

I.E. Samp.
(Completed)

AIR SAMPLE RECORD

FIELD DATA

Plant NORTH Lept 3 Department - Date Sampled 1

Operation REPAIR BLACK INSULATION TURBINE #3

Operator's Name SSG Job Title

Sampling For ASBESTOS

Sampling Location: Bldg. TURBINE Column # 3

(CHECK:) ☒ Breathing Zone:

☒ Area:

Pump # 3 Rotameter Setting 7 Flow Rate 1.96 LPM LPM or CFM

Type of Collector:

Cassette No. A-16 Impinger No.

Charcoal Tube No. Other

Impinger: Sampling Solution Vol. ml

Rinse Solution Vol. ml

TIME:

START 11:25 (AM) (PM) STOP 3:00 (AM) (PM) 2 hr 35 sec min.

(AM) (PM) (AM) (PM)

Lo-Vol Pump Count # Lo-Vol Pump Count # not count

REMARKS: SPRINKLED ASBESTOS LIGHTLY W/WATER. PRECAUTIONS

NOT ENOUGH WET FLANK AREA & TURBINE ENGINE JUST IN

SCENE DUST. VENT FANS ON.

Type of Analysis: Sampled by: G. P. JAMES

Sketch, Diagram, Photographs
(Use other side if necessary)

03254208

AIR SAMPLE RECORD
FIELD DATA

Plant NORTHLOOP # 3 Department — Date Sampled 4

Operation REMOVING BLACK INSULATION

Operator's Name _____ SS# _____ Job Title _____

Sampling For ASBESTOS

Sampling Location: Bldg. TURA ENCLOSURE Column # 3

(CHECK:) _____ Breathing Zone: _____

☒ Area: _____

Pump # 11 Rotameter Setting ORANGE Flow Rate 2.00 LFM or CFM

Type of Collector: _____

Cassette No. W-8 Impinger No. _____

Charcoal Tube No. _____ Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME: _____

START 7:30 (AM) (PM) STOP 12:45 (AM) (PM) 5:15 not min.

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump Count # _____ Lo-Vol Pump Count # _____ not count

REMARKS: BLOCK BEING THROWN FROM TUNNEL AREA TO FLOOR, THIS

CAUSE INCREASE AMOUNT OF DUST FLYING, VENT FANS ON.

Type of Analysis: _____ Sampled by: S. E. Hunt

Sketch, Diagram, Photographs
(Use other side if necessary)

I.N. Sample No. _____
(Completed by I.N.L. Sec)

100400-8001

AIR SAMPLE RECORD

FIELD DATA

Plant NORTHLOOP #3 Department _____ Date Sampled 1

Operation CLEANING AREA OF BLOCK & DUST

Operator's Name _____ SS# _____ Job Title _____

Sampling For ASBESTOS

Sampling Location: Bldg. TURB ENCLOSURE Column # 3

(CHECK:) _____ Breathing Zone: _____

☒ Area: _____

Pump # 11 Rotameter Setting ORANGE Flow Rate 2.00 LPM or CFM

Type of Collector:

Cassette No. W-20 Impinger No. _____

Charcoal Tube No. _____ Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME:

START 1:00 (AM) (PM) STOP 3:20 (AM) (PM) net min.

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump Count # _____ Lo-Vol Pump Count # _____ net count

REMARKS: ALL BLOCK OFF ENGINE. CLEANING AREA WITH

VACUUM AND SOME BRUSHING. VENT VANS ON

Type of Analysis: _____ Sampled by: S. L. Truitt

Sketch, Diagram, Photographs
(Use other side if necessary)

03254210

Completed by T.H.I.

MOB-0004003

AIR SAMPLE RECORD

FIELD DATA

Plant NORTHLOOP #3 Department _____ Date Sampled _____

Operation _____

Operator's Name H. MILESAP SS# _____ Job Title MW

Sampling For _____

Sampling Location: Bldg. _____ Column # _____

(CHECK:) _____ Breathing Zone: _____

_____ Area: _____

Pump # 11 Rotameter Setting 400 Flow Rate 2.00 LPM or CPM

Type of Collector:

Cassette No. W-33

Impinger No. _____

Charcoal Tube No. _____

Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME:

START 11:00 (AM) (PM) STOP 11:55 (AM) (PM) net min.

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump
Count # _____

Lo-Vol Pump
Count # _____

net count

REMARKS: _____

Type of Analysis: _____ Sampled by: _____

Sketch, Diagram, Photographs
(Use other side if necessary)

03254211

4471-004405

FIELD DATA

03254212

I.H. Sample No. _____
(Completed by I.H.L. Secy)

HHBB-0044007

AIR SAMPLE RECORD

FIELD DATA

Plant NOR. MILL #3 Department _____ Date Sampled 5

Operation _____

Operator's Name J. GALE SSN _____ Job Title M.W.

