



LAW ASSOCIATES, INC.
materials and asbestos consultants

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April 3, 1990

Ashcraft & Gerel
2000 L Street N.W.
Washington, D.C. 20036

**PLAINTIFF'S
EXHIBIT**
AB-202

Attention: Mr. Peter T. Enslein, Esquire
Subject: Pratchenko v. Abex Corporation, et al.
Re: Law Associates, Inc. Project Number 1190-2031-00

Gentlemen:

Law Associates has completed the field and analytical services necessary for our investigation of the subject case as it relates to the DC-3 aircraft. Attached is our report containing visual observations made, and dust samples collected during a site visit to the Chesapeake Airways Services Corporation in Salisbury, Maryland on January 31, 1990.

If you have any questions concerning this report or if we may be of further service, please do not hesitate to contact me.

Sincerely,

Martin R. Bennett
Asbestos Specialist

MRB:grj

90-2031.ltr

RECEIVED APR 4 1990

BACKGROUND

Law Associates was retained by the Law firm of Ashcraft and Gerel to provide technical support and expert testimony in the case of Pratchenko v. Abex Corporation et. al. It is our understanding that the plaintiff in this case died as a result of occupational exposure to asbestos.

Given the plaintiff's occupation (aircraft mechanic) an effort was made to yield an indication of the probability of his exposure to asbestiform minerals from the aircraft he typically serviced. The DC-3 was identified by Ashcraft & Gerel as one such aircraft in which asbestos exposure to the plaintiff was probable due to the asbestos-containing brake shoes found in the landing gear.

To evaluate this exposure potential, a DC-3 brake assembly was sought and located at the Chesapeake Airways Service Corp. (CASC) in Salisbury, Maryland. Arrangements were made with the owner of CASC, Mr. Sam Goldman to extract the interior brake assembly from a tire taken off a DC-3.

OBSERVATIONS

The disassembly of the wheel and the removal of the brake was performed by an employee of CASC who was provided with protective clothing and appropriate respiratory protection. When the brake assembly was lifted from the tire, Mr. Goldman identified the brake as representing BF Goodrich's latest configuration (a Hayes design), he also noted a lack of wear on the surface of the tire. Based on this observation, Mr. Goldman stated that the tire was relatively new and that there was a good chance that the brake assembly would have been blown out, and cleaned when the tire was installed. In summary, Mr. Goldman stated that it was his opinion that the unit (brake assembly, wheel and tire) had seen a limited amount of use - approximately 5 hours or less, or roughly 2 landings, hence the lack of large accumulations of black dust typically observed with normal wear.

RESULTS

A small amount of suspect asbestos-containing dust was observed during the removal of the brake from the tire despite the units limited use.

In order to yield an indication of the relationship between the plaintiffs work environment and exposure to asbestos, settled dust samples were collected from various surfaces of the landing gear (see table 1). These samples were collected and analyzed using the EPA's Draft surface sampling protocol entitled: Standard Test Method for Sampling and Analysis of Dust for Asbestos Structures by Transmission Electron Microscopy (see appendices).

Analysis of samples #1 and #3 indicate asbestos fiber concentrations within the brake assembly ranging from 3.5 billion to 8.1 billion asbestos structures per square foot. A third sample was collected from the dust which spilt out onto the surface of the tire following the removal of the brake assembly. Analysis of this dust yielded a concentration of 12.7 million asbestos structures per square foot.



