

JOHN A. JURGIEL & ASSOCIATES, INC.

Industrial Hygiene Consultants

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ST. LOUIS, MISSOURI 63146
(314) 878-8666

January 12, 1987

Mr. Bill Cunningham
Industrial Hygiene Manager
Shell Oil Co.
PO Box 262
Wood River, IL 62095

Dear Bill:

An airborne asbestos survey was conducted on January 3, 1987. Asbestos containing materials were removed from a process line on the west vacuum flasher furnace. A 7-man crew comprised of Shell Insulators performed this removal project.

A total of 8 airborne samples were collected during the removal project. Personnel samples ranged from 0.01 - 0.26 fibers per cubic centimeter (f/cc). One sample did exceed the Occupational Safety and Health Administration (OSHA) Asbestos Standard 1926.55(c) of 0.2 f/cc. Personnel were equipped with half mask ~~Suvinair~~ air, and Mine Safety Appliance (MSA) full and half mask respirators. A high efficiency particulate filter was the selected cartridge. Additional protective equipment consisted of disposable coveralls and gloves. Three area samples collected at the perimeter of the controlled area indicated airborne fibers below detectable limits of analysis (i.e. less than 0.01 f/cc).

The following conditions attributed to elevated airborne fiber concentrations during removal: 1) the colder temperatures (29 degrees F) minimized wetting techniques, 2) the 7-man crew removed asbestos at a higher than normal rate, and 3) the lack of a negative air pressure machine while working in an enclosure. However, a negative pressure is limited in its ability to reduce personnel exposure in an ~~enclosed~~ enclosure. Work practices and proper wetting of asbestos material are by far more effective control measures.

Please call if you have any questions regarding this report.

Very truly yours,


for Stephen W. Hecht
Industrial Hygienist

Enc.

SWH/bsm

LAM 026682

ABS-056813

PLAINTIFF'S
EXHIBIT
8/1-572

← I.E. NOT USING
DELIBERATE
MOTIONS!!

Table 1 (continued)

*Sample obtained were blank corrected.

Method of Collection: Airborne samples were collected with MSA Model G, SKC 224-43, and Gilian HFS, 113A sampling pumps. This instrumentation was calibrated before and after survey. Sampling media consisted of an open-faced 25 millimeter 0.8 micron mixed cellulose ester filter.

Method of Analysis: Samples were analyzed in accordance with NIOSH asbestos fibers in air procedures, NIOSH 7400 Method.

LAM 026683

ABS-056814

TABLE 1
RESULTS OF PERSONAL AND PERIMETER MONITORING
FOR AIRBORNE ASBESTOS

Shell Oil Company
(DU-2 West Vacuum Flasher Furnace)
Wood River, Illinois

January 3, 1987

Sample #/Time -----	Employee/Description -----	Airborne Fiber Con- centration (f/cc) -----	8-hour TWA (f/cc) -----
WRMC 870103-1 0045-0225 0343-0515		0.24	0.10
WRMC 870103-2 0049-0226 WRMC 870103-7 0343-0515		1.0 0.31	0.26
WRMC 870103-3 0050-0225 0343-0515		0.034	0.01
WRMC 870103-4 0100-0520	Perimeter North of Abatement Area. Approx- imately 4 feet east of P-39046	<0.01	
WRMC 870103-5 0106-0521	Perimeter Northwest Corner of Abatement Area, Pump Alley	<0.01	
WRMC 870103-6 0112-	Perimeter South of Abatement Area. 9 Feet from East Furnace	Void	
WRMC 070103-8	Blank *	3 Fibers/ 100 Fields	

LAM 026684

f/cc - fibers per cubic centimeter
TWA = Time Weighted Average

ABS-056815

Norio

SHELL GARAGE MECHANIC

<.01

11/12/86

263 min

brake job - pickup
wet method.

NOT
TWA

MARIETTA

INDUSTRIAL Fire Proofing
UTILITY

.17 162 min

11/21/86

90 minute job
40ft 1/2" line

Calc
TWA = .06

Ind. F. P.

163 min. .1 11/21
90 min

CATALYTIC CONST. CO.
TANK FARM

.03 TWA actual

11/20

452 min

6 HR.
WORK.

Rain

LAM 026685

11/7

Y

.03

398 min

CAT. CONST.
MK-1

about

30 +
120
120

270 min.
ACTUAL EXPOSURE
TIME.

ABS-056816

11/7

MK-1

<.01 398 min.

120 min actual removal +
BALBING

(6)

12/9 .0127 462 min.

