allstates
Environmental Services, Inc.

Site: St. Louis Airport
ID: MOD985767615
Break: 1.3
Other: Allstates

June 24, 1988

Mr. John Chen
EPA Region VII
726 Minnesota Avenue
Kansas City
KS 66101

Dear Mr. Chen

Enclosed for your file is a copy of the completed laboratory analytical report for the composite soil sample that was collected on May 9, 1988, to verify that no significant contamination exists in the pit from which contaminated soils and liquids were earlier removed. As you will recall, all sampling information and documentation with respect to this sample was submitted to you earlier (refer to "Project Report: Midcoast Aviation" submitted to Mr. Thomas J. Fussell of Midcoast Aviation on June 6, 1988, for which you were sent a copy).

Your receipt of this report shall bring you completely up-to-date with respect to Allstates Environmental's involvement in the Midcoast Aviation leasehold at the Lambert-St. Louis International Airport. Should you have any questions, please do not hesitate to contact me.

Sincerely,

ALLSTATES ENVIRONMENTAL SERVICES, INC.

Thomas M. Covilli

Thomas M. Covilli, CIH
Vice President

TMC/bje

cc: Thomas Fussell, Midcoast Aviation
Maxine Lipeles

30285372
Superfund

217 North Second Street St. Charles, Missouri 63301 (314) 946-0402

M.B.A. LABS

MICROBIOLOGICAL AND BIOCHEMICAL
ASSAY LABORATORIES

P.O. BOX 9461 340 S. 66th STREET HOUSTON, TEXAS 77261
TELEPHONE NO. (713) 928-2701

FAX TELEPHONE # 713-928-9063

DATE June 21, 1988

TO: Tom Covilli

FROM: Joe Kresse

TOTAL PAGES BEING SENT 22 (INCLUDES THIS COVER LETTER)

IF YOU DO NOT RECEIVE ALL OF THESE PAGES, PLEASE TELEPHONE US AS QUICKLY AS POSSIBLE AT 928-2701.

THANK YOU!

H LABS TEL NO.713-928-9063 Jun 21 '88

M.B.A. LABS

MICROBIOLOGICAL AND BIOCHEMICAL
ASSAY LABORATORIES

P.O. BOX 9461 340 S. 66th STREET HOUSTON, TEXAS 77261
TELEPHONE NO. (713) 928-2701

SAMPLE SUBMITTED BY:	Allstates Environmental
DATE RECEIVED:	5-13-1988
DATE COMPLETED:	6-9-1988
LABORATORY REPORT NUMBER:	J-12403
SAMPLE IDENTIFICATION:	Sample 0509-CS

RESULTS

Phenolics	0.5 mg/kg
pH	8.30
E.P. TOX METALS	
Silver	<.1 mg/l
Arsenic	<.1 mg/l
Barium	.5 mg/l
Cadmium	<.1 mg/l
Chromium	<.1 mg/l
Lead	<.1 mg/l
Selenium	<.1 mg/l
Mercury	<0.001 mg/l
Oil & Grease	224 mg/kg
TOX	4.9 mg/kg

REPORTED BY Joe Kuser

Reactivity

Total Available H_2S	<2 mg/kg
Total Cyanide	<0.5 mg/kg
PCB	<0.05 mg/kg
Flash Point	>140°F

M.B.A LABS

MICROBIOLOGICAL AND BIOCHEMICAL ASSAY

LABORATORIES

P.O.BOX 9461
HOUSTON, TEXAS 77261

340 S.66 TH STREET
TEL (713) 928-2701

SAMPLE SUBMITTED BY:	ALLSTATE ENV.
DATE RECEIVED:	5-13-88
DATE COMPLETED:	5-25-88
LABORATORY REPORT NUMBER:	J-12403
SAMPLE IDENTIFICATION:	#0509

THE SAMPLES WERE ANALYZED BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY USING HEWLETT-PACKARD MODEL # 5970 & 5985 GC/MS SYSTEMS.

THE SAMPLES WERE PREPARED FOR ANALYSIS ACCORDING TO THE METHODS DESCRIBED IN:

40 CFR PART 136, FEDERAL REGISTER, FRIDAY, OCTOBER 26, 1984 ENVIRONMENTAL PROTECTION AGENCY, PART VIII.

1. VOC'S METHOD 624
2. ACID/BASE-NEUTRAL METHOD 625
3. EPA MIX PESTICIDES METHOD 625
4. PCB'S (BY G.C.)METHOD 608

THE SAMPLES WERE ANALYZED FOR THE FOLLOWING COMPOUNDS:

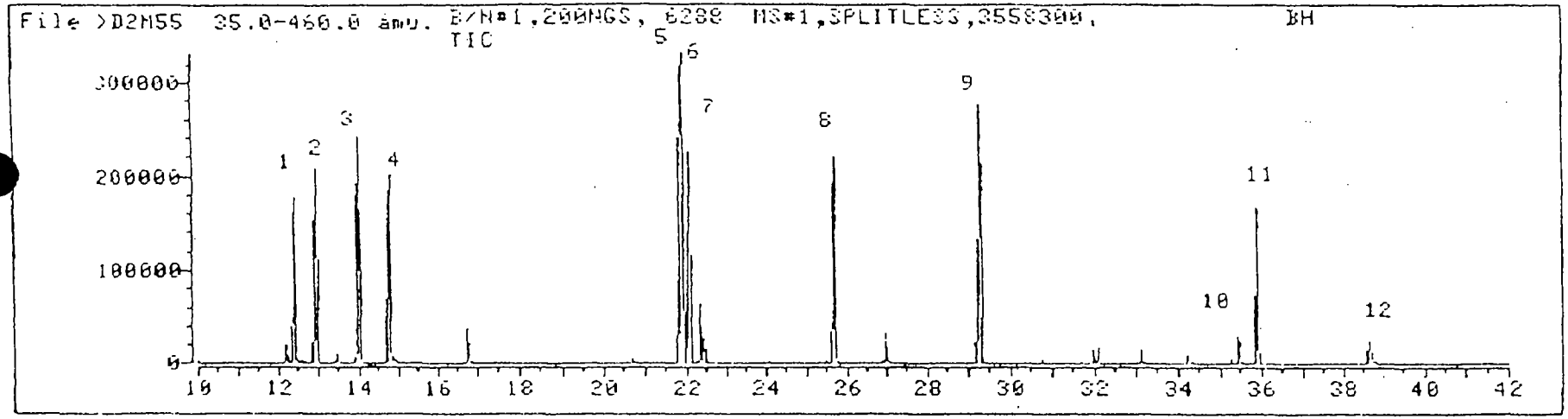
VOLATILE ORGANICS (P.P)
EPA MIX PESTICIDES
ACID/BASE-NEUTRAL EXTRACTABLES
PCB'S

BASE NEUTRAL/ACID EXTRACTABLES

THE GC/MS PARAMETERS WERE AS FOLLOWS:

COLUMN	25 METER FUSED SILICA CAPILLARY COATED WITH SE-30
CARRIER GAS	HELIUM @ 30 CM/SEC(0.9 ML/MIN)
INJECTOR TEMP	270 DEGREES
COLUMN TEMP	5 MINUTES @ 35 DEGREES, THEN 8 DEGREES PER MINUTE TO 300 DEGREES, HOLD AT 300 DEGREES.
INJECTION MODE	SPLITLESS
SPLIT RATIO	----
GC/MS INTERFACE	DIRECT
IONIZATION MODE	ELECTRON IMPACT
ELECTRON ENERGY	70 V
MASS RANGE SCAN	35 TO 450 AMU
SCAN TIME	0.4 SEC

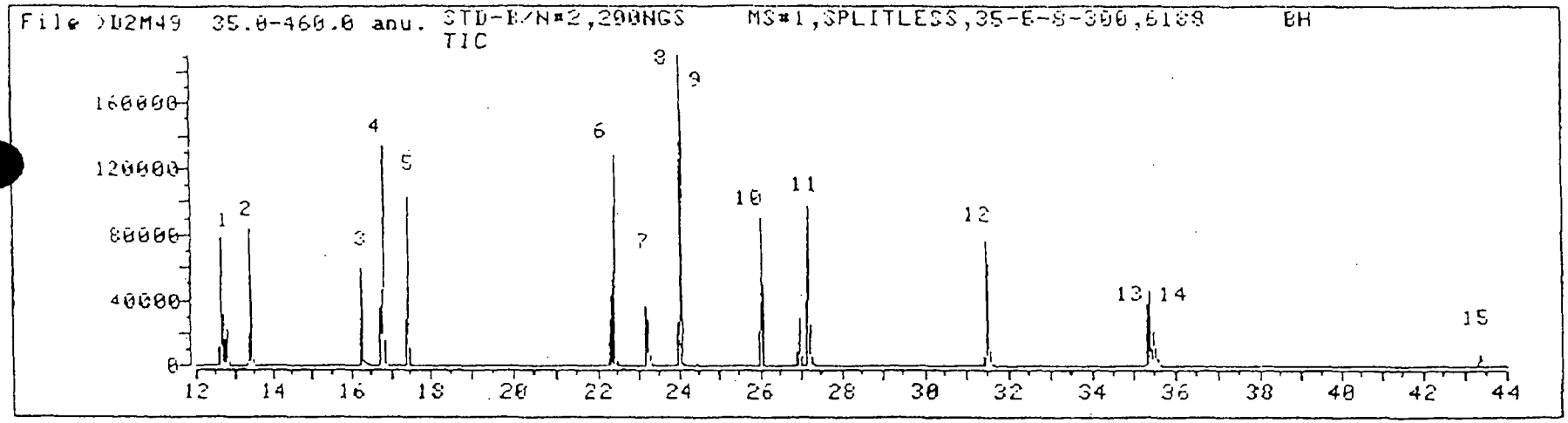
COPIES OF THE TOTAL ION CHROMATOGRAMS ARE INCLUDED WITH THIS REPORT. ALL GC/MS DATA IS PERMANENTLY STORED AT MBA LABORATORIES ON MAGNETIC MEDIA.



