

### APPENDIX B

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### PERSONNEL LIST

# Non-Responsive

FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 871 of 3473

### APPENDIX C

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### ANALYTICAL RESULTS

## AMA Analytical Services, Inc.

Attention:

A Specialized Environmental Laboratory

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### CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATOR NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGI ISONEC 17025-2005 www.aihaaccreditadtaba.cr LAB #100470





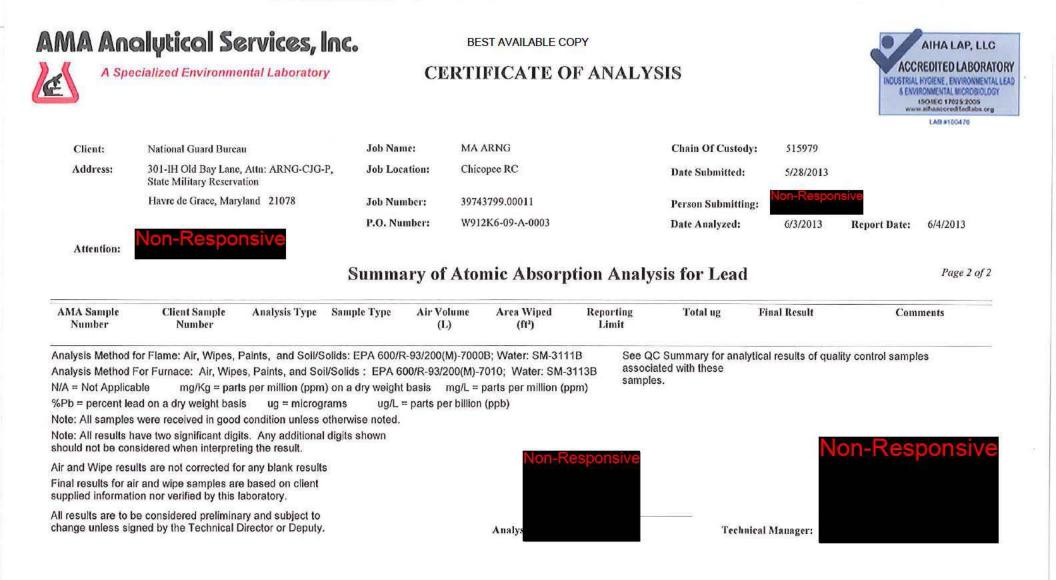
Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		orting Limit	Total ug	Final Res	ult	Comments
13065740	Chicopee RC W-01	Flame	Wipe	****	0.108	110	ug/fi²	<12	<110	ug/ft²	
13065741	Chicopee RC W-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065742	Chicopee RC W-03	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065743	Chicopce RC W-04	Flame	Wipe	****	0.108	110	ug/ft <sup>2</sup>	<12	<110	ug/ft²	
13065744	Chicopee RC W-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065745	Chicopee RC W-06	Flame	Wipe	****	0.108	110	ug/ft²	360	3400	ug/fl²	
13065746	Chicopee RC W-07	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065747	Chicopee RC W-08	Flame	Wipe	****	0.108	110	ug/fl <sup>2</sup>	<12	<110	ug/ft²	
13065748	Chicopee RC W-09	Flame	Wipe	****	0.108	110	ug/ft²	14	130	ug/ft²	
13065749	Chicopee RC W-10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065750	Chicopee RC TB-W	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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### APPENDIX D

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### PHOTOGRAPHIC LOG

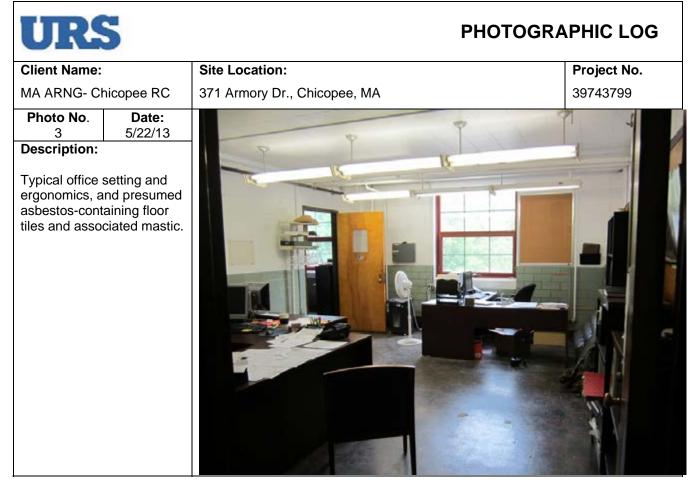


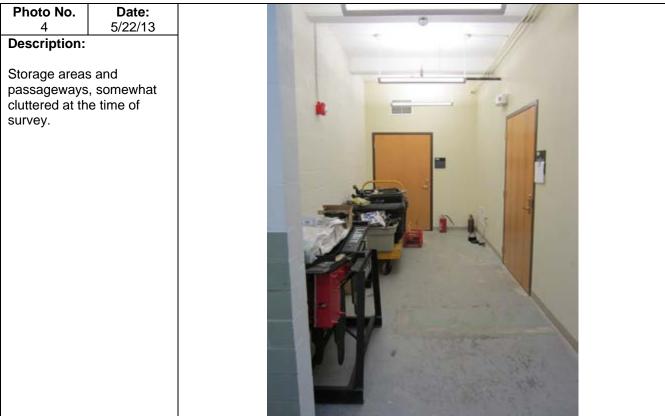
### PHOTOGRAPHIC LOG

Client Name:		Site Location:	Project No.
MA ARNG- Chicopee RC		371 Armory Dr., Chicopee, MA	39743799
MA ARNG- Ch Photo No. 1 Description: Under charged extinguisher wi evidence of mo inspections.	Date: 5/22/13 fire th no	371 Armory Dr., Chicopee, MA	39743799

# Photo No. Date: 2 5/22/13 Description: Presumed asbestos-containing floor tile and associated mastic in Classroom/ Mess Hall.

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### APPENDIX E

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### **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.



### **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 CONCORD READINESS CENTER 25 EVERETT STREET CONCORD, MASSACHUSETTS





Non-Responsive

Project wanager

September 2005 PN: 39741508

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### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
i 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 (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Peeling lead-based paint was present on the floor in storage room # 9, former firing range, classroom # 33 and office # 29.	Personnel trained in accordance with the OSHA Lead Standard should stabilize peeling lead paint (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Lead was detected in wipe samples collected from the former firing range in amounts greater than 200 µg/ft <sup>2</sup> Asbestos	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantitias of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
		AN CONTRACTOR OF CONTRACTOR
Damaged and missing floor tile was present in training room # 12. Exposed pipe fittings were found in various locations. Exposed tank insulation was found in the boiler room.	Repair or remove asbestos- containing floor tile, tank insulation and pipe fittings. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
A site-specific asbestos operations and maintenance plan was available but not implemented.	Implement the site specific asbestos operations and maintenance 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 to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4

Findings	Recommendation	Risk Assessment Code
Emergency Exit/Route Safety		
An emergency exit was obstructed by equipment being stored in the hallway.	Exit routes must be free and unobstructed. No materials or equipment may be placed, either permanently or temporarily, within the exit route (OSHA 29 CFR 1910.37(a)(3)).	RAC 2
An emergency exit sign was not illuminated in the drill hall.	Each exit sign must be illuminated to a surface value of at least five foot candles (54 LUX) by a reliable light source and be a distinctive in color (OSHA 29 CFR 1910.37(b)(6))	RAC 2

### FINDINGS AND RECOMMENDATIONS (Cont.)

### 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 25 Everett Street in Concord, Massachusetts 01742. 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 29, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Concord, Massachusetts. 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. Mr Non-Responsive of the State of Massachusetts 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.

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### 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. URS was unable to gain access to office #'s 14, 15 and 16 because this unit was deployed at the time of URS' survey. The other rooms had no ergonomic issues to report.

Water marks and visible mold were observed on the ceiling in the mess hall (Photo # 3413) and shower room # 5 (Photo # 3415). The water marks in training room # 12 (Photo # 3417) and storage room # 9 (Photo # 3403) did not appear to exhibit mold growth. However, all of the water stained areas should be addressed.

### 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 20.4 - 25.1% with an average of 23.8% on the 1<sup>st</sup> floor. Levels of the 2<sup>nd</sup> floor ranged from 14.4 – 15.3% with an average of 14.6%. In the basement, levels ranged from 22.2 – 28.4% with an average of 24.7%. These readings were below the recommended range of 30.0% to 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 on the 1<sup>st</sup> floor ranged from 325 to 398 parts per million (ppm), with an average of 332 ppm. Levels on the 2<sup>nd</sup> floor ranged from 332 to 385 ppm, with an average of 340 ppm. Basement levels ranged from 328 to 341 ppm, with an average of 332 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 (ANSI / ASHRAE Standard 62.1-2004) recommends that

levels of carbon dioxide be maintained below 700 ppm above background level. Since the average interior reading was 332 ppm an exterior reading was not collected.

### 2.2.3 Carbon Monoxide

Carbon monoxide levels were also measured in the Readiness Center. The carbon monoxide concentration remained at 0 parts per million (ppm) throughout the survey period for all building areas. The measured carbon monoxide levels were below the ASHRAE (ANSI / ASHRAE Standard 62.1-2004) 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 (ANSI / ASHRAE Standard 62.1-2004) 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).

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
Office # 12 – Desk by Drill Shed	Administrative Duties	323	500
Office # 12 – Desk by Front Windows	Administrative Duties	1031	500
Office # 13	Administrative Duties	413	500
Office # 19	Administrative Duties	200	500
Office # 25	Administrative Duties	331	500
Office # 26	Administrative Duties	680	500
Office # 27	Administrative Duties	517	500
Office # 28	Administrative Duties	236	500
Office # 29	Administrative Duties	164	500
Hallway # 4	Accessway	243	30
Hallway #20	Accessway	211	30
Hallway 31	Accessway	663	30

# Table 2-1 Lighting Measurements and Recommended Lighting Requirements

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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 five areas where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. Three samples were found to contain lead in a concentration below 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 "leadcontaining" (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	Reporting Limit (% by Weight)	Final Result (% by Weight)
Storage Room # 9	0129-LPC01	0.01	0.017
Storage Room # 9	0129-LPC02	0.01	0.6
Storage Room # 10	0129-LPC04	0.01	0.18
Classroom # 33	0129-LPC07	0.01	1.3
Office # 29	0129-LPC08	0.01	4.4

The analytical report from AMA is contained in Appendix D.

Wipe testing for lead dust 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 <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Bathroom # 17 – Top of a Table	0129-LW08	1.000	17	200
Office # 12 - Top of a Cabinet	0129-LW09	1.000	130	200
Office # 26 – Top of a File Cabinet	0129-LW10	1.000	31	200
Blank	0129-LWBlank	N/A	<12	200

### 2.2.6 Asbestos

Some exposed pipe fittings and pipe run insulation were discovered in area # 11 during the walk through inspection (Photos # 3406-07 & 3410). Training room # 12 contained some broken 9"x9" brown floor tile (Photo # 3418) and exposed air cell pipe insulation (Photo # 3416).

### 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

<u>GENERAL</u>: In general, the administrative area was neat and orderly, except in storage room # 9. This area was in disarray, which created tripping hazards (Photo # 3402). It is recommended that this area be better organized to prevent potential tripping hazards. The fire extinguisher in hallway # 4 was unmarked as to its location (Photo # 33412). Its location needs to be marked so the building occupants may find it in an emergency.

<u>LIGHTING</u>: 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. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Of the five paint chips collected in the administrative area, three were determined to be lead-based. Currently, there are no federal or state regulations that require removal of lead-based paint 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. URS recommends that personnel trained in accordance with OSHA's lead standard stabilize and make intact building areas with peeling lead-based paint.

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<u>ASBESTOS:</u> The floor tile, pipe fittings and pipe insulation were determined to contain asbestos in a concentration greater than one percent from a report of a previous survey conducted by ATC Associates. It is recommended that the damaged tiles (Photo **#** 3418) be replaced with new, non-asbestos tile. The damaged pipe fittings and insulation should be removed or repaired in a timely manner. The work should be completed by an appropriately trained technician.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

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### 3.0 FORMER FIRING RANGE

### 3.1 Operation Description

The Former 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Firing Range-Top of Light	0129-LW01	0.750	15,000	200
Guard				
Firing Range-Floor-Rear	0129-LW02	1.000	1,500	200
Firing Range-Floor-Center	0129-LW03	1.000	670	200
Firing Range-Floor-Front	0129-LW04	1.000	800	200
Firing Range-Top of Old	0129-LW05	1.000	10,000	200
Exhaust Unit				
Blank	0129- LWBlank	N/A	<12	200

Table 3-1 Levels of Lead Dust Found in the Former Firing Range

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 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(µĝ/m³)
Former Firing Range	0129-LA02	948	<3.2	50.0
Blank	0129-LA03	0	<3.0	50.0

On the day of the survey, the airborne lead dust level 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<sup>3</sup> averaged over an 8-hour day. The analytical report from AMA is contained in Appendix D.

One paint chip was collected where paint was peeling and sent to AMA for analysis. The sample was found to contain lead in a concentration that exceeds 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 paint testing.

# Table 3-3Level of Lead in Paint Found in the Former Firing Range

Sample Location		Reporting Limit	
Former Firing Range #7	0129-LPC03	0.01	0.82

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

<u>LEAD</u>: Five surface wipe samples and one paint chip sample collected within the former firing range. The surface dust wipes were all found to contain lead dust levels which exceed the maximum limit set by the National Guard Bureau. URS recommends that an appropriately licensed lead contractor clean the former firing range. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

The paint chip collected in the former firing range was determined to be lead-based. URS recommends that personnel trained in accordance with OSHA's lead standard stabilize and make intact this peeling lead-based paint.

### 4.0 DRILL HALL

### 4.1 Operation Description

The drill hall is a 9,600 square foot area with about a 30-foot high ceiling used for assembling personnel and storing equipment. The walls are constructed of brick with a wood floor.

The asbestos-containing pipe insulation in this area is in poor condition (Photo # 3421). The armory has an after-school program in the drill hall, which was set up for in-door soccer on the day of this survey. URS recommends removing the insulation before exposure becomes an issue.

One of the exit signs was not illuminated during the inspection (Photo # 3420) and should be repaired.

### 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.

Sample/Location	URS Sämple	Area Wiped	Result	Maximum Safe Surface
	Number	(ft²)		Contamination Level (µg/ft <sup>2</sup> )
Drill Hall # 22-Floor	0129-LW06	1.000	72	200
Drill Hall # 22-Floor	0129-LW07	1.000	71	200
Blank	0129-LWBlank	N/A	<12	200

 Table 4-1

 Levels of Lead Dust Found in the Drill Hall

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

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m³)	OSHA's PEL(µg/m³)
Drill Hall	0129-LA01	968	<3.1	50.0
Blank	0129-LA03	0	<3.0	50.0

### Table 4-2 Levels of Lead Found in the Air

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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

One paint chip was collected where paint was peeling and sent to AMA for analysis. The sample was found to contain lead in a concentration below 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 Level of Lead in Paint Found in the Drill Hall

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	
Drill Hall # 22	0129-LPC06	0.01	0.051

The analytical report from AMA is contained in Appendix D.

### 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

<u>ASBESTOS</u>: The asbestos-containing pipe insulation in this area is in poor condition (Photo # 3421). The armory has an after-school program in the drill hall, which was set up for indoor soccer on the day of this survey. URS recommends removing the insulation before exposure becomes an issue by properly trained personnel.

FIRE EXIT SIGNS: One of the exit signs was not illuminated during the inspection (Photo # 3420) and should be repaired.

### 5.0 BOILER ROOM

### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

### 5.2 Chemical and Physical Agents Sampled

### 5.2.1 Lead

One paint chip was collected where paint was peeling and sent to AMA for analysis. The sample was found to contain lead in a concentration below 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 5-1 below shows the results of the lead paint testing.

### Table 5-1 Level of Lead in Paint Found in the Boiler Room

Sample Location	URS Sample Number	 Reporting Limit (% by Weight)	Final Result
Boiler Room # 6	0129-LPC05	0.1	<0.0093

The analytical report from AMA is contained in Appendix D.

### 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.

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### 5.6 Interpretation of Results

<u>LEAD:</u> The one surface tested in the boiler room area for lead was found to contain a level of lead below the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. No further testing is required at this time.

<u>ASBESTOS:</u> The boiler and pipe insulation was observed to be in good condition. No damaged areas were found during the walk-through inspection.

### 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

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

### 6.3 Respiratory Protection

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

### 6.4 Hazard Communication

No safety program was found regarding hazard communication. An Operations and Maintenance (O&M) Plan was provided to URS before the inspection with regard to the asbestos on site. The main deficiency with this program was that the asbestos had not been labeled as containing asbestos and no training records were found.

### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. 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 62.1-2004: 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

**URS** 

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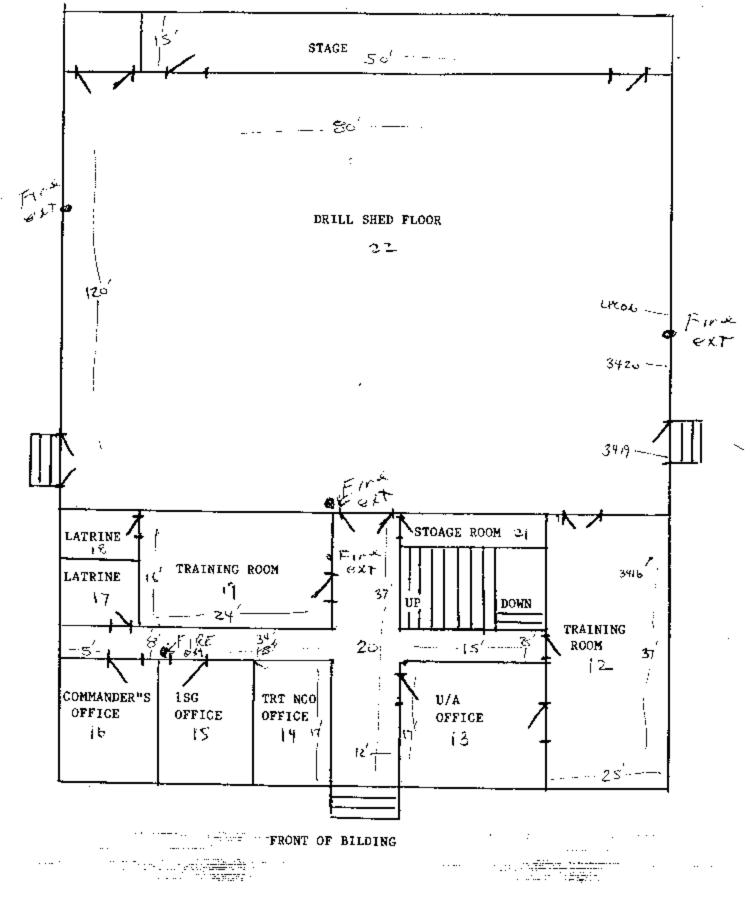
APPENDIX A

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SHOP DRAWING

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MAIN FLOOR EVACUATION PLAN FOLLOW RED ARROWS

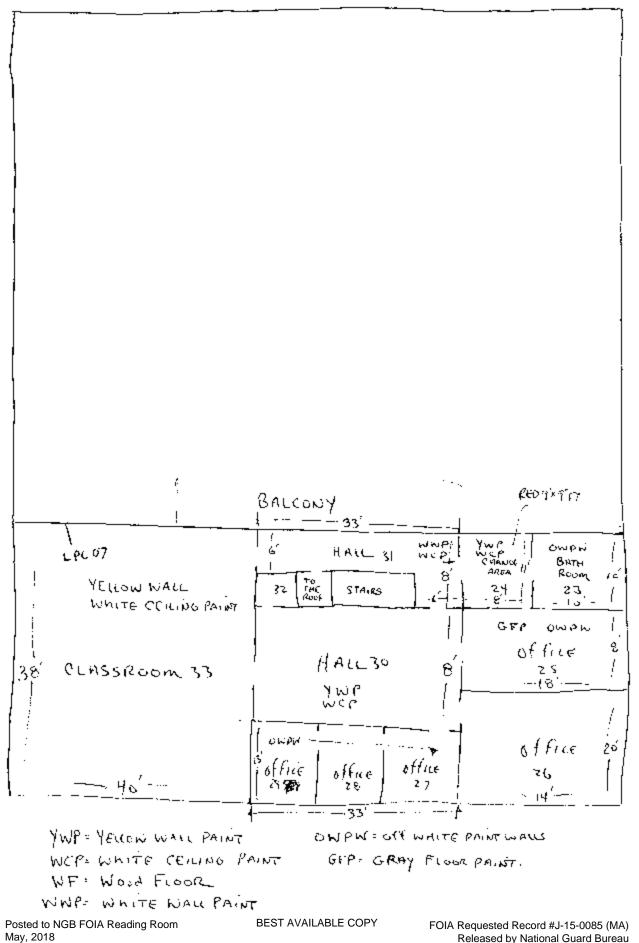


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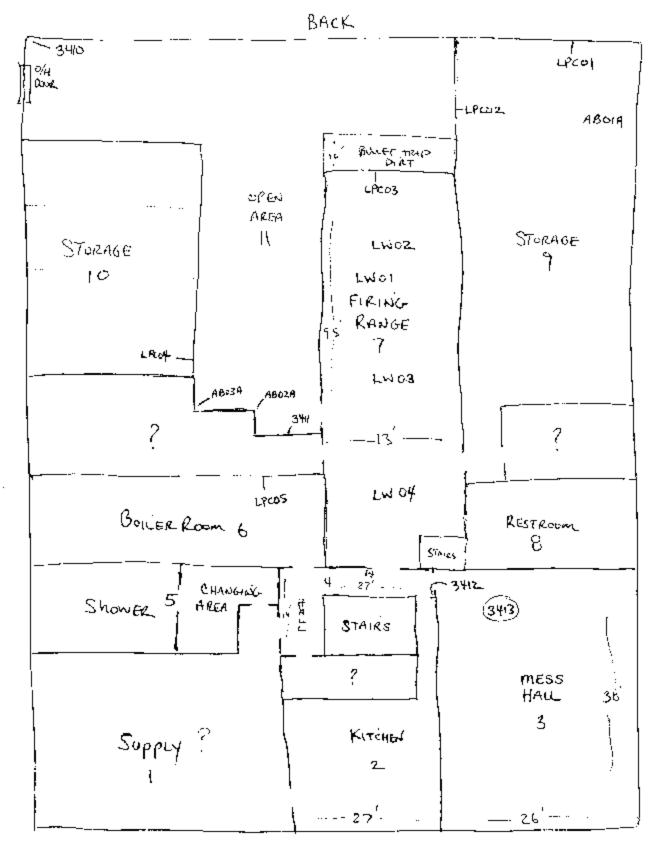
CONCORD, MA



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### BASEMENT





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PERSONNEL LIST

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UNIT DEPLOYED NO STAFF ON SITE

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## APPENDIX C

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## HAZARDOUS MATERIALS LIST

## NOT AVAILABLE

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#### APPENDIX D

#### ANALYTICAL RESULTS

A Specialized Environmental Laboratory			TIFICATE OF ANALYSIS		i) je	RIVLAG NY ELA AIHA
Client:	National Guard Burcau	Job Name:	Army National Guard	Chain Of Custody:	122699	
Address:	301-IH Old Bay Lanc, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	25 Everett St. Concord, MA	Date Analyzed:	02/10/2004	
	Havre de Grace, Maryland 21078	Job Number:	42056-012-211	Person Submitting:		
		P.O. Number:	Not Provided	Report Dute:	10-Feb-04	
Attention:						Pres 1 uf 2

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#### Summary of Atomic Absorption Analysis for Lead

	AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft')		orting mit		Final Res	ult	Comments
7	=_ == ==											
B	0422979	0129 LA 01	Flame	Air	968	N/A	3.10	ug/m'	<	3.1	ug/m³	
S	0422980	0129 1.A 02	Flame	Air	948	N/A	3.16	ug/m²	<	3.2	ug/m³	
BEST AVAILABLE	0422981	01291.03	Flame	Air Blank	0	N/A	3.00	ug/m <sup>3</sup>	<	3	ug	
A	0422982	01291.PC 01	Flame	Paint Chip	****	N/A	0.01	%Pb		0.017	%Ph	
A	0422983	0129 I.PC 02	Flame	Paint Chip	****	N/A	0.01	%Pb		0.6	%РЬ	
Ĩ	0422984	0129 LPC 03	Flame	Paint Chip	****	N/A	0.01	%Pb		0.82	%Pb	
2	0422985	0129 I.PC 04	Flame	Paint Chip	****	N/A	0.01	%Pb		0.18	%Pb	
COPY	0422986	0129 I.PC 05	Flame	Paint Chip	****	N/A	10.0	%Pb	<	0.0093	%Pb	
	0422987	0129 LPC 06	Flame	Paint Chip	****	N/A	0.01	%Pb		0.051	%РЬ	
	0422988	0129 LPC 07	Flame	Paint Chip	****	N/A	0.01	%Pb		1.3	%Pb	
	0422989	0129 I.PC 08	Flame	Paint Chip	****	N/A	0.01	%Pb		4.4	%Pb	
T	0422990	0129-LW 01	Flame	Wipe	****	0.750	16.00	ug/fl <sup>2</sup>		15000	ug/ft²	
FOIA	0422991	0129-LW 02	Flame	Wipe	****	1.000	12.00	ug/fi <sup>2</sup>		1500	ug/ft2	
Re	0422992	0129-LW 03	Flame	Wipe	****	1.000	12.00	ug/ft²		670	ug/fl²	ts, the public and these Laborate r without prior written authoriz xpressly disclaim any knowledge l by the client. NVLAP Accredit cserved. AMA Analytical Services,
que	0422993	0129-LW 04	Flame	Wipc	****	1.000	12.00	ug/ft²		800	ug/ft²	
este	0422994	0129-LW 05	Flame	Wipe	****	1.000	12.00	ug/il <sup>2</sup>		10000	ug/ft*	
dR	0422995	0129-LW 06	Flame	Wipe	****	1.000	12.00	ug/ft²		72	ug/ft²	
Na Na	0422996	0129-LW 07	Flame	Wipe	****	1.000	12.00	ug/ft <sup>2</sup>		71	ug/ft²	
ion a	0422997	0129-I.W 08	Flame	Wipe	****	1.000	12.00	ug/ft <sup>2</sup>		17	ug/ft <sup>2</sup>	
直楚	0422998	0129-LW 09	Flame	Wipe	****	1.000	12.00	ug/ft²		130	ug/Ω²	

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li.	A Spor	sialized Environmen	tal Laboratory	CER	FIFICATE	OF ANAI	LYSIS					NY ELA <i>A</i> IHA
	Client:	National Guard Bureau	i .	Job Name:	Army Nationa	l Guard		Chain Of	Custody:	1220	599	
	Address:	301-IH Old Bay Lane, State Military Reservat		Job Location:	25 Evercii St.	Concord, MA		Date Ana	lyzed:	02/1	0/2004	
		Havre de Grace, Maryl	and 21078	Job Number:	42056-012-21	1		Person Si	ubmitting:			
				P.O. Number:	Not Provided			Report D	ale:	10-F	eb-04	
2	Attention:											Page 2 of 2
		-		Summary o	f Atomic A	Absorption	Analys	is for l	Lead			
	AMA Sumple Number	Client Sample Number	Analysis Type	Sumple Type	Air Volume (L)	Area Wiped (ft²)		orting	Ĩ	inal Res	ult	Comments
Π	0422999	0129-LW 10	Flame	Wipe	****	1.000	12.00	ug/ft <sup>1</sup>		31	ug/ft²	
BES.	0423000	0129-I.W BLANK	Flame	Wipe Blank	****	N/A	12.00	ug	<	12	ug	
BEST AVAILABLE COPY		for Flame: Air, Wipes, F			S S 102							
AIL	Analysis Method N/A = Not Applic	For Furnace: Air, Wipe		iolids : EPA 600/R-93 by weight mg/L = pa								
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ÖP	considered when	interpreting the result.					Ĕ					
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May, 2018

### APPENDIX E

#### TRAINING CERTIFICATES

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# Non-Responsive

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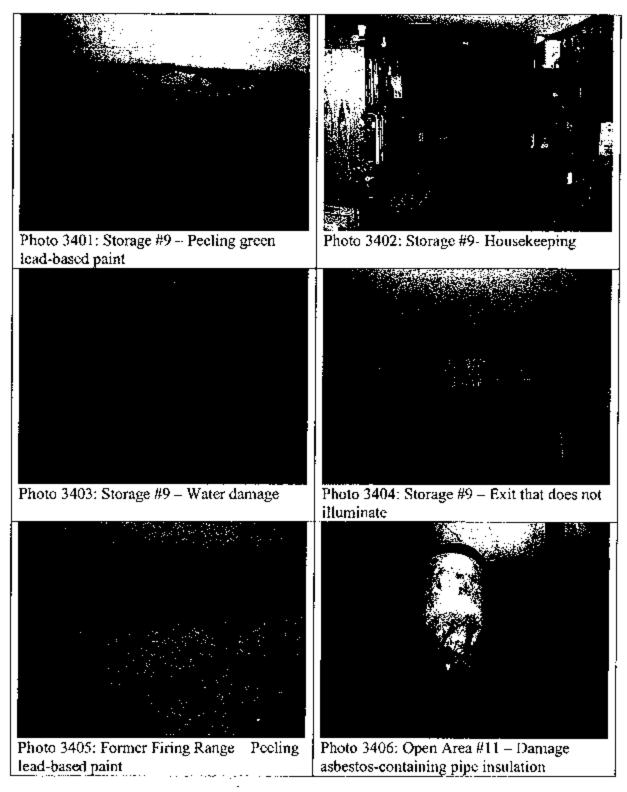
ENVIR	INSTITUTE FOR ONMENTAL EDUCATIO	N, INC.
TPP	16 Upton Drive, Wilmington, MA 01887 (978) 658-5272	TFF
IEE	This is to certify that	IEE
has compl	eted the requisite training, and has passed an exar for reaccreditation as:	nination
	Asbestos Inspector Refresher	
pursuar	nt to Title II of the Toxic Substance Control Act, 15 U.S.C	2. 2646
	April 11, 2003 Course Dates	
April 11, 2003 Examination Date	<u>Course Location</u> Institute for Environmental Education 16 Upton Drive Wilmington, MA 01887	April 10, 2004 Expiration Date
03518010625349 Certificate Number		President/Director of Training

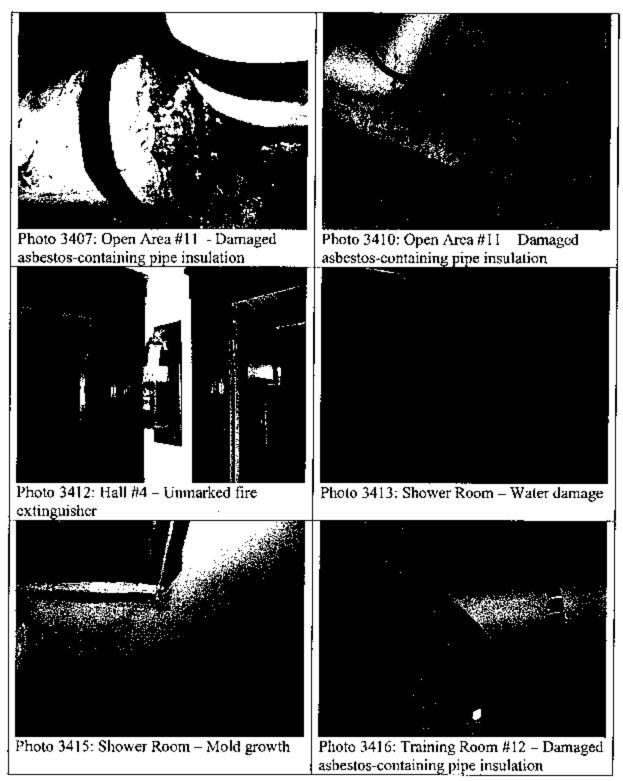
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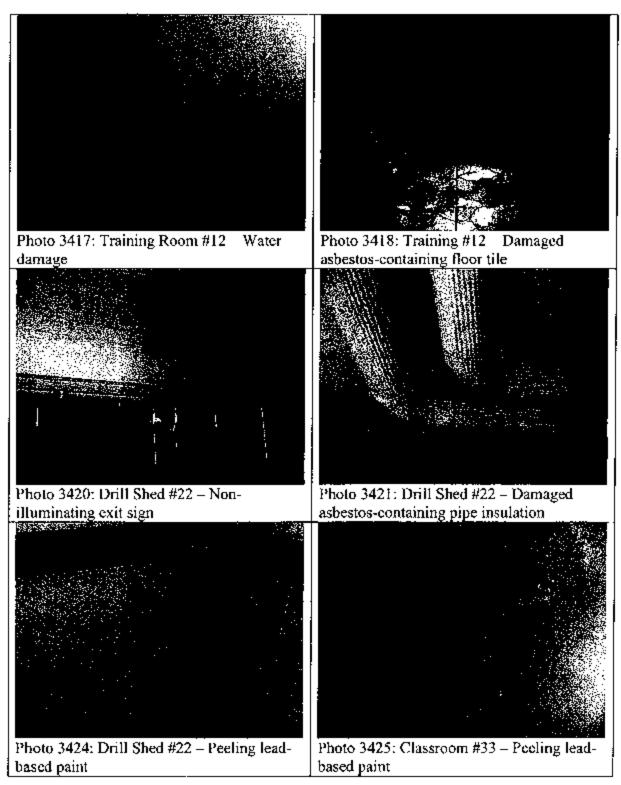
FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 914 of 3473 APPENDIX F

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## PHOTOGRAPHS







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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 ( $\mu$ g/ll<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

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



## Industrial Hygiene Survey for MAARNG – Concord Readiness Center 91 Everett Street Concord, Massachusetts 01742

AECOM Environment October 2010 Document No.: 60159721/Concord Readiness Center

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

## Industrial Hygiene Survey for MAARNG – Concord Readiness Center 91 Everett Street Concord, Massachusetts 01742



Project Manager



Section Manager - EHS Management

AECOM Environment October 2010 Document No.: 60159721/Concord Readiness Center

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## Executive Summary

On August 17, 2010, AECOM Environment conducted an Industrial Hygiene (IH) survey of the Concord Readiness Center facility located at 91 West Everett Street in Concord, Massachusetts. SSG was the point of contact for the facility, Non-Responsive, Program Coordinator I, was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Concord 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 Concord Readiness Center is currently staffed by approximately three personnel. The facility was constructed in1915.

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

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

The Concord Readiness Center is housed in a two story masonry structure with a basement, consisting of approximately 50% administrative space and 50% drill hall.

Lighting levels measured in most offices was as inadequate and should be addressed. All other levels were generally acceptable as per <u>ANSI/IESNA RP-1-2004</u>, <u>Office Lighting</u>, <u>ANSI/IESNA RP-7-2001</u>, <u>Industrial Lighting</u>, and the <u>IESNA Lighting Handbook</u>, <u>9<sup>th</sup> Edition</u>, <u>11 April 2005</u>.

Wipe samples collected in the former firing range indicated lead levels exceeding the ARNG action level.

Suspect mold growth was observed on water damaged ceiling tile in the mess hall.

The HVAC system in the building consists of a boiler room that feeds radiant heaters throughout the building. There is no HVAC system that provides fresh air from the building exterior in administrative areas. The Drill Hall is equipped with overhead fans along each wall. No information was available regarding fan unit maintenance.

## 1.0 Facility Description and Operations

The Concord Readiness Center is an administrative facility within a two story masonry structure with a basement. The building consists of two main sections. The front section of the building contains office and administrative areas, and is finished with painted plaster walls, plaster ceilings, and floor tile. The drill hall comprises rear portion of the building. This area is finished with painted masonry walls, an exposed roof deck painted to match the walls, and hardwood floors.

The primary activity at the Concord Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Concord Readiness Center is currently staffed by approximately three personnel. No vehicle maintenance activities are undertaken at the facility.

## 2.0 Sampling in Readiness Centers

#### 2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and 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.

According to site personnel the indoor firing range at the facility is no longer in use and was abated on September 30, 2000. The following table presents the results of the lead wipe sampling conducted at the facility.

Sample Number	Sample Location	Lead Concentration
CRC-1	Range Floor	1300 ug/ft <sup>2</sup>
CRC-2	Range Table	800 ug/ft <sup>2</sup>
CRC-3	Range Wall	36000 ug/ft <sup>2</sup>
CRC-4	Range Duct	11000 ug/ft <sup>2</sup>
CRC-5	Exterior Range Floor	310 ug/ft <sup>2</sup>
CRC-6	Kitchen Stove	250 ug/ft <sup>2</sup>
CRC-7	Mess Hall Table	150 ug/ft <sup>2</sup>
CRC-8	Drill Shed Vending Machine	110 ug/ft <sup>2</sup>
CRC-9	U/A Office Shelf	<110 ug/ft <sup>2</sup>
CRC-10	Training Room Shelf	120 ug/ft <sup>2</sup>
CRC-11	Office #1 Shelf	<110 ug/ft <sup>2</sup>
CRC-12	Classroom Table	<110 ug/ft <sup>2</sup>

#### Table 2-1: Lead Wipe Sample Results

All of the wipe samples collected in the former firing range and in the kitchen indicated elevated levels of lead. All other samples showed levels that were below the ARNG action level of 200 ug/ft<sup>2</sup>. Laboratory analytical results are presented in Appendix C.

#### 2.1.2 Air Sampling

Ambient 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
CRC-01A	Drill Hall	<13 ug/m <sup>3</sup>
CRC-02A	U/A Office	<13 ug/m <sup>3</sup>

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<sup>3</sup> and the Permissible Exposure Limit (PEL) is 50 ug/m<sup>3</sup>. 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. The paint on the walls appeared to be generally in good condition with the exception of localized areas, such as the upstairs classroom and some ceiling areas. A paint chip sample was collected in the upstairs classroom where the paint was peeling or otherwise damaged. The paint chip sample collected at the Concord Readiness Center showed the presence of quantifiable lead (29 CFR 1910.1025). Other painted building surfaces appeared to be generally in good condition with no peeling paint observed. Concrete flooring was generally tiled or unpainted. Laboratory analytical results are presented in Appendix C.

#### Table 3-11: Lead Paint Chip Sample Results

Sample Number	Sample Location	Lead Concentration
CRC-01C	Classroom	0.15 %Pb

#### 3.1.2 Suspect Asbestos Containing Materials

AECOM did observe damaged, friable suspect asbestos containing materials (ACM) in the basement of the Concord Readiness Center during this survey. AECOM was provided with a survey dated 2005, where the pipe insulation was found to be positive, thus a bulk sample was not taken. Thermal system piping is typically covered in ACM or fiberglass insulation with associated fittings generally in 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 observed evidence of water intrusion in the upstairs classroom and mess hall during this survey. Localized, suspect mold growth was observed on ceiling tiles in the mess hall. According to site personnel the water damage was due to a roof leak which has been repaired. The impacted areas were limited to less than 10 square feet.

#### 3.1.4 Housekeeping

The Concord Readiness Center was observed to be generally clean and orderly during this assessment. AECOM did not observe dust accumulation on 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 Concord Readiness Center staff members. No Indoor Air Quality concerns were noted by the Concord 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 3-2:	Indoor	Air	Quality	Monitoring	Results
------------	--------	-----	---------	------------	---------

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (°F)	Relative Humidity (%)				
Exterior - Baseline	1.7	455	76.9	66.6				
Training Room #1	1.8	478	79.0	60.3				
Classroom	1.3	498	79.0	63.1				
Kitchen	1.3	516	80.0	61.1				
Kitchen       1.3       516       80.0       61.1         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 ASHPAE Standard 62.1								

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)

Concord 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 not observed in the facility.

The Concord Readiness Center is heated by a radiant heating system fed by a boiler located in the boiler room. Supply and return air is not provided by mechanical means. Outdoor air is provided in the building through open windows and doors.

Multiple fan units are located along each wall of the drill hall, but the units were inaccessible and site personnel could not provide information on the use or status of the system. The fans were not observed in operation during the survey.

#### 4.1.2 HVAC Maintenance

There was no maintenance schedule associated with an active ventilation system.

## 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 were inadequate in most of the office areas.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Training Room #1	41.8	Ŷ	30
U/A Office	63.8	Y	50
Storage Room	3.6	N	5
Training Room #2	23.4	N	30
Latrine #1	20.5	Y	5
TRT NCO Office	35.4	N	50
1SG Office	39.6	Ν	50
Commanders Office	31.6	N	50
Latrine #2	22.5	Y	5
Drill Shed	10.7	Y	10
Classroom	37.5	Y	30
Closet	6.7	Y	5
Changing Room	35.0	Y	5
Latrine #3	41.0	Y	5
Storage #2	19.9	Y	5
Office #1	35.6	N	50
Office #2	39.2	N	50
Office #3	29.6	N	50
Storage #3	41.5	Y	5
Kitchen	36.8	Y	10
Mess Hall	28.9	Y	10
Storage Bay	27.5	Y	5
Tent Storage	24.1	Y	5
Medical Supplies #1	25.5	Y	5
Medical Supplies #2	21.6	Y	5
Former Range	16.7	Y	5
Equipment Room	34.3	Y	5
Storage #4	28.2	Y	5
Men's Latrine	23.1	Y	5
Shower	5.1	Y	5
Boiler Room	3.1	Ν	30
Radioactive Storage	21.5	Y	5
Medical Supplies #3	2.7	N	5
Office Lighting (ANSI/IESNA RP	-1-04) and Industrial Lightir	ng Facilities (ANSI RP-7	<i>′</i> -01)

## 6.0 Evaluation of Attached Garage

There is no garage associated with the Concord Readiness Center.

## 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 Concord Readiness Center, and AECOM did observe damaged friable pipe insulation and peeling paint during the evaluation.

Evidence of water intrusion was observed in the upstairs class room and mess hall. Localized, suspect visible mold growth was observed on ceiling tiles in the mess hall.

Lighting levels in most offices were out of compliance with ANSI/IESNA guideline levels.

Air samples collected and analyzed did not indicate quantifiable levels of airborne lead . Detectable levels of lead were found in the paint chip sample aquired from the classroom.

Wipe samples collected in the former range and kitchen all exceeded the ARNG action level. Other various locations throughout the building did not indicate levels of lead on surfaces in excess of the ARNG action level.

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.

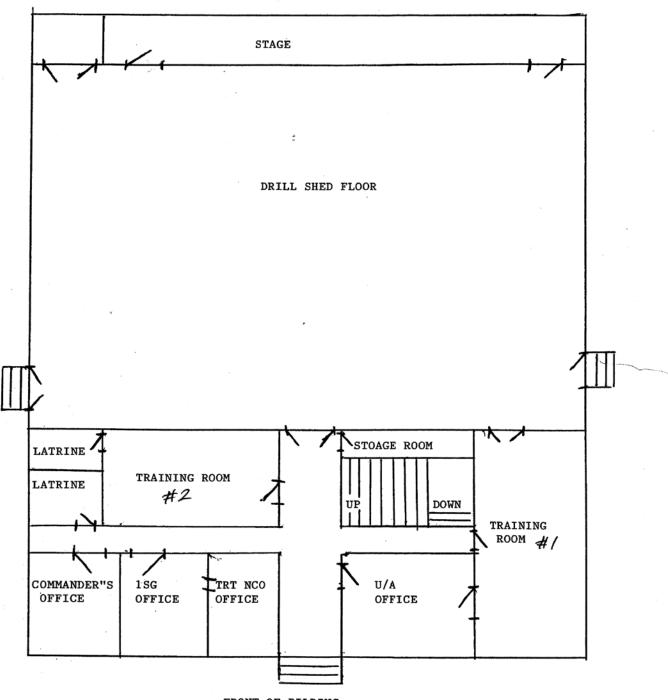
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive 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.

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Appendix A

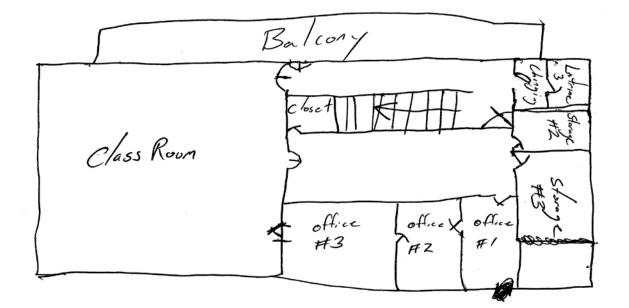
Concord Readiness Center Facility Layout



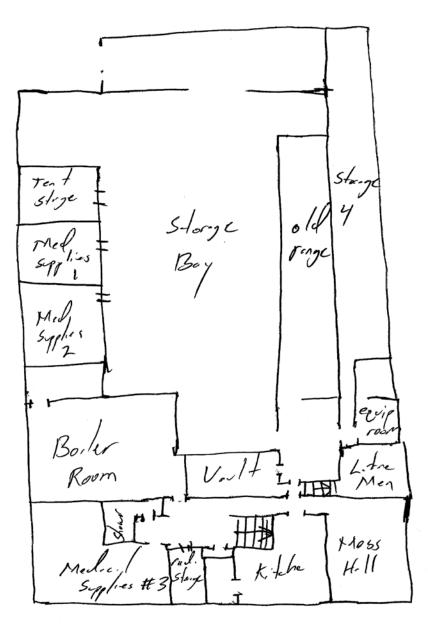
MAIN FLOOR EVACUATION PLAN FOLLOW RED ARROWS

FRONT OF BILDING

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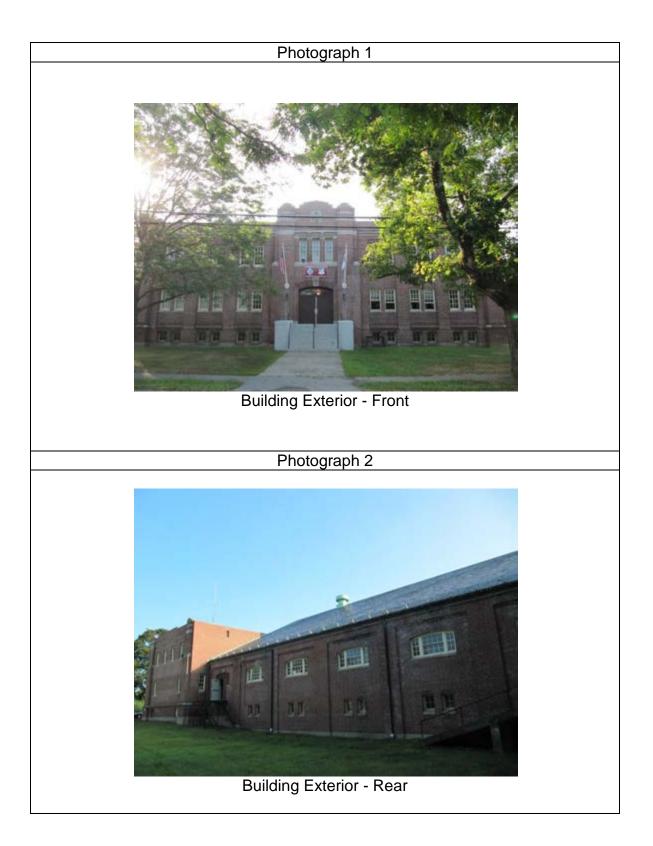


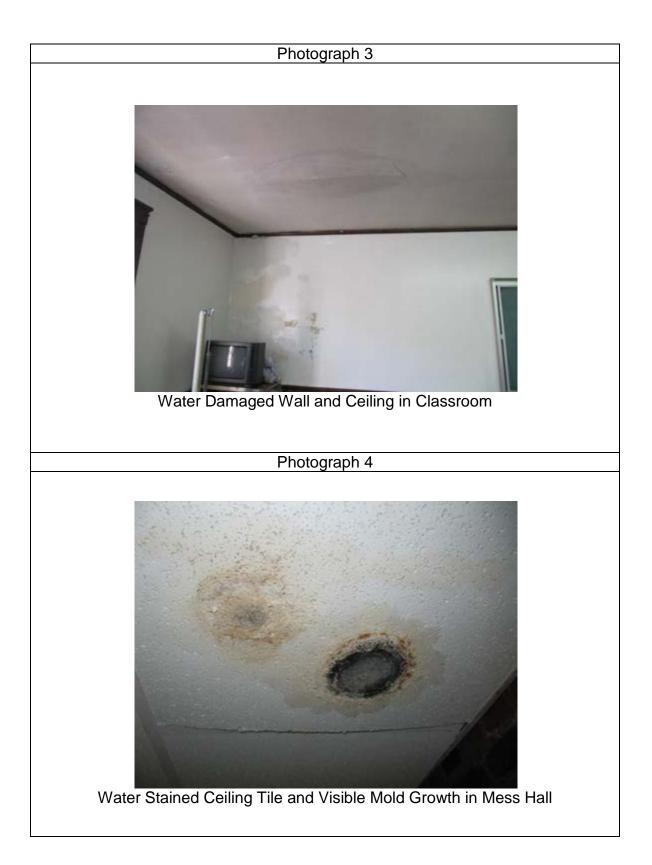
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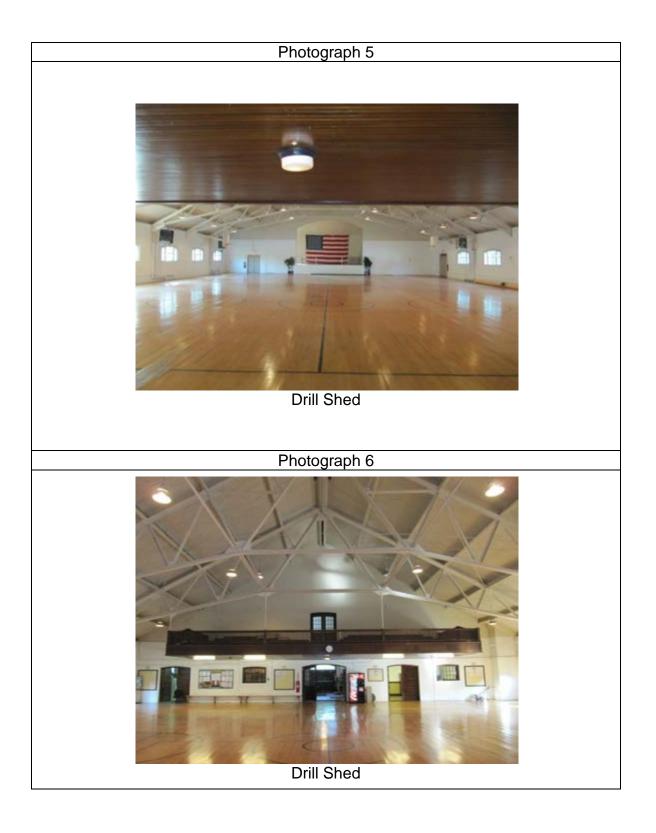


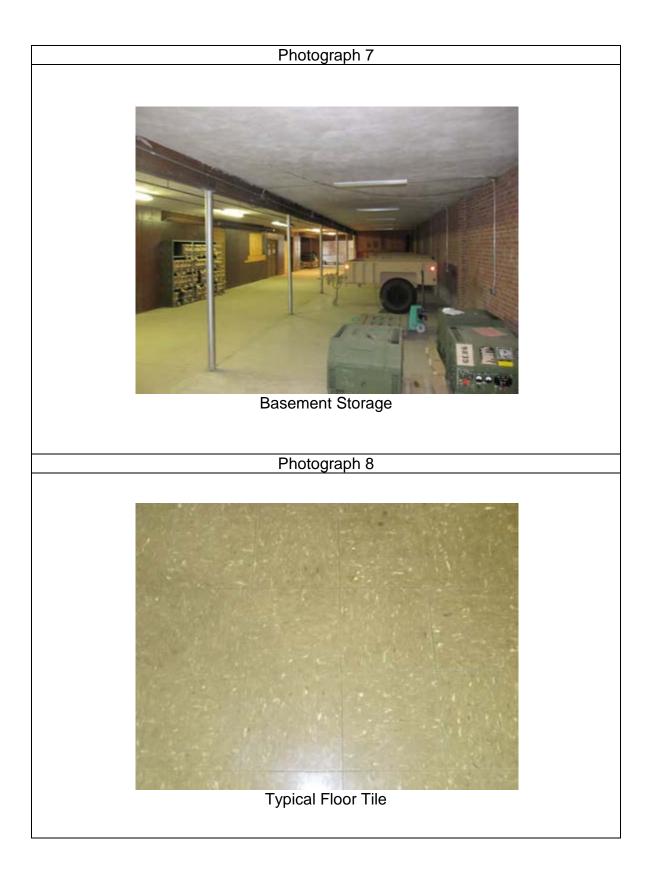
Appendix B

Concord Readiness Center Photographs

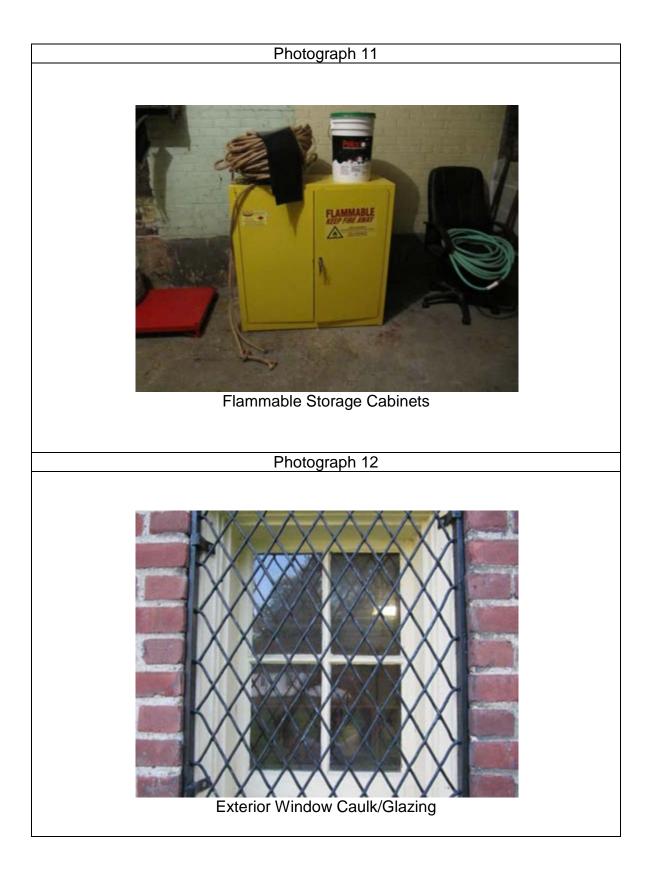






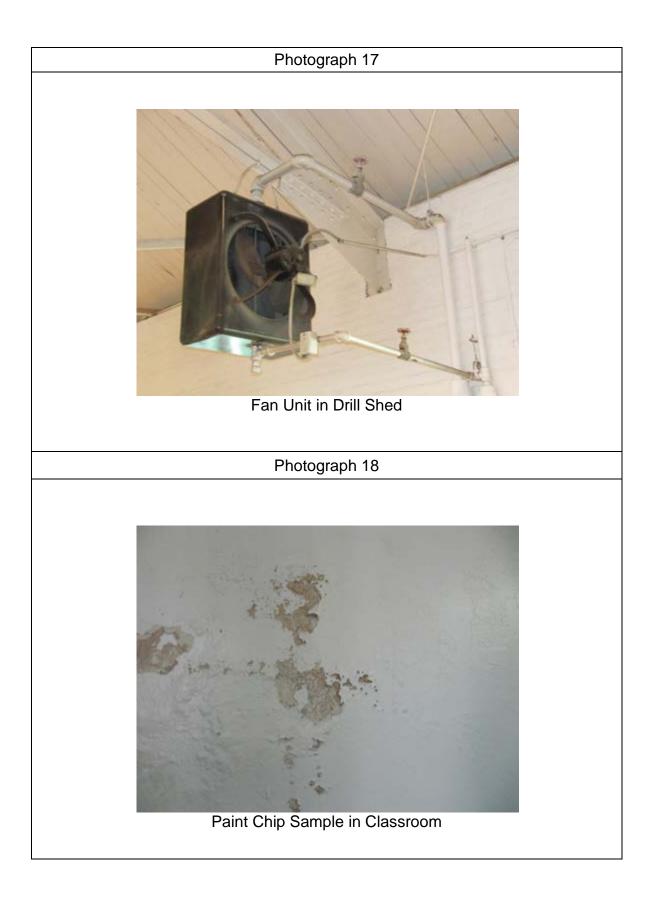








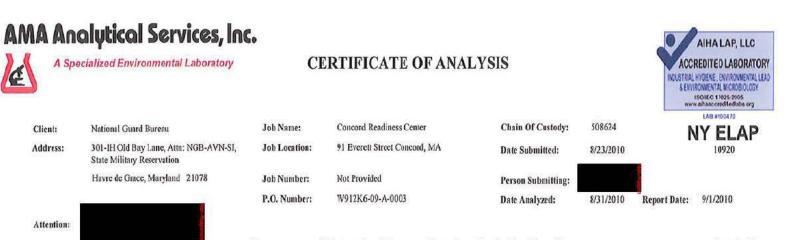






Appendix C

Analytical Results



#### Summary of Atomic Absorption Analysis for Lead

Page 1 of.
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AMA Sample Client Sample Number Number					Total ug	Final Res	ult	Comments			
1073192	CRC-01 C	Flame	Paint Chip	****	N/A	0.0091	%Pb		0.15	%Pb	
1073193	CRC-01	Flame	Wipe	****	0.111	110	ug/ft²	140	1300	ug/ft²	
1073194	CRC-02	Flame	Wipe	****	0.111	110	ug/ft²	89	800	ug/ft²	
1073195	CRC-03	Flame	Wipe	****	0.111	110	ug/ft²	4000	36000	ug/ft²	
1073196	CRC-04	Flame	Wipe	****	0.111	110	ug/ft²	1200	11000	ug/ft²	
1073197	CRC-05	Flame	Wipe	****	0.111	110	ug/ft²	35	310	ug/ft²	
1073198	CRC-06	Flame	Wipc	****	0.111	110	ug/ft²	28	250	ug/ft²	
1073199	CRC-07	Flame	Wipe	****	0.111	110	ug/ft²	16	150	ug/ft²	
1073200	CRC-08	Flame	Wipe	****	0.111	110	ug/ft²	13	110	ug/ft²	
1073201	CRC-09	Flame	Wipe	****	0.111	110	ug/ft²	12	<110	ug/ft²	
1073202	CRC-10	Flame	Wipe	****	0.111	110	ug/ft²	13	120	ug/ft²	
1073203	CRC-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
1073204	CRC-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
1073205	CRC-01 A	Flame	Air	225	N/A	13	ug/m³	<3	<13	ug/m³	
1073206	CRC-02 A	Flame	Air	225	N/A	13	ug/m*	<3	<13	ug/m²	

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 presons submitting them and, unless collected by presonnel 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. This report nust not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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Appendix D

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# 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



Office Manager

Non-Responsive

Project Manager

INDUSTRIAL HYGIENE SURVEY REPORT DANVERS READINESS CENTER 5 SYCAMORE STREET DANVERS, MASSACHUSETTS

October 2005 PN: 39741508

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- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories

# FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic	Manager & State State State	
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 States and the		
On the day of the survey, the illuminance in the administrative area was inadequate in half of all 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 RP-1-04)	RAC 4
Lead	MARKAR CALLS	
Lead was detected in wipe samples collected from the firing range in amounts greater than 200 µg/ft <sup>2</sup>	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	Carle Contraction Contraction	AND
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
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(j))	RAC 3
Hazard Communication		CARLES AR AND
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4

# FINDINGS AND RECOMMENDATIONS (Continued)

Findings	Recommendation	Risk Assessment Code
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 1910.305(b)(2))	RAC 2
Mold Watermarks and mold growth were throughout.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
An obstructed fire extinguisher was found in the kitchen.	Fire extinguishers must be made available when needed and that employees are not subjected to injury hazards when they try to obtain an extinguisher (OSHA 29 CFR 1910.157(c)(1)).	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 5 Sycamore Street in Danvers, Massachusetts 01923. 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 16, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Danvers, Massachusetts. 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 Massachusetts 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 building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walk through for ergonomic issues. Computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards could not be adjusted (Photo # 3166) in most of the offices. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks were observed on the ceiling in the classrooms.

# 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 10.5-15.1 % with an average of 11.9%. This average reading was below the recommended range of 30.0% to 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 341 to 404 parts per million (ppm), with an average of 362 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, an outside reading was not collected.



# 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. The carbon monoxide concentration remained at 0 parts per million (ppm) throughout the survey period. This measured level was below the ASHRAE guideline for indoor environments (62.1-2004). 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 (62.1-2004) 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).

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Minimum Illuminance (lux / foot candles)
Office # 9	Administrative Duties	947 / 88.0	500 / 50
Office # 11	Administrative Duties	1108 / 102.9	500 / 50
Office # 12	Administrative Duties	405/37.6	500 / 50
Office # 16	Administrative Duties	561 / 52.1	500 / 50
Office # 17	Administrative Duties	331/30.7	500 / 50
Office # 19 - Desk 1	Administrative Duties	228/21.2	500 / 50
Office # 19 – Desk 2	Administrative Duties	381/35.4	500 / 50
Office # 20	Administrative Duties	598 / 55.6	500 / 50
Office # 21	Administrative Duties	248 / 23.0	500 / 50
Office # 22 – Left Front Desk	Administrative Duties	663 / 61,6	500 / 50
Office # 22 – Left Center Desk	Administrative Duties	362 / 33.6	500 / 50

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

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Location	Function 7	(lux / foot	Recommended Minimum Illuminance (lux / foot candles)
Office # 22 – Left Rear Desk	Administrative Duties	9,7 <b>10 / 902</b> .1	500 / 50
Office # 22 – Right Rear Desk	Administrative Duties	692 / 64.3	500
Office # 22 – Right Center Desk	Administrative Duties	262/24.3	500
Office # 22 – Right Front Desk	Administrative Duties	560 / 52.0	500

# Table 2-1 (Continued) Lighting Measurements and Recommended Lighting Requirements

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

# 2.2.5 Lead

Paint chips were collected in four areas where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. The four samples were found to contain lead in a concentration below 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 2-2Levels of Lead in Paint Found in the Administrative Area

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Kitchen # 5	0116-LPC03	0.01	0.11
Men's Latrine # 28	0116-LPC04	0.01	0.14
Supply Room # 26	0116-LPC05	0.01	0.013
Supply Room # 26	0116-LPC06	0.01	0.18

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.

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Hallway <b>#</b> 1A	9"x9" Brown Floor Tile	0116-AB01A-FT	5 (chrysotile)
Kitchen # 5	9"x9" Brown Floor Tile	0116-AB01B-FT	NAD
Locker Room # 13	9"x9" Brown Floor Tile	0116-AB01C-FT	NAD
Hallway # 1A	Associated Mastic	0116-AB01A-M	2 (chrysotile)
Kitchen # 5	Associated Mastic	0116-AB018-M	3 (chrysotile)
Locker Room # 13	Associated Mastic	0116-AB01C-M	3 (chrysotile)
Locker Room # 13	12"x12" White Ceiling	0116-AB02A	NAD
Classroom # 3	12"x12" White Ceiling Tile	0116-AB02B	NAD
Supply Room # 14	12"x12" White Ceiling Tile	0116-AB02C	NAD

Table 2-3 Sample Results of Suspect ACM

NAD = "No Asbestos Detected"

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.

# 2.3 Ventilation System Evaluation

Not applicable to this operation.

FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 968 of 3473

#### 2.4 Noise Measurements

Not applicable to this operation.

#### 2.5 Personal Protective Equipment

Not applicable to this operation.

#### 2.6 Interpretation of Results

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits and exlinguishers were marked and easily accessible, except in the kitchen. On the day this survey was conducted, the fire exit lane through the kitchen was not 36 inches or wider (Photo # 3164).

<u>ERGONOMICS</u>: The ergonomic issues regarding the desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in approximately half of the offices. URS recommends increasing lighting in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD:</u> The four surfaces that were sampled in this area for lead were found to be within the allowable limits and require no further action at this time.

<u>ASBESTOS:</u> Samples of the floor tile which was present throughout this building area were determined to contain asbestos in a concentration greater than one percent. It is recommended that the damaged tiles (Photo # 3163) be replaced with new, non-asbestos tile by an appropriately trained technician.

<u>ELECTRICAL:</u> An electrical power outlet in office # 16 had exposed wiring (Photo # 3170). URS recommends putting a cover on the outlet.

<u>MOLD:</u> There were water stains on the ceiling in classroom # 3 (Photo # 3161), classroom # 4 and office # 16 (Photo # 3169) that may indicate mold problems if not addressed. There was visible mold growth on the pipe above the drop ceiling in room # 17 (Photo # 3168).

FIRE SAFETY: An obstructed fire extinguisher was observed in the kitchen

# 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Acceptable Surface Contamination Level (µg/ft <sup>2</sup> )
Firing Range-Top of Light Guard	0116-LW06	1.111	19000	200
Firing Range-Top of a Table	0116-LW07	1.000	30	200
Firing Range-Floor-Floor	0116-LW08	1.000	260	200
Firing Range-Floor-Center	0116-LW09	1.000	240	200
Firing Range-Floor-Bullet Trap	0116-LW10	1.000	13000	200
Blank	0116- LWBlank1	N/A	<12	200

Table 3-1 Levels of Lead Dust Found in the Former Firing Range

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 Level 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	0116-LA02	928	<3.2	50.0
Blank	0116-LA-Blank	0	<3.0	50.0

On the day of the survey, the airborne lead dust level 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<sup>3</sup> 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

<u>LEAD</u>: Surfaces within the former firing range were found to contain lead dust levels which exceed the maximum limit set by the US Army Center for Health Promotion and Preventive Medicine. URS recommends that personnel trained in accordance with the OSHA lead standard (29 CFR 1910.1025) clean the former firing range. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

# 4.0 DRILL HALL

### 4.1 Operation Description

The drill hall is a 6,300 square foot area with about a 30 foot high ceiling used for assembling personnel and storing vehicles. The walls are constructed of cinder block 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Acceptable Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall #27-Floor	0116-LW01	1.000	13	200
Drill Hall #27-Floor	0116-LW02	1.000	18	200
Drill Hall #27-Floor	0116-LW03	1.000	<12	200
Drill Hall #27-Top of a Table	0116-LW04	1.000	<12	200
Drill Hall #27-Top of Powerade Drink Machine	0116-LW05	1.000	25	200
Blank	0116- LWBlank1	N/A	<12	200

Table 4-1 Levels of Lead Dust Found in the Drill Hall

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 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume ja (L)	Result (µg/m³)∛	OSHA's PEL(µg/m³)
Drill Hall	0118-LA01	956	<3.1	50.0
Blank	0116-LABlank	0	<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  $\mu$ g/m<sup>3</sup> 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

<u>LEAD</u>: Wipe samples collected in the drill hall for leed were found to be below allowable limits and require no further action at this time.



# 5.0 BOILER ROOM

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

# 5.2 Chemical and Physical Agents Sampled

# 5.2.1 Lead

Paint chips were collected in two areas where paint was peeling and sent to AMA for analysis. Both samples were found to contain lead in a concentration below 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 5-1 below shows the results of the lead paint testing.

Table 5-1 Levels of Lead in Paint Found in the Boiler Room

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Boiler Room #2	0116-LPC01	0.1	0.052
Boiler Room #2	0116-LPC02	0.1	0.06

The analytical report from AMA is contained in Appendix D.

# 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

<u>LEAD:</u> Two surfaces were tested in the boiler room for lead and found to contain levels below the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. No further action is required at this time.

<u>MOLD</u>: There was visible mold growth on an old tank that was hanging from the ceiling (Photo # 3159). An appropriately trained technician should remove the mold before it becomes a larger issue.

# 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 safety program for hearing conservation was found in the site's safety binder, tab 1, 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 safety program for respiratory protection was found in the site's safety binder, tab I, 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 safety program for hazard communication was found in the site's safety binder, tab I, chapter 6. No training records were found on site.

#### 6.5 Personal Protective Equipment

A written safety program for personal protective equipment was found in the site's safety binder, tab N, chapter 10. 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 6055.22 APR 96

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)

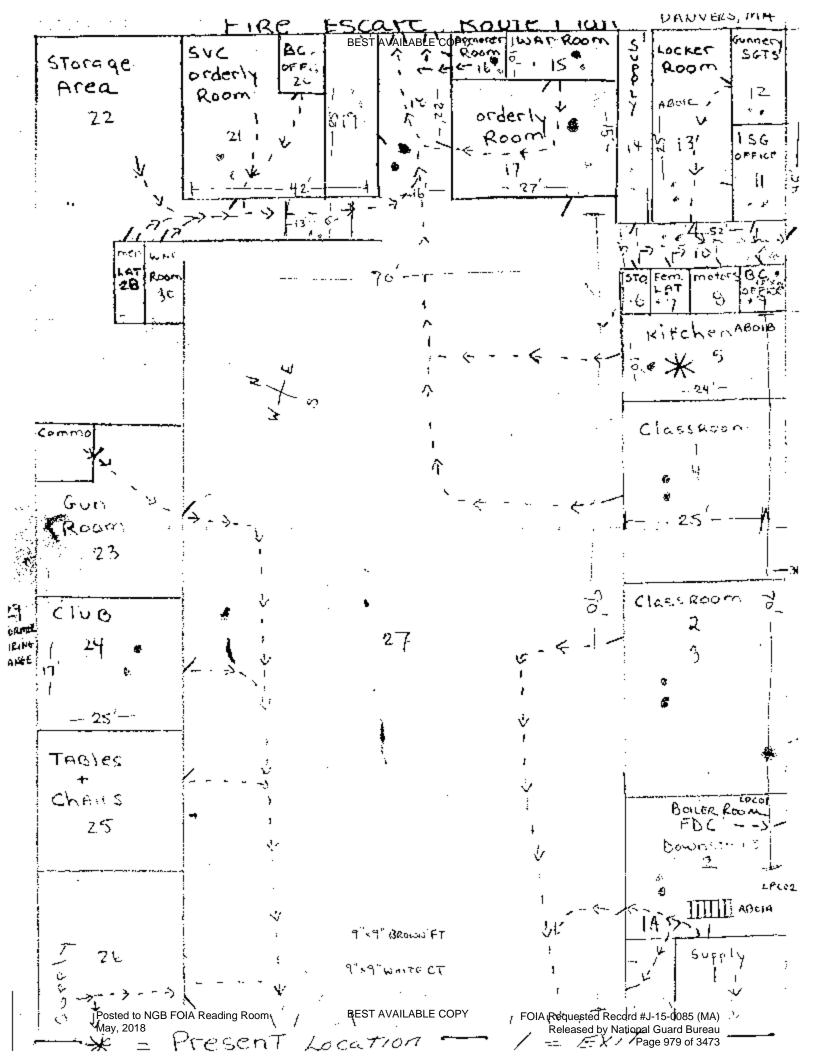
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

## APPENDIX A

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## SHOP DRAWING



## APPENDIX B

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## PERSONNEL LIST

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DEPARTMENT OF THE ARMY Headquarters, 1<sup>st</sup> Battalion, 101<sup>st</sup> Field Artillery "South Regiment" 5 Sycamore Street, New Bedford, Massachusetts 02740

16 January 2004

SUBJECT: Full Time Personnel in the Danvers Armory

REPLY TO ATTENTION OF:

1. The following is a list of personnel who work at the Danvers Armory on a full time basis:



2. POC on this matter is the undersigned at (978) 774-7406.



SFC, MAARNG Readiness NCO

## APPENDIX C

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## HAZARDOUS MATERIALS LIST

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NO HAZARDOUS CHEMICALS INVENTORY ON SITE

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## APPENDIX D

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## ANALYTICAL RESULTS

## AMA Analytical Services, Inc.



A Specialized Environmental Laboratory

## CERTIFICATE OF ANALYSIS

# NTV(AQ NY ELAP AIHA

	Client:	URS Corporation	Job Name:	Army National Guard 2 Annory Drive Danvers, MA	Chain Of Custudy:	122170 1/26/2004	
5	Address:	5 Industrial Way Salem, New Hampshire 03079-2830	Job Narober	Not Provided	Person Submitting:		
2			P.O. Number:	Not Provided	Report Bate:	2ti-Jan-04	

Attention: Tooki Young

Page I of 2

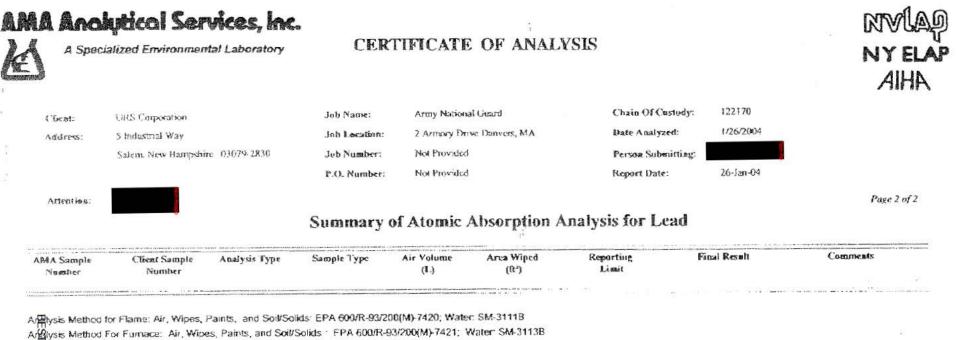
#### Summary of Atomic Absorption Analysis for Lead

MA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft <sup>*</sup> )	1	orting imit	ł	inal Res	elt	Comments	31. I
						1			97-39		LE 1 CTARS ST	i da incidente Nota incidente de la compositione d Nota de la compositione de la composit
80420756	01151.A-01	Напе	Arr	955	N/A	3.14	ug/m'	<	31	ug/m²		
S0420757	01161A-02	Flame	Aυ	928	N/A	3.23	ughir	<	32	ug/m*		
20420758	DITALA BLANK	Flame	Air Blank	0	N/A	3.00	ug/m²	<	3	ug		
A0420759	0115-1.W01	Flame	Wipe	173 Q A	1.009	12.00	ug/A*		13	ug/ft'		
B0420764	0115-1.W02	Plance	Wipe	****	1.000	12.00	ug/fl'		18	ug/ft'		
m0420761	01161.903	Flame	Wipe	****	1.000	12.00	ught	<	12	ug/fl²		
80420762	0116-1.9/04	Hame	Wipe	****	1.000	12.00	ug/A?	<	12	ug/ff*		
PC0420763	0116-LW05	Flame	Wipe	6 <b>9-8</b> E	1.000	12.00	ug/ftª		25	ug/ft?		
0420764	0116-LW06	Flame	Wipe	****	1.111	10.80	ug/ft'		19000	ug/ft²		
0420765	0116 LW07	Planc	Wipe	1548	1.000	12 00	ug/ft²		30	ug/ft²		
0420766	0116-LW08	Flame	Wipe	****	1.000	12.00	ug/ft²		260	ug/ft²		
O420767	0116-1.909	Flarne	Wipe	÷ 6 + 9	1 0(10	12 00	ug/ft*		240	ug/ft*		
O420767	0116-LW10	Flame	Wipe	****	1.000	12 00	ug/ft*		13000	ug/ft2		
Re 1420769	01161.WBLANKI	Палк	Wipe Black	63.83	N/A	12.00	ug	<	12	ug		
Requested 0420771	01161.PC 01	Flame	Paint Chip	** **	N/A	0.01	<b>%</b> РЬ		0.052	%РЪ		
0420771	01164.PC 02	Flame	Paint Chip	4.91.0	N/A	0.01	%Pb		0.06	%Рь		
	0110-137-03	Flame	Pamt ( Dup	2424	N/A	0.01	%Pb		011	% <b>r</b> b		÷
Record 0420772	0115-LPC 04	Flame	Paint Chip		N/A	0.01	· %1*b		0.14	%l'b		
Q0420772 0420773 40420774 ±0420774	0116-LPC 05	Flame	Point Chip	0.8.8 9	N/A	0.01	%Pb		0.013	%Pb		
L 0420775	HI 16-LK" (b)	Flame	Paint Chip		NIA	0.01	96476		0.18	%Pb		

B To be added by the products of the 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, we will be discussed and upon the condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, we will be discussed and upon the condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, we will be discussed 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 that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization is being types, locations and collection protocels are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaims any location is being types, locations of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, noless otherwise requested by the client. NULAP Accreditation upplies only to polarized light microscopy of bulk samples and transagisted electron microscopy of AHERA at samples.

