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Subsurface Investigation

Litigation Support

Limited Asbestos Survey Report

PG&E Kern Power Plant
2401 Coffee Road
Bakersfield, California

RGA Project No: PGE35613

June 5, 2014

Prepared for:

Redacted

Pacific Gas & Electric
2401 Coffee Road
Bakersfield, CA 93308

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Limited Asbestos Survey Report

*Kern Power Plant
2401 Coffee Road
Bakersfield, California*

1. Executive Summary

The following is a report of the limited asbestos survey performed at the former Kern Power Plant located at 2401 Coffee Road in Bakersfield, California. The survey was performed by Mr. [Redacted] Certified Asbestos Consultant (CAC) and Mr. [Redacted] [Redacted], Certified Site Surveillance Technician (CSST) with RGA Environmental, Inc. (RGA) on May 28 and 29, 2014. The scope of the survey requested by Pacific Gas & Electric (PG&E) was limited to accessible suspect asbestos containing boiler refractory materials associated with four remaining boilers at the captioned site.

The subject property consists of a former power plant and electrical switchyard. The above grade structures of the former power plant have been demolished with exception of four boilers. The boilers and supporting structures were reportedly previously abated of friable asbestos containing materials (ACMs). The supporting structures for the four boilers were imploded in August of 2013. The implosion caused the two structures with paired boilers to fall onto the backside of the boiler structure. Currently the front walls of the boilers are facing up with the bottom and side walls partially accessible.

The interior of the boilers and the majority of the areas on the front, north and south facing boiler walls are deemed inaccessible because of hazardous conditions related to the current structural component integrity and/or the potential for loose or falling debris. The top, backside, and inward facing sidewalls¹ of the boilers were completely inaccessible. In addition the interior and exterior surfaces of the penthouses, mud, and steam drums were inaccessible. Differing refractory materials may exist on or in these inaccessible areas of the boilers. The former bottoms of the boilers and bases of the sidewalls were most accessible. RGA collected the majority of the sampled materials from these areas. Please see the attached figures for locations of the sampled materials and current site locations.

During the limited survey, twenty-five (25) suspect ACMs were identified and sampled. Eleven (11) of the suspect materials were reported with asbestos content. Table I summarizes the materials identified as ACMs during the survey. Table II summarizes the materials that were reported as negative for asbestos content.

¹ Eastern faces of boilers #1 and #2 and the western faces of boilers #3 and #4

All of the refractory materials sampled were reported by the laboratory as negative for asbestos content. A layer with asbestos content was reported in twenty-three (23) of the eighty-three (83) samples of refractory material submitted for analysis. The majority of the samples with an asbestos containing layer were reported with a concentration of asbestos that is typical of insulating materials. The insulating materials associated with Boilers #1, 2, 3 & 4 and identified by others during pre-demolition testing indicated the asbestos containing insulating materials were friable. The association of these asbestos containing layers with the refractory materials identified by the laboratory therefore suggests the boiler refractory materials are contaminated with friable asbestos containing material. RGA could not visually identify additional layers of material associated with the refractory material during sample collection.

2. Scope of Work

The scope of the survey was as follows:

- Inspect the boiler towers (referenced as Boilers #1, 2, 3 and 4) for the presence of suspect ACMs associated with accessible refractory materials as requested by PG&E.
- Collect samples of accessible suspect asbestos containing refractory materials to meet the National Emissions Standard for Hazardous Air Pollutants (NESHAPs) protocol. Analyze asbestos bulk samples using polarized light microscopy (PLM) in accordance with EPA's July 1993 method for the determination of asbestos in bulk building materials - EPA 600/R-93/116.
- Submit written report including analytical results, regulatory requirements, conclusions and recommendations.

3. Methods and Sampling Strategy

Visual Inspection

Accessible refractory materials were visually inspected using the methods presented in the federal Asbestos Hazard Emergency Response Act (AHERA) regulations (40 CFR, Part 763) as a guideline. AHERA was originally only applicable to schools, however state and federal Occupational Safety and Health Administration (OSHA) and Asbestos School Hazard Abatement and Reauthorization Act (ASHARA) have adopted the AHERA sampling methodology for all buildings and structures subject to renovation or demolition.

Bulk Sampling of Asbestos

Bulk samples of suspect ACM homogeneous materials were collected. A homogeneous material is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in color, texture and age of construction. Examples of homogeneous materials include:

- Pipe insulation produced by the same manufacturer and installed during the same time period;
- Manufactured materials such as brick similar in size, texture, and application of use;
- Troweled on surfacing materials located in contiguous areas.

RGA visually inspected the accessible portions of the four boilers for the presence of suspect refractory materials. As materials were identified, bulk samples were obtained with the aid of a hand tool and placed into individual sampling bags. Each sample was given a discrete identification number, recorded on field notes as well as chain-of-custody forms, and marked on photographs of the boilers. Sample locations indicated on the figures attached in Appendix 2. Photographs of each suspect material sample were also collected. A photograph summary of the materials reported with asbestos content is included in Appendix 3. Refer to accompanying tables and appendices for details on material sample locations and results. Bulk samples were transported to Micro Analytical Laboratory, Inc. (MAL) in Emeryville, California.

Bulk Sample Analysis - Asbestos

MAL is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) for determination of asbestos fibers in bulk materials.

All samples were analyzed using polarized light microscopy (PLM) techniques in accordance with methodology approved by the U.S. Environmental Protection Agency (EPA). As set forth in the Code of Federal Regulations, 40 CFR Part 763, Appendix A to Subpart F, Section 1.2 and 1.7.2.4, the lower limit of reliability detection for asbestos using the PLM method is approximately one percent (1%) by volume. Cal-OSHA defines asbestos containing construction materials (ACCM) as those materials having asbestos content of greater than one tenth of one percent (>0.1%).

When None Detected (ND) appears in this report, it should be interpreted as meaning no asbestos was observed in the sample material above the reliable limit of detection for the PLM method.

Note: Under EPA assessment criteria, if a single sample of a homogeneous material tests positive for asbestos, all areas of that homogeneous material within that building are considered to be asbestos containing.

4. Asbestos Results

A total of twenty-five (25) homogeneous suspect ACMs were identified. A layer or layers of material in eleven (11) of the suspect materials sampled tested positive for asbestos-content. The materials reported with asbestos content are listed in Table I below.

**TABLE I
 ASBESTOS-CONTAINING MATERIALS**

HM# - Material Description	Material Location	Waste Category	Asbestos Type
3 – Grout Associated with 4"x10" Boiler Tile	Boiler 4 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% CH
5 – Grout Associated with 12"x12" Boiler Tile	Boiler 4 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% AM 20% - 60% CH
7 – Boiler Refractory	Boiler 4 - South Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 20% AM 40% CH
8 – Boiler Curb Tile Mortar	Boiler 2 - Former Bottom at Transition from Bottom to Front and Side Walls	RACM	Mortar: ND Fibrous Debris: <1% AM, Point Count Pending
9 – Boiler Tile, 4"x10"	Boiler 2 - Former Bottom	RACM	Tile: ND Fibrous Debris: <1% - 5% AM 30% CH
10 – Grout Associated with 4"x10" Boiler Tile	Boiler 2 - Former Bottom	RACM	Grout: ND Fibrous Debris: 60% CH
11 – Boiler Tile, 12"x12"	Boiler 2 - Former Bottom	RACM	Tile: ND Fibrous Debris: 15% CH, <1% AM
13 – Boiler Refractory	Boiler 2 - South Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 5% CH <1% - 6% AM
20 – Boiler Refractory	Boiler 3 - North Side Wall	RACM	Refractory: ND Fibrous Debris: <1% - 50% AM 30% CH
22 – Boiler Tile, 4"x10"	Boiler 1 - Former Bottom	RACM	Tile: ND Fibrous Debris: 20% AM 60% CH
26 – Boiler Refractory	Boiler 1 - North Side Wall	RACM	Refractory: ND Fibrous Debris: 20% - 40% CH 30% AM

CH = Chrysotile, AM = Amosite, ND = None Detected, RACM = Regulated asbestos containing material (friable), Cat. I = Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), Cat. II = Category II Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal)

During the survey the following suspect ACMs listed in Table II were reported negative for asbestos content.