SAMPLE ID = BASE/NEUTRAL #1

1- BIS(2-CHLOROETHNYL) ETHER
2- 1,4-DICHLOROBENZENE
3- BIS (2-CHLOROISOPROPLY) ETHER
4- NITROBENZENE
5- DIMETHYL PHTHALATE
6- ACENAPHTHYLENE
7- 2,4-DINITROTOLUENE
8- 4-BROMOPHENYL PHENYL ETHER
9- BIS(2-ETHYL HEXYL) PHTHALATE
10- 3,3'-DICHLOLROBENZIDINE
11- DIOCTYL PHTHALATE
12- BENZO(B)FLUORANTHENE

JUN 27,00 11:12 NO.004 P.00
TEL NO.713-978-5005
BH LAB:



SAMPLE ID = BASE/NEUTRAL #1

1- BIS(2-CHLOROETHHYL) ETHER
2- 1,4-DICHLOROBENZENE
3- BIS (2-CHLOROISOPROPLY) ETHER
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5- DIMETHYL PHTHALATE
6- ACENAPHTHYLENE
7- 2,4-DINITROTOLUENE
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10- 3,3'-DICHLOLROBENZIDINE
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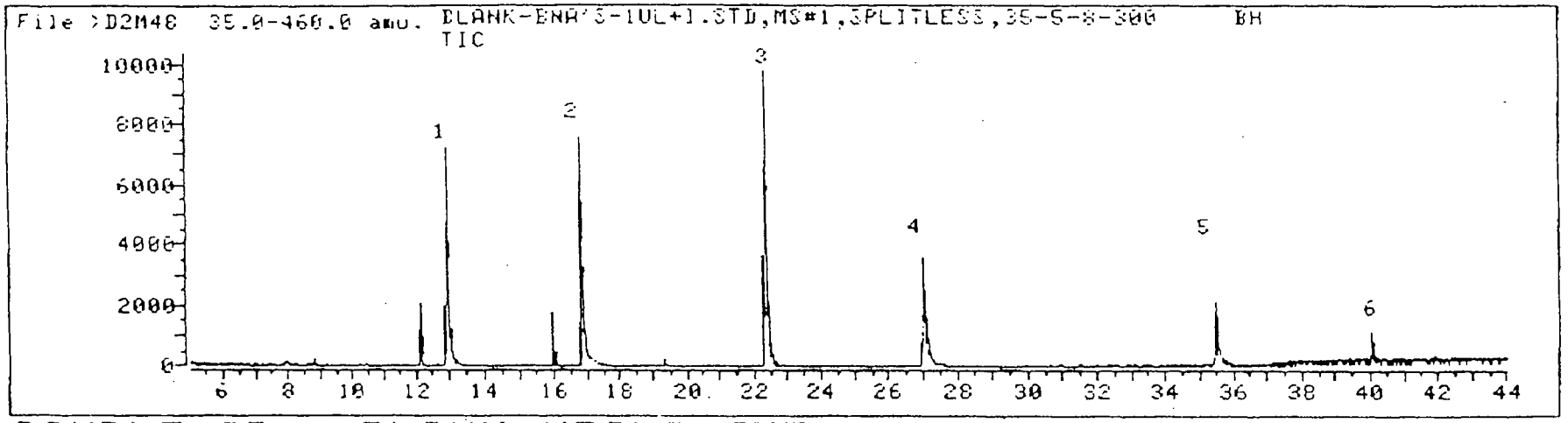
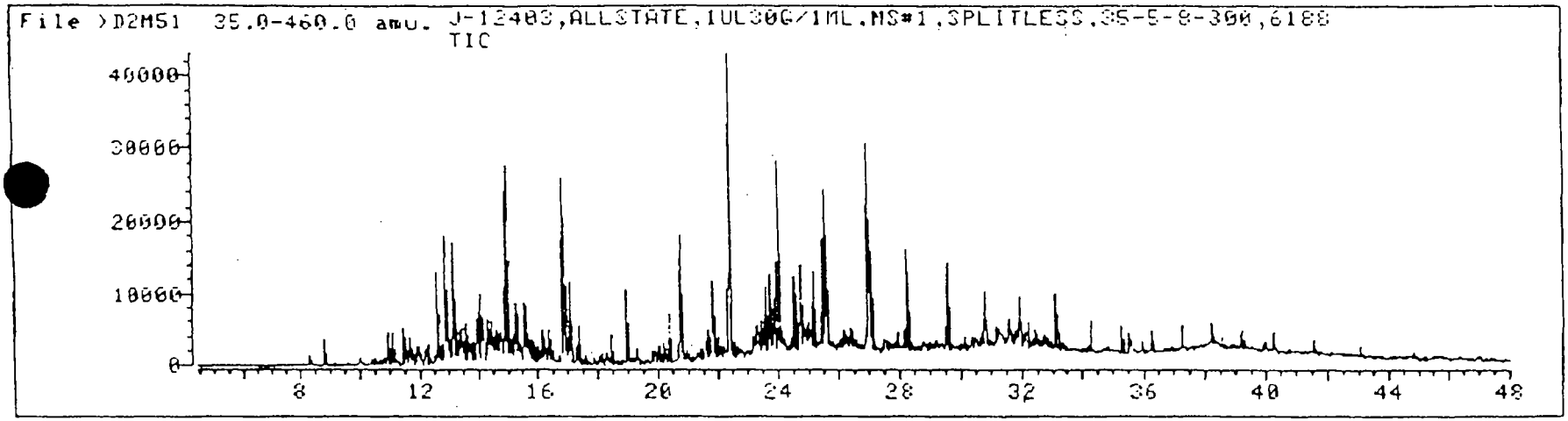


SAMPLE ID = BLANK-MECL2 EXT.

RESULTS

1. BNA'S(P.P)	NOT FOUND	<5	UG/L

*THESE ARE INTERNAL STANDARDS.



SAMPLE ID = J-12403

RESULTS

1. BNA'S (P.P)	NOT	FOUND	<10	UG/KG

*OTHER COMPOUNDS FOUND:

1. MID.RANGE ALIPHATICS(NAPHTHA)	11-20	MINS	9.53	MG/KG
2. HEAVY ALIPHATICS	20-48	MINS	11.48	MG/KG
3. TETRAHYDRO ,4,7-METHANO-H-INDENE	21-24	MINS	5.74	MG/KG

M E T H O D F I L E L I S T

Method file: PEST04 GC type: 5890 Run Type: SIM, GC, EI
Column: Cap Splitless: Yes

Temperature:	Inj.P	Intfc	Source
	270.0	280.0	0.0

GC/DIP		LEVEL A	LEVEL B	POST RUN
Temp 1	150.0	280.0	0.0	0.0
Time 1	4.0	3.0	0.0	0.0
Rate	0.0	0.0	0.0	
Temp 2	280.0	0.0	0.0	
Time 2	3.0	0.0	0.0	

Oven equilibration Time: 0.00 min

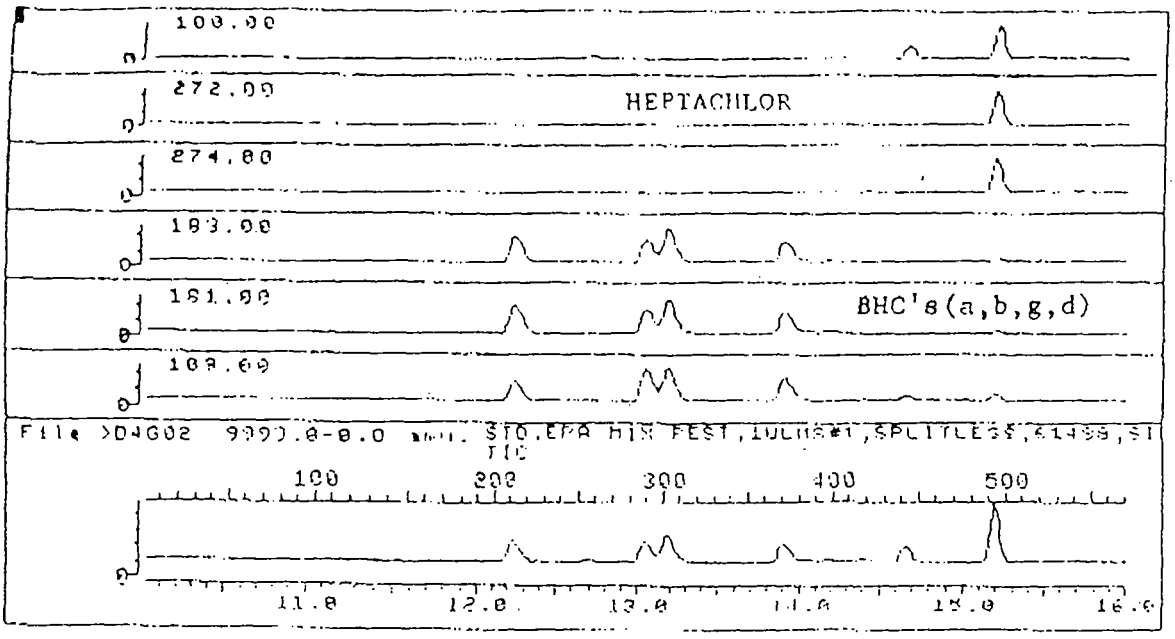
Run time: 23.00
Scan Start time: 10.00
Splitless valve time: 1.00