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N/2 = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

% - percent lead by weight ug = micrograms

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

Analyst:

ugAL = parts per billion (ppb)



COPY

Second 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 nutual protection to clients, the public and these Laboratories, which is submitted and accepted for the exclusive use of the client to whom it is addressed and opus the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization is understanded by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and ability for the accuracy and completeness of their information provided by the porsons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and ability for the accuracy and completeness of their information matter will be discarded in accordance with the appropriate regulatory guidelines, anless otherwise requested by the effect. NVLAP Accreditation projects and transmission cleators mittee of AHKRA air samples.

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AMA Analytical Services, In	к.	R
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## **CERTIFICATE OF ANALYSIS**

0	pecialized Environmental Laboratory	CERTIF	ICATE OF ANALYSIS			ny elap
Client:	URS Corporation	Job Name:	Army National Guard	Chain Of Custody:	122170	AIHA
Address:	5 Industrial Way	Jub Location:	2 Armory Drive Danvers, MA	Date Analyzed:	L/26/2004	
	Salem, New Hampshire 03079-2830	Job Number:	Not Provided	Person Submitting:		
		P.O. Number:	Not Provided			

Attention:

Page 1 of 2

## 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
0420776	0116-AB01 A- FT	5	5				-	•	-	<del></del> )	-	95	Brown	ск	
0420777	0116-AB01 A- M	NAD			-	-		-	TR	-		100	Black	CK	
0420778	0116-AB01 B- FT	NAD	844	200	8 <b>2</b> -1	-	••	-	<u></u>		122	100	Brown	СК	
0420779	0116-AB01 B- M	2	2		(***)		-		2			96	Black	СК	
0420780	0116-AB01 C FT	3	3			-						97	Brown	СК	
0420781	0116-AB01 C- M	3	3			<del>11</del> .5			TR			97	Black	СК	
0420782	0116-AB02 A	NAD			**:0		35	0.000	TR	-		65	Off-White	CK	
0420783	0116-AB02 B	NAD					40		TR	<del></del> )		60	Off-White	СК	
0420784	0116-AB02 C	NAD	**	••	-	<del></del> 3	40		TR			60	Off-White	СК	

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 ellents, 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. NYLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. All rights reserved. AMA Analytical Services, Inc.

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AM		utical Services, Inc.		CATE OF ANALYSIS		NY ELAP
	Client:	URS Corporation	Job Name:	Army National Guard	Chain Of Custody: 122170	AIHA 🚆
	Address:	5 Industrial Way	Job Location:	2 Armory Drive Danvers, MA	Date Analyzed: 1/26/2004	<u></u>
		Salem, New Hampshire 03079-2830	Job Number:	Not Provided	Person Submitting:	
			P.O. Number:	Not Provided		29a
	Attention:					Page 2 of 2
20			Summary of	Polarized Light Microscopy	(	АМА
		Client Total Chrysotile Amosite Sample # Ashestos Percent Percent	Percent Asbestos	Mineral Fiberglass Organic Synthetic Other Wool Percent Percent Percent Percent Percent	l'articulate Sample Analyst Percent Color ID	Comments D

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

- 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"

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 988 of 3473

TR = "Trace equals less than 1% of this component"

N

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 Laboratorics, applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples.

Posted to NGB FOIA Reading Room May, 2018

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 0 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 All rights reserved, AMA Analytical Services, Inc.

An AHIA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

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## APPENDIX E

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## TRAINING CERTIFICATES

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 990 of 3473

- <del>S</del>	INSTITUTE FOR	
ENVIRO	NMENTAL EDUCATIO	N, INC.
	6 Upton Drive, Wilmington, MA 01887 (978) 658-5272 This is to certify that	
has complete	d the requisite training, and has passed an exa for reaccreditation as:	mination
	Asbestos Inspector Refresher	
pursuant t	o Title II of the Toxic Substance Control Act, 15 U.S.	C. 2646
	April 11, 2003 Course Dates	
April 11, 2003 Examination Date	Course Location Institute for Environmental Education 16 Upton Drive Wilmington, MA 01887	April 10, 2004 Expiration Date
03518010625349 Certificate Number		President/Director or Training

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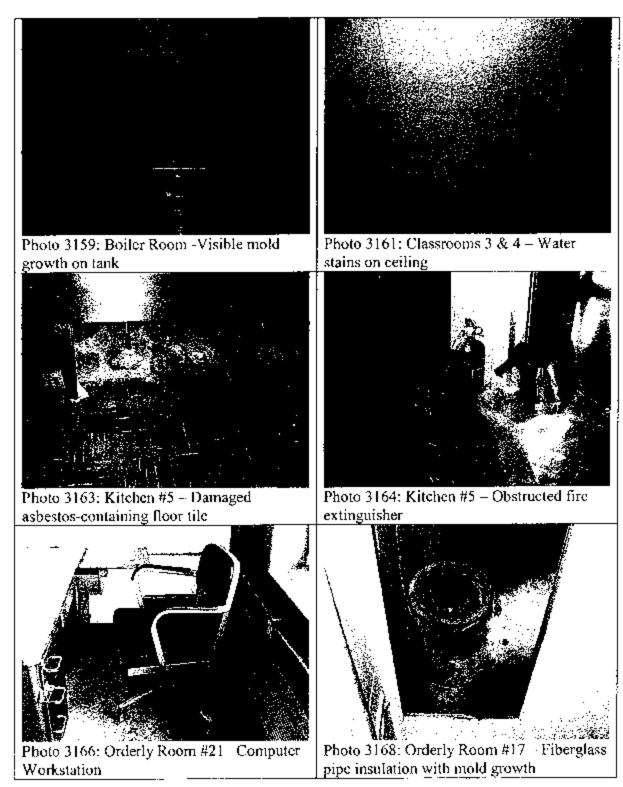
## APPENDIX F

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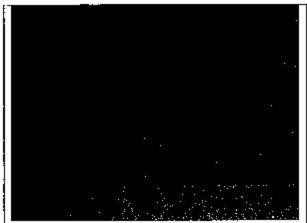
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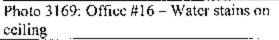
#### PHOTOGRAPHS

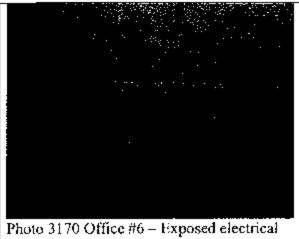
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## APPENDIX G

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## 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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) 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<sup>2</sup> 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/fl<sup>2</sup> 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:

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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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,



#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 2 ARMORY ROAD DANVERS, MA 01923

June 17, 2013 PN: 39743799



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#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 2 ARMORY RD, DANVERS, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting	Al-	
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards.	Ergonomic issues with regard to 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
Lead		
Four of the 9 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Emergency Exits	· · · · · · · · · · · · · · · · · · ·	
Emergency exit signs were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3
Asbestos		
Presumed asbestos-containing floor tile and mastic were damaged throughout the facility; an Asbestos Operation and Maintenance Program was not available on-Site.	Develop a site-specific asbestos operations and maintenance program for management of asbestos- containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 3
PPE		
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	Conduct a hazard assessment of site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4

Findings	Recommendations	Risk Assessment Code (RAC)
Water Intrusion		
Water staining was observed on stored materials in the Supply Room.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio-aerosols in the Indoor Environment).	RAC 4
Fire Extinguishers		
A fire extinguisher was blocked along the north perimeter of the Assembly Hall.	Portable fire extinguishers shall be provided, mounted and located so that they are readily available. (29 FR 1910.157 (c)(1) and 29 CFR 1910.38 (c)(2)).	RAC 3
Ladders		
Ladders were observed not properly secured and stored.	Ladders not in use shall be properly stored in a vertical position fastened to walls. (29 CFR 1910.25 (c)(2)(i)).	RAC 4
Housekeeping		
Storage areas were cluttered, including exits and passageways.	All places of employment, passageways, storerooms and service rooms shall be kept clean and orderly and in a sanitary condition. (29 CFR 1910.22 (a)(1)).	RAC 3
Former Indoor Firing Range		
The former Indoor Firing Range has been posted as unsafe due to lead contaminated; however the area is still regularly used.	Personnel trained in accordance with the OSHA Lead Standard should decontaminate this area in accordance with National Guard Pamphlet 420-15 (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Since the former indoor firing range is contaminated with lead and several wipe samples were found to contain elevated lead levels, the area should be locked and access restricted. An assessment should be made as to whether respiratory protection and other PPE should be worn when entering this area.	A respirator shall be provided for each employee when such equipment is necessary to protect the health of the employee. (29 CFR 1910.134 (a)(2)).	RAC 3

#### 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 in Danvers, Massachusetts.

URS representative, Ms. Non-Responsive, conducted the Industrial Hygiene Survey on April 11, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Danvers Readiness Center is a one-story brick building, consisting of offices, a classroom, supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: The former Indoor Firing Range was taken out of service and is currently being used for storage. Presumed asbestos-containing floor tiles were noted to be damaged throughout the facility. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. A fire extinguisher was blocked along the north perimeter of the Assembly Hall. Ladders were not properly secured and stored. Evidence of water intrusion, reportedly from a pipe break, was noted in the Supply Room.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Four of the nine wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region

North IH Office. The former indoor firing range has been posted as unsafe due to lead contamination, however, the area is still used regularly.

On the day of the survey, the paint chip samples were not found to contain a level of lead above the HUD criteria for determination of paint as lead-based.

<u>ASBESTOS</u>: Presumed asbestos-containing floor tiles were noted to be damaged throughout the facility. No Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Noise mapping levels in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

## 2.0 SUPPLY / TRAINING AREA

## 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, a classroom, supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be somewhat cluttered and unorganized at the time of URS' site visit.

## 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. Interior carbon dioxide concentrations were found to be between 453 and 699 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 416 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below

1116 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

## 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured between 0.0 ppm and 0.8 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

## 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 45.7%, which was within the guideline of less than 65% recommended by ASHRAE.

## 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 64.2 °F, which was below the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort. No complaints regarding temperature were received by URS during this survey.

## 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Admin, North Office, desk-	Admin	28.5	50
Admin, North Office, conference room, vacant desk	Admin	33.9	50
Admin North, conference table	Admin	36.9	50
Offices North of Lobby, desk-	Admin	87.4	50
Drill Hall	Hall	14.9	5
North Hallway	Hall	6.7	5
North Office, Btry. Co., desk	Admin	83.4	50
Recruiter's Office, desk	Admin	34.7	50
Recruiter's Office, desk-	Admin	29.9	50
South Hall	Hall	71.8	5
Storage off Range, shelves	Storage	8.7	30
Classroom, table	Admin	34.0	50
Classroom, table	Admin	46.2	50
Classroom, table	Admin	43.1	50
West storage, shelves	Storage	21.1	30
Supply Room, shelf	Storage	16.9	30
Supply Room, shelf	Storage	9.6	30
Supply Room, desk	Admin	<mark>51.1</mark>	50

Table 2-1Lighting Measurements and Recommended Lighting Requirements

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in twelve of the locations tested throughout the facility.

## 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical

Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Supply Room, doorway to former Indoor Firing Range, floor	Danvers RC Wipe-01	0.108	750	200
North Storage, floor by rolling door	Danvers RC Wipe-03	0.108	720	200
South Storage, floor by door to vault	Danvers RC Wipe-04	0.108	510	200
Basement Boiler Room, floor by hot water heater	Danvers RC Wipe-05	0.108	7600	200
South Admin, conference room, floor behind copier	Danvers RC Wipe-06	0.108	<110	200
Recruiting Office, floor under desk by window	Danvers RC Wipe-07	0.108	<110	200
Classroom, floor under projector screen	Danvers RC Wipe-08	0.108	<110	200
Kitchen, floor under storage locker	Danvers RC Wipe-09	0.108	<110	200
PT Room, floor behind door	Danvers RC Wipe-10	0.108	< <mark>11</mark> 0	200

 Table 2-2

 Levels of Lead Dust Found in the Readiness Center

Four of the nine surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62. Since access to the former firing range was restricted, no wipe samples were collected in that area.

Two paint chip samples were collected from areas of peeling paint in the facility and were analyzed for lead content. The analytical report from AMA is contained in Appendix C.

According to the U.S. Department of Housing and Urban Development (HUD), paint is considered to be lead-based if the quantity of lead is greater than 0.5% by weight. OSHA has not established a minimum percentage of lead to be defined as lead-based paint, therefore paint with lead in any amount above the analytical detection limit is considered to be lead-based under these regulations. The results of URS' lead paint testing are contained in Table 2-3.

Paint Location	Lead Concentration (Percent Weight)	HUD Lead-Based Quantity (Percent Weight)
White paint, interior walls, Supply Room	< 0.0091	0.5
Gray/ beige paint, boiler room, walls	0.23	0.5

Table 2-3 Lead Content in Painted Surfaces

On the day of the survey, neither of the paint chip samples were found to have a lead content above the HUD criteria for determination of paint as lead-based.

#### 2.2.7 Asbestos

URS collected a total of three samples from damaged suspect friable asbestoscontaining material (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 with dispersion staining (EPA-600/M4-82-020). Table 2-4 below shows the results of the asbestos sampling.

Sample Location	Sample Description	URS Sample Number	Result Total Asbestos Content
Basement Boiler Room, boiler at valve	Pipe Insulation	Danvers RC PLM-01A-01C	Non-detect

#### Table 2-4 Asbestos Bulk Sample Results – Assembly Hall

The EPA states that any material with an asbestos content greater than 1% must be treated as ACM (EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix C.

Presumed asbestos-containing floor tiles and associated mastic were also identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

## 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

## 2.4 Noise Measurements

Noise mapping was conducted throughout the Readiness Center. Area noise mapping results indicated that, on the day of the survey, noise levels throughout the Readiness Center ranged from 58.9 decibels to 64.2 decibels. All noise mapping results were below the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 dBA/8-hour day.

#### 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves.

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## 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

## 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility.

## 3.2 Hearing Conservation

A written hearing conservation program was identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise mapping results and a review of normal site operations, a hearing conservation program is not required for this site.

## 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was identified on site. No operations were observed by URS that would require the use of respiratory protection. If workers are allowed access to the former indoor firing range, which has not been contaminated, a hazard assessment should be conducted to determine whether respiratory protection and other forms of PPE should be required in this area.

#### 3.4 Hazard Communication

A site-specific hazard communication program was identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

#### 3.5 Personal Protective Equipment

A written personal protective equipment program was identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

## 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

#### 3.7 Safety

The former Indoor Firing Range was taken out of service and is currently being used for storage. Presumed asbestos-containing floor tiles were noted to be damaged throughout the facility. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. A fire extinguisher was blocked along the north perimeter of the Assembly Hall.

FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1012 of 3473

### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

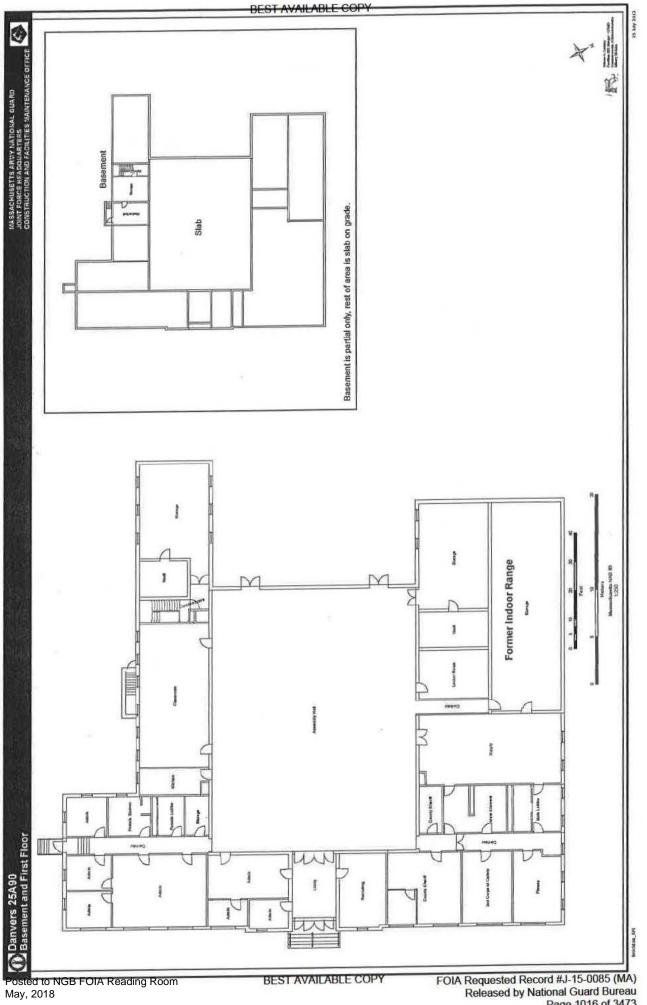
Standard for General Industry: 29 CFR 1910

OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

## APPENDIX A

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## SHOP DRAWING



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## APPENDIX B

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### PERSONNEL LIST



Fulltime

Fulltime

Fulltime

2days per week

5 Days per month

## APPENDIX C

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### ANALYTICAL RESULTS

# AMA Analytical Services, Inc.

<u>k</u>

Client: Address:

#### A Specialized Environmental Laboratory

#### BEST AVAILABLE COPY

#### **CERTIFICATE OF ANALYSIS**

ISOIEC 17025-2005 LAB #105470 National Guard Bureau Job Name: MA ARNG Chain Of Custody: 515617 301-IH Old Bay Lane, Attn: ARNG-CJG-P, Job Location: 2 Armory Road, Danvers, MA Date Submitted: 4/17/2013 State Military Reservation Havre de Grace, Maryland 21078 Danvers RC Job Number: Person Submitting: P.O. Number: W912K6-09-A-0003 Date Analyzed: **Report Date:** 4/24/2013

#### Attention: Non-Responsive

#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AIHA LAP, LLC

ACCREDITED LABORATORY

NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		orting imit	Total ug	Final Res	ult	Comments
13054205	DanversRC Wipe 01	Flame	Wipe	****	0.108	110	ug/ft²	80	750	ug/ft²	
13054206	DanversRC Wipe 03	Flame	Wipe	****	0.108	110	ug/ft²	77	720	ug/fl <sup>2</sup>	
13054207	DanversRC Wipe 04	Flame	Wipe	****	0.108	110	ug/ft²	55	510	ug/ft²	
13054208	DanversRC Wipe 05	Flame	Wipe	****	0.108	110	ug/ft²	820	7600	ug/ft²	
13054209	DanversRC Wipe 06	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13054210	DanversRC Wipe 07	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13054211	DanversRC Wipe 08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13054212	DanversRC Wipe 09	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl <sup>2</sup>	
13054213	DanversRC Wipe 10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13054214	DanversRC Wipe FB	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13054215	DanversRC LBP 01	Flame	Paint Chip	****	N/A	0.0091	%Pb		<0.0091	%Pb	
13054216	DanversRC LBP 02	Flame	Paint Chip	****	N/A	0.0064	%Pb		0.23	%Pb	

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### CERTIFICATE OF ANALYSIS

Job Name: MA ARNG Client: National Guard Bureau Chain Of Custody: 515617 Address: 301-IH Old Bay Lane, Attn: ARNG-CJG-P. Job Location: 2 Armory Road, Danvers, MA Date Submitted: 4/17/2013 State Military Reservation Havre de Grace, Maryland 21078 Danvers RC Job Number: Person Submitting: W912K6-09-A-0003 P.O. Number: Date Analyzed: Report Date: 4/24/2013 Attention: Summary of Atomic Absorption Analysis for Lead Page 2 of 2

AMA Sample **Client Sample** Analysis Type Sample Type Air Volume Area Wiped Reporting Total ug **Final Result** Comments Number Number (ft2) Limit (L) Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B See QC Summary for analytical results of quality control samples associated with these Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B 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.





AIHA LAP. LLC **ACCREDITED LABORATORY** 

NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17025-2005 LAS #100470

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### **CERTIFICATE OF ANALYSIS**



Client: National Guard Bureau Job Name: MA ARNG Chain Of Custody: 515617 Address: 301-IH Old Bay Lane, Attn: ARNG-CJG-P, Job Location: 2 Armory Road, Danvers, MA Date Analyzed: 4/24/2013 State Military Reservation Job Number: Danvers RC **Person Submitting:** Havre de Grace, Maryland 21078 W912K6-09-A-0003 P.O. Number: Page 1 of 2 Attention:

### **Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Asbestos		Percent			Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13054217	DanversRC PLM 01A	NAD	9.883	557	1000	8551	30	55	 	3 <b>55</b> 4	70	PI	Gray	Homogeneous	LBP	
13054218	DanversRC PLM 01B	NAD					30		 **		70	Ы	Gray	Homogeneous	LBP	
13054219	DanversRC PLM 01C	NAD	0	-			30	••	 		70	PI	Gray	Homogeneous	LBP	

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#### **CERTIFICATE OF ANALYSIS**



Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody:	515617
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	2 Armory Road, Danvers, MA	Date Analyzed:	4/24/2013
	Havre de Grace, Maryland 21078	Job Number:	Danvers RC	Person Submitting:	
		P.O. Number:	W912K6-09-A-0003		
Attention:	Non-Responsive				Page 2 of 2
		Summary	of Polarized Light Microscopy		

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

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.</p>

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** 



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## APPENDIX D

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## PHOTOGRAPHIC LOG



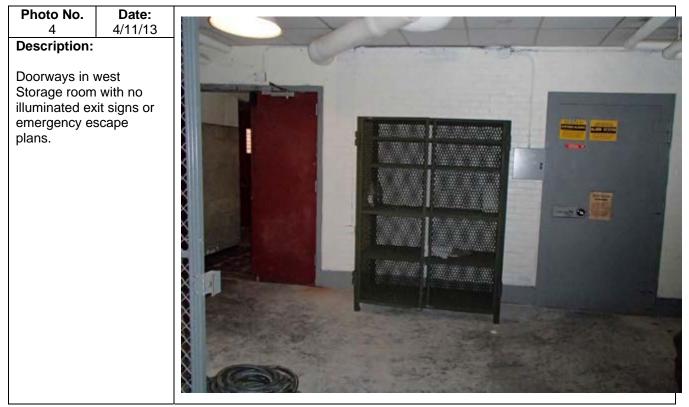
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## PHOTOGRAPHIC LOG

<b>Client Name:</b>		Site Location:	Project No.
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### APPENDIX E

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## **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.



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 DORCHESTER READINESS CENTER 70 VICTORY ROAD DORCHESTER, MASSACHUSETTS



Office Manager



July 2005 PN: 39741508

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- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs
- Appendix G Recommendations for Surface Dust in Armories

### FINDINGS AND RECOMMENDATIONS

		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 approximately half of the 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 RP-1-04)	RAC 4
Lead	· · · · · · · · · · · · · · · · · · ·	
Peeling lead-based paint was present in Kitchen #19 and the boiler room # 18.	Personnel trained in accordance with the OSHA Lead Standard should stabilize peeling lead paint (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Lead was detected in wipe samples collected from the former firing range in amounts greater than 200 µg/ft <sup>2</sup>	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 pipe insulation, worn out 9"x9" floor tile, and cracking and loose window glazing were found in various places of this facility.	Repair and/or remove all asbestos containing materials that are exposed. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
A site-specific asbestos operations and maintenance plan was available.	Implement the site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		·
No site specific hazard communication plan was available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	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 70 Victory Road in Dorchester, Massachusetts. 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 March 2, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Dorchester, Massachusetts. 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. Mr.Non-Responsive of the State of Massachusetts was Mr. **Von-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 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 and armrests were in a fixed position and keyboards could not be adjusted in office #1 (Photos # 4075-77), office #9 (Photo # 4082), office #10 (Photo # 4083), office #13 (Photo # 4086), office #23 (Photo # 4089) and room #24C (Photo # 4097). If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Watermarks and damage to the ceilings and/or walls were observed in office #4 (Photo # 4080); office # 14 (Photo # 4087) and room #24B (Photo # 4096).

## 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 16.8 – 19.2% with an average of 17.9%. These readings were below the recommended comfort levels of between 30.0% and 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 55-2004).

### 2.2.2 Carbon Dioxide

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On the day of the survey, carbon dioxide measurements were made at various locations throughout the Readiness Center. Carbon dioxide concentrations ranged from 463 to 491 parts per million (ppm), with an average of 476 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 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.

### 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations read 0 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 ANSL/ IESNA RP –1-04 American National Standard Practice for Office Lighting – Table B-1).

Location	Function	Measured Illuminance (lux)	Recommended Minimum Illuminance (lux)
Office # 1 - Near Door	Administrative Duties	315	500
Office # 1 - Near Window	Administrative Duties	2,640	500
Office # 2	Administrative Duties	540	500
Office # 3	Administrative Duties	424	500
Classroom # 6	Administrative Duties	802	500
Office # 9 - Right Desk	Administrative Duties	651	500
Office # 9 - Left Desk	Administrative Duties	629	500
Office # 10	Administrative Duties	1,539	500
Office # 11	Administrative Duties	2,650	500
Office # 12	Administrative Duties	596	500
Office # 13	Administrative Duties	588	500
Office # 14	Administrative Duties	779	500
Office # 17	Administrative Duties	799	500
Office # 23 - Front Desk	Administrative Duties	421	500
Office # 23 - Rear Desk	Administrative Duties	417	500

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

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Administrative Duties	394	500
Administrative Duties	746	500
Administrative Duties	487	500
Administrative Duties	385	500
Administrative Duties	117	500
Administrative Duties	306	500
Administrative Duties	1,105	500
Administrative Duties	778	500
Accessway	165	30
Accessway	213	30
Accessway	144	30
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On the day of the survey the illuminance in the administrative area was inadequate in approximately half of the offices.

#### 2.2.5 Lead

Three paint chips were collected where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. Sample # 0302-LPC03 was found to contain lead in a concentration above 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 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 Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Office # 11	0302-LPC01	0.01	<0.011
Kitchen # 19	0302-LPC02	0.01	0.1
Kitchen # 19	0302-LPC03	0.01	1.2

The analytical report from AMA is contained in Appendix D.

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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (μg/ft <sup>2</sup> )
Office # 23 – Top of a Bookcase	0302-LW01	0.111	17	200
Kitchen # 19 – Top of a File Cabinet	0302-LW02	0,111	180	200
Office # 27 – Top of Desk Bookcase	0302-LW03	0. <b>1</b> 11	21	200
Kitchen # 5 – Top of a Refrigerator	0302-LW05	0.111	15	200
Office # 14 – Top of a File Cabinet	0302-LW06	0.111	8.8	200
Blank	0302- LWBlank	0.111	1.2	200

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

## 2.2.5 Asbestos

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ATC Associates of Woburn, Massachusetts conducted an asbestos survey in June of 2000. Worn out asbestos containing 9"x9" floor tile was found in office # 27 (Photo # 4098). Exposed air cell pipe insulation was found in the supply room # 20 (Photo # 4073), office # 22 (Photo # 4094) and supply room # 32 (Photo # 4095). Cracked and loose window chalking was found in supply room # 20 (Photo # 4074) and in office # 1 (Photo # 4078).

#### 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

GENERAL: In general, the administrative area was neat and orderly.

LIGHTING: On the day of the survey, the illuminance in the administrative area was inadequate in approximately half of the offices. URS recommends increasing lighting in the administrative areas through the use of task lighting.

LEAD: The white paint chip from kitchen # 19 (Photo # 4091) that was tested for lead was found to contain lead above the allowable limits. 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: The identified damaged and/or exposed asbestos-containing materials need to be removed or repaired by a properly trained licensed technician.

MOLD: The water stains and damage on the ceilings and/or walls could lead to mold problems if not addressed.

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### 3.0 FORMER FIRING RANGE

### 3.1 Operation Description

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

### 3.2 Chemical and Physical Agents Sampled

### 3.2.1 Lead

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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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range-Top of a Light Guard	0302-LW07	0.111	1,200	200
Former Firing Range-Top of a File Cabinet	0302-LW08	0.111	190	200
Former Firing Range-Floor of the Bullet Trap	0302-LW09	0,111	180	200
Former Firing Range-Floor – Center	0302-LW10	0.111	150	200
Former Firing Range-Floor – Front	0302-LW11	0.111	350	200
Blank	0302- LWBlank	N/A	1.2	200

 Table 3-1

 Levels of Lead Dust Found in the Former Firing Range

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 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m³)	OSHA's PEL (µg/m <sup>3</sup> )
Former Firing Range	0302-LA01	988	<3.0	50.0
Blank	0302-LA03	0	<3.0	50.0

On the day of the survey, the airborne lead dust level 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 μg/m<sup>3</sup> 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: Two of the five surface wipe samples collected in the former firing range were found to contain lead dust levels which exceeded the maximum limit set by the National Guard Bureau (See Appendix G). The three that were below the maximum limit were close to the 200 microgram per square foot limit. URS recommends that an appropriately licensed lead contractor clean the former firing range.

#### URS я.

### 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is a 9,360 square foot area used for unit formations and activities as well as for storing equipment. There is a concrete floor and the walls are constructed of cinder-block.

#### 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall – Top of a	0302-LW04	0.111	14	200
Display Case				
Blank	0302-LWBlank	N/A	1.2	200

Table 4-1 Level of Lead Dust Found in the Drill Hall

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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 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL (µg/m³)
Drill Hall	0302-LA02	964	<3.1	50.0
Blank	0302-LA03	0	<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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

#### Ventilation System Evaluation 4.3

Not applicable to this operation.

#### 4.4 **Noise Measurements**

Not applicable to this operation.

#### **Personal Protective Equipment** 4.5

Not applicable to this operation.

#### 4.6 Interpretation of Results

LEAD: The surface wipe sample collected in this area for lead was found to be within the allowable limits and requires no further action at this time.

### 5.0 BOILER ROOM / BASEMENT AREA

#### 5.1 Operation Description

The boiler room is a mechanical space which contains a furnace and associated piping. There is a concrete floor and the walls are constructed of cinder blocks.

#### 5.2 Chemical and Physical Agents Sampled

### 5.2.1 Lead

Paint chips were collected in two areas where paint was peeling and sent to AMA for analysis. The brown paint chip (Photo # 4093) was found to contain lead in a concentration above 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 5-1 below shows the results of the lead paint testing.

Table 5-1 Levels of Lead in Paint Found in the Boiler Room

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Boiler Room # 18	0302-LPC04	0.01	0.27
Boiler Room # 18	0302-LPC05	0.01	2.8

The analytical report from AMA is contained in Appendix D.

### 5.2.2 Asbestos

No issues were found concerning asbestos-containing materials.

#### 5.3 Ventilation System Evaluation

Not applicable to this operation.

#### 5.4 Noise Measurements

Not applicable to this operation.

#### Personal Protective Equipment 5.5

Not applicable to this operation.

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#### 5.6 Interpretation of Results

<u>LEAD:</u> The brown paint chip that was tested for lead was found to contain lead above the allowable limits. 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.

### 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

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

#### 6.3 Respiratory Protection

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

#### Hazard Communication 6.4

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No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

#### Personal Protective Equipment 6.5

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

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### 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

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guar

### 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

URS

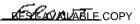
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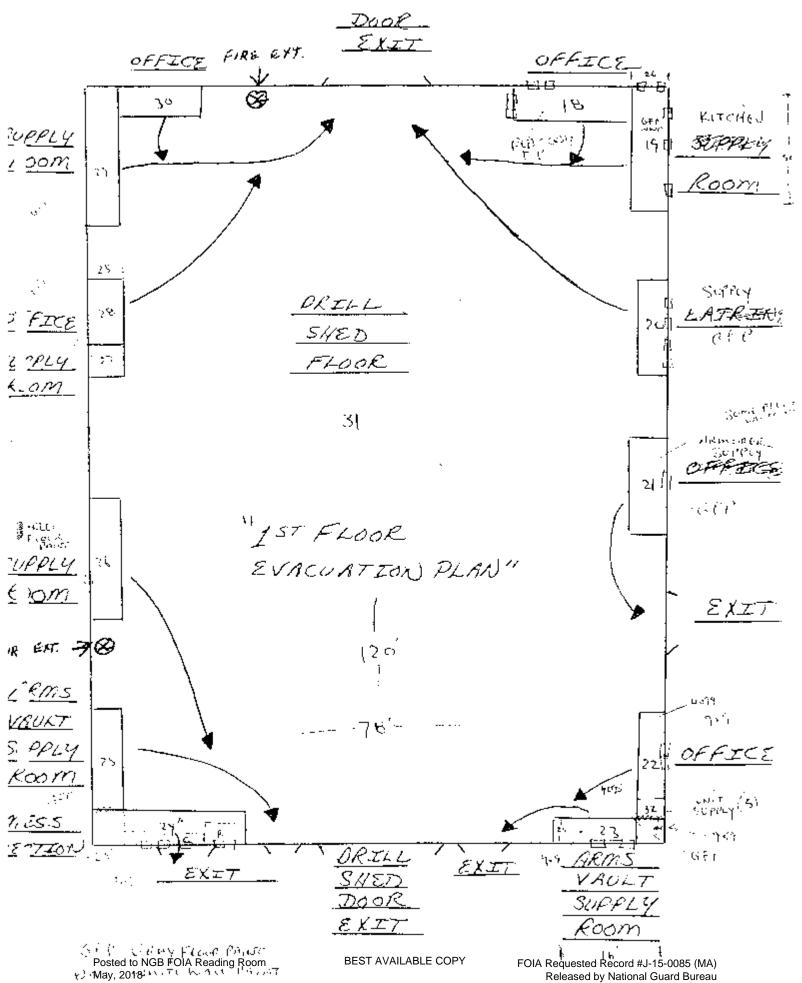
APPENDIX A

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### SHOP DRAWING

.

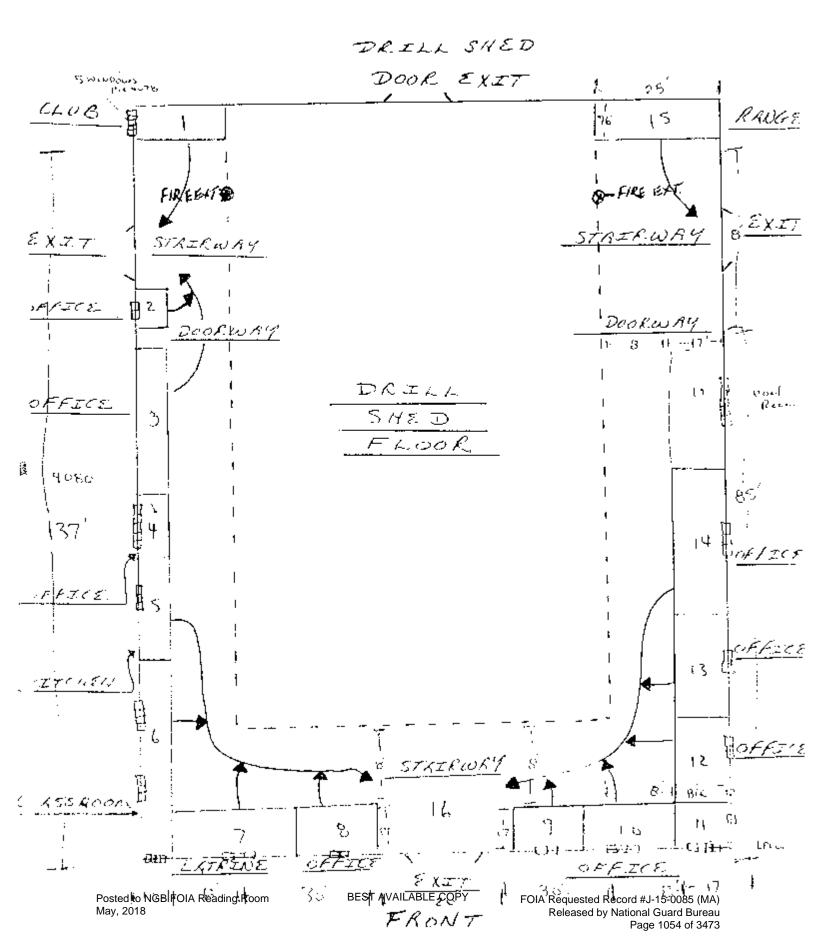




Page 1053 of 3473

DORCHESTER, MA

"ZND BESTAVAILABLE GOPA EVACURTION PLAN"



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APPENDIX B

PERSONNEL LIST

.

#### BEST AVAILABLE COPY PERSONEL LIST DORCHESTER ARMORY

Name	Rank
Non-Responsive	MAJ
	SGT
	SFC
	CIV
	SGT
	SFC
	SFC
	SSG
	SGT
	SSG

APPENDIX C

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### HAZARDOUS MATERIALS LIST

.

## NO CHEMICAL INVENTORY AVAILABLE

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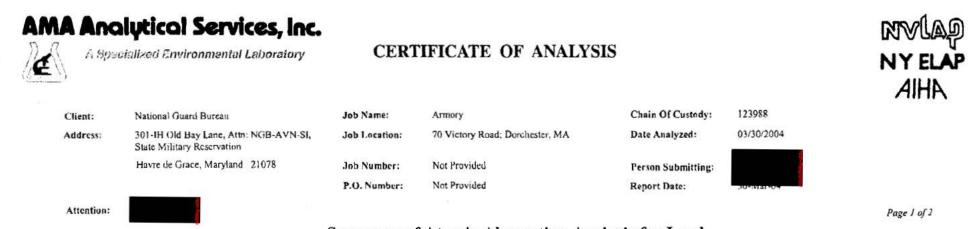
APPENDIX D

### ANALYTICAL RESULTS

600 M

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1059 of 3473



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#### Summary of Atomic Absorption Analysis for Lead

	AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Arca Wiped (ft²)		orting invit	1	Final Res	uit	Comments
BEST	0432329	0302-LPC 01	Flame	Paint Chip		N/A	0.01	%РЪ	<	0.011	%РЪ	
TA	0432330	0302-LPC 02	Flame	Paint Chip	••••	N/A	0.01	%Pb		0.1	%РЬ	
AVAII ABI F	0432331	0302-LPC 03	Flame	Paint Chip	••••	N/A	0.01	%Pb		1.2	%Pb	
A	0432332	0302-LPC 04	Flame	Paint Chip	****	N/A	0.01	%Pb		0.27	%Pb	
	0432333	0302-LPC 05	Flame	Paint Chip	••••	N/A	0.01	%Pb		2.8	%РЬ	
2	0432334	0302-LW 01	Furnace	Wipe	••••	0.111	2.70	ug/ft <sup>2</sup>		17	ug/ft <sup>2</sup>	
CODV	0432335	0302-LW 02	Furnace	Wipe	••••	0.111	33.75	ug/ft2		180	ug/ftª	
	0432336	0302-LW 03	Furnace	Wipe	••••	0.111	2.70	ug/ft²		21	սք/Ո՞	
	0432337	0302-LW 04	Furnace	Wipe	****	0.111	2.70	ug/ft²		14	ug/ft²	
	0432338	0302-LW 05	Furnace	Wipe	••••	0.111	2.70	ug/ft²		15	ug/ft²	
1	0432339	0302-LW 06	Furnace	Wipe	••••	0.111	2.70	ug/ft²		8.8	ug/fl²	
	0432340	0302-LW 07	Flame	Wipe	••••	0.111	108.01	ug/fl²		1200	ug/ít²	
)	0432341	0302-LW 08	Furnace	Wipe	****	0.111	33.75	ug/ft*		190	ug/ft²	
	0432342	0302-I.W 09	Furnace	Wipe	••••	0.111	33.75	ug/ft²		180	ug/fl <sup>2</sup>	
	0432343	0302-LW 10	Furnace	Wipe	****	0.111	33.75	ug/ft²		150	ug/ft <sup>2</sup>	
i -	0432344	0302-LW 11	Flame	Wipe	****	0.111	108.01	ug/ft²		350	ug/fl²	
	0432345	0302-LW BLANK	Furnace	Wipe Blank	****	N/A	0.30	ug		1.2	ug	
	0432346	0302-LA 01	Flame	Air	988	N/A	3.04	ug/m³	<	3	ug/m³	
Thi	0432347	0302-LA 02	Flame	Air	964	N/A	3.11	ug/m'	<	3.1	ug/m'	
	0432348	0302-LA 03	Flame	Air Blank	0	N/A	3.00	ug/m²	<	3	ыg	

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, 2 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. NVI.AP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

An AIHA (#8663), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

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### SCILAB BOSTON, INC.

8 SCHOOL STREET WEYMOUTH, MA 02189 TEL: (781) 337-9334 • FAX: (781) 337-7642

June 5, 2000

ATC Associates Inc., Woburn Attn 600 West Cummings Park Suite 6500 Woburn, MA 01801

RE: ATC Associates Inc., Woburn Job Number 500062259 P.O. # 91348 60-17533-0001; State Quartermaster; Dorchester Armory

Dear Mr.

Enclosed are the results for PLM asbestos analysis of the following ATC Associates Inc., Woburn samples received at SCILAB on Thursday, June 01, 2000, for a 3 day turnaround:

01A, 01B, 02A, 02B, 03A, 03B, 03C, 04A, 04B, 04C, 05, 06, 07A, 07B, 08, 09, 10, 11, 11M, 12, 12M, 13, 13M, 14, 15, 16, 17, 18, 19, 20, 21, 22A, 22B, 23, 24

The 35 samples contained in plastic sample bags were shipped to SciLab via Courier. These samples were prepared and analyzed according to the EPA Interim Method (40 CFR 763, subpt F, App. A). The required analytical information, analysis results, analyst signature and laboratory indentification is contained in the Analyst's Report.

This report relates ONLY to the sample analysis expressed as percent asbestos. SciLab assumes no responsibility for customer supplied data such as "sample type", "location", or "area sampled". This report must not be used to claim product endorsement by SciLab, NVLAP or any agency of the U. S. Government. The National Institute of Standards and Technology Accreditation requirements, mandate that this report must not be reproduced, except in full with the approval of the laboratory.

SciLab appreciates this opportunity to serve your organization. Please contact us for any further assistance or with any questions.



Aspestos Laboratory Manager



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## **PLM Bulk Asbestos Report**

ATC Associates Inc., Woburn

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 Date Received
 06/01/2000
 SciLab Job No.
 500062259

 Date Examined
 06/05/2000
 P.O. #
 91348

 Page
 1
 of
 8

Attr<mark>Non-Responsive</mark> 600 West Cummings Park Suite 6500 Woburn, MA 01801

RE: 60-17533-0001; State Quartermaster; Dorchester Armory

Client No. / HGA	Lab No.	Asbestos Present	<b>Total % Asbesto</b>
01A	500062259-01	Yes	65 %
1 Lo	cation:		
Asbestos	ription: Grey, Homogeneous, F Types: Chrysotile 65. % aterial: Cellulose 10. %, No	Pipe Insulation n-fibrous 25. %	R
01B	500062259-02		NA/PS
1 Lo	cation:		
Descr Asbestos Other Ma			<u>n_</u>
02A	500062259-03	Yes	40 %
2 Lo	cation:		
Asbestos	iption: Beige, Homogeneous, I Types: Chrysotile 40. % aterial: Fibrous glass 10. %,		
02B	500062259-04		NA/PS
2 Lo	cation:		
Descr Asbestos Other Ma			
03A	500062259-05	Yes	70 %
3 Lo	cation:		
Asbestos	iption: Tan, Homogeneous, Bo Types: Amosite 40. %, Chry iterial: Non-fibrous 30. %	sotile 30. %	d Record #J 15 0085 (MA)
May, 2018			by National Guard Bureau

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### SCILAB BOSTON, INC.

8 SCHOOL STREET WEYMOUTH, MA 02189 TEL: (781) 337-9334 • FAX: (781) 337-7642

# **PLM Bulk Asbestos Report**

ATC Associates Inc., Woburn<br/>AttnDate Received06/01/2000SciLab Job No.500062259Date Examined06/05/2000P.O. #91348600 West Cummings ParkPage 2 of 8Suite 6500<br/>Woburn, MA 01801RE: 60-17533-0001; State Quartermaster; Dorchester Armory

	E000(22E0 0(		NTA /DC
Location:	500062259-06		NA/PS
Description: Asbestos Types:	Boiler Jacket	2	
	500062259-07		NA/PS
Location:			
Asbestos Types:			
	500062259-08	Yes	65 %
Location:			
Asbestos Types:	Amosite 45. %, Chry		
	500062259-09		NA/PS
Location:			
Description: Asbestos Types: Other Material:	Tank Insulation		
	500062259-10		NA/PS
Location:			
Description: Asbestos Types: Other Material:	Tank Insulation		
	Asbestos Types: Other Material: Location: Description: Asbestos Types: Other Material: Location: Description: Asbestos Types: Other Material: Location: Description: Asbestos Types: Other Material: Location: Description: Asbestos Types:	Location: Description: Boiler Jacket Asbestos Types: Other Material: 500062259-08 Location: Description: White, Homogeneous, Asbestos Types: Amosite 45. %, Chry Other Material: Non-fibrous 35. % 500062259-09 Location: Description: Tank Insulation Asbestos Types: Other Material: 500062259-10 Location: 500062259-10 Location: Description: Tank Insulation Asbestos Types:	Asbestos Types: Other Material: 500062259-07 Location: Description: Boiler Jacket Asbestos Types: Other Material: 500062259-08 Fes Location: Description: White, Homogeneous, Tank Insulation Asbestos Types: Amosite 45. %, Chrysotile 20. % Other Material: Non-fibrous 35. % 500062259-09 Location: 500062259-09 Location: Description: Tank Insulation Asbestos Types: Other Material: 500062259-10 Location: Description: Tank Insulation Asbestos Types:



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SCILAB BOSTON, INC.

8 SCHOOL STREET WEYMOUTH, MA 02189 TEL: (781) 337-9334 • FAX: (781) 337-7642

# **PLM Bulk Asbestos Report**

ATC Associates Inc., Woburn<br/>Attn:Date Received06/01/2000SciLab Job No.500062259Attn:Non-Responsive<br/>000 West Cummings ParkDate Examined06/05/2000P.O. #91348600 West Cummings Park<br/>Suite 6500<br/>Woburn, MA 01801RE: 60-17533-0001; State Quartermaster; Dorchester Armory

Client No. / HGA	Lab No.	<b>Asbestos Present</b>	Total % Asbesto
05	500062259-11	No	NAD
	Location: Yankee Division		
Asbest	escription: Grey, Homogeneous, Sh tos Types: Material: Cellulose 4. %, Non-f		
06	500062259-12 Location: Yankee Division	No	NAD
Asbest	escription: Off-White, Homogeneo tos Types: Material: Non-fibrous 100. %	us, Joint Compound	
07A	500062259-13	Yes	3 %
7	Location: Supply		
Asbest	scription: Beige, Homogeneous, In tos Types: Chrysotile 3. % Material: Non-fibrous 97. %	nterior Window Glazing	
07B	500062259-14		NA/PS
7	Location: Kitchen		
Asbest	scription: Interior Window Glazing tos Types: Material:	g	
08	500062259-15	No	NAD
	Location: Recruters		
Asbest	scription: Brown/White, Homogen tos Types: Material: Cellulose 35. %, Fibro		35. %
Posted to NGB F May, 2018	OIA Reading Room BEST AVA		Record #J-15-0085 (MA) ov National Guard Bureau



### SCILAB BOSTON, INC.

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# **PLM Bulk Asbestos Report**

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Attn:Non-Re	ımmings Park	Date Received06/01/2000SciLab Job No.Date Examined06/05/2000P.O. #91348Page 4 of 8RE: 60-17533-0001;State Quartermaster;Dorches			
 Client No. / ]	HGA Lab No	0.	Asbestos Presen	t Tota	al % Asbesto
09	5000622	259-16	No		NAD
	Location: Recruters	Office			
	Description: Brown, asbestos Types: Other Material: Cellulos	Homogeneous, 2'x4' Cose 90. %, Non-fibrou			
10	5000622	259-17	Yes		65 %
	Location: Weight Ro				
	Description: Grey, H sbestos Types: Chrysot )ther Material: Cellulos			÷:	
11	5000622	259-18	Yes		20 %
11	Location:				
	Description: Black, H sbestos Types: Chrysot Other Material: Non-fib		Γ (Black w/ White	e Str)	
11M	5000622	259-19	Yes		≤1.%
11	Location:				
	Description: Black, H sbestos Types: Chrysott Other Material: Cellulos				
12	5000622	259-20	Yes		10 %
12	Location:				
	Description: Green, H sbestos Types: Chrysoti	Homogeneous, 9"x9" F	ſ (Green)		



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REPART R. Cong R. R. Channes BEST AVAILABLE COPY SCILAB BOSTON, INC.

**8 SCHOOL STREET** WEYMOUTH, MA 02189 TEL: (781) 337-9334 • FAX: (781) 337-7642

# **PLM Bulk Asbestos Report**

Attn: Non-F	ummings Park	Date Receive Date Examin RE: 60-1753		P.O. # 91348 Page 5 of 8	500062259 ter Armory
 Client No. /	HGA I	ab No.	Asbestos Prese	nt Tot	al % Asbesto
12M	5	00062259-21	Yes		6 %
12	Location:				
	Description: B Asbestos Types: C Other Material: N		oc. Black Mastic		
13	5	00062259-22	Yes		7 %
13	Location:				
	Asbestos Types: C Other Material: N	on-fibrous 93. %		iled)	
13M	5	00062259-23	No		NAD
13	Location:				
	Asbestos Types:	lack, Homogeneous, Ass on-fibrous 100. %	oc. Black Mastic		
14	5	00062259-24	No		NAD
5-0/E)	Location:	annan Alberta Talaina - Alberta			
	Description: T Asbestos Types:	an, Homogeneous, Tan C on-fibrous 100. %	ovebase Mastic		
15	5	00062259-25	No		NAD
	Location: Ca	ulk-XO's			
	Description: G	rey, Homogeneous, Cem	entitious, Interior Wi	ndow Cement	



# SCILAB BOSTON, INC.

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# **PLM Bulk Asbestos Report**

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600 West Suite 650	I <mark>-Responsive</mark> Cummings Parl 0 MA 01801		nined 06/05/2000 7533-0001; State Quarte	P.O. # 91348 Page 6 of 8 ermaster; Dorches	ster Armory
Client No	o. / HGA	Lab No.	Asbestos Prese	nt To	tal % Asbesto
16	Locati	500062259-26 on: @ Roof Hatch	No		NAD
	Descriptic Asbestos Typ	on: Brown/Off-White, Hon		g Tile	
17	Locatio	500062259-27 on: @ Roof Hatch	No		NAD
	Asbestos Typ	on: Tan, Homogeneous, Gl es: al: Talc <1. %, Non-fibr			
18		500062259-28	No		NAD
	Asbestos Typ	on: Off-White, Homogeneo		Wall Paint	
19	Locatio	500062259-29	No	13 192	NAD
382 	Asbestos Typ	on: Tan, Homogeneous, Ca es: al: Non-fibrous 100. %	rpet Mastic		
20	Locatio	500062259-30	No		NAD
	Descriptio Asbestos Typ	on: Black, Homogeneous, I	Black Covebase Mastic		

May, 2018

Released by National Guard Bureau



### SCILAB BOSTON, INC

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21 Str. 14"

8 SCHOOL STREET WEYMOUTH, MA 02189 TEL: (781) 337-9334 • FAX: (781) 337-7642

### **PLM Bulk Asbestos Report**

**Date Received** 06/01/2000 SciLab Job No. 500062259 ATC Associates Inc., Woburn Attn: Non-Responsive 06/05/2000 P.O. # 91348 **Date Examined** 600 West Cummings Park Page 7 of 8 Suite 6500 RE: 60-17533-0001; State Quartermaster; Dorchester Armory Woburn, MA 01801 Client No. / HGA Lab No. **Asbestos Present Total % Asbestos** Yes 21 500062259-31 8 % Location: Drill Shed Description: Brown, Homogeneous, Exterior Door Caulk Asbestos Types: Chrysotile 8. % Other Material: Talc 10. %, Non-fibrous 82. % Yes 22A 500062259-32 8 % Location: Boiler Room 22 Description: Brown, Homogeneous, Exterior Window Caulk Asbestos Types: Chrysotile 8. % Other Material: Talc 10. %, Non-fibrous 82. % NA/PS 22B 500062259-33 22 Location: XO's Description: Exterior Window Caulk Asbestos Types: **Other Material:** No NAD 23 500062259-34 Location: Shop Description: Grey, Homogeneous, 12"x12" FT (Grey Mottled) Asbestos Types: Other Material: Non-fibrous 100. %

24	500062259	-35	No NAD	
	Location: Shop			
	Description: Grey, Hom Asbestos Types: Other Material: Non-fibrou	ogeneous, Grey HVAC Duc s 100. %	t Sealant	
	Posted to NGB FOIA Reading Room May, 2018	BEST AVAILABLE COPY	FOIA Requested Record #J-15-0085 (MA)	



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# **PLM Bulk Asbestos Report**

ATC Associates Inc., Woburn Attn Non-Responsive 600 West Cummings Park Date Received Date Examined

06/01/2000 SciLab Job No. 500062259 06/05/2000 P.O.# 91348

Page 8 of 8

Suite 6500 Woburn, MA 01801 RE: 60-17533-0001; State Quartermaster; Dorchester Armory

# Ion-Responsive

#### Reporting Notes: Analyzed b

\*NAD/NSD = no asbestos detected; NA = not analyzed; Burk Asbestos Analysis per 40 CFR 763, Subpart F, Appendix A and ELAP Analysis Protocols 198.1/198.4 for New York samples; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full with the approval of the laboratory. This report relates ONLY to the items tested.

Reviewed by:\_\_\_

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Asbestos-Containing Material	Estimated Quantity	Repair Cost	Removal Cost
Boiler Insulation Debris and Damage Boiler Room	l Boilers	\$500.00	\$4,500.00
Boiler Tank Insulation	1 Tunk	500.00	2,000/00
Pipe Insulation Boiler Room	140 I.F	1,400.00	2,800.00
Pipe Insulation - Locked Storage One	60 LF	600.00	1,200.00
Pipe Insulation - Locked Storage One	55 L.F	550.00	1,100.00
Pipe Insulation Supply Room	660 LF	6,600,00	13,200.00
Pipe Insulation Supply Room Vault	50 LF	500,00	1,000.00
Pipe Insulation - Kitchen Vault	50 LF	500,00	1,000.00
Pipe Insulation Kitchen	270 I.F	2,700,00	5,400.00
Pipe Insulation - Weight Room	275 LF	500,00	5,500.00
Pipe Insulation Scout's Room	160 L.F	500,00	3,200.00
Pipe Insulation - Yankee Division	250	2,500.00	5,000.00
Pipe Insulation Rear Exit Hall	20 I.F	500.00	500.00
9" x 9" Floor Tile and Mastic	3,100 SF	1,000,00	9,300.00
Contaminated 21 x 41 Ceiling Tiles Yankee Division	1,400 SF		4,200,00
Total Co	st Estimates:	Repair: \$18,850.00	Removal: \$59,900.00

### TABLE II - COST ESTIMATES FOR IMMEDIATE RESPONSE ACTIONS

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Page 13 FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1071 of 3473

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The following is a listing of those materials identified as asbestos-containing:

Pipe Insulation

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- Boiler Jacket Insulation
- Boiler Vent Gasket Insulation (Assumed)
- Boiler Holding Tank Insulation
- 9" x 9" Green Floor Tiles and Mastic
- 9" x 9" Black Floor Tiles and Mastic
- HVAC Duct Insulation (Assumed)

- HVAC Damper Cloth
- Exterior HVAC Vent Caulking
- [2" x 12" Beige Floor Tiles and Mastic
- Exterior Door Caulking
- · Window Glazing and Caulking
- Door Caulking.

The following table provides the material location, estimated quantity, and general condition of the above identified asbestos-containing materials within the facility:

Location	Material	Estimated Quantity	Condition
Ground Floor			
	Pipe Insulation	60 I.F	Fair-Poor
Locker Storage One	Pipe Fitting Insulation	7 EA	Poor
	Pipe Insulation	45 I.F	hair
Locker Storage Two	Pipe Insulation	101.F	Poor
	Pipe Fitting Insulation	10 EA	] Fair
	Pipe Insulation	1201.F	lair
	Pipe Insulation	204.F	Poor
	Pipe Fitting Insulation	20 EA	Fair
	Pipe Fitting Insulation	124:A	Poor
Barler Room	Boiler Jacket Insulation - Damaged End	520 SF	Pair
Botter Koom	Boiler Tank Insulation	300 SF	Fair
	Boiler Vent Gasket Insulation (Assumed)	<u>12 I.F</u>	Fair
	Gross Contamination on Floor	15 SF	Роог
	Window Caulking and Glazing	6 EA	Fair
	Door Caulking	1 EA	Good
	Pipe Insulation	6304.F	lann
	Pipe Insulation	30 LF	Poor
	Pipe Fitting Insulation	30 EA	Faur
Supply Room	Pipe Fitting Insulation	3 EA	Poor
	Exterior Window Caulking and Glazing	4 EA	Fair
	Door Caulking	I EA	Fair
1 I I I I I I I I I I I I I I I I I I I	Pipe Insulation	50 I.F	Poor
Supply Room - Vault	Pipe Fitting Insulation	6 I(A	Fair
25 1 55 2.	Pipe Insulation	50 1.F	Poor
Kitchen - Vault	Pipe Fitting Insulation	5 EA	Fair

#### **TABLE 1 - Asbestos-Containing Building Materials**



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Location	Material	Estimated Quantity	Condition
Ground Floor (Continued)			
	Pipe Insulation	240 LF	Fair-Good
	Pipe Insulation	30 LF	Poor
Kstehen	Pipe Fitting Insulation	25 EA	Fair
	Exterior Window Caulking and Glazing	5 EA	F <u>air</u>
· - · · · · · · · · · · · · · · · · · ·	Pipe Insulation	1 <u>30</u> 1.F	Fair
Januar Supply	Pipe Fitting Insulation	12 EA	Fair
nunuu vulda)	Window Caulking and Glazing	1 EA	Fair
	Pipe Insulation	250 LF	Fair
Company Commandet's Office, DAV Room & Day to Param	Pipe Fitting Insulation	40 IEA	Fair
	9" x 9" Floor Tile and Mastic	650 SF	Good
Ready Room	Window Caulking and Glazing	<u>4 EA</u>	<u>Fair</u>
	Pipe Insulation	275 I.F	Fair
	Pipe Fitting Insulation	40 <u>EA</u>	Fair
Unit Rooms (Access to	Window Caulking and Glazing	8 EA	hair
Outside Hall Only)	HVAC Damper Cloth	12 SF	Fair
	Exterior HVAC Vent Caulk	10 L.F	Fair
	Pipe Insulation	50 I.F	Fair
Registry of Motor Vehicles	Pipe Fitting Insulation	5 EA	Fair
(mace)	9" x 9" Floor Tile and Mastic	130 SF	Good
( inter	Window Caulking and Glazing	_ 2 EA	Good
······································	Pipe Insulation	120 LF	Good
	Pipe Fitting Insulation	6 EA	Good
Recruiting Office	9" x 9" Floor Tile and Mastic	500 SF	Good
	Exterior Window Caulking and Glazing	3 EA	Good
· · · · · · · · · · · · · · · · · · ·	Pipe Insulation	25 <u>1.</u> F	Good
Recruting Office Supply	Pipe Fitting Insulation	4 E <u>A</u>	Good
Closet	9" x 9" Floor Tile and Mastic	15 SF	Good
·	Pipe Insulation	60 LF	Fair-Goo
	Pipe Fitting Insulation	7 <u>EA</u>	Good
Clerk's Office	9" x 9" Floor Tile and Mastic	400 SF	Good
	Exterior Window Caulking and Glazing	3 EA	Good
<b></b>	Pipe Insulation	80 LF	Баг
	Pipe Fitting Insulation	6 EA	Fair
Readiness NCO	9" x 9" Floor Tile and Mastic	250 SF	Good
	Exterior Window Caulking and Glazing	2 EA	Pair
The second	Pipe Insulation	125 L.F	Fair-Goo
Fover Entrance to	Pipe Fitting Insulation	61 <sup>-</sup> A	Fair
Clerk's and Readiness NCO Offices	9" x 9" Floor Tile and Mastic	300 SF	Good

# TABLE 1 - Asbestos-Containing Building Materials (Continued)



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Location	Material	Estimated Quantity	Condition
Main Floor (Continued)			
	Pipe Insulation	250 LF	Fair-Good
Weight Room	Pipe Fitting Insulation	25 EA	Fair-Good
	Pipe Fitting Insulation	5 EA	Poor
	HVAC Damper Cloth	12 SF	Fair
	HVAC Vent Caulk	10 SF	Fair
	Window Caulking and Glazing	2 1:A	Poor-Fair
	Pipe Insulation	150 L.F	Fair
	Pipe Insulation Reserve	101.F	Poor
Scout's Room	Pipe Fitting Insulation	22 EA	Good
	Window Caulking and Glazing	6 EA	Poor Fair
		185 LF	Fair
Men's Showers and Bathroom	Pipe Insulation Pipe Fitting Insulation	28 EA	Good
		2 EA	Fair
	Window Caulking and Glazing	250 LF	Poor-Fai
	Pipe Insulation	32 EA	Poor-Fai
	Pipe Fitting Insulation	1,400 SF	Good
Yankee Division	2' x 4' Contaminated Ceiling Tiles	12 SF	Fair
/ (//inf ( L 1 // ( // // // //	HVAC Damper Cloth	101.F	Fair
	Exterior HVAC Vent Caulk	3 EA	Poor-Fai
. <u> </u>	Window Caulking and Glazing	20 LF	Poor
Rear Exit Hall	Pipe Insulation	1 EA	Fair
Keur FAR (Ra)	Hall Door Caulking	265 LF	Fair
	Pipe Insulation	19 EA	Fair
Transportation Support	Pipe Fitting Insulation	950 SF	Fair
Offices	9" x 9" Floor Tile and Mastic	5 EA	Fair
	Window Caulking and Glazing	300 LF	Fair
	Pipe Insulation		Fair-Goo
	Pipe Fitting Insulation	20 EA	Fair
Drift Shed	HVAC Duct Insulation	500 SF	Fair
	HVAC Damper Cloth	35 SF	
	Door Caulking	2 F.A	Fair
	Garage Door Caulking	1 EA	Fair
	Pipe Insulation	1201 F	Fair
Main Entrance Foyer	Window Caulking and Glazing	24 EA	Fair
	Door Caulking	4 EA	Fair
Second Floor			
Hallway Ontside All Offices	9" x 9" Floor Tile and Mastic	2,800 SF	Fair
	9" x 9" Floor Tile and Mastic - Outside SI	300 SF	Loose
Caller Co	9" 8 9" Floor Tile and Mastic	800 SF	Fair
OPN Sgt.	Window Caulking and Glazing	4 <u>EA</u>	Fair

# **TABLE I - Asbestos-Containing Building Materials (Continued)**





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Location	Material	Estimated Quantity	Condition
Second Floor (Continu	ed)		
Medic's Room	HVAC Damper Cloth	15 SF	Fair
	Window Caulking and Glazing	I EA	Poor-Fair
Mortar's Room	HVAC Damper Cloth	2 SF	Fair
CSM Office	9" x 9" Floor Tile and Mastic	310 SF	Fair
	Window Caulking and Glazing	3 EA	Poor-Fair
Battalion Training Officer's Office	9" x 9" Floor Tile and Mastic	490 SF	Fair
	Window Caulking and Glazing	1 EA	Poor-Fair
S3 Office and Bathroom	9" x 9" Ploor Tile and Mastie	330 SF	Fair
	Window Caulking and Glazing	3 EA	Poor-Fair
Battalion Commanders Office	9" x 9" Floor Tile and Mastic	420 SF	Fair
	Window Caulking and Glazing	5 EA	Poor-Fair
())itt	9" x 9" Floor Tile and Mastic	500 SF	Fair
XO's Office	Window Caulking and Glazing	3 EA	Poor-Fair
	9" x 9" Ploor Tile and Mastic	450 SF	Fair
S2 Office	Window Caulking and Glazing	2 EA	Poor-Fair
Office - 28 (At Top of	9" x 9" Floor Tile and Mastic	330 SF	Fair
Entrance Stars)	Window Caulking and Glazing	2 EA	Poor-Fait
Women's Bathroom	Window Caulking and Glazing	3 EA	Poor-Fait
Classroom	9" x 9" Floor Tile and Mastic	1,300 SF	Fair
	Window Caulking and Glazing	14 EA	Poor-Fair
Kitchen	12" x 12" Floor Tile and Mastic	240 SF	Fair
	Window Caulking and Glazing	5 I:A	Poor-Fair
Staff Room	9" x 9" Floor Tile and Mastic	450 SF	Fair
	Window Caulking and Glazing	5 EA	Poor-Fair
Maintenance Office	9" x 9" Floor Tile and Mastic	450 SF	Fair
	Window Caulking and Glazing	2 EA	Poor-Fai
SI Office	9" x 9" Floor Tile and Mastic (Possibly Under Carpet)	800 SF	Fair
	Window Caulking and Glazing	6 E.A	Poor-Fair

### **TABLE 1 - Asbestos-Containing Building Materials (Continued)**

Bulk samples of suspect materials were analyzed by our affiliated laboratory. *Scil ub Hoston, Inc.* (*SciLab*), using the EPA approved polarized light microscopy with dispersion staining (PLM DS) method. By using the PLM DS method, a trained microscopist is able to identify and distinguish between asbestos group minerals and other fibrous materials such as cellulose (paper), mineral (rock), wood, or glass fiber. The quantity of each of these substances is estimated on a weight basis and recorded as a percent. Only the asbestos content, if any, is recorded in the bulk sample Report of Analysis (Appendix A). If a material contains greater than 1% asbestos, it is considered to be asbestos-containing material.



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APPENDIX E

## TRAINING CERTIFICATES

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APPENDIX F

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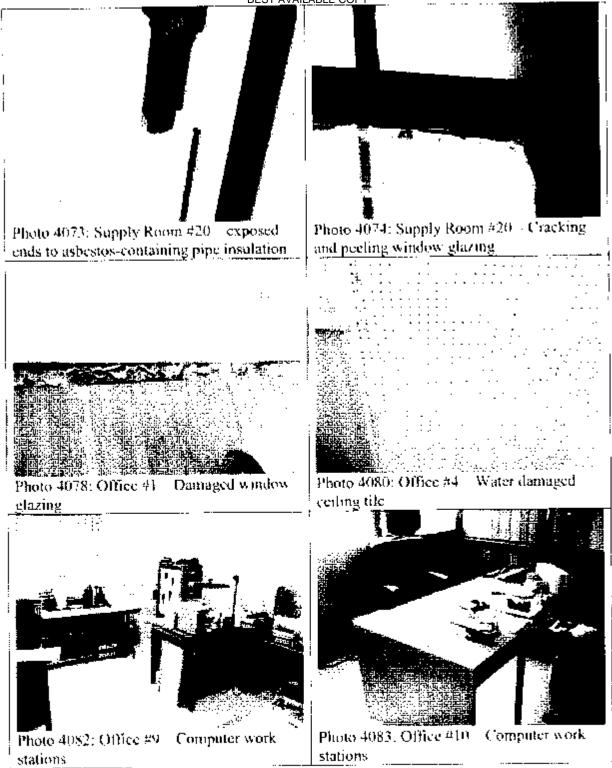
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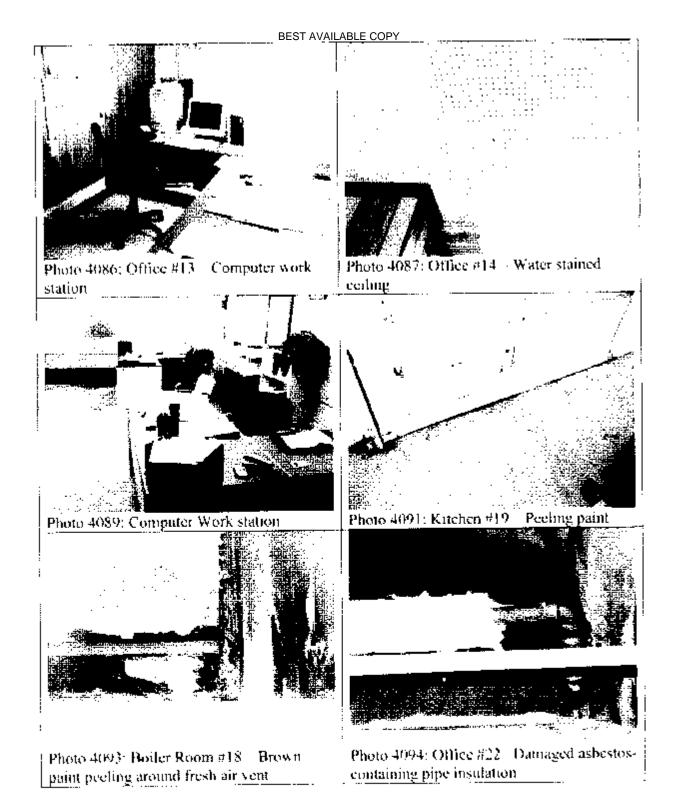
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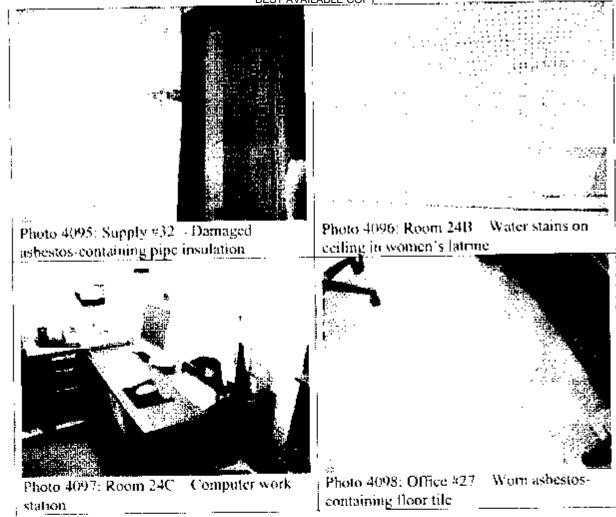


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APPENDIX G

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# 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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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:

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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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.



#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 70 VICTORY ROAD DORCHESTER, MA 02122

June 17, 2013 PN: 39743799



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	ARMORIES

#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 70 VICTORY ROAD, DORCHESTER, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting		
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards.	Ergonomic issues with regard to 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
Lead		
Five of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Former Indoor Firing Range		
The former Indoor Firing Range has been posted as unsafe due to lead contamination; however the area is still regularly used. The door to the area was not secured.	Personnel trained in accordance with the OSHA Lead Standard should decontaminate the areas where elevated lead dust levels were identified in accordance with National Guard Pamphlet 420-15 (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Since the former indoor firing range is contaminated with lead and several wipe samples were found to contain elevated lead levels, access should be restricted and an assessment should be made as to whether respiratory protection and other PPE should be worn by individuals who must enter this area.	A respirator shall be provided for each employee when such equipment is necessary to protect the health of the employee (29 CFR 1910.134 (a)(2)).	RAC 3

Findings	Recommendations	Risk Assessment Code (RAC)
Emergency Exits		
Emergency exit signs were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3
Asbestos		
Presumed asbestos-containing floor tile and mastic were observed throughout the facility; an Asbestos Operations and Maintenance Program was not available on-Site.	Develop a site-specific asbestos operations and maintenance program for management of asbestos-containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 3
PPE Hazard assessments have not	Conduct a hazard assessment of	
been conducted to determine whether personal protective equipment is required.	site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4
Water Intrusion		
Water staining was observed on ceiling tiles in the 2 <sup>nd</sup> floor north hallway.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio-aerosols in the Indoor Environment).	RAC 4
Fire Extinguishers		
A fire extinguisher along the north perimeter of the Assembly Hall was blocked.	Portable fire extinguishers shall be provided, mounted and located so that they are readily available (29 FR 1910.157 (c)(1) and 29 CFR 1910.38 (c)(2)).	RAC 4
Walking Surfaces		-
Duct tape was used to secure cords across walkways.	Flooring should be maintained in good repair to minimize uneven and slippery surfaces and tripping hazards (29 CFR 1910.22(b)(1)).	RAC 3
Housekeeping		
Storage areas were cluttered, including exits and passageways.	All places of employment, passageways, storerooms and service rooms shall be kept clean and orderly and in a sanitary condition (29 CFR 1910.22 (a)(1)).	RAC 3

Findings	Recommendations	Risk Assessment Code (RAC)
Ladders		
Two ladders were observed not properly stored in the first floor classroom and basement boiler room.	Ladders not in use shall be properly stored in a vertical position fastened to walls. (29 CFR 1910.25 (c)(2)(i)).	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 in Dorchester, Massachusetts.

URS representative, Ms. Non-Responsive, conducted the Industrial Hygiene Survey on April 25, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Dorchester Readiness Center is a two-story brick building, consisting of offices, a classroom, supply areas, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: The former Indoor Firing Range was taken out of service but is actively being used for storage. The door to the former Range was open when URS arrived at the facility. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. A fire extinguisher along the north perimeter of the Assembly Hall was blocked. An exit in the 2<sup>nd</sup> floor Plans Room was blocked. Extension cords were being used as permanent wiring. Cords were extended across walkways and secured with duct tape. Ladders were not properly secured and stored.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress, work areas must be lighted by at least the minimum light intensities. <u>LEAD</u>: Five of ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

On the day of the survey, the one paint chip sample collected from peeling paint was found to contain a level of lead below the HUD criteria for determination of paint as lead-based.

<u>ASBESTOS</u>: Presumed asbestos-containing floor tiles and mastic were noted throughout the facility. No Asbestos Operations and Maintenance Program was found onsite. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Noise monitoring and mapping levels in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

#### 2.0 SUPPLY / TRAINING AREA

#### 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, a classroom, supply areas, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be slightly cluttered and unorganized at the time of URS' site visit.

#### 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. Interior carbon dioxide concentrations were found to be between 443 and 569 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 402 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below

1102 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

#### 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured between 0.0 ppm and 0.1 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

#### 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 32.2%, which was within the guideline of less than 65% recommended by ASHRAE.

#### 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 71.5 °F, which was within the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort. URS received several complaints regarding temperature (too hot, too cold) during this survey.

#### 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
2 <sup>nd</sup> Floor, S1 Office, desk by conference room	Admin	149.2	50
2 <sup>nd</sup> Floor, desk-	Admin	194.2	50
2 <sup>nd</sup> Floor, S1 desk	Admin	84.7	50
2 <sup>nd</sup> Floor, Conference Room, table	Admin	79.8	50
2 <sup>nd</sup> Floor, Kitchen, counter	Break Room	256.2	10
2 <sup>nd</sup> Floor, Classroom, computer workstation	Admin	157.9	50
2 <sup>nd</sup> Floor, Classroom, computer workstation	Admin	297.1	50
2 <sup>nd</sup> Floor, Classroom, table	Admin	115.1	50
2 <sup>nd</sup> Floor, S-4 Offices, desk-	Admin	60.2	50
2 <sup>nd</sup> Floor, CSM Office, desk-	Admin	101.2	50
2 <sup>nd</sup> Floor, BN CDR Office, conference table	Admin	285.2	50
2 <sup>nd</sup> Floor, BN CDR Office, desk	Admin	58.2	50
2 <sup>nd</sup> Floor, OX Office, desk-	Admin	84.5	50
2 <sup>nd</sup> Floor, SPO Office, desk	Admin	96.0	50
2 <sup>nd</sup> Floor, OPS SGT Office, desk-	Admin	41.7	50
2 Floor, Plans Room, table	Admin	31.9	50
2 <sup>nd</sup> Floor, Plans Room, computer workstation	Admin	60.3	50
2 <sup>nd</sup> Floor, Plans Room, computer workstation	Admin	46.7	50
2 <sup>nd</sup> Floor, east hall	Hall	25.5	5
1 <sup>st</sup> Floor, Storage Room	Storage	13.3	30
1 <sup>st</sup> Floor, Supply Room, conference table	Admin	87.2	<mark>50</mark>

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
1 <sup>st</sup> Floor, Kitchen	Break Room	60.3	10
1 <sup>st</sup> Floor, West Conference Room, conference desk	Admin	34.9	50
1 <sup>st</sup> Floor, West Wing, desk-	Admin	31.1	50
1 <sup>st</sup> Floor, West Wing, desk	Admin	26.4	50
1 <sup>st</sup> Floor, West Wing, desk	Admin	44.9	50
1 <sup>st</sup> Floor, PT Room	Break Room	26.9	10
1 <sup>st</sup> Floor, West Wing, Commander desk	Admin	62.1	50
1 <sup>st</sup> Floor, West Wing, desk-	Admin	119.8	50
1 <sup>st</sup> Floor, West Wing, desk-	Admin	61.5	50
2 <sup>nd</sup> Floor, EOC Office, workstation	Admin	62.1	50
2 <sup>nd</sup> Floor, EOC Office, workstation	Admin	49.7	50
2 <sup>nd</sup> Floor, EOC Office, workstation	Admin	164.0	50

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in nine of the locations measured throughout the facility based on recommended lighting intensities contained in the American National Standards Institute/ Illuminating Engineering Society of North America (ANSI / IESNA) RP-1-04.