TABLE II
NON-ASBESTOS-CONTAINING MATERIALS

Material Description	Material Sample Location
1 – Boiler Tile Curb Mortar	Boiler 4 - Former Bottom at Transition from Bottom to Front and Side Walls
2 – Boiler Tile, 4” x 10”	Boiler 4 - Former Bottom
4 – Boiler Tile, 12” x 12”	Boiler 4 - Former Bottom
12 – Boiler Tile, 12” x 12”	Boiler 2 - Former Bottom
14 – Boiler Tile Curb Mortar	Boiler 3 - Former Bottom at Transition from Bottom to Front and Side Walls
15 – Boiler Tile, 4” x 10”	Boiler 3 - Former Bottom
16 – Grout Associated with 4” x 10” Boiler Tile	Boiler 3 - Former Bottom
17 – Light Gray Boiler Tile Mortar ¹	Boiler 3 - Former Bottom at Middle Elevation
18 – Boiler Tile, 12” x 12”	Boiler 3 - Former Bottom
19 – Grout Associated with 12” x 12” Boiler Tile	Boiler 3 - Former Bottom
21 – Boiler Tile Curb Mortar	Boiler 1 - Former Bottom at Transition from Bottom to Front and Side Walls
23 – Grout Associated with 4” x 10” Boiler Tile	Boiler 1 - Former Bottom
24 – Boiler Tile, 12” x 12”	Boiler 1 - Former Bottom
25 – Grout Associated with 12” x 12” Boiler Tile	Boiler 1 - Former Bottom

¹Note: Material was only observed on Boiler #3 in an area where the boiler tile/brick had been displaced by the implosion or felling of the boilers. RGA could not confirm the presence or absence of a similar (in appearance) material is present on boilers #1, 2 and 4.

5. Discussion and Conclusions

All of the refractory materials sampled were reported negative for asbestos content. ACMs were identified on the surface of majority of the refractory materials associated with boilers #1 – 4. The concentration and type of asbestos reported indicates that the likely sources of the reported asbestos content are former insulating materials. The residue asbestos reported on the surfaces of the refractory materials were not visually identifiable and therefore were not separated during sample collection.

RGA has experienced similar phenomenon with boiler insulations and refractory. The high heat produced during boiler firing can cause asbestos containing insulating materials to fuse to contact surfaces of refractory materials. Complete separation of asbestos containing insulating materials from refractory materials may at times require aggressive eroding of the refractory material during abatement.

Based upon RGA's visual assessment of the boilers, the laboratory data associated with the assessment, and limited access to the refractory materials RGA recommends management of all of the refractory materials associated with Boiler #1 - 4 as contaminated with friable ACM. If additional suspect materials that have not been characterized as ACM or non-ACM in this report are discovered during final dismantlement of the boilers, work should cease until additional testing can confirm or refute potential asbestos content.

Impacting materials containing greater than 0.1% asbestos either through repair, maintenance, or demolition activities triggers numerous regulations enforced by such agencies as OSHA (worker protection) and EPA (environmental exposure, transportation and disposal).

Listed below are the regulations that apply if the materials are removed:

- If more than 100 square feet of materials that contain greater than 0.1% asbestos will be removed, the material must be abated by a Cal-OSHA registered asbestos contractor. Regulation: Cal-OSHA 8 CCR 1529 (R).
- ACMs that are classified by OSHA as thermal system insulation materials are present in residual amounts. Removal of these materials is considered a Class I activity according to Cal-OSHA regulations. Work practices and engineering controls for Class I work are specified in Cal-OSHA 8 CCR 1529 (g) (4-6).
- Friable ACMs greater than 1% asbestos must be manifested, transported, and disposed of as hazardous waste in accordance with the Department of Toxic and Substances Control (DTSC), a division of Cal-EPA. DTSC regulates disposal of asbestos waste. DTSC issues U.S. EPA hazardous waste generator identification numbers.
- If more than 160 square feet, 260 linear feet, or 35 cubic feet of friable ACM will be removed, the abatement contractor must notify the San Joaquin Valley Air Pollution Control District (SJVAPCD) ten (10) days prior to removing the material. Regulation: 40 CFR Part 61 Subpart M Section 61.145 (a)(1)(i)(ii).

6. Limitations

RGA Environmental Inc. (RGA) warrants that the findings contained herein have been prepared in general accordance with accepted professional practices as applied by similar professionals in the community at the time of its preparation. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The field and laboratory results reported herein are limited to the materials observed and sampled. Survey report is not an abatement specification. This document is not appropriate for competitive bidding or for use as an asbestos abatement specification.

All areas of the former boiler structures were not accessible at the time of this investigation. RGA cannot confirm the presence or absence of additional or similar suspect materials that may exist in internal areas of the boilers and/or areas specifically excluded by the nature of this assessment.



Appendix 1

Laboratory Results and Chain of Custody Forms - Asbestos

MICRO ANALYTICAL LABORATORIES, INC.
BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1033
 Redacted

RGA Environmental, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**

Total Samples 83

Date Sampled 05/28/2014

Date Received 05/30/2014

Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

Client #: 1A	Micro #: 194220-01 Analyst: SC HM #01 - BOILER CURB MORTAR (WHITE) BOILER #4 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 1B	Micro #: 194220-02 Analyst: SC HM #01 - BOILER CURB MORTAR (WHITE) BOILER #4 - UPPER ELEVATION - WEST FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 1C	Micro #: 194220-03 Analyst: SC HM #01 - BOILER CURB MORTAR (WHITE) BOILER #4 - UPPER ELEVATION - WEST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 2A	Micro #: 194220-04 Analyst: SC HM #02 - MISC TILE 4" X 10" BOILER #4 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 2B	Micro #: 194220-05 Analyst: SC HM #02 - MISC TILE 4" X 10" BOILER #4 - UPPER ELEVATION - WEST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Technical Supervisor:

Redacted

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM). Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation. PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Redacted

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REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples **83**
Date Sampled **05/28/2014**
Date Received **05/30/2014**
Date Analyzed **05/30/2014**

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 2C Micro #: 194220-06 Analyst: SC HM #02 - MISC TILE 4" X 10" BOILER #4 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 3A Micro #: 194220-07 Analyst: SC HM #3 - MISC. TILE 4" X 10" GROUT BOILER #4 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 3B Micro #: 194220-08 Analyst: SC GR HM #3 - MISC. TILE 4" X 10" GROUT BOILER #4 - UPPER ELEVATION - WEST FACE CENTER	GROUT: NONE DETECTED SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 3C Micro #: 194220-09 Analyst: SC HM #3 - MISC. TILE 4" X 10" GROUT BOILER #4 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 4A Micro #: 194220-10 Analyst: SC HM #04 - 12" TILE BOILER #4 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Technical Supervisor:

Redacted

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

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 Total Samples 83
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 Date Received 05/30/2014
 Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