	ON	OFF	ON	OFF
Relay #1:	327.0	327.0	327.0	327.0
Relay #2:	327.0	327.0	327.0	327.0
Triac #0:	327.0	327.0	327.0	327.0
Triac #1:	327.0	327.0	327.0	327.0

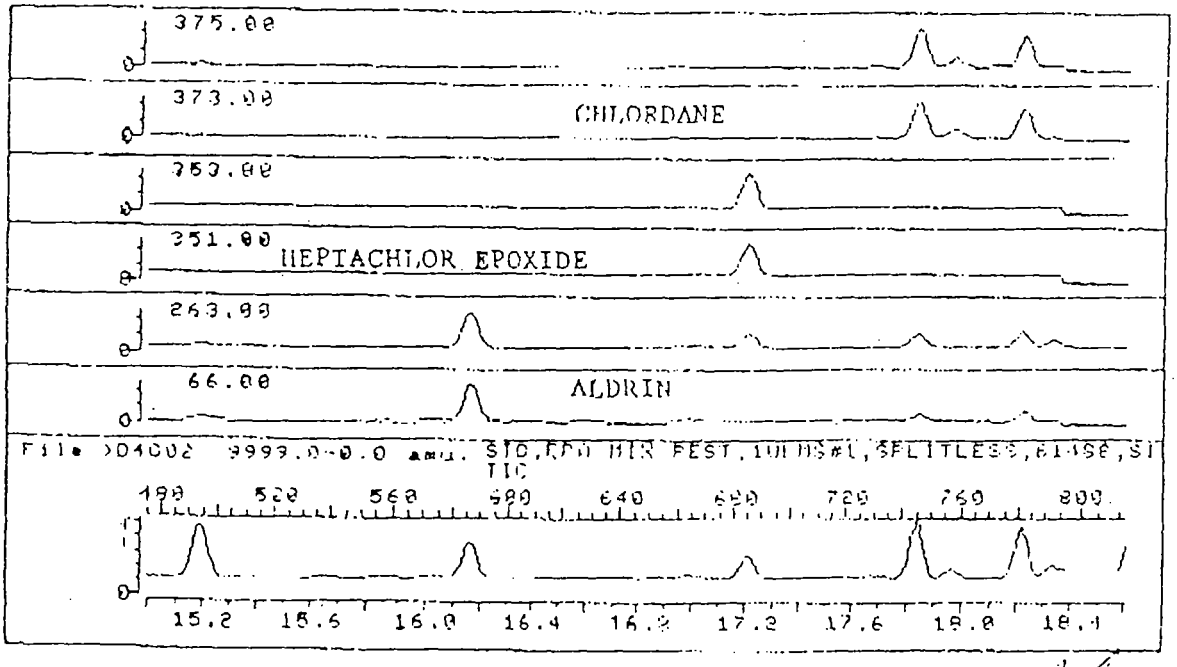
Sim Parameters: Number of groups: 2

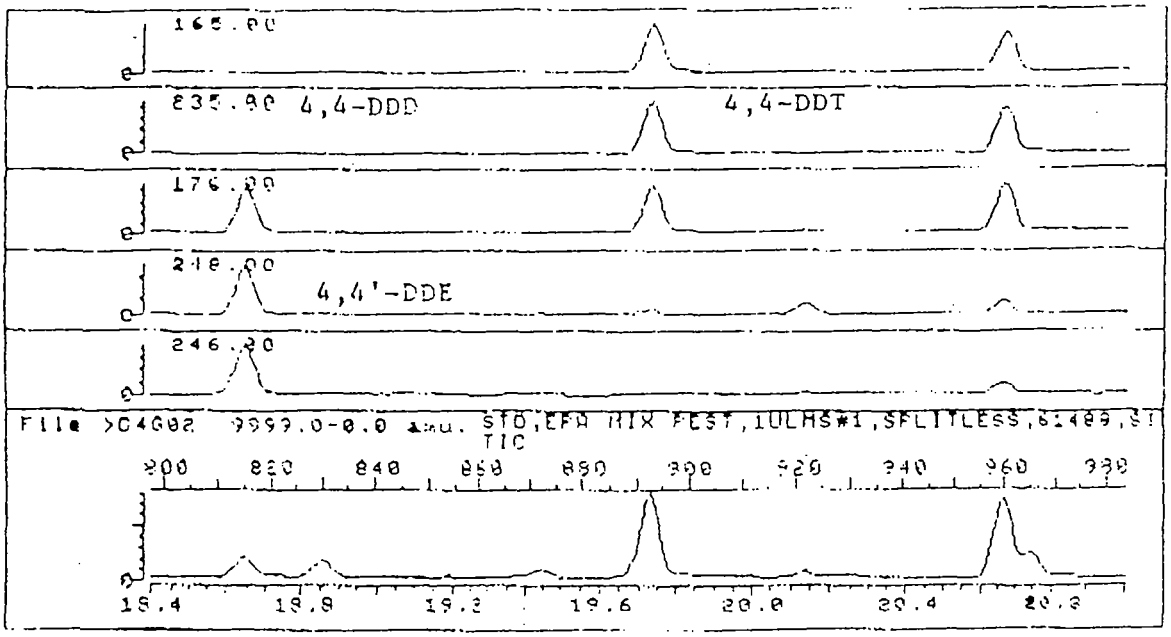
Multiplier voltage: 2300

Group 1		Group 2		Group 3		Group 4		Group 5	
Start/Stop		Start/Stop		Start/Stop		Start/Stop		Start/Stop	
10.00	18.40	18.40	23.00	0.00	0.00	0.00	0.00	0.00	0.00
M/Z	Dwell	M/Z	Dwell	M/Z	Dwell	M/Z	Dwell	M/Z	Dwell
-66.0	50	-79.0	50	0.0	0	0.0	0	0.0	0
100.0	50	159.0	50	0.0	0	0.0	0	0.0	0
109.0	50	165.0	50	0.0	0	0.0	0	0.0	0
181.0	50	176.0	50	0.0	0	0.0	0	0.0	0
183.0	50	195.0	50	0.0	0	0.0	0	0.0	0
263.0	50	201.0	50	0.0	0	0.0	0	0.0	0
272.0	50	235.0	50	0.0	0	0.0	0	0.0	0
274.0	50	246.0	50	0.0	0	0.0	0	0.0	0
351.0	50	248.0	50	0.0	0	0.0	0	0.0	0
353.0	50	261.0	50	0.0	0	0.0	0	0.0	0
355.0	50	-263.0	50	0.0	0	0.0	0	0.0	0
373.0	50	272.0	50	0.0	0	0.0	0	0.0	0
-375.0	50	278.0	50	0.0	0	0.0	0	0.0	0
0.0	0	279.0	50	0.0	0	0.0	0	0.0	0
0.0	0	283.0	50	0.0	0	0.0	0	0.0	0
0.0	0	293.0	50	0.0	0	0.0	0	0.0	0
0.0	0	-387.0	50	0.0	0	0.0	0	0.0	0
0.0	0	422.0	50	0.0	0	0.0	0	0.0	0