#### 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
1 <sup>st</sup> Floor, Kitchen, floor under fridge	Dorchester RC Wipe-01	0.108	<110	200
2 <sup>nd</sup> Floor, Classroom/ Mess Hall, top of heater	Dorchester RC Wipe-02	0.108	480	200
2 <sup>nd</sup> Floor, West Wing, Conference Room, window sill	Dorchester RC Wipe-03	0.108	310	200
1 <sup>st</sup> Floor, PT Room, Floor	Dorchester RC Wipe-04	0.108	<110	200
2 <sup>nd</sup> Floor, East Wing, S4 Offices, floor under table	Dorchester RC Wipe-05	0.108	<110	200
Former Indoor Firing Range, door at south entrance, floor	Dorchester RC Wipe-06	0.108	210	200
Former Indoor Firing Range, door at north entrance, floor	Dorchester RC Wipe-07	0.108	2500	200
1 <sup>st</sup> Floor, Supply, floor at storage pallets	Dorchester RC Wipe-08	0.108	710	200
1 <sup>st</sup> Floor, East Wing, Storage, under storage crate	Dorchester RC Wipe-09	0.108	160	200
Drill Hall, top of flammable cabinet	Dorchester RC Wipe-10	0.108	<1 <b>1</b> 0	200

Table 2-2 Levels of Lead Dust Found in the Readiness Center

Five of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62.

One paint chip sample was collected from an area of peeling paint in the storage area and was analyzed for lead content. The analytical report from AMA is contained in Appendix C.

According to the U.S. Department of Housing and Urban Development (HUD), paint is considered to be lead-based if the quantity of lead is greater than 0.5% by weight. OSHA has not established a minimum percentage of lead to be defined as lead-based paint, therefore paint with lead in any amount above the analytical detection limit is considered to be lead-based under these regulations. The results of URS' lead paint testing are contained in Table 2-3.

Table 2-3 Lead Content in Painted Surfaces

Paint Location	Lead Concentration (Percent Weight)	HUD Lead-Based Quantity (Percent Weight)
Beige paint, walls, 1 <sup>st</sup> Floor Storage Room	0.054	0.5

On the day of the survey, the paint chip sample was not found to have a lead content above the HUD criteria for determination of paint as lead-based.

#### 2.2.7 Asbestos

No damaged, friable materials were identified during this survey for sample collection.

Presumed asbestos-containing floor tiles and associated mastic were identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

#### 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

#### 2.4 Noise Measurements

Personal noise dosimetry was conducted within the administrative office area. Noise exposures were measured using a data-logging Spark 703+ Noise Dosimeter. Personal noise dosimetry results indicated that, on the day of the survey, workers were not exposed to noise levels above the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day. Table 2-5 indicates the individual monitored, the tasks performed and noise exposures.

Table 2-5 Noise Dosimetry Data

Location	Task	Sample Duration in Minutes	Monitoring Result TWA (dBA)*	Hearing Protection
Non-Responsive	Administrative	361	62.4	N/A

\* The calculated 8-hour, time-weighted average (TWA) noise exposure in dBA. The OSHA PEL for noise exposure is 90 dBA. DoDI has established an employee exposure level of 85 dBA for requirement of a hearing conservation program.

In addition, noise mapping was conducted throughout the Readiness Center. Area noise mapping results indicated that, on the day of the survey, noise levels throughout the Readiness Center ranged from 51.9 decibels to 60.6 decibels. All noise mapping results were below the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 dBA/8-hour day.

#### 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves.

#### 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility.

#### 3.2 Hearing Conservation

A written hearing conservation program was identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise dosimetry and noise mapping results and a review of normal site operations, a hearing conservation program is not required for this site.

#### 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was identified on site. No operations were observed by URS that would require the use of respiratory protection. No documentation was available that the former firing range had been contaminated. Bullet traps and firing lanes were not observed. If individuals are allowed access into this area, a hazard assessment should be conducted to determine whether respiratory protection and other forms of PPE should be required in this area.

#### 3.4 Hazard Communication

A site-specific hazard communication program was identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

#### 3.5 Personal Protective Equipment

A written personal protective equipment program was identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

#### 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

#### 3.7 Safety

The former Indoor Firing Range was taken out of service but is actively being used for storage. The door to the former Range was open when URS arrived at the facility. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. A fire extinguisher along the north perimeter of the Assembly Hall was blocked. An exit in the 2<sup>nd</sup> floor Plans Room was blocked. Extension cords were being used as permanent wiring. Cords were extended across walkways and secured with duct tape. Ladders were not properly secured and stored.

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#### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

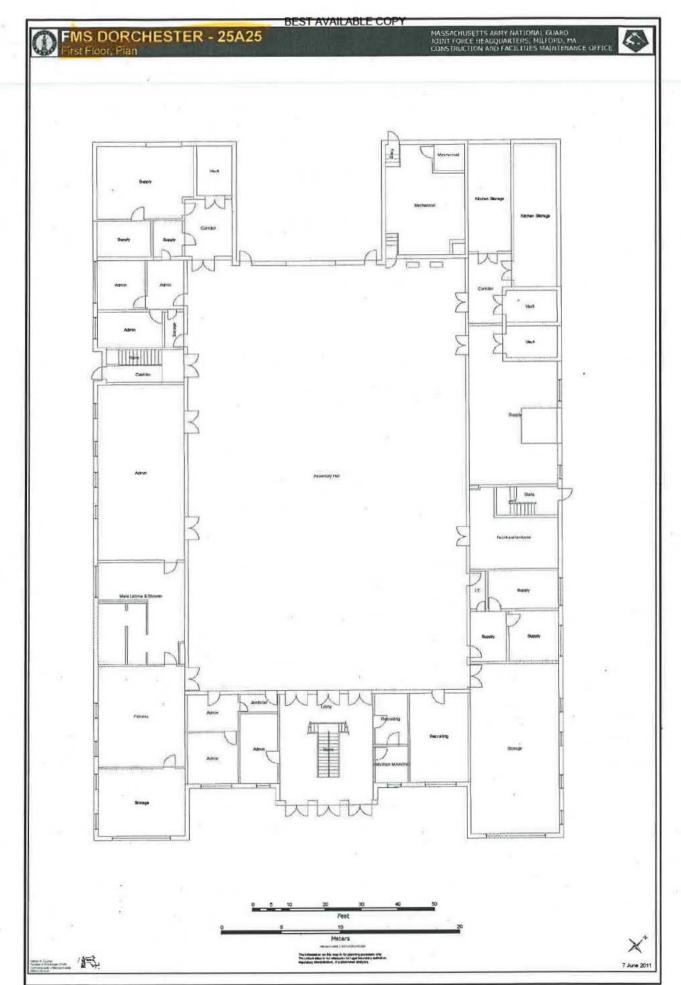
Standard for General Industry: 29 CFR 1910

OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

## APPENDIX A

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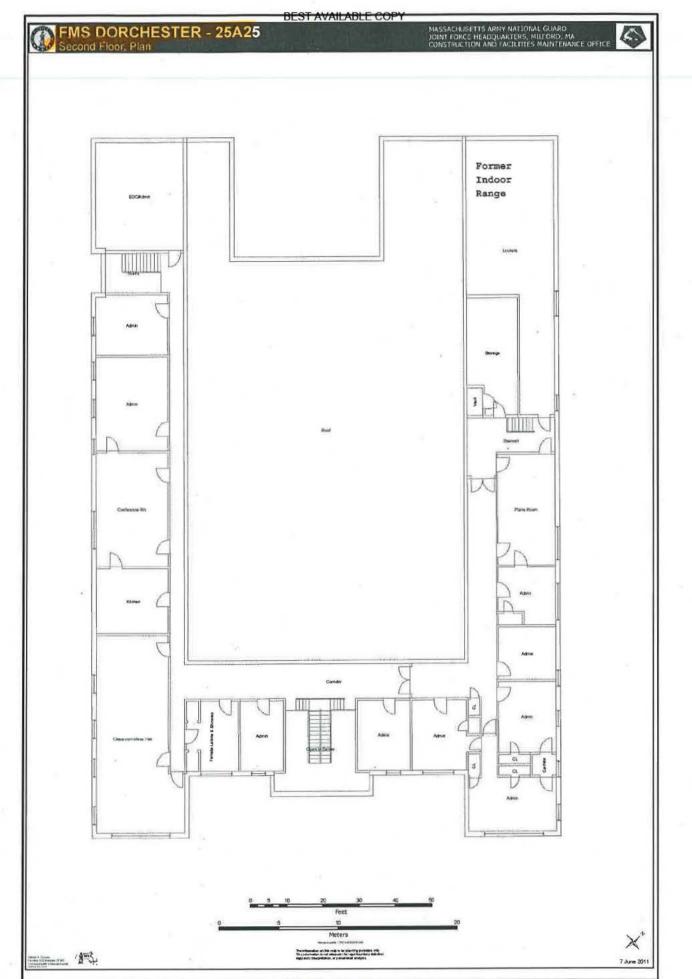
## SHOP DRAWING



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#### APPENDIX B

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#### PERSONNEL LIST



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## APPENDIX C

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#### ANALYTICAL RESULTS

## AMA Analytical Services, Inc.



Attention:

#### A Specialized Environmental Laboratory

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#### **CERTIFICATE OF ANALYSIS**

AIHA LAP, LLC ACCREDITED LABORATORY INCOSTRIAL HIGENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17/025-2005 Weet and an and a statement of the statement Weet and a statement of the statement of the statement ILAB #100470

Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody:	515723		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	70 Victory Road, Dorchester, MA	Date Submitted:	4/29/2013		
	Havre de Grace, Maryland 21078	Job Number:	Dorchester RC	Person Submitting:	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	5/6/2013	Report Date:	5/6/2013

#### 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 (ft²)		porting Limit	Total ug	Final Res	ult	Comments
13058039	DorchesterRC Wipe- 01	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13058040	DorchesterRC Wipe- 02	Flame	Wipe	****	0.108	110	ug/ft²	52	480	ug/ft²	
13058041	DorchesterRC Wipe- 03	Flame	Wipe	****	0.108	110	ug/ft²	34	310	ug/ft²	
13058042	DorchesterRC Wipe- 04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13058043	DorchesterRC Wipe- 05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13058044	DorchesterRC Wipe- 06	Flame	Wipe	****	0.108	110	ug/ft²	22	210	ug/ft²	
13058045	DorchesterRC Wipe- 07	Flame	Wipe	****	0.108	110	ug/ft²	270	2500	ug/ft²	
13058046	DorchesterRC Wipe- 08	Flame	Wipe	****	0.108	110	ug/ft²	76	710	ug/ft²	
13058047	· DorchesterRC Wipe- 09	Flame	Wipe	****	0.108	110	ug/ft²	17	160	ug/ft²	
13058048	DorchesterRC Wipe- 10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13058049	DorchesterRC Wipe- FB	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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#### **CERTIFICATE OF ANALYSIS**



#### Summary of Atomic Absorption Analysis for Lead

Page 2 of 2

AIHA LAP, LLC ACCREDITED LABORATORY

NOUSTRIAL HYGENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY 180MEC 17925;2005 www.ahunecreatestation.org LAB #100470

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		orting imit	Total ug	Final Result	Comments
13058050	DorchesterRC LBP- 01	Flame	Paint Chip	推击推动	N/A	0.0064	%Pb		0.054 %	БРЬ
Analysis Method N/A = Not Applic %Pb = percent le Note: All samples Note: All results I should not be con	for Flame: Air, Wipes, F For Furnace: Air, Wipe	es, Paints, and So s per million (ppm s ug = microg condition unless ts. Any additiona ing the result.	il/Solids : EPA 6 n) on a dry weight prams ug/L otherwise noted. I digits shown		7010; Water: SM parts per million	M-3113B		ited with these	alytical results of	quality control samples
Final results for a	ir and wipe samples are ion nor verified by this la	e based on client								
	be considered prelimina gned by the Technical D				Analys			Tec	hnical Manager:	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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<b>AMA</b> Analytical	Services, Inc.
Focused on Results	www.amalab.com

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## APPENDIX D

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## PHOTOGRAPHIC LOG



## PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
MA ARNG- Dorchester RC	70 Victory Rd., Dorchester, MA	39743799
Photo No.         Date:           1         4/25/13	-	-
Description:		
Exit blocked in second floor Plans Room.		
Photo No. Date: 2 4/25/13		

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#### APPENDIX E

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#### **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

#### **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 FALL RIVER READINESS CENTER **1089 DWELLY STREET** FALL RIVER, MASSACHUSETTS

April 2006 PN: 39741508



Office Manager

Project Manager

Posted to NGB FOIA Reading Room May, 2018

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## FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic	the second s	<u></u>
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		te lista i
On the day of the survey, the illuminance in the administrative area was inadequate in over half of all 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 RP-1-04)	RAC 4
Lead i i i i i i i i i i i i i i i i i i i		<u>e te ki ji</u>
Lead was detected in wipe samples collected from the former firing range and drill hall in amounts greater than 200 µg/ft <sup>2</sup>	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		2 2
Exposed pipefittings and pipe insulation was found throughout the facility.	Repair or remove exposed asbestos pipefittings and pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
A site-specific asbestos operations and maintenance plan was not available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		1. S.
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Housekeeping		
Found a few areas that were in disarray, which could cause trips and falls.	All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition (OSHA 29 CFR 1910.22(a)(1)).	RAC 4
Mold		
Evidence of water incursions throughout building that may promoter growth of mold.	Repair leaks in roof and institute a moisture management plan to inform employees of best practice in handling water incursions (Best management practice)	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 at 1089 Dwelly Street in Fall River, Massachusetts 02724. 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 February 5, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Fall River, Massachusetts. 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. Mr. Non-Responsive of the State of Massachusetts was Mr. Non-Responsive site contact for this survey.

A 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 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 and armrests were in a fixed position and keyboards could not be adjusted in only a few offices. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling in haliway #15 (Photo # 3587). Mold growth could become an issue if not addressed.

## 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 19.2 - 21.0% with an average of 20.2% on the 1<sup>st</sup> floor. The 2<sup>nd</sup> floor ranged from 18.7 - 20.5% with an average of 19.7%. These readings were below the recommended maximum of 65% 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 446 to 508 parts per million (ppm), with an average of 464 ppm on the 1<sup>st</sup> floor. The 2<sup>nd</sup> floor concentrations ranged from 451 to 498 ppm, with an average of 473 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. Given a background level of 350 ppm on the day of the survey, the ASHRAE limit would be 1050 ppm.

## 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations were 0 ppm throughout the survey period for both floors. The measured levels were below the ASHRAE guideline for indoor environments (62.1-2004). 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.

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 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (foot candles)	Recommended Minimum Illuminance (foot candles)
Office #9 – Front Desk	Administrative Duties	27	50
Office #9 – Rear Desk	Administrative Duties	32	50
Office #11- Front Desk	Administrative Duties	47	50
Office #12- Rear Desk	Administrative Duties	16	50
Office # 21	Administrative Duties	10	50
Office # 22	Administrative Duties	22	50
Office # 23	Administrative Duties	92	50
Office # 24	Administrative Duties	39	50
Office # 25	Administrative Duties	139	- 50
Office # 26	Administrative Duties	110	50
Office # 28	Administrative Duties	200	50
Office # 29	Administrative Duties	268	50
Office # 30	Administrative Duties	103	50
Hallway # 10	Accessway	54	3
Hallway # 5	Accessway	12	3
Hallway # 31	Accessway	24	3

On the day of the survey the illuminance in the administrative area was adequate in most office spaces.

## 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 2-2 below shows the results of the lead sampling.

 Table 2-2

 Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Office # 14 – Top of a File Cabinet	0205-LW05	1.000	24	200
Office # 21 – Top of a File Cabinet	0205-LW06	1.000	50	200
Blank	0205-LWBlank	N/A	<12 μg	N/A

## 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 Number	Total Asbestos (%)
Office # 21	12"x12" White Ceiling Tile	0205-AB05A	NAD
Room # 21	12"x12" White Ceiling Tile	0205-AB05B	NAD

NAD = "No Asbestos Detected"

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.

## 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

GENERAL: In general, the administrative area was neat and orderly.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in soma office spaces. URS recommends increasing lighting in the administrative areas through task lighting. While work is in progress the administrative area shall be lighted by at least the minimum light intensities.

<u>LEAD:</u> The two surfaces tested in this area for lead were found to be within the allowable limits and require no further action at this time.

<u>ASBESTOS:</u> There is exposed air-cell pipe insulation in room #3 (Photos # 3577-78), room #8 (Photo # 3579), office #9 (Photos # 3580-81), office #11 (Photo # 3582), office #13 (Photo # 3583), room #14 (Photo # 3584-85), bathroom #16 (Photo # 3588) and in the kitchen #36 (Photo # 3594). Most of these exposures are near the individual rooms heating units.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

#### 3.D 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 The analytical report from AMA is contained in meet ASTM E 1792 standards. · . Appendix D, Table 3-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wipe <b>đ</b> (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Former Firing Range-Top of a Desk	0205-LW07	1.000	13	200
Former Firing Range-Top of a Heating Unit	0205-LW08	1.000	76,000	200
Former Firing Range-Floor	0205-LW09	1.000	160	200
Former Firing Range-Top of a Light Guard	0205-LW10	1.000	16,000	200
Former Firing Range-Floor	0205-LW011	1.000	3,300	200
Blank	0205- LWBlank	N/A	<12 μg	N/A

Table 3-1 Levels of Lead Dust Found in the Former Firing Range

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.

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## Table 3-2 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(µg/m³)
Former Firing Range	0205-LA01	1132	<2.7	50.0
Blank	0205-LA03	N/A	<3.0 μg	N/A

On the day of the survey, the airborne lead dust level 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<sup>3</sup> averaged over an 8-hour day. The analytical report from AMA is contained in Appendix D.

Paint chips were collected in two areas where paint was peeling and sent to AMA for analysis. The two samples were 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 3-3 below shows the results of the lead paint testing.

Table 3-3				
Levels of Lead in Paint Found in the Former Firing Range				

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Former Firing Range #17	0205-LPC03	0.01	0.052
Former Firing Range #17	0205-LPC04	0.01	0.05

The analytical report from AMA is contained in Appendix D.

# 3.2.2 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 3-4 below presents the results of the sample analysis.

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Former Firing Range	12"x12" Floor Tile	0205-AB03A	NAD
Former Firing Range	12"x12" Floor Tile	0205-AB03B	NAD
Former Firing Range	12"x12" Floor Tile	0205-AB03C	NAD

Table 3-4 Sample Results of Suspect ACM

NAD = "No Asbestos Detected"

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. on-Responsive asbestos inspector training certificate is provided in Appendix E.

## 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

<u>LEAD</u>: Three of the five surface wipe samples collected in the former firing range were found to contain lead dust levels which exceeded the maximum limit set by the National Guard Bureau Region North Industrial Hygiene Office(See Appendix G). URS recommends that an appropriately licensed lead contractor clean the former firing range. Guideline for the cleanup and rehabilitation of indoor firing ranges are included in Appendix H.

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## 4.0 DRILL HALL

## 4.1 OPERATION DESCRIPTION

The drill hall is a 9,000 square foot area used for assembling personnel and storing equipment. 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.

Sample Location	URS Sample Number	Area Wiped (11 <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall – Floor – Rear	0205-LW01	1.000	84	200
Drill Hall – Floor – Center	0205-LW02	1.000	1000	200
Drill Hall – Top of the Flammable Storage Cabinet	0205-LW03	1.000	<12	200
Drill Hall – Top of the Powerade Machine	0205-LW04	1.000	320	200
Blank	0205-LWBlank	N/A	<12 μg	N/A

Table 4-1 Levels of Lead Dust Found in the Drill Hall

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

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Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL <u>(</u> μg/m³)
Drill Hall	0205-LA02	1132	<2.7	50.0
Blank	0205-LA03	N/A	<3.0 μg	N/A

Table 4-2 Levels of Lead Found in the Air

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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

Three paint chip samples were collected from the drill hall where paint was peeling and sent to AMA for analysis. The samples were found to contain lead in a concentration below 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	0205-LPC05	0.01	0.23
Drill Hall	0205-LPC06	0.01	0.15
Drill Hall	0205-LPC07	0.01	0.22

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.

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Drill Hall # 19	9"x9" Brown Floor Tile	0205-AB04A-FT	3
Drill Hall # 19	9"x9" Brown Floor Tile	0205-AB04B-FT	3
Drill Hall # 19	9"x9" Brown Floor Tile	0205-AB04C-FT	2
Drill Hall # 19	Associated Mastic	0205-AB04A-M	5
Drill Hall # 19	Associated Mastic	0205-AB04B-M	5
Drill Hall # 19	Associated Mastic	0205-AB04C-M	5

## Table 4-4 Sample Results of Suspect ACM

NAD = "No Asbestos Detected"

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. on-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 INTERPRETATON OF RESULTS

<u>LEAD</u>: Two of the four surface wipe samples collected in the drill hall were found to contain lead dust levels which exceeded the maximum limit set by the National Guard Bureau Region North Industrial Hygiene Office (See Appendix G). URS recommends that an appropriately licensed lead contractor clean the drill hall.

URS

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<u>ASBESTOS:</u> The 9"x9" brown floor tile on the drill hall floor tested positive for asbestos and is in poor condition, especially by the overhead door (Photo # 3591). An exposed pipe fitting was found on a rear air-handling unit (Photo # 3590). These areas of concern need to be repaired by an appropriately licensed contractor.

HOUSEKEEPING: The drill hall has many items stored in it that can cause trips and falls (Photo # 3592).



## 5.0 BOILER ROOM / BASEMENT AREA

## 5.1 OPERATION DESCRIPTION

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

## 5.2 CHEMICAL AND PHYSICAL AGENTS SAMPLED

## 5.2.1 Lead

Paint chips were collected where paint was peeling and sent to AMA for analysis. Both samples were found to contain lead in a concentration within 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 5-1 below shows the results of the lead paint testing.

Table 5-1 Levels of Lead in Paint Found in the Boiler Room

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Boiler Room # 1	0205-LPC01	0.01	0.33
Boiler Room # 1	0205-LPC02	0.01	0.34

The analytical report from AMA is contained in Appendix D.

## 5.2.2 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 5-2 below presents the results of the sample analysis.

URS 14

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room #1	Air Cell Pipe Insulation	0205-AB01A	30
Boiler Room #1	Air Cell Pipe Insulation	0205-AB01B	25
Boiler Room #1	Air Cell Pipe Insulation	0205-AB01C	20
Boiler Room #1	Pipe Fitting Insulation	0205-AB02A	40
Boiler Room #1	Pipe Fitting Insulation	0205-AB02B	60
Boiler Room #1	Pipe Fitting Insulation	0205-AB02C	60

## Table 5-2 Sample Results of Suspect ACM

NAD = "No Asbestos Detected"

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.

## 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

<u>LEAD</u>: The two paint chip samples collected in the boiler room for lead were found to contain levels within the acceptable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines.

<u>ASBESTOS</u>: The air cell and pipe fitting insulation in the boiler room was in poor condition. It is recommended that the insulation (Photos **#** 3572-73 & 3575) be removed or repaired. The work should be performed by an appropriately trained technician.

 $\mathcal{M}_{\mathcal{T}_{1},\mathcal{T}_{2}}$ 

## 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

The hearing conservation program was found in the safety book, under tab M, chapter 3. No training records were found on site. A program is not required for this site.

## 6.3 RESPIRATORY PROTECTION

The respiratory protection program was found in the safety book, under tab M, chapter 4. No training records were found on site. A respiratory protection program is not required for this site.

#### 6.4 HAZARD COMMUNICATION

The hazard communication program was found in the safety book, under tab L. An Operations and Maintenance (O & M) Plan was provided to URS before the inspection with regard to the asbestos on site. The main issues concerning this program were that the asbestos had not been labeled as containing asbestos and no training records were available. These are important parts of the O &M Plan.

#### 6.5 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment program was found in the safety book, under tab N, chapter 10. 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 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 Parl 61)

U. S. Housing and Urban Development

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

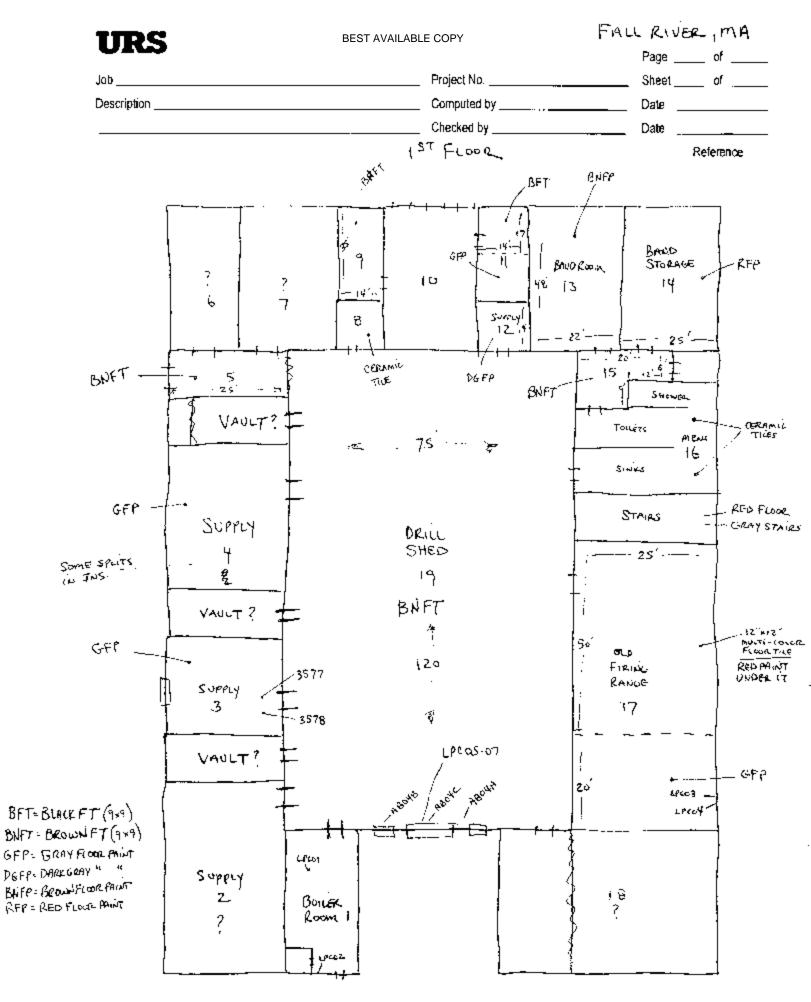
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

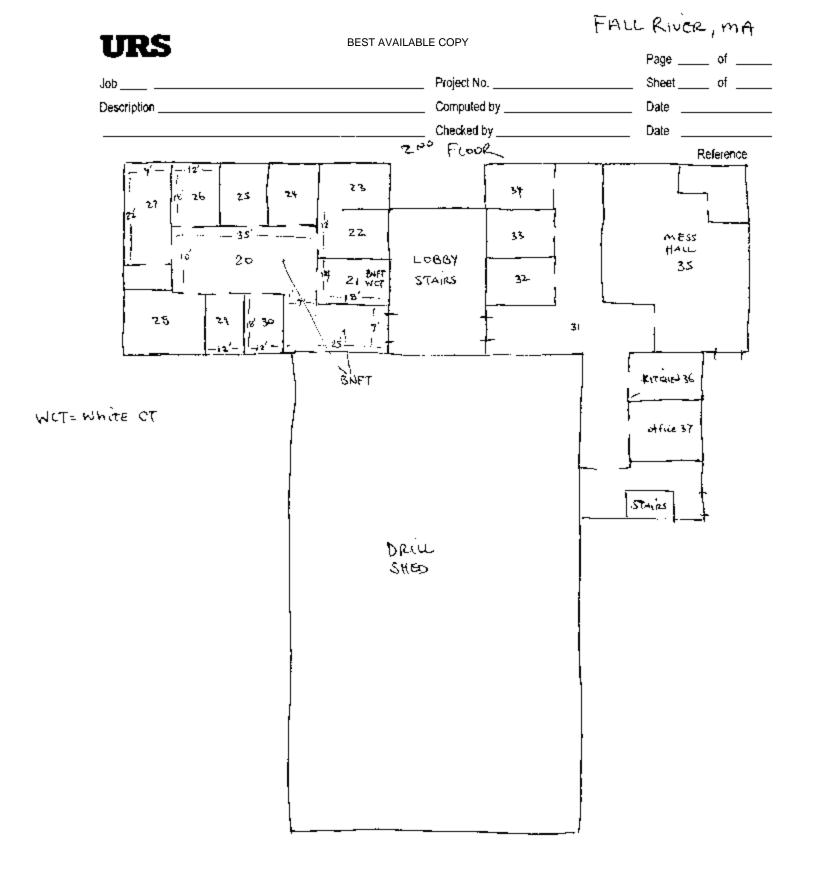
## APPENDIX A

.

## READINESS CENTER DRAWING



FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1140 of 3473

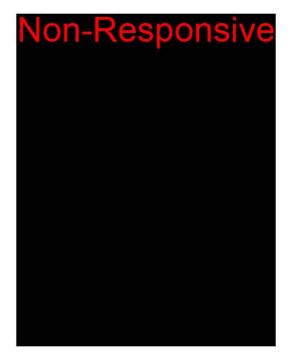


APPENDIX B

BEST AVAILABLE COPY

PERSONNEL LIST

#### BEST AVAILABLE COPY PERSONNEL ROSTER FALL RIVER ARMORY



C BATTERY 1-101 FA C BATTERY 1-101 FA 215<sup>TH</sup> ARMY BAND 215<sup>TH</sup> ARMY BAND RECRUITER RECRUITER ARMORER ARMORER APPENDIX C

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HAZARDOUS MATERIALS LIST

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spons

SHELF - A FROM - LEFT TO RIGHT I-QUART TWO CYCLE ENGINE OIL Q-IQOZ. CANS LITHIUM GREASE Q-IQOZ CANS CARBURETOR & CHOKE CLEANER I-GALLON LAQUER THINNER I-IIOZ. SPRAY CAN OF ENGINE STARTER

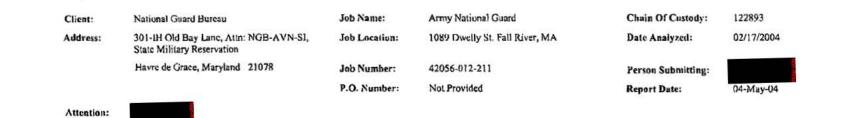
SHELF - B - FROM LEFT TO RIGHT I - I-GALLON CAN OF GASOLINE I - 2½ - GALLON OF GASOLINE I - 2½ - GALLON OF GASOLINE + OIL MIX 2 - I-GALLON CANS OF FLOOR TILE ADHESIVE I - I-GALLON CAN OF TRAFFIC PAINT

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FOIA

# APPENDIX D

## ANALYTICAL RESULTS

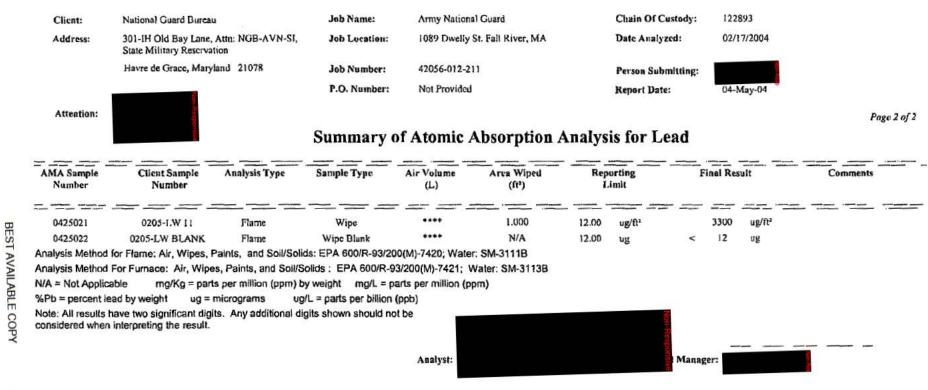


Summary of Atomic Absorption Analysis for Lead

Page I of 2

p.1

AMA Sample Number 0425001 0425002	Client Sample Number	Analysis Type	Sample Type	Air Volume (1.)	Area Wiped	Rep	orting		inal Res		Comments
	0205-1 PC 01			101	(ft²)		imit		mar eca	uit	Comments
0475002		Flame	Paint Chip	****		0.01	%Pb		0.33	%Pb	
042.002	0205-LPC 02	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.34	%Pb	
0425003	0205-LPC 03	Flame	Paint Chip	****	N/A	0.01	%Pb		0.052	%РЬ	
0425004	0205-LPC 04	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.05	%РЪ	
0425005	0205-LPC 05	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.23	%Pb	
0425006	0205-LPC 06	Flame	Paint Chip	****	N/A	0.01	%Pb		0.15	%Pb	
0425007	0205-LPC 07	Flame	Paint Chip	****	N/A	0.01	%Рь		0.22	%Pb	
0425008	0205-LA 01	Flame	Air	1132	N/A	2.65	ug/m'	<	2.7	ug/m'	
0425009	0205-LA 02	Flame	Air	1132	N/A	2.65	ug/m'	<	2.7	ug/m³	
0425010	0205-LA 03	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	
0425011	0205-LW 01	Flame	Wipe	****	1.000	12.00	ug/ft <sup>2</sup>		84	ug/N²	
0425012	0205-LW 02	Flame	Wipc	****	1.000	12.00	ug/ft²		1000	ug/ft²	
0425013	0205-LW 03	Flame	Wipe	****	1.000	12.00	ug/ft <sup>a</sup>	<	12	ug/fl <sup>2</sup>	
0425014	0205-LW 04	Flame	Wipe	****	1.000	12.00	ug/ft <sup>z</sup>		320	ug/ft²	
0425015	0205-LW 05	Flame	Wipe	****	1.000	12.00	ug/ft²		24	ug/ft²	
0425016	0205-LW 06	Flame	Wipe	****	1.000	12.00	ug/ft²		50	ug/ft <sup>2</sup>	
0425017	0205-LW 07	Flame	Wipe	****	1.000	12.00	ug/ft²		13	ug/ft*	
0425018	0205-LW 08	Flame	Wipe	****	1.000	12.00	ug/ft²		76000	ug/ft²	
0425019	0205-LW 09	Flame	Wipe	****	1.000	12.00	ug/ft <sup>2</sup>		160	ug/ft²	
0425020	0205-LW 10	Flame	Wipe	****	1.000	12.00	ug/ft²		16000	ug/ft²	
	0425002 0425003 0425004 0425005 0425006 0425007 0425008 0425009 0425010 0425011 0425012 0425013 0425013 0425014 0425015 0425016 0425017 0425018 0425019	0425002         0205-LPC 02           0425003         0205-LPC 03           0425004         0205-LPC 04           0425005         0205-LPC 05           0425006         0205-LPC 06           0425007         0205-LPC 07           0425008         0205-LA 01           0425010         0205-LA 01           0425010         0205-LA 02           0425011         0205-LW 01           0425012         0205-LW 01           0425013         0205-LW 03           0425014         0205-LW 03           0425015         0205-LW 04           0425016         0205-LW 05           0425017         0205-LW 06           0425018         0205-LW 08           0425019         0205-LW 08	0425002         020S-LPC 02         Flame           0425003         020S-LPC 03         Flame           0425004         020S-LPC 04         Flame           0425005         020S-LPC 05         Flame           0425006         020S-LPC 06         Flame           0425007         020S-LPC 07         Flame           0425008         020S-LA 01         Flame           0425009         020S-LA 02         Flame           0425010         020S-LA 02         Flame           0425011         020S-LA 03         Flame           0425012         020S-LW 01         Flame           0425013         020S-LW 03         Flame           0425014         020S-LW 03         Flame           0425015         020S-LW 03         Flame           0425016         020S-LW 05         Flame           0425015         020S-LW 05         Flame           0425016         020S-LW 06         Flame           0425017         020S-LW 08         Flame           0425018         020S-LW 08         Flame           0425019         020S-LW 09         Flame	0425002         0205-LPC 02         Flame         Paint Chip           0425003         0205-LPC 03         Flame         Paint Chip           0425004         0205-LPC 04         Flame         Paint Chip           0425005         0205-LPC 05         Flame         Paint Chip           0425006         0205-LPC 05         Flame         Paint Chip           0425007         0205-LPC 06         Flame         Paint Chip           0425008         0205-LPC 07         Flame         Paint Chip           0425009         0205-LA 01         Flame         Air           0425010         0205-LA 02         Flame         Air           0425010         0205-LW 01         Flame         Air           0425011         0205-LW 02         Flame         Wipe           0425012         0205-LW 03         Flame         Wipe           0425013         0205-LW 03         Flame         Wipe           0425014         0205-LW 04         Flame         Wipe           0425015         0205-LW 05         Flame         Wipe           0425015         0205-LW 05         Flame         Wipe           0425016         0205-LW 06         Flame         Wipe      0	0425002         020S-LPC 02         Flame         Paint Chip         ****           0425003         020S-LPC 03         Flame         Paint Chip         ****           0425004         020S-LPC 04         Flame         Paint Chip         ****           0425005         020S-LPC 05         Flame         Paint Chip         ****           0425006         020S-LPC 06         Flame         Paint Chip         ****           0425007         020S-LPC 07         Flame         Paint Chip         ****           0425008         020S-LAC 07         Flame         Paint Chip         ****           0425009         020S-LA 01         Flame         Air         1132           0425010         020S-LA 02         Flame         Air         1132           0425010         020S-LW 03         Flame         Air         1132           0425011         020S-LW 03         Flame         Wipe         *****           0425012         020S-LW 02         Flame         Wipe         *****           0425013         020S-LW 03         Flame         Wipe         *****           0425014         020S-LW 04         Flame         Wipe         *****           0425015         02	0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A           0425008         0205-LA 01         Flame         Air         1132         N/A           0425009         0205-LA 02         Flame         Air         1132         N/A           0425010         0205-LW 02         Flame         Air         Blank         0         N/A           0425011         0205-LW 01         Flame         Wipe         *****         1.000           0425012         0205-LW 02         Flame         Wipe         *****         1.000           0425013         0205-LW 03         Flame         Wipe         *****         1.000           0425014         0205-LW 05	0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01           0425006         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01           0425007         0205-LA 01         Flame         Paint Chip         ****         N/A         0.01           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65           0425010         0205-LA 02         Flame         Air         1132         N/A         2.65           0425011         0205-LW 03         Flame         Wipe         *****         1.000         12.00           0425012         0205-LW 02         Flame         Wipe         *****         1.000         12.00 <td>0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65         ug/m'           0425010         0205-LA 02         Flame         Air         1132         N/A         2.65         ug/m'           0425010         0205-LA 03         Flame         Air         1132         N/A         2.65         ug/m'           0425011         0205-LW 01         Flame         Wipe         1.000         12.00         ug/ft²&lt;</td> <td>0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65         ug/m³         &lt;</td> 0425010         0205-LA 02         Flame         Air         1132         N/A         2.65         ug/m³            0425011         0205-LW 03         Flame         Wipe         1.000         12.00         ug/ñ³            0425012         0205-LW 03         Flame         Wipe         1.000	0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65         ug/m'           0425010         0205-LA 02         Flame         Air         1132         N/A         2.65         ug/m'           0425010         0205-LA 03         Flame         Air         1132         N/A         2.65         ug/m'           0425011         0205-LW 01         Flame         Wipe         1.000         12.00         ug/ft²<	0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01         %Pb           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65         ug/m³         <	0425002         0205-LPC 02         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.34           0425003         0205-LPC 03         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.052           0425004         0205-LPC 04         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.053           0425005         0205-LPC 05         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.23           0425006         0205-LPC 06         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.23           0425007         0205-LPC 07         Flame         Paint Chip         ****         N/A         0.01         %Pb         0.22           0425008         0205-LA 01         Flame         Air         1132         N/A         2.65         ug/m³         <	04250020205-LPC 02FlumePaint Chip****N/A0.01%Pb0.34%Pb04250030205-LPC 03FlamePaint Chip****N/A0.01%Pb0.052%Pb04250040205-LPC 04FlamePaint Chip****N/A0.01%Pb0.05%Pb04250050205-LPC 05FlamePaint Chip****N/A0.01%Pb0.23%Pb04250060205-LPC 06FlamePaint Chip****N/A0.01%Pb0.22%Pb04250070205-LPC 07FlamePaint Chip****N/A0.01%Pb0.22%Pb04250080205-LA 01FlameAir1132N/A2.65ug/m³<



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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau HUHH IS Page 1 Page 0 19973 FEW

AMA Analy	ical Servic	es, Inc.
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A Specialized Environmental Laboratory

## **CERTIFICATE OF ANALYSIS**

						ALLIN
Client:	National Guard Bureau	Job Name:	Army National Guard	Chain Of Custody:	122893	AIHA
Address:	301-IH Old Bay Lanc, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	1089 Dwelly St. Fall River, MA	Date Analyzed:	02/17/2004	
	Havre de Grace, Maryland 21078	Job Number:	42056-012-211	Person Submitting:		
		P.O. Number:	Not Provided			

Summary of Polarized Light Microscopy

Attention:

										r		_			
AMA Sample Number		Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent		Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comment
0425023	0205-AB 01 A	30	30		-				10		-	60	Gray	СК	
0425024	0205-AB 01 B	25	25	-	31 <del>39</del> 1.	77	-		15		್	60	Gray	CK	
0425025	0205-AB 01 C	20	20	244			122		15		_	65	Gray	СК	
0425026	0205-AB 02 A	40	35	5							÷	60	Gray	СК	
0425027	0205-AB 02 B	60	45	15	020		-		<u></u> e:			40	Gray	СК	
0425028	0205-AB 02 C	60	45	15					10		:: <del>:::</del> ::	30	Gray	СК	
0425029	0205-AB 03 A	NAD	••								-	100	Multi	СК	
0425030	0205-AB 03 B	NAD								-		100	Multi	CK	
0425031	0205-AB 03 C	NAD		-				-			-	100	Multi	CK	
0425032	0205-AB 04 A-	• 3	3	-	-						-	97	Brown	CK	
0425033	0205-AB 04 B- FT	. 3	3	0.000	•••			~	~	-		97	Brown	СК	
0425034	0205-AB 04 C- FT	2	2	-			-		•		-	98	Brown	СК	
0425035	0205-AB 04 A- M	- 5	5	-	-				TR		-	95	Black	CK,	
0425036	0205-AB 04 B- M	- 5	5	-			-	-	TR		5 <b>**</b> 5	95	Black	CK	
0425037	0205-AB 04 C- M	- 5	5	<del></del>	-		-		TR	-		95	Black	CK	

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 accurdance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVI AP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. All rights reserved. AMA Analytical Services, Inc.

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

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Client:	Natio	tional Guard Bureau Job Name: Army National Guard Chain Of Cua						ustody:	122893	AIHA					
Address:		H Old Bay L Military Res	anc, Attn: NG	iB-AVN-SI,	Job La	b Location: 1089 Dwelly St. Fall River, MA Date Analyzed: 02				02/17/2004	_				
	Elavre	de Grace, M	Maryland 210	078	Job N	umber:	42056	-012-211				Person Sub	mitting:		
Attentio	n:					Number:	Not Pr	ized Lig	bt Mi	2205000	<b>x</b> ,				Page 2 of 2
			-					izeu Lig	, III 19110	croscop					
MA Samp Number	le 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
0425038	0205-AB 05 A	NAD	-		-		60		TR			40	Off-White	ск	
0425039	0205-AB 05 B	NAD	••		- <u></u>		40		TR			60	Off-White	СК	
	The following foo	inotes only a	apply to those	samples whi	ich the total ask	pestos result i	is flagged wi	lh a note numb	ber.						
2	TEM RECOMME or trace (<1%) for of optical microse MATRLX REDUC contain a significa obscuring effects	r asbestos m copy. CTJON REC ant quantity	COMMENDAT of asbestos wh	ignificant qu TION - Pleas hich is obscu	antity of ashest se note, due to i tred from view.	interference fr	mmended th form the mate included that t	at the addition	al analytica s of this san	I technique of	f TEM be u	sed to check f	or asbestos fi M as negativo	bors below the	resolution limits
	Analysis Method			10. 10 parts											n-Resp
	NAD = "No Asbo	slos Detecte	d" T	R = "Trace e	equals less than	1% of this co	omponent"								onsiv
															Ø

An AIHA (#8863), NVI.AP (# 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

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FOIA-Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1150 of 3473

# APPENDIX E

## TRAINING CERTIFICATES

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# Non-Responsive

e Erica States States Antonioria

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1152 of 3473

	6 Upton Drive, Wilmington, MA 01887 (978) 658-5272 This is to certify that	
has complete	ed the requisite training, and has passed an exa for reaccreditation as:	mination
	Asbestos Inspector Refresher	
pursuant	to Title II of the Toxic Substance Control Act, 15 U.S.	C. 2646
× 5	April 11, 2003 Course Dates	
	Course Location	
April 11, 2003 Examination Date	Institute for Environmental Education 16 Upton Drive Wilmington, MA 01887	April 10, 2004 Expiration Date
03518010625349		
Certificate Number		President/Director of Training

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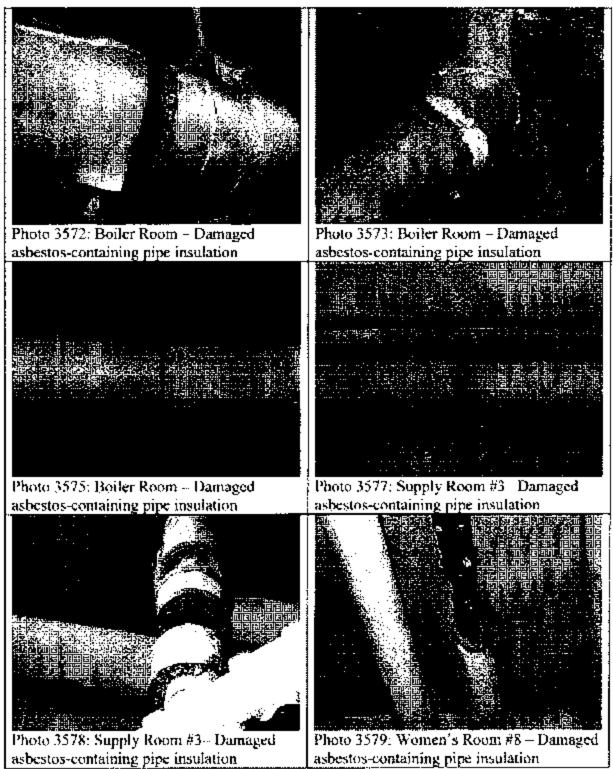
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APPENDIX F

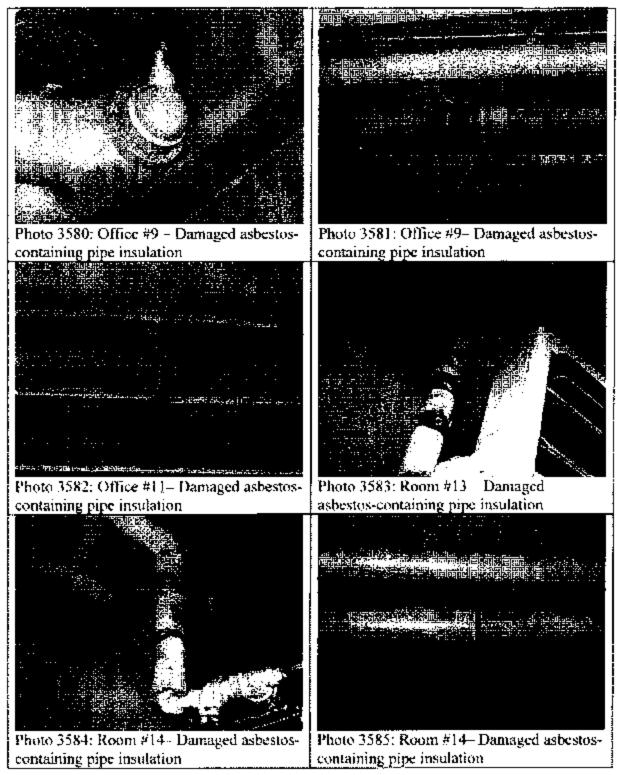
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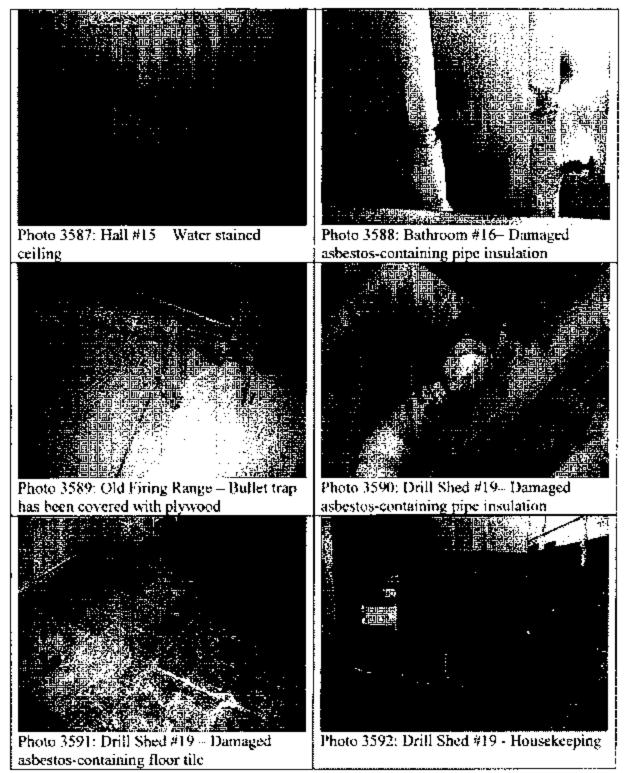
PHOTOGRAPHS

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APPENDIX G

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# RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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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<sup>2</sup>). 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/fl<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> 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

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

# 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)

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# Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prlor to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix 1 - Glossary

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 76-139 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

# SUBJECT: All States (Log Number 201-0075) 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, <sup>5th</sup> 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.

 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 tead 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 bonos 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 tot, 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.

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(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 complias 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 seafed to eliminate fugilive 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. Wel cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantilies 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 dock enamel or urethane; concrete floors should be seated with dock 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 plato(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.

I. 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 Hygione 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.

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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 fixish 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) Zine protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Air Monttoring. 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.

#### 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.

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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 Instituto 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:

Protective coverails with hood and shoe covers or disposable Tyvek ™ full body suit.

(2) Disposable rubber gloves; and disposable shoe coveriets (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, taundered, or disposed of, is placed in a closed container in the change area that soals 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 fead dust, fume, and mist will be worn at all times white 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.

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

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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. Butlet 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.

#### 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 fead contamination is removed the following procedure is established.

a. All ranges stated 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 tites 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.

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# 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, morsten 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 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-28ETWEEN 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 load dust and results that are above 200,000 micrograms/sq it, and should be considered suspect.

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

E-3.37 mm MCE Filter with pad, no cassetto included, for fead surface wipe samples.

# Order From <u>Catalog Number</u>

 a. Supelco Inc 2-3381IM Supelco Park Belletonte IPA 16823 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 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

# 

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. Altech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Wackegan Rd Deerfield, II, 60015 312-948-8600

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# **APPENDIX E (Continued)**

800-255-8324

E-6. Ghost Wipes™.

## Order From Catalog Number

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

E-7, Ghost Wipe<sup>™</sup> Containers

Order From Catalog Number

Environmental Express SC499 490 Wando Park Blvd. Mt. Pleasani, SC 29464 1-800-343-5319

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 gation, at a cost of approximately \$1.25. Defonized 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:

<u>75 ug</u>	- 92	29 cm²		
100 cm <sup>2</sup>		1 sq lt		
	=	<u>69675</u> 100	=	696.75ug/sq fl

ug - Microgram

Cm2 - Contimeters squared

Sq It - Square foot

Posted to NGB FOIA Reading Room May, 2018

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1172 of 3473

# 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 FIRINO RANGES

		Hygiene Surfa	-	act (name & phone #)					
Return Address				aor hioine o buoue #)					
			Samples Collected By						
Sampled Facility	npled Facility		State	Location (bldg/area)					
Description of Op	eration		Date Collecte	d Date Shipped					
, ,									
Analysis Desired									
				· · · · · · · · · · · · · · · · · · ·					
Sampling Data									
ab Use Only	Sample #	Results		Remarks					
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APPENDIX G SURFACE WIPE SAMPLING SHEET

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# 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

		Industrial Hy	giene Ai	r Samp	le Sheet	
Return Add	18\$\$		Point of C	Contact (r	name/phone #)	
			Samples	Collected	By	
Sampled Fa	cility	City	State	Location	n (bldg/area)	
Description o	of Operation	Persons Exposed	L Hre/Day		od of Collection	
Analysis De	sirêd		A se comerce	L		·····
Sampling D	ata					
Sampte No.						
Pump No.						B
Time On						L
Time Off			<b>.</b>			A
Total Time (min)						N
Flow Rate (LPM)						ĸ
Volume (liters)						
GAVBZ						
Employee Name10						
Laboratory No.						
Calibration I	nformation		I	J.		
Pump No.		ralion (LPM)	Rotameter	Setting		Date
	Pre-Use	Post-Use				
	··· ··					· · · · · ·
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					[ 	
Name of Calibia	alor	Calibration Date	Pump Marin	facturer	·	
Comments to L	ab	····	*			

APPENDIX H AIR SAMPLING SHEET

# 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 I ABBREVIATIONS AND TERMS

# Section I Abbrevlations

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

# NG8-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 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.

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# **Industrial Hygiene Survey**

Massachusetts Army National Guard (MA ARNG)

Prepared For: NGB ARNG - Region North IH Office

Survey Location:

# Fall River Readiness Center 1089 Dwelly Street Fall River, MA 02724-3199

Prepared By: Aria Environmental, Inc. (AEI) PO Box 286 Woodbine, MD 21797

Survey Date: August 17, 2010 Report Date: September 30, 2010

AEI Project #: J10-515 3d MA Fall River RC

Non-Responsive

Industrial Hygienist



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- Table 2 Results of Asbestos Sampling for the MA ARNG Fall River Readiness Center on August 17, 2010.
- Table 3 Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter
- Appendix A Building Layout
- Appendix B Certificates of Analysis for Air, Dust Wipe and Bulk Samples
- Appendix C Photo Documentation
- Appendix D IAQ and Lighting Survey Log Sheets

# **Executive Summary**

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Readiness Center located at 1089 Dwelly Street, Fall River, MA, 02724-3199. Non-Responsive performed the evaluation on August 17, 2010. The point of contact for the facility was Sergeant First Class and the evaluation of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities. The survey included: (1) evaluations of operations including operation description, sampling for chemicals or particulates if appropriate, ventilation system evaluational information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling lead-based paint, damaged asbestos-containing materials, water damage or mold problems; indoor air quality concerns; potential ergonomic problems; hazardous material storage; and housekeeping practices; and (3) photographs of the exterior and interior of the FMS. The results of the evaluation indicated industrial hygiene concerns in the following areas:

**Noise Hazards:** No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

**Lead in Air Samples:** Lead in air samples to determine if any airborne contamination of lead existed in the facility were not collected at the Fall River Readiness Center due to sample pump malfunction.

Paint Chip and Wipe Samples for Lead Contamination: A visual inspection was performed to determine if there were any areas of peeling paint at the facility that could pose a lead exposure hazard. No areas of peeling or flaking paint were observed. Three wipe samples collected from the former firing range that has not been converted and that is being used as storage were above the National Guard criteria for lead contamination (200  $\mu$ g/ft<sup>2</sup>). Samples ranged from 2.45 to 125 times the National Guard criteria. Lead was identified in samples collected the overhead heater vent, the bullet trap, and on the floor of the range.

**Visual Inspection for Damaged Asbestos-Containing Materials:** Damaged TSI pipe insulation was observed in the kitchen and damaged floor tile was located in the gym/band storage area and the drill hall. Bulk samples of the floor tiles were analyzed and reported as non-asbestos-containing. The submitted sample of TSI pipe insulation resulted in 50% and trace amounts of Chrysotile asbestos respectively.

**Visual Inspection for Water Damage and Mold Growth:** A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Extensive water damage was observed in the gym/band storage area. The water had loosened and removed floor tile from the area. No visible mold was observed in the space.

**Visual Inspection for Housekeeping Concerns:** A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

**Lighting:** The evaluation indicated that there are some illumination deficiencies in several offices and the kitchen. The illumination measurements indoors ranged from a low of 10.3 foot candles (fc) to a high of 97 fc.

**Indoor Air Quality:** Temperatures and relative humidity measurements were outside the acceptable range in most of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility. Those areas with window air conditioning units were within acceptable ranges. Indoor levels of CO<sub>2</sub> ranged from 303 to 436 parts per million (ppm) and outdoor CO<sub>2</sub> levels were approximately 310 ppm during the monitored period. CO<sub>2</sub> measurements were below the guideline in all areas, indicating adequate fresh air exchange. Indoor levels of CO ranged from 0 to 0.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

# 1 Introduction

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Massachusetts Army National Guard (MA ARNG) Readiness Center located at 1089 Dwelly Street, Fall River, MA, 02724-3199. Non-Responsive performed the evaluation on August 17, 2010. The point of contact for the facility was Sergeant First Class Non-Responsive. The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities.

The Fall River Readiness Center is staffed with 3 administrative personnel. The operations conducted at the facility include supply and administrative duties. A diagram of the building layout is provided in Appendix A. All sampling sheets and laboratory certificates of analysis are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. Indoor air quality and lighting survey measurement log sheets are provided in Appendix D. Lists of all references used during the evaluation are included in the main body of the report.

# 2 Evaluation Methods

The industrial hygiene survey of the Fall River Readiness Center consisted of visual inspections, interviews with employees, and sampling plan development in order to achieve the following: (1) evaluations of operations including operation description, sampling for lead in air or on surfaces if appropriate, ventilation system evaluations, noise measurements if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) a building layout and photographic documentation of the interior of the facility.

The National Guard Bureau (NGB) Region North IH Office provided all industrial hygiene equipment for air sampling (equipment and media), ventilation, lighting, noise and IAQ survey instruments and paid for laboratory analytical fees. Laboratories were chosen or approved by the NGB IH office.

# 3 Operations

Operations conducted at the Fall River facility consists exclusively of supply and administrative duties. No maintenance of vehicles, painting of equipment or other physical tasks are performed at the facility. Ground maintenance and upkeep of the building are the responsibility of the state employed Armorer and not part of the duties of National Guard personnel.

# 4 Noise Hazards

No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

# 5 Hazard Controls

# **Ventilation Systems**

Heat is supplied to the facility through a boiler located in the boiler room and overhead heaters in the drill hall. The boiler certificate for the Fall River facility is expired and is not up to date. Any air conditioning provided to the building is through window air conditioning units. No local ventilation systems were present at the facility.

# 6 Physical Condition of the Facility and Personnel Concerns

An evaluation of the physical condition of the facility and personnel concerns was performed including visual inspections for water damage or mold problems; potential ergonomic problems; and housekeeping practices. Lighting and indoor air quality measurements were taken in all areas of the facility as well.

# Lead in Air Samples

Lead in air samples to determine if any airborne contamination of lead existed in the facility were not collected at the Fall River Readiness Center due to sample pump malfunction.

# Paint Chip and Dust Wipe Samples for Lead Contamination

A visual inspection was performed to determine if there were any areas of peeling paint at the facility that could pose a lead exposure hazard. No areas of peeling or flaking paint were observed.

To determine if any cross contamination of lead from any source into areas of the facility existed, wipe samples were collected using ghost wipes and 10cm x 10cm templates. Wipe samples for surface dust were collected in 19 locations. The Environmental Protection Agency (EPA) and the Commonwealth of Massachusetts limits for lead in dust are 40 microarams per square foot  $(\mu g/ft^2)$  on floors, 250  $\mu g/ft^2$  on window sills, and 400  $\mu g/ft^2$  in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level for adult exposures of 200 µg/ft<sup>2</sup> on floors and frequently contacted surfaces, which is more stringent for window sills than the EPA/State standards. Dust wipe samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Three wipe samples collected from the former firing range were above the National Guard criteria for lead contamination (200 µg/ft<sup>2</sup>). Samples ranged from 2.45 to 125 times the National Guard criteria. Lead was identified in samples collected from the overhead heater vent, the bullet trap, and on the floor of the range. The history of the indoor firing range was not known to current employees at the Readiness Center. It appeared not to have been converted in accordance with NG PAM 420-15 and it was being used for storage. Results are given in Table 1 and certificates of analysis are included in Appendix B.

Wipe Sample #	Fall River Readiness Center on August 17 Sample Location	Result (µg/ft²)*			
FAL-PB-01	Drill Hall, Ceremonial Artillery	<110			
FAL-PB-02	Drill Hall, Middle of Floor	<110			
FAL-PB-03	FAL-PB-03 Drill Hall, From Bench Top				
FAL-PB-04	Kitchen, From Prep Table	<110			
FAL-PB-05 SFC Non-Responsive Office, From Supply Grill on Radiator		<110			
FAL-PB-06	Old Firing Range, From Overhead Heater	25,000			
FAL-PB-07	Old Firing Range, Bullet Trap	840			
FAL-PB-08 Old Firing Range, Light Fixture		<110			
FAL-PB-09	Old Firing Range, Stored Equipment	<110			
FAL-PB-10	Old Firing Range, Middle of Floor	490			
FAL-PB-11	Drill hall, Immediately Outside Old Firing Range on Floor	<110			
FAL-PB-12	Office (1), From Desktop	<110			
FAL-PB-13	Copy Room, From Top of Cabinet	<110			
FAL-PB-14	Storage Room (14), From Top of Footlocker	<110			
FAL-PB-15	Office (24), From Top of Cabinet	<110			
FAL-PB-16	Entry, Middle of Main Door on Floor	<110			
FAL-PB-17	Mess Hall, From Table	<110			
FAL-PB-18	Office (22), Window Sill	<110			
FAL-PB-19	Supply Room (5), From Supply Shelf	<110			

# Table 1 – Results of Dust Wipe Sampling for MA ARNG Fall River Readiness Center on August 17, 2010.

\*The US Army CHPPM recommends a maximum level for adult exposures of 200 µg/ft<sup>2</sup> lead on floors

# Visual Inspection for Damaged Asbestos-Containing Materials

A visual inspection was performed to determine if there were any suspect asbestos-containing material and its condition. Damaged TSI pipe insulation was observed in the kitchen and damaged floor tile was located in the gym/band storage area and the drill hall. Three bulk samples were collected and submitted to AMA Analytical Services, Inc. of Lanham, MD 20706 (NIST-NVLAP Accreditation No. 101143-0) for analysis by Polarized Light Microscopy (PLM) using EPA method 600/R-93/116. The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. Submitted samples of the floor tiles were reported as non-asbestos-containing. The submitted sample of TSI pipe insulation resulted in 50% and Trace

amounts of Chrysotile asbestos respectively. Results are given in Table 2 and certificates of analysis are included in Appendix B.

Table 2 – Results of Asbestos Sampling for the MA ARNG RC
Fall River, MA on August 17, 2010.

Bulk Sample #	Sample Location	Result* (% by wt )
FAL-ASB-01	12"x12" Brown Floor Tile, Gym/Former Firing Range	NAD**
FAL-ASB-02	Aircell Pipe Insulation, Kitchen at Damage by Door	50% Chrysotile
FAL-ASB-03	9"x9" Floor Tile and Mastic, Drill Hall	NAD

\*The EPA defines an asbestos-containing material as one percent or more asbestos by visual estimation. \*\*NAD = No asbestos detected.

# Visual Inspection for Water Damage and Mold Growth

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Extensive water damage was observed in the gym/band storage area. The water had loosened and removed floor tile from the area. No visible mold was observed in the space.

# Visual Inspection for Housekeeping Concerns

A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

# Lighting

Illumination levels were measured using a Cal-Light 400L, calibrated on July 30, 2010, and compared to minimum lighting requirements for various facilities and functions based on the following references: American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

A lighting survey was performed in all areas within the readiness center. The evaluation indicated that there are some illumination deficiencies in several offices and the kitchen. The illumination measurements indoors ranged from a low of 10.3 foot candles (fc) to a high of 97 fc. The complete results of the evaluation are presented in Appendix D, including whether the results met minimum requirements for illumination. Additional illumination can be achieved by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, using supplemental task lighting, and opening doors or windows to provide more natural lighting.

# Indoor Air Quality (IAQ)

Indoor air quality measurements (i.e., temperature, relative humidity, carbon dioxide and carbon monoxide) were taken using a TSI Q-Trak Plus Model 8554, factory calibrated in March 2010. Temperature, relative humidity and carbon dioxide (CO<sub>2</sub>) measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Carbon monoxide (CO) concentrations were compared to the ACGIH Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's (EPA's) National Ambient Air Quality Standard (NAAQS) for CO.

Industry guidelines or standards for seasonal temperature and humidity ranges for thermal comfort are established by ASHRAE standard 55-2004. These ranges are presented in Table 3. The U.S. EPA also recommends maintaining relative humidity below 60% and ideally between 30 and 50% to prevent mold growth. Complete results are provided in Appendix G with the lighting survey measurements.

Relative Humidity in Summer and Wintera										
Relative	Winter	Summer								
Humidity	Temperature	Temperature								
30%	68.5°F – 76.0°F	74.0°F – 80°F								
40%	68.5°F – 75.5°F	73.5°F – 79.5°F								
50%	68.5°F – 74.5°F	73.0°F – 79.0°F								
60%	68.0°F – 74.0°F	72.5°F – 78.0°F								

# Table 3 - Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter<sup>a</sup>

<sup>a</sup>adapted from ASHRAE Standard 55-2004

# Temperature and Relative Humidity

Indoor temperature and relative humidity (Rh) measurements in the facility ranged from 74.7 to 79.5° F and 62.4 to 88.5% Rh. Outdoor temperature and humidity measurements were 77.0° F and 80.4% on the day of monitoring. Temperatures and relative humidity measurements were outside the acceptable range in most of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility. Those areas with window air conditioning units were within acceptable ranges.

# Carbon Dioxide (CO<sub>2</sub>) and Carbon Monoxide (CO)

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build up of  $CO_2$  indicates inadequate ventilation. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1 - 2007 as 700 ppm above outdoor concentrations. Indoor levels of  $CO_2$  ranged from 303 to 436 parts per million (ppm) and outdoor  $CO_2$  levels were approximately 310 ppm during the monitored period.  $CO_2$  measurements were below the guideline in all areas, indicating adequate fresh air exchange.

Carbon monoxide is a byproduct of incomplete combustion. Indoor concentrations indicate contamination caused by improperly vented or malfunctioning boilers, furnaces or stoves or from vehicle exhaust entering the building from garages, loading docks, nearby roads or parking lots. The concentration of interest set by ASHRAE standard 62.1-2007 and the National Ambient Air Quality Standards (NAAQS) for carbon monoxide is an 8 hour average of 9 ppm. The ACGIH TLV for CO is 25 ppm. Indoor levels of CO ranged from 0 to 0.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

# 7 Conclusions

The results of the evaluation indicated no concerns with the following at the facility: contamination of clean air sources, peeling potentially lead-based paints, noise hazards, indoor air quality, visible mold, and housekeeping. The results of the evaluation indicated industrial hygiene concerns in the following areas: contamination of lead dust, water intrusion, lighting and the presence of damaged suspect asbestos-containing materials. Overall, Fall River Readiness Center has few industrial hygiene issues, and programs are in place to protect, inform and train employees.

# 8 Limitations

This report has been prepared for the exclusive use of the U.S. Army National Guard (USARNG) and/or their agents. This service has been performed in accordance with generally accepted industrial hygiene and environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations readily visible at the site at the time of our site visit, and upon current industry standards.

By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that my present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

# 9 References

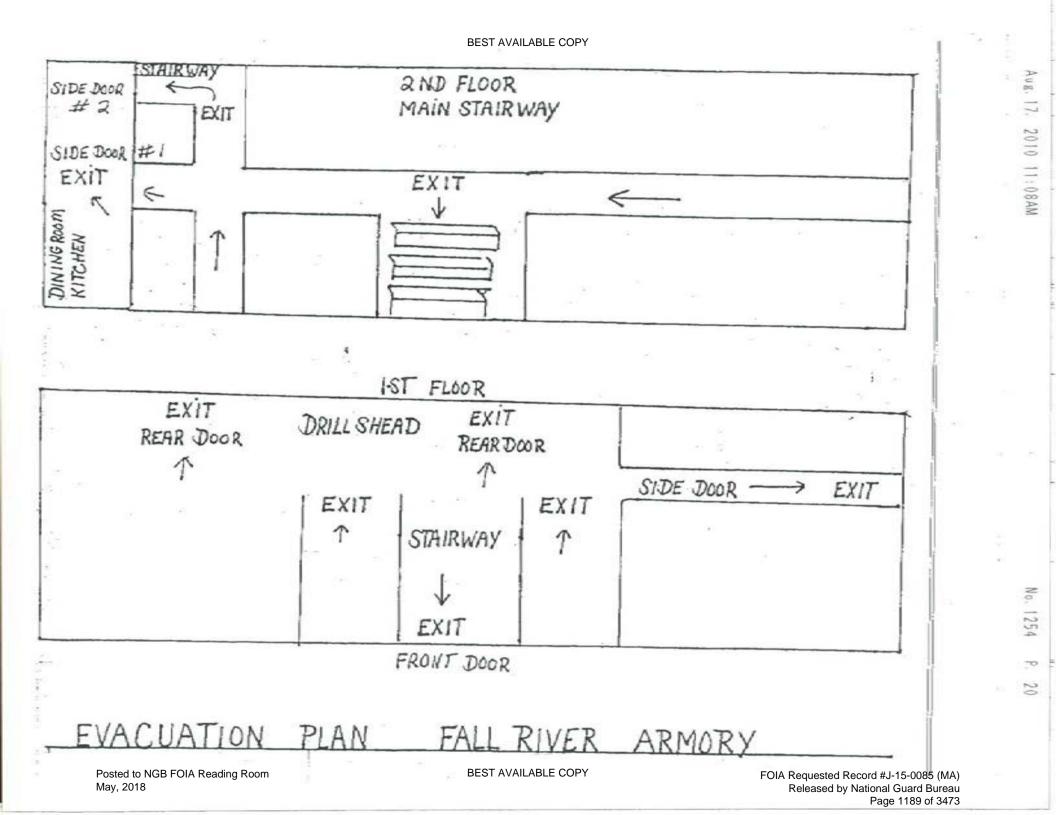
- 1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
- 2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
- 3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
- 4. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, May 25, 2007.
- 5. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
- 6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 15, 1998.
- 7. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
- 8. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
- 9. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
- 10. RP-1-2004 (Office Lighting) and RP-7-2001 (Industrial Lighting), Illuminating Engineering Society of North America (IESNA)/ANSI.

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# Industrial Hygiene Survey Report Massachusetts Army National Guard (MA ARNG) Fall River Readiness Center

- 11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality" and Standard 55-2004, "Thermal Environmental Conditions for Human Occupancy".
- 12. NIOSH website: <a href="http://www.cdc.gov/niosh/">http://www.cdc.gov/niosh/</a>
- 13. OSHA website: <u>http://www.osha.gov/</u>.
- 14. Army CHPPM website: http://chppm-www.apgea.army.mil/.
- 15. EPA website: <u>http://www.epa.gov</u>.

Appendix A Building Layout



Appendix B Certificates of Analysis for Dust Wipe and Bulk Samples

# AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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# CERTIFICATE OF ANALYSIS



Client:	National Guard Bureau	Job Name:	Fall River Readiness Center	Chain Of Custody:	508591	
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Fall River, MA	Date Analyzed:	8/25/2010	
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive	
		P.O. Number:	W912K6-09-0003			
Attention:	Non-Responsive					Page 1 of 1

# Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Asbestos	Mineral Wool Percent	Percent	Sector Contractor Contractor	Synthetic Percent		Sample Color	Homogeneity	Analyst ID	Comments
1071935	FAL-ASB-01	NAD							TR		 100	Multi	Homogeneous	SW	
1071936	FAL-ASB-02	50	50						20		 30	Multi	Homogeneous	SW	
	FAL-ASB-03	NAD	**		(1 <b>9</b> 17) (	.55			TR		 100	Brown	Homogeneous	SW	

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

- 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 1 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.
- 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 2 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.