Client #: 4B Micro #: 194220-11 Analyst: SC HM #04 - 12" TILE BOILER #4 - MID ELEVATION - WEST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 4C Micro #: 194220-12 Analyst: SC HM #04 - 12" TILE BOILER #4 - LOWER ELEVATION - WEST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 5A Micro #: 194220-13 Analyst: SC HM #05 - 12" TILE GROUT BOILER #4 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER	GROUT: NONE DETECTED SURFACE FIBROUS DEBRIS: 60% AMOSITE SURFACE FIBROUS DEBRIS (CONT.): 20% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 5B Micro #: 194220-14 Analyst: SC HM #05 - 12" TILE GROUT BOILER #4 - MID ELEVATION - WEST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 5C Micro #: 194220-15 Analyst: SC HM #05 - 12" TILE GROUT BOILER #4 - LOWER ELEVATION - WEST FACE SOUTHEAST CORNER	GROUT: NONE DETECTED SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Technical Supervisor: 

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Micro Log In **194220**
 Total Samples 83
 Date Sampled 05/28/2014
 Date Received 05/30/2014
 Date Analyzed 05/30/2014

ASBESTOS INFORMATION**SAMPLE IDENTIFICATION****QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES****DOMINANT
OTHER MATERIALS**

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 7A Micro #: 194220-16 Analyst: SC HM #07 - REFRACTORY BOILER #4 - UPPER ELEVATION SOUTH FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 7B Micro #: 194220-17 Analyst: SC HM #07 - REFRACTORY BOILER #4 - MIDDLE ELEVATION SOUTH FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 7C Micro #: 194220-18 Analyst: SC HM #07 - REFRACTORY BOILER #4 - MIDDLE ELEVATION SOUTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 7D Micro #: 194220-19 Analyst: SC HM #07 - REFRACTORY BOILER #4 - LOWER ELEVATION SOUTH FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 7E Micro #: 194220-20 Analyst: SC GR HM #07 - REFRACTORY BOILER #4 - LOWER ELEVATION SOUTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 20% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Redacted

Technical Supervisor: 

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Redacted

RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples 83
Date Sampled 05/28/2014
Date Received 05/30/2014
Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 8A Micro #: 194220-21 Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 8B Micro #: 194220-22 Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 8C Micro #: 194220-23 Analyst: SC HM #08 BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 9A Micro #: 194220-24 Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE NORTHEAST CORNER	TILE: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 9B Micro #: 194220-25 Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE SOUTHEAST CORNER	TILE: NONE DETECTED SURFACE FIBROUS DEBRIS: 30% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 5% AMOSITE ASBESTOS Sample contains heat-altered asbestos; some optical properties may be outside normal limits.	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:

Redacted

Technical Supervisor

6/2/2014
Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023

Redacted

RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

FORMER BOILER STRUCTURES KERN POWER PLANT PROJECT NO. PGE 35613

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**

Total Samples 83

Date Sampled 05/28/2014

Date Received 05/30/2014

Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 9C Micro #: 194220-26 Analyst: SC HM #09 - MISC TILE 4" X 10" BOILER #2 - UPPER ELEVATION - WEST FACE SOUTHEAST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 10A Micro #: 194220-27 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 10B Micro #: 194220-28 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 10C Micro #: 194220-29 Analyst: SC HM #10 - MISC TILE 4" X 10" GROUT BOILER #2 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER	GROUT: NONE DETECTED SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 11A Micro #: 194220-30 Analyst: SC GR HM #11 - 12" TILE BOILER #2 - UPPER ELEVATION - EAST FACE CENTER	TILE: NONE DETECTED SURFACE FIBROUS DEBRIS: 15% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Sample contains heat-altered asbestos; some optical properties may be outside normal limits.		

Redacted

Technical Supervisor:

6/2/2014

Date Reported

NVLAP Lab Code 101872-0, CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023

Redacted

RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples **83**
Date Sampled **05/28/2014**
Date Received **05/30/2014**
Date Analyzed **05/30/2014**

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 11B Micro #: 194220-31 Analyst: AR HM #11 - 12" TILE BOILER #2 - MID ELEVATION - EAST FACE CENTER	NONE DETECTED	Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 11C Micro #: 194220-32 Analyst: AR MO HM #11 - 12" TILE BOILER #2	NONE DETECTED	Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 12A Micro #: 194220-33 Analyst: AR HM #12 - 12" TILE GROUT BOILER #2 - UPPER ELEVATION - EAST FACE CENTER	NONE DETECTED	3% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 12B Micro #: 194220-34 Analyst: AR HM #12 - 12" TILE GROUT BOILER #2 - MID ELEVATION - EAST FACE NORTH SIDE	NONE DETECTED	3% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 12C Micro #: 194220-35 Analyst: AR HM #12 - 12" TILE GROUT BOILER #2 - LOWER ELEVATION - EAST FACE CENTER	NONE DETECTED	3% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER

Redacted

Technical Supervisor: _____

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses performed using polarized light microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-800/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023

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RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

FORMER BOILER STRUCTURES KERN POWER PLANT PROJECT NO. PGE 35613

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**

Total Samples 83

Date Sampled 05/28/2014

Date Received 05/30/2014

Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 13A Micro #: 194220-36 Analyst: AR GR HM #13 - REFRACTORY BOILER #2 - UPPER ELEVATION - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 5% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 6% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 13B Micro #: 194220-37 Analyst: AR MO / HM #13 - REFRACTORY BOILER #2 - UPPER ELEVATION - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 2% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 13C Micro #: 194220-38 Analyst: AR GR HM #13 - REFRACTORY BOILER #2 - MIDDLE ELEVATION - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 2% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 6% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 13D Micro #: 194220-39 Analyst: AR MO / HM #13 - REFRACTORY BOILER #2 - LOWER ELEVATION - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 13E Micro #: 194220-40 Analyst: AR MO / HM #13 - REFRACTORY BOILER #2 - LOWER ELEVATION - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): < 1% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Redacted

Technical Supervisor:

6/2/2014

Date Reported

NVLAP Lab Code 101872-0, CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)


 1023
 Redacted

 RGA Environmental, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**

 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

 Micro Log In **194220**
 Total Samples 83
 Date Sampled 05/28/2014
 Date Received 05/30/2014
 Date Analyzed 05/30/2014

SAMPLE IDENTIFICATION	ASBESTOS INFORMATION QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 14A Micro #: 194220-41 Analyst: AR HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER SECTION	NONE DETECTED	5 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 14B Micro #: 194220-42 Analyst: AR HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE CENTER SECTION	NONE DETECTED	5 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 14C Micro #: 194220-43 Analyst: AR HM #14 - BOILER CURB MORTAR BOILER #3 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER SECTION	NONE DETECTED	5 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 15A Micro #: 194220-44 Analyst: AR MO HM #15 - MISC BRICK BOILER #3 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER SECTION	NONE DETECTED	5 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 15B Micro #: 194220-45 Analyst: AR HM #15 - MISC BRICK BOILER #3 - UPPER ELEVATION - WEST FACE CENTER SECTION	NONE DETECTED	5 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER

Redacted

Technical Supervisor:

 6/2/2014
 Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM. The estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.
BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023

Redacted

RGA Environmental, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**
 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
 Total Samples 83
 Date Sampled 05/28/2014
 Date Received 05/30/2014
 Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 15C Micro #: 194220-46 Analyst: AR HM #15 - MISC BRICK BOILER #3 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER SECTION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 16A Micro #: 194220-47 Analyst: AR HM #16 - MISC. BRICK GROUT BOILER #3 - UPPER ELEVATION - WEST FACE SOUTHWEST CORNER SECTION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 16B Micro #: 194220-48 Analyst: AR MO HM #16 - MISC. BRICK GROUT BOILER #3 - UPPER ELEVATION - WEST FACE CENTER SECTION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 16C Micro #: 194220-49 Analyst: AR HM #16 - MISC. BRICK GROUT BOILER #3 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER SECTION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 17A Micro #: 194220-50 Analyst: AR HM #17 - BOILER MORTAR - LIGHT GRAY BOILER #3 - MIDDLE ELEVATION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER