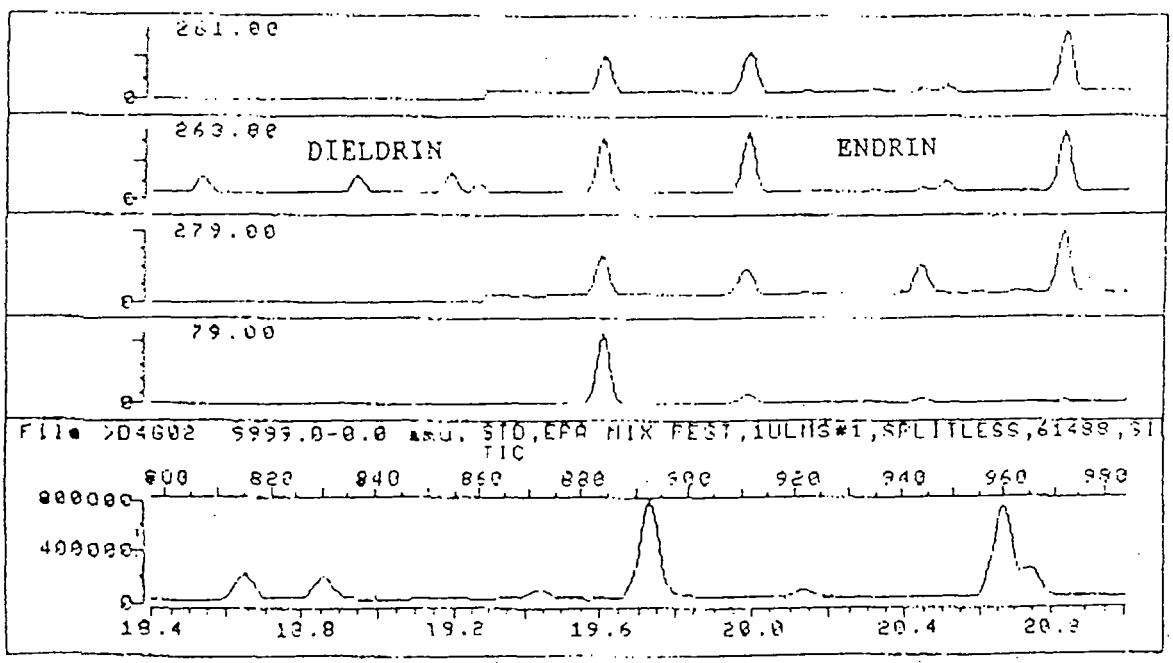


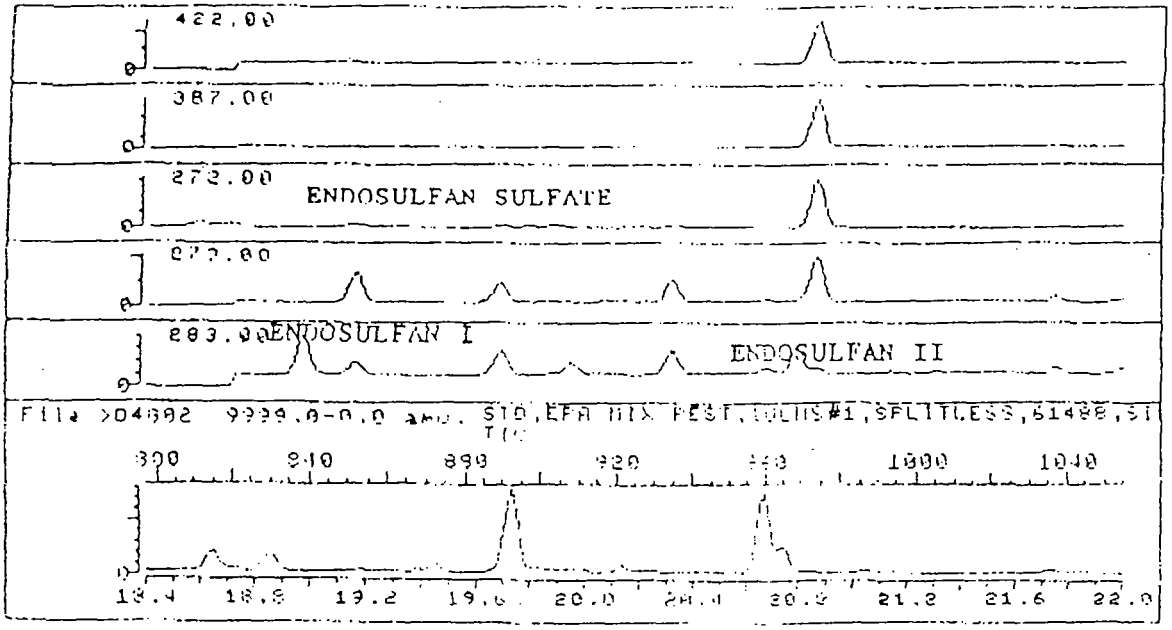
EPA MIX STANDARDS (pg-1)



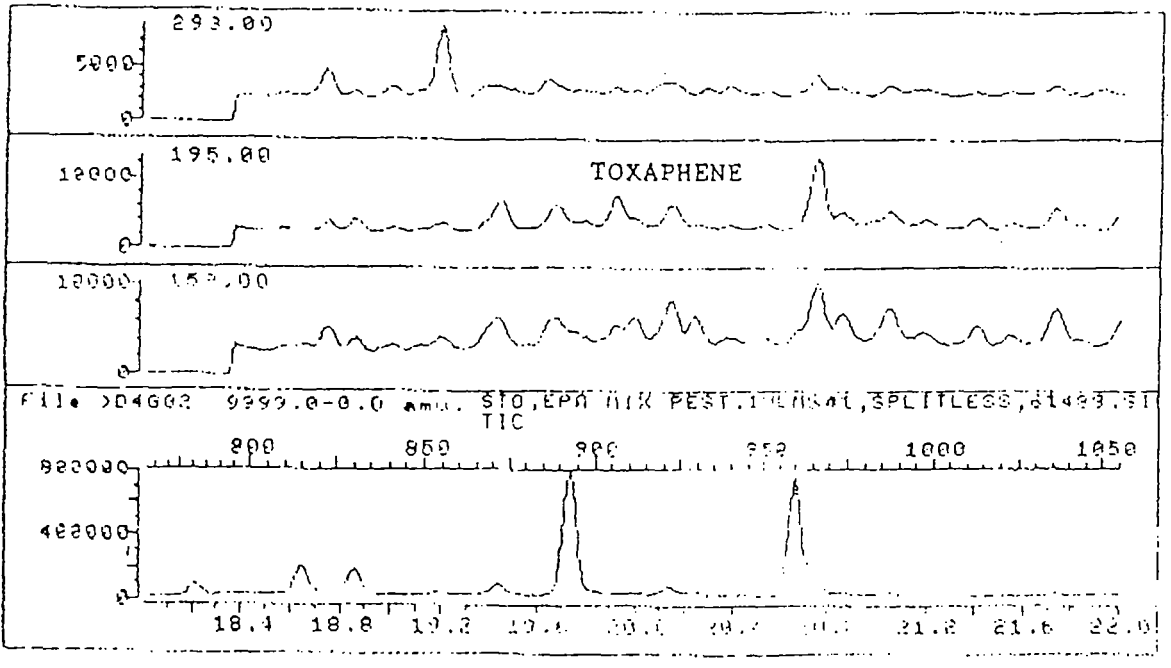


EPA MIX PESTICIDES STANDARD (page 2)