INSULATOR Shell

C AREA CHEM WAST

STRIPPING TAR PAPER wet, BAGGING

12/9 .0059 459

BLEACHER HOUSE

STRIP. asb. from TK 441 AM ONLY

12/9 .0005 463

SAME as AVALOS

12/9 .0018 468

SULFANATION PLANT

STRIP. KAWOOL CERAMIC Fiber during Turnaround

70 min in pm paint over asbestos insulation

TAR
PAPER

12/10 481 .0010

AM C-Area Chem Wast STRIP/BAG wet TAR paper

PM STRIP. asbestos on recovery line at oil separation
and at LOP

LAM 026686

12/10

475 .0039 12/10

2 1/2 hrs
ONLY

HOP Speciality House Stripping asb. Tar paper

NOT
TWP

12/10

.0033

482 min

AM
PM

SPEC. HOUSE STRIP. TAR PAPER

HOP AREA - SULFONATION PLANT
STRIP. SM. AMT ASBESTOS

ABS-056817



O-2801 (REV 3-85)

INDUSTRIAL HYGIENE SAMPLING FORM

**SENT TO
HEAD OFFICE**

12080

[illegible]

ABS-056818



SA
ING FORM

LAM 026688



1141. 2083

[illegible]

ABS-056820



ABS-056821



INDUSTRIAL HYGIENE
SAM. JNG FORM

SENT TO
HEAD OFFICE

FILE NO.

1H 342079

ANALYSIS REQUIRED

NAME EMPLOYEE SAMPLED	APC4	1 ☐ PERSONAL TWA	1 ☐ CHARCOAL TUBE	CODE	NAME	RESULT	UNIT
SOCIAL SECURITY NUMBER		2 ☐ PERSONAL-PEAK	2 ☐ FILTER (RESP)	400508	ASBESTOS	0.03	50 MG
EMPLOYEE NUMBER		3 ☒ AREA	3 ☒ FILTER (TOTAL)				20 MG/M ³
JEP OR AREA CODE		4 ☐ BLANK	4 ☐ IMPINGER				30 PPBV
JEP OR AREA CODE		5 ☐ BULK	5 ☐ PASSIVE DOSIMETER				70 % WT
JEP OR AREA CODE		6 ☐ LAB CONTROL	6 ☐ SILICA GEL				90 % VOL
JEP OR AREA CODE		7 ☐ SOURCE	7 ☐ PACKED TUBE				
JEP OR AREA CODE		8 ☐ PERSONAL TASK	8 ☐ _____				

EMPLOYER'S COMPANY	Steel	POSSIBLE INTERFERENCES/INSTRUCTIONS	
LOCATION (SHELL FACILITY OR OTHER)	E005	BAROMETER	30.0 IN HG
AREA/JNT DESCRIPTION	910570	TEMPERATURE	70 °F
OPERATING CONDITION/ OPERATION	35	WIND	Inside MPH
START TIME	1323	HUMIDITY	60 % RH

WORK TASK	Place addition to Charcoal ASBESTOS	SAMPLE NO.	870223-AK4	SAMPLED BY	Kellman SSA 4674
	8 ASBESTOS OPERATOR. Approx 12" upon the cutting head. Cutting generated visible residue of fibers on heads, swept residue by burn	DESCRIPTION OF COLLECTOR (MG, Lit No., Etc.)	0.8 MG of ASB	RETURN RESULTS TO	Kellman VME
	1338 Cutting started				
	1440 stop				

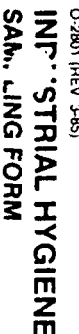
LAM 026691

INSTRUMENT TYPE	63113A	SERIAL NO.	5176	INFORMATION FOR TWA DETERMINATION	
CALIBRATION DATA		BY	REFERENCE/METHOD	DATE	
INITIAL	WMA	REFERENCE/METHOD	240		
FINAL					
COUNTER READING		VOLUME PER COUNT		FLOW RATE	
INITIAL					
FINAL					
NET					

COMMENTS
BUTANE ASBESTOS & ASBESTOS

CLASSIFIED BY	AKM/entad	DATE	3/23/87	DATA CLASSIFICATION	02
REVIEWED BY	AKM/entad	DATE	3/23/87		
SAFETY TIME	47	MIN	SAFETY VOLUME	138.8	LITERS
SAFETY TIME	47	MIN	SAFETY VOLUME	138.8	LITERS

ABS-056822



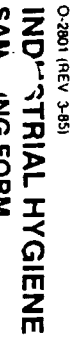
O-2801 (REV 3-85)

**SENT TO
HEAD OFFICE**

042078

[illegible]

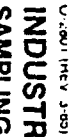
ABS-056823



INDUSTRIAL HYGIENE

[illegible]