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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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AMA Analytical Services, Inc. Focused on Results www.amalab.com AIHA (#100470) NVLAP (#101143-0) NY 4475 Forbes Bivd. • Lanham, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (30	n (ELAP(109	-552 13	СНА		0F (		TO	DY			159262 (Please Refer To Thi Number For Inquires			
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#### CERTIFICATE OF ANALYSIS



#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AIHA LAP. LLC

ACCREDITED LABORATORY INCUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Res	ult	Comments
1071916	FAL-PB-01	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071917	FAL-PB-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071918	FAL-PB-03	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071919	FAL-PB-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071920	FAL-PB-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071921	FAL-PB-06	Flame	Wipe	****	0.108	110	ug/ft²	2600	25000	ug/ft²	
1071922	FAL-PB-07	Flame	Wipe	****	0.108	110	ug/ft²	90	840	ug/ft²	
1071923	FAL-PB-08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl <sup>2</sup>	
1071924	FAL-PB-09	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071925	FAL-PB-10	Flame	Wipe	****	0.108	110	ug/ft²	53	490	ug/ft²	
1071926	FAL-PB-11	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
1071927	FAL-PB-12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071928	FAL-PB-13	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
1071929	FAL-PB-14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
1071930	FAL-PB-15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071931	FAL-PB-16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071932	FAL-PB-17	Flame	Wipc	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071933	FAL-PB-18	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1071934	FAL-PB-19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

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		Summary of	Atomic Absorption A	nalysis for Lead			Page 2 of 2
Attention:	Non-Responsive						
		P.O. Number:	W912K6-09-0003	Date Analyzed:	8/25/2010	Report Date:	8/26/2010
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Respons	stve	
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Fall River, MA	Date Submitted:	8/19/2010		10920
Client:	National Guard Bureau	Job Name:	Fall River Readiness Center	Chain Of Custody:	508591	N	<b>NY ELAP</b>

AIHA LAP. LLC

ACCREDITED LABORATOR NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAD **& ENVIRONMENTAL MICROBIOLOGY** ISOIEC 17025-2005

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft <sup>2</sup> )	Reporting Limit	Total ug	Final Result	Comments
Analysis Method F N/A = Not Applicat %Pb = percent lear Note: All samples of Note: All results has should not be cons	d on a dry weight bas vere received in good ve two significant dig idered when interpret	es, Paints, and So ts per million (ppm is ug = microg I condition unless its. Any additiona ing the result.	il/Solids : EPA 6 a) on a dry weight arams ug/L otherwise noted. I digits shown	00/R-93/200(M)-7 basis mg/L = p parts per billion	421; Water: SM-3 parts per million (p	3113B associa	ated with these sa AP accreditation a	nalytical results of qualit ampes. applies only to paint chip	•
Air and Wipe result	s are not corrected for	or any blank result	S		T TOT	Responsi	V C		and the second
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May, 2018

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On NOSH 7402	TEM Air - Please Indicate	Filter Type:					a Asa		'	Q11)					<u>_</u>	Pb Soi	VSolid	(QTY)		
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Image: Sector 1		)	_(QTY	)	ä	Quan. ( Ouan. (	s/area)] s/area)]	Vacuum Dust D6	480-99	o-90		(OTY)	1 Y }		<u> </u>	Waste	Water	QTY) QC	u(QTY) .	As(OTY)
CHEPA Point Countar(QTY)       Clock (preschas)       C(TY)       Collection Apparatus for Spore Trap./Air Samples:(QTY)         D NY State Frishle 198.1       (QTY)       Collection Media       Collection Media       Collection Media         O thank reduction ELAP 198.2 EXPA 100.2       (QTY)       Collection Media       Collection Media       (QTY)         O thank reduction ELAP 198.6       (QTY)       Collection Media       (QTY)       Surface Vacuum Dust(QTY)         I Abestos Sol RNL_(Qust) PLATEM       (Qust) (preschas)       (QTY)       Collection Media       (QTY)         Collection Media       (QTY)       Surface Spore Trap./QTY)       Collection Media       (QTY)         Collection Media       (QTY)       Surface Spore Trap(QTY)       Collection Media       (QTY)         Collection Media       (QTY)       Surface Spore Trap(QTY)       Collection Media       (QTY)         Collection Media       (QTY)       Collection Media       (QTY)       Collection Media       (QTY)         Collection Media       (QTY)       Surface Spore Trap(QTY)       Collection Media       (QTY)       Collection Media       (QTY)         Mather Internation       (Qust) PMEM_(Qust) PMEM_(Qust) PMEM_(Qust) PMEM_(Qust) PMEM_(Qust)       (QTY)       Collection Media       (QTY)       (Qust) PMEM_(Qust) PMEM_(	EPA 600 - Visual F	stimate 3	OTY		TEM V	Vater									u	Pb Fu	nace (	Media)_	(Q1	(Y)
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Instruction       ITEM Water samples	Other (specify			)	12	All sam	ples re-	eived in	n good	conditi	ion unles	s otherw	wiser	noted.		Spore-	Trap_		inface Vacuum Du	st(QTY)
SAMPLE INFORMATION       VOLUME       WIPE       ANALYSIS       MATKIX       CLIENT CONTACT         NUMBER       SAMPLE LOCATION       DATE OUTRESS       AREA       2       3       3       3       4												00004494383	-96363437	0.62517115-2		Surfac	e Tape	(QTY) DCu	Iturable ID Species (M	edia(Q1
CLERNT ID       SAMPLE LOCATION       VOLUME       WIPE       2       2       3       2       3       2       4	Asbestos Soil PLM	.(Quat) PLM_(Quan) PLM/TEL	M_(Q.al)	PLM/TEM	Quan)										0	Other (S	parify_	)(QTY)		
Querter     Strike     X     X       Au-R3 - 02     Date/Time:     Contact:     By:       Au-R3 - 02     Date/Time:     Contact:     By:       Au-R3 - 04     Date/Time:     Contact:     By:       Au-R3 - 05     Date/Time:     Contact:     By:       Au-R3 - 07     Date/Time:     Contact:     By:       Au-R3 - 1/     Date/Time:     Contact:     By:       Au-R3 - 1/     By:     By:     Date/Time:     Contact:       By:     By:     Date/Time:     Contact:     By:				NOLTR	P 11/11	e 1	- 1		YSIS	15	91	1 4		MATR	X Ha	1 44	1 2	/ CL	IENT CONTACT	e.
AL-R3-02       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-02       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-03       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-04       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-03       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-04       AL-R3-02       AL-R3-02       AL-R3-02         AL-R3-01       AL-R3-03       AL-R3-03       AL-R3-03         AL-R3-01       AL-R3-04       AL-R3-04       AL-R3-04         AL-R3-01       AL-R3-01       AL-R3-04       AL-R3-04         AL-R3-01       AL-R3-01       AL-R3-04       AL-R3-04         AL-R3-01       AL-R3-01       AL-R3-04       AL-R3-04         AL-R3-11       AL-R3-11       AL-R3-11       AL-R3-11         AL-R3-12       AL-R3-12       AL-R3-12       AL-R3-12         AL-R3-12       AL-R3-12       AL-R3-12 <td></td> <td>IDENTIFICATION</td> <td>DAT</td> <td>E ALTERS</td> <td>ARE</td> <td>A /</td> <td>ē.</td> <td></td> <td>1/3</td> <td>18</td> <td>15</td> <td>BUI</td> <td>DC</td> <td>1</td> <td><b>B</b>E</td> <td>12</td> <td>1 B</td> <td>(LABOR</td> <td>ATORY STAFF C</td> <td>ONLY)</td>		IDENTIFICATION	DAT	E ALTERS	ARE	A /	ē.		1/3	18	15	BUI	DC	1	<b>B</b> E	12	1 B	(LABOR	ATORY STAFF C	ONLY)
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FAL-AB ~ 65       Date/Time; Contact: By:         FAL-AB ~ 07       FAL-PB ~ 07         FAL-PB ~ 10       FAL-PB ~ 10         FAL-PB ~ 10       FAL ~ 10         FAL ~ 10       FAL ~ 1	FAL-PB-03																12			
A(B-o)c       A(B-o)c         A(B-o)c       A(B-o)c         A(B-o)c       Date/Time:         Contact:       By:         A(B-o)c       By:         B(B-o)c       B(B-o)c         B(B-o)c       B(B-o)c         B(B-o)c       B(B-o)c <td>FAL-A3-UH</td> <td></td> <td></td> <td></td> <td><math>\square</math></td> <td>-</td> <td>_</td> <td></td> <td>11</td> <td></td>	FAL-A3-UH				$\square$	-	_		11											
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U NIOSH 7400(Q	(QTY)		<b>NY</b>	State PI	M/TEM_		(0	TY)				<u> </u>	b Dus	t Wip	e (wipe type	)	(QTY)
M Air - Please Indicate Filter Ty	pe:		TEM Dust	idual As	h	(	(YTY)					<b>U</b> I	b Soil	/Solid	(QTY) (QTY)		
Q AHERA(Q) Q NIOSH 7402	Y) (OTY)		L) Qua		abs) Vacuu							01	5 TCI	P	(QTY)		2 STEEL
U Other (specify		n			a) Vacuum a)Dust D6					Y)			Vaste V	ng wa Water	ler 🗆 Pb(QTY) 🗔 ( 🗆 Pb(QTY) 🗆 Cu		AS(QT)
M Bulk EPA 600 Visual Estimate_	(OTY)		TEM Wate	r	65060/10000A				,		1	u I	b Fur	nave (	Media)_	(QTY	)
C EPA Point Count	_(QTY)			l. (pres/	abs) <u></u> /EPA 100.3	2	(QTY)	(OTV)				ungal.	Analy	sis on Ar	paratus for Spore Traps/	Air Samples:	
NY State Friable 198.1 Grav. Reduction ELAP 198.	(QTY) 5(QTY)	)	O EPA	100.1	CIA IW.	(QT	Y)	.(Q11)				C	ollect	ion M	edia	·	
Other (specify	)(QT)	Y)		samples	received in	good o	ondition	a unless o	therw	ise no	oted.		pore-	Trap_	(QTY) Su (QTY) Col	rface Vacuum Dust,	
SC U Vermiculite					mples			-1919-9910-9910-99		2424294.00		Qs	urface	Tape	(OTY) Clock	urable ID Species (Med	ia
CAsbestos Soil PLM_(Qual) PLM		i) PLM/TEM_(Q	(66)		10000							00	ther (Sp	erify_	_)(QTY)		
	E INFORMATION	VOLUME	WIPE	1	ANAL	YSIS	12	#	31	M	ATRI	× .	LAPE	1 3		ENT CONTACT	
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Appendix C Photo Documentation BEST AVAILABLE COPY

# Falls River RC



#### Drill Hall



Kitchen

Front Entry



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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1199 of 3473

May, 2018

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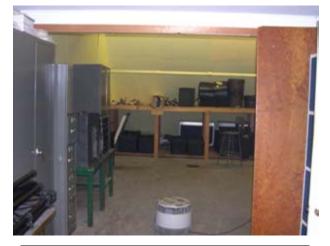
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# Falls River RC



Storage Area, Former Firing Range





Bullet Trap



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Boiler Room FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1200 of 3473

May, 2018

Posted to NGB FOIA Reading Room

Appendix D IAQ and Lighting Survey Log Sheets

State	MA			IAQ			0.0	ty and Ligh				Light		
Date	8/17/2010	Inspector	Non-Responsive	Instrument		ר	rsi (	Q-Trak Plus	Moc	lel 8554		Instrument		CAL-LIGHT 400
Facility Description	Readiness Ctr			Serial Numb	er			8554-0204	101	5		Serial Numbe	ər	K070277
Weather Conditions				Last Calibrat	ion			Mar-1	0			Last Calibrat	ion	30-Jul-10
Location	Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Value (fc)
1	Office			77.2	х	88.5	х	347		0.7		40.6	х	50
2	Office			77.5	х	76.0	х	332		0.4		53.4		50
3	Entry			77.7	х	80.1	х	388		0.3		58.3		10
4	Women's Room			77.2	х	87.5	х	361		0.1		16.8		5
5	Supply Room			77.2	х	85.9	х	326		0.1		28.7		10
6	Boiler Room			77.5	х	87.9	х	346		0.1		40.0		30
7	Storage			77.2	х	82.3	х	326		0.2		59.7		30
8	Gym			77.0	х	86.6	х	337		0.1		59.7		30
9	Men's Room			77.0	х	86.9	х	339		0.0		6.4		5
10	Storage			76.8	x	87.8	х	320		0.1		10.3		10
11	Storage			77.2	х	83.8	х	327		0.0		16.5		10
12	Office/ Storage			77.5	х	82.5	х	395		0.0		63.3		50
13	Storage			77.5	х	80.3	х	315		0.0		57.9		30
14	Storage			77.5	х	79.5	х	360		0.0		34.3		30
15	Storage			77.2	х	84.1	х	334		0.0		13.0		10
16	Storage			77.2	х	80.3	х	322		0.1		11.3		10
17	Copy Room			77.4	х	85.4	х	336		0.0		67.8		50
18	Office			78.3	х	80.1	х	334		0.0		29.3	Х	50
Notes:		Relative 30 40 50 60	nidity	Winter Temp.           68.5°F-76.0°F           68.5°F-75.5°F           68.5°F-74.5°F           68.0°F-74.0°F			ummer Tem 4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0° 2.5°F-78.0°	F F F						

#### National Guard Industrial Hygiene Survey For Indoor Air Quality and Light Level

State	MA		Fall River		vey For Indoor Air Quality and Light Level									
	8/17/2010	Inspector	Non-Responsive	Instrument		Т	SI Q-	-Trak Plus N	/lode	el 8554		Instrument		CAL-LIGHT 400
Facility Description	Readiness Ctr			Serial Num	ber			8554-02041	015	5		Serial Numb	er	K070277
Weather Conditions				Last Calibra				Mar-10				Last Calibra		30-Jul-10
Location	Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Value (fc)
19	Office			78.8	х	69.5	х	358		0.5		31.6	х	50
20	Office			79.0	х	80.0	х	369		0.1		64.4		50
21	Office			79.0	х	77.3	х	326		0.0		97.0		50
22	Office			79.0	х	71.0	х	317		0.0		38.9	x	50
23	Latrine			79.5	х	75.5	х	335		0.0		76.8		5
24	Office			75.2		62.4		342		0.1		57.7		50
25	Office			74.7	х	80.9	х	433		0.2		71.4		50
26	Office			78.6	х	77.7	х	436		0.0		69.1		50
27	Mess Hall			78.8	х	80.4	х	387		0.2		37.1		10
28	Kitchen			78.8	х	79.5	х	352		0.0		41.1	x	50
29	Office			78.8	х	78.5	х	370		0.1		60.3		50
30	Rehersal Room			78.1	х	69.0	х	319		0.2		57.3		50
31	Band Storage			71.2	х	80.7	х	320		0.1		22.9		30
32	Rehersal Hall			77.2	х	80.1	х	303		0.0		52.3		50
33	Storage			77.0	х	68.5	х	327		0.1		28.7		10
34	Drill Hall			77.0	х	80.4	Х	313		0.1		25.6		10-30
Notes:	<u> </u>	<u> </u>	<u> </u>		e Hi 30% 40% 50% 60%	)	68. 68. 68.	nter Temp. 5°F-76.0°F 5°F-75.5°F 5°F-74.5°F 0°F-74.0°F	7 7 7	ummer Tem 4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0° 2.5°F-78.0°	F F F			



#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 1089 DWELLY STREET FALL RIVER, MA 02724

June 17, 2013 PN: 39743799



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#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 1089 DWELLY ST., FALL RIVER, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting	······································	
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards. Several wheeled chairs with four casters were noted.	Ergonomic issues with regard to 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
Former Indoor Firing Range	1	
The former Indoor Firing Range was reported to have been abated however elevated lead levels were detected in dust wipe samples.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Lead		
Six of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Emergency Exits		
Emergency exit signs were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3
Ladder Storage		
Ladders were observed not properly secured and stored in the Assembly Hall.	Ladders not in use must be properly stored in a vertical position fastened to walls. (29 CFR 1910.25 (c)(2)(i)).	RAC 4

Findings	Recommendations	Risk Assessment Code (RAC)
Asbestos	<b>.</b>	
Asbestos-containing pipe insulation and presumed asbestos-containing floor tile and mastic were observed throughout the facility; an Asbestos Operation and Maintenance Program was not available on- Site.	Repair damaged areas of asbestos- containing materials and develop a site-specific asbestos operations and maintenance program for management of asbestos- containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 3
PPE		
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	Conduct a hazard assessment of site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4
Water Intrusion		
Water staining was observed on the ceiling of the first floor vault and in the stairwell in the area of the roof hatch.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio-aerosols in the Indoor Environment).	RAC 4
Fire Extinguishers		
No evidence was found that all fire extinguishers were being inspected on a monthly basis. One fire extinguisher in the Assembly hall was blocked.	All fire extinguishers must be inspected on a monthly basis to determine that they are full and readily accessible. (OSHA 29 CFR 1910.157(e)(2))	RAC 3

#### 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 in Fall River, Massachusetts.

URS representative, Ms. Non-Responsive, conducted the Industrial Hygiene Survey on April 8, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Fall River Readiness Center is a two-story brick building, consisting of offices, classrooms, a supply area, gender separate bathrooms, locker storage rooms, storage rooms, a kitchen, a classroom/mess hall, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: Ladders were observed not properly secured and stored in the Assembly Hall. A folding table was not properly stored overhead in the Assembly Hall. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. Several fire extinguishers without inspection tags were identified in the first floor storage rooms. One fire extinguisher in the Assembly Hall was blocked. Ceiling tiles in the second floor classroom were waterdamaged and falling.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in seven of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities. <u>LEAD</u>: The former Indoor Firing Range was taken out of service and abated approximately three years ago; however elevated lead levels were detected in dust wipe samples at various locations within the Readiness Center.

Seven of ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

On the day of the survey, one paint chip sample was collected from peeling paint and found to contain a level of lead below the HUD criteria for determination of paint as lead-based.

<u>ASBESTOS</u>: Asbestos-containing pipe insulation was identified during this survey. Presumed asbestos-containing floor tiles were noted to be damaged and pulling up at entrances in the Assembly Hall. No Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker. Wheeled chairs with four casters were identified throughout the admin areas.

<u>NOISE</u>: Noise mapping levels in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

#### 2.0 SUPPLY / TRAINING AREA

#### 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, classrooms, a supply area, gender separate bathrooms, locker storage rooms, storage rooms, a kitchen, a classroom/mess hall, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be neat and organized at the time of URS' site visit.

#### 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. Interior carbon dioxide concentrations were found to be between 499 and 623 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 444 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below 1144 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

#### 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured between 0.0 ppm and 0.3 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

#### 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 35.6%, which was within the guideline of less than 65% recommended by ASHRAE.

#### 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 67 °F, which was below the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort. No complaints regarding temperature were received by URS during this survey.

### 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)	
Storage/ Supply Office, desk-	Admin	10.1	50	
Band Storage Room, off Drill Hall	Storage	116.3	30	
Instrument Storage, Office, desk- Non-Responsive	Admin	14.6	50	
2 <sup>nd</sup> Floor, Fmr. Recruiter's Office, desk	Admin	32.1	50	
2 <sup>nd</sup> Floor, Mess Hall, table	Break Room	71.4	10	
2 <sup>nd</sup> Floor, Mess Hall, table	Break Room	133.0	10	
2 <sup>nd</sup> Floor, Classroom, table	Admin	63.9	50	
2 <sup>nd</sup> Floor, Classroom, table	Admin	99.9	50	
2 <sup>nd</sup> Floor, TNG NCO Office, desk	Admin	50.1	50	
2 <sup>nd</sup> Floor, Library/ Server Room, table	Admin	15.1	50	
2 <sup>nd</sup> Floor, Break Room	Break Room	76.3	10	
2 <sup>nd</sup> Floor, 1 <sup>st</sup> Sgt. Office, desk	Admin	78.9	50	
2 <sup>nd</sup> Floor, Office, Desk-	Admin	41.9	50	
2 <sup>nd</sup> Floor, Office, keyboard desk	Admin	86.7	50	
2 <sup>nd</sup> Floor, Office, desk-	Admin	63.0	50	
2 <sup>nd</sup> Floor, Office, desk-	Admin	76.5	50	
1 <sup>st</sup> Floor, Office, desk-	Admin	52.3	50	

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in five of the locations tested throughout the facility.

### 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination in Micrograms/ Square Foot Level (μg/ft <sup>2</sup> )
1 <sup>st</sup> Floor, Band Office off Lobby, floor under window	Fall River RC Wipe-01	0.108	170	200
1 <sup>st</sup> Floor, Men's Latrines, floor behind door	Fall River RC Wipe-02	0.108	240	200
2 <sup>nd</sup> Floor, Mess Hall, floor behind door towards kitchen	Fall River RC Wipe-03	0.108	<110	200
2 <sup>nd</sup> Floor, Break Room, TV Stand, top shelf	Fall River RC Wipe-04	0.108	<110	200
2 <sup>nd</sup> Floor, Latrines, floor behind door	Fall River RC Wipe-05	0.108	<110	200
1 <sup>st</sup> Floor, PT Room, floor at door to former Indoor Firing Range	Fall River RC Wipe-06	0.108	220	200
1 <sup>st</sup> Floor, PT Room, floor behind weights by entrance	Fall River RC Wipe-07	0.108	590	200
1 <sup>st</sup> Floor, Drill Shed, floor along PT Room, corner to Band Storage	Fall River RC Wipe-08	0.108	210	200
Drill Shed, floor along storage/ vaults, under storage container	Fall River RC Wipe-09	<mark>0.108</mark>	240	200
1 <sup>st</sup> Floor, Storage, floor by counter and desk, by entrance	Fall River RC Wipe-10	0.108	520	200

Table 2-2 Levels of Lead Dust Found in the Readiness Center

Six of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62.

One paint chip sample was collected from an area of peeling paint in the PT Room and was analyzed for lead content. The analytical report from AMA is contained in Appendix C.

According to the U.S. Department of Housing and Urban Development (HUD), paint is considered to be lead-based if the quantity of lead is greater than 0.5% by weight. OSHA has not established a minimum percentage of lead to be defined as lead-based paint, therefore paint with lead in any amount above the analytical detection limit is considered to be lead-based under these regulations. The results of URS' lead paint testing are contained in Table 2-3.

Table 2-3 Lead Content in Painted Surfaces

Paint Location	Lead Concentration (Percent Weight)	HUD Lead-Based Quantity (Percent Weight)		
Gray paint, floor, PT Room	0.18	0.5		

On the day of the survey, the paint chip sample was not found to have a lead content above the HUD criteria for determination of paint as lead-based.

#### 2.2.7 Asbestos

URS collected a total of three samples from damaged suspect friable asbestoscontaining material (ACM) in the Readiness Center 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 with dispersion staining (EPA-600/M4-82-020). Table 2-4 below shows the results of the asbestos sampling.

 Table 2-4

 Asbestos Bulk Sample Results – Basement

Sample Location	Sample Description	URS Sample Number	Result Total Asbestos
1 <sup>st</sup> Floor, Vault	Pipe Insulation	Fall River RC PLM-01A	50% Chrysotile 10% Amosite
1 <sup>st</sup> Floor, Vault	Pipe Insulation	Fall River RC PLM-01B	50% Chrysotile 5% Amosite

Sample Location	Sample	URS Sample	Result
	Description	Number	Total Asbestos
1 <sup>st</sup> Floor, Office (Hyde) off lobby	Pipe Insulation	Fall River RC PLM-01C	40% Chrysotile

The EPA states that any material with an asbestos content greater than 1% must be treated as ACM (EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix C.

Presumed asbestos-containing floor tiles and associated mastic were also identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

### 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

### 2.4 Noise Measurements

Noise mapping was conducted throughout the Readiness Center. Area noise mapping results indicated that, on the day of the survey, noise levels throughout the Readiness Center ranged from 56.2 decibels to 61.2 decibels. All noise mapping results were below the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day.

### 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves.

### 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility.

#### 3.2 Hearing Conservation

A written hearing conservation program was identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise mapping results and a review of normal site operations, a hearing conservation program is not required for this site.

#### 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was not identified on site. No operations were observed by URS that would require the use of respiratory protection. If workers are allowed access to the former firing range, a hazard assessment should be conducted to determine whether respiratory protection and other forms of PPE should be required in this area.

#### 3.4 Hazard Communication

A site-specific hazard communication program was identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

#### 3.5 Personal Protective Equipment

A written personal protective equipment program was identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

#### 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site. Since both confirmed and presumed ACM were identified during URS' site visit, a sitespecific operations and maintenance program is required.

#### 3.7 Safety

The former Indoor Firing Range was taken out of service and abated approximately three years ago; however wipe samples detected elevated lead levels in multiple locations within the Readiness Center. Ladders were observed not properly secured and stored in the Assembly Hall. A folding table was not properly stored overhead in the Assembly Hall. Presumed asbestos-containing floor tiles were noted to be damaged and pulling up at entrances in the Assembly Hall. Wheeled chairs with four casters were identified throughout the admin areas. Emergency exit signs were not posted and illuminated throughout the facility. Emergency escape plans were not posted throughout the facility. Several fire extinguishers without inspection tags were identified on the first floor storage rooms. One fire extinguisher in the Assembly Hall was blocked.

#### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

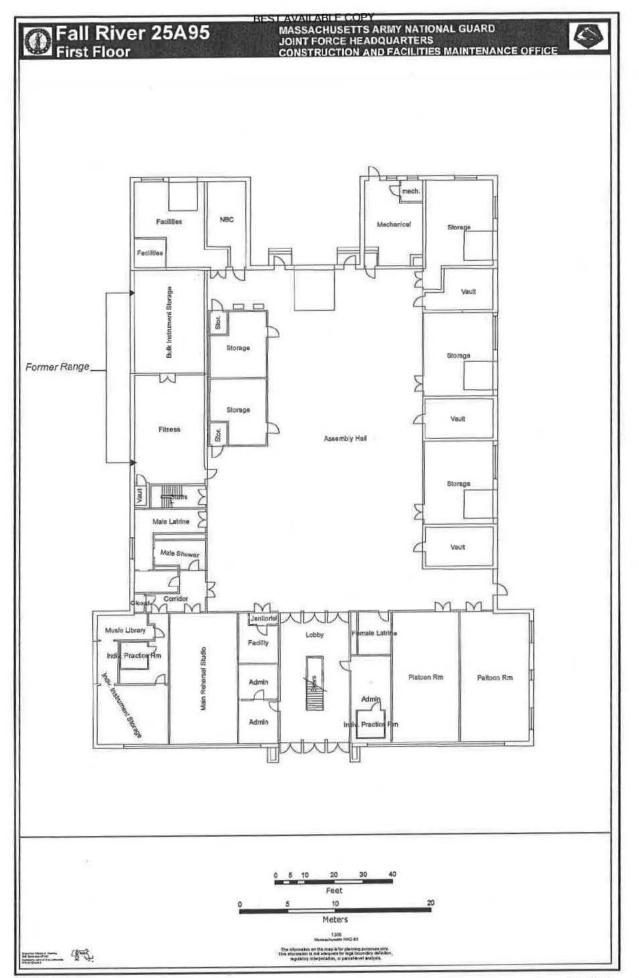
Standard for General Industry: 29 CFR 1910

OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

## APPENDIX A

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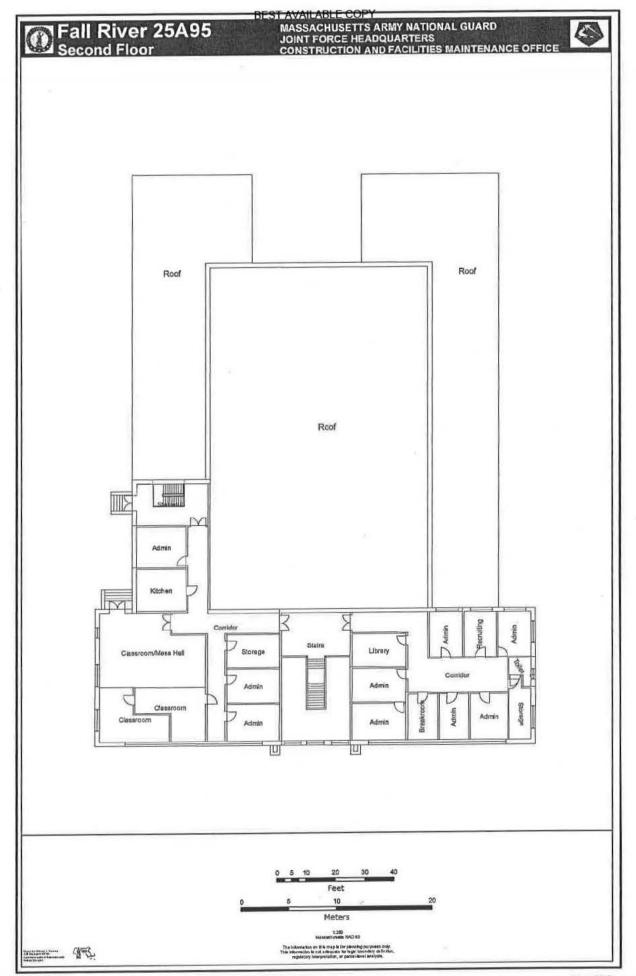
## SHOP DRAWING



NGMA-FMO-PP Posted to NGB FOIA Reading Room May, 2018

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## APPENDIX B

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#### PERSONNEL LIST



REPLY TO ATTENTION OF BEST AVAILABLE COPY DEPARTMENT OF THE ARMY MASSACHUSETTS ARMY NATIONAL GUARD DETACHMENT 1 ALPHA BATTERY, 1<sup>ST</sup> BATTALION, 101<sup>ST</sup> FIELD ARTILLERY 1089 DWELLY STREET FALL RIVER, MA 02724-3119 508-679-5454/508-672-2466

NGMA-FAB-AB

08 April 2013

MEMORANDUM FOR URS 5 Industrial Way, Salem NH 03079

SUBJECT: Memorandum for Record

1. The following Full-Time Massachusetts National Guard Soldiers work at the Fall River Armory:



4. Point-of-Contact is above letterhead, attention: SSG

Unit Training NCO.





SSG, MAARNG Unit Training NCO

215th Band

## APPENDIX C

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#### ANALYTICAL RESULTS

## AMA Analytical Services, Inc.



#### A Specialized Environmental Laboratory

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#### **CERTIFICATE OF ANALYSIS**

ISONEC 17025-2005 LAB #100470 National Guard Bureau Job Name: MA ARNG **Chain Of Custody:** \$15613 Client: 301-IH Old Bay Lane, Attn: ARNG-CJG-P, 1089 Dwelly Street, Fall River, MA Address: Job Location: Date Submitted: 4/17/2013 State Military Reservation Havre de Grace, Maryland 21078 Job Number: Fall River RC **Person Submitting:** P.O. Number: W912K6-09-A-0003 Date Analyzed: 4/23/2013 **Report Date:** 4/23/2013



#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AIHA LAP, LLC ACCREDITED LABORATORY

NOUSTRIAL HYGIENE, ENVIRONMENTAL LEAS **8 ENVIRONMENTAL MICROBIOLOGY** 

AMA Sample Number	Client Sample Analysis Type Sample Type Air Volume Area Wiped Reporting Number (L) (ft²) Limit			Total ug	Final Result		Comments						
13054160	13054160	FallRiverRC Wipe 01	FallRiverRC Wipe 01	Flame	Wipe	****	0.108	110	ug/ft²	18	170	ug/ft²	
13054161	FallRiverRC Wipe 02	Flame	Wipe	***	0.108	110	ug/ft²	26	240	ug/fi²			
13054162	FallRiverRC Wipe 03	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²			
13054163	FallRiverRC Wipe 04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²			
13054164	FallRiverRC Wipe 05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²			
13054165	FallRiverRC Wipe 06	Flame	Wipe	****	0.108	110	ug/ft²	23	220	ug/ft²			
13054166	FallRiverRC Wipe 07	Flame	Wipe	****	0.108	110	ug/ft²	64	590	ug/ft²			
13054167	FallRiverRC Wipe 08	Flame	Wipe	****	0.108	110	ug/ft²	22	210	ug/ft²			
13054168	FallRiverRC Wipe 09	Flame	Wipe	****	0.108	110	ug/ft²	26	240	ug/fl <sup>2</sup>			
13054169	FallRiverRC Wipe 10	Flame	Wipe	****	0.108	110	ug/ft²	56	520	ug/ft²			
13054170	FallRiverRC Wipe FB	Flame	Wipe Blank	****	N/A	12	ug		<12	ug			
13054171	FallRiverRC LBP 01	Flame	Paint Chip	****	N/A	0.0082	%Pb		0.18	%Pb			

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. This report must not be used to claim, and does not imply product certification, approval. or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# AMA Analytical Services, Inc. BEST AVAILABLE COPY A Specialized Environmental Laboratory CERTIFICATE OF ANALYSIS

National Guard Bureau Job Name: MA ARNG Chain Of Custody: 515613 Client: 301-IH Old Bay Lane, Attn: ARNG-CJG-P, 1089 Dwelly Street, Fall River, MA Address: Job Location: Date Submitted: 4/17/2013 State Military Reservation Havre de Grace, Maryland 21078 Job Number: Fall River RC Person Submitting: P.O. Number: W912K6-09-A-0003 Date Analyzed: 4/23/2013 **Report Date:** 4/23/2013 Attention: Summary of Atomic Absorption Analysis for Lead Page 2 of 2 Analysis Type Air Volume Area Wiped **Final Result** AMA Sample **Client Sample** Sample Type Reporting Total ug Comments Limit Number Number (L) (ft2)

 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.

associated with these

samples.

**Technical Manager:** 

See QC Summary for analytical results of quality control samples

AIHA LAP, LLC ACCREDITED LABORATOR

NOUSTRIAL HYGENE, ENVIRONMENTAL LEAL & ENVIRONMENTAL MICROBIOLOGY ISONEC 717025.2005 www.anhanecoreditediate.org LAB #150470

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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#### An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory BEST AVAILABLE COPY

Posted to NGB FOIA Reading Room May, 2018 4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643 Released by National Guard Bureau Page 1227 of 3473

#### BEST AVAILABLE COPY OWI(410) 247-2024 159202 210 REV. 6.08 **AMA Analutical Services, Inc.** Focused on Results www.amalab.com (Please Refer To This 515613 Baselotz ALHA (#100470) NVLAP (#101143-0) NY ELAP (10920) CHAIN OF CUSTODY Number For Inquires) 4475 Forbes Blvd. . Lanham, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643 Submittal Information: Mailing/Billing Information: MA JARNG 1. Job Name: . I. Client Name: National Guard Bureau 2. lob Location: 1089 DWELLY St. FAU KIVO , WUA 2. Address 1: 301-IH Old Bay Lane 3. Job #: Fall River Address 2: Attn: NGB-AVN-SI. State Military Reservation 3. 4. Contact Pers 4. Address 3: Havre de Grace, Maryland 21078. 5. Phone #: (410) 942-0273 Fax #: (410) 942-0254 5. Submitted Reporting Information (Results will be provide PRIMIX . NORMAL BUSINESS HOURS AFTER HOURS (must be pro-scheduled) RT TO: TYS. CON 80 Incl 3 Day S Day + C) Immediate Dimmediate Date Duc: Results Required By Noon Next Day 24 Hours Time Due: (HveryAtterupt Will Be @us.army.mil Date Due: U Fax LI 2 Day Made to Accomodate) Comments: Q Vert aus.army.mi Wester Analysis Asbestos Analysis TEM Balk Po Paint Chip\_\_\_ PCM Air - Please Indicate Filter Type: LI ELAP 198,4/Chatfield (YTO). (OTY) Po Dust Wipe (wipe type 4105t J NIOSH 7400 (YTO) NY State PLM/TEM\_\_\_\_\_ (OTY) \_(QTY) G Fibernlass (YTOL OPb Air\_ U Residual Ash OTY OTY TEM Air - Please Indicate Filter Type: U Pb Soll/Solid (OTY) TEM Dust QAHERA\_ · (OTY) OPh TCLP. (QTY) U Qual. (pres/abs) Vacuum/Dust\_ (OTY) Q NIOSH 7402\_ \_(OTY) Drinking Water Q Pb\_\_\_\_(QTY) Q Cu\_\_\_\_(QTY) Q As\_\_\_\_(QTY) Quan, (s/area) Vacuum D5755-95 \_(QTY) (OTY) U Other (specify\_ Waste Water Q Pb\_\_\_\_(QTY) Q Cu\_\_\_\_(QTY) Q As\_\_\_\_(QTY) Quan (slarea)Dust D6480-99\_ (OTY) PLM Bull. ZHEPA 600 -- Visual Estimate 21 UPb Furnace (Media \_\_\_)\_\_\_\_(QTY) TEM Water (QTY) And Analysis Q Qual. (pres/abs)\_\_\_\_ \_(OTY) DEPA Point Count\_ (QTY) Collection Apparatus for Spore Traps/Air Samples:\_\_ GELAP 198.2/EPA 100.2 QTY) ONY State Friable 198.1\_ (OTY) Collection Media\_ Q EPA 100.1 (YTQ) Gray, Reduction ELAP 198.6 (OTY) Spore-Trap\_\_\_\_(OTY) Surface Vacuum Dust (OTY) (QTY) Other (specify\_ All samples received in good condition unless otherwise noted, Q Surface Swab\_\_\_\_\_ (QTY) Q Culturable ID Genus (Media\_ (OTY) MISC (TEM Water samples \_\_\_\_\_°C) G Surface Tope\_\_\_\_ (QTY) Culturable ID Species (Media (OTY) O Vermiculite Other (Specify\_\_\_\_)\_\_\_(QTY) C Asbestos Soil PLM\_(Quali PLM\_(Quan) PLM/TEM\_(Quali PLM/TEM\_(Quan) SAMPLE INFURMATION ANALYSIS CLIENT CONTACT 2 | s | 170 VOLUME WIPE CAD Sac CLIENTID SAMPLE LOCATION/ (LABORATORY STAFF ONLY) AREA NUMBER **IDENTIFICATION** DATE (LITERS) 418/15 10xpri FAILRINGYKCUNAG MMM Date/Time: Contact: By: FILL REPORT DIA APIRCUMP-X Date/Time; Contact: By: siver aciusto a maintenance FAILPARY RC II De 1 RC IU D2-1 Date/Time: Contact: By: X X field blank MM-OF TS ARWAD Respons dus viateril 1. Date/Time RCVD: By (Print): LABORATORY BEST AVAILABLE COPY 2. Date/Time Analyzed Posted to NGB POIA Reading Roomits Reported To FOIA Requested Record #J-15 1085 (MA) Date: - Fieldased by National Guard Bureau May, 20((SUSTODY) 487 4. Comments: Page 1228 of 3473

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AMAR Analytical Services, Inc. Focused on Results www.umalab.com AIHA (#100470) NVLAP (#101143-0) NY ELA 4475 Forbes Blvd. • Lanham, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (301) 45		CHAI	N OI	F CUS	TOD	Y		Please Refer To Th Number For Inquire	<sup>is</sup> 5150	013 1920f
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# AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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# CERTIFICATE OF ANALYSIS



Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody;	515613	
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1089 Dwelly Street, Fall River, MA	Date Analyzed:	4/24/2013	
	Havre de Grace, Maryland 21078	Job Number:	Fall River RC	Person Submitting:	Non-Responsive	
		P.O. Number:	W912K6-09-A-0003			
Attention:	Non-Responsive					Page 1 of 2
		Summary	of Polarized Light Microscopy			

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Asbestos	Percent	Organic Percent	1.033	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13054172	FallRiverRC PLM 01A	60	50	10			 			 40	Pipe wrap	Off-White	Homogeneous	PC	
13054173	FallRiverRC PLM 01B	55	50	5			 144	5		 40	Pipe wrap	Off-White	Homogeneous	PC	
13054174	FallRiverRC PLM 01C	40	40				 	25		 35	Pipe wrap	Off-White	Homogeneous	PC	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# **CERTIFICATE OF ANALYSIS**



Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P,	Job Location:	1089 Dwelly Street, Fall River, MA	Date Analyzed:	4/24/2013	
	State Military Reservation	Job Number:	Fall River RC	Person Submitting:	Non-Responsive	
	Havre de Grace, Maryland 21078	Job Number:	Fail River RC	rerson Submitting:		
		P.O. Number:	W912K6-09-A-0003			
Attention:	Non-Responsive					Page 2 of 2
		Summary	of Polarized Light Microscopy			

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

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.</p>

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** 

1-Responsive



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 AllERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

#### NVLAP (101143-0) Accredited Laboratory

Posted to NGB FOIA Reading Room May, 2018 4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643 Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1231 of 3473

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AMA Analytical Services, Inc. Focused on Results www.amalab.com AIHA (#100470) NVLAP (#101143-0) NY EJ 4475 Forbes Blvd. • Lauham, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (301)		CHA	10030100000000							0.539	lease Refer To This unber For Inquires)		1920
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# APPENDIX D

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# PHOTOGRAPHIC LOG



# PHOTOGRAPHIC LOG

<b>Client Name:</b>		Site Location:	Project No.
MA ARNG- Fa	all River RC	1089 Dwelly St., Fall River, MA	39743799
Photo No. 1	<b>Date:</b> 4/8/13		
Description:			
Damaged ceil second floor c	ing tiles in lassroom.		

Photo No. 2	<b>Date:</b> 4/8/13	
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# PHOTOGRAPHIC LOG

Client Name:		Site Location:	Project No.
MA ARNG- Fa	all River RC	1089 Dwelly St., Fall River, MA	39743799
Photo No. 3	<b>Date:</b> 4/8/13		
Description:		a set of the second	
Evidence of w intrusion in 1 <sup>st</sup>	ater floor vault.		
		- and the addition	France

# Photo No. Date: 4 4/8/13 Description: Damaged presumed asbestos-containing floor tiles at Assembly Hall entrance.

P:Project\National Guard Bureau\39743798 IH Services ME & MA\39743799 - MA Sites\Reports\Fall River RC\Fall River RC Photo Log docx Room BEST AVAILABLE COPY FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1236 of 3473

# APPENDIX E

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# **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

# **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 AGAWAM ARMORY 140 MAYNARD STREET FEEDING HILLS, MASSACHUSETTS 01030



Office Manager

## October 2005 PN: 39741508

URS Corporation 5 Industrial Way Salem, NH 03079-2830 Tel: 603.893.0616 Fax: 603.893.6240 Posted to NGB FOIA Reading Room May, 2018 Non-Responsive

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- Appendix C HAZARDOUS MATERIALS LIST
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- Appendix E TRAINING CERTIFICATES
- Appendix F PHOTOGRAPHS
- Appendix G RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

# **FINDINGS AND RECOMENDATIONS**

Findings	Recommendation	Risk		
		Assessment		
Lighting		Code		
On the day of the survey, the	Increase lighting through task	Contract of the second		
illuminance in the Commander's	lighting (ANSI / IESNA RP-1-04)	<b></b>		
Office and Storage (Former	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	RAC 4		
Firing Range).				
Lead and solution of sense as		C State of the second		
Lead was detected in wipe	Personnel trained in accordance			
samples in amounts greater	with the OSHA Lead Standard			
than 200 μg/ft <sup>2</sup>	should clean the former indoor firing			
	range where lead was detected in	RAC 4		
	quantities of greater than 200			
	micrograms per square foot (OSHA			
	29 CFR 1910.1025(h)(1))			
Asbestos	· · · · · · · · · · · · · · · · · · ·	也是形式建筑。确定		
Damaged asbestos containing	Repair or remove asbestos-			
pipe and breeching insulation is	containing floor tile and tank			
present	insulation. Work should be	RAC 3		
	completed by personnel trained in	10.00		
	accordance with federal regulations			
	(OSHA 29 CFR 1910.1001(k)(1))			
No site specific asbestos	Develop a site specific asbestos			
operations and maintenance	operations and maintenance plan to	<b>D</b> 100		
plan available.	manage asbestos-containing	RAC 3		
	materials (OSHA 29 CFR			
	1910.1001(j))	a kata hara adalar		
Hazard Communication	Develop a site specific bazard	2084250000000000000000000000000000000000		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage			
communication plan available.	hazardous materials and to educate	RAC 4		
	employees (OSHA 29 CFR	FVAC 4		
	1910.1200(e))			
Electrical Safety		Revent en en el		
Exposed electrical outlet was	Cover live electrical outlets with	the Alley of the Chapter State of		
observed in the Former Firing	approved outlet cover (OSHA 29	RAC 2		
range	CFR1910.305(b)(2))			
Water damage was observed on	Determine and repair source of			
the ceiling in the men's room.	water. Replace water damaged			
Mold growth could become an	building materials and implement a			
issue if left unattended.	moisture management program to	RAC 4		
	provide direction for future water			
	incursions (Best management			
	practice)			

# 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 Agawam Armory located at 140 Maynard Street in Feeding Hills, Massachusetts. 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 February 10, 2004, Mr Non-Responsive an industrial hygienist with URS, conducted a site visit to the Agawam Armory in Feeding Hills, Massachusetts 01030. 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 Commonwealth of Massachusetts National Guard 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.

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# 2.0 ADMINISTRATIVE AREA

# 2.1 Operation Description

The Administrative areas include offices, classrooms, the kitchen and hallways. Housekeeping was orderly. The floor was covered with presumed asbestos-containing floor tiles that were in good condition.

Water damage on the ceiling of the Men's Room (Photo # 0013) may indicate the potential for mold growth.

Damaged asbestos-containing pipe insulation was observed outside of Boiler Room "A".

# 2.2 Chemical and Physical Agents Sampled

# 2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551) directreading instrument. Relative humidity on the day of the survey averaged 19.9 %. This average reading was below the recommended range of 30.0% to 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 55-2004).

# 2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Armory. Carbon dioxide concentrations averaged 532 parts per million (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 700 ppm above background level. Since the average interior reading was recorded at 532 ppm an outside reading was not collected.

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URS

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# 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide levels remained at 0.1 ppm throughout the survey period. The measured level was below the ASHRAE guideline for indoor environments (62.1-2004). 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 (62.1-2004) 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 2-1

 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Minimum Illuminance (lux / foot candles)
Classroom 1	Administrative Duties	916 / 85.1	500 / 50
Commander's Office	Administrative Duties	394 / 36.6	500 / 50

On the day of the survey the illuminance in the Commander's Office was inadequate.

# 2.2.5 Lead

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

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Sample Location	URS <sup>i</sup> Sample Number	Area Wiped (ff)	(µg/ft²)	Maximum Recommended Surface Contamination Level (µg/ft <sup>2</sup> )
Commander's Office	0210-15	1.000	<12	200
Classroom 2	0210-16	1.000	12	200
Blank	0210-09	N/A	<12	200

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

One paint chip was collected in the Men's Room 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 2-4 below shows the results of the lead paint testing.

# Table 2-4 Level of Lead in Paint Found in the Men's Room

Sample Location	URS Sample	Reporting Limit	Final Result
	Number	(% by Weight)	(% by Weight)
Men's Room Ceiling	0210-20	0.01	0.01

The analytical report from AMA is contained in Appendix D.

# 2.2.6 Asbestos

One bulk sample was collected from damaged suspect asbestos-containing pipe insulation located in the hall in front of Boiler Room "A" (Photo # 0010) 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 2-5 below presents the results of the sample analysis.

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# Table 2-5 Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Hal in Front of Boiler Room "A"	Pipe insulation	0210-18A	15 (chrysotile)
Hal in Front of Boiler Room "A"	Pipe insulation	0210-18B	15 (chrysotile)
Hal in Front of Boiler Room "A"	Pipe insulation	0210-18C	15 (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. Non-Responsives 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

<u>LIGHTING</u>: On the day of the survey, the illuminance in the Commander's Office was inadequate. URS recommends increasing lighting through use of task lights.

<u>ASBESTOS:</u> Damaged asbestos-containing pipe insulation was observed in the hallway in front of Boiler Room "A". This material should be either repaired or removed by a Commonwealth of Massachusetts licensed Asbestos Abatement Contractor.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

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# 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. An electrical outlet was observed in the Former Firing Range without a cover.

# 3.2 Chemical and Physical Agents Sampled

# 3.2.1 Lighting

Lighting in the Former Firing Range was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 3-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting)

 Table 3-1

 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Minimum Illuminance (lux / foot candles)
Former Firing Range Center	Storage	17 / 1.6	100 / 10

The lighting in the storage area (Former Firing Range) was inadequate.

# 3.2.2 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 3-2 below shows the results of the lead sampling.

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Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result. (µg/ft²)	Maximum Recommended Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range –	0210-04	1,00	280	200
Impact Area (floor)				
Former Firing Range -	0210-05	1.00	220	200
Center (Floor)				
Former Firing Range -	0210-12	1.00	210	200
Impact Area (locker)				
Former Firing Range -	0210-13	1.00	47	200
Center (locker)				
Former Firing Range -	0210-14	1.00	210	200
East (locker)				
Blank	0210-09	N/A	<12	200

# Table 3-2 Levels of Lead Dust Found in the Former Firing Range

One paint chip was collected in the Former Firing Range 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 3-3 below shows the results of the lead paint testing.

# Table 3-3 Level of Lead in Paint Found in the Former Firing Range

Sample Location	URS Sample Number		Final Result (% by Weight)
Former Firing Range	0210-21	0.01	0 02

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

LIGHTING: On the day of the survey lighting in the storage area was inadequate and should be increased.

<u>LEAD</u>: Four of the five surface wipe samples collected in the former firing range were found to contain lead dust levels above the maximum limit set by the National Guard Bureau (See Appendix F). URS recommends that this area be cleaned by properly trained technicians. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

<u>ELECTRICAL</u>: An electrical outlet was observed in the Former Firing Range without a cover.

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# 4.0 DRILL HALL

# 4.1 Operation Description

The drill hall is used for assembling personnel and storing equipment. The walls are constructed of cinder-block with a concrete floor.

# 4.2 Chemical and Physical Agents Sampled

# 4.2.1 Lighting

Lighting in the drill hall was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 4-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting)

Table 4-1 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Minimum Illuminance (lux / foot candles)
Drill Floor - Center	Assembly	394 / 36.6	100 / 10

# 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.

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URS

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Sample Location	URS Sample Number	Area Wiped (ff²)	¦Result <sup>i</sup> (µg/ft <sup>2</sup> )	Maximum Recommended Surface Contamination Level (µg/ff?)
Drill Floor - Northwest	0210-04	1.00	38	200
Drill Floor Center	0210-05	1.00	50	200
Drill Floor Southeast	0210-06	1.00	<12	200
Drill Floor – North	0210-10	1.00	74	200
Drill Floor - Southwest	0210-11	1.00	45	200
Blank	0210-09	N/A	<12	200

# Table 4-1 Levels of Lead Dust Found in the Drill Hall

# 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

LIGHTING: On the day of the survey lighting was adequate in the Drill Half.

URS 10

# 5.0 BOILER ROOM

# 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

# 5.2 Chemical and Physical Agents Sampled

# 5.2.1 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing breeching insulation (Photo # 0011) 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.

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room "A"	Breeching Insulation	0210-19A	60 (chrysotile)
Boiler Room "A"	Breeching Insulation	0210-19B	60 (chrysotile)
Boiler Room "A"	Breeching Insulation	0210-19C	60 (chrysotile)

Table 5-1 Sample Results of Suspect ACM

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.

# 5.3 Ventilation System Evaluation

Not applicable to this operation.

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# 5.4 Noise Measurements

Not applicable to this operation.

# 5.5 Personal Protective Equipment

Not applicable to this operation.

# 5.6 Interpretation of Results

<u>ASBESTOS:</u> Samples of the breeching insulation where found to contain asbestos in a concentration greater than one percent. The breeching insulation had some damaged sections. It is recommended that the insulation be removed of repaired by a licensed Commonwealth of Massachusetts Asbestos Abatement Contractor.

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# 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

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

# 6.3 Respiratory Protection

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

# 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

# 6.5 Personal Protective Equipment

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

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# 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 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

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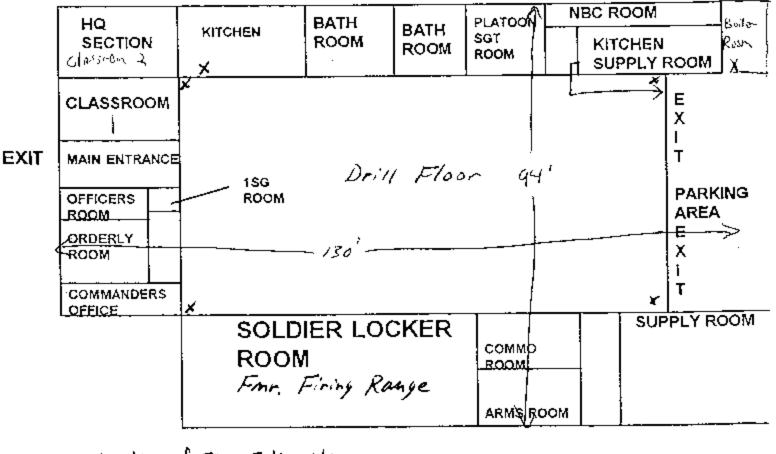
SHOP DRAWING

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Agawam Armony

# LAY OUT OF ARMORY

10.14



X - Location of Fire Estinguishers

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PERSONNEL LIST

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# APPENDIX C

# HAZARDOUS MATERIALS LIST

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NO CHEMICAL INVENTORY AVAILABLE

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APPENDIX D

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ANALYTICAL RESULTS

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#### AMA Analytical Services, Inc. CERTIFICATE OF ANALYSIS A Specialized Environmental Laboratory 128471 Chain Of Custody: National Guard Bureau Clicut: Date Analyzed: 6/8/2004 301-IH Old Bay Lane, Altn: NGB-AVN-SL .1 Address:

ŝ 0 No.2746

Attention:

State Military Reservation Havre de Grace, Maryland 21078

Job Name:	Аттолу	Chain Of Cus
Jub Location:	Agawam, MA	Date Analyze
Job Number:	Not Provided	Person Submi
P.O. Number:	BPA #W912K6-04-A0002	Report Date:

Person Submitting:

08-Jun-04

Page 1 of 1

NY ELAP AIHA

#### Summary of Atomic Absorption Analysis for Lead

	A Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Valume (L)	Area Wiped (ft <sup>a</sup> )		orting imit		final Res	olt	Comments
	448996	0210-04	Flame	Wipe	****	1.000	12.00	ug/fP		280	ug/ft²	
	448997	0210-05	Flame	Wipe	****	1.000	12.00	ug/ff <sup>2</sup>		220	ug/ft <sup>2</sup>	
D	448998	0210-05	Flame	Wipe		1.000	12.00	ug/ff		38	ug/ft²	
0	4489999	0210-07	Flame	Wipe		1.000	12.00	ug/ftª		50	ught	
5 0	449000	0210-08	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
	449001	0210-09	Flame	Wipe Blank	****	N/A	12.00	ug	<	12	ug	
3 0	449002	0210-20	Flame	Paint Chip	****	N/A	0.01	%РЪ	<	0.01	%P5	
	449003	0210-21	Flame	Paint Chip	****	N/A	0.01	%РЪ		0.02	%Ръ	

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 Soll/Sollds ; EPA 600/R-93/200(M)-7421; Water: SM-3113B

mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

ug = micrograms ug/L = parts per billion (ppb)

. terme: A . For Furnace: . opticable mg/Kg . percent lead by weight . ste: All results have two significant of requested Record #J-1 . eleased by National GL MdIG: E Ph00022 Shote: All results have two significant digits. Any additional digits shown should not be

Analyst

Technical Manager:



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# AMA Analytical Services, Inc.

#### NY ELAP CERTIFICATE OF ANALYSIS A Specialized Environmental Laboratory AIHA 128471 Chain Of Custody: National Guard Bureau Clicot: Job Name: Armory 05/28/2004 301-IH Old Bay Lane, Attn: NGB-AVN-SI, Job Location: Agawam, MA Date Analyzed: Address: State Military Reservation Person Submitting: Not Provided Job Number: Havre de Grace, Maryland 21078 BPA #W912K6-04-A0002 P.O. Number:

Attention:

# Summary of Polarized Light Microscopy

MA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthelic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0449004	0210-18 A	15	15				20	-		<u> 1944</u>	-	65	Gray	СК	
0449005	0210-18 B	15	15		-	**	20			-		65	Gray	CK	
0449006	0210-18 C	15	15		-		25		TR	-		60	Gray	СК	
0449007	0210-19 A	60	60		-	••	••	-		-		40	Gray	СК	
0449008	0210-19 B	60	60			52						40	Gray	CK	
0449009	0210-19 C	60	60							***	3 <del>44</del>	40	Gray	CK	

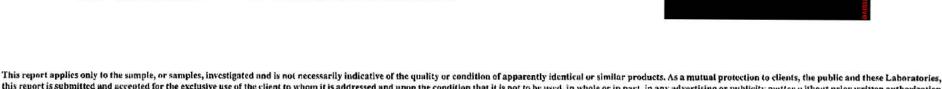
The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

- 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.</p>

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

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





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 uppropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AITERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorscment by NVLAP, NIST, or any agency of the Federal Government.

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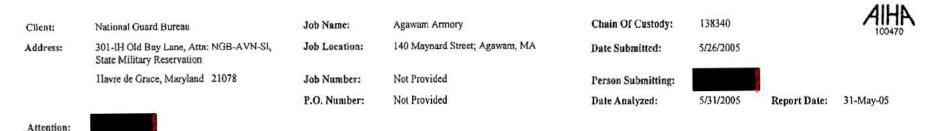
May

# AMA Analytical Services, Inc.



A Specialized Environmental Laboratory

#### CERTIFICATE OF ANALYSIS



Summary of Atomic Absorption Analysis for Lead

Page 1 of 1

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		orting imit	F	inal Res	alt	Comment
0542001	0210-10	Flame	Wipe	++++	1.000	12.00	ug/ft²		74	ug/fl²	
0542002	0210-11	Flame	Wipe	****	1.000	12.00	ug/ft²		45	ug/ft²	
0542003	0210-12	Flame	Wipe	••••	1.000	12.00	ug/ft²		210	ug/fl²	
0542004	0210-13	Flame	Wipe	****	1.000	12.00	ug/ft²		47	ug/fl²	
0542005	0210-14	Flame	Wipe	****	1.000	12.00	ug/ft²		210	ug/ft²	
0542006	0210-15	Flame	Wipe	****	1.000	12.00	ug/fl²	<	12	ug/ft²	
0542007	0210-16	Flame	Wipe	****	1.000	12.00	ug/fl²		12	ug/ft²	
0542008	0210-17	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

ug = micrograms

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.

mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

ug/L = parts per billion (ppb)

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



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N/A = Not Applicable

%Pb = percent lead by weight

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 AIIERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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### APPENDIX E

#### TRAINING CERTIFICATES

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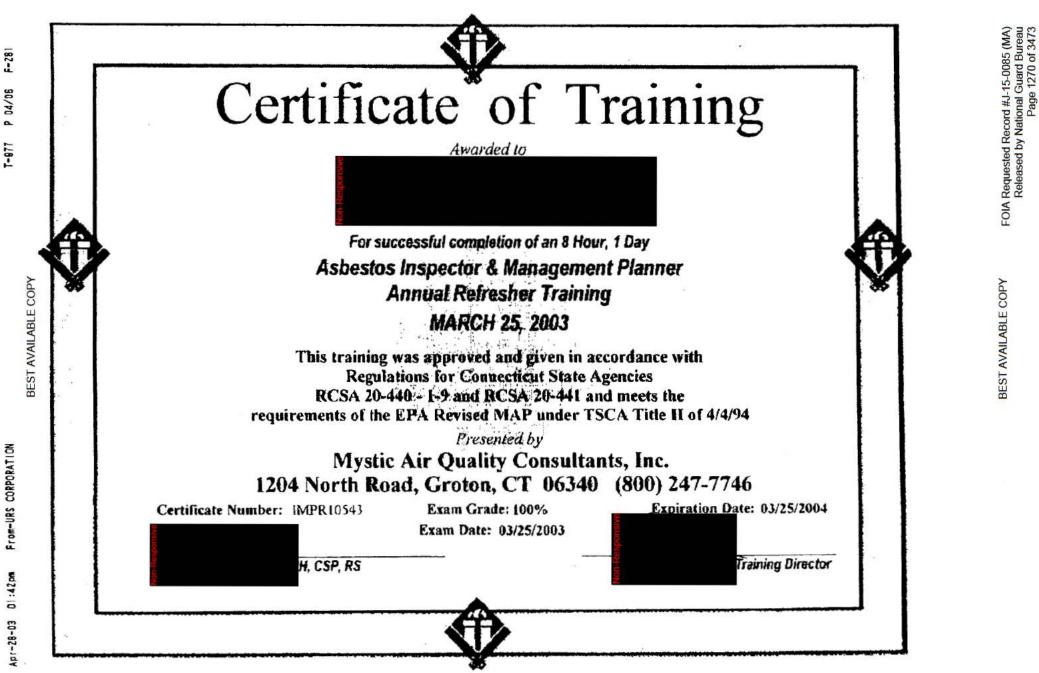
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# Non-Responsive

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APPENDIX F

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**PHOTOGRAPHS** 

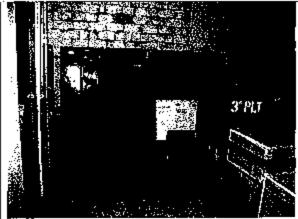


Photo 0001: Former Firing Range – Wipe sample 0210-04 (floor); wipe sample 0210-12 (locker)



Photo 0003: Former Firing Range – Wipe sample 0210-14

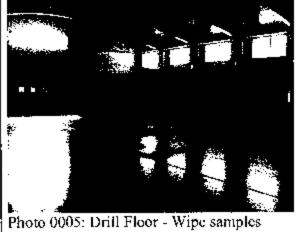


Photo 0005: Drill Floor - Wipe sample 0210-07 and 0210-08



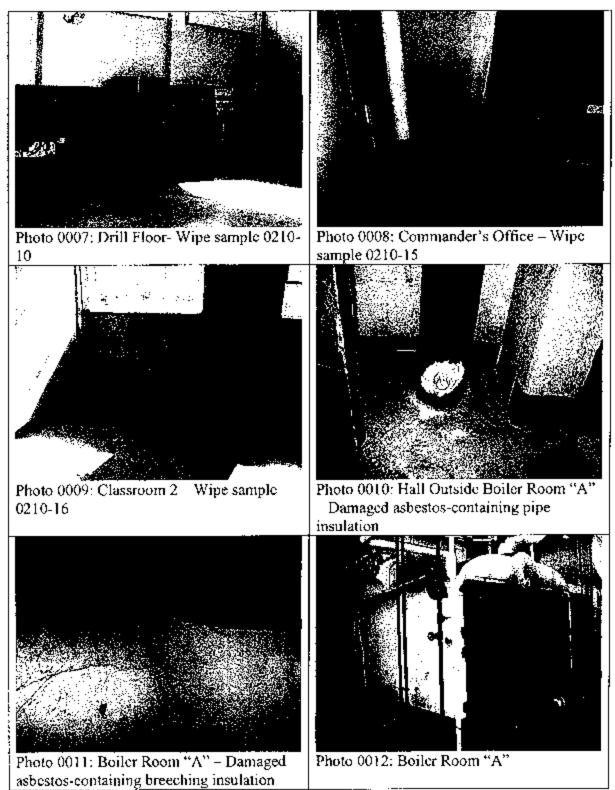
Photo 0002: Former Firing Range - Wipe sample 0210-05 (floor); wipe sample 0210-13 (locker)

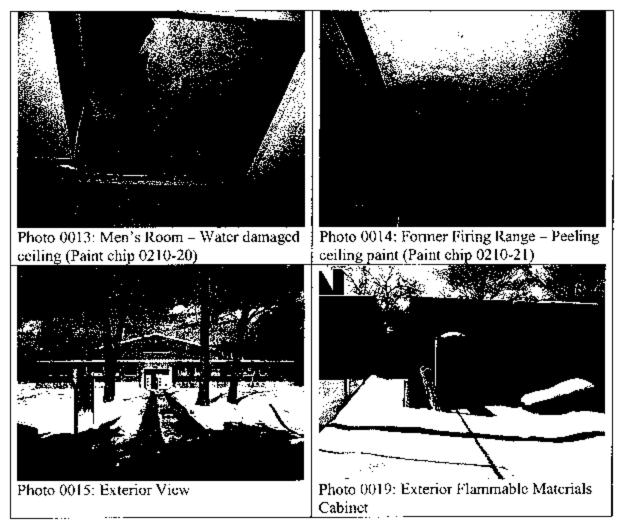


Photo 0004: Drill Floor - Wipe sample 0210-06



Photo 0006: Drill Floor - Wipe sample 0210-11





APPENDIX G

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## RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.



#### 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 MASSACHUSETTS NATIONAL GUARD AGAWAM READINESS CENTER 140 MAYNARD STREET FEEDING HILLS, MA 01030

July 9, 2013 PN: 39743799





Project Manager

Director, Industrial Hygiene Services

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	ARMORIES

#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER AGAWAM, 140 MAYNARD ST., FEEDING HILLS, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting		
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards.	Ergonomic issues with regard to 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
Lead		
One of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
<b>Emergency Action Plans</b>		
Emergency escape routes were not posted throughout the facility.	Facilities must have emergency action plans including emergency escape procedures and route assignments (29 CFR 1910.38 (a)(2)(i)).	RAC 3
Asbestos		
Presumed asbestos-containing floor tiles and associated mastic were observed throughout the facility; an Asbestos Operation and Maintenance Program was not available on-Site.	Develop a site-specific asbestos operations and maintenance program for management of asbestos- containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 4
PPE		
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	Conduct a hazard assessment of site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4

Findings	Recommendations	Risk Assessment Code (RAC)
Relative Humidity		
The average relative humidity level in the Readiness Center was above the recommended range.	Relative humidity levels should be maintained within the comfort range recommended by ASHRAE (55- 2010).	RAC 4
Chemical Storage		
Chemicals/ flammable materials were observed improperly stored and labeled.	Each container of hazardous chemicals in the work place must be labeled with the identity of the chemical and appropriate hazard warnings (29 CFR 1910.1200).	RAC 3

#### 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 in Agawam/Feeding Hills, Massachusetts.

URS representative, Ms. **Non-Responsive**, conducted the Industrial Hygiene Survey on May 24, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise monitoring.

The Agawam Readiness Center is a one-story brick building, consisting of offices, classrooms, a supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: Chemicals/ flammable materials in the Supply Room and administration areas were observed not properly stored in a flammables cabinet. Illuminated emergency exit signs and escape plans were not posted throughout the facility.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities.

<u>LEAD</u>: One of ten wipe samples collected in the Readiness Center was found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office. None of paint chip samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office. <u>ASBESTOS</u>: Presumed asbestos-containing floor tiles and associated mastic were identified during this survey, however no Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and desks were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Area noise monitoring levels in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

#### 2.0 SUPPLY / TRAINING AREA

#### 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, classrooms, a supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range which is currently used for storage.

#### 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. Interior carbon dioxide concentrations were found to be between 429 and 554 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 408 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below 1,108 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

#### 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured to range from 0.1 ppm to 0.6 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

#### 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 70.7%, which was above the guideline of less than 65% recommended by ASHRAE.

#### 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 74.5 °F, which was within the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort.

### 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Classroom, table, adjacent to projection screen	Admin	21.7	50
Kitchen, counter, adjacent to sink and microwave	Break Room	20.0	50
Alpha Company office, desk- 1 <sup>st</sup> Sergeant	Admin	26.3	50
Office, desk	Admin	17.2	50
Office, conference table	Admin	18.8	50
Office, desk, next to clock and printer	Admin	12.6	50
Office, desk, next to printer and windows	Admin	17.1	50
Office, desk, next to windows	Admin	26.1	50
Office, desk-	Admin	17.3	50
Office, desk-	Admin	36.4	50
Office, south desk- vacant	Admin	46.7	50
Training Room, desk, adjacent to cabinet	Admin	29.1	50
Training Room, desk-	Admin	35.0	50
Corridor, adjacent to PT Room	Hall	10.3	5
Corridor, adjacent to Training Room	Hall	12.5	5
Supply Room, desk-	Admin	39.3	50
Assembly Hall, loading area	Hall	20.2	5
Locker Room, middle isle	Storage	55.2	30
Corridor, admin west	Hall	15.2	5
Corridor, admin east	Hall	92.5	5

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in thirteen of the office/administrative locations.

#### 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Office, Non-Responsive cabinet adjacent to door and desk	Agawam RC W-01	0.108	<110	200
Office, window sill adjacent to conference table	Agawam RC W-02	0.10 <mark>8</mark>	<110	200
Office, window sill adjacent to desk	Agawam RC W-03	0.108	<110	200
Women's Latrine, window sill adjacent to toilet	Agawam RC W-04	0.108	<110	200
Training Room, middle, top of cabinet adjacent to door and desk	Agawam RC W-05	0.108	< <mark>11</mark> 0	200
Classroom, east end, corner, floor	Agawam RC W-06	0.108	<110	200
Men's Locker Room, north corner, window sill behind locker	Agawam RC W-07	0.10 <mark>8</mark>	2,700	200
Supply Room, top of cabinet adjacent to loading area	Agawam RC W-08	0.108	<110	200
Assembly Hall, top of cabinet adjacent to storage door	Agawam RC W-09	0.108	<110	200
PT Room, top of cabinet adjacent to doorway	Agawam RC W-10	0.108	<110	200

Table 2-2 Levels of Lead Dust Found in the Readiness Center

One of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62.

No areas of peeling paint were identified for sample collection during this survey.

#### 2.2.7 Asbestos

No damaged, friable suspect material was identified during this survey for sample collection.

Presumed asbestos-containing floor tiles and associated mastic were identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

#### 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

#### 2.4 Noise Measurements

Area noise dosimetry was conducted within the administrative office area. Area exposures were measured using a data-logging Spark 703+ Noise Dosimeter. Area noise dosimetry results indicated that, on the day of the survey, workers were not exposed to noise levels above the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day. Table 2-4 indicates the individual monitored, the tasks performed and noise exposures.

Table 2-4 Noise Dosimetry Data

Location	Task	Sample Duration in Minutes	Monitoring Result TWA (dBA)*	Hearing Protection
Office- Non-Responsive	Administrative	364	64.0	N/A

\* The calculated 8-hour, time-weighted average (TWA) noise exposure in dBA. The OSHA PEL for noise exposure is 90 dBA. DoDI has established an employee exposure level of 85 dBA for requirement of a hearing conservation program.

#### 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves. No personal protective equipment was observed in use on the day of URS' site visit.

#### 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility. A confined space program was identified at the facility.

#### 3.2 Hearing Conservation

A written hearing conservation program was not identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise dosimetry results and a review of normal site operations, a hearing conservation program is not required for this site.

#### 3.3 **Respiratory Protection**

A site-specific written program regarding Respiratory Protection was not identified on site. No operations were observed by URS that would require the use of respiratory protection.

#### 3.4 Hazard Communication

A site-specific hazard communication program was identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

#### 3.5 Personal Protective Equipment

A written personal protective equipment program was identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

#### 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

#### 3.7 Safety

Chemicals/flammable materials in the Supply Room and administrative areas were observed not properly stored in a flammables cabinet. Illuminated emergency exit signs and escape plans were not posted throughout the facility.

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#### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

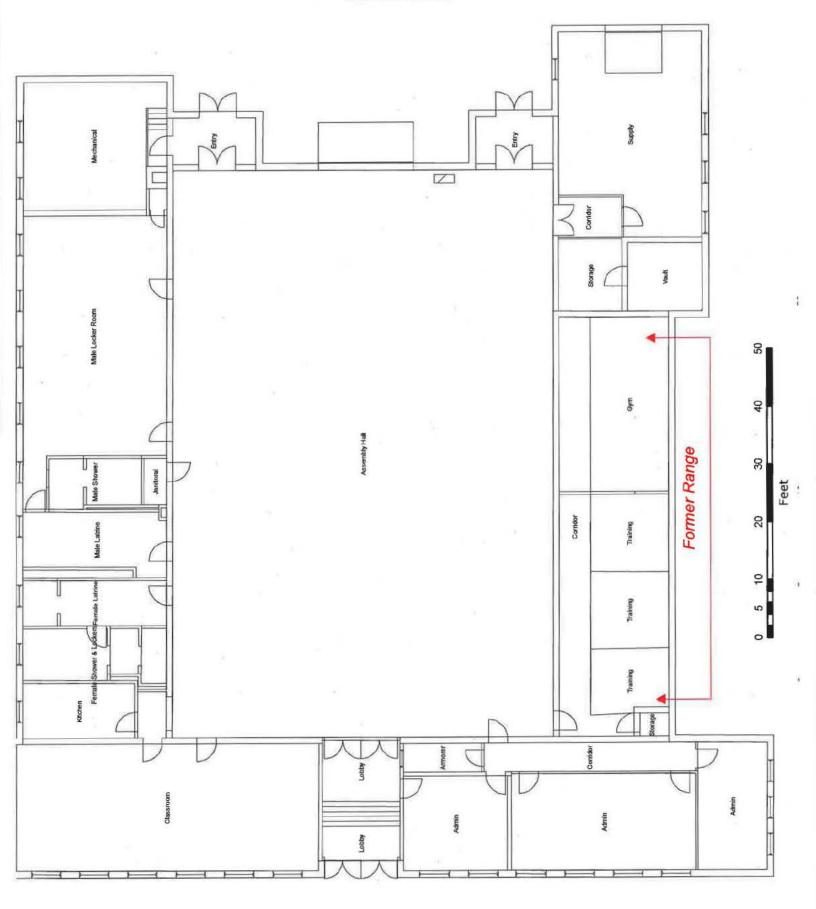
OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

### APPENDIX A

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### SHOP DRAWING

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#### APPENDIX B

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#### PERSONNEL LIST

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Fill time staff

-Responsi



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# Non-Responsive

List of fall time staff

#### APPENDIX C

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#### ANALYTICAL RESULTS

# **AMA Analytical Services, Inc.**

Æ

Attention:

#### A Specialized Environmental Laboratory

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#### **CERTIFICATE OF ANALYSIS**

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISOME 17095-2005 WWW althouscreditediates org

LAS #100470

Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody:	515977
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Agawam RC	Date Submitted:	5/28/2013
	Havre de Grace, Maryland 21078	Job Number:	39743799.00001	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	6/3/2013 Report Date: 6/3/2013

Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number 13065715	Client Sample Number RC Agawam W-01	Analysis Type Flame	Sample Type Wipe	Air Volume (L) ****	Area Wiped (ft²)	20000	oorting Jimit	Total ug	Final Res	Comments	
					0.108	110	ug/ft²	<12	<110	ug/ft²	
13065716	RC Agawam W-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065717	RC Agawam W-03	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065718	RC Agawam W-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065719	RC Agawam W-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065720	RC Agawam W-06	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065721	RC Agawam W-07	Flame	Wipe	****	0.108	110	ug/ft²	290	2700	ug/ft²	
13065722	RC Agawam W-08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/îl²	
13065723	RC Agawam W-09	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065724	RC Agawam W-10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065725	RC Agawam TB-W	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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## APPENDIX D

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## PHOTOGRAPHIC LOG



# PHOTOGRAPHIC LOG

<b>Client Name:</b>		Site Location:	Project No.
MA ARNG- Agawam RC		140 Maynard St., Feeding Hills, MA	39743799
Photo No. 1	<b>Date:</b> 5/24/13		
Description: Former Indoor I currently being storage, with im stored flammab cylinders.	Firing Range, used for properly		

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# PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
MA ARNG- Agawar	n RC 140 Maynard St., Feeding Hills, MA	39743799
Photo No. D	ate: 24/13 and	



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## APPENDIX E

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## **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

#### 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 FRAMINGHAM READINESS CENTER 522 CONCORDSTREET FRAMINGHAM, MASSACHUSETTS

April 2006 PN: 39741508





Posted to NGB FOIA Reading Room May, 2018 **BEST AVAILABLE COPY** 

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- Appendix B Personnel List
- Appendix C Hazardous Materials List
- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories
- 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)

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#### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		NR.
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 👔		1998 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 -
On the day of the survey, the illuminance in the administrative area was inadequate in most of the 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 RP-1-04)	RAC 4
Lead	化微微石罐的化力 化乙基乙基胆石	동네 111년 중 중 문서
Lead was detected in wipe samples collected from the former firing range in amounts greater than 200 $\mu$ g/ft <sup>2</sup>	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		
Splits in the pipe insulation were found throughout the facility.	Repair the exposed asbestos pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
A site-specific asbestos operations and maintenance plan was available.	Implement the site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		
No site specific hazard communication plan was available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Housekeeping		4 <b>1</b> 977
Electrical panels were obstructed by equipment in room #18. Electrical panels must be kept clear of obstruction	Remove all obstructions in front of electrical panels in the drill hall for a minimum of 3 feet (OSHA 29 CFR 1910.303(g)(1)(i)).	RAC 4
Mold		
Water damage was observed throughout. Mold growth could become an issue if left unattended. Employees did complain of respiratory issues	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 3

#### 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 at 522 Concord Street in Framingham, Massachusetts 01702. 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 February 24, 2004, Mr Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Framingham, Massachusetts. 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. Mr. Non-Responsive of the State of Massachusetts was Mr Non-Responsive site contact for this survey.

A 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 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 and armrests were in a fixed position and keyboards could not be adjusted in office #7 (Photo # 3959), office #12 (Photo # 3964) and office #18 (Photo # 3969). If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks and damage on the ceilings of room # 5 (Photo # 3958); office #12 (Photo # 3966); office #18 (Photo # 3968); office #20 (Photo # 3971) and office #21 (Photo # 3972). The major concern was in office #21 where some of the occupants voiced their concerns about the water staining. The occupants stated that they have experienced respiratory problems and eye irritations. They claim that when they leave the site these problems lessen or subside until they return to the site.

An obstructed electrical box was found in office #18 (Photo # 3970).

## 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 11.2 – 15.3% with an average of 12.5%. These readings were below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (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 387 to

454 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.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 425 ppm on the day of the survey, the ASHRAE limit would be 1125 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations ranged from 0 to 2 ppm throughout the survey period for all floor levels. 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).

Location	Function	Measured Illuminance (foot candles)	Recommended Illuminance (foot candles)	
Office # 5	Administrative Duties	26	50	
Office # 6	Administrative Duties	44	50	
Office # 7	Administrative Duties	25	50	
Office # 12	Administrative Duties	26	50	
Office # 13	Administrative Duties	33	50	
Office # 14	Administrative Duties	53	50	
Office # 15	Administrative Duties	34	50	
Office # 17	Administrative Duties	43	50	
Office # 18 – Lobby Side	Administrative Duties	28	50	
Office # 18 – Copier Side	Administrative Duties	39	50	
Office # 18 – Little Office	Administrative Duties	52	50	
Office # 20	Administrative Duties	30	50	
Office # 21 – Desk Near Door	Administrative Duties	34	50	
Office # 21 – Desk Near Windows	Administrative Duties	55	50	
Office # 23	Administrative Duties	40	50	
Office # 24	Administrative Duties	25	50	
Office # 25	Administrative Duties	46	50	
Office # 33	Administrative Duties	18	50	
Haliway # 16	Accessway	39	3	

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

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

#### 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 2-2 below shows the results of the lead sampling.

Samplè Location	URS Sample Number	Area Wipe <b>d</b> (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Admin #11 – Top of Cabinet	0224-LW21	0.111	11	200
Admin #13 – Top of File Cabinet	0224-LW22	0.111	17	200
Admin #18 – Top of File Cabinet	0224-LW23	0.111	10	200
Admin #25 – Top of File Cabinet	0224-LW24	0.111	490	200
Admin # 348 – Floor	0224-LW25	0.111	21	200
Admin #30 – Top of Powerade Machine	0224-LW26	0.111	61	200
Admin #6 – Top of File Cabinet	0224-LW27	<b>Q.11</b> 1	24	200
Blank	0224- LWBlank2	N/A	0.78 μg	N/A

 Table 2-2

 Levels of Lead Dust Found in the Administrative Area

## 2.2.6 Asbestos

ATC Associates of Woburn, Massachusetts conducted an asbestos survey at this facility in May of 2000. Broken asbestos containing 9"x9" floor tile was found in room #13 (Photos # 3961-62), room #14 (Photo # 3960), room #12 (Photo # 3965), room #18 (Photo # 3967), room #21 (Photo # 3972) and room #30 (Photos 3974-75). Splits were found in the asbestos-containing pipe insulation in room #6 (Photo # 3955), room #7 (Photo # 3957) and room #21 (Photo # 3973). A calendar was tacked to the pipe insulation in room #6 (Photo # 3956) which was causing the insulation to be exposed. The window chalking and glazing in room #1 was in poor condition (Photo # 3963).