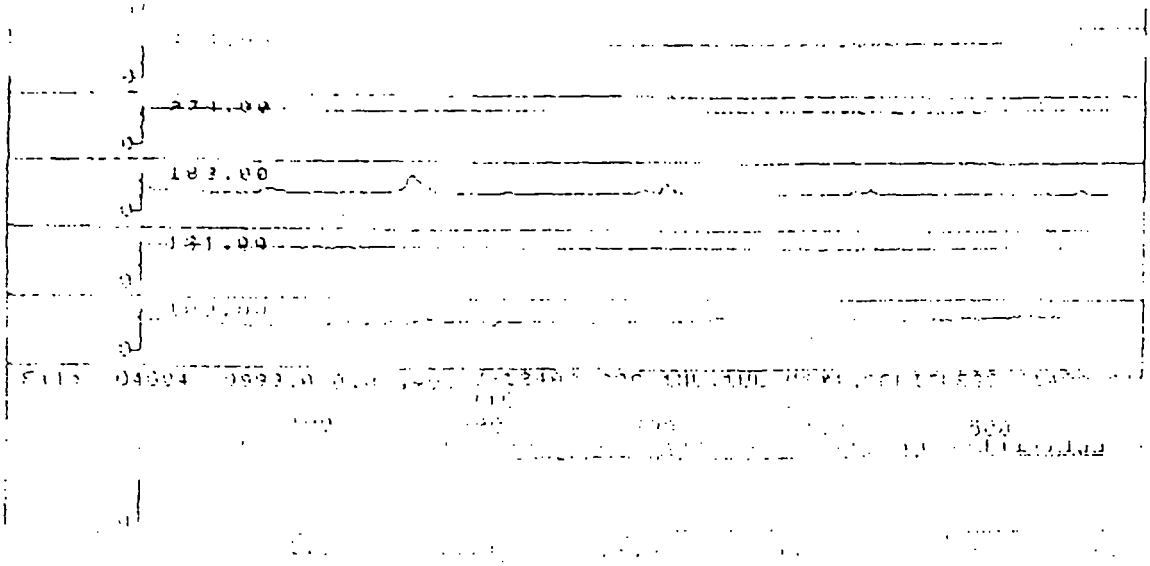




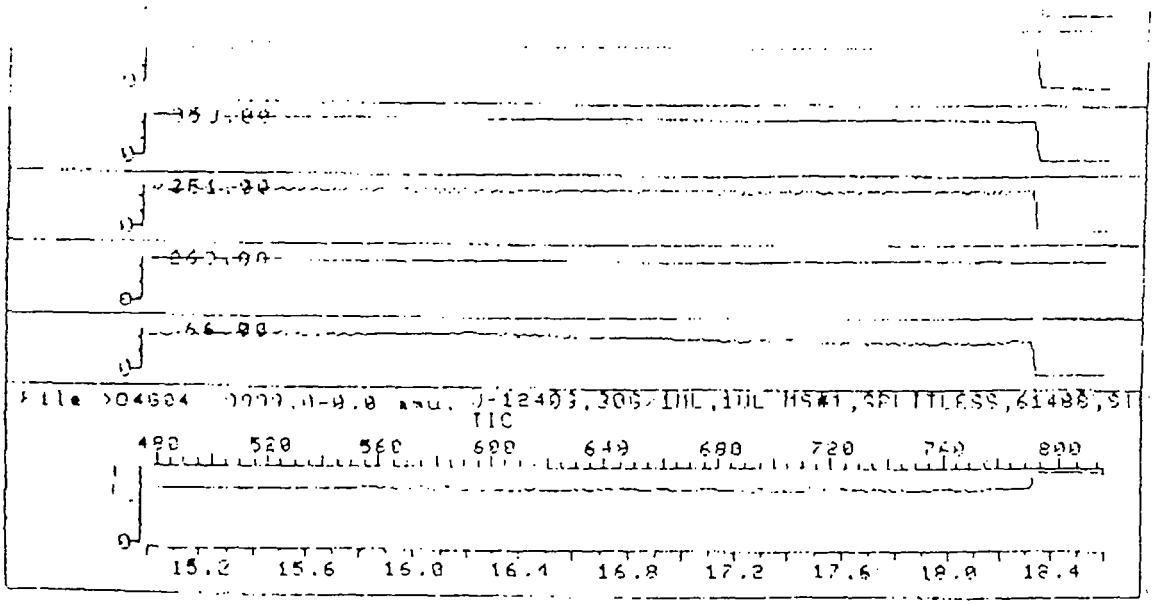
EPA MIX PESTICIDES STANDARD. (page 3)

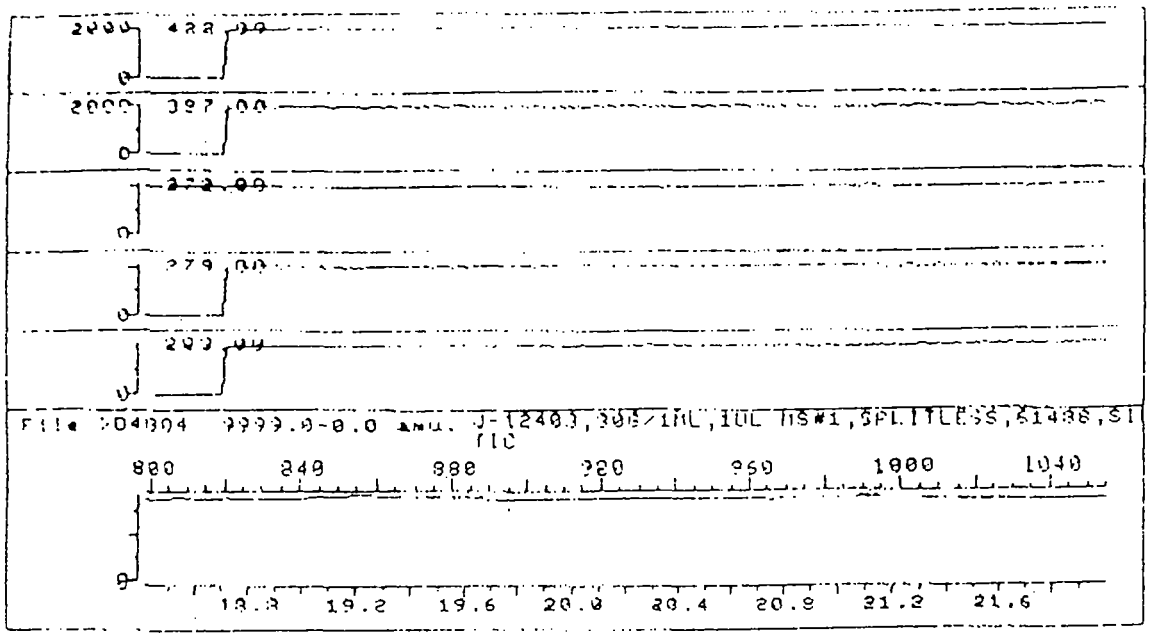


Ben Vasamai

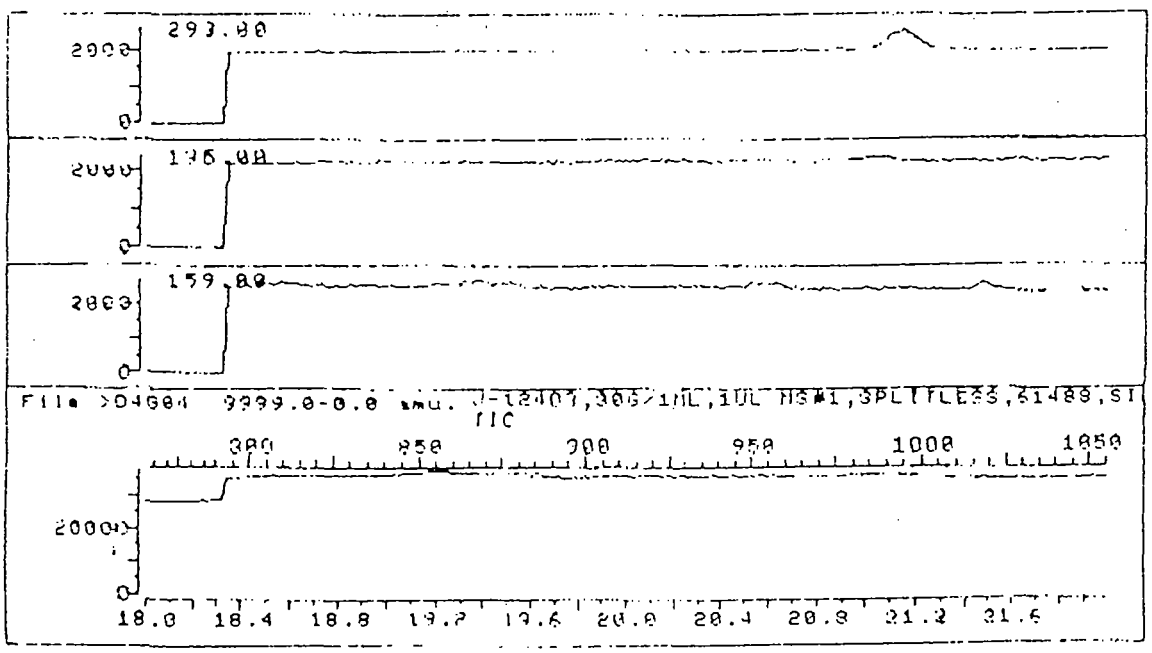


SAMPLE ID =J-12403,pesticides (page 1)





SAMPLE ID =J-12403,PESTICIDES (page 3)



EPA MIX PESTICIDES

SAMPLE I D= J-12323

RESULTS

1- BHC'S(a,b,g,d)	NOT	FOUND	<0.05	MG/KG
2- HEPTACHLOR	NOT	FOUND	<0.05	MG/KG
3- ALDRIN	NOT	FOUND	<0.05	MG/KG
4- HEPTACHLOR EPOXIDE	NOT	FOUND	<0.05	MG/KG
5- DIELDRIN	NOT	FOUND	<0.05	MG/KG
6- ENDRIN	NOT	FOUND	<0.05	MG/KG
8- ENDOSULFAN I	NOT	FOUND	<0.05	MG/KG
9- ENDOSULFAN II	NOT	FOUND	<0.05	MG/KG
10- 4,4'-DDE	NOT	FOUND	<0.05	MG/KG
11- 4,4'-DDD	NOT	FOUND	<0.05	MG/KG
12- 4,4'-DDT	NOT	FOUND	<0.05	MG/KG
13- TOXAPHENE	NOT	FOUND	<0.50	MG/KG
14- PCB'S(BY GC)	NOT	FOUND	<0.05	MG/KG

M.B.A LABS

MICROBIOLOGICAL AND BIOCHEMICAL ASSAY

LABORATORIES

P.O.BOX 9461
HOUSTON, TEXAS 77261

340 S.66 TH STREET
TEL (713) 928-2701

SAMPLE SUBMITTED BY: ALLSTATES ENV.

DATE RECEIVED: 5-13-88

DATE COMPLETED: 5-25-88

LABORATORY REPORT NUMBER: J-12403

SAMPLE IDENTIFICATION: #0509-CS

THE SAMPLES WERE ANALYZED BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY USING HEWLETT-PACKARD MODEL #5985 GC/MS SYSTEMS.