ABS-056824



INDUSTRIAL HYGIENE SAMPLING FORM

[illegible]

ABS-056825

LAM 026694

INDUSTRIAL HYGIENE SAMPLING FORM

SENT TO
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IHL NO

NAME EMPLOYEE SAMPLED **Alberta Alburn** ANALYSIS REQUIRED **Asbestos** IHL 041511

SOCIAL SECURITY NUMBER **123456789** ☒ PERSONAL TWA ☐ PERSONAL PEAK ☐ FILTER (RESP) ☐ FILTER (TOTAL) ☐ PPMV ☐ MG ☐ FIBER

EMPLOYEE NUMBER **123456** ☐ BLANK ☐ IMPINGER ☐ PASSIVE DOSIMETER ☐ SILICA GEL ☐ PPMV ☐ MG ☐ FIBER

JEP OR AREA CODE **EN0000109** ☐ LAB CONTROL ☐ SOURCE ☐ PACKED TUBE ☒ FIBER, CC ☐ % VOL

JOB TITLE **Contract insulator** ☐ SOURCE ☐ PACKED TUBE ☐ DATE SAMPLED **12/19/86**

EMPLOYER'S COMPANY **Brown & Root** ☐ PERSONAL TASK ☐ POSSIBLE INTERFERENCES/INSTRUCTIONS

LOCATION (SHELL, FACILITY OR OTHER) **Ecos NMC** ☐ BAROMETER **30.09** IN HG ☐ TEMPERATURE **51** °F ☐ HUMIDITY **96** % RH

AREA/UNIT DESCRIPTION **910515** ☐ WIND **NE 9** MPH ☐ SAMPLE NO. **121986-5173** ☐ DESCRIPTION OF COLLECTOR (MG, LCM NO, ETC) **0.8 MCE** ☐ RETURN RESULTS TO **HILL & Sief NMC** ☐ PHONE **6789**

OPERATING CONDITION/OPERATION **06** ☐ WORK TASK **Removal of old metal casing and disposal** ☐ PPE **S7**

START TIME **7:50** ☐ SKETCH AREA (And/or Remarks)

Alberta Alburn ☐ INFORMATION FOR TWA DETERMINATION

1503 ☐ LENGTH OF SHIFT **480** MIN ☐ DOES THIS SAMPLE REPRESENT EXPOSURE OVER THE ENTIRE SHIFT ☐ YES ☐ NO

Calibration ☐ BY **CMC** ☐ REFERENCE METHOD **Buck** ☐ DATE **12/19/86** ☐ INCLUDE RESULTS FROM ADDITIONAL SAMPLES (ATTACHED) ☐ ASSIGN ZERO EXPOSURE FOR MINUTES OF SHIFT DURING PERIOD NOT SAMPLED

5173 ☐ COUNTER READING **RS** ☐ VOLUME PER COUNT **1860** ☐ FLOW RATE **1825** ☐ TWA CANNOT BE CALCULATED FROM THESE SAMPLES

INITIAL ☐ FINAL ☐ WAS A RESPIRATOR WORN DURING SAMPLE TO CONTROL EXPOSURE? ☒ YES ☐ NO

NET ☐ AVG. **1891** ☐ DID ANY SIGNIFICANT SKIN CONTACT OCCUR? ☐ YES ☒ NO

SAMPLING TIME **433** MIN ☐ SAMPLING VOLUME **818.8** LITERS

COMMENTS **gloves, disposable coveralls, boot covers, cartridge respirator with asbestos cartridge** ☐ CLASSIFIED BY **AK Menard 3/27/87** ☐ DATA CLASSIFICATION **01**

LAM 026695

ABS-056826



INDUSTRIAL HYGIENE SAMPLING FORM

SENT TO
HEAD OFFICE

HL NO. 041509

ANALYSIS REQUIRED

NAME EMPLOYEE SAMPLED	CODE	NAME	RESULT	UNIT
ASBESTOS	900508	Asbestos	0.04	100 PPMV

EMPLOYEE NUMBER	100 PPMV	50 MG
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EMPLOYEE NUMBER	20 MG/M ³	60 FIBER
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EMPLOYEE NUMBER	30 PPBV	70 % WT
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EMPLOYEE NUMBER	40 FIBER/CC	80 % VOL
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EMPLOYEE NUMBER	50 % G/m ³	
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EMPLOYEE NUMBER	DATE SAMPLED	12/19/86
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EMPLOYEE NUMBER	SHIFT	X 2 27-3:30
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EMPLOYEE NUMBER	PHONE	6789
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EMPLOYEE NUMBER	RETURN RESULT IS TO	HHH Safety NMC
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EMPLOYEE NUMBER	DESCRIPTION OF COLLECTOR (MFG., LOT NO., ETC.)	0.8 MCF
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EMPLOYEE NUMBER	SKETCH AREA (And/or Remarks)	
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EMPLOYEE NUMBER		
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EMPLOYEE NUMBER		
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HL NO. 041509