Redacted

Technical Supervisor

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
 Redacted
 RGA Environmental, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:
**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**
 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
 Total Samples 83
 Date Sampled 05/28/2014
 Date Received 05/30/2014
 Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 17B Micro #: 194220-51 Analyst: AR HM #17 - BOILER MORTAR - LIGHT GRAY BOILER #3 - MIDDLE ELEVATION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 17C Micro #: 194220-52 Analyst: AR HM #17 - BOILER MORTAR - LIGHT GRAY BOILER #3 - MIDDLE ELEVATION	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 18A Micro #: 194220-53 Analyst: AR HM #18 - 12" TILE BOILER #3 - UPPER ELEVATION - WEST FACE NORTHWEST CORNER	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 18B Micro #: 194220-54 Analyst: AR MO HM #18 - 12" TILE BOILER #3 - MID ELEVATION - WEST FACE CENTER	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 18C Micro #: 194220-55 Analyst: AR HM #18 - 12" TILE BOILER #3 - LOWER ELEVATION - WEST FACE SOUTHWEST CORNER	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER

Technical Supervisor:

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6/2/2014
 Date Reported

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BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



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RGA Environmental, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**Total Samples **83**Date Sampled **05/28/2014**Date Received **05/30/2014**Date Analyzed **05/30/2014****ASBESTOS INFORMATION**

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

Client #: 19A			
Micro #: 194220-56	Analyst: AR	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
HM #19 - 12" TILE GROUT BOILER #3 - UPPER ELEVATION WEST FACE			
Client #: 19B			
Micro #: 194220-57	Analyst: AR	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
HM #19 - 12" TILE GROUT BOILER #3 - MIDDLE ELEVATION WEST FACE			
Client #: 19C			
Micro #: 194220-58	Analyst: AR	NONE DETECTED	5% CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
HM #19 - 12" TILE GROUT BOILER #3 - LOWER ELEVATION WEST FACE			
Client #: 20A			
Micro #: 194220-59	Analyst: AR	NONE DETECTED	5% CELLULOSE Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
HM #20 - REFRACTORY BOILER #3 - UPPER - NORTH FACE			
Client #: 20B			
Micro #: 194220-60	Analyst: AR MO / RD	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: < 1% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
HM #20 - REFRACTORY BOILER #3 - MIDDLE - NORTH FACE			

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Technical Supervisor:

6/2/2014

Date Reported

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MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



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RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**

(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples 83
Date Sampled 05/28/2014
Date Received 05/30/2014
Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 20C Micro #: 194220-61 Analyst: SC HM #20 - REFRACTORY BOILER #3 - MIDDLE - NORTH FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 30% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 50% AMOSITE ASBESTOS	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 20D Micro #: 194220-62 Analyst: SC HM #20 - REFRACTORY BOILER #3 - LOWER - NORTH FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 20E Micro #: 194220-63 Analyst: SC HM #20 - REFRACTORY BOILER #3 - LOWER - NORTH FACE	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 21A Micro #: 194220-64 Analyst: SC HM #21 - BOILER CURB MORTAR BOILER #1 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 21B Micro #: 194220-65 Analyst: SC HM #21 - BOILER CURB MORTAR BOILER #1 - UPPER ELEVATION - EAST FACE CENTER	NONE DETECTED	Matrix BINDER, OTHER, MISCELLANEOUS. Type:

Redacted

Technical Supervisor:

6/2/2014
Date Reported

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BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



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RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples 83
Date Sampled 05/28/2014
Date Received 05/30/2014
Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 21C Micro #: 194220-66 Analyst: SC HM #21 - BOILER CURB MORTAR BOILER #1 - UPPER ELEVATION - EAST FACE NORTHEAST CORNER	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 22A Micro #: 194220-67 Analyst: SC HM #22 - MISC. BRICK 4" X 10" BOILER #1 - UPPER ELEVATION - EAST FACE SOUTHEAST CORNER	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 22B Micro #: 194220-68 Analyst: SC GR HM #22 - MISC. BRICK 4" X 10" BOILER #1 - UPPER ELEVATION - EAST FACE CENTER	BRICK: NONE DETECTED SURFACE FIBROUS DEBRIS: 60% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 20% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 22C Micro #: 194220-69 Analyst: SC HM #22 - MISC. BRICK 4" X 10" BOILER #1 - UPPER ELEVATION - EAST FACE LOWER	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 23A Micro #: 194220-70 Analyst: SC HM #23 - MISC. BRICK GROUT BOILER #1 - UPPER ELEVATION - EAST FACE SOUTHWEST	NONE DETECTED	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:

Technical Supervisor:

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6/2/2014

Date Reported

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BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



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RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**
(Report amended 6/2/2014. SAMPLE IDs: 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**

Total Samples 83


Date Sampled 05/28/2014

Date Received 05/30/2014

Date Analyzed 05/30/2014

SAMPLE IDENTIFICATION	ASBESTOS INFORMATION QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 23B Micro #: 194220-71 Analyst: WC HM #23 - MISC. BRICK GROUT BOILER #1 - UPPER ELEVATION - EAST FACE CENTER	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 23C Micro #: 194220-72 Analyst: WC HM #23 - MISC. BRICK GROUT BOILER #1 - UPPER ELEVATION - EAST FACE	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 24A Micro #: 194220-73 Analyst: WC HM #24 - 12" TILE BOILER #1 - UPPER ELEVATION - EAST FACE	TILE: NONE DETECTED COMPOUND: NONE DETECTED	3 % CELLULOSE 2 % FIBROUS GLASS Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 24B Micro #: 194220-74 Analyst: WC HM #24 - 12" TILE BOILER #1 - MID ELEVATION - EAST FACE	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 24C Micro #: 194220-75 Analyst: WC HM #24 - 12" TILE BOILER #1 - LOWER ELEVATION - EAST FACE	TILE: NONE DETECTED COMPOUND: NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER

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Technical Supervisor: 

6/2/2014

Date Reported

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BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



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 Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
 KERN POWER PLANT
 PROJECT NO. PGE 35613**
 (Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
 REANALYZED AND Layer Description REVISED PER
 CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
 Total Samples 83
 Date Sampled 05/28/2014
 Date Received 05/30/2014
 Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION

QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES

DOMINANT
OTHER MATERIALS

Client #: 25A Micro #: 194220-76 Analyst: WC HM #25 - 12" TILE GROUT BOILER #1 - UPPER - EAST FACE	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 25B Micro #: 194220-77 Analyst: WC HM #25 - 12" TILE GROUT BOILER #1 - MIDDLE - EAST FACE	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 25C Micro #: 194220-78 Analyst: WC HM #25 - 12" TILE GROUT BOILER #1 - LOWER - EAST FACE	NONE DETECTED	3 % CELLULOSE Matrix: ROCK FRAGMENTS, CARBONATE, Type: BINDER
Client #: 26A Micro #: 194220-79 Analyst: WC GR HM #26 - REFRACTORY BOILER #1 - UPPER ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 20% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 26B Micro #: 194220-80 Analyst: WC HM #26 - REFRACTORY BOILER #1 - UPPER ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:

Redacted

Technical Supervisor:

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM). Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite), and should be confirmed by TEM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

MICRO ANALYTICAL LABORATORIES, INC.