## 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

GENERAL: In general, the administrative area was neat and orderly.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in most of the offices. URS recommends increasing lighting in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD:</u> Lead was detected in the dust wipe sample collected from Admin #25 in an amount that exceeded the NGB Region North Industrial Hygiene Office recommended maximum of 200 micrograms per square foot (See Appendix G). Personnel trained in accordance with OSHA's lead standard (29 CFR 1910.1025 and 1926.62) should clean this area.

<u>ASBESTOS:</u> The identified damaged asbestos-containing materials should be removed or repaired by a properly trained, licensed technician. The work should be performed in a timely manner to avoid further damage to these materials.

<u>MOLD</u>: The water stains on the ceilings could lead to mold growth if not addressed. Further evaluation should be undertaken in room #21 where the complaints were made concerning respiratory issues.

<u>ELECTRICAL</u>: An obstructed electrical box was observed in office #18. Electrical control boxes should be clear of obstruction.

#### 3.0 FORMER FIRING RANGE

## 3.1 Operation Description

The firing range has been dismantled and is now used as a fitness room.

## 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 Analytical Services, Inc. (AMA) is contained in Appendix D. Table 3-1 below contains the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Surface Contamination Level (μg/ft <sup>2</sup> )
Firing Range-Floor – Rear	0224-LW16	0.111	2,200	200
Firing Range-Floor – Center	0224-LW17	0.111	620	200
Firing Range-Floor – Front	0224-LW18	0.111	310	200
Firing Range-Top of Light Guard	0224-LW19	0.111	60	20 <b>0</b>
Firing Range-Top of a Table	0224-LW20	0.111	160	200
Blank	0224- LWBlank2	N/A	0.78 μg	N/A

 Table 3-1

 Levels of Lead Dust Found in the Former Firing Range

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/m <sup>3</sup> )	OSHA's PEL(µg/m³)
Former Firing Range	0224-LA05	724	<4.1	50.0
Blank	0224-LA06	N/A	<3.0 μg	N/A

April 12, 2006 PN: 39741509 I. J. Aviry National Guard 397/1508 - Francingham, MARReports MASS Frankryson Avirony - Reviewed Final add On the day of the survey, the airborne lead dust level 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<sup>3</sup> 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

<u>LEAD</u>: Three of the five surface wipe samples collected within the former firing range were found to contain lead dust levels which exceed the maximum limit set by the National Guard Bureau Region North Industrial Hygiene Office (See Appendix G). URS recommends that an appropriately licensed lead contractor clean the former firing range. Appendix H contains guidelines for the cleanup and rehabilitation of indoor firing ranges.

#### 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is a 7,000 square foot area used for assembling personnel and storing equipment. 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	: Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall – Top of a Flammable Storage Cabinet #1	0224-LW11	0.111	46	200
Drill Hall – Top of a Flammable Storage Cabinet #2	0224-LW12	0.111	63	200
Drill Hall – Floor – Rear	0224-LW13	0.111	49	200
Drill Hall – Floor – Center	0224-LW14	0.111	34	200
Drill Hall – Floor – Front	0224-LW15	0.111	29	200
Blank	0224- LWBlank2	N/A	0.78 µg	N/A

Table 4-1 Levels of Lead Dust Found in the Drill Hall

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

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#### Table 4-2 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(μg/m³)
Drill Hall	0224-LA04	764	<3.9	50.0
Blank	0224-LA06	N/A	<3.0 μg	N/A

On the day of the survey, the airborne fead 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  $\mu$ g/m<sup>3</sup> 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

<u>LEAD:</u> The five surface wipe samples and one air sample collected for lead dust in this area were found to be within the allowable limits and require no further testing at this time. The NGB Region North Industrial Hygiene Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

## 5.0 BOILER ROOM / BASEMENT AREA

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

#### 5.2 Chemical and Physical Agents Sampled

#### 5.2.1 Lead

No issues regarding lead in the boiler room were observed during the site visit.

#### 5.2.2 Asbestos

The asbestos-containing boiler and pipe insulation has been properly repaired throughout the boiler room (Photo # 3954) and requires no attention at this time.

#### 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

No issues were observed in the boiler room during the site visit.

Page 1321 of 3473

URS

## 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

The hearing conservation program was found in the safety book, under tab M, chapter 3. No training records were found on site. A hearing conservation program is not required for this site.

#### 6.3 Respiratory Protection

The respiratory protection program was found in the safety book, under tab M, chapter 3. No training records were found on site. A respiratory protection program is not required for this site.

#### 6.4 Hazard Communication

The hazard communication program was found in the safety book, under tab L. An Operations and Maintenance Written Plan (O & M) was provided to URS before the inspection regarding asbestos at the site. The main issues concerning this program were that the asbestos has not been labeled as containing asbestos and no training records were available.

#### 6.5 Personal Protective Equipment

May, 2018

The personal protective equipment program was found in the safety book, under tab N, chapter 10. 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 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

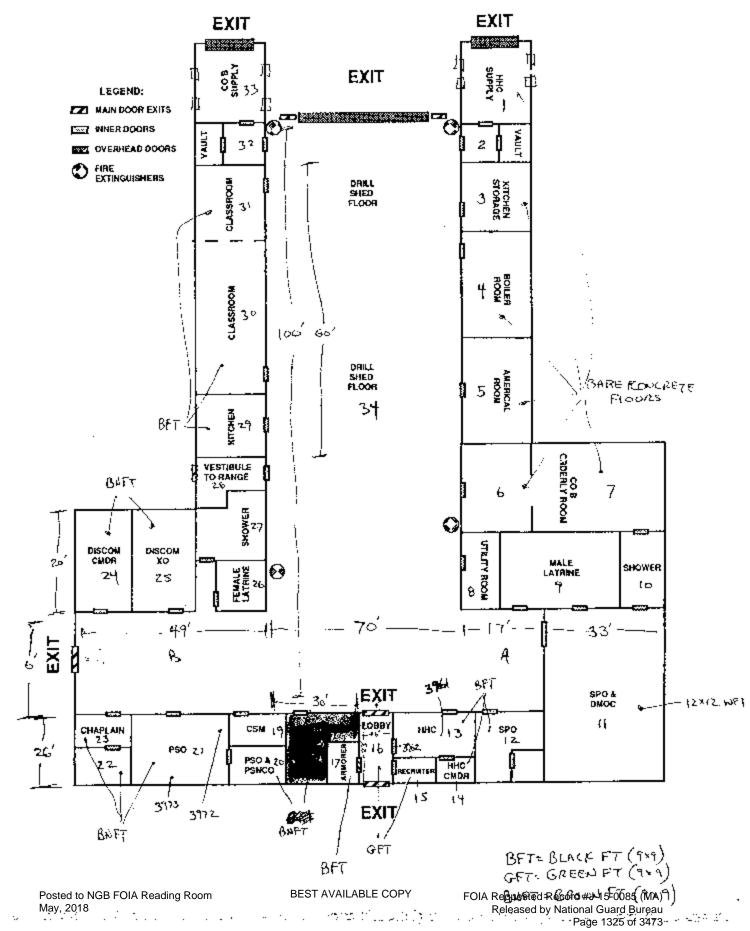
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#### FIRE EVACUATION FRAMINGHAM ARMORY



APPENDIX B

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PERSONNEL LIST

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xo Non-Responsive	
S1 NC	
S3 NC	
Asst S	
S4 NC	
HHD	
1060th	
1164th	
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HHD	
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APPENDIX C

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HAZARDOUS MATERIALS LIST

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NO CHEMICAL INVENTORY AVAILABLE

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## APPENDIX D

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## ANALYTICAL RESULTS

	AMA	Analy	rical	Servi	ces, Inc.
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A Specialized Environmental Laboratory

## **CERTIFICATE OF ANALYSIS**

Client:	National Guard Bureau	Job Name:	Аттогу	Chain Of Custody:	123985
Address:	301-IH Old Bay Lanc, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	522 Concord St., Framingham, MA	Date Analyzed:	3/26/2004
	Havre de Grace, Maryland 21078	Job Number:	Nut Provided	Person Submitting:	
		P.O. Number:	Not Provided	Report Date:	26-Mar-04

Attention:

#### Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	2 2 1 1 1 2 2 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	orting imit	F	inal Res	ult	Comment
	0224-LW11	Furnacc	Wipe	****	0.111	6.75	ug/ft²		46	 ug/ມີ"	
0432264	0224-LW12	Furnace	Wipe	****	0.111	6.75	ug/ft²		63	ug/ft²	
0432265	0224-LW13	Furnace	Wipe	****	0.111	6.75	ug/ft²		49	ug/ft²	
0432266	0224-LW14	Furnace	Wipe	****	0.111	5.40	ug/ft²		34	ug/ft²	
0432267	0224-LW15	Furnace	Wipc	****	0.111	5.40	ug/ft²		29	ug/ft²	
0432268	0224-LW16	Flame	Wipc	****	0.111	108.01	ug/ft <sup>z</sup>		2200	ug/ft²	
0432269	0224-LW17	Flame	Wipe	***	0.111	108.01	ug/ft²		620	ug/ft²	
0432270	0224-LW18	Flame	Wipc	****	0.111	108.01	ug/ft²		310	ug/ft²	
0432271	0224-LW19	Furnace	Wipe	****	0.111	13.50	ug/ft²		60	ug/ft²	
0432272	0224-LW20	Furnace	Wipe	****	0.111	33.75	ug/ft²		160	ug/ft²	
0432273	0224-LW-BLANK2	Furnace	Wipe	****	N/A	0.30	ug		0.78	ug	
0432274	0224-LA 04	Flame	Air	764	N/A	3.93	ug/m³	<	3.9	ug/m²	
0432275	0224-LA 05	Flame	Air	724	N/A	4.14	ug/ni <sup>3</sup>	<	4.1	ug/m³	
0432276	0224-LA 06	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	

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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. NYLAP Accreditation applies only to polarized light microscopy of hulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

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A Spec	lytical Services, Inc.		TIFICATE OF ANALYS	SIS		NY ELA AIHA
Clicat;	National Guard Bureau	Job Name:	Armory	Chain Of Custody:	123985	
Address:	301-IH Old Bay Lane, Atm: NGB-AVN-SI, State Military Reservation	Job Location:	522 Concord St., Framingham, MA	Date Analyzed:	3/26/2004	
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:		
		P.O. Number:	Not Provided	Report Date:	26-Mar-04	
		<b>A</b>	£			
AMA Sample Number	Client Sample Analysis Type Number	Summary 0 Sample Type	Air Volume (L) Area Wiped (ft <sup>*</sup> )		inal Result	Comments

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Posted to NGB FOIA Reading Room May, 2018

# AMA Analytical Services, Inc.



Attention:

A Specialized Environmental Laboratory

# CERTIFICATE OF ANALYSIS

Client: Address:	National Guard Bureau 301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Name: Job Location:	Armory Framingham, MA	Chain Of Custody: Date Submitted:	138227 5/20/2005		AIHA 100470	
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:				
		P.O. Number:	Not Provided	Date Analyzed:	5/26/2005	Report Date:	26-May-05	

#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 1

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AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit				Comments	
0540463	0224-LW21	Furnace	Wipe	****	0.111	2.70	ug/ft²		ug/ll²		
0540464	0224-LW22	Furnace	Wipe	****	0.111	2.70	ug/ft²	17	ug/ft²		
0540465	0224-LW23	Furnace	Wipe	****	0.111	2.70	ug/ft²	10	ug/ft²		
0540466	0224-LW24	Furnace	Wipe	****	0.111	67.51	ug/ft²	490	ug/ft²		
0540467	0224-LW25	Furnace	Wipe	****	0.111	2.70	ug/ft²	21	ug/û²		
0540468	0224-LW26	Furnace	Wipe	****	0.111	13.50	ug/ft²	61	ug/ft²		
0540469	0224-LW27	Furnace	Wipe	****	0.111	2.70	ug/ft²	24	ug/ft²		
Analysis Method F N/A = Not Applicat %Pb = percent lea Note: All samples Note: All results ha	•••	es, Paints, and Soil/ ts per million (ppm) micrograms u d condition unless of jits. Any additional of	Solids : EPA 600/R- by weight mg/L = g/L = parts per billion therwise noted.	93/200(M)-7421; N parts per million (p	Water: SM-3113B		Summary for ed with these	analytical result samples.	is of quality co	ntrol samples	
	ts are not corrected for	or any blank results							<u>.</u>		
Air and Wipe resul											

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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APPENDIX E

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## TRAINING CERTIFICATES

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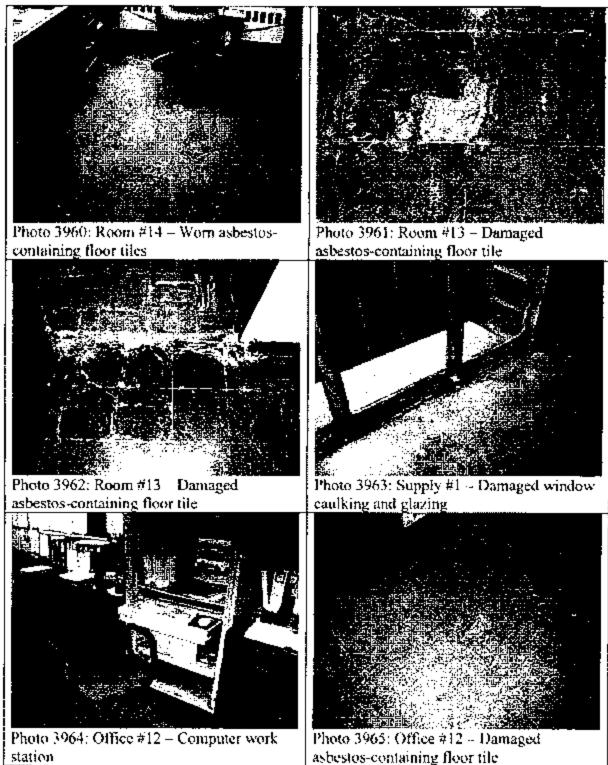
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APPENDIX F

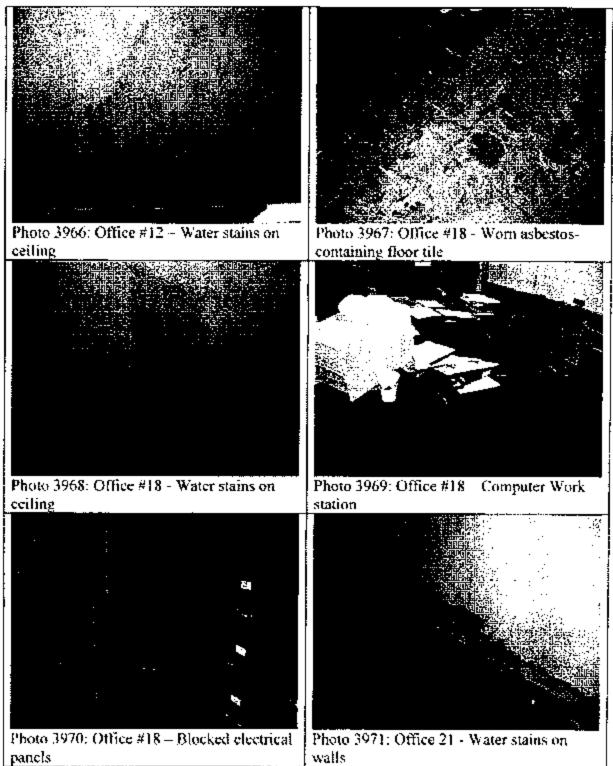
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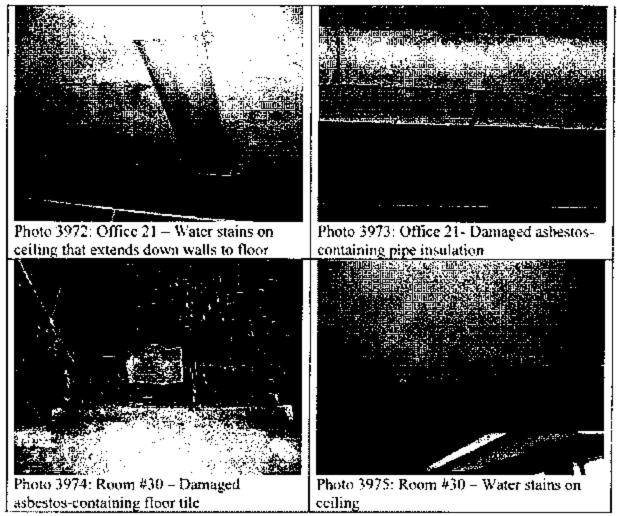
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APPENDIX G

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### RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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:

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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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> 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)

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#### ADOENDUM

#### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Paragraph

Purpose	1
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Policy and Procedures	4
Goal	5
Background	6
Wipo Sample Media	7
Wipe Sampling Protocol	8
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Contaminated Sand and Lead Waste	11
Medical Surveillance	12
Worker Education	13
Personal Protection Equipment	14
Rousekeeping	15
Maintenanco	16
Range Rehabilitation	17
Conversion of Indoor Firing Ranges	18
Deviation	19

#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix 1 - Glossary

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.

- OSHA Technical Manual, Edition VII.
- DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Fining Ranges).

#### SUBJECT: All States (Log Number P03-0075) 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.

#### 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 fevel of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, <sup>5th</sup> 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 tevels.

(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 modia. 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. Goat

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 tead 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 sloeping, kritability, 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 Modia 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.

#### for meride (11) centimeter (chivitar) action 12/040 pager

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(2) Unacceptable Media consists of but is not limited to --

- (a) Cotton balls
- (b) Baby wipes or wel 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<sup>™</sup> 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.

6. 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 substratium 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 cost 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, bafflas, 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) lest 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 built trap and ending behind the firing lino.

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.

 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.

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b. Equipment located near the bullet trap and firing tine 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, concrole, 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 tast 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 levol
  - (b) A complete blood count (CBC)
  - (c) Blood urea nitrogen (BUN)
- (6) Serum creatinine
- (7) Zine 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 Hygiono 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 tange cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and fited 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 employee will assure that each employee is informed of the following:

- a. The content of the standard and its appendices.
- b. It he specific nature of operations that could result in exposure to lead above the action level
- c. The purpose, proper selection, filting, 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.
- Smoking and smoking materials will not be permitted in contaminated areas.

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g. Employees must wash their hands and other exposed skin whenever they leave the work area.

b. 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 coveralis 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, laundored, 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 regalive pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuoming. 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 white cleaning.

e. When cleaning start behind the fring 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 ventriation system fan for condition of boits to ensure that they are not frayed or slipping.

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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.

 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 fead contamination is removed the following procedure is established.

a. All ranges stated 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, builtet 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.

(. 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, Artington, VA 22204-1382.

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#### 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 wipo. Unfold the wipe.

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

A-4 Place a 10 cm by 10 cm (emplate 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 plonum 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 8.

Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results withe 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 acove 200,000 micrograms/sqll, and should be considered suspect

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#### 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 tess 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 Hyglene Office for additional assistance or clarification.

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

E-3.37 mm MCE Filter with pad, no cassette included, for load surface wipe samples

Order From Catalog Number

 a. Supelco Inc 2-3381IM Supelco Park Belletonte, PA (5823)

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#### APPENDIX & (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

# E-5. Glass container (25 milliiter) 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
   600–874-3723
- Alitech 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 SC4200 490 Wando Park Bivd. Mt. Pleasant, SC 29464 1-600-343-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

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

E-8. Plastic ziplock bags can be obtained through the Army logistres 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. Defonized 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:

<u>75 ug</u>	<u>, 9</u> 2	2 <u>9 cm²</u>	
100 cm <sup>2</sup>		1 sq ft	
<u>75 x 929</u> 100	=	<u>69675</u> 100	= 696.75ug/sq ft

ug – Microgram

Cm2 - Centimeters squared

Sq ft - Square foot

industri	al Hygiene S	urface Wipe S	Sample Sheet	
Return Address		Point of Co	intact (name & phone #)	
		Samples C	offected By	
			Unecido Dy	
Sampled Facility	City	State	Cocation (bldg/area)	
Description of Operation	<u>-</u>	Date Collec	ted Oate Shipped	
1				
Analysis Desired				
Sampling Data			· · · · · · · · · · · · · · · · ·	
Lab Use Only Sample (	Res	ults	Remarks	·· _ ·
	<b>_</b>			
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				<u> </u>
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comments to Lab:				

#### APPENDIX G SURFACE WIPE SAMPLING SHEET

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#### APPENDIX H AIR SAMPLING SHEET

		Industrial H				,
Return Add	ress		Point of Co	ontact (nam	e/phone #)	•••
			Samples C	ollected By		
Sampled Fa	acility	City	State	Location (b	dg/area)	
Description		Parsons Exposed	Hrs/Day	Method	of Collection	
Sampling D						
Sample No.				· · - · · · · · · · · · · · · · · · · ·	•••••	- [
Pump No.						8
Time On						L
Time Off						A
Total Time (min)						N
Flow Rate (LPM)		ff				к
Volume (liters)						
GA/BZ						
Employee Name/ID						
Laboralory No.						<u> </u>
Calibration						
Punip No.	Callt Pre-Uso	Post-Use	Rotameter S	atting	Date	
		- [		· · · · · · · · · · · · · · · · · · ·		
······	<b>..</b> .					
			· · · · · ·	·	···	
Name of Calibra	ator	Calibration Date	Pump Manuf	acturer		
Comments to L	ab ·			-		

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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

*om* 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

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.

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



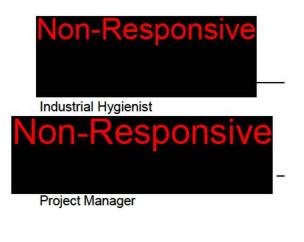
# Industrial Hygiene Survey for MAARNG – Framingham Readiness Center 522 Concord Street Framingham, Massachusetts 01701

AECOM Environment October 2010 Document No.: 60159721/Framingham Readiness Center

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

Industrial Hygiene Survey for MAARNG – Framingham Readiness Center 522 Concord Street Framingham, Massachusetts 01701





Section Manager - EHS Management

AECOM Environment October 2010 Document No.: 60159721/Framingham Readiness Center

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## **Executive Summary**

On August 18, 2010, AECOM Environment conducted an Industrial Hygiene (IH) survey of the Framingham Readiness Center facility located at the armory at 522 Concord Street in Framingham, Massachusetts. Steve Raymond, Program Coordinator I, was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Framingham 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 Framingham Readiness Center is currently staffed by approximately 24 personnel. The facility is configured as an administrative area and a Drill/Assembly Hall.

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

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

The Framingham Readiness Center is housed in a one story masonry slab-on grade building, consisting of approximately 50% administrative space and 50% drill hall.

Lighting levels measured throughout the facility were generally adequate as per <u>ANSI/IESNA RP-1-2004</u>, <u>Office Lighting</u>, <u>ANSI/IESNA RP-7-2001</u>, <u>Industrial Lighting</u>, and the <u>IESNA Lighting Handbook</u>, 9<sup>th</sup> <u>Edition</u>, 11 <u>April 2005</u>, with the exception of the weight room and a few offices

Wipe samples collected throughout the facility indicated lead levels below the ARNG action level with the exception of the duct sample in the former firing range.

There was no suspect mold growth or water damaged observed during the survey of the facility.

The HVAC system in the building consists of a boiler room that feeds radiant heaters throughout the building. There is no HVAC system that provides fresh air from the building exterior in administrative areas. The Drill Hall is equipped with two overhead air handling units. The two units in the Drill Hall were inaccessible at the time of the survey. According to **Non-Responsive** the units are serviced every six months.

# 1.0 Facility Description and Operations

The Framingham Readiness Center is an administrative facility within a masonry structure, slab on grade. The building consists of two main sections. The center section consists of the drill hall and is surrounded with administrative offices and supply storage. The drill hall is finished with painted cinder block walls, an exposed roof deck painted to match the walls, and concrete floors.

The primary activity at the Framingham Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Framingham Readiness Center is currently staffed by approximately 24 personnel. No vehicle maintenance activities are undertaken at the facility.

# 2.0 Sampling in Readiness Centers

#### 2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall, former firing range and 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.

According to site personnel there is no record of the indoor firing range at the facility being abated for lead. The following table presents the results of the lead wipe sampling conducted at the facility.

Sample Number	Sample Location	Lead Concentration
FRC-1	Firing Range Floor	<110 ug/ft <sup>2</sup>
FRC-2	Firing Range Duct	27000 ug/ft <sup>2</sup>
FRC-3	Stairway to Firing Range	120 ug/ft <sup>2</sup>
FRC-4	Firing Range Bench	<110 ug/ft <sup>2</sup>
FRC-5	Bullet Trap	<110 ug/ft <sup>2</sup>
FRC-6	Cafeteria Table	<110 ug/ft <sup>2</sup>
FRC-7	Drill Shed Floor	<110 ug/ft <sup>2</sup>
FRC-8	Drill Shed Cabinet	120 ug/ft <sup>2</sup>
FRC-9	Kitchen Stove	<110 ug/ft <sup>2</sup>
FRC-10	Armorer's Desk	<110 ug/ft <sup>2</sup>
FRC-11	S 2/3 Training Operations Desk	<110 ug/ft <sup>2</sup>
FRC-12	Recruiter's Desk	<110 ug/ft <sup>2</sup>

#### Table 2-1: Lead Wipe Sample Results

The wipe sample collected on top of a duct in the former firing range indicated detectable levels of lead. Levels detected were above the ARNG action level of 200 ug/ft<sup>2</sup>. Laboratory analytical results are presented in Appendix C.

#### 2.1.2 Air Sampling

Ambient 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
HRC-10	Drill Shed	<17 ug/m <sup>3</sup>
HRC-11	Former Firing Range	<17 ug/m <sup>3</sup>

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<sup>3</sup> and the Permissible Exposure Limit (PEL) is 50 ug/m<sup>3</sup>. 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. The paint on the walls appeared to be generally 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 Framingham Readiness Center during this survey. Thermal system piping is typically covered in fiberglass insulation with associated fittings in 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 any evidence of water intrusion in the facility during this survey.

#### 3.1.4 Housekeeping

The Framingham Readiness Center was observed to be generally clean and orderly during this assessment. AECOM did not observe dust accumulation on 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 Framingham Readiness Center staff members. No Indoor Air Quality concerns were noted by the Framingham 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 (°F)	Relative Humidity (%)
Exterior - Baseline	1.2	461	81.8	54.6
Cafeteria	1.7	452	74.9	52.9
Table 1-3 Guidelines: Carbon Monoxide: Office/Wareh OSHA Permissible Exposure Lin Carbon Dioxide: Office Space -A 2007). Not Applicable to wareho Relative Humidity: Mechanically 5.10.1). Temperature: Winter (clothing in Summer Temp - 73 – 79°F. (De	nit (PEL) = 50 ppm. ACG Approximately 700 ppm a use and vehicle mainten air-conditioned space – sulation = 1.0 clo) Relati	SIH Threshold Limit value bove background (Deriv ance bays. Maximum 65% (Derived ve humidity 30-60% - Te	e (TLV) = 25, ppm ved from ASHRAE I from ASHRAE S	n. Standard 62.1-

Framingham 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 not observed in the facility.

The Framingham Readiness Center is heated by a radiant heating system fed by a boiler located in the boiler room that is adjacent to the drill hall. Supply and return air is not provided by mechanical means.

Two air handling units are located in the overhead space of the drill hall, but the units were inaccessible and site personnel could not provide information on the use or status of the system. The fans were not observed in operation during the survey.

#### 4.1.2 HVAC Maintenance

According to Non-Responsive, Units are serviced once every six months.

# 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 were adequate in most areas measured except for a few office areas and the weight room.

#### Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*			
Cafeteria	43.5	Y	10			
Kitchen	30.6	Y	10			
BN CDR	59.0	Y	50			
CSM	40.9	N	50			
AO	26.7	N	50			
S1	63.0	Y	50			
S1 MSG	93.1	Y	50			
WO	73.4	Y	50			
JAG	70.0	Y	50			
S 2/3	59.0	Y	50			
S 2/3 LTC	62.0	Y	50			
Armorer	75.5	Y	50			
Recruiter	37.2	N	50			
Training and Operations	64.0	Y	50			
Training and Operations SGM	45.5	N	50			
S4 Supply	40.7	Y	30			
Classroom	56.0	Y	50			
1060 <sup>th</sup> TC	41.6	N	50			
1060 <sup>th</sup> CDR	18.1	N	50			
1060 <sup>th</sup> 1SG	16.5	Ν	50			
Boiler Room	34.5	Y	30			
151 Orderly	60.2	Y	50			
HHC Supply	35.3	Y	30			
Drill Shed	42.5	Y	10			
1060 <sup>th</sup> Supply	35.1	Y	30			
Weight Room	19.2	N	30			
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)						

# 6.0 Evaluation of Attached Garage

There is no garage associated with the Framingham Readiness Center.

# 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 Framingham Readiness Center, and AECOM did not observe any damaged, suspect asbestos containing materials or peeling paint during the evaluation.

Evidence of water intrusion was not observed anywhere within the facility.

Lighting levels in most areas of the facility were in compliance with ANSI/IESNA guideline levels.

Air samples collected and analyzed did not indicate quantifiable levels of airborne lead.

Wipe samples collected in various locations throughout the building did not indicate levels of lead on surfaces in excess of the ARNG action level except for the duct in the former firing range.

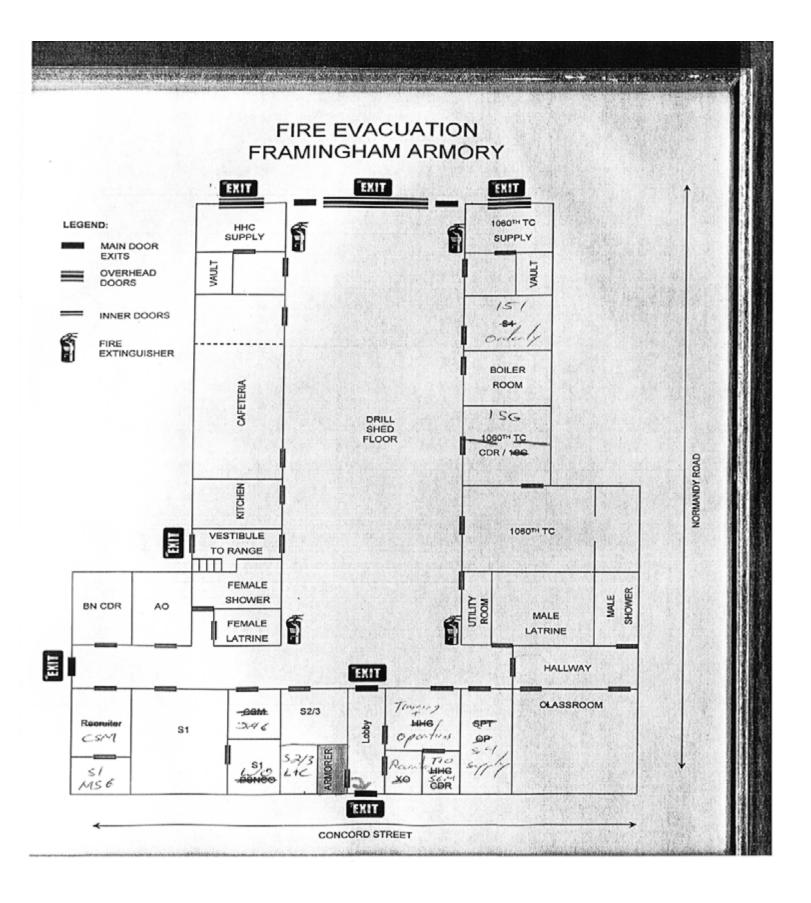
AECOM provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This 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

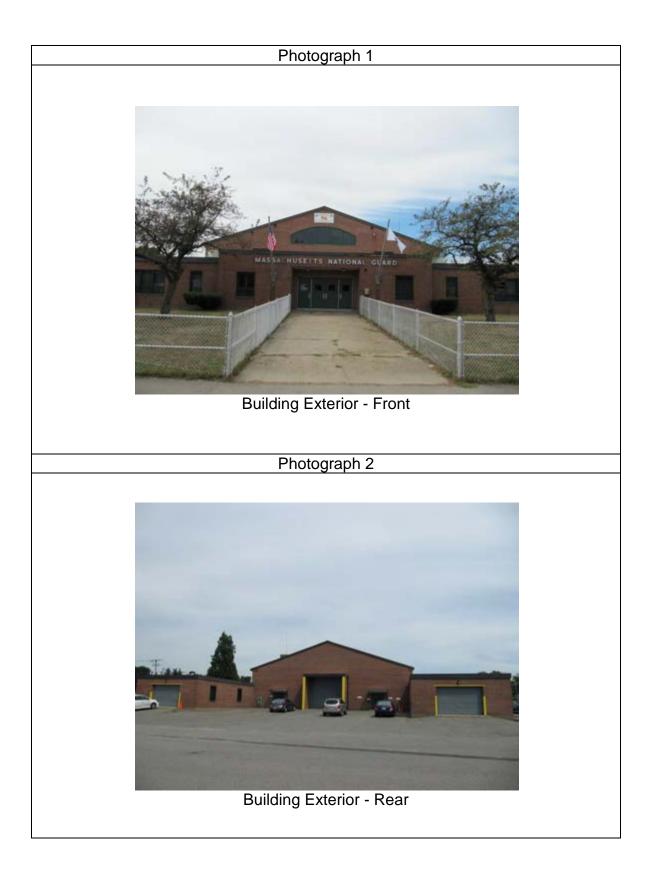
Framingham Readiness Center Facility Layout

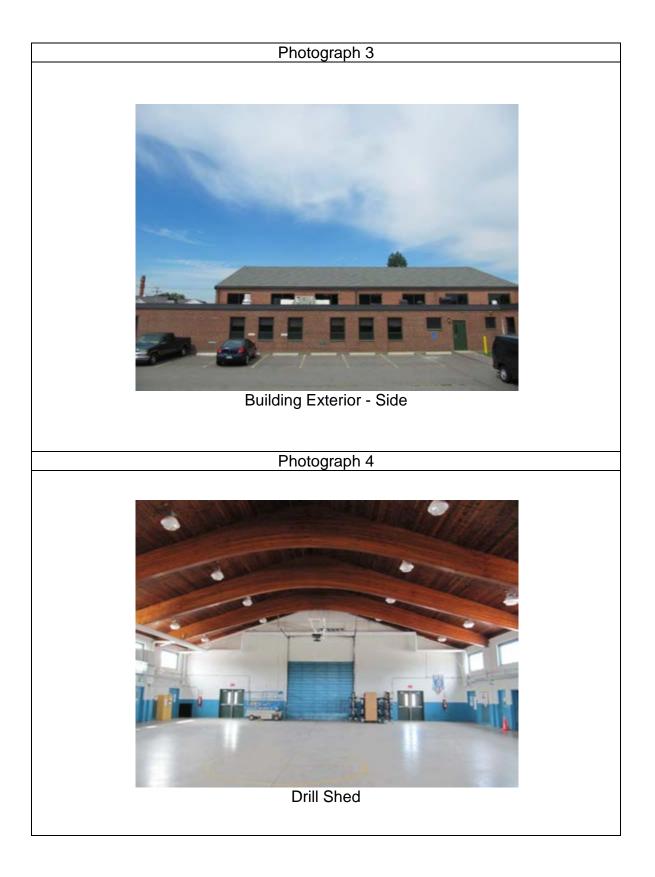


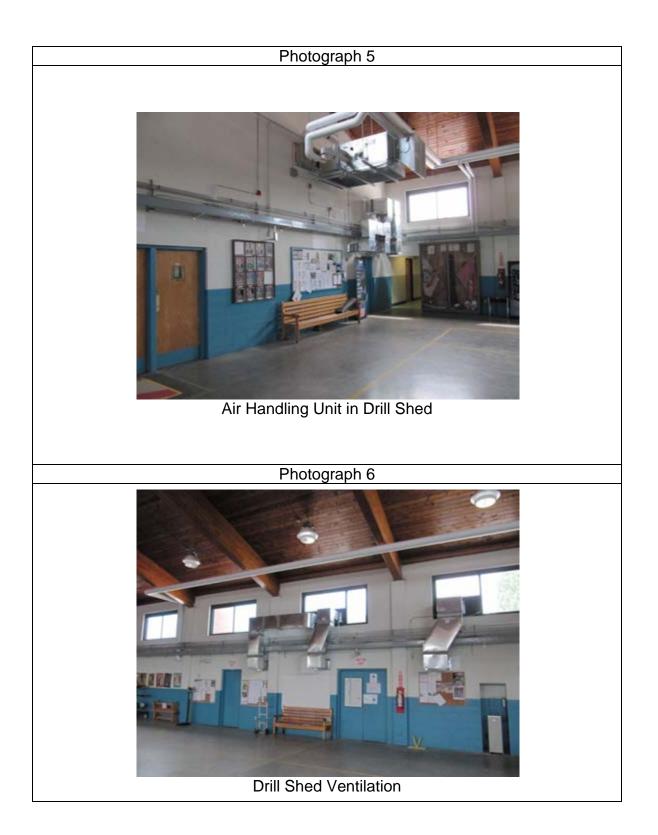
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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1375 of 3473 Appendix B

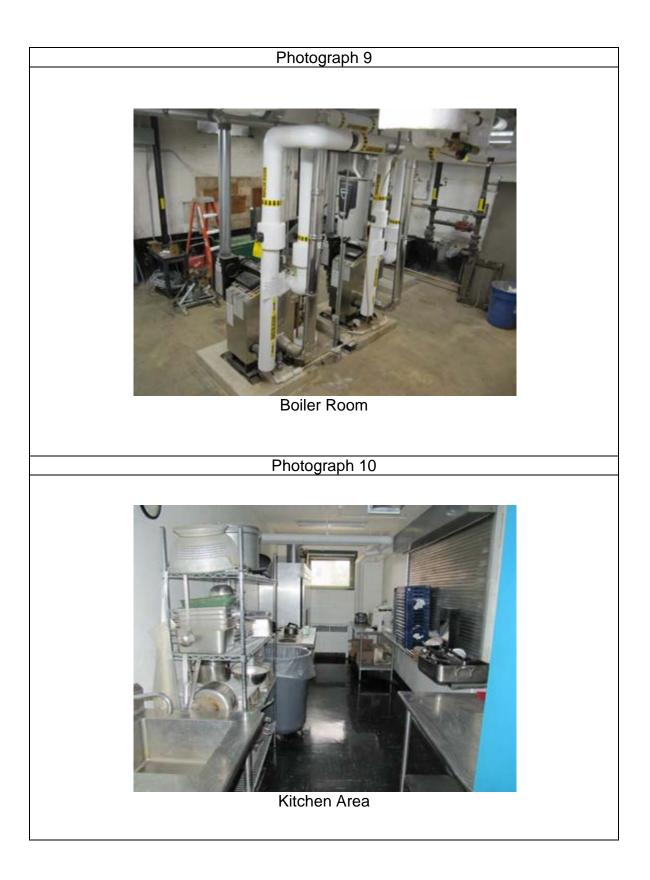
Hillsborough Readiness Center Photographs

















Appendix C

Analytical Results

# AMA Analytical Services, Inc.

É

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	Job Name:
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:
	Havre de Grace, Maryland 21078	Job Number:
		P.O. Number:

Framingham RC C 522 Concord Street, Framingham, MA E Not Provided P W912K6-09-A-0003 E



AIHA LAP, LLC

Page 1 of 2

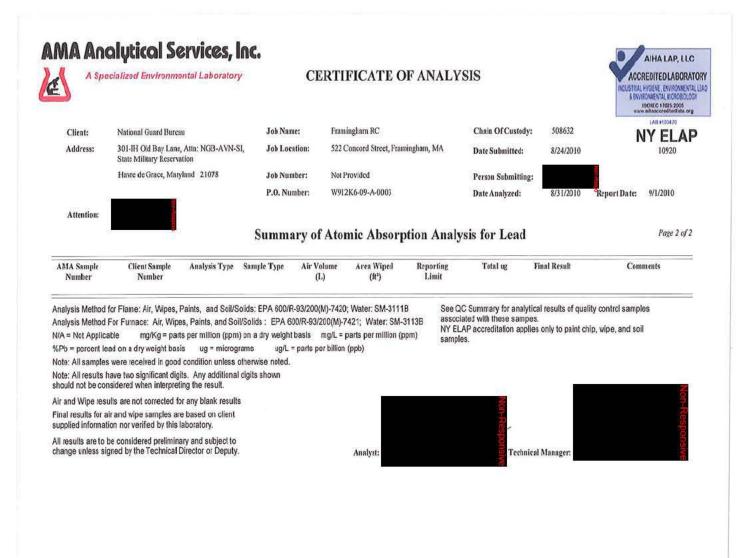
#### Summary of Atomic Absorption Analysis for Lead

AMA Sample **Client Sample** Analysis Type Sample Type Air Volume Area Wiped Reporting Total ug Final Result Comments Limit Number Number (L) (ft2) 175 N/A <3 <17 1073254 FRC-01A Flame Air 17 ug/m<sup>3</sup> ug/m3 175 N/A <3 <17 1073255 FRC-02A Flame Air 17 ug/m<sup>3</sup> ug/m3 .... Wipe 0.111 <12 1073256 FRC-01 Flame 110 ug/ft2 <110 ug/fl<sup>a</sup> 1073257 FRC-02 Wipe .... 0.111 110 3000 27000 ug/ft2 Flame ug/N<sup>4</sup> .... ug/ft² 1073258 FRC-03 Fame Wipe 0.111 110 14 120 ug/ft² ug/ft2 FRC-04 Wipe .... 0.111 110 <12 <110 ug/ft<sup>2</sup> 1073259 Flame .... ug/ft² <12 1073260 FRC-05 Wipe 0.111 110 ug/fl? <110 Fame .... <12 ug/ft2 0.111 110 <110 1073261 FRC-06 Flame Wipe ug/ft2 .... <12 1073262 FRC-07 Fame Wipe 0.111 110 112/112 <110 ug/ft2 .... 13 1073263 **FRC-08** Flame Wipe 0.111 110 ug/ft3 120 ug/ft2 .... 0.111 <12 <110 ug/fl² 1073264 FRC-09 Flame Wipe 110 ug/ft3 .... ug/ft\* <12 1073265 FRC-10 Flame Wipe 0.111 110 <110 ug/ft? FRC-11 \*\*\*\* 0.111 <12 <110 ug/ft2 1073266 Wipe 110 ug/ft2 Fame .... <12 1073267 FRC-12 Wipe 0.111 110 ug/ft2 <110 ug/ft2 Flame

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 elicatto when it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicly matter without prior written authorization from us. Sample types, locations, and collection provided by the personsel of these Laboratories, the exclusive matter value authorization provided by the personsel of these Laboraties, we expressive discriming and most be information. Residualisample material will be discarded in accuracy and completeness of this information. Residualisample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP acceeditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AllERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsoment by NY ELAP, AlHA, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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Appendix D

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5. AR 385-10, The Army Safety Program, 23 August 2007. http://www.usapa.army.mil/pdffiles/r385\_10.pdf

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#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 522 CONCORD STREET FRAMINGHAM, MA 01701

June 17, 2013 PN: 39743799



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	ARMORIES

#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 522 CONCORD ST., FRAMINGHAM, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting		
On the day of the survey, the illuminance was inadequate in several locations tested. One light fixture was not operational.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		·
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards	Ergonomic issues with regard to 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
Former Indoor Firing Range		
The former Indoor Firing Range has been posted as unsafe due to lead contamination; however the area is still accessed.	Materials removed from the firing range should be cleaned by trained individuals. (29 CFR 1910.1025 (h)(1)).	RAC 3
Lead		
Four of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Emergency Exits		
Emergency exit signs were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3
Asbestos		
Presumed asbestos-containing floor tiles and associated mastic were observed throughout the facility; an Asbestos Operation and Maintenance Program was not available on-Site.	Employees were not informed of the hazards of the presumed ACM in the building and procedures were not put in place for managing such materials. (29 CFR 1910.1001 (j)).	RAC 4

Findings	Recommendations	Risk Assessment Code (RAC)
Fire Protection		
One fire extinguisher didn't have an inspection tag and wasn't properly secured to the wall. Emergency escape plans were not posted throughout the facility.	Portable fire extinguishers shall be provided, mounted and located so that they are readily available. (29 FR 1910.157 (c)(1) and 29 CFR 1910.38 (c)(2)).	RAC 3
PPE		
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	The workplace shall be assessed to determine if hazards are present to determine the need for PPE. (29 CFR 1910.132 (d)(1)).	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 in Framingham, Massachusetts.

URS representative, Ms. Mon-Responsive, conducted the Industrial Hygiene Survey on March 27, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Framingham Readiness Center is a one-story brick building, consisting of offices, classrooms, a supply area, gender separate bathrooms, storage rooms, a kitchen, break room, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: The basement former Indoor Firing Range is posted as unsafe due to lead contamination; however the area is still accessed. One fire extinguisher didn't have an inspection tag and wasn't properly secured to the wall. Emergency escape plans were not posted throughout the facility. Emergency exit signs were not observed properly illuminated with directional arrows throughout the Center.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Four of ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

<u>ASBESTOS</u>: On the day of the survey none of the bulk samples were determined to be asbestos-containing. Presumed asbestos-containing floor tiles and associated mastic were identified during this survey, however no Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Noise mapping in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and the Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

### 2.0 SUPPLY / TRAINING AREA

### 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, classrooms, a supply area, gender separate bathrooms, storage rooms, a kitchen, break room, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be clean and organized at the time of URS' site visit.

### 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. Interior carbon dioxide concentrations were found to be between 516 and 613 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 444 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below

1144 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

### 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured at 0.0 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

### 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 22.7%, which was within the guideline of less than 65% recommended by ASHRAE.

### 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 68.8 °F, which was within the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort.

### 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Classroom/ Conference Room, table	Admin	48.9	50
Supply Office, desk-	Admin	55.1	50
Supply Office, storage tables	Admin	29.2	50
Drill Office, computer work station, table	Admin	31.2	50
Drill Office, work station 7, desk	Admin	26.8	50
Hallway to basement	Hall	19.4	5
Office, desk-	Admin	97.5	50
Office, desk- Non-Responsive	Admin	40.4	50
Office, desk-	Admin	65.1	50
Office, desk-	Admin	71.2	50
Office, desk- Office 04B	Admin	46.0	50
Office, desk	Admin	53.0	50
S3 Office, conference table	Admin	61.5	50
S4 Office, desk-	Admin	50.5	50
S4 Office, desk-	Admin	41.4	50
Library/ Classroom, computer tables, front	Admin	75.3	50
Library/ Classroom, computer tables, rear	Admin	47.3	50
Library/ Classroom, desk-Non-Responsive	Admin	52.5	50
Library/ Classroom, desk-	Admin	42.3	50
Library/ Classroom, desk-	Admin	10.1	50
Corridor, to Men's Latrines	Hall	61.3	5
1060 <sup>th</sup> TC OPS Office, front conference table	Admin	52.9	50
1060 <sup>th</sup> TC OPS Office, desk-	Admin	54.2	50
1060 <sup>th</sup> TC OPS Office, desk-	Admin	64.7	50
1060 <sup>th</sup> TC OPS Office, desk- Non-Responsive	Admin	20.3	50

Table 2-1Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Detachment NCO Office, desk-	Admin	47.6*	50
Supply Room, desk	Admin	30.3	50
Supply Room, desk	Admin	37.3	50

\*Note- light fixture above desk not operational

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in several of the office/administrative locations. One light fixture was not operational at the time of the survey.

#### 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
S1 Personnel Office, center, window sill	Framingham RC Wipe-01	0.108	<110	200
1060 <sup>th</sup> TC OPS Office, office floor- Westberg, behind door	Framingham RC Wipe-02	0.108	710	200
Library/ Classroom, floor, front of classroom, under screen	Framingham RC Wipe-03	0.10 <mark>8</mark>	<110	200
Conference/ Classroom, counter to kitchen	Framingham RC Wipe-04	0.108	<1 <b>1</b> 0	200

 Table 2-2

 Levels of Lead Dust Found in the Readiness Center

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Latrine- Men's shower, corner to 1060 <sup>th</sup> NCO Office	Framingham RC Wipe-05	<mark>0.108</mark>	<110	200
Storage Room, floor at rolling door	Framingham RC Wipe-06	0.108	140	200
Supply Room, shelves by rolling door	Framingham RC Wipe-07	0.108	380	200
Drill Hall, floor, at door to Supply Room	Framingham RC Wipe-09A	0.108	<110	200
Former Indoor Firing Range, floor at door	Framingham RC Wipe-09B	0.108	500	200
Former Indoor Firing Range, floor, stairwell landing	Framingham RC Wipe-10	0.108	450	200

Four of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62.

No areas of peeling paint were observed on the day of this survey for sample collection.

### 2.2.7 Asbestos

URS collected a total of three samples from damaged suspect friable asbestoscontaining material (ACM) 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 with dispersion staining (EPA-600/M4-82-020). Table 2-3 below shows the results of the asbestos sampling.

	Table 2-4
Asbestos	Bulk Sample Results

Sample Location	Sample	URS Sample	Result
	Description	Number	Total Asbestos
Drill Office, above computer work stations	Ceiling Plaster	Framingham RC PLM-01A- 01C	Non-detect

The EPA states that any material with an asbestos content greater than 1% must be treated as ACM (EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix C.

Presumed asbestos-containing floor tiles and associated mastic were identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

### 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

### 2.4 Noise Measurements

Noise mapping was conducted throughout the Readiness Center. On the day of the survey, noise levels throughout the facility ranged from 56.1 decibels to 61.4 decibels. All noise mapping results were below the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day.

### 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves.

## 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

### 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility.

### 3.2 Hearing Conservation

A written hearing conservation program was not identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise mapping results and a review of normal site operations, a hearing conservation program is not required for this site.

### 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was identified on site, however current fit tests, list of employees who have been issued respirators or who have been medically cleared for respirator use was not available during this survey. No operations were observed by URS that would require the use of respiratory protection.

### 3.4 Hazard Communication

A site-specific hazard communication program was identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

### 3.5 Personal Protective Equipment

A written personal protective equipment program was identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

## 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

#### 3.7 Safety

The basement former Indoor Firing Range was posted as unsafe due to lead contamination. According to interviews with site personnel, the former Indoor Firing Range is still used for storage and is accessed approximately once per month. Not all emergency exit signs were properly illuminated with directional arrows throughout the facility. Emergency escape plans were not observed posted throughout the facility. One fire extinguisher was observed without an inspection tag and not mounted to the wall.

### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

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National Guard Pamphlet 420-15

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

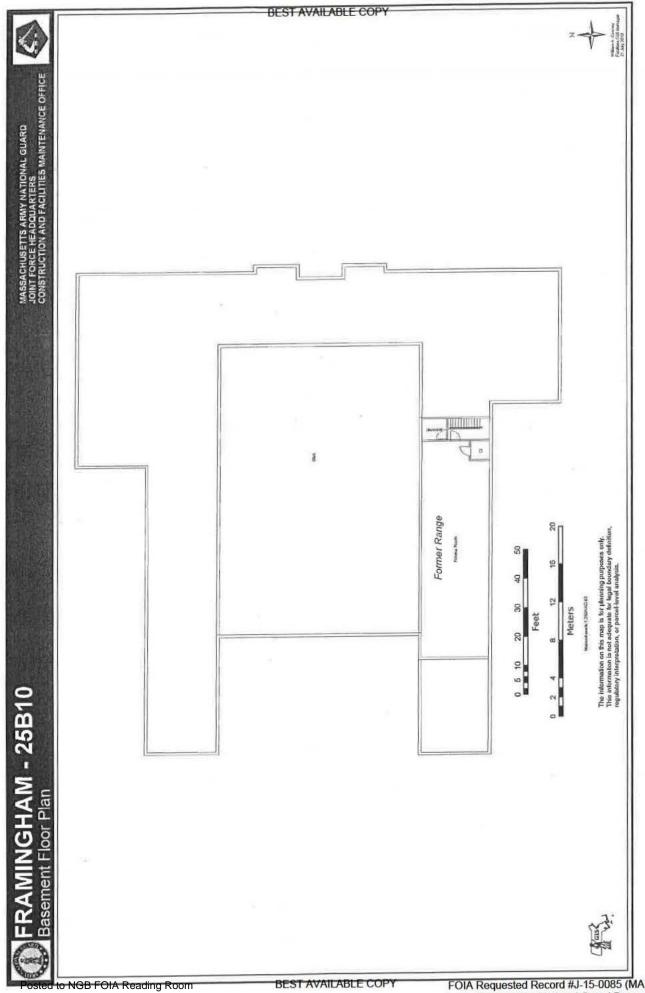
Standard for General Industry: 29 CFR 1910

OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

## APPENDIX A

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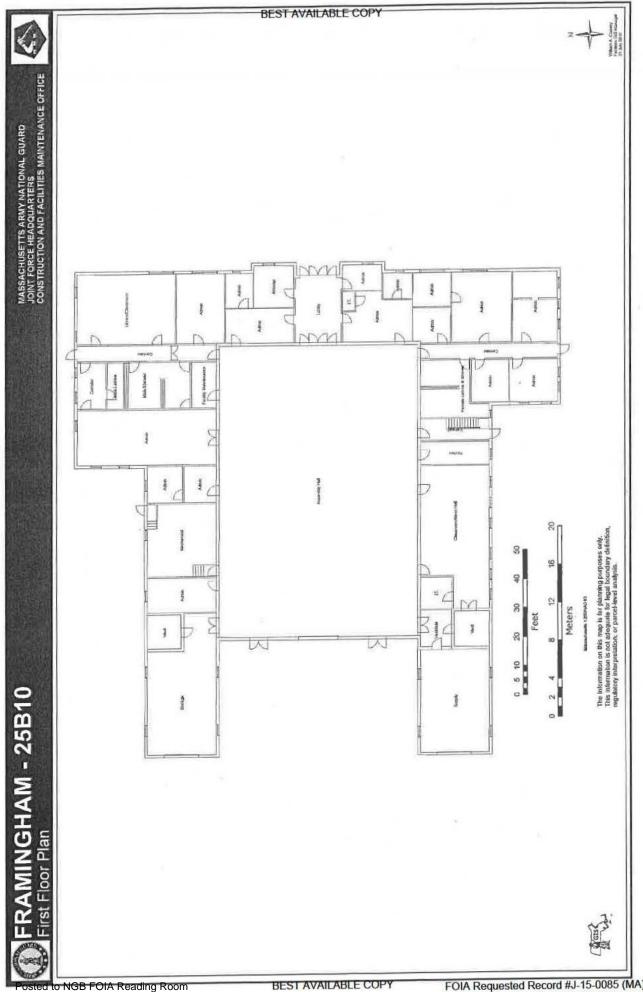
## SHOP DRAWING



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May, 2018

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#### APPENDIX B

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#### PERSONNEL LIST

## **151 RSG PHONE EXTENTIONS**

MSG7275SFC7258SSG72831SG7834SSG7833SSG7832
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### APPENDIX C

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#### ANALYTICAL RESULTS

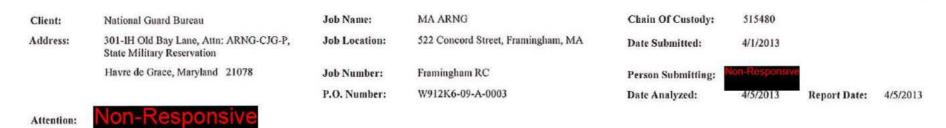
## AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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#### **CERTIFICATE OF ANALYSIS**





#### Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

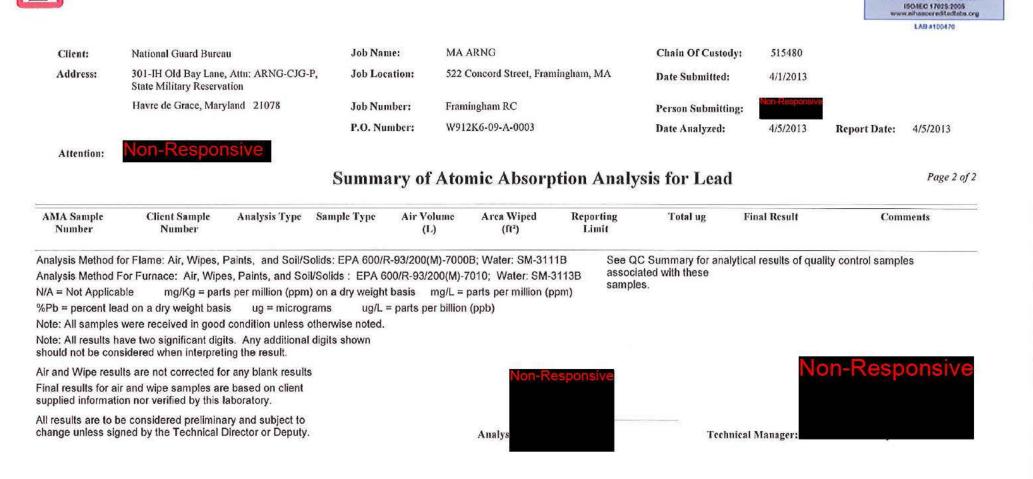
AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		oorting Jimit	Total ug	Final Res	ult	Comments
13049850	Framingham RC- Wipe-01	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13049851	Framingham RC- Wipe-02	Flame	Wipe	****	0.108	110	ug/ft²	76	710	ug/ft²	
13049852	Framingham RC- Wipe-03	Flame	Wipe	****	0.108	110 ug/ft <sup>2</sup>		<12	<110	ug/ft²	
13049853	Framingham RC- Wipe-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13049854	Framingham RC- Wipe-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13049855	Framingham RC- Wipe-06	Flame	Wipe	****	0.108	110	ug/ft²	15	140	ug/ft²	
13049856	Framingham RC- Wipe-07	Flame	Wipe	****	0.108	110	ug/fl²	41	380	ug/ft²	
13049857	Framingham RC- Wipc-08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13049858	Framingham RC- Wipc-09	Flame	Wipe	****	0.108	110	ug/ft²	53	500	ug/ft²	
13049859	Framingham RC- Wipc-10	Flame	Wipe	***	0.108	110	ug/ft²	48	450	ug/ft²	
13049860	Framingham RC- Wipe-FB	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

#### An AIHA (#100470) and NY FLAP (#10920) Accredited Laboratory

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AIHA LAP, LLC ACCREDITED LABORATORY

NDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY

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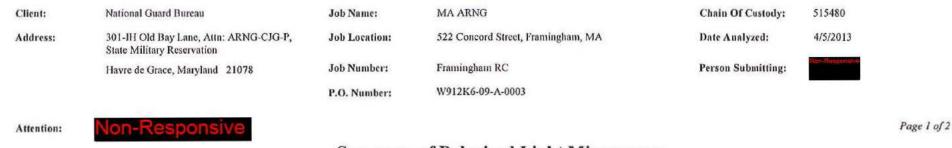
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#### Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysofile Percent	Amosite Percent	Crocidolite Percent	Asbestos	Percent	Organic Percent			Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13049861	Framingham RC-PLM-01A	NAD					 TR			 100	СР	Gray	Homogeneous	sw	
13049862	Framingham RC-PLM-01B	NAD		••	-		 TR		••	 100	CP	Gray	Homogeneous	SW	
13049863	Framingham RC-PLM-01C	NAD					 TR	-		 100	CP	Gray	Homogeneous	SW	

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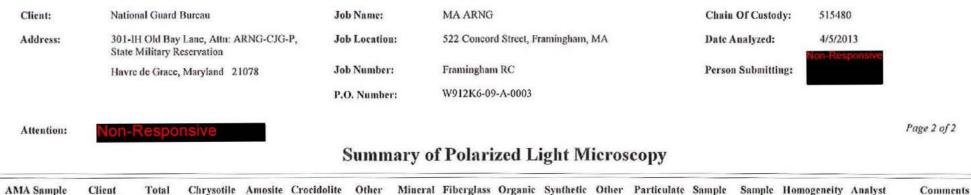
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AMA Sample	Client	Total	Chrysotile	Amosite	Crocidolite	Other	Mineral	Fiberglass	Organic	Synthetic	Other	Particulate	Sample	Sample	Homogeneity	Analyst	Comments
Number	Sample #	Asbestos	Percent	Percent	Percent		Wool Percent		Percent	Percent	Percent	Percent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

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.</p>

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

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### APPENDIX D

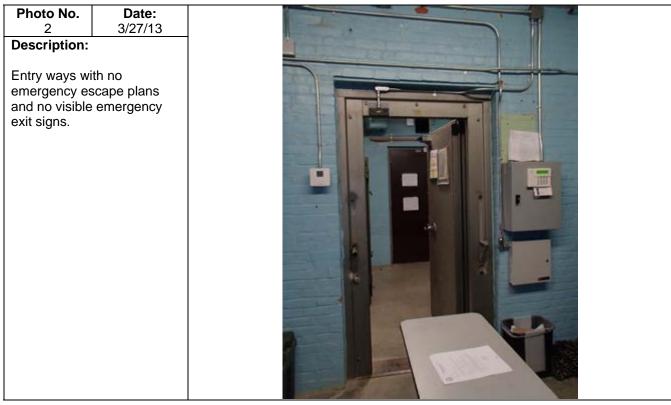
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#### PHOTOGRAPHIC LOG



## PHOTOGRAPHIC LOG

Client Name:		Site Location:	Project No.
MA ARNG- Fr	amingham RC	522 Concord St., Framingham, MA	39743799
Photo No. 1	<b>Date:</b> 3/27/13		
Description:			1
Door to forme Range, posted contaminated.	d as lead-		



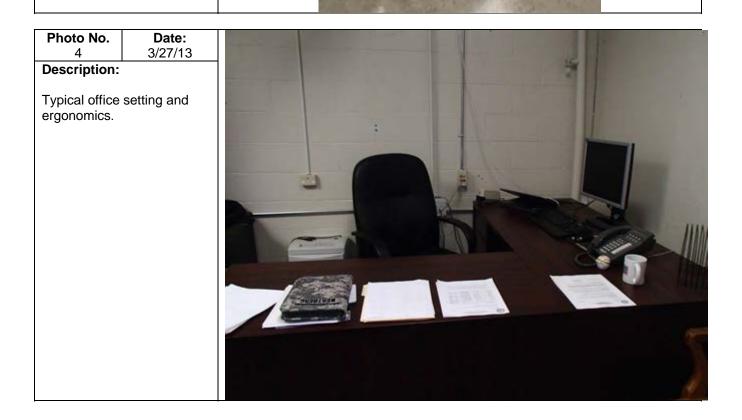
#### Page 1 of 2 P:\Project\Nation Posted to NGB FOIA Reading Room May, 2018

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## **PHOTOGRAPHIC LOG** Site Location: Project No. **Client Name:** MA ARNG- Framingham RC 522 Concord St., Framingham, MA 39743799 Photo No. Date: 3/27/13 **Description:** Fire extinguisher with no inspection tag and not mounted to the wall. ÷



#### Page 2 of 2 Posted to NGB FOIA Reading Room May, 2018

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#### APPENDIX E

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### **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

# URS

#### **Prepared For:**

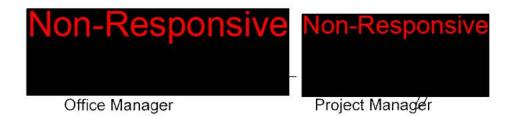
National Guard Bureau Army National Guard Region North Industrial Hygiene Office 301 – IH Old Bay Lane Havre De Grace, Maryland 21078

#### **Prepared By:**

URS Corporation 5 Industrial Way Salem, New Hampshire 03079

#### INDUSTRIAL HYGIENE SURVEY REPORT GARDNER ARMORY 323 WEST BROADWAY GARDNER, MASSACHUSETTS

April 2006 PN: 39741508



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2002)

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#### FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
On the day of the survey, the	Increase lighting through task lighting	
illuminance in office #1 was	in office #1. While work is in progress,	
inadequate.	the administrative area shall be lighted	RAC 4
	by at least the minimum lighting	
	intensities (ANSL/ IESNA RP-1-04)	·
Lead		· · · !
Lead was detected in wipe	Personnel trained in accordance with	
samples collected from the	the OSHA Lead Standard should	
firing range in amounts greater	clean the drill hall where lead was	RAC 4
than 200 μg/ft²	detected in quantities of greater than	
	200 micrograms per square foot	
De effere e det constat de serve el la	(OSHA 29 CFR 1910.1025(h)(1))	
Peeling paint was observed in	Personnel trained in accordance with	
the administrative area but	the OSHA Lead Standard should	RAC 4
was inaccessible to sampling	stabilize peeling lead paint (OSHA 29	KAU 4
and must be presumed to be lead-based.	CFR 1910.1025 (h)(1))	
Asbestos		
Damaged asbestos containing	Repair or remove asbestos-containing	
pipe insulation is located in the	pipe insulation. Work should be	
northwest corner of the drill	completed by personnel trained in	RAC 3
hail.	accordance with federal regulations	
	(OSHA 29 CFR 1910.1001(k)(1))	
Damaged asbestos containing	Repair or remove asbestos-containing	
boiler insulation is located in	boiler insulation. Work should be	
the bailer room.	completed by personnel trained in	RAC 3
	accordance with federal regulations	
	(OSHA 29 CFR 1910.1001(k)(1))	
No site specific asbestos	Develop a site specific asbestos	
operations and maintenance	operations and maintenance plan to	
plan available.	manage asbestos-containing	RAC 3
	materials (OSHA 29 CFR	
	1910.1001(j))	
No site specific hazard	Develop a site specific hazard	
communication plan available.	communication plan to manege	RAC 4
	hazardous materials (OSHA 29 CFR	
	1910.1200(e))	

Findings	Recommendation	Risk Assessment
		Code
Mold		
Water damage was observed	Determine and repair source of water,	
in the weight room and the drill	Replace water damaged building	
hall. Mold growth could	materials and implement a moisture	RAC 4
become an issue if left	management program to provide	RAC 4
unattended.	direction for future water incursions	
	(Best management practice)	

#### FINDINGS AND RECOMMENDATIONS (Continued)

#### 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 Armory located at 323 West Broadway in Gardner, Massachusetts 01440. 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 February 12, 2005, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Gardner, Massachusetts. 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. Mr. Non-Responsive of the Commonwealth of Massachusetts National Guard was Mr.

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

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1. 1. 1

May, 2018

#### 2.0 ADMINISTRATIVE AREA

#### 2.1 Operation Description

The administrative area includes offices, storage areas, a kitchen, classroom and latrines. Asbestos-containing materials in the form of floor tile and pipe insulation were in good condition. URS' point of contact expressed no concerns regarding indoor air quality, ergonomics or lighting with regard to this building area.

Significant water damage was observed on the ceiling in the weight room (Photo # 0031) which may indicate the potential for mold growth.

#### 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 averaged 24.0%. This average reading was below the recommended maximum of 65% 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 averaged of 455 parts per million (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

i.e.,

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. For instance, given a background level of 350 ppm on the day of the survey, the ASHRAE limit would be 1050 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide levels were also measured in the Readiness Center. Carbon monoxide concentrations remained at 0.0 parts per million (ppm) throughout the survey period. This measured level was 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)

Location	Function	Measured Illuminance (foot candles)	Recommended Illuminance (foot candles)
Classroom	Administrative Duties	58	50
Office #1	Administrative Duties	38	50

Table 2-1 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey the illuminance in office #1 was inadequate.

### 2.2.5 Lead

Peeling paint was observed on the water-damaged plaster in the weight room. This paint was inaccessible and could not be sampled. Given the building construction date (1956) this paint must be presumed to be lead-based.

#### 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

<u>GENERAL</u>: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

<u>LIGHTING</u>: On the day of the survey, the illuminance in office #1 was inadequate. URS recommends increasing lighting in several of the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

<u>LEAD:</u> Peeling paint in the weight room must be presumed lead-based given a pre-1978 construction date for the building. Once the source of the water incursion is corrected, this paint should be stabilized by a technician trained in accordance with OSHA's lead standard (29 CFR1910.1025). Alternately, the paint could be sampled and analyzed for lead content. If the paint is determined not to be lead-based then a general maintenance worker can stabilize the peeling paint.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed. URS recommends that the source of the water be identified, repaired and that water damaged building materials be replaced.

May, 2018

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URS 5

### 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 (Photos # 0023, 0024, and 0025).

#### 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 Former Firing Range

Semple Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range-Bullet	0212B-04	1.000	500	200
Former Firing Range- North- Shelf	0212B-04	1.000	110	200
Blank	0212B-09	N/A	<12	200

One air sample for lead dust was also collected in the former firing renge. Table 3-2 below shows the result of this air sample.

Table 3-2 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(µg/m <sup>3</sup> )
Former Firing Range	02128-01	293	<10	50.0
Blank	0130-LA03	0	<3,0	50.0

On the day of the survey, the airborne lead dust level 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<sup>3</sup> 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

<u>LEAD</u>: The dust wipe sample collected from the bullet trap of the former firing range contained lead greater than the maximum limit of 200 micrograms per square foot set by the National Guerd Bureeu Region North Industrial Hygiene Office (See Appendix G). URS recommends that the former firing range be cleaned by a technician trained in accordance with OSHA's lead standard (29 CFR 1910.1025). The NGB Region North Industrial Hygiene Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Appendix H contains guidelines for the cleanup and rehabilitation of indoor firing ranges.

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#### 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is used for assembling personnel and storing equipment. The walls are constructed of cinder-block with a wood parquet floor. Warping due to water incursion was observed on the wood floor (Photo # 0032). Visible mold was not observed in the water damaged area.

#### 4.2 Chemical and Physical Agents Sampled

#### 4.2.1 Lighting

Lighting in the drill hall was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 4-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting)

Table 4-1 Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (foot candles)	Recommended Illuminance (foot candles)
Drill Hall – Center	Assembly, Storage	47	30

On the day of the survey the illuminance in the drill hall was adequate.

#### 4.2.2 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 4-2 below shows the results of the lead sampling.

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URS

Sample Location	URS Sample Number	Area Wiped (fl <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall – North Center – Floor	0212B-06	1.000	110	200
Drill Hall – Center - Floor	0212B-07	1.000	13	200
Drill Hall - South -Floor	0212B-08	1.000	14	200
Blank	0212B-09	N/A	<12	200

Table 4-2 Levels of Lead Dust Found in the Drill Hall

One air sample for lead dust was collected in the drill hall. Table 4-3 below shows the result of this air sample.

Table 4-3 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(µg/m³)
Drill Hall	0212B-02	290	<10	50.0
Blank	0212B-03	0	<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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

### 4.2.3 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing pipe insulation in the northwest corner of the drill hall 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 Northwest Corner	Pipe insulation	0212B-20A	30
Drill Hall Northwest Corner	Pipe insulation	0212B-20B	5
Drill Hall Northwest Corner	Pipe insulation	0212B-20C	20

NAD = "No Asbestos Detected"

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.

#### 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

May, 2018

LIGHTING: On the day of the survey the illuminance in the drill hall was adequate.

<u>LEAD:</u> Analysis of dust wipe samples collected in the drill hall indicated that lead levels are below the allowable limit of 200 micrograms per square foot set by the National Guard Bureau Region North Industrial Hygiene Office (See Appendix G).

<u>ASBESTOS:</u> Approximately ten linear feet of damaged asbestos-containing pipe insulation is located in the northwest corner of the drill hall. URS recommends that the material is either removed or repaired by a Commonwealth of Massachusetts licensed Asbestos Abatement Contractor.

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#### 5.0 BOILER ROOM

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a boiler and associated piping.

#### 5.2 Chemical and Physical Agents Sampled

#### 5.2.1 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing boiler insulation (Photo 0030) 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 5-2 below presents the results of the sample analysis.

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room	Boiler Insulation	0212B-19A	10
Boiler Room	Boiler Insulation	0212B-19B	20
Boiler Room	Boiler Insulation	0212B-19C	25

Table 5-2 Sample Results of Suspect ACM

NAD = "No Asbestos Detected"

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.

#### 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

<u>ASBESTOS:</u> Samples of the boiler insulation where found to contain asbestos in a concentration greater than one percent. Approximately thirty square feet of boiler insulation has become significantly damaged (Photo # 0030). It is recommended that the insulation be removed or repaired by a Commonwealth of Massachusetts licensed Asbestos Abatement Contractor.

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#### 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

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

#### 6.3 Respiratory Protection

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

#### 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

#### 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. 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 62.1-2004: 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

#### ARMORY DRAWING

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#### EVACUATON PLAN

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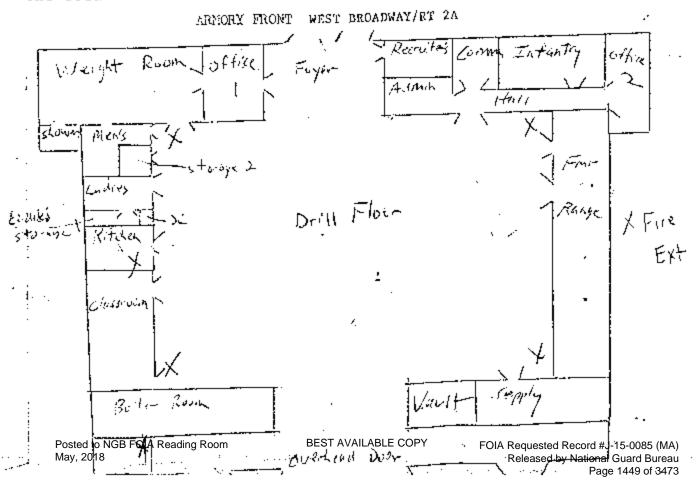
#### Company B(<sup>2</sup>) lst Battalion 181st Infantry Massachusetts Army National Quard 323 West Broadway, Gardner, MA 01440-3105

l. The Armory Evacuation Plan is designed to facilitate the evacuation of troops from the Armory, West Broadway/Gardner, Massachusetts, in the event of an enemy attack, fire, or other disorder.

2. This plan will be posted in all rooms of the Armory. Unit commanders will, at least once a year, hold an "Evacuation Drill" to insure that all members are familiar with the proper exits and designated assembly areas.

3. This plan will be reviewed by the Safety Officer at least once during each quarter, or more often if needed, to insure its being kept up to date.