Dust Samples Analyzed by TEM
Project Number 1190-2031-00

<u>Sample #</u>	<u>Location</u>	<u>Area Sampled</u>	<u>Asbestos Conc. (Structures/ft ²)</u>
1	Interior of Brake Drum	9" x 1.5"	8.09 x 10 ⁹
2	On tire surface	5" x 5"	1.27 x 10 ⁷
3	Inside lip of dust cover	6" x .5"	3.53 x 10 ⁹

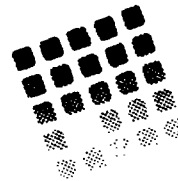
Table I



APPENDIX A
TEM ASBESTOS ANALYSIS REPORT

PROJECT NUMBER 1190-2031-00





MATERIALS
ANALYTICAL
SERVICES

March 8, 1990

Mr. Martin Bennett
Law Associates
114 Town Park Drive
Kennesaw, GA 30144

RE: Pratchenko

Dear Martin:

Enclosed are the TEM analyses for the dust samples that we received at our facility on February 15, 1990.

The samples were labeled: 1 - 3.

Should you have any questions regarding the analyses, please call us at your earliest convenience.

Sincerely,

William E. Longo, Ph.D.
President

WEL:rw
Enc.
Ref: M4287
cc: Mr. Peter Enslein

**Chain-of-Custody
PRATCHENKO
Law Associates' Job #1190-2031-00**

DATE SAMPLE(S) TAKEN: 1-31-90

Transfer Requested by: Martin Bennett

Transfer to: Materials Analytical Services

Field Collection - Dust Samples:

- #1 Dust from the interior of the brake drum; 9" x 1.5"
- #2 Dust which spilt out on the side of the tire after removing the brake assembly; 5" x 5"
- #3 Dust from the inside lip of the brake assembly dust cover; 6" x 1/2"

Transferred by:

Martin Bennett

Date: 2-14-90

90-2031.dust



Materials Analytical Services Inc.
3597 Parkway Lane, Suite 250
Norcross, Georgia 30092
(404) 448-3200

TEM ASBESTOS ANALYSIS REPORT

Client	LAW/KENNESAW	Sample Area	0.094 sq ft
Sample ID:	1	Filter Type:	47MM
MAS Log Number:	M4287-1	Filter Area:	1.34E+009
Sample Received:	2-15-90	Grid Openings:	10
Sample Due Date:	3-06-90	Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	6707
Microscopist:	<i>Rudolf R. Smith</i>	Tot Area Examined:	67070
Reviewed By:	<i>John H. Hester</i>	Magnification:	25000X
Client Proj/ref:	**	Dilution Factor:	1:1000

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	17	2	3.623E+09	4.262E+08
No. of Chrysotile Bundles:	5	0	1.066E+09	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	10	4	2.131E+09	8.524E+08
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)			:	8.098E+09
Total Asbestos Structures/1 sq ft (>= 5 um)			:	1.279E+09

Comments: **CLIENT REFERENCE: 1190-2031-00

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW/KENNESAW
 Sample ID: 1
 MAS Log Number: M4287-1
 Sample Received: 2-15-90
 Sample Due Date: 3-06-90
 Type Analysis: DUST
 Microscopist: Rudolph A. White
 Reviewed By: W. H. H. H.
 Client Proj/ref: **

Sample Area 0.094 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 6707
 Tot Area Examined: 67070
 Magnification: 25000X
 Dilution Factor: 1:1000

Strc.	Grid Op	Type c, a	Structure f, b, c, m	Length Microns	Width Microns
1	1-1	c	m	5.50	2.40
2		c	f	1.60	0.10
3		c	f	2.30	0.10
4		c	m	2.50	1.00
5		c	m	4.00	3.00
6		c	m	1.60	0.40
7		c	f	1.80	0.10
8		c	m	1.60	1.50
9		c	m	2.40	1.80
10		c	b	4.00	0.40
11	1-2	c	b	1.60	0.30
12		c	f	1.70	0.10
13		c	b	2.00	0.30
14		c	f	6.00	0.10
15	1-3	c	f	3.50	0.10
16		c	f	1.50	0.10
17	1-4	c	f	0.50	0.10
18		c	f	0.70	0.10
19	1-5	c	f	3.70	0.10
20		c	f	2.50	0.10
21		c	b	2.20	0.25
22	2-1	c	m	3.00	2.50
23		c	f	4.00	0.10
24	2-2	c	m	6.00	4.00
25		c	f	1.40	0.05
26	2-3	c	m	4.50	2.40
27		c	m	6.00	3.00
28		c	f	0.80	0.10
29		c	m	2.40	0.70
30		c	f	2.00	0.10
31	2-4	c	f	1.10	0.05
32		c	m	1.50	1.00
33		c	m	10.00	3.50
34	2-5	c	f	11.50	0.10
35		c	f	2.00	0.10