THE SAMPLES WERE PREPARED FOR ANALYSIS ACCORDING TO THE METHODS DESCRIBED IN:

40 CFR PART 136, FEDERAL REGISTER, FRIDAY, OCTOBER 26, 1984 ENVIRONMENTAL PROTECTION AGENCY, PART VIII.

1. VOC'S METHOD 624

THE SAMPLES WERE ANALYZED FOR THE FOLLOWING COMPOUNDS:

VOLATILE ORGANICS (P.P)

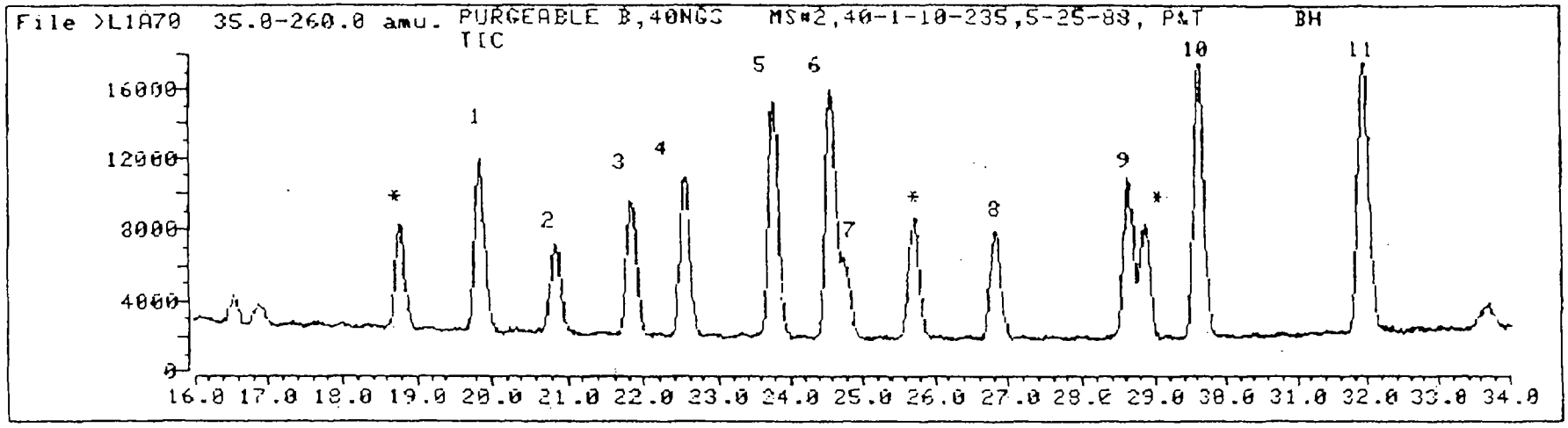
Ben Jaramillo

THE GC/MS PARAMETERS WERE AS FOLLOWS

PURGE GAS	HELIUM @ 20 MLS/MIN
PURGE TIME	12 MINUTES
DESORB TIME	04 MINUTES
DESORB TEMP	180 DEGREES
COLUMN	1% SP-1000 ON CARBOPACK B, 60/80 MESH 1/4 INCH X 6 FEED ,PYREX
CARRIER GAS	HELIUM @ 20 CM/SEC (0.9 ML/MIN)
INJECTION TEMP	180 DEGREES
	50 DEGREES FOR 1 MINS, THEN 10 DEGREES PER MINUTES TO 220 DEGREES, HOLD 15 MINS
GC/MS INTERFACE	MOLECULLAR JET SEPARATOR
MASS RANGE	33 TO 260
SCAN TIME	0.9 SEC
IONIZATION MODE	ELECTRON IMPACT
ELECTRON ENERGY	70 V

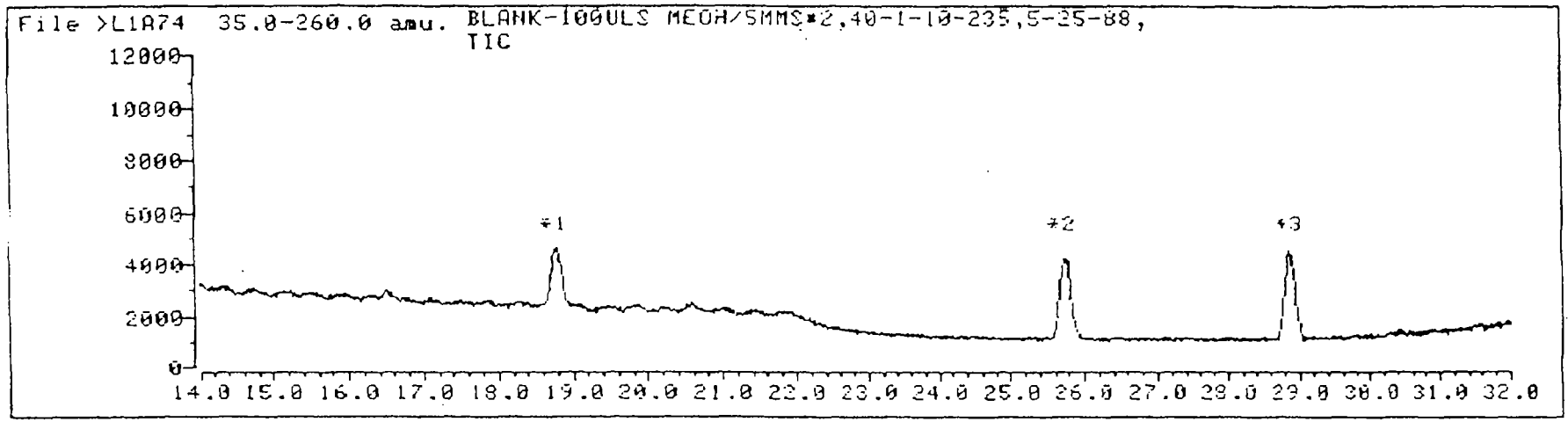
COPIES OF THE TOTAL ION CHROMATOGRAMS ARE INCLUDED WITH THIS REPORT. ALL GC/MS DATA IS PERMANENTLY STORED AT MBA LABORATORIES ON MAGNETIC TAPE.

Ben Hovsanian



SAMPLE ID = STANDARD PURGEABLE B

1- 1,2-DICHLOROETHENE
2- 1,2-DICHLOROETHANE
3- 1,1,1-TRICHLOROETHANE
4- BROMODICHLOROMETHANE
5- TRANS-1,3-DICHLOROPROPENE
6- BENZENE
7- CIS-1,3-DICHLOROPROPENE
8- BROMOFORM
9- 1,1,2,2-TETRACHLOROETHANE
10- TOLUENE
11- ETHYLBENZENE
* THESE ARE INTERNAL STANDARDS.



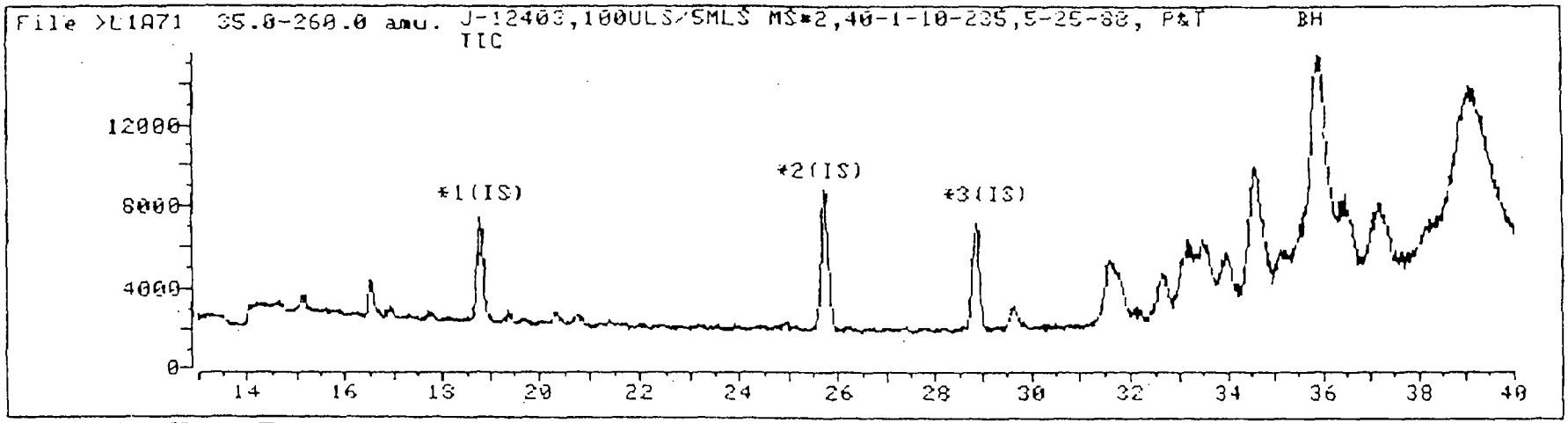
SAMPLE ID = BLANK(100ULS MEOH/5MLS H2O)

RESULTS

1- VOA'S(P.P)	NOT	FOUND	<10 UG/KG

*THESE ARE INTERNAL STANDARDS.

1. BROMOCHLOROMETHANE
2. 2-BROMO-1-CHLOROPROPANE
3. 1,4-DICHLOROBUTANE



SAMPLE ID = J-12403

RESULTS

1- VOLATILE ORGANICS(P.P)	NOT	FOUND	<20	UG/KG

OTHER COMPOUNDS FOUND:

1. ALIPHATICS	30-40	MINS	1392	UG/KG

*THESE ARE INTERNAL STANDARDS.