4. After each evacuation of the Armory, Unit Commanders will immediatly have a roll call to insure that all troops have been evacuated. The building will not be re-entered until all safety factors have been taken into consideration. Fire fighting must be under control of authorized personnel of the unit or by unit officers. Periodic checks will be made to insure that all company personnel are familiar with the locations of the fire extinguishers. The local FIRE DEPARTMENT PHONE NUMBER IS: 911



APPENDIX B

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PERSONNEL LIST

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APPENDIX C

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HAZARDOUS MATERIALS LIST

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APPENDIX D

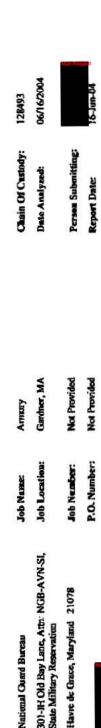
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#### ANALYTICAL RESULTS

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Summary of Atomic Absorption Analysis for Lead

Page I of I

1000	AMA Sample Namber	Clicat Sample Number	Analysis Type	Sample Type	Aár Volume (L)	Area Wiped (fr)	dan A	parting. Limit	Σ.	Final Result	4	Comments	
II BE	0451565	021B-04	Flame	Wipe	I	1,000	12.00	ug/ff		80	-US/Bo		
SI	0451566	021B-05	Flame	Wrpe	i	1.000	12.00	ug/ff		011	zU/₫¤		
AV	0451567	021B-06	Flame	Wripe	I	1.000	12.00	allfan		110	zU/Bn		
AIL	0451568	0218-07	Flame	Wipe	i	1.000	12.00	-ti),Bin		E	"Bu		
AB	0451569	021B-08	Flame	Wipe	ļ	1.000	12.00	ug/R <sup>2</sup>		Ŧ	ug/fr		
LE	0451570	0218-09	Flame	Wripe: Blank	ļ	NVA	12.00	3	v	2	ân		
CO	0451571	0218-01	Flame	ĄĢ	293	NIA	10.24	'm'Bu	v	10	ug/m3		
PY	0451572	0218-02	Flame	Air	290	NIA	10.34	'm/Bn	v	10	em/gu		
	0451573	0218-03	Flame	Air Biank	0	NIA	3.00	'm/an	v	•	84		
•	unalysis Method for F	Flame: Air, Wipe	s, Paints, and Soli/St	Analysis Method for Flame: Air, Wipes, Paints, and Sold'Solids: EPA 600/R-93/200/MJ-7420; Water: SM-3111B	100(M)-7420; Wale	r: SM-3111B							
•	unalysis Method For	Fumace: Air, W	lipes, Paints, and Soil	Analysis Method For Furnace: Air, Wipes, Paints, and Sol/Solids : EPA 600R-93/200(M)-7421; Water: SM-3113B	93/200(M)-7421; V	Water: SM-3113B							
PO	AIA = Not Applicable		mg/Kg = parts per million (ppm) by weight		mg/L = parts per million (ppm)	(ud							
1	KPb = percent lead by weight		ug = micrograms	up/L = parts per billion (ppb)	(pdd)	. 1001							

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## 4475 Forbes Blyd. • Lanham, MD 26706 • (301) 459-2646 • Todi Free (200) 346-0961 • 850 (301) 440-2623 An AlHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory

FD / T	lytical Services, Inc. iolized Environmental Laboratory	CERTIF	ICATE OF ANALYSIS			NY ELAP
Client:	National Guard Burcau	Job Name:	Armory	Chain Of Custody:	128493	AIHA
Address:	301-TH Old Bay Lanc, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Gardner, MA	Date Analyzed:	06/16/2004	
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:		
		P.O. Number:	Not Provided			
Attention:					<i>.</i>	Page I of I

#### Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amusite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiherglass Percent	Organic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0451574	0212B-19 A	10	10				TR			 	90	Gray	СК	
0451575	0212B-19 B	20	20	-	-			-		 	80	Gray	СК	
0451576	0212B-19 C	25	25		-		-	-		 	75	Gray	CK	
0451577	0212B-20 A	30	30		-		20052		30	 	40	Off-White	CK.	
0451578	0212B-20 B	5		3	2			**		 	95	Off-White	CK	
0451579	0212B-20 C	20	2	18						 	80	Off-White	CK	

applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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#### APPENDIX E

#### TRAINING CERTIFICATES



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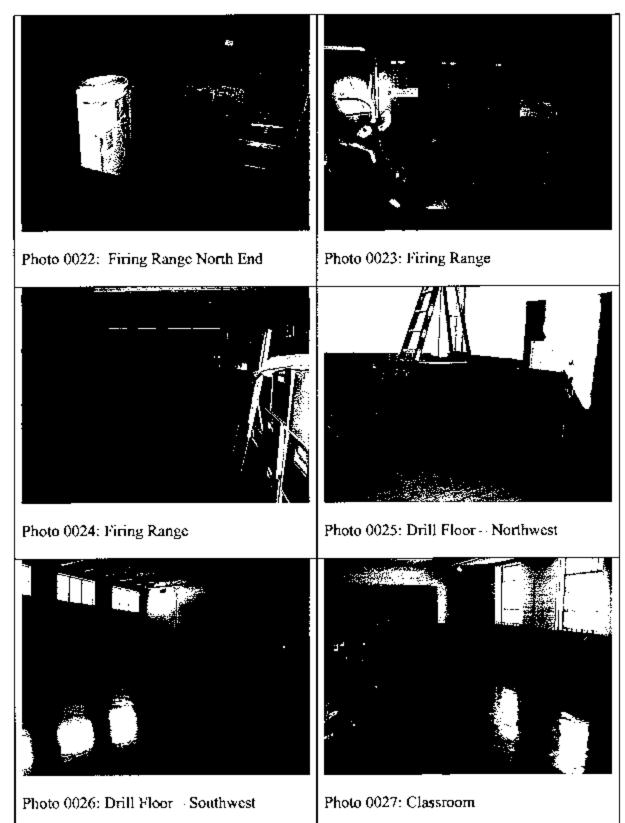
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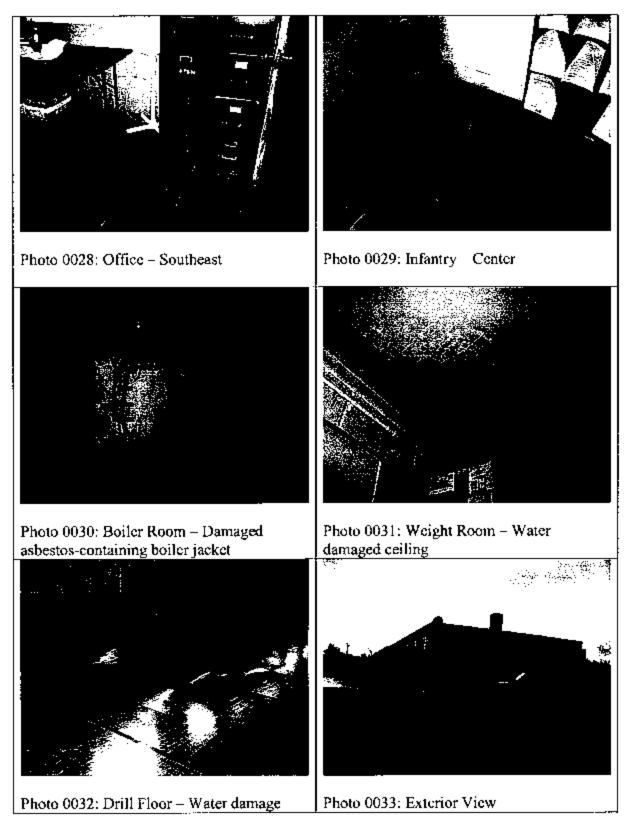


APPENDIX F

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PHOTOGRAPHS





#### APPENDIX G

#### RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> 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

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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 GUARO INDOOR FIRING RANGES

#### ADDENDUM

#### GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Paragraph

Purpose	1
References	2
Explanation of Abbreviations and Terms	3
Policy and Procedures	4
Goal	5
Background	6
Wipe Sample Media	7
Wipe Sampling Protocol	8
Range Cleaning Instructions	9
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Contaminated Sand and Lead Waste	11
Medical Surveillance	12
Worker Education	13
Personal Protection Equipment	14
Housekeeping	15
Maintenanco	16
Range Rehabilitation	17
Conversion of Indoor Firing Ranges	18
Deviation	19

#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Lead Levels from Wipe Sample Results

Appendix G - Surface Wive Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

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 (Proventive Medicine)

 NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG (ndoor Firing Ranges)

e. 29 Code of Pederal Regulations (CFR), Part 1910, Occupational Safety and Health Standards

1 OSHA Technical Manual, Edition VII.

q. DH5W NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

#### 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, <sup>5th</sup> 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.

 Equipment/Items proviously 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 kidnoys, 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 teast one field blank filter must be submitted with each sample sheet. The field blank must be from the same tot, 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.

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#### 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

(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 Appandix A.

#### 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 <sup>th</sup> 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.

 the Wood floors should receive a cost of deck enamel or urethane; concrete floors should be scaled 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 taboratory testing. The floor should be the fast 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 REPA.

I. 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 fl) with lead dust must be decontaminated before it is removed from the range.

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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 modical 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 personnal are not overexposed to airborne load 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 lovel 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 tritations 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, filting, use and limitations of respirators.
- d. The purpose and a description of medical surveillance program.
- e. Ealing and drinking are prohibited in lead conteminated areas.
- f. Smoking and smoking materials will not be permitted in contaminated areas.

#### 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

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 ongaged 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 coverails 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, faundered, 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 property 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 Alr) 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 tabeled to identify contents, in accordance with the hazardous waste program.

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

e. When cleaning start behind the firing line (orward, 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 for condition of belts to ensure that they are not frayed or slipping.

#### 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

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 vanistian 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 builtet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved rospirator, 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 tead 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 fead 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 tans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

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

#### 19. Devlation

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, Atin: NG8-AVS-S, 111 South George Mason Drive, Arlington, VA 22204 1382.

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#### 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<sup>™</sup> 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 clearing instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 206,000 micrograms/sq ft

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

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#### 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 splited 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 fist of vandors, 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 Hyglene Office for additional assistance or clarification.

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

Order From Catalog Number

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

E-3.37 rtm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From Catalog Number

 a. Supeleo Inc. 2-3381iM Supeleo Park Belfofonte, PA 16823 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 & (Continued)

800-247-6828 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 Valloy View Rd.
 Eighty Four, PA 15330
 412-941-9701
 800-752-8472

# 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 61305
 815-968-0747
 800-874-3723

 Altech Associates, Ioc. 95321 (screw cap) Applied Science Labs 2051 Waukegan Rd Ceerfield, IL 60015 312-948 8600

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#### APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

#### Order From Catalog Number

Environmental Express SC4200 490 Wando Park Bivd. MI. Pleasani, SC 29464 1-800-343-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

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

E-8. Plastic ziptock 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:

75 <u>ug</u>	- 92	<u>29 cm²</u>	
100 cm <sup>2</sup>		1 sq ft	
75 x 929	=	69675	= 698.75ug/sq.ft
100		100	

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 Realth Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

leturn Address			Point of Conta	ct (name & phone #)
			Samples Collee	nted By
ampled Facility		City	State	Location (bldg/area)
escription of Ope	ration		Date Collected	Date Shipped
nalysis Desired				
ampling Data		·		
ab Use Only	Sample #	Results		Remarks
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#### APPENDIX G SURFACE WIPE SAMPLING SHEET

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#### 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 Point of Contact (name/phone #) Samples Collected By Location (bidg/area) State City **Description of Operation** Method of Collection **Hrs/Day** Persons Exposed

No.		1		I	
Pump No.					B
Time On					L
Time Off				1 1	A
Total Time (min)				<u>₹</u>	N
Flow Rate (LPM)					ĸ
Volume (iltors)					
GA/BZ					
Employee Name/ID					
Laboratory No.					
Calibration I	nformation				
	Calibrat	tion (LPM)	Rotameter Soffing		Dale
Pump No.	Pro-Use	Post-Use			
		· <b></b>	<b>├</b> ··· - <b>_</b>	_ <u> </u> ·•	
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		:		·	
Name of Calibra	ator	Calibration Date	Pump Manufacturer		
Cominants to L	ab				

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Return Address

Sampled Facility

Analysis Desired Sampling Data 

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> APPENDIX I ABBREVIATIONS AND TERMS

Section I Abbreviations

ARNG Army National Guard

BUN Blood urea nitrogen

**9Z** 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

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#### 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 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.

#### Leed~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.

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## **Industrial Hygiene Survey**

Massachusetts Army National Guard (MA ARNG)

Prepared For: NGB ARNG- Region North IH Office

Survey Location:

Gardner Readiness Center 323 West Broadway Gardner, MA 01440-3105

Prepared By: Aria Environmental, Inc. (AEI) PO Box 286 Woodbine, MD 21797

Survey Date: July 26, 2010 Report Date: September 16, 2010

AEI Project #: J10-513 3a MA Gardner RC

#### Non-Responsiv

Industrial Hygienist



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- Appendix D IAQ and Lighting Survey Log Sheets

#### **Executive Summary**

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Readiness Center located at 323 West Broadway, Gardner, MA, 01440-3105. Non-Responsive performed the evaluation on July 26, 2010. The point of contact for the facility was Staff Sergeant The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities. The survey included: (1) evaluations of operations including operation description, ventilation system evaluations, noise dosimetry if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) photographs of the exterior and interior of the readiness center. The results of the evaluation indicated the following:

**Noise Hazards:** No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

Lead in Air Samples: Results of collected air samples were below regulatory limits for lead (50  $\mu$ g/m<sup>3</sup>).

Paint Chip and Wipe Samples for Lead Contamination: Five of six wipe samples collected from the former firing range were above the National Guard criteria for lead contamination (200  $\mu$ g/ft<sup>2</sup>). Samples ranged from 1.7 to 195 times the National Guard criteria. Lead was identified in the remaining ductwork, exhaust fan, on top of the light fixture, on stored footlockers and on the floor of the range. All collected paint chip samples were below the percentage that defines lead-based paint.

**Visual Inspection for Damaged Asbestos-Containing Materials:** Minor damage on the boiler breeching and a damaged TSI pipe fitting leading from the boiler were observed in the Mechanical Room. Bulk samples collected of the materials indicated one of the samples contained asbestos at greater than one percent (1%). The TSI pipe fitting leading from the boiler contained 80% Chrysotile asbestos.

Visual Inspection for Water Damage and Mold Growth: There was some evidence of light water damage in the corner of the Supply Room. The area was not wet at the time of the survey and no mold growth was observed at the facility.

**Visual Inspection for Housekeeping Concerns:** A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

**Lighting:** The evaluation indicated that there are some illumination deficiencies in several areas of the facility. Additionally, office and one storage room (Rooms 9 and 10 on the attached drawing) had lights that were not functioning on the day of the survey. The illumination measurements indoors ranged from a low of 0.8 foot candles (fc) to a high of 80 fc.

**Indoor Air Quality:** Temperatures and relative humidity measurements were all acceptable on the day of monitoring. However, indoor conditions are directly related to outdoor conditions due to the lack of air conditioning in most of the facility. Indoor levels of  $CO_2$  ranged from 346 to 1072

parts per million (ppm) and outdoor  $CO_2$  levels were approximately 350 ppm during the monitored period.  $CO_2$  measurements were below the guideline in all areas, except the front office of the building. Elevated  $CO_2$  levels in the front office were most likely the result of overcrowding in the room at the time of the survey. Due to an ongoing meeting, there were eight (8) individuals in the room at the time of the survey. Indoor levels of CO ranged from 0 to 0.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

#### 1 Introduction

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Massachusetts Army National Guard (MA ARNG) Readiness Center located at 323 West Broadway, Gardner, MA, 01440-3105. Non-Responsive performed the evaluation on July 26, 2010. The point of contact for the facility was Staff Sergeant Non-Responsive. The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities.

The Gardner Readiness Center is staffed with 2 fulltime National Guard administrative personnel. The operations conducted at the facility include supply and administrative duties. A diagram of the building layout is provided in Appendix A. All sampling sheets and laboratory certificates of analysis are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. Indoor air quality and lighting survey measurement log sheets are provided in Appendix D. Lists of all references used during the evaluation are included in the main body of the report.

#### 2 Evaluation Methods

The industrial hygiene survey of the Gardner Readiness Center consisted of visual inspections, interviews with employees and sampling plan development in order to achieve the following: (1) evaluations of operations including operation description, sampling for lead in air or on surfaces if appropriate, ventilation system evaluations, noise measurements if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) a building layout and photographic documentation of the interior of the facility.

The National Guard Bureau (NGB) Region North IH Office provided all industrial hygiene equipment for air sampling (equipment and media), ventilation, lighting, noise and IAQ survey instruments and paid for laboratory analytical fees. Laboratories were chosen or approved by

#### 3 Operations

Operations conducted at the Gardner facility consists exclusively of supply and administrative duties. No maintenance of vehicles, painting of equipment or other physical tasks are performed at the facility. Ground maintenance and upkeep of the building are the responsibility of the state employed Armorer and not part of the duties of National Guard personnel.

#### 4 Noise Hazards

No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

## 5 Hazard Controls

#### Ventilation Systems

Heat is supplied to the facility through a boiler located in the boiler room and overhead heaters in the drill hall. The boiler certificate for the Gardner was expired and is not up to date. Any air conditioning provided to the building is through window air conditioning units. No local ventilation systems were present at the facility.

#### 6 Physical Condition of the Facility and Personnel Concerns

An evaluation of the physical condition of the facility and personnel concerns was performed including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices. Lighting and indoor air quality measurements were taken in all areas of the facility as well.

#### Lead in Air Samples

To determine if any airborne contamination of lead existed in the facility, personal air sampling for lead was conducted in on two National Guard members and analyzed by AMA for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Results are given in Table 1 and certificates of analysis are included in Appendix B.

Air Sample #	Sample Location	Result (µg/m³)*
GAR-01	Staff Sergeant Non-Responsive	<10
GAR-02	Sergeant Major	<10

## Table 1 – Results of Lead in Air Sampling for the MA ARNG

\*The OSHA PEL for Lead in Air is 50  $\mu$ g/m<sup>3</sup>.

### Paint Chip and Dust Wipe Samples for Lead Contamination

To determine if any cross contamination of lead from any source into areas of the facility existed, wipe samples were collected using ghost wipes and 10cm x 10cm templates. Wipe samples for surface dust were collected in 17 locations. The Environmental Protection Agency (EPA) and the Commonwealth of Massachusetts limits for lead in dust are 40 micrograms per square foot  $(\mu g/ft^2)$  on floors, 250  $\mu g/ft^2$  on window sills, and 400  $\mu g/ft^2$  in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level for adult exposures of 200 µg/ft<sup>2</sup> on floors and frequently contacted surfaces, which is more stringent for window sills than the EPA/State standards. Dust wipe samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Five of six samples collected from the former firing range, now used but not converted to storage, were above the National Guard criteria for lead contamination (200 µg/ft<sup>2</sup>). Samples ranged from 1.7 to 195 times the National Guard criteria. Lead was identified in the remaining ductwork, exhaust fan, on top of the light fixture, on stored footlockers and on the floor of the range. Results are given in Table 2 and certificates of analysis are included in Appendix B.

Table 2- Results of Dust Wipe Sampling for MA ARNG
Gardner Readiness Center on July 26, 2010.

Wipe Sample #	Sample Location	Result (µg/ft²)*
GAR-PB-01	Kitchen, On Serving Table	<110
GAR-PB-02	Office 13, From Vent	<110
GAR-PB-03	Assembly Hall, Walking Mat Against Wall by Room 19	<110
GAR-PB-04	Assembly Hall, Middle of Floor	<110
GAR-PB-05	Assembly Hall, On Top of Vending Machine	<110
GAR-PB-06	Room 3, Former Indoor Firing Range, Inside Duct	39,000
GAR-PB-07	Room 3, Former Indoor Firing Range, Bullet Trap	190
GAR-PB-08	Room 3, Former Indoor Firing Range, From Exhaust Fan in Ceiling	6,200
GAR-PB-09	Room 3, Former Indoor Firing Range, Light Fixture	640
GAR-PB-10	Room 3, Former Indoor Firing Range, From Top of Stored Footlockers	770
GAR-PB-11	Room 3, Former Indoor Firing Range, Middle of Floor	340
GAR-PB-12	Assembly Hall Floor Immediately Outside Former Range (Room 3)	<110
GAR-PB-13	Room 11, Top of Locker	<110
GAR-PB-14	Entry Foyer, From Vent	<110
GAR-PB-15	Room 14, Window Sill	200
GAR-PB-16	Room 19, Mess Hall Table Top	<110
GAR-PB-17	Room 21, Middle of Floor	<110

\*The US Army CHPPM recommends a maximum level for adult exposures of 200 µg/ft<sup>2</sup> lead on floors

A visual inspection was performed to determine if there were any areas of peeling paint at the facility that could pose a lead exposure hazard. Peeling paint was observed over the door in the Men's Room; therefore, one paint chip was collected. The paint chip sample was collected following operational protocols set forth in HUD's Guidelines for the Evaluation and Control of Lead-Based Paint Hazard in Housing (1995). The paint chip sample was submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) of Lanham, MD for analysis. The analyses were performed using Flame Atomic Absorption Spectrophotometry (AAS) following the analytical method SW 846 7420. AMA is accredited for the analysis of paint chip samples through the AIHA Proficiency Testing Program (#100470). In the Commonwealth of Massachusetts, paint is considered to be lead-based if it contains more than 0.5 % lead by weight. All paint chip samples were below regulatory limits of 0.5% lead by weight. Results are given in Table 3 and certificates of analysis are included in Appendix B.

#### Table 3 – Results of Paint Chip Sampling for MA ARNG Gardner Readiness Center on July 26, 2010.

Paint Chip Sample #	Sample Location	Result (% by wt )*
GAR-LBP-01	Flaking Paint in Men's Room	0.034

\*Paint is considered lead-based if it is > 0.5% by weight.

#### Visual Inspection for Damaged Asbestos-Containing Materials

A visual inspection was performed to determine if there were any suspect asbestos-containing material and its condition. Minor damage on the boiler breeching and a damaged TSI pipe fitting leading from the boiler were observed in the Mechanical Room. Bulk samples of both materials were collected. Samples were submitted to AMA Analytical Services, Inc. of Lanham, MD 20706 (NIST-NVLAP Accreditation No. 101143-0) for analysis by Polarized Light Microscopy (PLM) using EPA method 600/R-93/116. The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. One of the samples contained asbestos at greater than one percent (1%). The TSI pipe fitting leading from the boiler contained 80% Chrysotile asbestos Results are given in Table 4 and certificates of analysis are included in Appendix B.

#### Table 4 – Results of Asbestos Sampling for the MA ARNG RC Gardner, MA on July 26, 2010.

Bulk Sample #	Sample Location	Result (%)
GAR-ASB-01	Boiler Breeching	ND
GAR-ASB-02	Damaged Elbow in Mechanical Room	80% Chrysotile

#### Visual Inspection for Water Damage and Mold Growth

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was some evidence of light water damage in the corner of the Supply Room. The area was not wet at the time of the survey and no visible mold growth was observed at the facility.

#### Visual Inspection for Housekeeping Concerns

A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

#### Lighting

Illumination levels were measured using a Cal-Light 400L, calibrated on July 30, 2009, and compared to minimum lighting requirements for various facilities and functions based on the following references: American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

A lighting survey was performed in all areas within the RC. The evaluation indicated that there are some illumination deficiencies in several areas of the facility(Rooms 5, 8, 14, and 20 on the attached drawing). Additionally, office and one storage room (Rooms 9 and 10 on the attached drawing) had lights that were not functioning on the day of the survey. The illumination measurements indoors ranged from a low of 0.8 foot candles (fc) to a high of 80 fc.

The complete results of the evaluation are presented in Appendix D, including whether the results met minimum requirements for illumination. Additional illumination can be achieved by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, using supplemental task lighting, and opening doors or windows to provide more natural lighting.

#### Indoor Air Quality (IAQ)

Indoor air quality measurements (i.e., temperature, relative humidity, carbon dioxide and carbon monoxide) were taken using a TSI Q-Trak Plus Model 7565X, factory calibrated in September 2009. Temperature, relative humidity and carbon dioxide (CO<sub>2</sub>) measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Carbon monoxide (CO) concentrations were compared to the ACGIH Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's (EPA's) National Ambient Air Quality Standard (NAAQS) for CO.

Industry guidelines or standards for seasonal temperature and humidity ranges for thermal comfort are established by ASHRAE standard 55-2004. These ranges are presented in Table 5. The U.S. EPA also recommends maintaining relative humidity below 60% and ideally between 30 and 50% to prevent mold growth. Complete results are provided in Appendix G with the lighting survey measurements.

Relative Humidity	Winter Temperature	Summer Temperature
30%	68.5°F - 76.0°F	74.0°F – 80°F
40%	68.5°F – 75.5°F	73.5°F - 79.5°F
50%	68.5°F - 74.5°F	73.0°F - 79.0°F
60%	68.0°F - 74.0°F	72.5°F - 78.0°F

#### Table 5 - Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter<sup>a</sup>

<sup>a</sup>adapted from ASHRAE Standard 55-2004

#### Temperature and Relative Humidity

Indoor temperature and relative humidity (Rh) measurements in the facility ranged from 75.6 to 77.9° F and 43.6 to 62.4% Rh. Outdoor temperature and humidity measurements were 76.1° F and 48.5% on the day of monitoring. Temperatures and relative humidity measurements were all acceptable on the day of monitoring. However, indoor conditions are directly related to outdoor conditions due to the lack of air conditioning in most of the facility.

#### Carbon Dioxide (CO2) and Carbon Monoxide (CO)

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build up of  $CO_2$  indicates inadequate ventilation. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1 – 2007 as 700 ppm above outdoor concentrations. Indoor levels of  $CO_2$  ranged from 346 to 1072 parts per million (ppm) and outdoor  $CO_2$  levels were approximately 350 ppm during the monitored period.  $CO_2$  measurements were below the guideline in all areas, except the front office of the building. Elevated  $CO_2$  levels in the front office were most likely the result of overcrowding in the room at the time of the survey. Due to an ongoing meeting, there were eight (8) individuals in the room at the time of the survey.

Carbon monoxide is a byproduct of incomplete combustion. Indoor concentrations indicate contamination caused by improperly vented or malfunctioning boilers, furnaces or stoves or from vehicle exhaust entering the building from garages, loading docks, nearby roads or parking lots. The concentration of interest set by ASHRAE standard 62.1-2007 and the National Ambient Air Quality Standards (NAAQS) for carbon monoxide is an 8 hour average of 9 ppm. The ACGIH TLV for CO is 25 ppm. Indoor levels of CO ranged from 0 to 0.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

#### 7 Conclusions

The results of the evaluation indicated no concerns with the following at the facility: contamination of clean air sources, peeling lead-based paints, noise hazards, indoor air quality, visible mold and housekeeping. The results of the evaluation indicated industrial hygiene concerns in the following areas: cross contamination from the former firing range, the presence of damaged suspect asbestos-containing materials, and lighting. Overall, Chicopee Readiness Center has few industrial hygiene issues, and programs are in place to protect, inform and train employees.

#### 8 Limitations

This report has been prepared for the exclusive use of the U.S. Army National Guard (USARNG) and/or their agents. This service has been performed in accordance with generally accepted industrial hygiene and environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations readily visible at the site at the time of our site visit, and upon current industry standards.

By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that my present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, sate, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

### 9 References

- 1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
- 2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
- 3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.

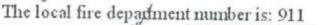
- 4. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, May 25, 2007.
- 5. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
- 6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 15, 1998.
- 7. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
- 8. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
- 9. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
- 10. RP-1-2004 (Office Lighting) and RP-7-2001 (Industrial Lighting), Illuminating Engineering Society of North America (IESNA)/ANSI.
- 11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality" and Standard 55-2004, "Thermal Environmental Conditions for Human Occupancy".
- 12. NIOSH website: <a href="http://www.cdc.gov/niosh/">http://www.cdc.gov/niosh/</a>
- 13. OSHA website: <u>http://www.osha.gov/</u>.
- 14. Army CHPPM website: http://chppm-www.apgea.army.mil/.
- 15. EPA website: <u>http://www.epa.gov</u>.

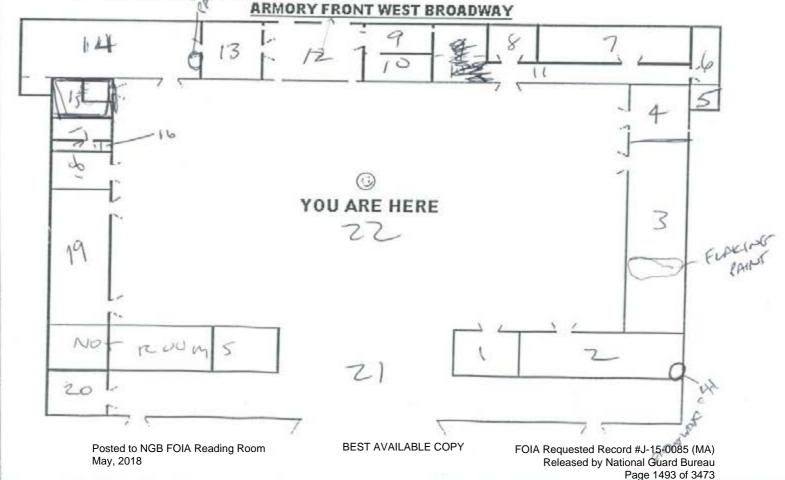
Appendix A Building Layout

#### EVACUATION PLAN BEST AVAILABLE COPY

## <u>COMPANY B</u> <u>1<sup>ST</sup> BATTALION 181<sup>ST</sup> INFANTRY</u> <u>MASSACHUSETTS ARMY NATIONAL GUARD</u> <u>323 WEST BROADWAY, GARDNER, MA.01440-3105</u>

- The Armory Evacuation Plan is designed to facilitate the evacuation of troops from the Armory, West Broadway Gardner, Massachusetts, in the event of an enemy attack, fire, or other disorder.
- 2. This plan will be posted in all rooms of the Armory. Unit commanders will, at least once a year, hold an "Evacuation Drill" to insure that all members are familiar with the proper exits and designated assembly areas.
- This plan will be reviewed by the State Officer at least once during each quarter, or more often as if needed, to insure its being kept up to date.
- 4. After each evacuation of the Armory, Unit Commanders will immediately have a roll call to insure that all troops have been evacuated. The building will not be re-entered until all safety factors have been taken into consideration. Fire fighting must be under control of authorized personnel of the unit or by unit officers. Periodic checks will be made to insure that all company personnel are familiar with the locations of the fire extinguishers.





Appendix B Certificates of Analysis for Air, Dust Wipe and Bulk Samples

## AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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## **CERTIFICATE OF ANALYSIS**



#### Client: National Guard Bureau Job Name: Gardner Armory Chain Of Custody: 508469 301-IH Old Bay Lane, Attn: NGB-AVN-SI, Job Location: Gardner, MA 8/6/2010 Address: Date Analyzed: State Military Reservation Job Number: Not Provided Person Submitting: Havre de Grace, Maryland 21078 W912K6-09-A-0003 P.O. Number: Page 1 of 1 Attention:

## Summary of Polarized Light Microscopy

MA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Asbestos		Percent		1000 C	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
1066553	GAR-ASB-01	NAD			 	35		5		 60	Multi	Layered	sw	
1066554	GAR-ASB-02	80	20	60	 					 20	Multi	Layered	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.</p>

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



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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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## AMA Analytical Services, Inc.

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A Specialized Environmental Laboratory

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## CERTIFICATE OF ANALYSIS



Page 1 of 2

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#### Summary of Atomic Absorption Analysis for Lead

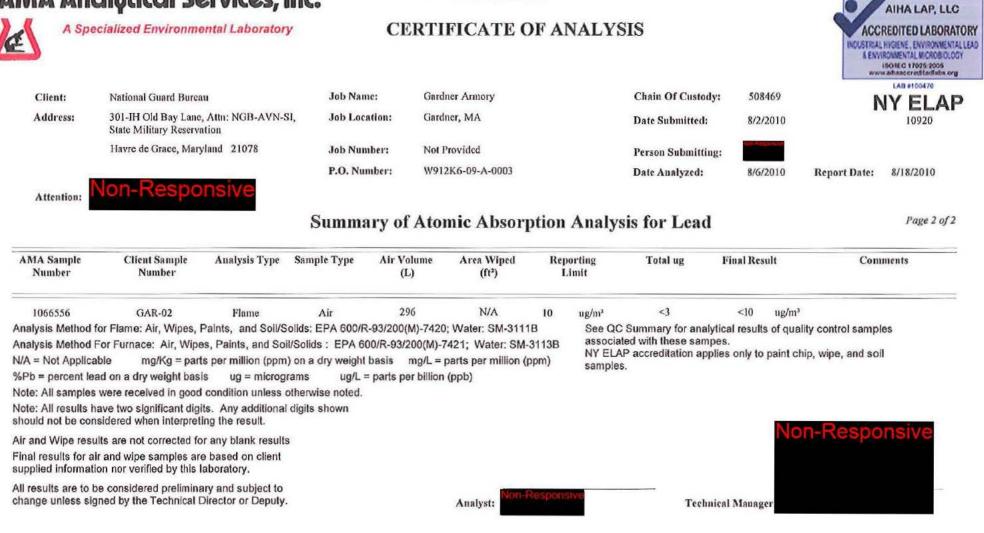
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1066535	GAR-Pb-01	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066536	GAR-Pb-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066537	GAR-Pb-03	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066538	GAR-Pb-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066539	GAR-Pb-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
1066540	GAR-Pb-06	Flame	Wipe	****	0.108	110	ug/ft²	4200	39000	ug/ft²	
1066541	GAR-Pb-07	Flame	Wipe	****	0.108	110	ug/ft²	20	190	ug/fi²	
1066542	GAR-Pb-08	Flame	Wipe	****	0.108	110	ug/fl²	670	6200	ug/ft²	
1066543	GAR-Pb-09	Flame	Wipe	****	0.108	110	ug/ft²	69	640	ug/fl²	
1066544	GAR-Pb-10	Flame	Wipe	****	0.108	110	ug/ft²	83	770	ug/ft <sup>2</sup>	
1066545	GAR-Pb-11	Flame	Wipe	****	0.108	110	ug/ft²	37	340	ug/ft²	
1066546	GAR-Pb-12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
1066547	GAR-Pb-13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066548	GAR-Pb-14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066549	GAR-Pb-15	Flame	Wipe	****	0.108	110	ug/fl²	22	200	ug/fl <sup>2</sup>	
1066550	GAR-Pb-16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1066551	GAR-Pb-17	Flame	Wipe	****	0.108	110	ug/ft2	<12	<110	ug/ft²	
1066552	GAR-LBP-01	Flame	Paint Chip	****	N/A	0.0086	%Pb		0.034	%Pb	
1066555	GAR-01	Flame	Air	295	N/A	10	ug/m³	<3	<10	ug/m³	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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Appendix C Photo Documentation

# Gardner RC



## Front Entry





## Storage Area, Former Firing Range



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Workout Area FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1503 of 3473

May, 2018

Flaking Paint on Ceiling

# Gardner RC



## Damaged Ceiling



Posted to NGB FOIA Reading Room May, 2018



Kitchen

Vault



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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1504 of 3473

# Gardner RC



## Flammable Cabinet





Boiler Room



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Damaged TSI FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1505 of 3473

# Gardner RC



Drill Hall

Appendix D IAQ and Lighting Survey Log Sheets

State	MA		Gardner	IAQ Light										
Date	7/26/2010	Inspector	Non-Responsive	Instrument				Q-TRAK 7	565-	х		Instrument		CAL-LIGHT 400
Facility Description	Readiness Ctr			Serial Numb	er		7565X0839017					Serial Numbe	K070277	
Weather Conditions				Last Calibrat			Sep-0	8			Last Calibration		30-Jul-09	
Location	Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Values (fc)
1	Vault	0	12:03 PM	77.2		50.6		406		0.4		62.4		10
2	Office/Supply	1	12:04 PM	76.5		56.2		366		0.2		58.7		50
3	Storage	0	12:08 PM	76.5		62.4	х	370		0.5		12.2		5-30
4	Storage	0	12:12 PM	76.0		58.3		550		0.0		34.2		5-30
5	Ammo Vault	0	12:13 PM	76.0		58.3		512		0.1		9.6	х	10
6	Office	0	12:14 PM	75.9		52.1		416		0.3		65.0		50
7	Office	0	12:15 PM	75.9		55.1		392		0.1		60.8		50
8	Office	1	12:26 PM	76.1		53.0		430		0.7		49.2	х	50
9	Office	0	12:17 PM	75.7		52.9		390		0.6		25.1*	x	50
10	Storage	0	12:18 PM	75.6		53.6		410		0.0		0.8*	x	5-30
11	Hall	0	12:25 PM	76.0		51.4		414		0.5		7.2		5
12	Entry Foyer	0	12:29 PM	76.2		49.6		617		0.1		13.3		10
13	Front Office	8	12:31 PM	76.5		48.9		1072	х	0.4		80.0		50
14	Weight Room/ Locker	0	12:34 PM	76.0		48.6		420		0.5		18.6	х	30
15	Men's Room	0	12:40 PM	75.8		54.3		490		0.3		18.6		5
16	Janitor Closet	0	12:40 PM	75.6		54.1		358		0.1		13.1		5
17	Ladie's Room	0	12:41 PM	77.2		52.8		501		0.2		18.6		5
18	Kitchen	0	12:42 PM	77.4		46.0		368		0.2		53.1		50
Notes:				40 50	Hum )% )% )% )%	nidity	68. 68. 68.	nter Temp. .5°F-76.0°F .5°F-75.5°F .5°F-74.5°F .0°F-74.0°F	7 7 7	ummer Tem 4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0° 2.5°F-78.0°	F F F	*Natural Ligh Do Not Work		ly, House Lights

State	MA	City	Gardner	IAQ								Light			
Date	7/26/2010	Inspector	Non-Responsive	Instrument				Q-TRAK 75	65-X			Instrument		CAL-LIGHT 400	
Facility Description	Readiness Ctr			Serial Number 7565X0839017				Serial Number		K070277					
Weather Conditions				Last Calibra	Last Calibration							Last Calibration		30-Jul-09	
Location	Function	No. Occupant s	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Values (fc)	
19	Mess Hall	0	12:45 PM	77.9		46.0		388		0.3		72.5		10	
20	Mechanical Room	0	12:47 PM	76.2		49.2		335		0.2		8.1	Х	30	
21	Assembly Entry	0	12:49 PM	75.8		43.6		346		0.2		31.7		10	
22	Assembly Hall	0	12:51 PM	76.1		45.5		356		0.3		48.5		30-50	
							-								
Notes:	1	1		4	e Hi 30% 40% 50% 60%		68. 68. 68.	nter Temp. 5°F-76.0°F 5°F-75.5°F 5°F-74.5°F 0°F-74.0°F	7 7 7	ummer Tem 4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0° 2.5°F-78.0°	F F F			1	



#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 323 WEST BROADWAY GARDNER, MA 01440

July 11, 2013 PN: 39743799



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APPENDIX E	RECOMMENDATIONS FOR SURFACE LEAD DUST IN
	ARMORIES

#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 323 WEST BROADWAY, GARDNER, MA

Findings	Recommendations	Risk Assessment Code (RAC)
Lighting		
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4
Ergonomics		
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards	Ergonomic issues with regard to 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
Water Intrusion		
Evidence of water intrusion was noted in the area of a roof drain in the Supply Room.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio-aerosols in the Indoor Environment).	RAC 3
Former Indoor Firing Range		
The former Indoor Firing Range has been posted as unsafe due to lead contamination; however, a closed door to the area does not adequately restrict access.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Since the former indoor firing range is contaminated with lead and several wipe samples in other building areas were found to contain elevated lead levels, an assessment should be made as to whether respiratory protection and other PPE should be worn when entering the former Indoor Firing Range.	A respirator shall be provided for each employee when such equipment is necessary to protect the health of the employee. (29 CFR 1910.134 (a)(2)).	RAC 3

Findings	Recommendations	Risk Assessment Code (RAC)
Lead		
Three of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3
Emergency Exits		
Emergency exit signs and escape plans were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3
Asbestos		
Presumed asbestos-containing floor tiles and associated mastic were observed throughout the facility; an Asbestos Operations and Maintenance Program was not available on-Site.	An asbestos operations and maintenance program should be developed to include labeling and training with regard to both confirmed and presumed ACM. (29 CFR 1910.1001 (j))	RAC 4
<b>Personal Protective Equipmen</b>	t	
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	The workplace shall be assessed to determine if hazards are present to determine the need for PPE. (29 CFR 1910.132 (d)(1)).	RAC 4
Temperature		
The average temperature in the Readiness Center on the day of URS' site visit was slightly below the recommended range.	Temperature should be maintained within the range stated in the ASHRAE standard. (55-2010)	

#### 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 in Gardner, Massachusetts.

URS representative, Ms. **Non-Responsive**, conducted the Industrial Hygiene Survey on May 30, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise monitoring.

The Gardner Readiness Center is a single-story brick building, consisting of offices, a classroom/mess hall, a supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: Evidence of water intrusion was observed in the area of the roof drain in the Supply Room. The former Indoor Firing Range is posted as unsafe due to lead contamination, however the door does not lock to restrict access.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in seven of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress, work areas must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Three of ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

Since the former indoor firing range is accessible to staff, a hazard assessment should be conducted to determine good hygiene practices to be followed when entering the former firing range. <u>ASBESTOS</u>: Presumed asbestos-containing floor tiles and associated mastic were identified during this survey, however no Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chairs armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Personal noise monitoring in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

## 2.0 SUPPLY / TRAINING AREA

## 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, a classroom/mess hall, a supply area, gender separate bathrooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. The indoor firing range is currently used for storage and, although the door is kept closed, access is not prohibited. The former Indoor Firing Range has not been decontaminated.

The Readiness Center was found to be neat and organized at the time of URS' site visit.

## 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. Interior carbon dioxide concentrations were found to be between 448 and 579 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 447 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below

1,147 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

# 2.2.2 Carbon Monoxide

The carbon monoxide concentration in the Readiness Center was measured between 0.0 ppm and 0.6 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

# 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 65.5%, which was slightly above the guideline of less than 65% recommended by ASHRAE.

# 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 67.6 °F, which was slightly below the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort. URS received several complaints regarding cool indoor air temperature during this survey.

# 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Classroom, table adjacent to chalk board	Admin	115.7	50
Recruiter's Office, desk-	Admin	10.1	50
Recruiter's Office, desk-	Admin	30.3	50
Office, desk-	Admin	63.9	50
Office, training computer workstation	Admin	38.8	50
Office, desk- vacant	Admin	50.3	50
CMR Office, desk	Admin	69.2	50
1 <sup>st</sup> Platoon's Office, desk	Admin	61.5	50
1 <sup>st</sup> Platoon's Office, desk-	Admin	58.0	<mark>50</mark>
1 <sup>st</sup> Platoon's Office, maintenance desk	Admin	55.2	<mark>50</mark>
Bravo Company Office, desk- 1 <sup>st</sup> Sergeant	Admin	81.4	50
Office, desk, adjacent to board	Admin	75.6	50
Office, desk, adjacent to board, east window	Admin	77.0	50
Corridor west	Hall	9.8	5
Corridor east	Hall	8.9	5
NBC Office, desk	Admin	32.1	50
Assembly Hall	Hall	65.8	5
Assembly Hall	Hall	57.2	5
Supply Room, desk-	Admin	37.3	50
Supply Room, desk adjacent to window	Admin	17.1	50
Supply Room, north side	Storage	6.1	30
Kitchen, adjacent to stove and sink	Break Room	54.9	50

Table 2-1Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
Classroom, desk adjacent to kitchen window	Admin	78.4	50

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in seven of the office/administrative locations.

## 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Office- definition of the computer training desk, top of computer	Gardner RC W-01	0.108	<110	200
1 <sup>st</sup> Platoon's Office, under corner desk adjacent to window	Gardner RC W-02	0.108	<110	200
Recruiting Office, adjacent to bookshelf and copier	Gardner RC W-03	0.108	<110	200
West Corner Office, top of locker adjacent to north window	Gardner RC W-04	0.108	<110	200
Women's latrine	Gardner RC W-05	0.108	<110	200
Supply Room, floor, adjacent to shelving unit	Gardner RC W-06	0.108	22,000	200

 Table 2-2

 Levels of Lead Dust Found in the Readiness Center

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Former Indoor Firing Range, doorway, floor	Gardner RC W-07	0.108	160	200
PT Room, southern corner, floor adjacent to work area	Gardner RC W-08	0.108	860	200
Classroom, north corner, top of locker adjacent to chalk board	Gardner RC W-09	0.108	620	200
Assembly Hall, adjacent to loading area and electrical box	Gardner RC W-10	0.108	140	200

Three of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62. Wipe samples could not be collected in the former Indoor Firing Range since access was restricted.

No areas of peeling paint were identified for sample collection during this survey.

# 2.2.7 Asbestos

Presumed asbestos-containing floor tiles and associated mastic were identified during this survey. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestos-containing and managed accordingly.

# 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

# 2.4 Noise Measurements

Personal noise dosimetry was conducted within the administrative office area. Noise exposures were measured using a data-logging Spark 703+ Noise Dosimeter. Personal noise dosimetry results indicated that, on the day of the survey, workers were not exposed to noise levels above the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day. Table 2-5 indicates the individual monitored, the tasks performed and noise exposures.

Table 2-5 Noise Dosimetry Data

Location	Task	Sample Duration in Minutes	Monitoring Result TWA (dBA)*	Hearing Protection
Non-Responsive	Administrative	375	65.6	N/A

\* The calculated 8-hour, time-weighted average (TWA) noise exposure in dBA. The OSHA PEL for noise exposure is 90 dBA. DoDI has established an employee exposure level of 85 dBA for requirement of a hearing conservation program.

## 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves. On the day of URS' site visit, no personal protective equipment was observed in use.

# 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

# 3.1 Confined Spaces

A written confined spaces program is not applicable to this facility.

# 3.2 Hearing Conservation

A written hearing conservation program was identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise dosimetry results and a review of normal site operations, a hearing conservation program is not required for this site.

# 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was not identified on site. No operations were observed by URS that would require the use of respiratory protection. If workers are allowed access to the former indoor firing range, good hygiene practices should be followed.

## 3.4 Hazard Communication

A site-specific hazard communication program was identified on site. A hazard communication program is required for this site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

# 3.5 Personal Protective Equipment

A written personal protective equipment program was not identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

# 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

# 3.7 Safety

The door to the former Indoor Firing Range does not lock to secure access to the contaminated area. Not all emergency exit signs were properly illuminated throughout the facility.

## 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

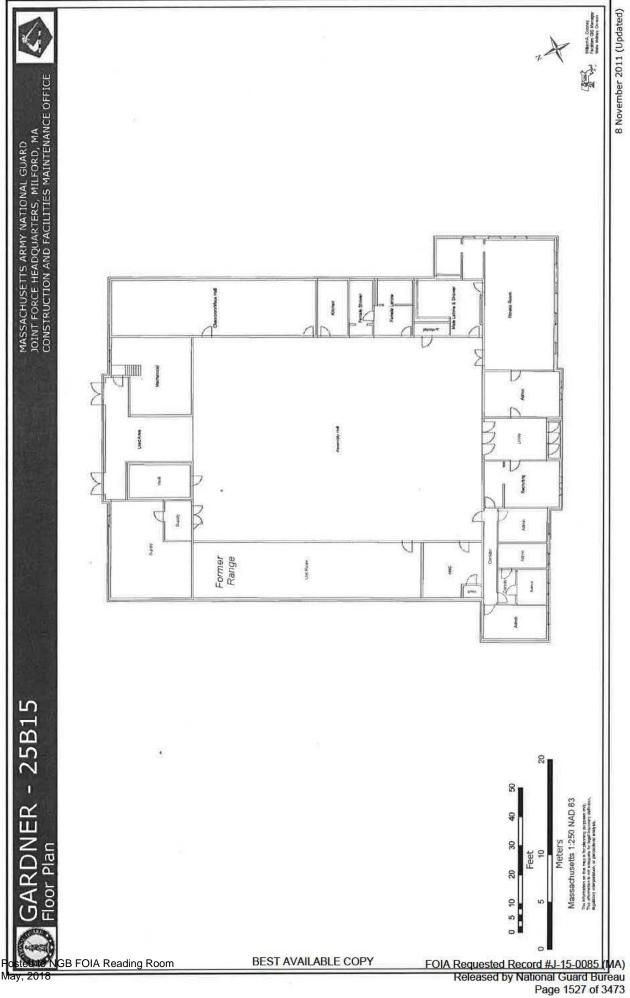
Standard for General Industry: 29 CFR 1910

OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

# APPENDIX A

BEST AVAILABLE COPY

# SHOP DRAWING



**BEST AVAILABLE COPY** 

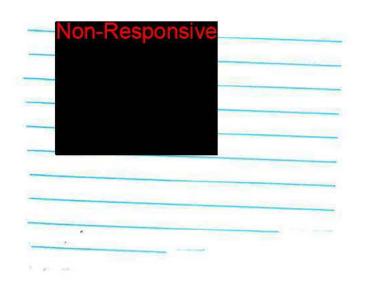
# APPENDIX B

BEST AVAILABLE COPY

# PERSONNEL LIST

#### **BEST AVAILABLE COPY**

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# APPENDIX C

BEST AVAILABLE COPY

# ANALYTICAL RESULTS

# AMA Analytical Services, Inc.

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A Specialized Environmental Laboratory

#### **BEST AVAILABLE COPY**

# **CERTIFICATE OF ANALYSIS**

AIHA LAP, LLC ACCREDITED LABORATORY INCUSTRIAL HYGENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17025-2005 WWW adhascerediteditable org

Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody:	516024	
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Gardner RC	Date Submitted:	6/3/2013	
	Havre de Grace, Maryland 21078	Job Number:	37943799.00016	Person Submitting:	Non-Responsive	
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	6/10/2013 Report Date: 6/10/2013	

Attention:

#### 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 (ft²)		oorting Limit	Total ug	Final Res	ult	Comments
13067140	RC Gardener W-01	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13067141	RC Gardener W-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13067142	RC Gardener W-03	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
13067143	RC Gardener W-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13067144	RC Gardener W-05	Flame	Wipe	****	0.108	110	ug/ſl²	<12	<110	ug/ft²	
13067145	RC Gardener W-06	Flame	Wipe	****	0.108	110	ug/ft²	2400	22000	ug/ft²	
13067146	RC Gardener W-07	Flame	Wipe	****	0.108	110	ug/ft²	18	160	ug/ft²	
13067147	RC Gardener W-08	Flame	Wipe	****	0.108	110	ug/ft²	93	860	ug/fl²	
13067148	RC Gardener W-09	Flame	Wipe	****	0.108	110	ug/ft²	67	620	ug/ft²	
13067149	RC Gardener W-10	Flame	Wipe	****	0.108	110	ug/ft²	15	140	ug/fl²	
13067150	RC Gardener TB-W	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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# APPENDIX D

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# PHOTOGRAPHIC LOG



# PHOTOGRAPHIC LOG

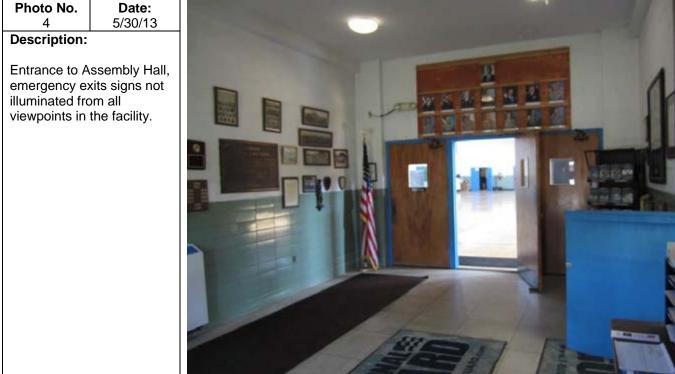
<b>Client Name:</b>		Site Location:	Project No.
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Photo No. 2	<b>Date:</b> 5/30/13	
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# APPENDIX E

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# **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

#### **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 GREENFIELD ARMORY 71 HOPE STREET GREENFIELD, MASSACHUSETTS



Office Manager



September 2005 PN: 39741508

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# FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Lighting h Average and a loss		
On the day of the survey, the illuminance in the administrative area was inadequate in over half of all 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 RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected throughout the armory in amounts greater than 200 µg/ft <sup>2</sup>	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		
A site-specific asbestos operations and maintenance plan was not available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication	1749 (A.Y. 1997)	
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
INCOLOR REPORTS OF CONTRACTOR		
Evidence of water incursions throughout building that may promote growth of mold.	Repair leaks in roof and institute a moisture management plan to inform employees of best practice in handling water incursions (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 Armory located at 71 Hope Street in Greenfield, Massachusetts 01301. 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 February 3, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Greenfield, Massachusetts. 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. Mr. Non-Responsive of the State of Massachusetts 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.

1

#### 2.0 ADMINISTRATIVE AREA

#### 2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Asbestos-containing floor tile located throughout this area is in good condition. Mr. Non-Responsive did observe a few areas on the second floor where there was evidence of water incursions (Photo # 0028)

#### 2.2 Chemical and Physical Agents Sampled

#### 2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551) directreading instrument. Relative humidity on the day of the survey averaged 26.2%. This average reading is below the recommended range of 30.0% to 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 55-2004).

#### 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 600 to 1058 parts per million (ppm), with an average of 751 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 (ASHRAE 62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. A background (exterior) reading was not collected on the day of the survey, however given the average interior carbon dioxide reading of 751 ppm the likelihood that the interior carbon dioxide concentration would exceed the exterior carbon dioxide concentration is remote.

URS 2

# 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Administration Area. The average carbon monoxide concentration was 1.4 ppm. This average measured level was below the ASHRAE guideline for indoor environments (ASHRAE 62.1 – 2004). 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.

		Measured	Recommended
Location	Function 🚕 😞	Illuminance	Minimum
		candles	foot candles
Main Office	Administrative Duties	98 / 9,1	500 / 50
Foyer	Hail	266 / 24.7	30/3
Company Locker	Change Area	228/21.1	300/30
Room	_		
Basement Corridor	Hall	520 / 48.3	30/3
Admin Room	Administrative Duties	298/27.7	500 / 50

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey the illuminance in the administrative area was inadequate in several office spaces.

## 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 Analytical Services, Inc.

(AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Sample Location	URS Sampla Number	Area Wiped	)(µg/ff <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Company Locker Room	0203-04	1.0	210	200
PLT SGT Room	0203-05	1.0	260	200
Mortar Room	0203-06	1.0	310	200
1 <sup>st</sup> SGT Room	0203-07	1.0	46	200
Foyer Lobby	0203-08	1.0	43	200
Garage	0203-19	1.0	530	200
Basement Corridor	0203-20	1.0	<14	200
Blank	0203-21	N/A	<14	200

 Table 2-2

 Levels of Lead Dust Found in the Administrative Area

# 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

GENERAL: In general, the administrative area was neat and orderly.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in some office spaces. URS recommends increasing lighting in the administrative areas through task lighting. While work is in progress, the administrative area should be lighted by at least the minimum light intensities.

<u>LEAD:</u> The four of the six surfaces tested in this area for lead were found to contain lead above the allowable limits set by the National Guard Bureau (See Appendix F) and should be cleaned by properly trained technicians. The NGB has prepared a

memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

<u>MOLD:</u> There is evidence of water incursions including water stains on the ceilings that could lead to mold problems if not addressed.

May, 2018

# 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 and an exercise room.

# 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	, Result (μg/ft²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range- North	0203-14	1.000	4700	200
Former Firing Range-Near Divider	0203-15	1.000	440	200
Former Firing Range- Exercise Room	0203-16	1.000	78	200
Former Firing Range- South	0203-17	1.000	200	200
Blank	0203-21	N/A	<14	200

 Table 3-1

 Levels of Lead Dust Found in the Former Firing Range

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 Level of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume	Resulf (µg/m <sup>3</sup> )	OSHA's PEL(µg/m <sup>3</sup> )
Former Firing Range	0203-02	245	<12	50.0
Blank	0205-LÁÖ3	0	<3.0	50.0

On the day of the survey, the airborne lead dust level 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<sup>3</sup> 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

<u>LEAD</u>: Three of the four surface wipe samples collected in the former firing range were found to contain lead dust levels which exceeded the maximum limit set by the National Guard Bureau (See Appendix F). URS recommends that an appropriately licensed lead contractor clean the former firing range. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

May, 2018

URS

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## 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is used for assembling personnel and storing equipment. The walls are constructed of cinder block with a wood floor.

#### 4.2 Chemical and Physical Agents Sampled

## 4.2.1 Lead

May, 2018

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.

Sample Location	URS Sample Number	Area Wiped (ft*)	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall - Floor -	0203-09	1.000	430	200
Southwest				
Drill Hall - Floor -	0203-10	1.000	150	200
Northwest				
Drill Hall - Northeast	0203-11	1.000	83	200
Drill Half – Southeast	0203-12	1.000	150	200
Drill Hall - Stage	0203-13		81	200
Blank	0203-21	N/A	<14	200

Table 4-1 Levels of Lead Dust Found in the Drill Hall

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 Level of Lead Found in the Air

Sample Location	URS Sample Number 😒	Air Volumé ⟨Ľ)	Result (µg/m³)	OSHA's PEL(µg/m <sup>3</sup> )
Drill Hall	0203-01	224	<13	50.0
Blank	0205-LA03	0	<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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

Two paint chip samples were collected in the drill hall where paint was peeling and sent to AMA for analysis. The samples were found to contain lead in a concentration below 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 King	Reporting Limit (% by Weight)	Final Result (% by Weight)
Drill Hall	0203-22	0.01	0.04
Drill Hall	0203-23	0.01	0.093
Drill Hall	0205-LPC07	0.01	0.22

The analytical report from AMA is contained in Appendix D.

# 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

<u>LEAD</u>: One of the five surface wipe samples collected in the drill hall was found to contain a lead dust level which exceeded the maximum limit set by the NGB (See Appendix F). URS recommends that an appropriately licensed lead contractor clean the drill hall. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

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# 5.0 BOILER ROOM / BASEMENT AREA

# 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

# 5.2 Chemical and Physical Agents Sampled

# 5.2.1 Lead

Wipe testing for lead dust was conducted in the boiler room using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 5-1 below shows the results of the lead sampling.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/fi²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Boiler Room –Locker	0203-18	1.000	300	200
Blank	0203-21	N/A	<14	200

Table 5-1 Level of Lead Dust Found in the Boiler Room

# 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

<u>LEAD:</u> The wipe sample collected in the boiler room was found to contain a lead dust level which exceeded the maximum limit set by the National Guard Bureau URS.

recommends that an appropriately licensed lead contractor clean the drill hall. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

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# 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

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

## 6.3 Respiratory Protection

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

## 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

# 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. 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 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

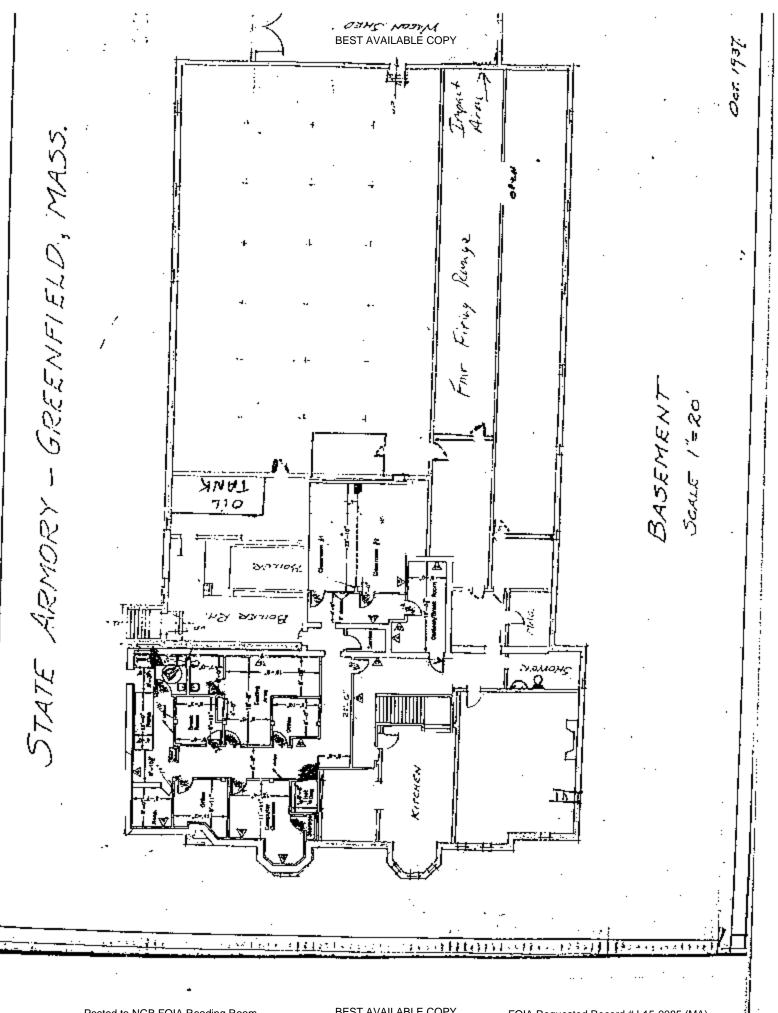
Standard for General Industry: 29 CFR 1910

APPENDIX A

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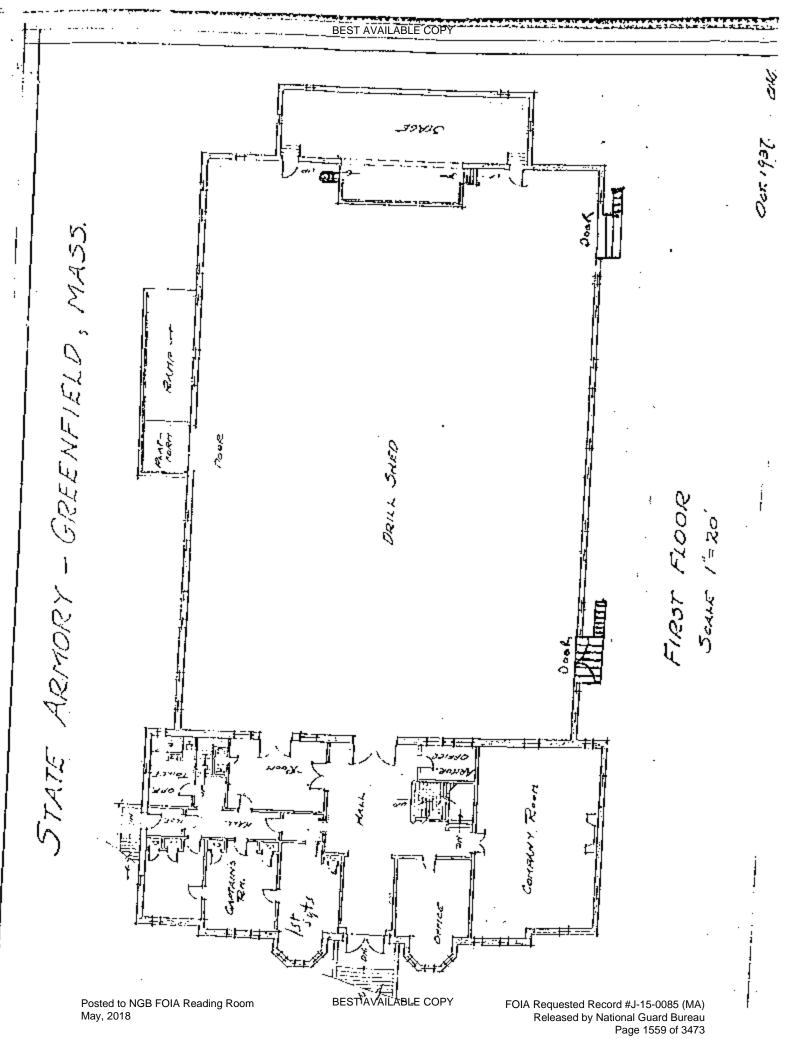
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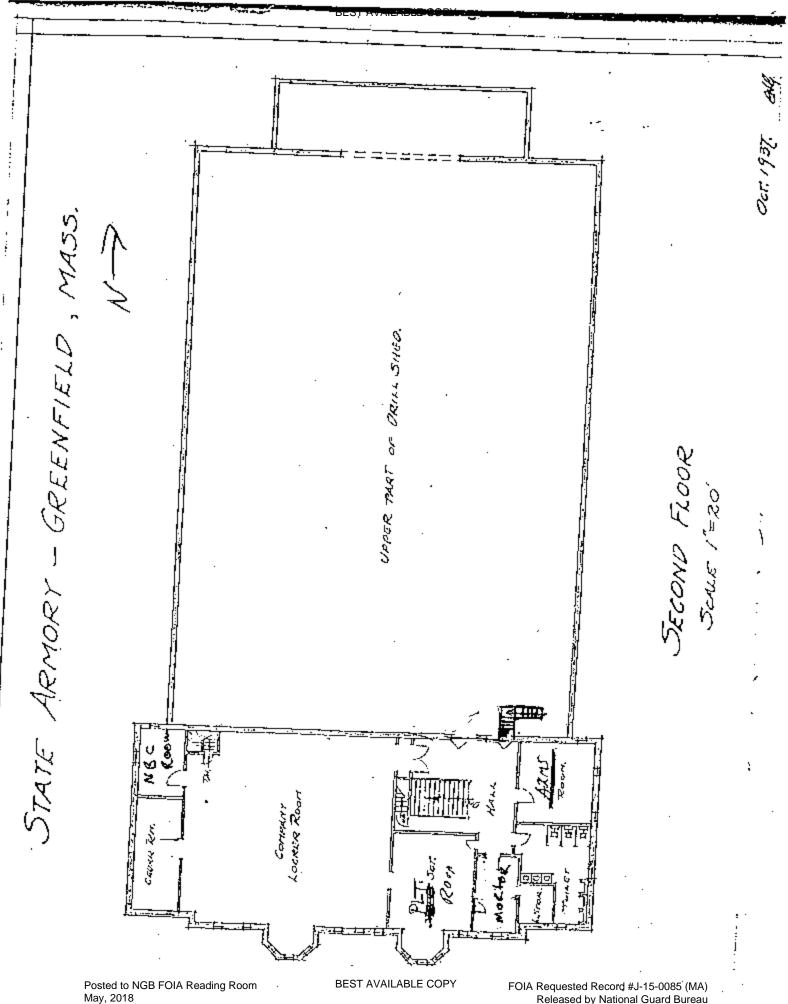


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# APPENDIX B

# PERSONNEL LIST

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HAZARDOUS MATERIALS LIST

AN FAMILY AN FIRST MASSACHUSETTS NATIONAL GUARD E E CARACTER CONTRACTOR FAMILY SERVICES PROGRAM 4 CONTAMENS THINNHER -) GAL To parl CARB clamer I can 6 Homoson WATER SER Ty Gol Statin Fluid Z CAU h/9 Cans-Gold spra Paint 1 Containen ld oz. CA-5 (a GAL CAN sprie L ٥ Can JANSITVE ADACSIVE C Ans 0.15 . Finish Stain & Gloss 2.5 GAS. lD. DASED ርሑኔ 64 В Er. Class . LATTER HOUSE PAIN Phenomen Inscontinge -- 5 cms 12 m. 54. HEROSOL 132 CANS 1202 GA. LOCAE 77 1) Cleaning Composes Rifle Borce -(CAW Ø, GAL. 2) Rubber à Gasker Senen -@ 3 6t\*{ 1 cm 32 67. 6.5. PATCHNG SEALANST 2 CAWS 2 12 METHYL Alcohol -Sottles -7 EACH, 0, 1 QT Charlose Lighton flood 35 CANS EA. و د ډې 20T OIL -WEAPONS 9 cms I DINT. Resin Minder MRTHAL Alcohol - 7 bottles Ø ĘÆ, DIWI WATTER' DEPLACING COMPOUND ð Como C 16 17 84. MOTOR OIL 100-40 101 bottle @ -Flup 1.5 BRAKE Constr FURL Coloman Stovens 1-800.352-4452 EXT, 2118

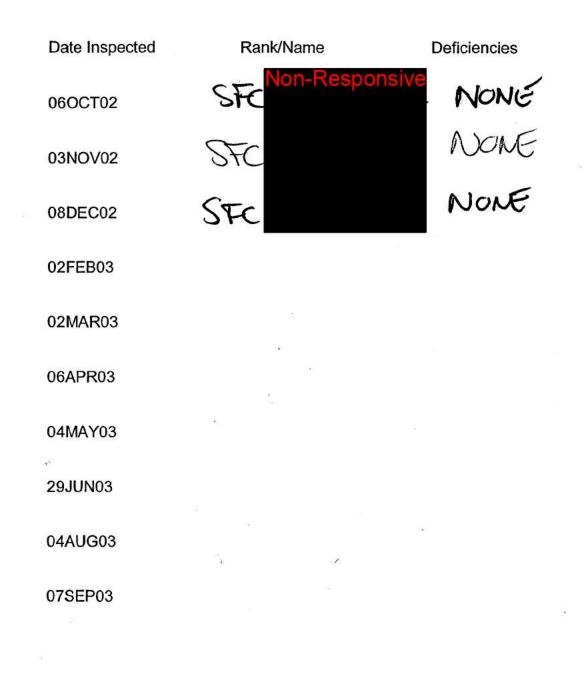
1

Date Inspected	R R R	Responsive Deficiencies
21OCT01	SF	NONE
04OCT01	SF	None
09DEC01	SFC	NONE
06JAN02	SFC	NONE
03FEB02	STC	NONE
03MAR02	SFC	NONE
07APR02	SFC	NONE
05MAY02	SFC	NOME
29JUN02	SFC	NONE
14JUL02	SFC	NONE
04AUG02	SFC	NonE
11 AUGUS	SFC +	SCRE
10	т. 1 1	

# Hazardous Material Locker Inspection List TY02

FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1565 of 3473

# Hazardous Material Locker Inspection List TY03



FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1566 of 3473

# APPENDIX D

# ANALYTICAL RESULTS

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M	and and the same of the second second	lytical Services, Inc. cielized Ravironmental Laboratory		TIFICATE OF ANALYSIS			RIVIA Ny El Aiha
	Client:	National Guard Bureau	Job Name:	Amory	Chain Of Custody:	128465	
	Address:	301-IH Old Bay Lune, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Greenfield, MA	Date Analyzed:	06/11/2004	
		Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:		
			P.O. Number:	BPA #W912K6-04-A0002	Report Date:	11-Jun-04	
	Attention:						Page 1 of 2

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# Summary of Atomic Absorption Analysis for Lead

	AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Arca Wiped (ft <sup>2</sup> )		orting	F	inal Res	ult	Comments
1000				· · · · · · · · · · · · · · · · · · ·	****	1 000						······································
BEST AVAILABLE COPY	0448813	0203-04	Flame	Wipe	****	1.000	14.00	uy/ft²		210	ug/flª	
ST	0448814	0203-05	Flame	Wipe		1.000	14.00	ug/ft²		260	ug/fl²	
AVI	0448815	0203-06	Flame	Wipc	****	1.000	14.00	ug/ft*		310	ug/ft*	
AILA	0448816	0203-07	Flame	Wipc	****	1.000	14.00	ug/ft <sup>2</sup>		46	ug/ft*	
AB	0448817	0203-08	Flame	Wipc	****	1.000	14.00	ug/ft²		43	ug/ft²	
LE	0448818	0203-09	Flame	Wipe	****	1.000	14.00	ug/ft²		430	ug/ft²	
8	0448819	0203-10	Flame	Wipc	****	1.000	14.00	ug/ft <sup>2</sup>		150	ug/ft²	
Add	0448820	0203-11	Flame	Wipc	****	1.000	14.00	ug/ft²		83	ug/ft*	
с П	0448821	0203-12	Flame	Wipc	****	1.000	14.00	ug/ft²		150	ug/ft²	
4	0448822	0203-13	Flame	Wipe		1.000	14.00	ug/ft²		81	ug/fl <sup>2</sup>	
F	0448823	0203-14	Flame	Wipe	****	1.000	14.00	ug/ft²		4700	ug/ft²	
FO	0448824	0203-15	Flame	Wipe	****	1.000	14.00	ug/ftª		440	ug/ft²	
MA	0448825	0203-16	Flame	Wipe	****	1.000	14.00	ug/fl²		78	ug/ft <sup>z</sup>	
Re	0448826	0203-17	Flame	Wipe	****	1.000	14.00	ug/ft²		200	ug/ft <sup>2</sup>	
que	0448827	0203-18	Flame	Wipe	****	1.000	14.00	ug/ft²		300	ug/ft²	
sed	0448828	0203-19	Flame	Wipe	****	1.000	14.00	ug/ft*		530	ug/ft²	
by dR	0448829	0203-20	Flame	Wipe	****	1.000	14.00	ug/ft*	<	14	ug/ft <sup>a</sup>	
Na	0448830	0203-21	Flame	Wipe Blank	****	N/A	14.00	ug	<	14	ug	
ion a	0448831	0203-22	Flame	Paint Chip		N/A	0.01	%РЬ		0.04	%РЪ	
自共	0448832	0203-23	Flame	Paint Chip	****	N/A	0.01	%Pb		0.093	%Pb	
Sureau	m us. Sample types, loc pility for the accuracy a plies only to polarized is	ations and collection p and completeness of th	protocols are based up is information. Reside samples and transmi	on the information pu al sample material w	and upon the condit ovided by the person ill be discarded in a	ion that it is not to be u as submitting them an ecordance with the ap	ised, in whole id, unless col propriate re	e or in part, in lected by pers gulatory guide	any adver sonnel of t elines, unl	tising or hese Lab ess other	publicity math oratories, we e wise requested product certif	ats, the public and these Laboratori er without prior written authorizati expressly disclaim any knowledge a d by the client. NVLAP Accreditati fication, approval, or endorsement reserved. AMA Analytical Services, J

An AIHA (20063), NVLAP (2 101143), & New York ELAP (210920) Accredited Enbormory Posted to NGB FOIA Reading Room 475 Forbes Wive, • Lendons, MD 20705 • (301) 459-2649 • Toll Free (300) A46-6961 • Ens (301) 459-2645 May, 2018

## AMA Analytical Services, Inc. CERTIFICATE OF ANALYSIS N A Spocialized Environmental Leberatory ė

Client:	National Guard Bureau	Job Name:	∧rmory	Chain Of Custody:	128465
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Greenfield, MA	Date Analyzed:	06/11/2004
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	
		P.O. Number:	BPA #W912K6-04-A0002	Report Date:	11-Jun-04

Page 2 of 2

NY ELAP

AIHA

# Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (fi <sup>2</sup> )		orting imit	F	inal Res	ult	Comments
0448833	0203-24	Flame	Wipe Blank		N/A	 14.00	 ug	<	14	ug	
0448834	0203-03	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	4
0448835	0203-01	Flame	Air	224	N/A	13.39	ug/m³	<	13	ug/m²	
0448836	0203-02	Flame	Air	245	N/A	12.24	ug/m³	<	12	ug/m²	

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

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

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

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

Analyst

**Technical Manager:** 



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 of 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 of the securacy 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 Cliability 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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. All rights reserved, AMA Analytical Services, Inc.

An AHIA (#8863), NVLAP (# 1011-33), & New York ELAP (#10929) Accredited Laboratory

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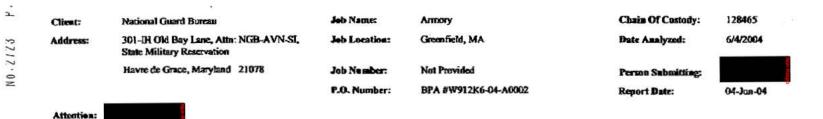
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Page 1 of 1

### Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (if?)		orting Jadit	I	Final Res	<b>u</b> lt	Comments
R 0448831	0203-22	Flame	Paint Chip	****	N/A	0.01	%Рь		0.04	%Pb	And a second
0448832	0203-23	Flame	Paint Chip	****	N/A	0.01	%Pb		0.093	%Рь	
0448834	0203-03	Flame	Air Blank	0	N/A	3.00	vg/m³	<	3	ug	
0448835	0203-01	Flame	Air	224	N/A	13.39	ug/m'	<	13	ug/m²	
0448836	0203-02	Flame	Air	245	N/A	12.24	ug/m	<	12	ug/m²	

Algalysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-31118

Adalysis 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.