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Page: 2

Client LAW/KENNESAW
 Sample ID: 1
 MAS Log Number: M4287-1
 Sample Received: 2-15-90
 Sample Due Date: 3-06-90
 Type Analysis: DUST
 Microscopist: *[Signature]*
 Reviewed By: *[Signature]*
 Client Proj/ref: **

Sample Area 0.094 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 6707
 Tot Area Examined: 67070
 Magnification: 25000X
 Dilution Factor: 1:1000

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
36		c	m	1.80	0.60
37		c	f	2.30	0.10
38		c	b	1.00	0.20

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW/KENNESAW	Sample Area	0.174 sq ft
Sample ID:	2	Filter Type:	47MM
MAS Log Number:	M4287-2	Filter Area:	1.34E+009
Sample Received:	2-15-90	Grid Openings:	10
Sample Due Date:	3-06-90	Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8056
Microscopist:	<u>W. J. J. J.</u>	Tot Area Examined:	80560
Reviewed By:	<u>R. J. J. J.</u>	Magnification:	25000X
Client Proj/ref:	**	Dilution Factor:	1:33

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Bundles:	1	0	3.183E+06	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	3	0	9.550E+06	0.000E+00
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00

Total Asbestos Structures/1 sq ft (All) : 1.273E+07
Total Asbestos Structures/1 sq ft (>= 5 um): 0.000E+00

Comments:

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW/KENNESAW
 Sample ID: 2
 MAS Log Number: M4287-2
 Sample Received: 2-15-90
 Sample Due Date: 3-06-90
 Type Analysis: DUST
 Microscopist: *Willie H. H.*
 Reviewed By: *Rubal P. H.*
 Client Proj/ref: **

Sample Area 0.174 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8056
 Tot Area Examined: 80560
 Magnification: 25000X
 Dilution Factor: 1:33

Strc.	Grid Op	Type c, a	Structure f, b, c, m	Length Microns	Width Microns
-----	-----	-----	-----	-----	-----
1	1-4	c	b	2.00	0.25
2	1-5	c	m	2.50	1.25
3	2-1	c	m	2.00	1.50
4	2-2	c	m	4.00	2.00

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TEM ASBESTOS ANALYSIS REPORT

Client	LAW/KENNESAW	Sample Area	0.021 sq ft
Sample ID:	3	Filter Type:	47MM
MAS Log Number:	M4287-3	Filter Area:	1.34E+009
Sample Received:	2-15-90	Grid Openings:	10
Sample Due Date:	3-06-90	Grids Examined:	2
Type Analysis:	DUST	Avg Area of Grid:	8144
Microscopist:	<i>[Signature]</i>	Tot Area Examined:	81440
Reviewed By:	<i>[Signature]</i>	Magnification:	25000X
Client Proj/ref:	**	Dilution Factor:	1:100

	Area Examined		Structures	
	< 5 um	>= 5 um	< 5 um	>= 5 um
No. Free Chrysotile Fibers:	13	0	1.019E+09	0.000E+00
No. of Chrysotile Bundles:	1	0	7.835E+07	0.000E+00
No. of Chrysotile Clusters:	0	0	0.000E+00	0.000E+00
No. of Chrysotile Matrices:	18	13	1.410E+09	1.019E+09
No. Free Amphibole Fibers:	0	0	0.000E+00	0.000E+00
No. of Amphibole Bundles:	0	0	0.000E+00	0.000E+00
No. of Amphibole Clusters:	0	0	0.000E+00	0.000E+00
No. of Amphibole Matrices:	0	0	0.000E+00	0.000E+00
Total Asbestos Structures/1 sq ft (All)	:		3.526E+09	
Total Asbestos Structures/1 sq ft (>= 5 um):			1.019E+09	

Comments: **CLIENT REFERENCE: 1190-2031-00

* The Detection Limit is calculated on the probability of analyzing one asbestos fiber or structure in the total area examined.