Ba [illegible]

B. PIT LIQUID

1. SAMPLING DATA
2. CHAIN-OF-CUSTODY
3. ANALYSIS

Field notes - TMC - Midcoast

5/4/88 - Wed. (continued)

- after digging, at approximately 3:30 - 4 holes were dug at each corner down to about 5 ft. below bottom to verify that no other drums were left - no drums were encountered - ran into red gray unontaminated clay (at least via visual and odor)

3:40 - TMC collected grab sample from pit - representative of entire depth of liquid

- 1 glass quart jar (retained split)

- Sample # 505-03EL

United Parcel Service

TO	CONSIGNEE PURCH. ORD. NO	SHIPPER INVOICE NO	SHIPPER REFERENCE NO	SHIPPER TELEPHONE NO	TRACER DATE
[illegible]				[illegible]	[illegible]

SHIPMENT SENT TO (CONSIGNEE)

[illegible]

INQUIRY FROM (SHIPPER)

[illegible]

SHIPPER NO	PICKUP DATE	PICKUP RECORD NO	PARCELS	WEIGHTS	VALUE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MERCHANDISE DESCRIPTION

[illegible]

OTHER INFORMATION

[illegible]

FROM	TRACER NO	UPS USE ONLY	
[illegible]	[illegible]	[illegible]	[illegible]

PROOF OF DELIVERY OR RETURN

NO. PARCELS DELIVERED	NO. PARCELS RETURNED	DATE	REASON IF RETURNED
[illegible]		[illegible]	

TRACING OF RECEIVER'S SIGNATURE FROM UPS DELIVERY RECORD

[illegible]

CALL		NUMBER	NUMBER	NUMBER	NUMBER	STATUS		SIGNATURE	
		274	522	424	600	Hrsh (Austin	1		
		059	539	15			2		HARDWICK
		A625	207	132	320		3		
		A625	207	133			4		
		A625	207	134			5		WATSON 1052
		N604	621	20			6		
		N666	132	18	309		7		Choate 1133
		923	256	30	6618	Capi	8		
		923	256	8			9		Lopez
		923	256	30			10		
		430	307	28	0702		11		
		430	307	28			12		
		430	307	28			13		Cole
		430	307	28			14		
		430	307	28			15		Fisher
		430	307	28			16		
		430	307	569			17		
		642	256	551	0701		18		
		N149	201	N			19	DAVID VANEGAS	Vanegas 1110
		A910	032	44	303	Sick	20		McPherson
		477	802	550		(1) (2)	21		
		477	802	552			22		McMahon
		477	802	551		5/13	23		
		298	529	237	324		24		Rocha
118	75	607	804	7	330		25		BATES
		800	867	2	340		26		
		N604	572	10			27		Miller 1121
		688	550	415	6605	Supp	28		
		688	850	091			29		Reed
		146	222	2	6610		30		HORN
		750	820	511	6622		31		
		075	092	N			32		
		268	46	35			33		MARTINEZ
		964	325	050			34		
		N690	553	038			35		1131
		N062	508	1			36		
		N552	896	9			37		
		750	104	4	6611		38		
		651	361	061			39		
		354	294	44			40		
		A629	597	605			41		
		A--	032	072			42		

PARCEL SHIPPING ORDER

RECEIVED FROM (please print)

PRINT NAME	DATE 2/15/8X
STREET	PHONE
CITY/STATE/ZIP 947-6861	DAYTIME PHONE

Postal and Business Services
MAIL BOXES ETC. USA
Locations from Coast to Coast

PARCEL SHIPPING ORDER — For Mail Boxes Etc. USA Use
NO. 72[illegible] SHIPPER RECORD NO.

PKG		INTENDED	INSTALL CONTENTS	VALUE	CK ONE	CLAIM	ZONE	WT.	Pkg Charges (Amt.)	(Type)	ASSP.
1	NAME	MDA LAB - JOE KRESSE	Hall	$	☐ GROUND	$	22	10	31.00	FRT	
	STREET	140 - 16th ST.	Sample		☑ NEXT DAY AIR		K			INS	
	CITY/STATE/ZIP	HOUSTON, TX 77011	PHONE NO. 713 724-2701	75.03	☐ 2ND DAY AIR		Carton		1.75	COD AOD	
2	NAME			$	☐ GROUND	$	Dimensional		7.00	FRT	
	STREET	5-6-Wrw.		57	☐ NEXT DAY AIR					INS	
	CITY/STATE/ZIP	C. Miller	PHONE NO.		☐ 2ND DAY AIR					COD AOD	
3	NAME			$	☐ GROUND	$				FRT	
	STREET	Pick up record	927-705-5594		☐ NEXT DAY AIR					INS	
	CITY/STATE/ZIP		PHONE NO.		☐ 2ND DAY AIR					COD AOD	
4	NAME			$	☐ GROUND	$				FRT	
	STREET				☐ NEXT DAY AIR					INS	
	CITY/STATE/ZIP		PHONE NO.		☐ 2ND DAY AIR					COD AOD	

1. The carrier for all parcels accepted at Mail Boxes Etc. USA hereafter referred to as MBE, shall be _____ hereafter referred to as carrier. Parcels accepted by MBE from customer, hereafter referred to as shipper, are subject to refusal for shipment by the carrier.

2. MBE does not accept for shipment, without adequate insurance coverage provided by carrier, parcel(s) containing 1) glass or other fragile items, 2) contents exceeding $100 in value and 3) hazardous materials.

3. MBE shall act as agent only for the above receipt and forwarding of parcel(s) by the shipper, whose name and address appear above. MBE assumes no liability for the successful completion of delivery of the parcel(s) accepted for shipment nor for loss or damages by any cause to the parcel(s) or the contents thereof. In the event of loss or damage to said parcel(s), MBE will act as agent on behalf of the shipper for the filing and processing of claims. It is hereby expressly agreed that MBE shall have no liability if any claim is denied or paid only in part by the carrier. _____ (Customer Initials)

4. It is also agreed, that provided the shipper has indicated the "Declared Value" and paid the appropriate fees, the carrier's liability is limited to the repair or replacement value of lost or damaged items of readily ascertainable market value, not to include items of sentimental value. If parcel(s) should arrive damaged, the receiver must arrange for inspection of the parcel(s) with the carrier's local agent.

5. MBE is not liable for the failure of the carrier to properly collect or remit funds for COD parcels. Furthermore, receiver's check shall be accepted for COD's at shipper's risk unless otherwise noted on COD tag.

6. Shipper shall not hold MBE liable for failure to make timely delivery on delivery date specified. Any statement by MBE as to probable date of delivery by carrier is a statement of opinion only, and shall not be warranted in any manner. MBE shall not be liable for any delays in shipments or deliveries by MBE and/or carrier.

7. The foregoing constitutes the full and complete agreement between MBE and shipper, and supercedes all prior/subsequent representations either written or oral.

Claims Not Made In Writing To Mail Boxes Etc. USA Within 3 Months Of Shipment Date Are Waived.

SUB-TOTAL	39.75
Tax	.11
TOTAL CHARGES	39.86

AUTHORIZED SIGNATURE

I certify that I agree to the foregoing terms, and that the stated contents and their value for each package listed are truthful and complete.

SIGN HERE X

Thank you for shipping via Mail Boxes Etc. USA.

Hangar Business Forms, Inc. (818) 779-0843

© 1984 MAIL BOXES ETC. USA™, INC.

CHAIN OF CUSTODY RECORD

PROJ. NO.

PROJECT NAME: Midcoast Aviation

SAMPLERS: (Signature) Thomas M. Covill

A. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Fluid Ignitability (S.G.C.N)	Ph, E.P. Tox (metals)	TCX Brix value, S. ASH	Chloride, Sulfate, Sulfide	VOA's (Fraction)	O&G, Phenols, Sp. Gravity, PCB's	REMARKS
1	5/4/88	3:50pm		✓	Sample 505-03EL (Excavation Liquid)	1qt. glass	✓	✓	✓	✓	✓	✓	Sample is liquid

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
[illegible]	5/5/88 4:00pm	Joe Kressa	5-6-88 1 pm	Sample Intact	

06/02/1988 12:45 HOU INC 713 641 4126 P.02

M.B.A. LABS

MICROBIOLOGICAL AND BIOCHEMICAL ASSAY LABORATORIES

P.O. BOX 9461 340 S 66th STREET HOUSTON, TEXAS 77261
TELEPHONE NO. (713) 928 2701

SAMPLE SUBMITTED BY:	Allstates Environmental Labs
DATE RECEIVED:	5-6-1988
DATE COMPLETED:	5-6-1988
LABORATORY REPORT NUMBER:	J-12290
SAMPLE IDENTIFICATION:	Sample # 505-03EL

RESULTS

Flash Point	118°F

REPORTED BY Jo Kern

M.B.A. LABS

MICROBIOLOGICAL AND BIOCHEMICAL ASSAY LABORATORIES

P.O BOX 9461 340 S. 66th STREET HOUSTON, TEXAS 77261
TELEPHONE NO. (713) 928-2701

SAMPLE SUBMITTED BY:	Allstates Environmental Services
DATE RECEIVED:	5-6-1988
DATE COMPLETED:	5-16-1988
LABORATORY REPORT NUMBER:	J-12295
SAMPLE IDENTIFICATION:	Sample 505-03EL

RESULTS

E.P. TOX METALS	
Silver	<.1 mg/l
Arsenic	<.1 mg/l
Barium	.50 mg/l
Cadmium	<.1 mg/l
Chromium	<.1 mg/l
Lead	<.1 mg/l
Selenium	<.1 mg/l
Mercury	<0.01 mg/l
PCB	<0.10 mg/l
Reactivity	
Total Available H_2S	<1 mg/l
Total Cyanide	<0.5 mg/l
BTU Value	Does not burn (No BTU value)
% Moisture	91.7%
% Ash	7.1%
Phenols	0.35 mg/l
Oil & Grease	1310 mg/kg

REPORTED BY H. J. Kreise

pH	8.7
Specific Gravity	1.05
S	<5.0 mg/kg
Cl^-	<5.0 mg/kg
Benzene	15 ug/l
Ethyl Benzene	966 ug/l
Toluene	31 ug/l
Other Priority pollutants	<0 ug/l

M.B.A LABS

MICROBIOLOGICAL AND BIOCHEMICAL ASSAY

LABORATORIES

P.O.BOX 9461
HOUSTON,TEXAS 77261

340 S.66 TH STREET
TEL (713) 928-2701

SAMPLE SUBMITTED BY: ALLSTATES ENV.