BULK ASBESTOS ANALYSIS - POLARIZED LIGHT MICROSCOPY (PLM)



1023
Redacted

RGA Environmental, Inc.
1466 66th Street
Emeryville, CA 94608

PROJECT:

**FORMER BOILER STRUCTURES
KERN POWER PLANT
PROJECT NO. PGE 35613**
(Report amended 6/2/2014. SAMPLE IDs. 13A - 13E & 20B
REANALYZED AND Layer Description REVISED PER
CUSTOMER REQUEST. Replaces report of 05/31/2014.)

Micro Log In **194220**
Total Samples 83
Date Sampled 05/28/2014
Date Received 05/30/2014
Date Analyzed 05/30/2014

ASBESTOS INFORMATION

SAMPLE IDENTIFICATION	QUANTITY (AREA %) / TYPES / LAYERS / DISTINCT SAMPLES	DOMINANT OTHER MATERIALS
Client #: 26C Micro #: 194220-81 Analyst: WC HM #26 - REFRACTORY BOILER #1 - MIDDLE ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 26D Micro #: 194220-82 Analyst: WC HM #26 - REFRACTORY BOILER #1 - MIDDLE ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:
Client #: 26E Micro #: 194220-83 Analyst: WC GR HM #26 - REFRACTORY BOILER #1 - LOWER ELEVATION - EAST FACE	REFRACTORY: NONE DETECTED SURFACE FIBROUS DEBRIS: 40% CHRYSOTILE ASBESTOS SURFACE FIBROUS DEBRIS (CONT.): 30% AMOSITE ASBESTOS	Matrix: BINDER, OTHER, MISCELLANEOUS. Type:

Technical Supervisor:

Redacted

6/2/2014

Date Reported

NVLAP Lab Code 101872-0. CA ELAP Certification #1037. Analyses use Polarized Light Microscopy (PLM), Micro Analytical SOP PLM-101 (Rev. Jan. 2014). Basic techniques follow the EPA Interim Method for Bulk Insulation Samples (1982), and EPA-600/R93-116 (1993). The 1993 method covers all types of bulk materials and is based on the 1982 Method, with improved analytical techniques for layered samples as required for NESHAP compliance. Asbestos is quantified by calibrated visual estimation. Detection limit is material dependent. Detection of asbestos traces (much less than 1%) may not be reliable or reproducible by PLM. Weight % cannot be determined by PLM. Asbestos with diameter below ~1 µm may not be detected by PLM. Absence of asbestos in dust, debris, and some compact materials, including floor tiles, cannot be conclusively established by PLM, and should be confirmed by Transmission Electron Microscopy (TEM). Tremolite-asbestos or actinolite-asbestos may be indistinguishable by PLM from some similar, non-regulated amphiboles (e.g. the "Libby Amphiboles" richterite and winchite). Reliable determination of asbestos percent at this level cannot be done by PLM. The lower quantitation limit (reporting limit) of PLM estimation is 1%. The Cal-OSHA definition of asbestos-containing construction material is 0.1% asbestos; however, reliable determination of asbestos percent at this level cannot be done by PLM estimation; PLM Point Counting or TEM weight percent analysis are recommended. Only dominant non-asbestos materials are indicated. Interferences may prevent detection of small asbestos fibers, and hinder determination of some optical properties. Sample heterogeneity is indicated by listing more than one distinct layer or material on the report. Layers are analyzed separately when feasible; if asbestos is detected, percentages are reported for individual layers. Interlayer contamination is possible among any layers in a sample. The notation ND (or "NONE DETECTED") indicates a result of "NO ASBESTOS DETECTED" in a homogeneous sample, or in all layers of a heterogeneous sample. Composite asbestos percentages from multiple layers are applicable only to wallboard / joint compound systems; compositing is based on customers' descriptions of material as "joint compound". Customers are solely responsible for identification and description of bulk materials listed on field forms. Laboratory descriptions may differ from those given by customers. Quality Control (QC): all results have been determined to be within acceptance limits prior to reporting. Samples that were reanalyzed are denoted by two sets of analyst initials. Unless otherwise stated herein, all samples were received in acceptable condition for analysis. This report must not be used to claim product endorsement by NIST or any U.S. Government agency. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.



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(510) 547-7771

ACM BULK SAMPLE DATA SHEET

PM - Redacted
Redacted

PM - Redacted
Redacted

Redacted

Redacted

Redacted

Redacted

PLM Analysis (Analyze all samples)

Stop Analysis at First Positive

Point Count Analysis (400-point)

PAGE 1 OF 6

194220

Project Name/Address/Building No.: Former Boiler Structures, Kern Power Plant

RGA Project #: PGE 3613

Sampled By: Redacted

Sampling Date: 5-28-14

Sample(s) Sent To: RGAL KMAL Other: _____

TAT: Rush 24Hrs 48Hrs 3-5 Days

E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

HM#	Material Description	Sample ID	Sample Location & Material Location	Quantity:
01	BOILER CURB MORTAR (WHITE)	1A	BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER	
		1B	BOILER #4 - UPPER ELEVATION - WEST FACE	
		1C	BOILER #4 - UPPER ELEVATION - WEST FACE - CENTER	
02	MISC TILE 4" X 10"	2A	BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER	
		2B	BOILER #4 - UPPER ELEVATION - WEST FACE - CENTER	
		2C	BOILER #4 - UPPER ELEVATION - WEST FACE - NW CORNER	
03	MISC. TILE 4" X 10" GROUT	3A	BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER	
		3B	BOILER #4 - UPPER ELEVATION - WEST FACE - CENTER	
		3C	BOILER #4 - UPPER ELEVATION - WEST FACE - NW CORNER	
04	12" TILE	4A	BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER	
		4B	BOILER #4 - UPPER ^{MID} ELEVATION - WEST FACE - CENTER	
		4C	BOILER #4 - LOWER ELEVATION - WEST FACE - CENTER	
05	12" TILE GROUT	5A	BOILER #4 - UPPER ELEVATION - WEST FACE - SW CORNER	
		5B	BOILER #4 - UPPER ^{MID} ELEVATION - WEST FACE - CENTER	
		5C	BOILER #4 - LOWER ELEVATION - WEST FACE - SE CORNER	

Relinquished By: Redacted Signature: Redacted Date/Time: 5-30-14

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Received By: _____ Signature: _____ Date/Time: _____



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ACM BULK SAMPLE DATA SHEET

Redacted

- PLM Analysis (Analyze all samples)
- Stop Analysis at First Positive
- Point Count Analysis (400-point)

PAGE 2 OF 6

194220

Project Name/Address/Building No.: Former Boiler Structures Kern Boiler Plant

RGA Project #: PLAE 55613 Sampled By: Redacted

Sample(s) Sent To: RGA MAL Other: Sampling Date: 5/25/14

TAT: Rush ✓ 24Hrs 48Hrs 3-5 Days

E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

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HM#	Material Description	Quantity:
Sample ID	Sample Location & Material Location	
06	Boiler #4 - Upper Elevation - South Face	
HM# 07	Material Description: REFRACTORY	
Sample ID	Sample Location & Material Location	Quantity:
7A	Boiler #4 - Upper Elevation - South Face	
7B	Boiler #4 - Middle Elevation - South Face	
7C	Boiler #4 - Middle Elevation - " "	
HM# 07	Material Description: CONTINUE	
Sample ID	Sample Location & Material Location	Quantity:
7D	Boiler #4 - Lower Elevation - South Face	
7E	Boiler #4 - Lower Elementary - " "	
HM# 08	Material Description: BOILER CURB MORTAR	
Sample ID	Sample Location & Material Location	Quantity:
8A	Boiler #2 - Upper Elevation - East Face - NE Corner	
8B	Boiler #2 - " " " " " "	
8C	Boiler #2 - " " " " " "	
HM# 09	Material Description: MISC TILE 4" x 10"	
Sample ID	Sample Location & Material Location	Quantity:
9A	Boiler #2 - Upper Elevation - ^W FACE - NE Corner	
9B	Boiler #2 - Upper Elevation - ^W FACE - SE Corner	
9C	Boiler #2 - Upper Elevation - ^E FACE - SE Corner	