ANALYSIS REQUIRED

NAME EMPLOYEE SAMPLED	CODE	NAME	RESULT	UNIT
ASBESTOS	900508	Asbestos	0.04	100 PPMV

EMPLOYEE NUMBER	100 PPMV	50 MG
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EMPLOYEE NUMBER	20 MG/M ³	60 FIBER
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EMPLOYEE NUMBER	30 PPBV	70 % WT
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EMPLOYEE NUMBER	40 FIBER/CC	80 % VOL
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EMPLOYEE NUMBER	50 % G/m ³	
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EMPLOYEE NUMBER	DATE SAMPLED	12/19/86
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EMPLOYEE NUMBER	SHIFT	X 2 27-3:30
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EMPLOYEE NUMBER	PHONE	6789
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EMPLOYEE NUMBER	RETURN RESULT IS TO	HHH Safety NMC
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EMPLOYEE NUMBER	DESCRIPTION OF COLLECTOR (MFG., LOT NO., ETC.)	0.8 MCF
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EMPLOYEE NUMBER	SKETCH AREA (And/or Remarks)	
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EMPLOYEE NUMBER		
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EMPLOYEE NUMBER		
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LAM 026696

ABS-056827



INDUSTRIAL HYGIENE SAMPLING FORM

[illegible]

ABS-056828

INDUSTRIAL HYGIENE SAMPLING FORM

SENT TO
HEAD OFFICE

PH. NO.

041510

NAME EMPLOYEE SAMPLED		SAMPLE TYPE		COLLECTOR		ANALYSIS REQUIRED		UNIT	
SOCIAL SECURITY NUMBER		PERSONAL-TWA		1. CHARCOAL TUBE		CODE		NAME	
EMPLOYEE NUMBER		2. PERSONAL-PEAK		2. C. FILTER (RESP)		900008		Asbestos	
JEP OR AREA CODE		3. AREA		3. X. FILTER (TOTAL)				0.05	
JEP OR AREA CODE		4. BLANK		4. C. IMPINGER					
JOB TITLE		5. BULK		5. D. PASSIVE DOSIMETER					
Contract insulator		6. LAB CONTROL		6. C. SILICA GEL					
EMPLOYEE'S COMPANY		7. SOURCE		7. C. PACKED TUBE					
Brown + Root		PERSONAL-TASK		8. D. _____					
LOCATION (SHELL FACILITY OR OTHER)		POSSIBLE INTERFERENCES/INSTRUCTIONS							
Ecos NMC									
AREA UNIT DESCRIPTION		BAROMETER		TEMPERATURE		SAMPLE NO.		SAMPLED BY	
910575		29.71 IN HG		62 °F		122386-5142		RS	
OPERATING CONDITION/OPERATION		WIND		HUMIDITY		DESCRIPTION OF COLLECTOR (MFG., LOT NO., ETC.)		RETURN RESULTS TO	
06		S 6 MPH		93 % RH		0.8 MCE		Hlt + Safety NMC	
TIME		WORK TASK		PPE		SKETCH AREA (and/or Remarks)			
07:37		Algebra Plotment		ST					
		Removal of sheet metal covering and disposal		ST					
		Saturation of work surface		ST					
		Green removal of asbestos							
		Disposal of removed asbestos							
		All work done equally in above tasks							
908									
INSTRUMENT TYPE		SERIAL NO.		INFORMATION FOR TWA DETERMINATION		COMMENTS		DATE	
Calibration		5142		LENGTH OF SHIFT 480 MIN		Does this sample represent exposure over the entire shift? YES		3/27/87	
BY		REFERENCE METHOD		IF NO, COMPLETE THE FOLLOWING:		DOES THIS SAMPLE REPRESENT EXPOSURE OVER THE ENTIRE SHIFT? YES		3/27/87	
RS		Pick		• INCLUDE RESULTS FROM _____ ADDITIONAL SAMPLES (ATTACHED)		• ASSIGN ZERO EXPOSURE FOR _____ MINUTES OF SHIFT DURING PERIOD NOT SAMPLED.		3/27/87	
INITIAL		VOLUME PER COUNT		• TWA CANNOT BE CALCULATED FROM THESE SAMPLES.		Pump malfunctioned, only run 20 minutes		3/27/87	
11		12/25/86				Actual calculation work ended at 10:30		3/27/87	
FINAL		FLOW RATE				CLASSIFIED BY		DATE	
1737						Hlt + Safety		3/27/87	
INITIAL		INITIAL		WAS A RESPIRATOR WORN DURING SAMPLE TO CONTROL EXPOSURE?		REVIEWED BY		DATE	
1734		1730		YES		Hlt + Safety		3/27/87	
NET		AVG.		DID ANY SIGNIFICANT SKIN CONTACT OCCUR?		CLASSIFICATION		02	
90		15.7		YES					