Technical Manager:

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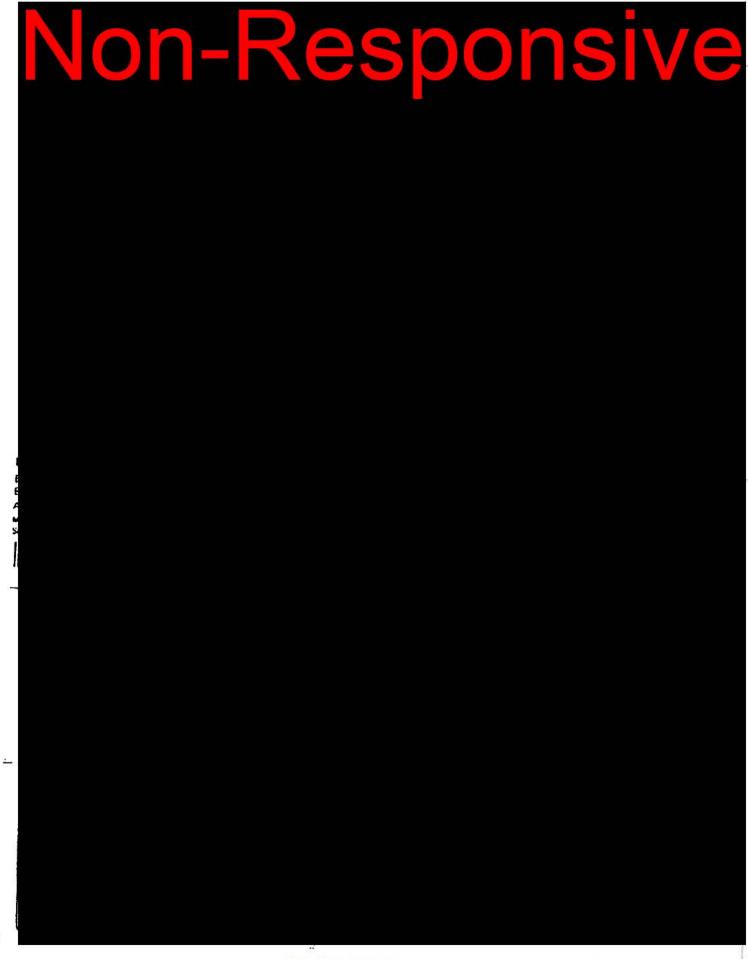
# APPENDIX E

# TRAINING CERTIFICATES

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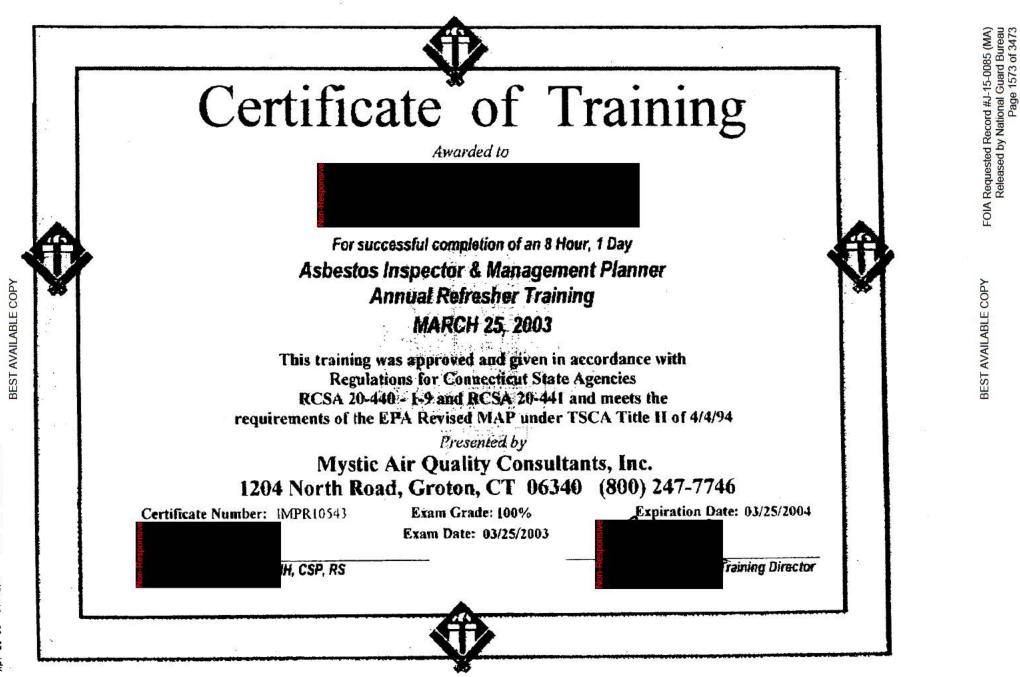


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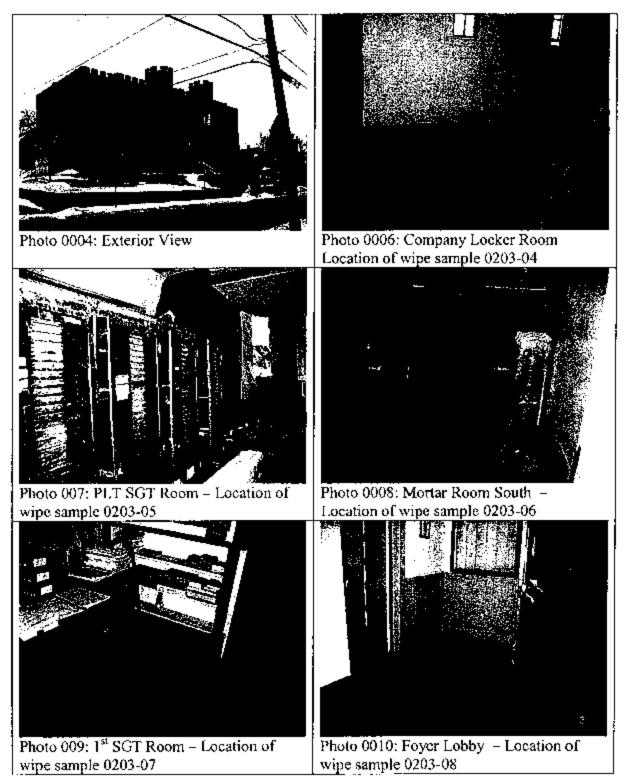
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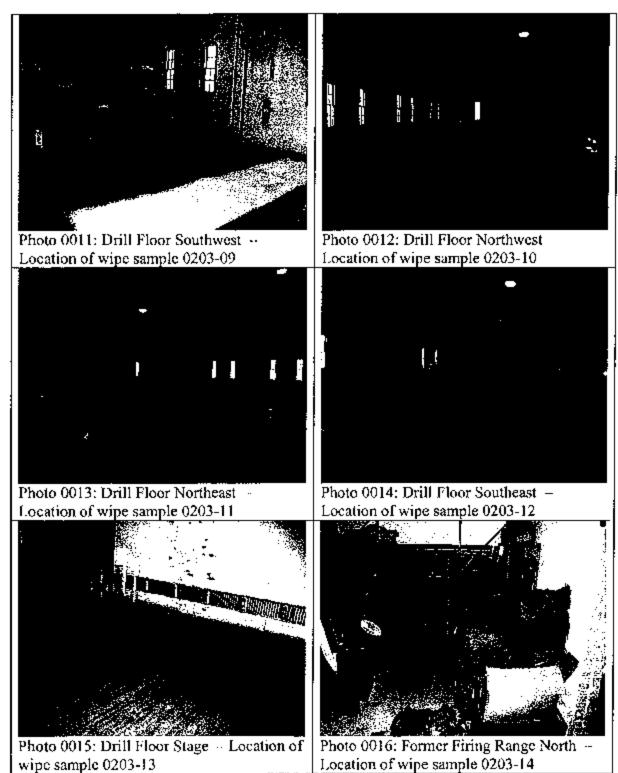
APPENDIX F

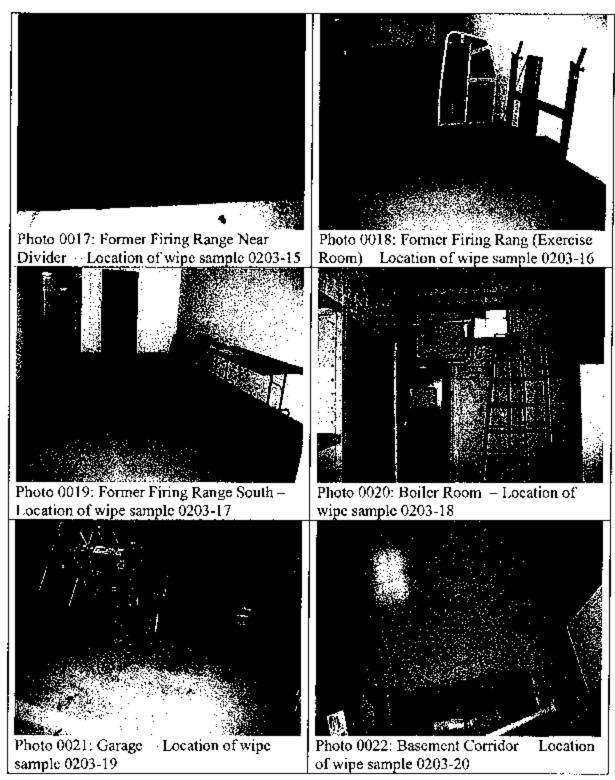
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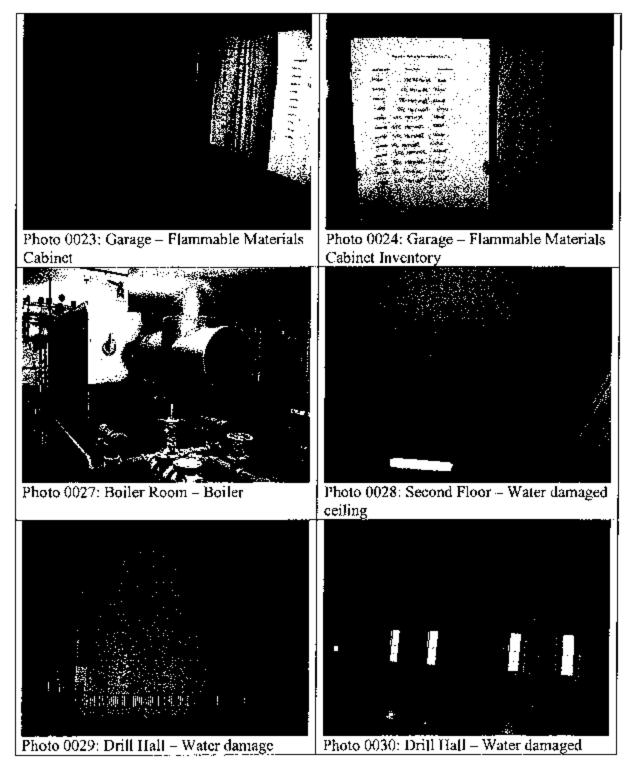
PHOTOGRAPHS

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APPENDIX G

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# **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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250 µg/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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/fl<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

# **Industrial Hygiene Survey**

Massachusetts Army National Guard (MA ARNG)

Prepared For: NGB ARNG- Region North IH Office

Survey Location:

Greenfield Readiness Center 71 Hope Street Greenfield, MA 01301-3516

Prepared By: Aria Environmental, Inc. (AEI) PO Box 286 Woodbine, MD 21797

Survey Date: July 29, 2010 Report Date: September 16, 2010

AEI Project #: J10-513 3a MA Greenfield RC

#### Non-Responsiv

Industrial Hygienist



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2	Evaluation Methods	1
3	Operations	1
4	Noise Hazards	1
5	Hazard Controls	2
	Ventilation Systems	2
6	Physical Condition of the Facility and Personnel Concerns	2
	Paint Chip and Dust Wipe Samples for Lead Contamination	2
	Visual Inspection for Damaged Suspect Asbestos-Containing Materials	4
	Visual Inspection for Water Damage and Mold Growth	
	Visual Inspection for Housekeeping Concerns	4
	Lighting	4
	Indoor Air Quality (IAQ)	4
	Temperature and Relative Humidity	5
	Carbon Dioxide (CO <sub>2</sub> ) and Carbon Monoxide (CO)	5
7	Conclusions	5
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- Table 1 Results of Lead in Air Sampling for the MA ARNG Greenfield Readiness Center on July 29, 2010.
- Table 2 Results of Dust Wipe Sampling for the MA ARNG Greenfield Readiness Center on July 29, 2010.
- Table 3 Results of Asbestos Sampling for the MA ARNG RC Greenfield Readiness Center on July 29, 2010.
- Table 4 Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter
- Appendix A Building Layout
- Appendix B Certificates of Analysis for Air, Dust Wipe and Bulk Samples
- Appendix C Photo Documentation
- Appendix D IAQ and Lighting Survey Log Sheets

## **Executive Summary**

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Readiness Center located at 71 Hope Street, Greenfield, MA, 01301-3516 Non-Responsive performed the evaluation on July 29, 2010. The point of contact for the facility was SGT The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities. The survey included: (1) evaluations of operations including operation description, ventilation system evaluations, noise dosimetry if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) photographs of the exterior and interior of the readiness center. The results of the evaluation indicated the following:

**Noise Hazards:** No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

Lead in Air Samples: Results of collected air samples were below regulatory limits for lead. (50  $\mu$ g/m<sup>3</sup>).

Paint Chip and Wipe Samples for Lead Contamination: Three of six wipe samples collected from the former firing range were above the National Guard criteria for lead contamination (200  $\mu$ g/ft<sup>2</sup>). Samples ranged from 1.8 to 21 times the National Guard criteria. Lead was identified on the overhead exhaust fan, on top of the light fixture, on stored footlockers and on the floor of the range. Additionally, the wipe sample taken from the floor immediately outside the former firing range was above National Guard criteria. One sample from the radiator in a basement storage room and one sample collected from the top of the flammable cabinet located in the basement were reported as 690 and 450  $\mu$ g/ft<sup>2</sup> respectively.

Peeling paint was identified on the bullet trap remaining in the old firing range. Paint chip samples were collected from the peeling paint on the bullet trap. The lead content of the paint chip sample was less than 0.5% by weight and is not considered lead-based paint.

**Visual Inspection for Damaged Asbestos-Containing Materials:** No damaged suspect asbestoscontaining materials were observed at the Greenfield Readiness Center.

**Visual Inspection for Water Damage and Mold Growth:** A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Standing water was present in the basement storage rooms. Water has been infiltrating the storage space for some time and standing water pools along the exterior wall. Although the exact source of the water is unknown and was not readily apparent, National Guard personnel have indicated they believe it is a result of water seepage through exterior foundation walls.

**Visual Inspection for Housekeeping Concerns:** A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

**Lighting:** The evaluation indicated that there are some illumination deficiencies in the: quarters, stage, classroom, kitchen, garage and boiler room. The illumination measurements indoors ranged from a low of 1.3 foot candles (fc) to a high of 141.1 fc.

**Indoor Air Quality:** Temperatures and relative humidity measurements were outside the acceptable range in most of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility. Those areas with window air conditioning units were within acceptable ranges. Indoor levels of CO<sub>2</sub> ranged from 306 to 798 parts per million (ppm) and outdoor CO<sub>2</sub> levels were approximately 421 ppm during the monitored period. CO<sub>2</sub> measurements were below the guideline in all areas, indicating adequate fresh air exchange. Carbon dioxide levels in areas over the guideline were 1.14 times or less than the established guidelines. Indoor levels of CO ranged from 0 to 0.1 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

## 1 Introduction

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Massachusetts Army National Guard (MA ARNG) Readiness Center located at 71 Hope Street, Greenfield, MA 01301-3516. Non-Responsive performed the evaluation on July 29, 2010. The point of contact for the facility was SGT . The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities.

The Greenfield Readiness Center is staffed with 3 administrative personnel. The operations conducted at the facility include supply and administrative duties. A diagram of the building layout is provided in Appendix A. All sampling sheets and laboratory certificates of analysis are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. Indoor air quality and lighting survey measurement log sheets are provided in Appendix D. Lists of all references used during the evaluation are included in the main body of the report.

## 2 Evaluation Methods

The industrial hygiene survey of the Greenfield Readiness Center consisted of visual inspections, interviews with employees, and sampling plan development in order to achieve the following: (1) evaluations of operations including operation description, sampling for lead in air or on surfaces if appropriate, ventilation system evaluations, noise measurements if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) a building layout and photographic documentation of the interior of the facility.

The National Guard Bureau (NGB) Region North IH Office provided all industrial hygiene equipment for air sampling (equipment and media), ventilation, lighting, noise and IAQ survey instruments and paid for laboratory analytical fees. Laboratories were chosen or approved by the NGB IH office.

## 3 Operations

Operations conducted at the Greenfield facility consists exclusively of supply and administrative duties. No maintenance of vehicles, painting of equipment or other physical tasks are performed at the facility. Ground maintenance and upkeep of the building are the responsibility of the state employed Armorer and not part of the duties of National Guard personnel.

## 4 Noise Hazards

No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

# 5 Hazard Controls

## Ventilation Systems

Heat is supplied to the facility through a boiler located in the boiler room and overhead heaters in the drill hall. The boiler certificate for the Greenfield facility is expired and is not up to date. Personnel indicated the new boiler certification was in the mail. Any air conditioning provided to the building is through window air conditioning units. No local ventilation systems were present at the facility.

## 6 Physical Condition of the Facility and Personnel Concerns

An evaluation of the physical condition of the facility and personnel concerns was performed including visual inspections for water damage or mold problems; potential ergonomic problems; and housekeeping practices. Lighting and indoor air quality measurements were taken in all areas of the facility as well.

## Lead in Air Samples

To determine if any airborne contamination of lead existed in the facility, air sampling for lead was conducted in two offices in the facility and analyzed by AMA for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Results are given in Table 1 and certificates of analysis are included in Appendix B.

Air Sample #	Sample Location	Result (µg/m³)		
GRE-01	Room 10, On Desk	<3.3		
GRE-02	Room 13, On Desk	<3.3		

#### Table 1 – Results of Lead in Air Sampling for the MA ARNG Greenfield Readiness Center on July 29, 2010.

\*The OSHA PEL for Lead in Air is  $50 \,\mu\text{g/m}^3$ .

## Paint Chip and Dust Wipe Samples for Lead Contamination

To determine if any cross contamination of lead from any source into areas of the facility existed, wipe samples were collected using ghost wipes and 10cm x 10cm templates. Wipe samples for surface dust were collected in 19 locations. The Environmental Protection Agency (EPA) and the Commonwealth of Massachusetts limits for lead in dust are 40 micrograms per square foot  $(\mu g/ft^2)$  on floors, 250  $\mu g/ft^2$  on window sills, and 400  $\mu g/ft^2$  in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level for adult exposures of 200 µg/ft<sup>2</sup> on floors and frequently contacted surfaces, which is more stringent for window sills than the EPA/State standards. Dust wipe samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Three of six samples collected from the former firing range, now used but not converted to storage, were above the National Guard criteria for lead contamination (200 µg/ft<sup>2</sup>). Samples ranged from 1.8 to 21 times the National Guard criteria. Lead was identified on the overhead exhaust fan, on top of the light fixture, on stored footlockers and on the floor of the range. Additionally the wipe sample taken from the floor immediately outside the former firing range was also above National Guard criteria. One sample from the radiator in a basement storage room and one sample collect4ed from the top of the flammable cabinet located in the basement were reported as 690 and 450

 $\mu$ g/ft<sup>2</sup> respectively. Results are given in Table 2 and certificates of analysis are included in Appendix B.

Greenfield Readiness Center on July 29, 2010.						
Vipe Sample #	Sample Location	Result (µg/ft²)*				
GRE-PB-01	Room 27, Former Indoor Firing Range, Bullet Trap	180				
GRE-PB-02	Room 27, Former Indoor Firing Range, Light Fixture	370				
GRE-PB-03	Room 27, Former Indoor Firing Range, Foot Locker	1,100				
GRE-PB-04	Room 27, Former Indoor Firing Range, Floor	4,200				
GRE-PB-05	Room 27, Former Indoor Firing Range, Overhead Heater	<110				
GRE-PB-06	Immediately at Side Door of Room 27	540				
GRE-PB-07	Kitchen, From Prep Table	<110				
GRE-PB-08	Room 10, Radiator	690				
GRE-PB-09	Assembly Hall, Middle of Floor	<110				
GRE-PB-10	Assembly Hall, Stage	<110				
GRE-PB-11	Assembly Hall, Table Along Exterior Wall	120				
GRE-PB-12	Room 26, On Top of Flammable Cabinet	450				
GRE-PB-13	Room 19, From Shelving Unit	<110				
GRE-PB-14	Room 20, From Mantle	<110				
GRE-PB-15	Room 14, On Top of File Cabinet	<110				
GRE-PB-16	Room 17, Middle of Floor	<110				
GRE-PB-17	Room 15, Desk Top	<110				
GRE-PB-18	Room 3, From Bar Top	<110				
GRE-PB-19	Room 6, Top of Steps	<110				
Sector Sector Party and		3 (16)/40/CC (17) (160/16/CC) (17)				

#### Table 2 – Results of Dust Wipe Sampling for MA ARNG Greenfield Readiness Center on July 29, 2010.

\*The US Army CHPPM recommends a maximum level for adult exposures of 200 µg/ft<sup>2</sup> lead on floors

A visual inspection was performed to determine if there were any areas of peeling paint at the facility that could pose a lead exposure hazard. Peeling paint was identified on the bullet rap remaining in the old firing range. Paint chip samples were collected from the peeling paint on the bullet trap. Samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. In Massachusetts, paint is considered to be lead-based if it contains more than 0.5 % lead by weight. The lead content of the paint chip samples was less than 0.5% by

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weight and is not considered lead-based paint. Results are given in Table 3 and certificates of analysis are included in Appendix B.

#### Table 3 – Results of Paint Chip Sampling for MA ARNG Greenfield Readiness Center on July 29, 2010.

Paint Chip Sample #	Sample Location	Result (% by wt )*
GRE-LBP-01	Peeling Paint on Bullet Trap	0.47

\*Paint is considered lead-based if it is > 0.5% by weight.

#### Visual Inspection for Damaged Suspect Asbestos-Containing Materials

A visual inspection was performed to determine if there were any suspect asbestos-containing material and its condition. The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. No damaged suspect asbestos-containing materials were observed at the Greenfield Readiness Center.

#### Visual Inspection for Water Damage and Mold Growth

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Standing water was present in the basement storage rooms. Water has been infiltrating the storage space for some time and standing water pools along the exterior wall. Although the exact source of the water is unknown and was not readily apparent, National Guard personnel have indicated they believe it is a result of water seepage through exterior foundation walls.

#### Visual Inspection for Housekeeping Concerns

A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

#### Lighting

Illumination levels were measured using a Cal-Light 400L, calibrated on July 30, 2009, and compared to minimum lighting requirements for various facilities and functions based on the following references: American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

A lighting survey was performed in all areas within the readiness center. The evaluation indicated that there are some illumination deficiencies in the: quarters, stage, classroom, kitchen, garage and boiler room. The illumination measurements indoors ranged from a low of 1.3 foot candles (fc) to a high of 141.1 fc. The complete results of the evaluation are presented in Appendix D, including whether the results met minimum requirements for illumination. Additional illumination can be achieved by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, using supplemental task lighting, and opening doors or windows to provide more natural lighting.

#### Indoor Air Quality (IAQ)

Indoor air quality measurements (i.e., temperature, relative humidity, carbon dioxide and carbon monoxide) were taken using a factory calibrated TSI Q-Trak Plus Model 7565X. Temperature, relative humidity and carbon dioxide (CO<sub>2</sub>) measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-

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Conditioning Engineers (ASHRAE). Carbon monoxide (CO) concentrations were compared to the ACGIH Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's (EPA's) National Ambient Air Quality Standard (NAAQS) for CO.

Industry guidelines or standards for seasonal temperature and humidity ranges for thermal comfort are established by ASHRAE standard 55-2004. These ranges are presented in Table 4. The U.S. EPA also recommends maintaining relative humidity below 60% and ideally between 30 and 50% to prevent mold growth. Complete results are provided in Appendix G with the lighting survey measurements.

Relative Humidity	Winter Temperature	Summer Temperature					
30%	68.5°F - 76.0°F	74.0°F – 80°F					
40%	68.5°F – 75.5°F	73.5°F – 79.5°F					
50%	68.5°F - 74.5°F	73.0°F - 79.0°F					
60%	68.0°F - 74.0°F	72.5°F - 78.0°F					

#### Table 4 - Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter<sup>a</sup>

adapted from ASHRAE Standard 55-2004

#### Temperature and Relative Humidity

Indoor temperature and relative humidity (Rh) measurements in the facility ranged from 76.4 to 87.0° F and 42.5 to 61.1% Rh. Outdoor temperature and humidity measurements were 86.5° F and 42.5% on the day of monitoring. Temperatures and relative humidity measurements were outside the acceptable range in most of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility. Those areas with window air conditioning units were within acceptable ranges.

#### Carbon Dioxide (CO2) and Carbon Monoxide (CO)

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build up of  $CO_2$  indicates inadequate ventilation. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1 - 2007 as 700 ppm above outdoor concentrations. Indoor levels of  $CO_2$  ranged from 306 to 798 parts per million (ppm) and outdoor  $CO_2$  levels were approximately 421 ppm during the monitored period.  $CO_2$  measurements were below the guideline in all areas, indicating adequate fresh air exchange.

Carbon monoxide is a byproduct of incomplete combustion. Indoor concentrations indicate contamination caused by improperly vented or malfunctioning boilers, furnaces or stoves or from vehicle exhaust entering the building from garages, loading docks, nearby roads or parking lots. The concentration of interest set by ASHRAE standard 62.1-2007 and the National Ambient Air Quality Standards (NAAQS) for carbon monoxide is an 8 hour average of 9 ppm. The ACGIH TLV for CO is 25 ppm. Indoor levels of CO ranged from 0 to 0.1 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

#### 7 Conclusions

The results of the evaluation indicated no concerns with the following at the facility: contamination of clean air sources, the presence of damaged suspect asbestos-containing materials, peeling potentially lead-based paints, noise hazards, visible mold and housekeeping.

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The results of the evaluation indicated industrial hygiene concerns in the following areas: cross contamination from the former firing range, indoor air quality, water intrusion and lighting. Overall, Greenfield Readiness Center has few industrial hygiene issues, and programs are in place to protect, inform and train employees.

#### 8 Limitations

This report has been prepared for the exclusive use of the U.S. Army National Guard (USARNG) and/or their agents. This service has been performed in accordance with generally accepted industrial hygiene and environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations readily visible at the site at the time of our site visit, and upon current industry standards.

By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that my present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, sate, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

#### 9 References

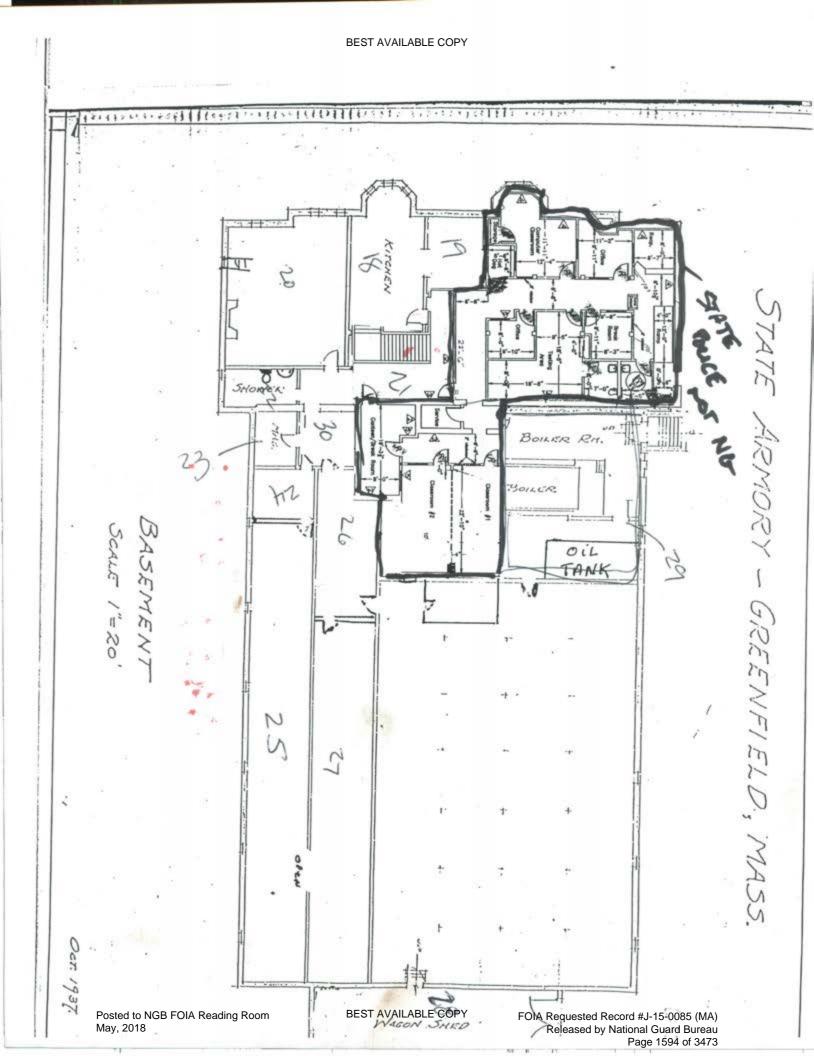
- 1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
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- 3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
- 4. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, May 25, 2007.
- 5. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
- 6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 15, 1998.
- 7. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
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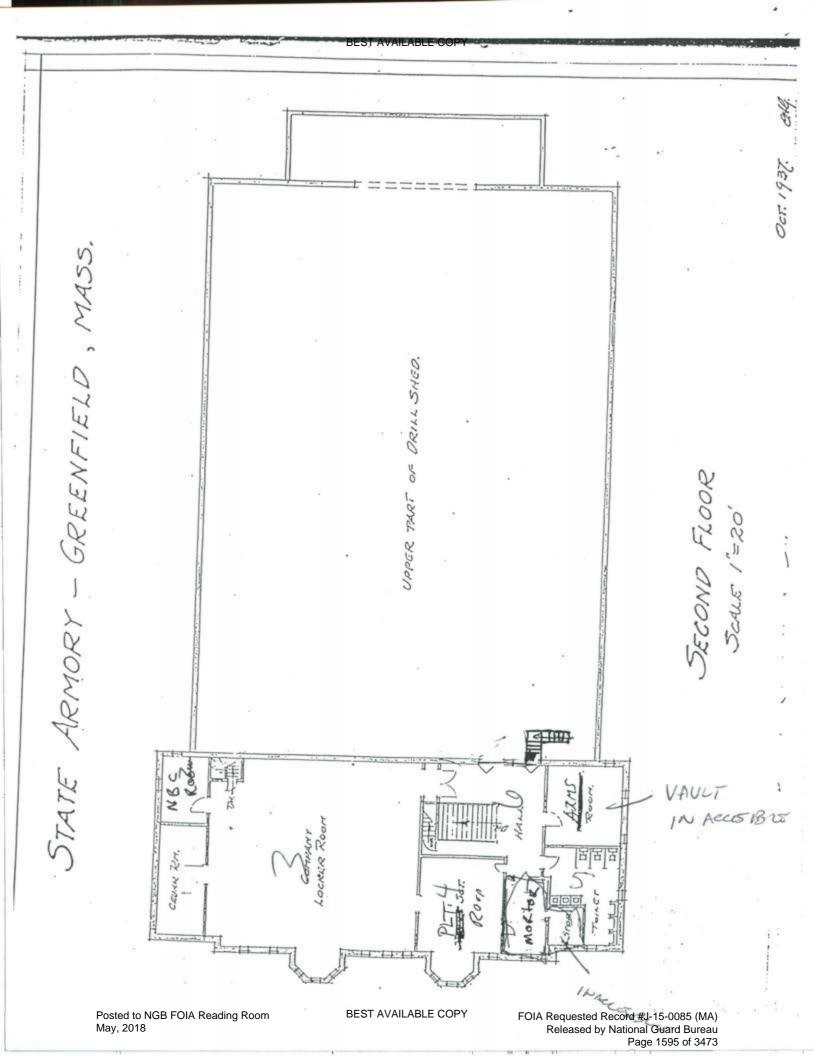
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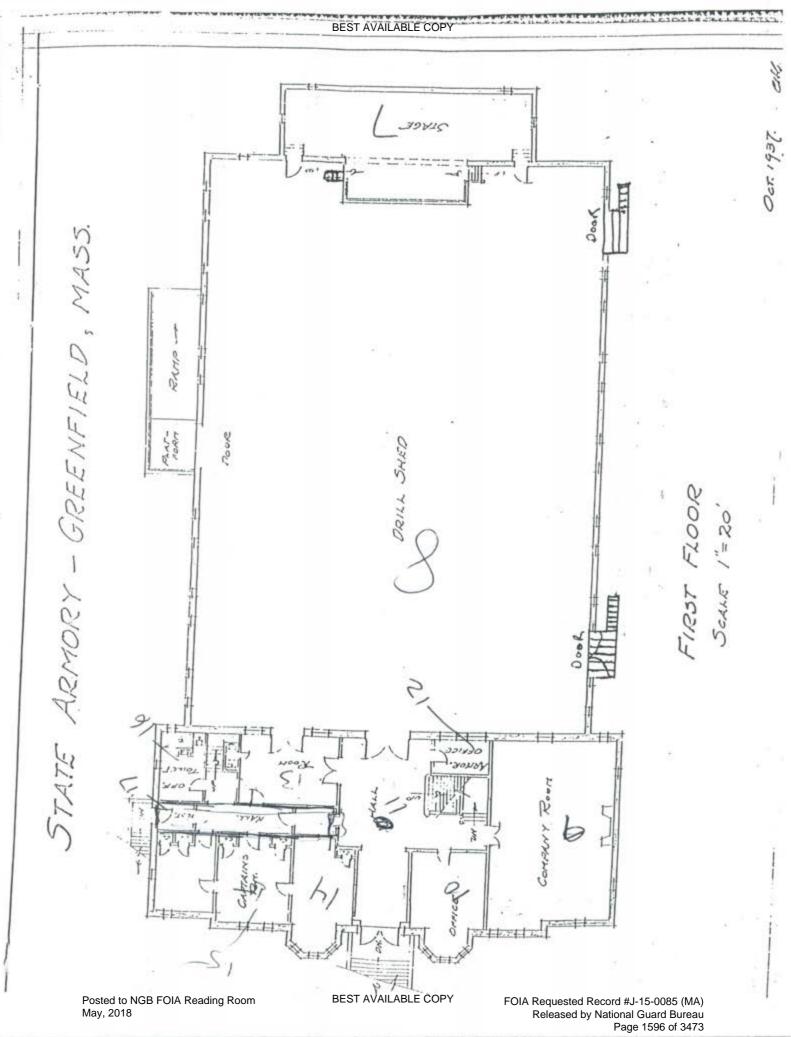
#### Industrial Hygiene Survey Report Massachusetts Army National Guard (MA ARNG) Greenfield Readiness Center

- 10. RP-1-2004 (Office Lighting) and RP-7-2001 (Industrial Lighting), Illuminating Engineering Society of North America (IESNA)/ANSI.
- 11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality" and Standard 55-2004, "Thermal Environmental Conditions for Human Occupancy".
- 12. NIOSH website: http://www.cdc.gov/niosh/
- 13. OSHA website: http://www.osha.gov/.
- 14. Army CHPPM website: http://chppm-www.apgea.army.mil/.
- 15. EPA website: <u>http://www.epa.gov</u>.

Appendix A Building Layout







Appendix B Certificates of Analysis for Air, Dust Wipe and Bulk Samples

## AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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#### CERTIFICATE OF ANALYSIS

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Page 1 of 2

ACCREDITED LABORATORY



#### Summary of Atomic Absorption Analysis for Lead

Sample Type Air Volume Area Wiped Reporting Total ug **Final Result** Comments Client Sample Analysis Type **AMA Sample** Number (L) (ft²) Limit Number <3 GRE-01 906 N/A 3.3 ug/m3 <3.3 ug/m<sup>3</sup> 1066224 Flame Air N/A <3 <3.3 GRE-02 909 3.3 ug/m3 ug/m<sup>3</sup> 1066225 Flame Air \*\*\*\* 0.108 ug/fl2 19 180 ug/ft2 1066226 GRE-Pb-01 Flame Wipe 110 \*\*\*\* 0.108 40 370 ug/ft2 Wipe 110 ug/ft2 1066227 GRE-Pb-02 Flame \*\*\*\* 0.108 120 ug/ft2 GRE-Pb-03 Wipe 110 ug/ft2 1100 1066228 Flame \*\*\*\* GRE-Pb-04 Wipe 0.108 110 ug/ft2 460 4200 ug/ft2 1066229 Flame \*\*\*\* 0.108 <12 <110 ug/ft2 GRE-Pb-05 110 ug/ft2 1066230 Flame Wipe \*\*\*\* 0.108 ug/ft² 58 540 ug/ft2 1066231 GRE-Pb-06 Flame Wipe 110 \*\*\*\* 0.108 <12 ug/ft2 110 ug/ft2 <110 1066232 GRE-Pb-07 Flame Wipe \*\*\*\* ug/ft² 0.108 GRE-Pb-08 Wipe 110 ug/fl<sup>2</sup> 74 690 1066233 Flame \*\*\*\* 0.108 110 ug/ft2 <12 <110 ug/fl<sup>2</sup> 1066234 GRE-Pb-09 Flame Wipe \*\*\*\* 0.108 <12 <110 ug/ft2 Wipe 110 ug/ft2 1066235 GRE-Pb-10 Flame \*\*\*\* 0.108 13 120 ug/ft2 1066236 GRE-Pb-11 Flame Wipe 110 ug/fl2 \*\*\*\* 49 450 ug/fl<sup>2</sup> GRE-Pb-12 Wipe 0.108 110 ug/ft2 1066237 Flame \*\*\*\* 0.108 <12 <110 ug/fl2 Wipe 110 ug/fl2 1066238 GRE-Pb-13 Flame \*\*\*\* 1066239 GRE-Pb-14 Wipe 0.108 110 ug/ft<sup>2</sup> <12 <110 ug/ft2 Flame \*\*\*\* 0.108 <12 <110 ug/ft2 1066240 GRE-Pb-15 Flame Wipe 110 ug/ft2 \*\*\*\* 0.108 <12 <110 ug/ft2 1066241 GRE-Pb-16 Flame Wipe 110 ug/ft² \*\*\*\* 0.108 <12 <110 ug/ft2 GRE-Pb-17 Flame Wipe 110 ug/ft² 1066242

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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## CERTIFICATE OF ANALYSIS

						ISO.NEC 17025-2005 www.aihaaccreditediabis.org
Client:	National Guard Bureau	Job Name:	Greenfield Amory	Chain Of Custody:	508459	NY ELAP
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Greenfield, MA	Date Submitted:	8/2/2010	10920
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Henpenbrow	
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	8/9/2010	Report Date: 8/9/2010
Attention:	Non-Responsive					

#### Summary of Atomic Absorption Analysis for Lead

Page 2 of 2

AIHA LAP. LLC

ACCREDITED LABORATOR INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY

1066243       GRE-Pb-18       Flame       Wipe       ****       0.108       110       ug/ft²       <12       <110       ug/ft²         1066244       GRE-Pb-19       Flame       Wipe       ****       0.108       110       ug/ft²       <12       <110       ug/ft²         1066245       GRE-LBP-01       Flame       Paint Chip       ****       N/A       0.011       %Pb       0.47       %Pb         Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B       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         N/A = Not Applicable       mg/Kg = parts per million (ppm) on a dry weight basis       mg/L = parts per billion (ppb)       NY ELAP accreditation applies only to paint chip, wipe, and soil samples.         %Pb = percent lead on a dry weight basis       ug = micrograms       ug/L = parts per billion (ppb)       NY ELAP accreditation applies only to paint chip, wipe, and soil samples.         Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.       Analysis shown       Non-Responsive	AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	A	oorting Jimit	Total ug	Final Result		Comments
1060244       CREPTORIS       Frame       Write       0.105       110       upril       012       010       upril         1066245       GRE-LBP-01       Flame       Paint Chip       ****       N/A       0.011       %Pb       0.47       %Pb         Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B       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         M/A = Not Applicable       mg/Kg = parts per million (ppm) on a dry weight basis       mg/L = parts per million (ppm)       NY ELAP accreditation applies only to paint chip, wipe, and soil         Mote: All results have two significant digits. Any additional digits shown       Mote Postocol       Mote Postocol	1066243	GRE-Pb-18	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
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-3111B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3113B Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-31	1066244	GRE-Pb-19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft2	
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) 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	1066245	GRE-LBP-01	Flame	Paint Chip	****	N/A	0.011	%Pb		0.47	%Pb	
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All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy. Analyst:

**Technical Manager:** 

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, NYLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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PCM Air – Please Indicate Fil INIOSH 7400 Fiberglass Fiberglass AHERA Other (specify EPA 600 – Visual Estir EPA 600 – Visual Estir EPA 600 – Visual Estir EPA Point Count NY State Friable 198.1 Grav. Reduction ELAF Other (specify Other (specify Vermiculite Asbestos Soil PLM(Qu SA CLIENT ID S	(QTY) (QTY) ter Type: (QTY) (QTY) (QTY) (QTY) (QTY) (QTY) (QTY) (QTY)	QTY) (QTY) _(Qael) PL ON	M/TEM(Q VOLUME (LITERS)		ELAP NY Sta Residu Quat Quat Quan Quan Quan Quan ELAP EPA EPA C All san EM Wa	198.4/Cha te PLM/I al Ash pres/abs) s/area) Va s/area) Du pres/abs) 198.2/EPA 0.1 ples recei ter sample Er E_	EM Vacuum E st D648 100.2 ved in g s NALY	(Q /Dust	95 (QTY) (QTY) (QTY) onditio	QTY)	.(QTY (Q (QTY) )	TY)			Pb Pa Pb D Pb A Pb So Pb To Drini Wast Pb To Drini Wast Pb To Drini Wast Pb To Drini Wast Pb To Drini Wast Pb To Drini Wast Surfa Surfa	int Chi ust Wip ir bil/Solic CLP king Wa e Water ornace ( lysls ction Ap ction M c-Trap cc Swal cc Tape	Pb(QTY) Media pparatus for Spore (edia(QTY) b(QTY) b(QTY)(QTY)(QTY) /	QTY) () TY) □ Cu () □ Cu () □ Cu () □ Cu () □ Cu () □ Cultur CLIES	.)	(QTY)
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		BEST	AVAILABLE OWI (410) 247-20				15920	2 210 REV	6.08
AMA Analytical Services, Inc. Focused on Results www.analab.com AIHA (#100470) NVLAP (#101143-0) NY E1 4475 Forbes Blvd. • Lanbam, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (301)	U.	HAIN					(Please Refer To Number For Inqu		542-
Mailing/Billing Information:		\$	Submittal Inf 1. Job Name	ormation:	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	500 /	12.404 4		
Client Name: <u>National Guard Bureau</u> Address I: <u>301-IH Old Bay Lane</u>			<ol> <li>Job Name:</li> <li>2. Job Locati</li> </ol>	12/2	Cuel	2 PIRD	RANDRY	- here	
3. Address 2: Attn: NGB-AVN-SI, State Milita	The second se		3. Job #:		Cherce		P.O. #: W912K6	09.4.0002	
								Non-Respon	sive
4. Address 3:         Havre de Grace, Maryland         21           5. Phone #:         (410) 942-0273         Fac	x #: (410) 942-0254		5. Submitted	by	)n-	Res	bons	ive	
	Reporting Inform	ation (Results	will be provid	ded					
AFTER HOURS (must be pre-scheduled)		NORMAL B	USINESS HOL	IRS				REPORT TO:	
Immediate Date Duc: 24 Hours Time Due: Comments:	Q Next Day Q	3 Day 5 Day + ate Due:		Results Rec (EveryAtter Made to Ac	not Will Be	oon SU Incl SU Em U Fax		Sheets with Report SIVC @us.army.mil @us.army.mil	
Asbestos Analysis						Metals Analysi	1	a ds.drifty.titl	
PCM Air – Please Indicate Filter Type:         UNIOSH 7400(QTY)         Fiberglass      (QTY)         HAHERA      (QTY)         AHERA      (QTY)         Other (specify)(QTY)      (QTY)         Department      (QTY)         Uniter (specify)(QTY)      (QTY)         Department      (QTY)         Determine      (QTY)         Other (specify	NY Sta Reside TEM Dust Qual. ( Qual. ( PLAP All san (TEM Water VOLUME WIPE <u>AIESA</u> AREA	198.4/Chatfield_ tte PLM/TEM al Ash pres/abs) Vacuum (s/area) Vacuum (s/area)Dust D64 pres/abs) 198.2/EPA 100.2 0.1 ples received in ter samples ANAIX	(QTY) (QTY) (QTY) (QTY) (QTY) (QTY) good condition (C)	TY) (QTY) (QTY) (QTY)	vise noted.	Pb Paint     Pb Dast     Pb Dast     Pb Air_     Pb SoiUS     Pb TCLL     Drinking     Waste W     Po Furna Fongal Analysi     Collectio     Collectio     Spore-Tr     Surface S     Surface S	Chip	QTY) () TY) Cu(QTY) A () Cu(QTY) () () Cu(QT	As(QTY) is(QTY) Y) t(QTY) ia)(QT) dia)(QT)
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LABORATORY 1. Date/Time RCVD:		and the second sec	ia:	By	(Print):			— <sup>s</sup>	
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3. Results Reported To:		DECT	AVAILAB	CODY	Date:	/_		ane:	

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Appendix C Photo Documentation BEST AVAILABLE COPY

# Greenfield RC



Storage Area, Former Firing Range





Standing Water

Kitchen



Storage Area Posted to NGB FOIA Reading Room May, 2018

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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1603 of 3473 BEST AVAILABLE COPY

# Greenfield RC



## Drill Hall





Office



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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1604 of 3473 Appendix D IAQ and Lighting Survey Log Sheets

		Greenfield		AQ									
7/29/2010	Inspector	Non-Responsive	Instrument	nstrument Q-TRAK 7565-X							Instrument	CAL-LIGHT 400	
Readiness Ctr			Serial Numbe	er	7565X0839017						Serial Numbe	K070277	
			Last Calibrat	ion			Sep-0	8		Last Calibrati	30-Jul-09		
Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Value (fc)
Storage	0		83.8	х	54.4	х	402		0.0		33.3		5-30
Storage	0		83.8	х	54.4	х	306		0.0		34.4		5-30
Empty Room	0		84.4	х	60.5	х	463		0.0		122.2		5-30
Quarters	0		84.8	х	51.8	х	465		0.0		24.7	х	5
Toilet	0		87.0	х	43.4	х	668		0.0		33.0		5
Hall	0		86.4	х	42.5	х	391		0.0		20.4		5
Stage	0		84.1	х	51.0	х	391		0.0		7.1	х	30-50
Assembly Hall	0		82.8	х	51.9	х	445		0.0		26.5	х	30-50
Classroom	0		83.9	х	49.9	х	459		0.0		38.4	x	50
Office	0		83.3	х	49.6	х	514		0.0		67.7		50
Entry/Hall	0		83.4	х	48.7	х	378		0.1		44.6		10
Office	0		83.7	х	48.0	х	378		0.0		54.8		50
Office	0		83.5	х	50.5	х	417		0.0		122.7		50
Office	0		83.6	х	46.5	х	356		0.0		101.7		50
Office	0		83.1	х	46.8	х	348		0.0		71.7		50
Toilet	0		84.0	х	49.5	х	372		0.0		16.8		5
Hall	0		83.5	х	47.2	х	428		0.0		65.6		5
Kitchen	0		82.3	х	49.1	х	570		0.0		24.2	х	50
			30 40 50	)% )% )%	nidity	68. 68. 68.	.5°F-76.0°F .5°F-75.5°F .5°F-74.5°F	7 7 7	4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0°	F F F			
	Readiness Ctr         Function         Storage         Storage         Empty Room         Quarters         Toilet         Hall         Stage         Assembly Hall         Classroom         Office         Office         Office         Office         Office         Office         Hall	Readiness CtrReadiness CtrFunctionNo. OccupantsStorage0Storage0Empty Room0Quarters0Mail0Gasembly Hall0Classroom0Office0Office0Office0Office0Office0Office0Office0Office0Office0Office0Hall0Office0Office0Office0Hall0Office0<	Readiness CtrNo. OccupantsTimeStorage0Storage0Storage0Empty Room0Quarters0Mail0Hall0Stage0Classroom0Office0Office0Office0Office0Office0Office0Office0Office0Office0Office0Office0Office0Office0Hall0Office0Hall0Office0Hall0Office0Hall0	Readiness Ctr         Serial Numb           Function         No. Occupants         Time         Temp. (°F)           Storage         0         83.8           Empty Room         0         84.4           Quarters         0         84.8           Toilet         0         86.4           Stage         0         84.1           Assembly Hall         0         82.8           Classroom         0         83.3           Entry/Hall         0         83.4           Office         0         83.7           Office         0         83.7           Office         0         83.5           Office         0         83.5           Office         0         83.6           Office         0         83.5           Office         0         83.5           Office         0         83.5           Mice         0         83.5           Office         0         83.5           Office         0         83.5           Office         0         83.5           Kitchen         0         82.3	Readiness Ctr         Serial Number           Last Calibration         Last Calibration           Function         Occupants         Time         Temp. (°F)         Image           Storage         0         83.8         X           Storage         0         83.8         X           Guarters         0         84.4         X           Quarters         0         84.8         X           Toilet         0         86.4         X           Stage         0         83.9         X           Glassroom         0         83.9         X           Office         0         83.3         X           Office         0         83.3         X           Office         0         83.9         X           Office         0         83.3         X           Office         0         83.3         X           Office         0         83.7         X           Office         0         83.7         X           Office         0         83.6         X           Office         0         83.6         X           Office         0         83.1	Readiness Ctr         Serial Number           Function         No. Occupants         Time         Temp. (°F)         No. No. Occupants         Temp. (°F)         No. No. Temp. (°F)         No. No. No. Occupants         Time         Temp. (°F)         No. No. No. No. No. Cuastroage         No. Occupants         Temp. (°F)         No. No. No. No. No. No. No. No. No. No.	Readiness Ctr         Serial Number           Last Calibration         Last Calibration           Function         Occupants         Time           Storage         0         83.8         X           Storage         0         83.8         X           Storage         0         83.8         X           Storage         0         83.8         X           Empty Room         0         84.4         X           Quarters         0         84.8         X         51.8           Y         Y         43.4         X         51.8         X           Toilet         0         87.0         X         43.4         X           Hall         0         86.4         X         42.5         X           Stage         0         84.1         X         51.0         X           Assembly Hall         0         82.8         X         51.9         X           Office         0         83.3         X         49.9         X           Office         0         83.7         X         48.0         X           Office         0         83.5         X         50.5 <t< td=""><td>Readiness Ctr         Serial Number         7565X083           Last Calibration         Sep-0           Keadiness Ctr         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         CO<sub>2</sub> (ppm)           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         306           Empty Room         0         84.4         X         60.5         X         463           Quarters         0         84.8         X         51.8         X         465           Toilet         0         87.0         X         43.4         X         668           Hall         0         86.4         X         42.5         X         391           Assembly Hall         0         83.3         X         49.6         X         514           Entry/Hall         0         83.4         X         48.7         X         378           Office         0         83.7         X         48.0         X         378           Office         0         83.6         X         46.5         X         356</td></t<> <td>Readiness Ctr         Serial Number         7565X083901           Last Calibration         Sep-08           Function         Occupants         Time           Temp. (°F)         X         RH (%)         X         CO2 (ppm)         X           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         402           Quarters         0         84.4         X         60.5         X         463           Quarters         0         87.0         X         43.4         X         668           Hall         0         86.4         X         42.5         X         391         1           Stage         0         83.3         X         49.9         X         459         1           Office         0         83.3         X         49.6         X         514         1           Entry/Hall         0         83.7         X         48.0         X         378         1         1           <td< td=""><td>Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         W         CO2(ppm)         CO(ppm)           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Quarters         0         84.4         X         60.5         X         463         0.0           Quarters         0         84.8         X         51.8         X         4665         0.0           Toilet         0         87.0         X         43.4         X         6668         0.0           Hall         0         82.8         X         51.9         X         445         0.0           Classroom         0         83.3         X         49.9         X         459         0.0           Office         0         83.7         X         48.0         X         378         <td< td=""><td>Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         Temp. (°F)         Temp. (°C)         Temp. (°C)</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Function         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         No. W         CO2 (ppm)         No. W         CO (ppm)         No. No. W         CO (ppm)         No. No. No. No. No. No. No. No. No. No.</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Last Calibration         Sep-08         Last Calibration         Sep-08         Last Calibration           Function         Occupants         Time         Temp. (°F)         B         CO (ppm)         B         CO (ppm)         B         B         B         B         CO (ppm)         B         CO (ppm)         B         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A</td></td<></td></td<></td>	Readiness Ctr         Serial Number         7565X083           Last Calibration         Sep-0           Keadiness Ctr         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         CO <sub>2</sub> (ppm)           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         306           Empty Room         0         84.4         X         60.5         X         463           Quarters         0         84.8         X         51.8         X         465           Toilet         0         87.0         X         43.4         X         668           Hall         0         86.4         X         42.5         X         391           Assembly Hall         0         83.3         X         49.6         X         514           Entry/Hall         0         83.4         X         48.7         X         378           Office         0         83.7         X         48.0         X         378           Office         0         83.6         X         46.5         X         356	Readiness Ctr         Serial Number         7565X083901           Last Calibration         Sep-08           Function         Occupants         Time           Temp. (°F)         X         RH (%)         X         CO2 (ppm)         X           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         402           Storage         0         83.8         X         54.4         X         402           Quarters         0         84.4         X         60.5         X         463           Quarters         0         87.0         X         43.4         X         668           Hall         0         86.4         X         42.5         X         391         1           Stage         0         83.3         X         49.9         X         459         1           Office         0         83.3         X         49.6         X         514         1           Entry/Hall         0         83.7         X         48.0         X         378         1         1 <td< td=""><td>Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         W         CO2(ppm)         CO(ppm)           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Quarters         0         84.4         X         60.5         X         463         0.0           Quarters         0         84.8         X         51.8         X         4665         0.0           Toilet         0         87.0         X         43.4         X         6668         0.0           Hall         0         82.8         X         51.9         X         445         0.0           Classroom         0         83.3         X         49.9         X         459         0.0           Office         0         83.7         X         48.0         X         378         <td< td=""><td>Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         Temp. (°F)         Temp. (°C)         Temp. (°C)</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Function         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         No. W         CO2 (ppm)         No. W         CO (ppm)         No. No. W         CO (ppm)         No. No. No. No. No. No. No. No. No. No.</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Last Calibration         Sep-08         Last Calibration         Sep-08         Last Calibration           Function         Occupants         Time         Temp. (°F)         B         CO (ppm)         B         CO (ppm)         B         B         B         B         CO (ppm)         B         CO (ppm)         B         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A</td></td<></td></td<>	Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         W         CO2(ppm)         CO(ppm)           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Storage         0         83.8         X         54.4         X         402         0.0           Quarters         0         84.4         X         60.5         X         463         0.0           Quarters         0         84.8         X         51.8         X         4665         0.0           Toilet         0         87.0         X         43.4         X         6668         0.0           Hall         0         82.8         X         51.9         X         445         0.0           Classroom         0         83.3         X         49.9         X         459         0.0           Office         0         83.7         X         48.0         X         378 <td< td=""><td>Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         Temp. (°F)         Temp. (°C)         Temp. (°C)</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Function         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         No. W         CO2 (ppm)         No. W         CO (ppm)         No. No. W         CO (ppm)         No. No. No. No. No. No. No. No. No. No.</td><td>Readiness Ctr         Serial Number         7565X0839017         Serial Number           Last Calibration         Sep-08         Last Calibration         Sep-08         Last Calibration           Function         Occupants         Time         Temp. (°F)         B         CO (ppm)         B         CO (ppm)         B         B         B         B         CO (ppm)         B         CO (ppm)         B         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A</td></td<>	Readiness Ctr         Serial Number         7565X0839017           Last Calibration         Sep-08           Function         Occupants         Time         Temp. (°F)         Temp. (°F)         Temp. (°C)         Temp. (°C)	Readiness Ctr         Serial Number         7565X0839017         Serial Number           Function         No. Occupants         Time         Temp. (°F)         No. W         RH (%)         No. W         CO2 (ppm)         No. W         CO (ppm)         No. No. W         CO (ppm)         No. No. No. No. No. No. No. No. No. No.	Readiness Ctr         Serial Number         7565X0839017         Serial Number           Last Calibration         Sep-08         Last Calibration         Sep-08         Last Calibration           Function         Occupants         Time         Temp. (°F)         B         CO (ppm)         B         CO (ppm)         B         B         B         B         CO (ppm)         B         CO (ppm)         B         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A

National Guard Industrial Hygiene Survey For Indo	or Air Quality and Light Level
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State	MA	City	Greenfield									Light		
Date	7/29/2010	Inspector	Non-Responsive	Instrument				Q-TRAK 75	65->	<		Instrument		CAL-LIGHT 400
Facility Description	Readiness Ct	r		Serial Number 7565X0839017							Serial Number	K070277		
Weather Conditions				Last Calibra				Sep-08				Last Calibration	30-Jul-09	
Location	Function	No. Occupant s	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Value (fc)
19	Pantry	0		81.7	Х	48.2	Х	629		0.0		16.8		5
20	Office/Storage	0		80.5	Х	54.0	Х	603		0.0		33.7		30-50
21	Hall	0		79.7	Х	61.8	X	664		0.0		38.0		5
22	Bath/Shower	0		81.2	Х	52.3	Х	598		0.0		141.1		5
23	Storage	0		80.2	Х	53.0	Х	597		0.0		22.3		5-30
24	Entry	0		78.1	Х	61.1	Х	617		0.0		26.2		10
25	Storage	0		78.1	Х	61.1	Х	607		0.0		22.4		5-30
26	Storage	0		76.5	Х	60.3	Х	798		0.1		23.4		5-30
27	Storage	0		76.5	Χ	60.3	Х	798		0.0		24.8		5-30
28	Garage	0		76.9	Χ	60.1	Х	584		0.0		1.3	Х	5
29	Boiler Room	0		77.0		48.7		734		0.0		5.4	Х	30
30	Storage	0		76.4	X	60.3	X	592		0.0		113.7		5-30
									_					
Notes:	1	1	1	4	0% 0%		68 68	inter Temp. .5°F-76.0°F .5°F-75.5°F	7 7	ummer Tem 4.0°F-80.0° 3.5°F-79.5°	F F		<u> </u>	
					0% 0%			.5°F-74.5°F .0°F-74.0°F		<u>3.0°F-79.0°</u> 2.5°F-78.0°				



#### 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 71 HOPE STREET GREENFIELD, MA 01301

July 11, 2013 PN: 39743799



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	ARMORIES

#### FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 71 HOPE STREET, GREENFIELD, MA

Findings	Recommendations	Risk Assessment Code (RAC)	
Lighting			
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4	
Ergonomics			
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards.	Ergonomic issues with regard to 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	
Water Intrusion	E		
Evidence of water intrusion was noted on the ceiling on the second floor.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio-aerosols in the Indoor Environment).	RAC 3	
Lead			
Five of the 10 lead wipe samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3	
Emergency Exits			
Emergency exit signs and escape plans were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3	
Asbestos			
Asbestos-containing floor tiles and associated mastic were identified; an Asbestos Operation and Maintenance Program was not available on- Site.	Develop a site-specific asbestos operations and maintenance program for management of asbestos- containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 4	

Findings	Recommendations	Risk Assessment Code (RAC)		
PPE				
Hazard assessments have not been conducted to determine whether personal protective equipment is required.	Conduct a hazard assessment of site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4		
Former Indoor Firing Range				
Since the former indoor firing range is contaminated with lead and several wipe samples were found to contain elevated lead levels, good hygiene practices should be used when entering this building area.	Good hygiene practices shall be employed when entering building areas where lead dust may become airborne (29 CFR 1910.1025 (i)(1)).	RAC 3		
Former Indoor Firing Range				
Ladders were not properly secured and stored.	Ladders not in use shall be properly stored in a vertical position fastened to walls (29 CFR 1910.25 (c)(2)(i)).	RAC 4		
Hazard Communication				
No written hazard communication program was identified on site.	Employers shall develop, implement and maintain a written hazard communication program (29 CFR 1910.1200 (e)(1)).	RAC 3		

#### 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 in Greenfield, Massachusetts.

URS representative, Mr. Non-Responsive, conducted the Industrial Hygiene Survey on May 20, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Greenfield Readiness Center is a two-story brick building, consisting of offices, classrooms, a supply area, a kitchen, storage areas, PT room, gender separate bathrooms, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A. The former Indoor Firing Range is currently used for storage.

<u>GENERAL</u>: Illuminated emergency exit signs were not observed throughout the facility. Emergency escape plans were not posted throughout the facility. Ladders were not properly secured and stored. Evidence of water intrusion was observed on the ceiling of the second floor.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities.

<u>LEAD</u>: Five of the ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

<u>ASBESTOS</u>: Damaged asbestos-containing floor tiles and associated mastic were identified during this survey; however no Asbestos Operations and Maintenance Program was available on site.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and monitors were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Noise monitoring in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

## 2.0 SUPPLY / TRAINING AREA

#### 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, classrooms, a supply area, kitchen, storage areas, PT room, gender separate bathrooms, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be neat and organized at the time of URS' site visit.

#### 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. Interior carbon dioxide concentrations were found to be between 447 and 533 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 479 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below 1,179 ppm. Using the ASHRAE guideline, the readings at the subject site were found to be below the suggested indoor to outdoor differential concentration.

#### 2.2.2 Carbon Monoxide

The carbon monoxide concentrations in the Readiness Center were measured between 0.2 ppm and 0.7 ppm on the day of the survey. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Trak Plus (Model 8554).

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.

#### 2.2.3 Relative Humidity

The average relative humidity within the Readiness Center measured with the Q-Trak Plus was 46.7%, which was within the guideline of less than 65% recommended by ASHRAE.

#### 2.2.4 Temperature

Temperature should be maintained within the thermal comfort envelope suggested in ASHRAE Standard 55-2010. This standard on thermal environments specifies conditions in which 80% or more of building occupants should find the thermal environment acceptable. ASHRAE 55-2010 suggests temperatures of 68 to 75 degrees Fahrenheit (°F), during winter months, for people in typical seasonal clothing during light sedentary activity. For summer, the temperature should be in the range of 73 to 79 °F.

The average temperature inside the Readiness Center was, 69.1 °F, which was within the guideline of 68 to 75 °F recommended by ASHRAE for thermal comfort. Complaints regarding elevated indoor temperature during summer months were received by URS during this survey, although the measured temperature was within the recommended range

## 2.2.5 Lighting

Lighting in the Readiness Center was measured using a cal-Light 400 Light Meter. Table 2-1 below shows lighting measurements in foot candles (FC) and the recommended lighting requirements (Illuminating Engineering Society of North America (IESNA) RP-7-01).

Location	Function	Measured Illuminance in Foot Candles (FC)	Recommended Minimum Illuminance in Foot Candles (FC)
First Sergeant Office, desk	Admin	56.5	50
Company Commander Office, desk	Admin	99.3	50
B104 Office, desk	Admin	38.2	50
1 <sup>st</sup> Floor, Classroom, table	Admin	26.4	50
Main Hall, desk	Admin	10.0	50
2 <sup>nd</sup> Floor, Office, vacant desk	Admin	25.3	50
Drill Shed	Hall	29.0	5
1 <sup>st</sup> Floor, restroom	Break Room	27.9	10
Basement, kitchen	Break Room	25.7	10
Basement, Supply Room	Storage	4.1	30
Rear Stairwell	Hall	13.4	5
Main Stairwell	Hall	24.3	5
First Sergeant Office, desk	Admin	105.0	50

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

On the day of the survey, the illuminance in the Readiness Center was determined to be inadequate in five of the locations surveyed.

## 2.2.6 Lead

Wipe testing for lead dust was conducted in the Readiness Center using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix C. Table 2-2 below shows the results of the lead wipe testing.

Sample Location	URS Sample Number	Area Wiped in Square Feet (ft <sup>2</sup> )	Result in Micrograms/ Square Foot (µg/ft <sup>2</sup> )	Maximum Surface Contamination Level in Micrograms/ Square Foot (μg/ft <sup>2</sup> )
Basement, former Indoor Firing Range, end, metal shelf	Greenfield RC W-01	0.108	380	200
Basement, corridor, top of flammable cabinet	Greenfield RC W-02	0.108	1,000	200
Basement, former Indoor Firing Range, floor at storage	Greenfield RC W-03	0.108	620	200
Basement, kitchen, metal shelf	Greenfield RC W-04	0.108	200	200
Stairwell landing, basement to first floor	Greenfield RC W-05	0.108	370	200
1 <sup>st</sup> floor, First Sergeant office	Greenfield RC W-06	0.108	<110	200
1 <sup>st</sup> Floor, classroom, glass countertop	Greenfield RC W-07	0.108	<110	200
1 <sup>st</sup> Floor, Company Commander office	Greenfield RC W-08	0.108	<110	200
1 <sup>st</sup> Floor, Drill Shed, stage floor	Greenfield RC W-09	0.108	<110	200
1 <sup>st</sup> Floor, Drill Shed, table	Greenfield RC W-10	0.108	<110	200

Table 2-2 Levels of Lead Dust Found in the Readiness Center

Five of the ten surface dust level measurements were found to contain lead at a level above the NGB recommended level, based on the OSHA clarification letter which states "as free as practicable" of lead contamination as specified under OSHA 29 CFR 1926.62.

Two paint chip samples were collected from areas of peeling paint in the facility and were analyzed for lead content. The analytical report from AMA is contained in Appendix C.

According to the U.S. Department of Housing and Urban Development (HUD), paint is considered to be lead-based if the quantity of lead is greater than 0.5% by weight. OSHA has not established a minimum percentage of lead to be defined as lead-based paint therefore, paint with lead in any amount above the analytical detection limit is considered to be lead-based under these regulations. The results of URS' lead paint testing are contained in Table 2-3.

Table 2-3 Lead Content in Painted Surfaces

Paint Location	Lead Concentration (Percent Weight)	HUD Lead-Based Quantity (Percent Weight)
White paint, Drill Shed wall	0.031	0.5
White paint, Drill Shed wall	0.089	0.5

On the day of the survey, neither of the paint chip samples were found to have a lead content above the HUD criteria for determination of paint as lead-based.

#### 2.2.7 Asbestos

URS collected a total of two samples from damaged suspect asbestos-containing material (ACM) in the administrative areas 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 with dispersion staining (EPA-600/M4-82-020). Table 2-4 below shows the results of the asbestos sampling.

 Table 2-4

 Asbestos Bulk Sample Results – Basement

Sample Location	Sample	URS Sample	Result	
	Description	Number	Total Asbestos	
1 <sup>st</sup> Floor, Commander/ 1 <sup>st</sup>	Red 9x9 Floor	Greenfield RC	3% Chrysotile	
Sergeant Offices	Tile	PLM-01-02		

The EPA states that any material with an asbestos content greater than 1% must be treated as ACM (EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix C.

## 2.3 Ventilation System Evaluation

The facility, not designed for vehicle maintenance, contains a ventilation system that is limited to localized personal ventilation (i.e. room fans, window air conditioning units) within the majority of rooms, and main negative draw fans in the Assembly Hall.

#### 2.4 Noise Measurements

Area noise dosimetry was conducted within the administrative office area. Noise exposures were measured using a data-logging Spark 703+ Noise Dosimeter. Area noise dosimetry results indicated that, on the day of the survey, workers were not exposed to noise levels above the DoDI Hearing Conservation Standard (6055.12 3 December 2010) of 85 decibels, A scale (dBA)/8-hour day. Table 2-5 indicates the individual monitored, the tasks performed and noise exposures.

Table 2-5 Noise Dosimetry Data

Location	Task	Sample Duration in Minutes	Monitoring Result TWA (dBA)*	Hearing Protection
Office <sup>Non-Responsive</sup>	Administrative	360	71.6	N/A

\* The calculated 8-hour, time-weighted average (TWA) noise exposure in dBA. The OSHA PEL for noise exposure is 90 dBA. DoDI has established an employee exposure level of 85 dBA for requirement of a hearing conservation program.

## 2.5 Personal Protective Equipment

Personal protective equipment was orderly and readily available to employees in the Readiness Center. Personal protective equipment included safety glasses, ear plugs and nitrile gloves. Personal protective equipment was not observed in use during URS' site visit.

## 3.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

#### 3.1 Confined Spaces

A written confined spaces program is not required for this site.

## 3.2 Hearing Conservation

A written hearing conservation program was not identified on site. A review of normal site activities determined that no operations were identified that would warrant hearing protection. Based on area noise dosimetry results, a hearing conservation program is not required for this site.

## 3.3 Respiratory Protection

A site-specific written program regarding Respiratory Protection was not identified on site and is not required for this facility

## 3.4 Hazard Communication

A site-specific hazard communication program was not identified on site.

Material safety data sheets, a site map, and list of full time personnel were readily available on the day of the survey.

## 3.5 Personal Protective Equipment

A written personal protective equipment program was not identified on site. A hazard assessment should be conducted to determine whether personal protective equipment is required for activities typically undertaken at the Readiness Center.

## 3.6 Asbestos Operations and Maintenance Program

A written asbestos operations and maintenance program was not identified on site.

## 3.7 Safety

Ladders were not properly secured and stored. Illuminated emergency exit signs and emergency escape plans were not properly posted throughout the facility. Evidence of water intrusion was observed throughout ceilings on the second floor.

#### 4.0 REFERENCES

American Conference of Governmental Industrial Hygienists

Industrial Ventilation: A Manual of Recommended Practice, 27<sup>th</sup> Edition, 2010

Guidelines for the Assessment of Bio-aerosols in the Indoor Environment, 1989

American National Standards Institute

American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04: American National Standard Practice for Office Lighting

ANSI/IESNA RP-7-01: Recommended Practice for Lighting Industrial Facilities

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality

ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human Occupancy.

Department of the Army

DA PAM 40-21, Ergonomics Program, 15 August 2003

Unified Facilities Criteria, Heating, Ventilating and Air Conditioning, 3-520-05, 14 April 2008

DA PAM 40-501, Hearing Conservation Program, 10 December 1998.

AR 385-10, The Army Safety Program, 23 August 2007; RAR Issue Date: 4 October 2011

National Guard Pamphlet 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006

Department of Defense

DoDI 6055.12, Hearing Conservation, 3 December 2010

Creating the Ideal Computer Workstation: A Step-by-Step Guide, June 2000

National Institute for Occupational Safety and Health

Current Intelligence Bulletin 50: Carcinogenic Effects of Exposure to Diesel Exhaust, August 1988

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. Department of Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997, 2012)

U. S. Occupational Safety and Health Administration

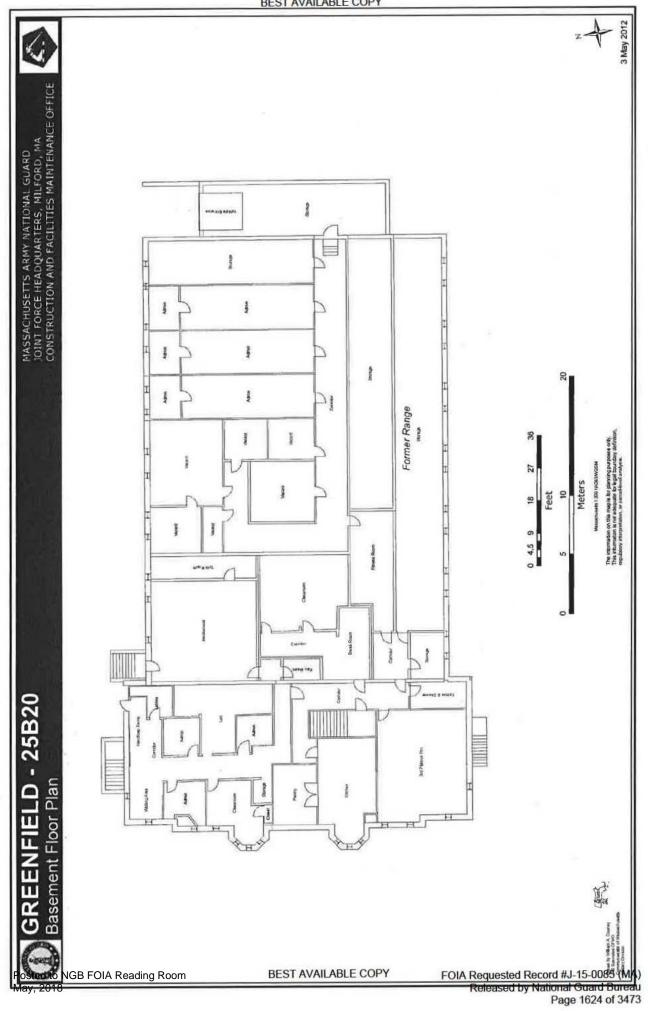
Standard for General Industry: 29 CFR 1910

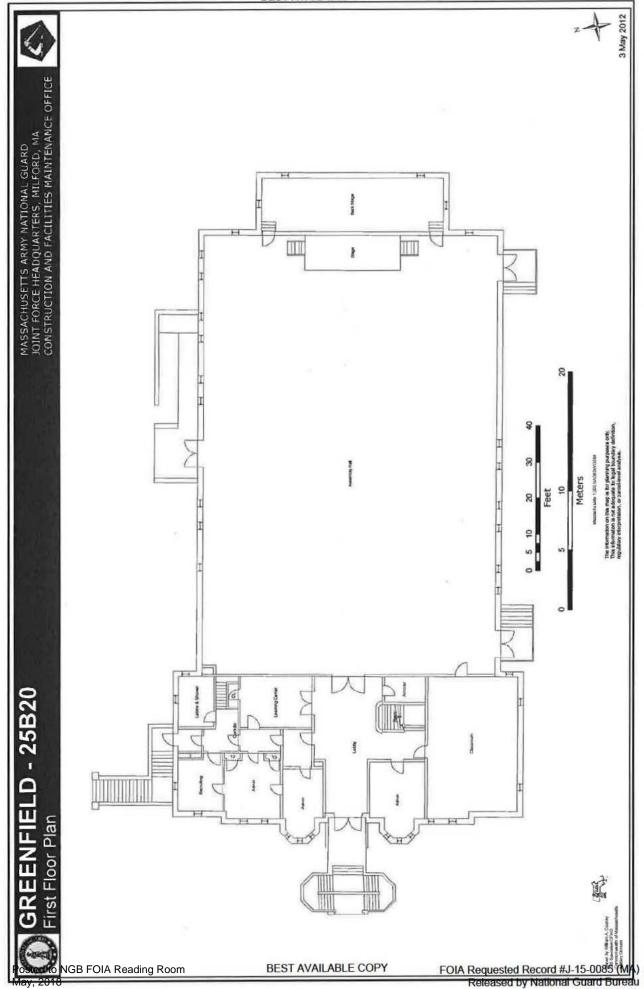
OSHA Clarification Letter – Clarification of "as free as practicable" of lead contamination under 29 CFR 1926.62, 13 January 2003.

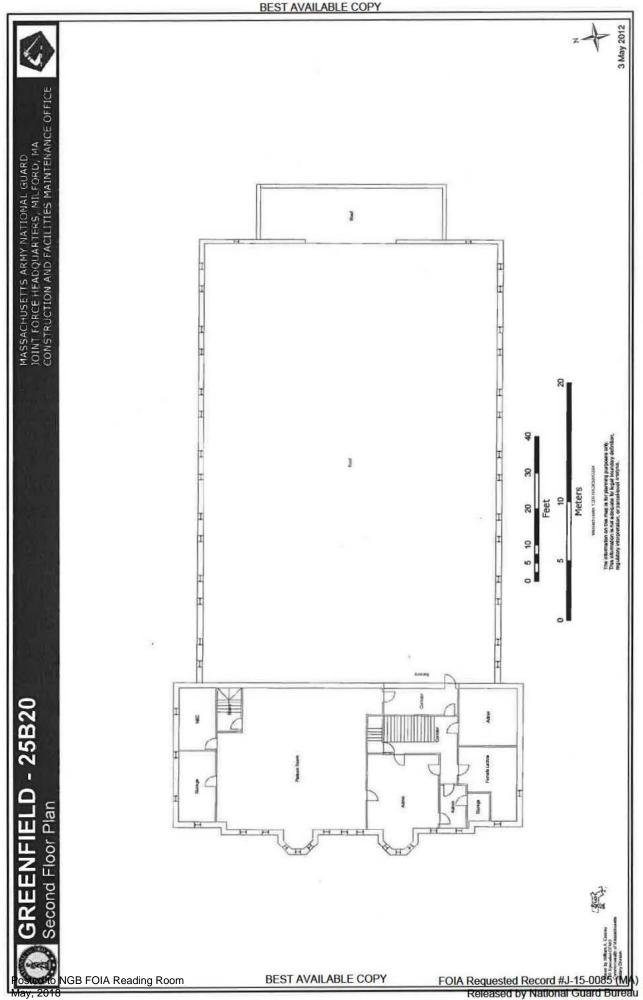
## APPENDIX A

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## SHOP DRAWING







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#### APPENDIX B

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#### PERSONNEL LIST

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List of Personal

# Non-Responsive

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#### APPENDIX C

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#### ANALYTICAL RESULTS

# AMA Analytical Services, Inc.

Attention:

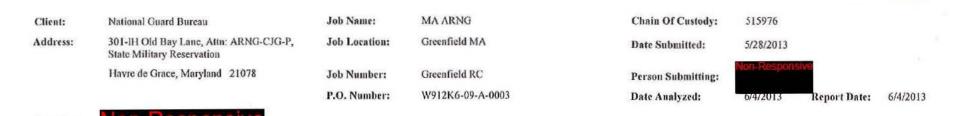
A Specialized Environmental Laboratory

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#### CERTIFICATE OF ANALYSIS

#### AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEC 17025-2005

LAB #105470



#### 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 (ft²)		orting imit	Total ug	Final Res	ult	Comments
13065700	Greenfield RC W-01	Flame	Wipe	****	0.108	110	ug/ft²	41	380	ug/ft²	
13065701	Greenfield RC W-02	Flame	Wipe	****	0.108	110	ug/ft²	110	1000	ug/ft²	
13065702	Greenfield RC W-03	Flame	Wipe	****	0.108	110	ug/fl²	67	620	ug/ft²	
13065703	Greenfield RC W-04	Flame	Wipe	****	0.108	110	ug/ft²	21	200	ug/ft²	
13065704	Greenfield RC W-05	Flame	Wipe	****	0.108	110	ug/ft²	39	370	ug/ft²	
13065705	Greenfield RC W-06	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065706	Greenfield RC W-07	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065707	Greenfield RC W-08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065708	Greenfield RC W-09	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/fl²	
13065709	Greenfield RC W-10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13065710	Greenfield RC LBP- 01	Flame	Paint Chip	****	N/A	0.0077	%Pb		0.031	%РЬ	
13065711	Greenfield RC LBP- 02	Flame	Paint Chip	****	N/A	0.0072	%Pb		0.089	%Pb	
13065714	Greenfield RC TB-W	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

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#### AMA Analytical Services, Inc. BEST AVAILABLE COPY CERTIFICATE OF ANALYSIS A Specialized Environmental Laboratory

Client:	National Guard Bureau	Job Name:	MA ARNG		Chain Of Custody:	515976		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-F State Military Reservation	, Job Location:	Greenfield MA		Date Submitted:	5/28/2013		
	Havre de Grace, Maryland 21078	Job Number:	Greenfield RC		Person Submitting	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003		Date Analyzed:	6/4/2013	Report Date:	6/4/2013
Attention:	Non-Responsive							
		Summary	of Atomic Absor	rption Analy	sis for Lead			Page 2 of 2
AMA Sample Number	Client Sample Analysis Type Number	Sample Type Air	r Volume Area Wiped (L) (ft²)	Reporting Limit	Total ug	Final Result	Com	ments
Analysis Method I N/A = Not Applica %Pb = percent lea Note: All samples	ad on a dry weight basis ug = microgra were received in good condition unless o	/Solids : EPA 600/R- on a dry weight basis ams ug/L = part therwise noted.	93/200(M)-7010; Water: SI	M-3113B assoc	C Summary for analyt iated with these es.	ical results of qua	lity control sampl	es
Analysis Method I N/A = Not Applica %Pb = percent lea Note: All samples Note: All results h	For Furnace: Air, Wipes, Paints, and Soil ble mg/Kg = parts per million (ppm) ad on a dry weight basis ug = microgra	/Solids : EPA 600/R- on a dry weight basis ams ug/L = part therwise noted.	93/200(M)-7010; Water: Sl s mg/L = parts per million	M-3113B assoc	iated with these			
Analysis Method I N/A = Not Applica %Pb = percent lea Note: All samples Note: All results h should not be con	For Furnace: Air, Wipes, Paints, and Soil ble mg/Kg = parts per million (ppm) ad on a dry weight basis ug = microgra were received in good condition unless o ave two significant digits. Any additional	/Solids : EPA 600/R- on a dry weight basis ams ug/L = part therwise noted. digits shown	93/200(M)-7010; Water: Sl s mg/L = parts per million is per billion (ppb)	M-3113B assoc	iated with these es.		lity control sampl	
Analysis Method I N/A = Not Applica %Pb = percent lea Note: All samples Note: All results h should not be con Air and Wipe resu Final results for ai	For Furnace: Air, Wipes, Paints, and Soil ble mg/Kg = parts per million (ppm) ad on a dry weight basis ug = microgra were received in good condition unless o ave two significant digits. Any additional sidered when interpreting the result.	/Solids : EPA 600/R- on a dry weight basis ams ug/L = part therwise noted. digits shown	93/200(M)-7010; Water: Sl s mg/L = parts per million is per billion (ppb)	M-3113B assoc sampl (ppm)	iated with these es.			