Relinquished By: Redacted Signature: Redacted Date/Time: 5-30-14

Received By: Signature: Date/Time: 5/30/14 10:17

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ACM BULK SAMPLE DATA SHEET

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PLM Analysis (Analyze all samples)

Stop Analysis at First Positive

Point Count Analysis (400-point)

PAGE 3 OF 6

194220

Project Name/Address/Building No.: FORMER BOILER STRUCTURES - KERN POWER PLANT

RGA Project #: PLG 35613

Sampled By: Redacted

Sampling Date: 5/26/14

Sample(s) Sent To: RGA MAL Other: _____

TAT: Rush 24Hrs 48Hrs 3-5 Days

E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

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HM#	Material Description	Sample ID	Sample Location & Material Location	Quantity:
10	MISC TILE 4" x 10" GROUT			
10A	BOILER # 2 - UPPER ELEVATION - EAST FACE - NE CORNER			
10B	BOILER # 2 - " " " - SE CORNER			
10C	BOILER # 2 - " " " - SE CORNER			
11	Material Description: 12" TILE			
11A	BOILER # 2 - UPPER ELEVATION - EAST FACE - CENTER			
11B	BOILER # 2 - MID ELEVATION " " - CENTER			
11C	BOILER # 2 - " " - CENTER			
12	Material Description: 12" TILE GROUT			
12C	BOILER # 2 - UPPER ELEVATION - EAST FACE - CENTER			
12B	BOILER # 2 - MID ELEVATION - EAST FACE - (N) SIDE			
12C	BOILER # 2 - LOWER ELEVATION - EAST FACE - CENTER			
13	Material Description: REFRACTORY			
13A	BOILER # 2 - UPPER ELEVATION - NORTH FACE -			
13B	BOILER # 2 - " UPPER ELEVATION - " " "			
13C	BOILER # 2 - " MIDDLE ELEVATION " - " " "			
13	Material Description: CONTINUED			
13D	BOILER # 2 - LOWER ELEVATION - NORTH FACE			
13E	BOILER # 2 - LOWER ELEVATION - " " "			

Relinquished By: Redacted Signature: Redacted Date/Time: 5-30-14

Received By: _____ Signature: _____ Date/Time: 5/30/14 10:17

Relinquished By: _____ Signature: _____ Date/Time: _____

Received By: _____ Signature: _____ Date/Time: _____



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ACM BULK SAMPLE DATA SHEET

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PLM Analysis (Analyze all samples)

Stop Analysis at First Positive

Point Count Analysis (400-point)

PAGE 4 OF 4

194220

Project Name/Address/Building No.: FORMER BOILER STRUCTURE - KERN BOILER PLANT

RGA Project #: PLG 35613 Sampled By: Redacted

Sample(s) Sent To: RGA MAL Other: _____ Sampling Date: 5/29/14

TAT: Rush 24Hrs 48Hrs 3-5 Days

E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

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HM#	Material Description	Sample ID	Sample Location & Material Location	Quantity:
14	WOOD BOILER CURB MORTAR			
14A	BOILER #3 - UPPER ELEVATION - (W) FACE - SW CORNER SECTION			
14B	BOILER #3 - " " " " " - CENTER SECTION			
14C	BOILER #3 - " " " " " - NW CORNER SECTION			
15	MISC BRICK			
15A	BOILER #3 - UPPER ELEVATION - (W) FACE - SW CORNER SECTION			
15B	BOILER #3 - UPPER ELEVATION - (W) FACE - CENTER SECTION			
15C	BOILER #3 - UPPER ELEVATION - (W) FACE - NW CORNER SECTION			
16	MISC BRICK GROUT			
16A	BOILER #3 - UPPER ELEVATION (W) FACE - SW CORNER SECTION			
16B	BOILER #3 - UPPER ELEVATION (W) FACE - CENTER SECTION			
16C	BOILER #3 - UPPER ELEVATION (W) FACE - (NW) CORNER SECTION			
17	BOILER MORTAR - LIGHT GRAY			
17A	BOILER #3 - MIDDLE ELEVATION			
17B	BOILER #3 - " " " "			
17C	BOILER #3 - " " " "			
18	12" TILE			
18A	UPPER BOILER #3 - UPPER ELEVATION - (W) FACE - (NW) CORNER			
18B	BOILER #3 - ^{MID} UPPER ELEVATION (W) FACE - SW CENTER			
18C	BOILER #3 - LOWER ELEVATION - (W) FACE - (SW) CORNER			

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PLM Analysis (Analyze all samples)

Stop Analysis at First Positive

Point Count Analysis (400-point)

PAGE 5 OF 6

194220

Project Name/Address/Building No.: FORMER BOILER STRUCTURES - KERN POWER PLANT

RGA Project #: PGE 35613 Sampled By: Redacted

Sample(s) Sent To: RGA MAL Other: _____ Sampling Date: 5-29-14

TAT: Rush 24Hrs 48Hrs 3-5 Days

E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

HM#	Material Description	Sample ID	Sample Location & Material Location	Quantity:
19	12" TILE CAROUT			
5b		19A	BOILER #3 - UPPER ELEVATION - (W) FACE	
5f		19B	BOILER #3 - MIDDLE ELEVATION - " "	
5g		19C	BOILER #3 - LOWER ELEVATION - " "	
20	REFRACTORY			
59		20A	BOILER #3 - UPPER - (N) FACE	
60		20B	BOILER #3 - MIDDLE - " "	
6f		20C	BOILER #3 - MIDDLE - " "	
20	CONTINUE			
62		20D	BOILER #3 - LOWER - (N) FACE	
63		20E	BOILER #3 - LOWER - (N) FACE	
21	BOILER CURB MORTAR			
64		21A	BOILER #1 - UPPER ELEVATION - (E) FACE - SE CORNER	
65		21B	BOILER #1 - " - (E) FACE - CENTER	
66		21C	BOILER #1 - " - (E) FACE - NE CORNER	
22	MISC. BRICK 4"x10"			
67		22A	BOILER #1 - UPPER ELEVATION - (E) FACE - SE CORNER	
68		22B	BOILER #1 - " - (E) FACE - CENTER	
69		22C	BOILER #1 - " - (E) FACE - LOWER	

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 Received By: _____ Signature: _____ Date/Time: _____



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- PLM Analysis (Analyze all samples)
- Stop Analysis at First Positive
- Point Count Analysis (400-point)