LAM 026698

ABS-056829

[illegible]

LAM 026699

ABS-056830

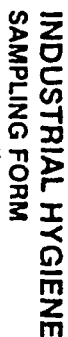


INDUSTRIAL HYGIENE

SENT TO

HL No. 7A1506

NAME		EMPLOYEE		SAMPLED		SAMPLE TYPE		COLLECTOR		ANALYSIS REQUIRED		UNIT	
EMPLOYEE		NAME		RESULT		CODE		NAME		RESULT		UNIT	
EMPLOYEE NUMBER		SOCIAL SECURITY NUMBER		1. PERSONAL TWA		1. CHARCOAL TUBE		2. FILTER (RESP)		3. FILTER (TOTAL)		4. PPMV	
EMPLOYEE NUMBER		EMPLOYEE NUMBER		2. PERSONAL PEAK		3. AREA		4. BLANK		5. FILTER (TOTAL)		6. MG/M3	
JEP OR AREA CODE		JEP OR AREA CODE		3. D BULK		4. D BULK		5. D PASSIVE DOSIMETER		6. D SILICA GEL		7. D PACKED TUBE	
JOB TITLE		JOB TITLE		6. D LAB CONTROL		7. D SOURCE		8. D PERSONAL TASK		9. D POSSIBLE INTERFERENCES/INSTRUCTIONS		10. D FIBER/C	
EMPLOYER COMPANY		EMPLOYER COMPANY		7. D SOURCE		8. D PERSONAL TASK		9. D POSSIBLE INTERFERENCES/INSTRUCTIONS		10. D FIBER/C		11. D FIBER/C	
LOCATION (SHELL FACILITY OR OTHER)		LOCATION (SHELL FACILITY OR OTHER)		E005 NMC		E005 NMC		E005 NMC		E005 NMC		E005 NMC	
AREA/UNIT DESCRIPTION		AREA/UNIT DESCRIPTION		910575		910575		910575		910575		910575	
OPERATING CONDITION OPERATION		OPERATING CONDITION OPERATION		06		06		06		06		06	
TIME		TIME		07:50		07:50		07:50		07:50		07:50	
START TIME		START TIME		07:50		07:50		07:50		07:50		07:50	
WORK TASK		WORK TASK		Asbestos Abatement at Hydrometallurgical		Asbestos Abatement at Hydrometallurgical		Asbestos Abatement at Hydrometallurgical		Asbestos Abatement at Hydrometallurgical		Asbestos Abatement at Hydrometallurgical	
PPE		PPE											
SAMPLE NO.		SAMPLE NO.		122686-5140		122686-5140		122686-5140		122686-5140		122686-5140	
DESCRIPTION OF COLLECTOR (Mg, Lot No., Etc.)		DESCRIPTION OF COLLECTOR (Mg, Lot No., Etc.)		0.8 MCE		0.8 MCE		0.8 MCE		0.8 MCE		0.8 MCE	
RETURN RESULTS TO		RETURN RESULTS TO		HHS Safety NMC		HHS Safety NMC		HHS Safety NMC		HHS Safety NMC		HHS Safety NMC	
SKETCH AREA (And/or Remarks)		SKETCH AREA (And/or Remarks)											
COMMENTS		COMMENTS		disposable coveralls + shoe covers, gloves		disposable coveralls + shoe covers, gloves		disposable coveralls + shoe covers, gloves		disposable coveralls + shoe covers, gloves		disposable coveralls + shoe covers, gloves	
MSA single respirator with GAC-High Efficiency		MSA single respirator with GAC-High Efficiency											
CLASSIFIED BY		CLASSIFIED BY		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17	
REVIEWED BY		REVIEWED BY		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17		ATM/MSA 3/21/17	
DATA CLASSIFICATION		DATA CLASSIFICATION		01		01		01		01		01	



ABS-056832

PHIL,
FY I.

Bill C.

ADD	KCC	JHB	PYS	PJW
HEALTH & SAFETY MANUFACTURING & TECHNICAL				
JAN'16 1987				
BJD				
CU For: Date:		File No:		

LAM 026681

ABS-056812