* 0.000 display = Below Detection Limit

Materials Analytical Services Inc.

Page: 1

Client LAW/KENNESAW
 Sample ID: 3
 MAS Log Number: M4287-3
 Sample Received: 2-15-90
 Sample Due Date: 3-06-90
 Type Analysis: DUST
 Microscopist: *[Signature]*
 Reviewed By: *[Signature]*
 Client Proj/ref: **

Sample Area 0.021 sq ft
 Filter Type: 47MM
 Filter Area: 1.34E+009
 Grid Openings: 10
 Grids Examined: 2
 Avg Area of Grid: 8144
 Tot Area Examined: 81440
 Magnification: 25000X
 Dilution Factor: 1:100

Strc.	Grid Op	Type c, a	Structure f, b, c, m	Length Microns	Width Microns
1	1-1	c	m	3.50	2.00
2		c	m	2.50	0.35
3		c	m	8.00	4.50
4		c	m	2.50	2.00
5		c	b	3.75	0.25
6	1-2	c	m	2.00	2.00
7		c	m	7.00	1.00
8		c	m	0.85	0.20
9		c	m	2.50	0.50
10		c	m	5.75	1.00
11	1-3	c	m	17.00	4.00
12		c	m	2.00	1.50
13		c	f	1.50	0.08
14		c	f	3.75	0.05
15	1-4	c	m	3.75	2.00
16		c	m	3.00	2.00
17		c	m	6.00	1.75
18	1-5	c	f	2.00	0.10
19		c	m	1.00	0.50
20		c	m	3.00	1.25
21		c	m	4.00	1.75
22		c	m	4.00	3.75
23		c	f	2.00	0.10
24	2-1	c	f	2.25	0.12
25		c	f	0.75	0.08
26		c	f	1.00	0.05
27	2-2	c	m	5.00	4.50
28		c	m	4.50	2.00
29		c	m	6.00	3.00
30		c	m	6.00	4.00
31	2-3	c	m	2.00	0.25
32		c	f	1.50	0.18
33		c	m	4.50	2.00
34		c	f	1.00	0.08
35	2-4	c	f	1.25	0.08

Materials Analytical Services Inc.

Page: 2

Client LAW/KENNESAW
Sample ID: 3
MAS Log Number: M4287-3
Sample Received: 2-15-90
Sample Due Date: 3-06-90
Type Analysis: DUST
Microscopist: *W. H. H.*
Reviewed By: *R. L. H.*
Client Proj/ref: **

Sample Area 0.021 sq ft
Filter Type: 47MM
Filter Area: 1.34E+009
Grid Openings: 10
Grids Examined: 2
Avg Area of Grid: 8144
Tot Area Examined: 81440
Magnification: 25000X
Dilution Factor: 1:100

Strc.	Grid Op	Type c,a	Structure f,b,c,m	Length Microns	Width Microns
-----	-----	-----	-----	-----	-----
36		c	m	4.00	3.50
37		c	m	6.00	4.00
38		c	m	6.00	5.00
39		c	f	2.50	0.08
40	2-5	c	f	1.00	0.10
41		c	m	3.00	2.75
42		c	m	7.50	4.00
43		c	m	12.00	4.00
44		c	f	1.25	0.08
45		c	m	5.00	4.00

APPENDIX B
EPA DRAFT SURFACE SAMPLING PROTOCOL