PAGE 6 OF 6
194220

Project Name/Address/Building No.: FORMER BOILER STRUCTURE KERN POWER PLANT

RGA Project #: PLGE 35613 Sampled By: Redacted Sampling Date: 5-29-14

Sample(s) Sent To: RGA MAL Other: TAT: Rush 24Hrs 48Hrs 3-5 Days

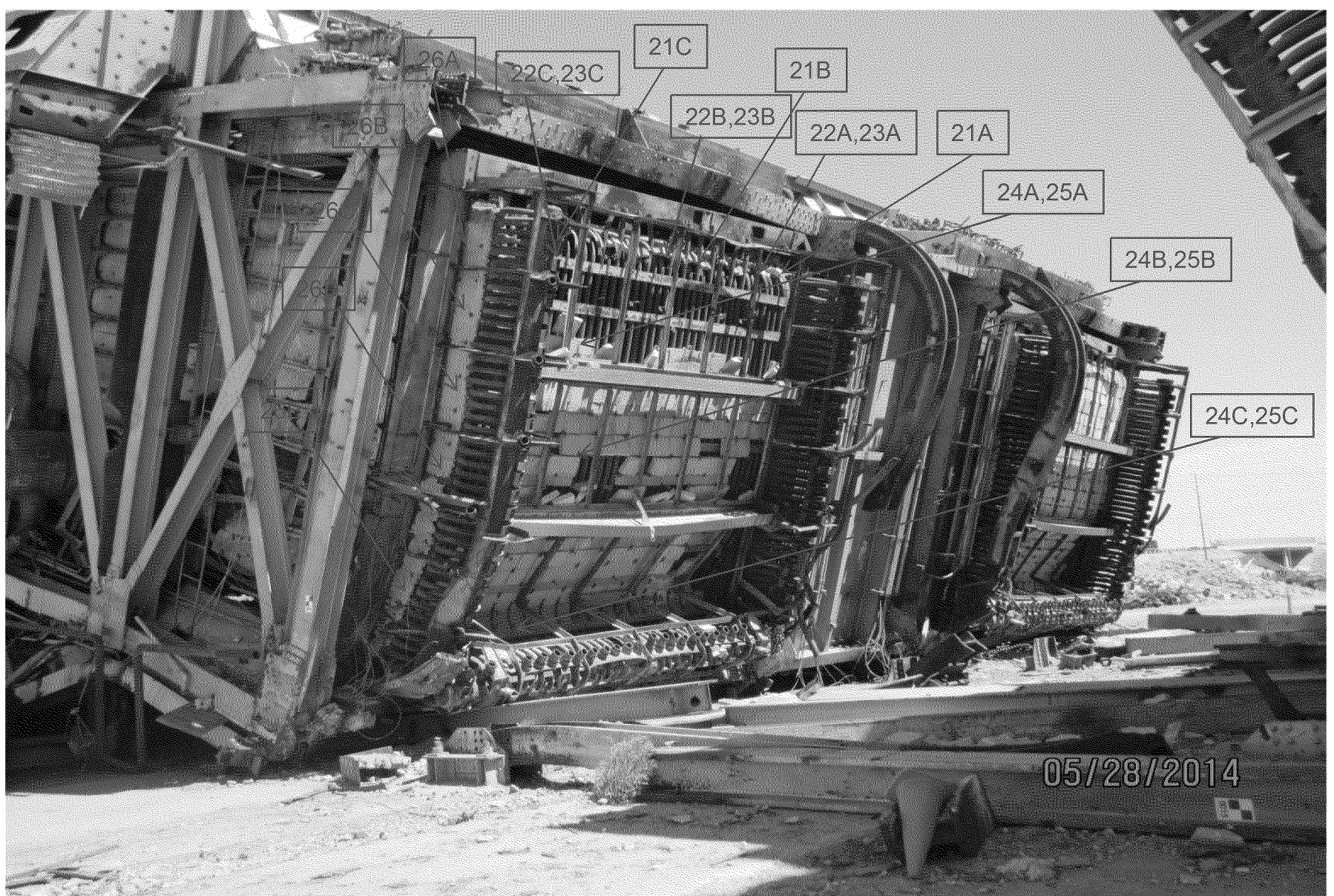
E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)


HM#	Material Description	Sample ID	Sample Location & Material Location	Quantity:
70	MISC. BRICK GROUT	23A	BOILER #1 - UPPER ELEVATION - (E) FACE - (SW)	
71		23B	BOILER #1 - " " - (E) FACE - (CENTER)	
72		23C	BOILER #1 " " - (E) FACE -	
	MATERIAL DESCRIPTION: 12" TILE			
		73	24A BOILER #1 - UPPER ELEVATION - (E) FACE	
74		24B	BOILER #1 - MIDDLE ELEVATION - (E) FACE	
75		24C	BOILER #1 - LOWER ELEVATION - (E) FACE	
	MATERIAL DESCRIPTION: 12" TILE GROUT			
76		25A	BOILER #1 - UPPER - (E) FACE	
77		25B	BOILER #1 - MIDDLE - (E) FACE	
78		25C	BOILER #1 - LOWER - (E) FACE	
	MATERIAL DESCRIPTION: REFRACTORY			
79		26A	BOILER #1 - UPPER ELEVATION - (E) FACE	
80		26B	BOILER #1 - UPPER ELEVATION - " "	
81		26C	BOILER #1 - MIDDLE ELEVATION - " "	
	MATERIAL DESCRIPTION: CONTINUE			
82		26D	BOILER #1 - MIDDLE ELEVATION - (E) FACE	
83		26E	BOILER #1 - LOWER ELEVATION - " "	

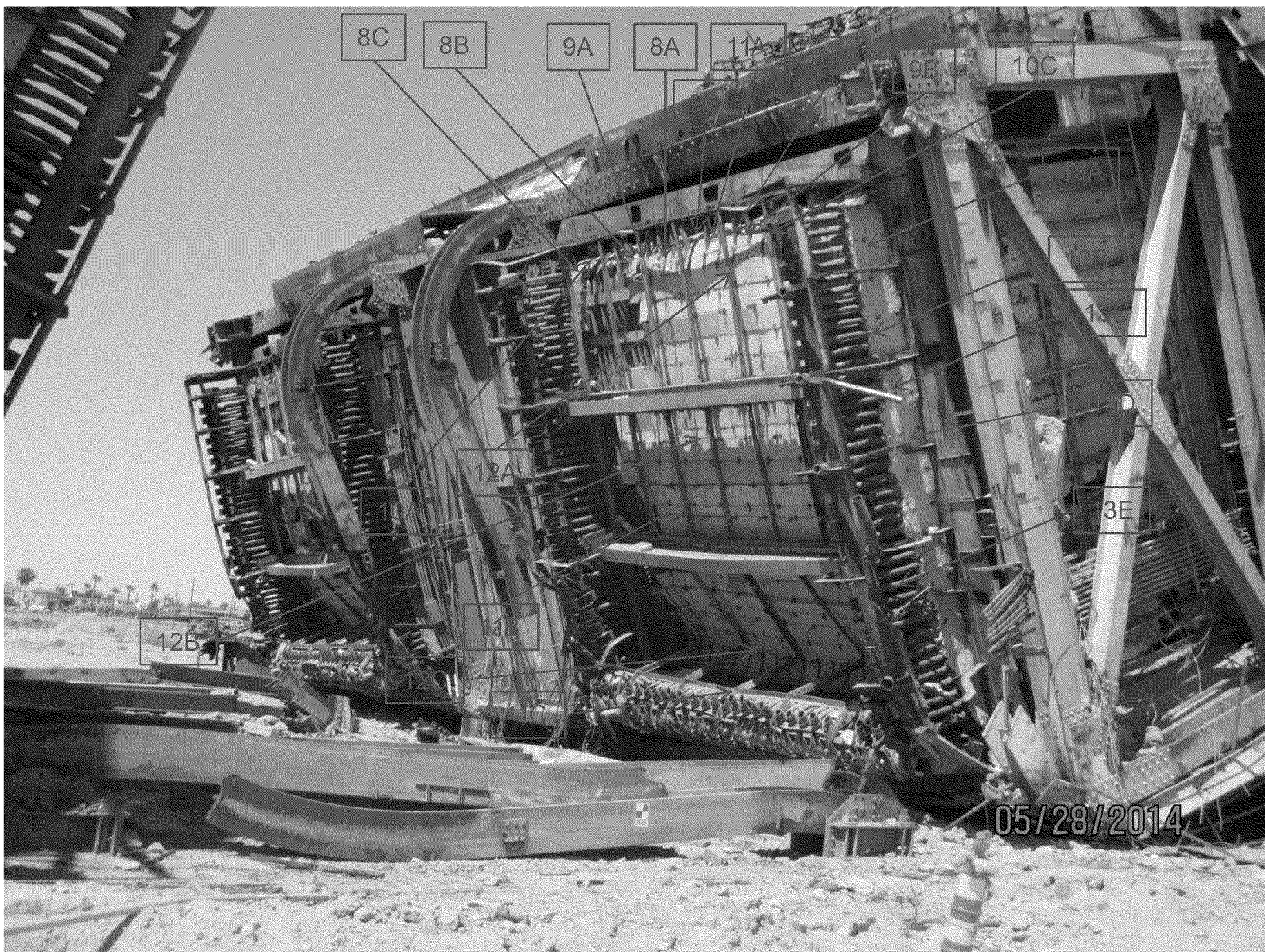
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 Received By: _____ Signature: _____ Date/Time: 5/30/14 10:17
 Relinquished By: _____ Signature: _____ Date/Time: _____
 Received By: _____ Signature: _____ Date/Time: _____