Sampling For _____

Sampling Location: Bldg. _____ Column # _____

(CHECK:) _____ Breathing Zone: _____

_____ Area: _____

Pump # 14 Rotameter Setting 5 Flow Rate 2.01 LPM or CFM

Type of Collector: _____

Cassette No. W-1

Impinger No. _____

Charcoal Tube No. _____

Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME:

START 10:15 (AM) (PM) STOP 11:50 (AM) (PM) 1:25 sec min.

_____ (AM) (PM)

_____ (AM) (PM)

Lo-Vol Pump
Count # _____

Lo-Vol Pump
Count # _____ not count

REMARKS: _____

Type of Analysis: _____ Sampled by: _____

Sketch, Diagram, Photographs
(Use other side if necessary)

03254213

L.H. Sample No. _____
(Completed by I.H.L. Key.)

AIR SAMPLE RECORD

FIELD DATA

Plant NORTH LIMA #3 Department _____ Date Sampled 4/14/79

Operation _____

Operator's Name H. MILLER SS# _____ Job Title MW

Sampling For _____

Sampling Location: Bldg. 3 Column # _____

(CHECK:) ☒ Breathing Zone: ATTACHED TO CLOTHING

Area: _____

Pump # 11 Rotameter Setting ORANGE Flow Rate 2.00 LPM or CFM

Type of Collector: _____

Cassette No. 14-37 Impinger No. _____

Charcoal Tube No. _____ Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIDE: _____

START 12:55 (AM) (PM) STOP 3:15 (AM) (PM) 2:20 not used

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump Count # _____ Lo-Vol Pump Count # _____ not count

REMARKS: RUNNING DOWN AREA WITH AIR HOSE VENT FANS

RUNNING POSSIBLE EXCESSIVE AMOUNT ON FILTER.

Type of Analysis: _____ Sampled by: S. J. Truitt

Sketch, Diagram, Photographs _____
(Use other side of card)

03254214

AIR SAMPLE RECORD

FIELD DATA

110700-0000

Plant NORTHLOOP # 3 Department _____ Date Sampled 4

Operation _____

Operator's Name _____ SS# _____ Job Title _____

Sampling For _____

Sampling Location: Bldg. _____ Column # _____

(CHECK:) _____ Breathing Zone: _____

✓ Area: COLUMN # 4

Pump # 11 Rotameter Setting ORANGE Flow Rate 2'00 LPM or CFM

Type of Collector: _____

Cassette No. W-12 Impinger No. _____

Charcoal Tube No. _____ Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME:

START 7:15 (AM) (PM) STOP 2:45 (AM) (PM) 7:30 not used

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump Count # _____ Lo-Vol Pump Count # _____ not used

REMARKS: MONITORED AREA WHILE CUTTING OFF METAL CLATS

THAT HAD OLD INSULATION. ALSO STARTED PAINTING TOP HALF

OF STEAM ENGINE W/ ANV.M. PAINT TO SEE ANY RUST LEFT ON MET.

Type of Analysis: _____ Sampled by: S. L. Smith

Sketch, Diagram, Photographs
(Use other side if necessary)

RESULTS

03254215

AIR SAMPLE RECORD

FIELD DATA

HHB-004,013

Plant NORTHLOOP # 3 Department _____ Date Sampled _____

Operation _____

Operator's Name _____ SS# _____ Job Title _____

Sampling For _____

Sampling Location: Bldg. 3 Column 4

(CHECK:) _____ Breathing Zone: _____

☒ Area: _____

Pump # 14 Rotameter Setting 5 Flow Rate 2.01 LPM or CFM

Type of Collector: _____

Cassette No. W-39 Impinger No. _____

Charcoal Tube No. _____ Other _____

Impinger: Sampling Solution _____ Vol. _____ ml

Rinse Solution _____ Vol. _____ ml

TIME:

START 8:00 (AM) (PM) STOP 3:15 (AM) (PM) 7:15 (AM) (PM)

_____ (AM) (PM) _____ (AM) (PM)

Lo-Vol Pump

Count # _____

Lo-Vol Pump

Count # _____ net count

REMARKS: REMOVING TURBINE CYL BOLTS. TOP HALF OF UNIT

HAS BEEN REPAINTED TO ASSURE ONLY REMAINING DUST. VENT

EQNS ON

Type of Analysis: _____ Sampled by: G. L. Turner

Sketch, Diagram, Photographs
(Use other side if necessary)