AIHA LAP, LLC ACCREDITED LABORATORY

INCUSTRIAL HYGIENE, ENVIRONMENTAL LEAD **& ENVIRONMENTAL MICROBIOLOGY** ISONEC 17075-2005 LAB #100470

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## AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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#### CERTIFICATE OF ANALYSIS



Client:	National Guard Bureau	Job Name:	MA ARNG	Chain Of Custody:	515976
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Greenfield MA	Date Analyzed:	6/4/2013
	Havre de Grace, Maryland 21078	Job Number:	Greenfield RC	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		
Attention:	Non-Responsive				Page 1 of 1

#### Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Wool	Percent			Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13065712	Greenfield RC PLM-01	3	3					(	 	-	97	FT	Red	Homogeneous	SW	
13065713	Greenfield RC PLM-02	3	3						 		97	FT	Red	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.

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 2 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

TR = "Trace equals less than 1% of this component" NAD = "No Asbestos Detected" 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** Analyst(s)

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

#### NVLAP (101143-0) Accredited Laboratory

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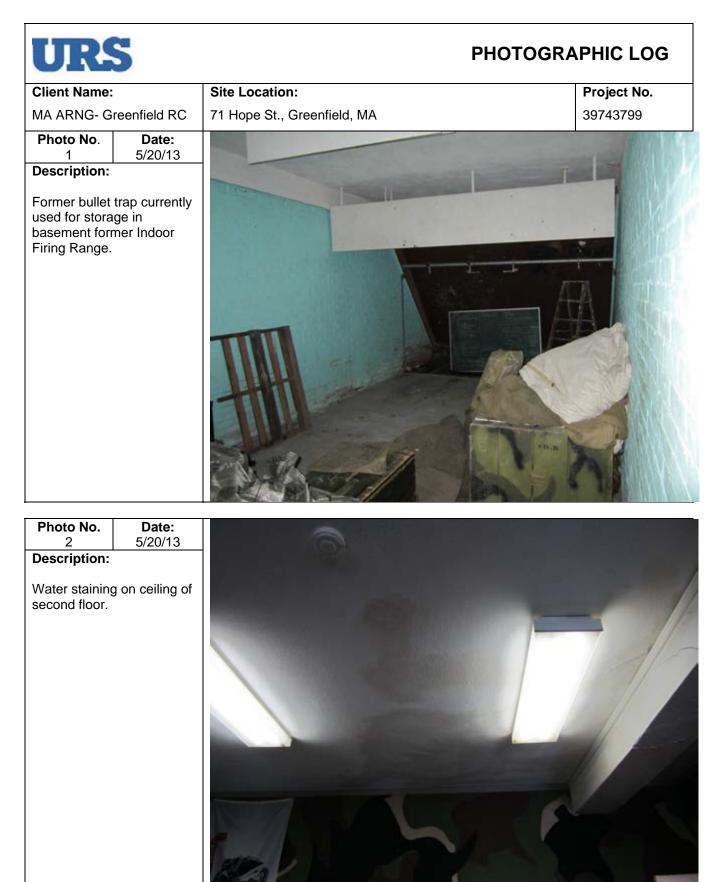
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## APPENDIX D

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### PHOTOGRAPHIC LOG



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**PHOTOGRAPHIC LOG** Project No. **Client Name:** Site Location: MA ARNG- Greenfield RC 71 Hope St., Greenfield, MA 39743799 Photo No. Date: 5/20/13 3 **Description:** Improperly stored ladder in the Drill Hall.



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#### APPENDIX E

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#### **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 (µg/ft<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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 milligrams per cubic meter (mg/m<sup>3</sup>) averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

#### **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 HINGHAM READINESS CENTER 96 CENTRAL STREET HINGHAM, MASSACHUSETTS

April 2006 PN: 39741508



Office Manager



**Project Manager** 

Posted to NGB FOIA Reading Room May, 2018 **BEST AVAILABLE COPY** 

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- Appendix D Analytical Results
- Appendix E Training Certificates
- Appendix F Photographs
- Appendix G Recommendations for Surface Lead Dust in Armories
- 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)

#### FINDINGS AND RECOMMENDATIONS

Findings Ergonomic	Recommendation	Risk Assessment Code
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 (DoD, OSHA General Duty)	RAC 3
Lighting On the day of the survey, the illuminance in the administrative area was inadequate in half of all 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 RP-1-04)	RAC 4
Lead was detected in wipe samples collected from the firing range in amounts greater than 200 µg/ft <sup>2</sup>	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
Peeling lead-based paint was present in storage room #3, room #16 and in the drill hall.	Personnel trained in accordance with the OSHA Lead Standard should stabilize peeling lead paint (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Asbestos		
Damaged floor tile containing greater than 1% asbestos was present in room #14. Exposed pipe and pipefitting insulation was present in room #6, boiler room #5, area #9 and in the drill hall.	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
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(j))	RAC 3
Hazard Communication		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4

## FINDINGS AND RECOMMENDATIONS (Continued)

Findings	Recommendation	Risk Assessment Code
Machinery and Machine Guard	All and a second	
The grinding wheel in area #9 was missing a safety guard.	Abrasive wheels shall be used only on machines provided with safety guards (OSHA 29 CFR 1910.215(a)(2))	RAC 3
Walking-Working Surfaces		$e_{ij} = e_{ij} e_{ij} e_{ij} = e_{ij} e_{$
There was a hole in the floor of the boiler room.	Covers and/or guardraits shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc. (OSHA 29CFR 1910.23(a)(8))	RAC 3
Mold	e i dise transfire dependence et	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Watermarks and visible mold growth were observed throughout.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	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 at 96 Central Street in Hingham, Massachusetts. 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 February 18, 2004, Mr an industrial hygienist with URS, conducted a site visit to the Readiness Center in Hingham, Massachusetts. 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 Von-Responsive of the State of Massachusetts was Mr. Mr. procedures. 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.

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#### 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 office # 15 could not be adjusted (Photo # 3821). Computer monitors could not be adjusted for different individuals working at the work stations. If more than one person is using a work station, then proper adjustments need to be made to accommodate each person.

Watermarks were observed on the ceiling in hallway #15 (Photo # 3820). Watermarks with mold growth were found in the kitchen #2 (Photo # 3809) and in room # 10 (Photo # 3816). There was some water damage to the ceiling in the locker room # 28 (Photo # 3830).

#### 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 22.3 - 26.0% with an average of 24.2% on the 1<sup>st</sup> floor. The 2<sup>nd</sup> floor ranged from 21.5 - 22.4% with an average of 22.0%. The basement level ranged from 21.6 - 24.9% with an average of 22.9%. These readings were below the recommended range of 30.0% and 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 55-2004).

#### 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 on the 1<sup>st</sup> floor ranged from 383 to 475 parts per million (ppm), with an average of 392 ppm. The 2<sup>nd</sup> floor ranged from 460 to 472 ppm, with an average of 466 ppm. The basement level

FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1649 of 3473 ranged from 411 to 433 ppm, with an average of 416 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. Qther 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 700 ppm above background level. Given a background level of 425 ppm on the day of the survey, the ASHRAE limit would be approximately 1125 ppm.

#### 2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. The carbon monoxide concentration 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).

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
Office # 15	Administrative Duties	286	500
Office # 16	Administrative Duties	199	500
Office # 17	Administrative Duties	195	500
Office # 18	Administrative Duties	166	500
Office # 27	Administrative Duties	130	500
Office # 29	Administrative Duties	139	500
Office # 30	Administrative Duties	036	500
Hallway # 1	Accessway	088	30
Hallway # 19	Accessway	112	30

 Table 2-1

 Lighting Measurements and Recommended Lighting Requirements

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

#### 2.2.5 Lead

Paint chips were collected where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. Two samples were found to contain lead in a concentration above the allowable limit 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 2-2 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 Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Storage #3	0218-LPC01	0.01	0.88
Mess Hall #4	0218-LPC02	0.01	0.051

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Mess Hall #4	0218-LPC03	0.01	< 0.0091
Mess Hall #4	0218-LPC04	0.01	0.19
Kitchen #2	0218-LPC05	0.01	0.34
Room #10	0218-LPC06	0.01	0.043
Room #10	0218-LPC07	0.01	<0.008
Room #16	0218-LPC08	0.01	1.4
Locker Room #28	0218-LPC10	0.01	0.35

# Table 2-2 (Cont) Levels of Lead in Paint Found in the Administrative Area

The analytical report from AMA is contained in Appendix D.

Wipe testing for lead dust 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.

Levels of	Levels of Lead Dust Found in the Administrative Area				
			:	Maximum	

Table 2-3

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft <sup>2</sup> )	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Hallway #19 – Top of the Coca Cola Machine	0218-LW03	0.111	610	200
Office #15 – Top of a Book Case	0218-LW04	0.111	49	200
Office #17 ~ Top of a Book Case	0218-LW05	0.111	31	200
Blank	0218-LWBlank	N/A	0.62	200

### 2.2.6 Asbestos

Pipe insulation, 9"x9" floor tile and cove base mastic were determined to contain asbestos in a previous survey conducted by ATC Associates of Woburn, Massachusetts in June of 1999

#### 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

GENERAL: In general, the administrative area was neat and orderly.

<u>LIGHTING</u>: On the day of the survey, the illuminance in the administrative area was inadequate in all offices.

<u>LEAD:</u> One of the three surface wipes that were tested in the administrative area for lead, was found to contain lead in a quantity greater than 200 micrograms per square foot. URS recommends that an appropriately licensed lead contractor clean the areas with high lead dust levels. The NGB Region North Industrial Hygiene Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

The light blue paint chip sample from storage room #3 (Photo # 3805) and the brown paint chip sample from room #16 (Photo # 3823) were found to contain lead above the HUD Guideline for lead-based paint. It is recommended that the peeling lead paint be stabilized to prevent further spread of lead dust.

<u>ASBESTOS</u>: Broken 9"x9" floor tile was found throughout room #14 (Photo # 3822). This material was determined to contain asbestos in a previous survey conducted by ATC Associates of Woburn, Massachusetts in June of 1999.

----

#### 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Former Firing Range-Top of Light Guard	0218-LW06	0.111	78,000	200
Former Firing Range-Top of Light Guard	0218-LW07	0.111	100,000	200
Former Firing Range-Floor- Rear	0218-LW08	0.111	8,500	200
Former Firing Range-Floor- Center	0218-LW09	0.111	3,100	200
Former Firing Range-Floor- Front	0218-LW10	0.111	2,700	200
Blank	0218- LWBlank	N/A	0.62	200

Table 3-1Levels of Lead Dust Found in the Former Firing Range

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.

- -----

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m <sup>3</sup> )	OSHA's PEL(µg/m <sup>3</sup> )
Former Firing Range	0218-LA02	900	<3.3	50.0
Biank	0218-LA03	0	<3.0	50.0

Table 3-2 Levels of Lead Found in the Air

On the day of the survey, the airborne lead dust level 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<sup>3</sup> 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

<u>LEAD</u>: The five surface wipe samples collected in the former firing range were found to contain lead dust levels above the maximum limit set by the National Guard Bureau. The NGB Region North Industrial Hygiene Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Guidelines for the cleaning and rehabilitation of indoor firing ranges is provided in Appendix H.

#### 4.0 DRILL HALL

#### 4.1 Operation Description

The drill hall is a 6,600 square foot area with about a 30-foot high ceiling used for assembling personnel and storing equipment. The walls are constructed of brick with a wood floor.

The asbestos-containing pipe insulation in this area is in poor condition (Photo # 3824). URS recommends removing the insulation before further deterioration occurs. This work should be performed by a properly trained, licensed technician.

Watermarks were discovered in the drill hall on the ceiling (Photo # 3826). URS was told by the on-site escort that the roof was new and the watermarks had been there prior to the installation of the new roof. URS recommends frequent visual inspections by for any new water stains or mold growth.

#### 4.2 Chemical and Physical Agents Sempled

#### 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.

Sample Location	URS Sample Number	Area Wiped (ft <sup>2</sup> )	Result (µg/ft²)	Maximum Safe Surface Contamination Level (µg/ft <sup>2</sup> )
Drill Hall # 22 – Floor – Rear	0218-LW01	0.111	130	200
Drill Hall # 22 – Floor – Front	0218-LW02	0.111	100	200
Blank	0218- LWBlank	N/A	<12	200

Table 4-1 Levels of Lead Dust Found in the Drill Hail

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

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m³)	OSHA's PEL(µg/m³)
Drill Hall	0218-LA01	864	<3.5	50.0
Blank	0218-LA03	0	<3.0	50.0

#### Table 4-2 Levels of Lead Found in the Air

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  $\mu$ g/m<sup>3</sup> averaged over an 8-hour day.

A Paint chip was collected 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	Reporting Limit	Final Result
	Number	(% by Weight)	(% by Weight)
Drill Hall # 22	0218-LPC09	0.01	0.2

The analytical report from AMA is contained in Appendix D.

#### 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

<u>LEAD</u>: The air and paint chip samples collected in the drill hall for lead were found to be within allowable limits and require no further action at this time. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

--

#### 5.0 BOILER ROOM

#### 5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

#### 5.2 Chemical and Physical Agents Sampled

#### 5.2.1 Asbestos

An air sample was collected in the boiler room to determine the airborne fiber count in this building 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 5-1 below shows the result of the air sample.

Location Of Sample Taken	URS Sample Number	Volume (Liters)	Results: Fibers Per Cubic Centimeter
Boiler Room # 5	0218-AA01	2618	0.009
Blank 1	0218-AA02	0	*****
Blank 2	0218-AA03	0	******

Table 5-1 Airborne Fiber Level in the Boiler Room

The result of the air sample was found to be below the analytical detection limit as defined in 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

<u>ASBESTOS:</u> The aircell pipe and pipe fitting insulation in the boiler room (Photo # 3812), room #6 (Photo # 3811) and area #9 (Photo # 3819) was exposed at the time of this survey. URS recommends that a properly trained and licensed technician remove the exposed insulation.

<u>WALKING-WORKING SURFACES</u>: There was a hole in the floor of the boiler room that is a hazard to anyone walking in the room (Photo # 3813). URS recommends filling in the hole to make it level with the existing floor.

<u>MACHINERY AND MACHINE GUARDING:</u> There was a grinding wheel in area #9 that did not have a safety guard (Photo # 3818). A safety guard is required if this grinding wheel is to be used.

# 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

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

# 6.3 Respiratory Protection

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

# 6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

# 6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. 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

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

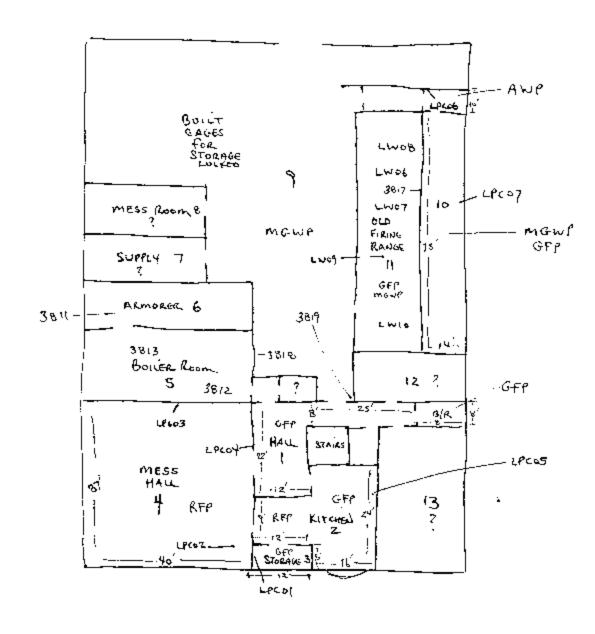
# APPENDIX A

BEST AVAILABLE COPY

# SHOP DRAWING

URS	BEST AVAILABLE COPY	HINGHAM, MA
Job	Project No.	Sheet of
Description	Computed by	Date
	Checked by	Dale
		Reference

BASEMENT.

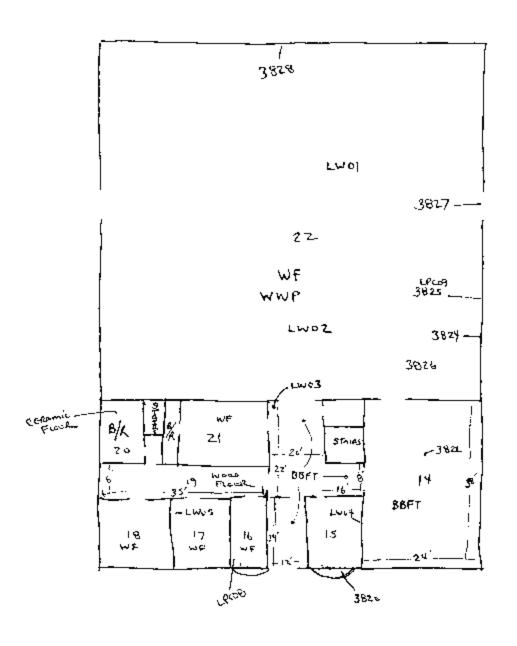




RFP = RED FLOOR PAINT GFP - GRAY " " AWP = AQUA WALL PAINT MGWP = MINT GREEN" "

URS	BEST AVAILABLE COPY	HINGHAM, MA
		Page of
Jab	Project No	Sheet of
Description	Computed by	Date
	Checked by	Date
		Reference

IST FLOOR



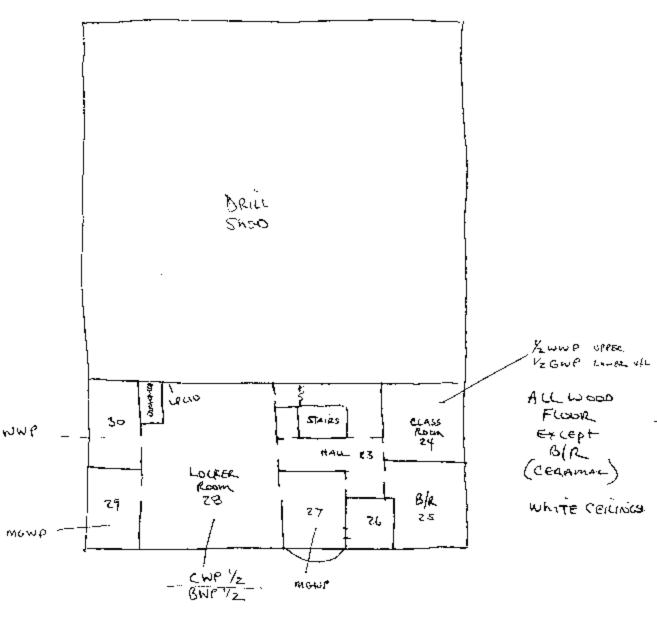
BBFT = BROWN/BLACK FLOOR THE (929)

WF = WOOD FLOOR\_

WWP = White WALL PAINT.

URS	BEST AVAILABLE COPY	HINGHAM, MA
Job dot	Project No.	Sheet of
Description	Computed by	Date
	Checked by	Date
		Reference

2ND FLOOR



C = CREAM WP Be BROWN "

# APPENDIX B

BEST AVAILABLE COPY

# PERSONNEL LIST

## BEST AVAILABLE COPY

# PERSONEL LIST HINGHAM ARMORY

Name	Rank
Non-Responsive	CIV – Armorer
No Staff on sit	e Unit Deployed

APPENDIX Ç

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HAZARDOUS MATERIALS LIST

NO CHEMICAL INVENTORY AVAILABLE

.

APPENDIX D

BEST AVAILABLE COPY

# ANALYTICAL RESULTS

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		1							

Electron & Ontical Microscopy Services

**CERTIFICATE OF ANALYSIS** 

Client:	National Guard Bureau	Job Name:	Army National Guard	Chain Of Custody:	123112
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	96 Central Street Hingham, MA	Date Analyzed:	3/2/04
	Havre de Grace, Maryland 21078	Job Number:	42056-012-211	Person Submitting:	
		P.O. Number:	Not Provided		

# Summary of Phase Contrast Microscopy

**AMA Sample** Fibers Per Cubic **Client Sample** Volume Sampled **Fibers Per** Analyst I.D. Sample Type Comments Number Millimeter Centimeter Number (Liters) Squared 0427571 0218 AA 01 CK 2618 59.2 N/P 0.009 0218 AA 02 ..... ..... 0427572 0 CK BLK 0427573 0218 AA 03 ..... CK 0 < 7.0 BLK 2 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.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition 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 hulk samples and transmission electron microscopy of AHERA air samples.

An AHIA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory Posted to NGB FOIA Reading Room 4475 Forbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643 May, 2018





Attention:

Page 1 of 1

AMA Analytical Services, Inc	AMA	Analy	utical	Services	Inc.
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Electron & Optical Microscopy Services

# CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	Job Name:	Army National Guard	Chain Of Custody:	123112
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	96 Central Street Hingham, MA	Date Analyzed:	3/2/2004
	Havre de Grace, Maryland 21078	Job Number:	42056-012-211	Person Submitting:	
		P.O. Number:	Not Provided	Report Date:	04-Mar-04

Attention:

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---FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1673 of 3473

## Page 1 of 2

NVLAQ NY ELAP AIHA

# Summary of Atomic Absorption Analysis for Lead

MA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Arca Wiped (ft <sup>2</sup> )		orting imit	1	Final Resu	lt	Comments
0427547	0218 LA 01	Flame	Air	864	N/A	3.47	ug/m'	<	3.5	ug/m'	······································
0427548	0218 LA 02	Flame	Air	900	N/A	3.33	ug/m'	<	3.3	ug/m³	
0427549	0218 LA 03	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	
0427550	0218 LPC 01	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.88	%Pb	
0427551	0218 LPC 02	Flame	Paint Chip	****	N/A	0.01	%Pb		0.051	%РЪ	
0427552	0218 LPC 03	Flame	Paint Chip	****	N/A	0.01	%РЪ	<	0.0091	%Рь	
0427553	0218 LPC 04	Flame	Paint Chip	****	N/A	0.01	%Pb		0.19	%Pb	
0427554	0218 LPC 05	Flame	Paint Chip	****	N/A	0.01	%РЪ		0.34	%Pb	
0427555	0218 LPC 06	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.043	%Pb	
0427556	0218 I.PC 07	Flame	Paint Chip	****	N/A	0.01	%РЬ	<	0.008	%Pb	
0427557	0218 LPC 08	Flame	Paint Chip	****	N/A	0.01	%РЬ		1.4	%Pb	
0427558	0218 LPC 09	Flame	Paint Chip	****	N/A	0.01	%РЬ		0.2	%Pb	
0427559	0218 LPC 10	Flame	Paint Chip	****	N/A	0.01	%Pb		0.35	%Pb	
0427560	0218 LW 01	Furnace	Wipe	****	0.111	67.51	ug/ft²		130	ug/ft²	
0427561	0218 LW 02	Furnace	Wipe	****	0.111	33.75	ug/ft²		100	ug/ft²	
0427562	0218 LW 03	Flame	Wipe	****	0.111	108.01	ug/ft <sup>2</sup>		610	ug/ft²	
0427563	0218 LW 04	Furnace	Wipe	****	0.111	13.50	ug/ft²		49	ug/ft²	
0427564	0218 LW 05	Furnace	Wipe	****	0.111	6.75	ug/ft²		31	ug/ft <sup>2</sup>	
0427565	0218 LW 06	Flame	Wipe	****	0.111	108.01	ug/ft²		78000	ug/ft²	
0427566	0218 LW 07	Flame	Wipe	****	0.111	108.01	ug/ft²		100000	ug/ft <sup>2</sup>	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition 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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May, 2018

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Client:	National Guard Bureau	Job Name:	Army National Guard	Chain Of Custody:	123112	
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	96 Central Street Hingham, MA	Date Analyzed:	3/2/2004	
	Havre de Grace, Maryland 21078	Job Number:	42056-012-211	Person Submitting:		
		P.O. Number:	Not Provided	Report Date:	04-Mar-04	
Attentio	n:					Page 2 of 2

# Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Alr Volume (L)	Area Wiped (ît <sup>z</sup> )		orting İmit	Final Res	ult	Comments	
	· · · · · · · · · · · · · · · · · · ·									 	 
0427567	0218 I.W 08	Flame	Wipe	****	0.111	108.01	ug/ft²	8500	ug/fl²		
0427568	0218 LW 09	Flame	Wipe	****	0.111	108.01	ug/fl²	3100	ug/ft²		
0427569	0218 LW 10	Flame	Wipe	****	0.111	108.01	ug/ft²	2700	ug/ft²		
0427570	0218 LW BLANK 1	Furnace	Wipe Blank	****	N/A	0.30	ug	0.62	ug		

Analys

Analysis Method for France, Air, Yipes, France, and Sourosous, Er A Gover-Solzouw/Prizz, Yrate, Silves 1110

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.

Chnical Manager

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This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition 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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# APPENDIX E

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# TRAINING CERTIFICATES

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pursuant t	to Title II of the Toxic Substance Control Act, 15 U.S.	C. 2646
	April 11, 2003 Course Dates	
April 11, 2003 Examination Date	<u>Course Location</u> Institute for Environmental Education 16 Upton Drive Wilmington, MA 01887	April 10, 2004 Expiration Date
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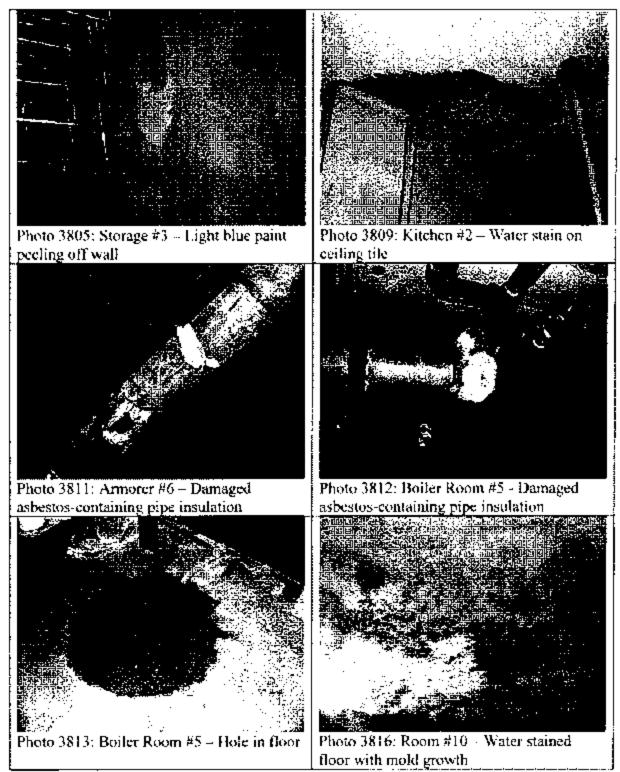
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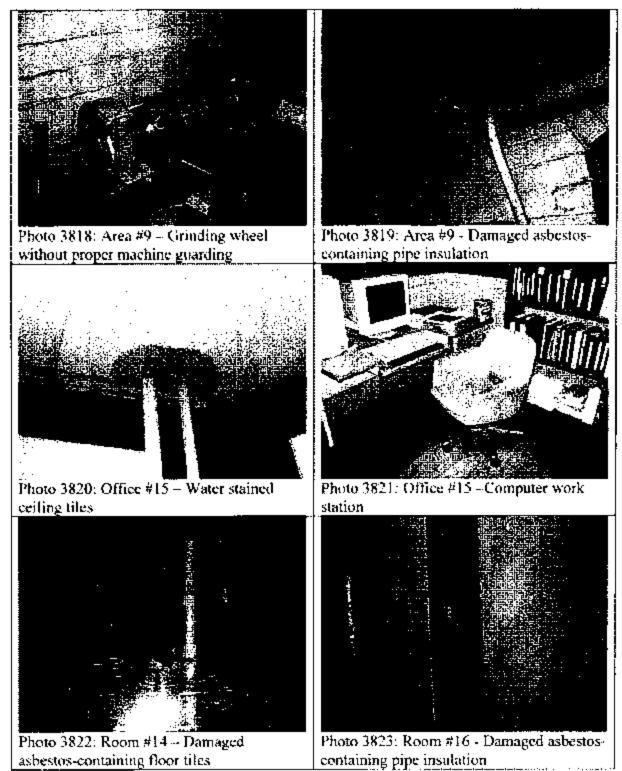
FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1677 of 3473

# APPENDIX F

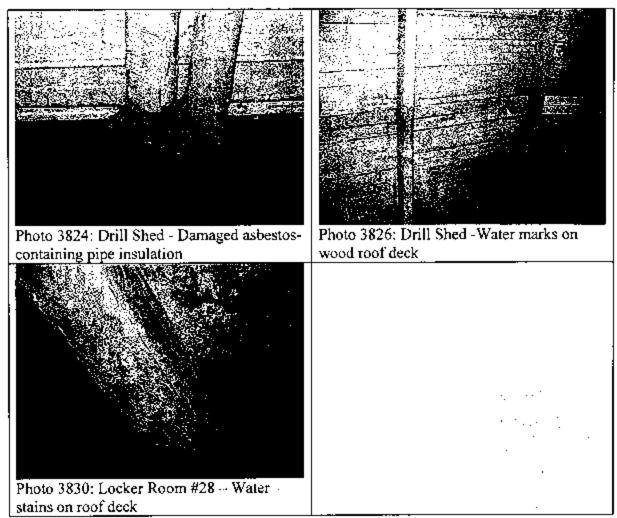
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APPENDIX G

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# **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<sup>2</sup>). 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<sup>2</sup>) and windowsills (250  $\mu$ g/ft<sup>2</sup>) 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 surfeces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practiceble 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> on floors and 250  $\mu$ g/ft<sup>2</sup> 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<sup>3</sup> 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-AV9-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)

Paragraph

Purpose References Explanation of Abbreviations and Terms Policy and Procedures Goal Background Wipe Sample Media Wipe Sample Media Wipe Sampling Protocol Range Cleaning Instructions Cleaning Stored Contaminated Equipment Contaminated Sand and Lead Waste Medical Surveillance Worker Education Personal Protection Equipment Housekeeping Maintenance Range Rehabilitation	1 2 3 4 5 6 7 8 9 10 11 72 13 14 15 16 17
Range Rehabilitation Conversion of Indoor Firing Ranges	
Devlation	19

#### Appendices

Appendix A - General Procedures for Collecting Wipe Samples

Appendix B - Sampling Strategy for Collection of Wipe Samples

Appendix C - Interpretation of Sample Results (Prior to Cleaning)

Appendix D - Interpretation of Sample Results (After Cleaning)

Appendix E - Recommended Sample Media and Containers

Appendix F - Examples of Computation of Load Levels from Wipe Sample Results

Appendix G - Surface Wipe Sample Sheet

Appendix H - Air Sampling Sheet

Appendix I - Glossary

#### 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),
- 6 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).

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# 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

Explanation of Abbreviations and Terms.

Abbreviations and special terms used in this publication are listed in the glossary.

#### 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, <sup>Sh</sup> Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipo 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 (up/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 accoptable 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 focation 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.

#### 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 slooping, 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 tot, 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 callulose ester (MCE) filters, with or without the cassettes.

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## 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 INOOOR FIRING RANGES

(2) Unacceptable Media consists of but is not fimited 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 vontilation system, all doors and windows will be seated 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.

 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.

 Wel 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 wasto.

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 scaled.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and lineleum 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 vacuamed 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 fandfill. Contact your State Environmental Office for assistance before arranging for this taboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing time.

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.

 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.

#### 1D 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.

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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 tast resort will the item be discarded as hazardous waste. Porous items, such as office partillons 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.

#### 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 ures nitragen (BUN)
- (6) Serum creatinine
- (7) Zinc protoporphyrin
- (8) A routine urine analysis
- (9) Recordkeeping

b. Air Monitoring. Worker broathing zone (82) 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 protoctive 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.
- Smoking and smoking materials will not be permitted in contaminated areas.

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# 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

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.

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).

c. 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 property 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 Atr) 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, (ume, and mist will be worn at all times while cleaning.

o. 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.

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

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b. Evaluate static prossure 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. Butlet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three guarters 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 Appandix 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.

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

#### 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, build 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 deconlaminated.

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. Atlington, VA 22204-1382

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## NGB-AVS-SG SUBJECT: All States (Log Number 201-0075) 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 provent contact with the substance.

A-3 (1) If using Ghost Wipes <sup>ixx</sup>, tear open the individually sealed package. Remove the moistened wipe.

(2) If using a dry modia such as MCE or Whatman™ fifter, moisten the filter with distilled or doionized 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 alrilow. 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 wail 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 abd/or used for any purpose.

C-28ETWEEN 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 microorams/sq ft, and should be considered suspect

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## 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 wips samples. The information is provided to assist in obtaining the proper media and containers. Alternativo vendors are available and may be utilized, if known. Contact your Regional Industrial Hyglene 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. MAWP-037-A0 Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380
- b. Gelman Sciences 64678 (GN-4) 600 South Wagner Rd Ann Arbor, MI 48106 313-605-0651 800-521-1520
- c. Supelco. Inc. 2-3368M
   Supelco Park
   Bellefonte, PA 16823
   800-247-6628
   800-359-3041

E-3.37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples

## Order From Catalog Number

 a Supelco Inc. 2-3381IM Supelco Park Bellefonte, PA 16823 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 INOOOR FIRING RANGES

## APPENDIX E (Continued)

800-247-6628 600-359-3041

- 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

# 

E-5. Gtass 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
- Altech Associates, Inc. 95321 (screw cap) Applied Science Labs 2051 Wackegan Rd. Deerfield, IL 60015 312–948-8600

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## APPENDIX E (Continued)

800-255-8324

E-6, Ghost Wipes™.

#### Order From Calalog Number

Environmental Express SC4200 490 Wando Park Blvd, Mt. Pleasant, SC 29464 1-800-340-5319

E-7. Ghost Wipe™ Containers

Order From Catalog Number

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

E-8. Plastic zlplock 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. Defonized 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

Sampte 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:

<u>75 ug _</u>	<u>97</u>	<u>29 cm*</u>		
100 cm <sup>2</sup>		1 sq ft		
<u>75 x 929</u>	=	69675	Ħ	696.75vg/sq ft
100		100		•

ug – Microgram

Cm2 - Centimoters 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

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Return Address				······			
			Samples Co	llected By			
Sampled Facility City			State Location (bldg/area)				
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# APPENDIX G

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#### 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 GUARO INDOOR FIRING RANGES

## APPENDIX H AIR SAMPLING SHEET

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Return Add	ress					t (name/phone		
				Samples	Collec	ted By	,	• · · ·
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Sampling D	ala							
Sample No.								
Pomp No.								В
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Time Off								A
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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 Personnol File

**OSHA** Occupational Safety and Health Administration

**TCLP** Toxic Characteristic Leaching Procedures

ug/sq\_ft Micrograms per 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 (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.

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# **Industrial Hygiene Survey**

Massachusetts Army National Guard (MA ARNG)

Prepared For: NGB ARNG – Region North IH Office

Survey Location:

## Hingham Readiness Center 96 Central Street Hingham, MA 02043-2517

Prepared By: Aria Environmental, Inc. (AEI) PO Box 286 Woodbine, MD 21797

Survey Date: August 19, 2010 Report Date: September 30, 2010

AEI Project #: J10-515 3d MA Hingham RC

Non-Responsive

Industrial Hygienist



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- Appendix B Certificates of Analysis for Air, Dust Wipe and Bulk Samples
- Appendix C Photo Documentation
- Appendix D IAQ and Lighting Survey Log Sheets

## **Executive Summary**

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Readiness Center located at 96 Central Street, Hingham, MA 02043-2517. Non-Responsive performed the evaluation on August 19, 2010. The point of contact for the facility was Specialist Non-Responsive The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities. The survey included: (1) evaluations of operations including operation description, ventilation system evaluations, noise dosimetry if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) photographs of the exterior and interior of the readiness center. The results of the evaluation indicated the following:

**Noise Hazards:** No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

**Lead in Air Samples:** Lead in air samples to determine if any airborne contamination of lead existed in the facility were not collected at the Hingham Readiness Center due to sample pump malfunction.

**Paint Chip and Wipe Samples for Lead Contamination:** Two wipe samples collected from the top of a flammable cabinet and from the top of a locker were above the National Guard criteria for lead contamination (200  $\mu$ g/ft<sup>2</sup>). Samples ranged from 1.05 to 1.1 times the National Guard criteria. It should be noted that the former firing range located in the basement of the facility was not accessible at the time of the survey. All paint chip samples were below regulatory limits of 0.5% lead by weight except for the yellow paint in room 18 (0.78%). Peeling paint was observed over the majority of the second floor and in one room (room 13 on the drawing) on the first floor where extensive water damage has occurred.

Visual Inspection for Damaged Asbestos-Containing Materials: Damaged plaster that may contain asbestos were observed in one room (room 13 on the drawing) on the first floor where extensive water damage has occurred. The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. The plaster was reported to contain no asbestos.

**Visual Inspection for Water Damage and Mold Growth:** A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Extensive water damage was observed in one room (room 13 on the drawing) on the first floor. Water intrusion was reportedly from an old water leak in the roof which has been repaired. The ceiling of the room had collapsed due to the water damage and a determination of whether mold was present was not feasible.

**Visual Inspection for Housekeeping Concerns:** A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy except where mold was observed.

**Lighting:** The evaluation indicated that there are some illumination deficiencies in several areas of the facility. The illumination measurements indoors ranged from a low of 4.4 foot candles (fc) to a high of 101.7 fc.

**Indoor Air Quality:** Temperatures and relative humidity measurements were outside the acceptable range in approximately one third of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility. Indoor levels of CO<sub>2</sub> ranged from 359 to 712 parts per million (ppm) and outdoor CO<sub>2</sub> levels were approximately 345 ppm during the monitored period. CO<sub>2</sub> measurements were below the guideline in all areas, indicating adequate fresh air exchange. Indoor levels of CO ranged from 0.1 to 4.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

## 1 Introduction

Aria Environmental, Inc. (AEI) was contracted to perform an industrial hygiene evaluation for the Massachusetts Army National Guard (MA ARNG) Readiness Center located at 96 Central Street, Hingham, MA 02043-2517 Non-Responsive performed the evaluation on August 19, 2010. The point of contact for the facility was Specialist Non-Responsive. The purpose of the evaluation was to identify and measure the existence and extent of potentially hazardous operations or conditions at Army National Guard (ARNG) facilities.

The Hingham Readiness Center is staffed with 3 administrative personnel. The operations conducted at the facility include supply and administrative duties. A diagram of the building layout is provided in Appendix A. All sampling sheets and laboratory certificates of analysis are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. Indoor air quality and lighting survey measurement log sheets are provided in Appendix D. Lists of all references used during the evaluation are included in the main body of the report.

## 2 Evaluation Methods

The industrial hygiene survey of the Hingham Readiness Center consisted of visual inspections, interviews with employees and sampling plan development in order to achieve the following: (1) evaluations of operations including operation description, sampling for lead in air or on surfaces if appropriate, ventilation system evaluations, noise measurements if appropriate, lighting surveys, hazard control evaluations and any additional information pertinent to the operations; (2) an evaluation of the physical condition of the facility and personnel concerns including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices; and (3) a building layout and photographic documentation of the interior of the facility.

The National Guard Bureau (NGB) Region North IH Office provided all industrial hygiene equipment for air sampling (equipment and media), ventilation, lighting, noise and IAQ survey instruments and paid for laboratory analytical fees. Laboratories were chosen or approved by the NGB IH office.

## **3** Operations

Operations conducted at the Hingham facility consists exclusively of supply and administrative duties. No maintenance of vehicles, painting of equipment or other physical tasks are performed at the facility. Ground maintenance and upkeep of the building are the responsibility of the state employed Armorer and not part of the duties of National Guard personnel.

## 4 Noise Hazards

No noise-generating activities were taking place on the day of the survey. Due to the nature of the tasks performed onsite, no activities requiring noise monitoring are anticipated to occur at the RC.

## 5 Hazard Controls

## **Ventilation Systems**

Heat is supplied to the facility through a boiler located in the boiler room and overhead heaters in the drill hall. The boiler certificate for the Hingham facility expired in 1994 and is not up to date. Any air conditioning provided to the building is through window air conditioning units. No local ventilation systems were present at the facility.

## 6 Physical Condition of the Facility and Personnel Concerns

An evaluation of the physical condition of the facility and personnel concerns was performed including visual inspections for peeling potentially lead-based paint, damaged suspect asbestos-containing materials, water damage or mold problems; indoor air quality concerns; and housekeeping practices. Lighting and indoor air quality measurements were taken in all areas of the facility as well.

## Lead in Air Samples

Lead in air samples to determine if any airborne contamination of lead existed in the facility were not collected at the Hingham Readiness Center due to sample pump malfunction.

## Paint Chip and Dust Wipe Samples for Lead Contamination

To determine if any cross contamination of lead from any source into areas of the facility existed, wipe samples were collected using ghost wipes and 10cm x 10cm templates. Wipe samples for surface dust were collected in 13 locations. The Environmental Protection Agency (EPA) and the Commonwealth of Massachusetts limits for lead in dust are 40 micrograms per square foot ( $\mu g/ft^2$ ) on floors, 250  $\mu g/ft^2$  on window sills, and 400  $\mu g/ft^2$  in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level for adult exposures of 200 µg/ft<sup>2</sup> on floors and frequently contacted surfaces, which is more stringent for window sills than the EPA/State standards. Dust wipe samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) for atomic absorption spectrophotometry (AAS) following the analytical method ASTM D3335-85A. Two samples collected from the top of a flammable cabinet and from the top of a locker were above the National Guard criteria for lead contamination (200 µg/ft<sup>2</sup>). Samples ranged from 1.05 to 1.1 times the National Guard criteria. The history of the former indoor firing range was not known by current Readiness Center employees, and the range was inaccessible at the time of the survey. All indoor firing ranges must be properly converted and/or maintained in accordance with NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges. These procedures include worker education, range cleaning instructions, cleaning stored contaminated equipment, management of contaminated sand and lead waste, range rehabilitation and conversion of indoor firing ranges. Results are given in Table 1 and certificates of analysis are included in Appendix B.

Wipe Sample #	Sample Location	Result (µg/ft²)*
HIN-PB-01	Room 2, Radiator Cover	150
HIN-PB-02	Room 22 Kitchen, Prep Table	<110
HIN-PB-03	Drill Hall, Bench by Door	<110
HIN-PB-04	Drill Hall, Middle of Floor	<110
HIN-PB-05	Drill Hall, Center Stage	<110
HIN-PB-06	Room 4, Top of File Cabinet	<110
HIN-PB-07	Room 6, Desktop	<110
HIN-PB-08	Room 8, Storage Room on Desk	<110
HIN-PB-09	Room 1, Top of Refrigerator	<110
HIN-PB-10	Room 29, From Top of Flammable Cabinet	210
HIN-PB-11	Room 23, From Stored Mess Table Seat	<110
HIN-PB-12	Room 18, Top of Locker	220
HIN-PB-13	Room 29, Middle of Floor	180

## Table 1 – Results of Dust Wipe Sampling for MA ARNG Hingham Readiness Center on August 19, 2010.

\*The US Army CHPPM recommends a maximum level for adult exposures of 200 µg/ft<sup>2</sup> lead on floors

A visual inspection was performed to determine if there were any areas of peeling paint at the facility that could pose a lead exposure hazard. Peeling paint was observed over the majority of the second floor and in one room (room 13 on the drawing) on the first floor where extensive water damage has occurred. The paint chip samples were collected following operational protocols set forth in HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazard in Housing (1995)*. The paint chip samples were submitted to Aerosol Monitoring and Analysis Analytical Services, Inc. (AMA) of Lanham, MD for analysis. The analyses were performed using Flame Atomic Absorption Spectrophotometry (AAS) following the analytical method SW 846 7420. AMA is accredited for the analysis of paint chip samples through the AIHA Proficiency Testing Program (#100470). In the Commonwealth of Massachusetts, paint is considered to be lead-based if it contains more than 0.5 % lead by weight. All paint chip samples were below regulatory limits of 0.5% lead by weight except for the yellow paint in Room 18 (0.78%). Results are given in Table 2 and certificates of analysis are included in Appendix B.

Paint Chip Sample #	Sample Location	Result (% by wt )*
HIN-LBP-01	White Ceiling Paint, From Stair Leading to Basement	0.055
HIN-LBP-02	White Hallway Wall Paint, Room 15	0.38
HIN-LBP-03	Yellow Wall Paint, Room 18	0.78
HIN-LBP-04	Green Wall Paint, Room 13	0.026

## Table 2 – Results of Paint Chip Sampling for MA ARNGHingham Readiness Center on August 19, 2010.

\*Paint is considered lead-based if it is > 0.5% by weight.

## Visual Inspection for Damaged Asbestos-Containing Materials

A visual inspection was performed to determine if there were any suspect asbestos-containing material and its condition. Damaged plaster that may contain asbestos was observed in one room (room 13 on the drawing) on the first floor where extensive water damage has occurred. Bulk samples of pipe fittings were collected. Samples were submitted to AMA Analytical Services, Inc. of Lanham, MD 20706 (NIST-NVLAP Accreditation No. 101143-0) for analysis by Polarized Light Microscopy (PLM) using EPA method 600/R-93/116. The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. The plaster was reported to contain no asbestos. Results are given in Table 4 and certificates of analysis are included in Appendix B.

## Table 3 – Results of Asbestos Sampling for the MA ARNG RC Hingham, MA on August 19, 2010.

Bulk	k Sample #	Sample Location	Result (%)*
н	IN-ASB-01	Plaster from Wall and Ceiling Debris, Room 13	NAD**

\*The EPA defines an asbestos-containing material as one percent (1%) or more asbestos by visual estimation. \*\*NAD – No Asbestos Detected.

## Visual Inspection for Water Damage and Mold Growth

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. Extensive water damage was observed in one room (room 13 on the drawing) on the first floor. Water intrusion was reportedly from an old water leak in the roof which has been repaired. The plaster ceiling of the room had collapsed due to the water damage and a determination of whether mold was present was not feasible.

## Visual Inspection for Housekeeping Concerns

A visual inspection was performed to assess the state of housekeeping in the facility. The housekeeping was good. All areas were clean and tidy.

## Lighting

Illumination levels were measured using a Cal-Light 400L, calibrated on July 30, 2010, and compared to minimum lighting requirements for various facilities and functions based on the following references: American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

A lighting survey was performed in all areas within the readiness center. The evaluation indicated that there are some illumination deficiencies in several areas of the facility. The illumination measurements indoors ranged from a low of 4.4 foot candles (fc) to a high of 101.7 fc. The complete results of the evaluation are presented in Appendix D, including whether the results met minimum requirements for illumination. Additional illumination can be achieved by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, using supplemental task lighting, and opening doors or windows to provide more natural lighting.

## Indoor Air Quality (IAQ)

Indoor air quality measurements (i.e., temperature, relative humidity, carbon dioxide and carbon monoxide) were taken using a TSI Q-Trak Plus Model 8554, factory calibrated in March 2010. Temperature, relative humidity and carbon dioxide (CO<sub>2</sub>) measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Carbon monoxide (CO) concentrations were compared to the ACGIH Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's (EPA's) National Ambient Air Quality Standard (NAAQS) for CO.

Industry guidelines or standards for seasonal temperature and humidity ranges for thermal comfort are established by ASHRAE standard 55-2004. These ranges are presented in Table 4. The U.S. EPA also recommends maintaining relative humidity below 60% and ideally between 30 and 50% to prevent mold growth. Complete results are provided in Appendix G with the lighting survey measurements.

Kelulive n	unnung in summer c	
Relative	Winter	Summer
Humidity	Temperature	Temperature
30%	68.5°F – 76.0°F	74.0°F – 80°F
40%	68.5°F – 75.5°F	73.5°F – 79.5°F
50%	68.5°F – 74.5°F	73.0°F – 79.0°F
60%	68.0°F – 74.0°F	72.5°F – 78.0°F
adapted	from ASHRAE Stand	$ard 55_2001$

## Table 4 - Acceptable Ranaes of Temperature and Relative Humidity in Summer and Wintera

adapted from ASHRAE Standard 55-2004

## **Temperature and Relative Humidity**

Indoor temperature and relative humidity (Rh) measurements in the facility ranged from 73.9 to 80.2° F and 54.3 to 66.8% Rh. Outdoor temperature and humidity measurements were 78.5° F and 58.4% on the day of monitoring. Temperatures and relative humidity measurements were outside the acceptable range in approximately one third of the facility. These results are not unexpected due to outdoor conditions on the day of the survey and the lack of air conditioning in most of the facility.

## Carbon Dioxide (CO<sub>2</sub>) and Carbon Monoxide (CO)

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build up of CO<sub>2</sub> indicates inadequate ventilation. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1 - 2007 as 700 ppm above outdoor concentrations. Indoor levels of CO<sub>2</sub> ranged from 359 to 712 parts per million (ppm) and

outdoor CO<sub>2</sub> levels were approximately 345 ppm during the monitored period. CO<sub>2</sub> measurements were below the guideline in all areas, indicating adequate fresh air exchange.

Carbon monoxide is a byproduct of incomplete combustion. Indoor concentrations indicate contamination caused by improperly vented or malfunctioning boilers, furnaces or stoves or from vehicle exhaust entering the building from garages, loading docks, nearby roads or parking lots. The concentration of interest set by ASHRAE standard 62.1-2007 and the National Ambient Air Quality Standards (NAAQS) for carbon monoxide is an 8 hour average of 9 ppm. The ACGIH TLV for CO is 25 ppm. Indoor levels of CO ranged from 0.1 to 4.7 ppm; therefore, concentrations are below occupational exposure limits, ASHRAE and the NAAQS-recommended CO concentrations.

## 7 Conclusions

The results of the evaluation indicated no concerns with the following at the facility: contamination of clean air sources, the presence of damaged suspect asbestos-containing materials, peeling lead-based paints, noise hazards, visible mold and housekeeping. The results of the evaluation indicated industrial hygiene concerns in the following areas: cross contamination of lead dust, indoor air quality, water intrusion and lighting. Overall, Hingham Readiness Center has few industrial hygiene issues, and programs are in place to protect, inform and train employees.

## 8 Limitations

This report has been prepared for the exclusive use of the U.S. Army National Guard (USARNG) and/or their agents. This service has been performed in accordance with generally accepted industrial hygiene and environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations readily visible at the site at the time of our site visit, and upon current industry standards.

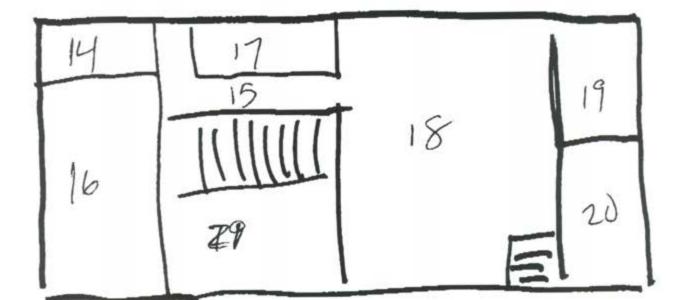
By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that my present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

## 9 References

- 1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
- 2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

- 3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
- 4. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, May 25, 2007.
- 5. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
- 6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 15, 1998.
- 7. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
- 8. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
- 9. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
- 10. RP-1-2004 (Office Lighting) and RP-7-2001 (Industrial Lighting), Illuminating Engineering Society of North America (IESNA)/ANSI.
- 11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality" and Standard 55-2004, "Thermal Environmental Conditions for Human Occupancy".
- 12. NIOSH website: <a href="http://www.cdc.gov/niosh/">http://www.cdc.gov/niosh/</a>
- 13. OSHA website: <u>http://www.osha.gov/</u>.
- 14. Army CHPPM website: http://chppm-www.apgea.army.mil/.
- 15. EPA website: <u>http://www.epa.gov</u>.

Appendix A Building Layout



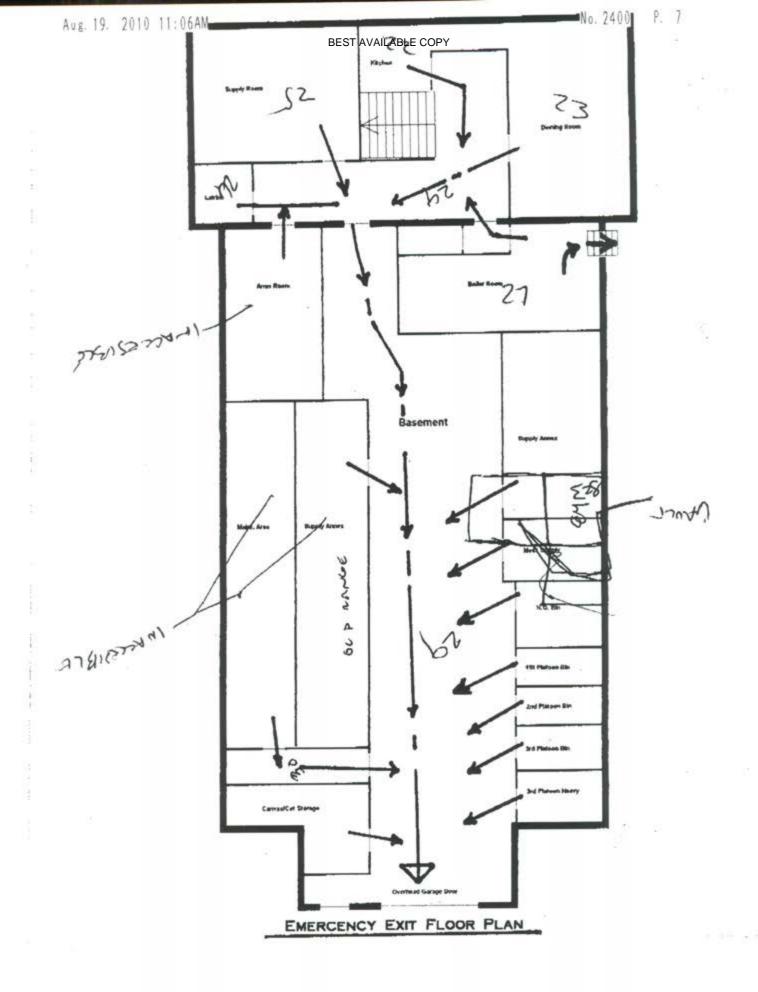
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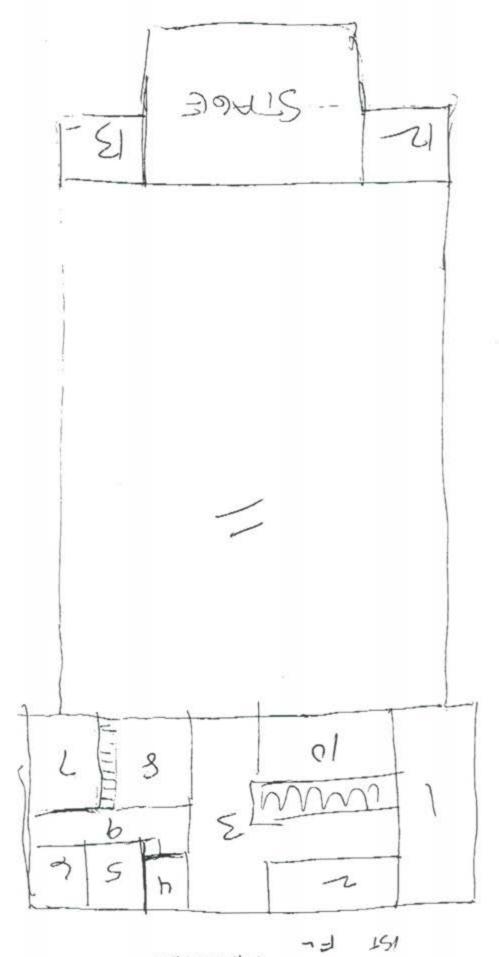
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FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1715 of 3473 Appendix B Certificates of Analysis for Dust Wipe and Bulk Samples

## **AMA Analytical Services, Inc.**

Attention:

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<b>E</b> <sup>A</sup>	Specialized Environmental Laboratory	CI	ERTIFICATE OF ANA	ALYSIS		ACCREDITED LABORATORY INDUSTRIAL HYGENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISONEG 17025-2005 www.aihabaccreditedhaba.org
Client:	National Guard Bureau	Job Name:	Hingham Readiness Center	Chain Of Custody:	508619	NY ELAP
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	Job Location:	Hingham, MA	Date Submitted:	8/23/2010	10920
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsi	ive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	8/29/2010	Report Date: 8/30/2010

## Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AIHA LAP, LLC

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)		orting imit	Total ug	Final Res	sult	Comments
1073105	HIN-PB-01	Flame	Wipe	****	0.108	110	ug/ft²	17	150	ug/ft²	
1073106	HIN-PB-02	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073107	HIN-PB-03	Flame	Wipe	****	0.108	110	ug/fl²	<12	<110	ug/ft²	
1073108	HIN-PB-04	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073109	HIN-PB-05	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
1073110	HIN-PB-06	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft <sup>2</sup>	
1073111	HIN-PB-07	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073112	HIN-PB-08	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073113	HIN-PB-09	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073114	HIN-PB-10	Flame	Wipe	****	0.108	110	ug/fl²	22	210	ug/ft²	
1073115	HIN-PB-11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
1073116	HIN-PB-12	Flame	Wipe	****	0.108	110	ug/ft²	23	220	ug/ft²	
1073117	HIN-PB-13	Flame	Wipe	****	0.108	110	ug/ft²	20	180	ug/fl²	
1073118	HIN-LBP-01	Flame	Paint Chip	****	N/A	0.0092	%Pb		0.055	%Pb	
1073119	HIN-LBP-02	Flame	Paint Chip	***	N/A	0.009	%Pb		0.38	%Pb	
1073120	HIN-LBP-03	Flame	Paint Chip	****	N/A	0.0077	%Pb		0.78	%Pb	
1073121	HIN-LBP-04	Flame	Paint Chip	****	N/A	0.01	%Рь		0.026	%Pb	

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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, AIHA, NYLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

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4. Comments:

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## **AMA Analytical Services, Inc.**

A Specialized Environmental Laboratory

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## **CERTIFICATE OF ANALYSIS**





1073122 HIN-ASB-01 NAD -- -- -- -- -- -- 100 White Homogeneous SW White Plaster only was 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.</p>

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** 





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. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NY ELAP, NVLAP, NIST, or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.

Posted to NGB FOIA Reading Room May, 2018 An AIHA (#100470), NVLAP (101 BEST AVAILABLE COPY #10920) Accredited Laboratory FOIA Requested Record #J-15-0085 (MA) Forbes Bivd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643 Released by National Guard Bureau Page 1721 of 3473

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#### BEST AVAILABLE COPY OWI (410) 247-2024 159202 210 REV. 6.08 **RMR Analytical Services, Inc.** www.umalab.com Focused on Results (Please Refer To This 508619 AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920) Number For Inquires) CHAIN OF CUSTODY 4475 Forbes Blvd. . Lanham, MD 20706 (301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643 Mailing/Billing Information: Submittal Information: 1. Client Name: National Guard Bureau 1. Job Name: 2. Address 1: 301-IH Old Bay Lane Job Location: 2. 3. Address 2: Attn: NGB-AVN-SI, State Military Reservation 3. Job #: esponsive 4. Address 3: Havre de Grace, Marviand 21078 Contact Perso 5. Phone #: (410) 942-0273 Pax #: (410) 942-0254 5. Submitted by Reporting Information (Results will be provided . our as recommently reasonie): NORMAL/BUSINESS HOURS AFTER HOURS (must be pre-scheduled) REPORT TO: Dinclude COC/Field Data Sheets with Report Immediate Date Due: C Immediate 3 Day C Results Required By Noon O Next Day O 5 Day + O Ema 24 Hours Time Due: . (EveryAttempt Will Be Qus.army.mil L2 Day LI Fax: Date Duc:. Comments: Made to Accomodate) C Verb Qus.army.mil Asbestos Analysis Metals Analysts TEM Bulk D Pb Paint Chip PCM Air -- Please Indicate Filter Type: LI ELAP 198.4/Chatfield, (OTY) (OTY) UNIOSH 7400\_ (OTY) Pb Dust Wipe (wipe type\_ QNY State PLM/TEM\_ (QTY) (OTY) G Fiberglass\_ (QTY) PbAir (OTY) L Residual Ash\_ (QTY) TEM Air - Please Indicate Filter Type: Pb Soil/Solid (QTY) TEM Dust AHERA\_ (OTY) Pb TCLP\_ (OTY) U Qual. (pres/abs) Vacuum/Dust\_ (QTY) Q NIOSH 7402. (OTY) Drinking Water DPb (QTY) Cu\_ Quan. (s/area) Vacuum D5755-95 (OTY) As (OTY) (OTY) (QTY) U Other (specify\_ Q Waste Water Q Pb (QTY) Cu\_\_\_(QTY) CAs\_\_\_ Quan. (s/area)Dust D6480-99 (QTY) (OTY) PLM Bulk DPb Furnace (Media TEM Water (OTY) EPA 600 -- Visual Estimate, (QTY) Fungal Analysis Qual. (pres/abs)\_ (YTO) EPA Point Count\_ (QTY) Collection Apparatus for Spore Trops/Air Samples:\_\_\_\_ ELAP 198.2/EPA 100.2\_ ONY State Friable 198.1 (QTY) (OTY) Collection Media DEPA 100.1\_ (QTY) Grav. Reduction ELAP 198.6 (QTY) G Spore-Trap\_\_\_\_(QTY) Surface Vacuum Dust (OTY) Other (specify\_ (QTY) All samples received in good condition unless otherwise noted. C Surface Swab\_\_\_\_ (QTY) Culturable ID Genus (Media, (OTY) MISC (TEM Water samples \_\_\_\_\_ -°C) CI Surface Tape\_\_\_\_(QTY) Culturable ID Species (Media, O Vermiculite (QTY) C) Other (Specify\_ C Asbestos Soil PLM\_(Qual) PLM\_(Quan) PLM/TEM\_(Qual) PLM/TEM\_(Quan) \_\_\_\_\_(OTY) MATRIX SAMPLE INFORMATION CLIENT CONTACT VOLUME WIPE CLIENTID SAMPLE LOCATION/ (LABORATORY STAFF ONLY) NUMBER IDENTIFICATION DATE (LITERS) AREA 819/10 HIN-98-13 10-6100 Date/Time: Contact: By: HIN -189-01 HIN -L38-02 HIN -LEPOS x HIN -(3P-04 Date/Time: Contact: By: HIN -458 - 3 Date/Time: Contact: By: 1. Date/Time RCVD: @ Via: eso LABORATORY 2. Date/Time Analyzed: By (Priz VAILA Posted TONGB POTA Reading Roams Reported To:

May, 2019STODY)

4. Comments:

Appendix C Photo Documentation

# Hingham RC



## Front Entry



Storage Areg in Basement Posted to NGB FOIA Reading Room May, 2018



Flaking Paint on Walls



BEST AVAILABLE COPY Flaking Paint on Ceiling FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1725 of 3473

# Hingham RC



Damaged Plaster and Peeling Paint on Ceiling





Kitchen



Mess Holl Posted to NGB FOIA Reading Room May, 2018

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Boiler Room FOIA Requested Record #J-15-0085 (MA) Released by National Guard Bureau Page 1726 of 3473

# Hingham RC



**Basement Hallway** 



Flaking Paint and Damaged Plaster Appendix D IAQ and Lighting Survey Log Sheets

National Guard Industrial Hygiene Survey For Indoor Air Quality and L
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State	MA		Hingham	IAQ				.,				Light		
Date	8/19/2010	Inspector	Non-Responsive	Instrument	TSI Q-Trak Plus Model 8554 Instrument CAL-LIGHT 400									
Facility Description	Readiness Ctr			Serial Numb	erial Number		8554-02041015				Serial Number		K070277	
Weather Conditions	ner Conditions		Last Calibration		Mar-10				Last Calibration		30-Jul-10			
Location	Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Values (fc)
1	Meeting Room			78.6		59.4		455		0.7		63.8		50
2	Admin Office			78.6		59.5		485		0.4		30.2	х	50
3	Foyer			78.8		59.1		472		0.3		59.5		10
4	Office			78.8		58.3		436		0.2		63.3		50
5	Commander's Office			78.8		57.6		404		0.3		70.2		50
6	1st SGT. Office			78.8		57.3		382		0.8		21.3	х	50
7	Women's Room			78.8		57.4		419		0.6		40.0		5
8	Operational Range			78.6		57.4		421		0.0		51.1		50
9	Hall			78.6		57.0		416		0.5		19.4		5
10	Office			78.6		57.6		400		0.5		70.0		50
11	Drill Hall			78.4		58.3		374		0.5		4.4	x	10-50
12	Stage			79.0		57.1		360		0.4		12.2		10-50
13	Stage			79.9	х	56.5	х	405		0.4		28.6		10-50
14	Men's Room			80.1	х	56.8	х	398		0.6		76.9		5
15	Hall			79.9	х	56.6	х	377		0.4		25.2		5
16	Recruiter's Office			79.2	х	58.3	х	438		0.5		50.0		50
17	Office			79.9	х	58.5	х	439		0.1		22.7	х	50
18	Locker Room			80.1	x	56.8	х	419		0.2		6.0	x	7
Notes:				Relative 30 40 50 60	1% 1% 1%	nidity	68. 68. 68.	nter Temp. 5°F-76.0°F 5°F-75.5°F 5°F-74.5°F 0°F-74.0°F	7 7 7	ummer Tem 4.0°F-80.0° 3.5°F-79.5° 3.0°F-79.0° 2.5°F-78.0°	F F F			

State	Mational Guard Industrial Hygiene Survey For Indoor Air Quality and Light Leve       MA     City     IAQ													
Date		Inspector	Non-Responsive	Instrument		т	TSI Q-Trak Plus Model 8554				Instrument		CAL-LIGHT 400	
Facility Description	Readiness Ctr			Serial Number			8554-02041015				Serial Number		K070277	
Weather Conditions	1		Last Calibration			Mar-10				Last Calibration		30-Jul-10		
Location	Function	No. Occupants	Time	Temp. (°F)	Exceeded	RH (%)	Exceeded	CO <sub>2</sub> (ppm)	Exceeded	CO (ppm)	Exceeded	Illuminance (fc)	Insufficient	Illuminance Reference Values (fc)
19	Office			80.2	х	55.3	х	422		0.5		25.4	х	50
20	Office			80.2	х	54.3	х	359		0.2		11.8	х	50
21	2nd Floor Landing			80.2	х	55.6	х	390		0.5		101.7		5
22	Kitchen			77.0		58.8		386		1.1		98.8		50
23	Mess Hall			75.2		61.8		367		0.7		50.7		10
24	Basement Hall			74.7		64.4		393		0.8		20.5		5
25	Supply Room			74.3		65.5		392		0.2		15.3		10
26	Latrine			73.9		65.9		359		0.5		38.1		5
27	Boiler Room			73.9		66.4		363		0.3		18.7	х	30
28	Gym			77.5		66.8		712		4.7		44.0		30
29	Basement			76.3		61.1		428		0.7		39.0		10
30	Basement Hall			75.6		63.4		421		0.4		6.0		5
Notes:		Relative Humidity 30% 40% 50%		midity	68.5°F-76.0°F 7 68.5°F-75.5°F 7		Summer Temp. 74.0°F-80.0°F 73.5°F-79.5°F 73.0°F-79.0°F							
			60%			68.0°F-74.0°F 72.5°F-78.0°F								



## 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 MASSACHUSETTS NATIONAL GUARD READINESS CENTER 96 CENTRAL STREET HINGHAM, MA 02043

July 11, 2013 PN: 39743799





Director, Industrial Hygiene Services

Project Manager

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## FINDINGS AND RECOMMENDATIONS MASSACHUSETTS NATIONAL GUARD READINESS CENTER 96 CENTRAL ST., HINGHAM, MA

Findings	Recommendations	Risk Assessment Code (RAC)		
Lighting				
On the day of the survey, the illuminance was inadequate in several locations tested.	Increase lighting in the work areas. While work is in progress, these areas must be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04).	RAC 4		
Ergonomics				
Computer workstations in the Administrative Areas were observed with un-adjustable chairs, arm rests and keyboards	Ergonomic issues with regard to 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		
Water Intrusion				
Water staining was observed on ceiling tiles and on ceiling throughout the facility. Water damage in Drill Hall has led to a warped wooden Drill Hall floor.	The source of the water intrusion should be identified and repaired. The water-stained materials should be repaired or replaced (ACGIH – Guidelines for the Assessment of Bio- aerosols in the Indoor Environment).	RAC 3		
Lead				
Eight of the 10 lead wipe samples indicated elevated lead levels. Two of four paint chip samples indicated elevated lead levels.	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where elevated lead dust levels were identified (OSHA 29 CFR 1910.1025(h)(1)).	RAC 3		
Emergency Exits				
Emergency exit signs and escape plans were not visible from all areas of the facility or illuminated.	Emergency exits should be properly illuminated (29 CFR 1910.37 (q)(6)).	RAC 3		
Asbestos				
Presumed asbestos- containing floor tiles and associated mastic and pipe insulation were observed throughout the facility; an Asbestos Operation and Maintenance Program was not available on-Site.	Develop a site-specific asbestos operations and maintenance program for management of asbestos- containing materials in place as required by OSHA 29 CFR 1910.1001(j)(2).	RAC 4		

Findings	Recommendations	Risk Assessment Code (RAC)				
PPE						
Hazard assessments have not been conducted to determine whether personal protective equipment is required	Conduct a hazard assessment of site operations to determine what types of PPE are required for each type of work (29 CFR 1910.132(d)(1)).	RAC 4				
Housekeeping						
Storage areas were found to be somewhat unorganized at the time of URS' site visit.	All places of employment, passageways, storerooms and service rooms shall be kept clean and orderly and in a sanitary condition. (29 CFR 1910.22 (a)(1))	RAC 3				
Railings						
A stairway outside the boiler room does not have a standard railing.	Every flight of stairs having four or more risers shall be equipped with standard stair railings. (29 CFR 1910.23 (d)(1)).	RAC 3				
Fire Extinguishers						
No evidence was found that all fire extinguishers were being inspected on a monthly basis.	All fire extinguishers must be inspected on a monthly basis to determine that they are full and readily accessible. (OSHA 29 CFR 1910.157(e)(2))	RAC 3				
Flammable Storage						
Chemicals/ flammable materials were observed improperly stored in Basement Boiler Room	Each container of hazardous chemicals in the work place must be labeled with the identity of the chemical and appropriate hazard warnings (29 CFR 1910.1200).	RAC 3				

## 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 in Hingham, Massachusetts.

URS representative, Mr. **Non-Responsive**, conducted the Industrial Hygiene Survey on May 2, 2013. The scope of work included an overall assessment of the facility as it relates to industrial hygiene and included a walkthrough of the facility, collection of photographs, and when required, measurements for illumination (light), area and personal air sampling, and noise mapping.

The Hingham Readiness Center is a two-story brick building, consisting of offices, classrooms, a supply area, a mess hall, gender separate bathrooms, locker storage rooms, storage rooms, a kitchen, an Assembly Hall and a former Indoor Firing Range. A layout of the Readiness Center is provided in Appendix A.

<u>GENERAL</u>: Moderate water staining was observed on ceiling tiles throughout the facility, including the 2<sup>nd</sup> floor classroom, locker room, break room/mess hall, and unit room. The basement former Indoor Firing Range is posted as unsafe due to lead contamination, but is missing the proper notice of closure. No evidence was found that all fire extinguishers were being inspected on a monthly basis. Illuminated emergency exit signs were not observed throughout the facility. Emergency escape plans were not posted throughout the facility. Walkways in storage areas were cluttered at the time of the survey. Chemicals/flammable materials were observed not properly stored in the Basement Boiler Room. The stairway from outside to the boiler room does not have handrails; planks used for bringing in supplies are unsafe.

<u>LIGHTING</u>: Lighting in the Readiness Center was found to be inadequate in several of the areas measured. Areas noted within the report as having inadequate lighting require upgrading by either increasing the general lighting or through the use of task lighting. While work is in progress work areas must be lighted by at least the minimum light intensities. <u>LEAD</u>: Eight of ten wipe samples collected in the Readiness Center were found to contain lead in a concentration above the recommended limit set by the NGB, Region North IH Office.

On the day of the survey, two of the paint chip samples were found to contain a level of lead above the HUD criteria for determination of paint as lead-based.

<u>ASBESTOS</u>: Presumed asbestos-containing floor tiles and associated mastic and pipe insulation were identified during this survey, however no Asbestos Operations and Maintenance Program was found on site. Until suspect materials have been sampled and determined not to contain asbestos, they must be presumed to be asbestoscontaining and managed accordingly.

<u>ERGONOMICS</u>: Many of the work stations had ergonomic issues which require attention. Computer workstations were assessed during the walkthrough for ergonomic issues. The computer workstations in the facility did not meet the current Occupational Safety and Health Administration (OSHA) ergonomic recommendations. The chair armrests, keyboards, and desks were not adjustable. All workstations in the facility should be adjusted and monitored. The ergonomic issues with regard to the workstations and chairs need to be corrected by fitting the workplace to the worker.

<u>NOISE</u>: Area noise monitoring levels in the Readiness Center determined that noise levels were below the OSHA permissible exposure limit (PEL) and Department of Defense Instruction (DoDI) Hearing Conservation Standard (6055.12 3 December 2010) on the day of URS' site visit.

## 2.0 SUPPLY / TRAINING AREA

## 2.1 Operation Description

This Readiness Center is primarily used for weekend training drills and conducting administrative functions. The building includes offices, classrooms, a supply area, gender separate bathrooms, locker storage rooms, storage rooms, a mess hall, a kitchen, an Assembly Hall and a former Indoor Firing Range.

The Readiness Center was found to be cluttered and unorganized at the time of URS' site visit.

## 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. Interior carbon dioxide concentrations were found to be between 449 and 762 parts per million (ppm). Carbon dioxide levels were measured using a direct-reading TSI Q-Trak (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 human respiration. 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 but is typically 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.

To minimize air quality complaints, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has proposed that the carbon dioxide concentration within an occupied workspace be maintained below 700 ppm above ambient outside levels. For example, on the day of the survey, the outside carbon dioxide level was measured at 401 ppm. Therefore ASHRAE (Standard 62.1-2010) would recommend that interior carbon dioxide concentrations be maintained at or below