Appendix 2

Sample Location Figures




	Sample Location Figure	Kern Power Plant – Boiler 1 Bakersfield, California		
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 1




	Sample Location Figure	Kern Power Plant – Boiler 2 Bakersfield, California		
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 2



	Sample Location Figure	Kern Power Plant – Boiler 3 Bakersfield, California		
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 3



	Sample Location Figure	Kern Power Plant – Boiler 4 Bakersfield, California		
	Date: 6/2/14	PROJECT NO.:	PGE35613	Figure 4

Appendix 3

Positive Asbestos Sample Photos

Kern Power Plant - Positive Asbestos Sample Photos



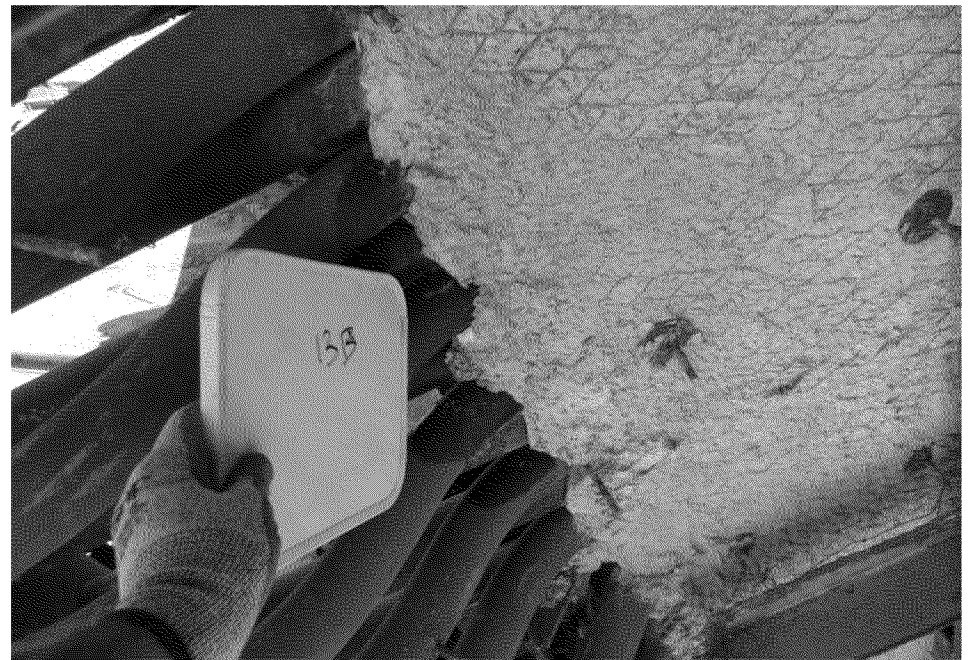
Sample 10C Misc. Tile Grout - Boiler 2



Sample 11A 12 Inch Tile - Boiler 2



Sample 13A Refractory - Boiler 2



Sample 13B Refractory - Boiler 2

Kern Power Plant - Positive Asbestos Sample Photos



Sample 13C Refractory - Boiler 2



Sample 13D Refractory - Boiler 2



Sample 13E Refractory - Boiler 2



Sample 20B Refractory - Boiler 3

Kern Power Plant - Positive Asbestos Sample Photos



Sample 26A Refractory - Boiler 1



Sample 26B Refractory - Boiler 1

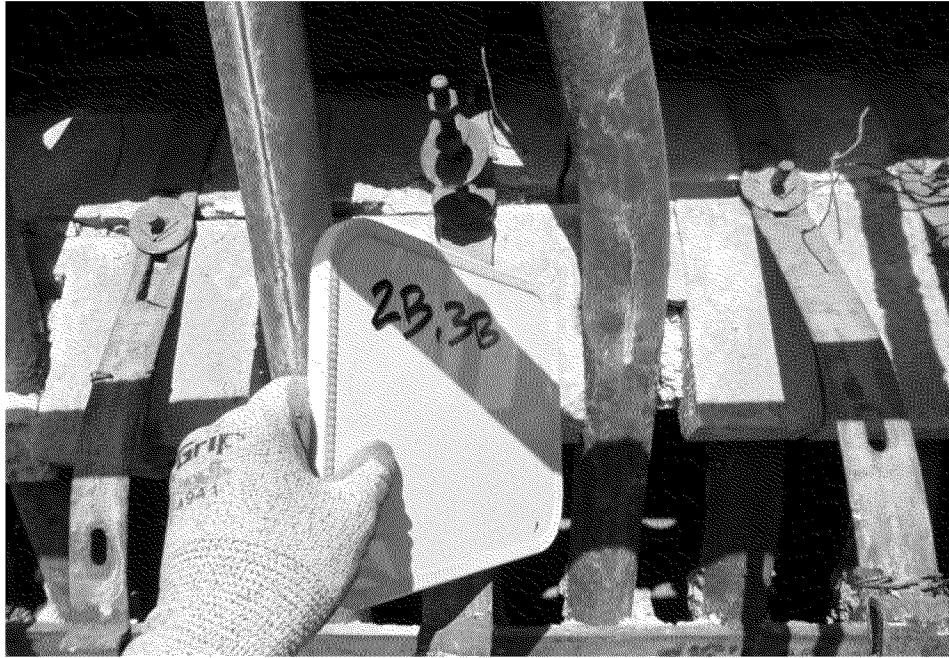


Sample 26C Refractory - Boiler 1



Sample 26D & 26E Refractory - Boiler 1

Kern Power Plant - Positive Asbestos Sample Photos



Sample 3B Misc. Tile Grout - Boiler 4



Sample 5A 12 Inch Tile Grout - Boiler 4



Sample 5C 12 Inch Tile Grout - Boiler 4



Sample 7E Refractory - Boiler 4

Kern Power Plant - Positive Asbestos Sample Photos



Sample 8A Boiler Mortar - Boiler 2



Sample 9A Misc. Tile - Boiler 2



Sample 9B Misc. Tile - Boiler 2



Appendix 4

Site Inspector Certificates