03254216

SUMMARY OF ASBESTOS MONITORING
AT TUCSON ELECTRIC POWER COMPANY
NORTH LOOP - TURBINE NO. 3, APRIL 17 - 20, 1979

BEST AVAILABLE COPY

<u>SAMPLE DATE</u>	<u>SAMPLE NO.</u>	<u>SAMPLING TIME HRS:MIN</u>	<u>SAMPLE VOLUME CF**</u>	<u>FIBERS/ FILTER</u>	<u>FIBERS/L</u>
4/17/79	W-15	3:35	421,000	7,130	0.017
4/18/79	W-8	5:15	630,000	10,300	0.017
	W-20	2:20	280,000	5,700	0.020
4/19/79	W-33*	0:35	110,000	55,600	0.51
	W-27	2:25	291,000	319,000***	1.1
	W-1	1:35	191,000	17,700	0.093
	W-37	2:20	280,000	345,000***	1.2
4/20/79	W-12	7:30	900,000	25,700	0.029
	W-39	7:15	874,000	10,000	0.011

* Assumed as filter label read W-23 while field data sheet specified W-33.

** Volumes calculated from field data sheets prepared by G. L. Truitt.

*** Filters are very heavily loaded.

03254206

HWBB-00043995

Invoice for Analysis of Asbestos Fibers for Samples
Collected at North Loop - Turbine No. 3 from
April 17 - 20, 1979.

BEST AVAILABLE COPY

Laboratory Fees - 9 filters x \$25/filter

\$225.00

Please remit \$225.00 to:

James O. Jackson, Ph.D.
8358 N. Dawn Place
Tucson, Arizona 85704

03254207

EVALUATION OF ASBESTOS EXPOSURES
AT THE NORTH LOOP TURBINE NUMBER 1 FACILITY
FROM MARCH 27 THROUGH APRIL 11, 1979

Prepared for
TUCSON ELECTRIC POWER COMPANY

by
James O. Jackson, Ph.D., CIH

April 30, 1979
Tucson, Arizona

03254218

The recent activities at the North Loop No. 1 Gas Turbine have been evaluated for asbestos fiber exposure to workers performing various tasks. Their activities and tasks encompassed removing asbestos-containing baskets, pads and some block material in order to examine the baskets, turbine blades, etc. for possible defects and/or missing parts from the just-accomplished turbine overhaul. Sampling was performed to maximize subsequent data analysis to allow calculation of not only full shift exposure patterns but also to evaluate specific job tasks. All time-weighted average, full shift exposures as well as specific calculated job tasks did not exceed the OSHA asbestos standards, however, the concentrations observed are above the 0.1 fiber cc level suggested by OSHA for instituting medical monitoring. Specific recommendations are presented for future turbine overhauls and the monthly maintenance procedures with respect to handling asbestos-containing materials, particularly when such material is reaffixed as occurred in this study.

INTRODUCTION

In conjunction with Westinghouse health and safety representatives at both the corporate and divisional levels, an evaluation of asbestos exposure during activities at the North Loop No. 1 turbine was requested by Tucson Electric and Electric Company (now Tucson Electric Power Company). In addition, comments and recommendations were requested concerning the observed work practices by Westinghouse as well as those projected for Tucson Electric Power Company (TEPCO) employees.

STUDY DESIGN

In order to maximize the sampling performed during this study, all monitoring data were acquired in as cost-effective a manner as possible. Time-weighted average employee exposures and area monitoring were calculated with several assumptions that are detailed in a latter section. Also, it was purposefully planned that each distinguishable task involving possible asbestos exposure be evaluated separately. This effort would also assist defining specific tasks for future investigation and sampling for the asbestos ceiling standard of 10 fibers per cubic centimeter.

Furthermore, two additional factors impinged directly on this study design. First, there was uncertainty at the beginning of sampling as to the extent of work to be performed on the turbine and second, the union employees were somewhat unfamiliar with the newly revised work practices.

ASBESTOS SAMPLING AND ANALYTICAL PROCEDURES

All samples were collected with calibrated personal sampling pumps operating at approximately 1 liter per minute. The pumps were calibrated on March 26, 1979 just before the study began and the calibration reconfirmed at the end of the study. A calibration quality control check was performed daily before and after each sampling period. Flow rates were also checked frequently during each sampling period and only very minor adjustments were made during the initial stages of sampling. This is a fairly common occurrence with all flow battery-powered pumps. Asbestos fibers were collected size-based on 0.3 μ m Millipore, 0.3 μ m pure size filters in three-place samplers.

03254219

6. It is not necessary for security personnel to wear air-purifying respirators when making their evening rounds during turbine overhaul activities similar to those described in this report. Daytime rounds should also not require respiratory equipment unless work practices deteriorate or future air sampling results indicate the contrary.

RECOMMENDATIONS

Based on the findings of this study and as a result of discussions with Tucson Electric Power Company and Westinghouse employees, the following recommendations are offered:

1. Asbestos-containing materials such as blankets and blocks that are used as insulation on the gas turbines should be replaced with asbestos-free materials. Fiberglass is used as a replacement by both Westinghouse and Arizona Power for example. Unfortunately, fiberglass is not without some health hazard of its own. Attached as Appendix V is a recent review article on fiberglass that should give you some insight into current thinking on this material. Also, a section of the NIOSH Criteria Document on fiberglass is enclosed.
2. A medical monitoring program as described in 29 CFR 1910.1001 should be established. A copy of the OSHA regulation on asbestos is enclosed for your reference as Appendix VI.
3. An asbestos monitoring program should be instituted to ensure that employee work practices are equal to or hopefully exceed those observed in this study. It is encouraging that the TEPC Safety Department has just purchased three MSA Model 5 personal sampling pumps and this action certainly constitutes a commitment to begin the monitoring plan. Periodic personal sampling should emphasize the blanket stripping and refitting tasks as well as any removal of block material. Short-term exposure levels of approximately 15-minute duration collected at perhaps 2 lpm or greater, should be acquired also to ensure that asbestos ceiling value is not exceeded.
4. All blankets, blocks and any other asbestos-containing materials that are removed and to be refitted, should be painted as described earlier in this report. This activity, while time-consuming, appears to cut down dust generation.
5. An asbestos respiratory and protective clothing program should continue to be available to employees until such time as a sufficient data base and good work practices show that asbestos exposures are minimized.
6. Employee work practices must be re-evaluated in light of these findings. Specific stripping and removal procedures should be studied and bagging of materials, wet clean-up methods and any other effective dust suppression techniques implemented.

James O. Jackson, Ph.D.
8358 N. Dawn Place
Tucson, Arizona 85704
May 10, 1979

Mr. Al Warner
Manager, Power Production
Tucson Electric Power Company
P.O. Box 711
Tucson, AZ 85702

BEST AVAILABLE COPY

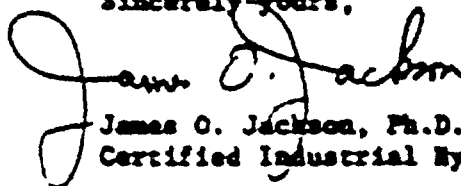
Dear Mr. Warner:

Enclosed are the results from the asbestos monitoring at the North Loop Turbine No. 3 from April 17 - 20, 1979. These samples were collected by Mr. G. L. Truitt of Westinghouse. I have also enclosed the original field sampling data sheets for your files.

An invoice for the analysis of asbestos fibers is attached. All filters were examined by phase-contrast microscopy at 400x, counting all fibers with an aspect ratio of 3:1. Except for samples W-27 and W-37, 100 fields were counted. The two exceptions were heavily loaded and therefore only 30 fields were examined.

Again, it is a pleasure to be of assistance to you and I look forward to helping you attain your goal of providing a healthful and safe working place for your employees.

Sincerely yours,



James O. Jackson, Ph.D.
Certified Industrial Hygienist

mkc

RECEIVED
JUN 11 1979

03254205
TUCSON ELEC. POWER CO.

fill
I.H. Sample No. 66-30
(Completed by I.H.L. Secy.)

HA88-0035427

AIR SAMPLE RECORD

FIELD DATA

Plant East Pittsburgh Department LRI Date Sampled 5-30-74

Operation _____

Operator's Name James McKenna SSN 161-38-1141 Job Title Asst. A.E.C.

Sampling for Asbestos

Sampling Location: Bldg. E-5-A Column # 56 East

(CHECK:) ☒ Breathing Zone: _____

Area: _____

Pump # 16 Rotameter Setting 6 Flow Rate 2.15 LPM or CFM

Type of Collector: 9

Cassette No. 11-~~25~~ Charcoal Tube No. _____

Impinger No. _____ Other _____

Impinger: Sampling Solution _____ Vol _____ ml

Rinse Solution _____ Vol _____ ml

START 9:30 (AM) (PM) STOP 10:30 (AM) (PM) 60 sec min.

_____ (AM) (PM) Vol $\frac{1.15}{129.00}$

REMARKS: Putting asbestos gaskets on band saw + job saw
Column 56 East Section E5A. (W) MATL No 4225198.

Sampled by T. J. King - J. H. L. Secy

Sketch, Diagram, Photographs
(Use other side if necessary)

fibers/m³ : $\frac{AN}{PV} = \frac{255 \times 16}{100 \times 129 \times 3.48} = .30$ fibers/m³ Results 0.30 fibers/m³ for 1 hr.