DATE RECEIVED: 5-06-88

DATE COMPLETED: 5-11-88

LABORATORY REPORT NUMBER: J-12295

SAMPLE IDENTIFICATION: 505-03EL

THE SAMPLES WERE ANALYZED BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY USING HEWLETT-PACKARD MODEL # 5985 GC/MS SYSTEMS.

THE SAMPLES WERE PREPARED FOR ANALYSIS ACCORDING TO THE METHODS DESCRIBED IN:

40 CFR PART 136, FEDERAL REGISTER, FRIDAY, OCTOBER 26, 1984 ENVIRONMENTAL PROTECTION AGENCY, PART VIII.

1. VOC'S METHOD 624

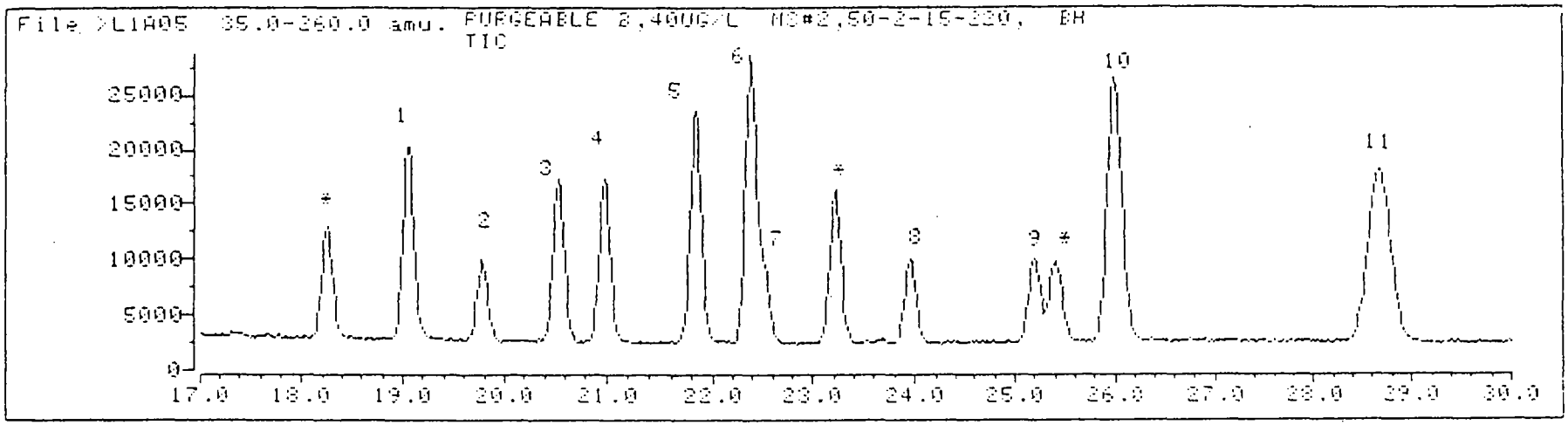
THE SAMPLES WERE ANALYZED FOR THE FOLLOWING COMPOUNDS:

VOLATILE ORGANICS (P.P)

THE GC/MS PARAMETERS WERE AS FOLLOWS

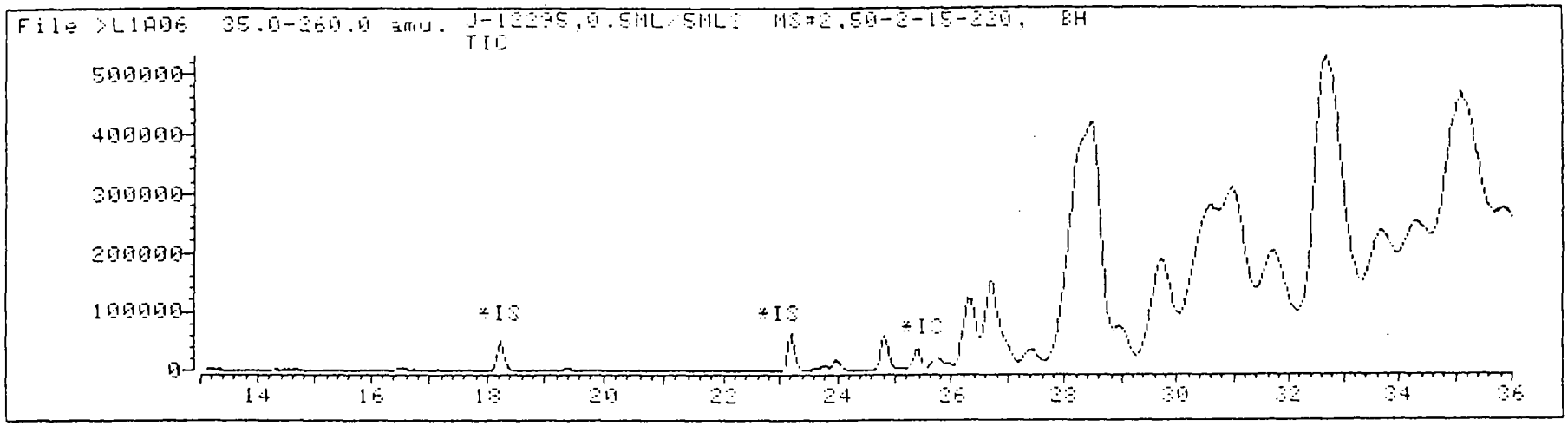
PURGE GAS	HELIUM @ 20 MLS/MIN
PURGE TIME	12 MINUTES
DESORB TIME	04 MINUTES
DESORB TEMP	180 DEGREES
COLUMN	1% SP-1000 ON CARBOPACK B, 60/80 MESH 1/4 INCH X 6 FEED ,PYREX
CARRIER GAS	HELIUM @ 20 CM/SEC (0.9 ML/MIN)
INJECTION TEMP	180 DEGREES
	50 DEGREES FOR 1 MINS, THEN 15 DEGREES PER MINUTES TO 220 DEGREES, HOLD 15 MINS
GC/MS INTERFACE	MOLECULLAR JET SEPARATOR
MASS RANGE	33 TO 260
SCAN TIME	0.9 SEC
IONIZATION MODE	ELECTRON IMPACT
ELECTRON ENERGY	70 V

COPIES OF THE TOTAL ION CHROMATOGRAMS ARE INCLUDED WITH THIS REPORT. ALL GC/MS DATA IS PERMANENTLY STORED AT MBA LABORATORIES ON MAGNETIC TAPE.



SAMPLE ID = STANDARD PURGEABLE B

1- 1,2-DICHLOROETHENE
2- 1,2-DICHLOROETHANE
3- 1,1,1-TRICHLOROETHANE
4- BROMODICHLOROMETHANE
5- TRANS-1,3-DICHLOROPROPENE
6- BENZENE
7- CIS-1,3-DICHLOROPROPENE
8- BROMOFORM
9- 1,1,2,2-TETRACHLOROETHANE
10- TOLUENE
11- ETHYLBENZENE
* THESE ARE INTERNAL STANDARDS.



SAMPLE ID = J-12295

RESULTS

1- BENZENE	22.4	MINS	15	UG/L
2- TOLUENE	25.9	MINS	31	UG/L
3- ETHYL BENZENE	28.6	MINS	966	UG/L
4- OTHER VOLATILE ORGANICS(P.P)	NOT	FOUND	120	UG/L

**OTHER COMPOUNDS FOUND.

1. OCTAHYDRO-2-METHYL PENTALENE
2. 2-PROPENYL CYCLOHEXANE& SIMILAR

* THESE ARE INTERNAL STANDARDS.

C. CONFIRMATION SOIL

1. SAMPLING DATA
2. CHAIN-OF-CUSTODY
3. ANALYSIS

Excerpts from Field Notes - Thomas M. Covilli
Allstates Environmental Services, Inc.

5/9/88 3:50 PM TMC - final site review to assure all soils were excavated.

4:10 PM HNu Rdgs: Background: 1.0 ppm
Inside Pit

(1) Northeast corner	≃ 1 ppm.
(2) East side	≃ 1-2 ppm.
(3) Southeast corner	1-2 ppm.
(4) South side	1-2 ppm.
(5) Southwest corner	1-2 ppm.
(6) West side	1-2 ppm.
(7) Northwest corner	2-6 ppm (sandy are w/minor oil)
(8) North side	1-2 ppm.
(9) Middle (Bottom)	1-2 ppm.

HNu probe was systematically waved over surface of soils approximately 3 inches from surface.

4:30 PM Collected composite soil sample

- composite prepared by collecting and combining grabs from these locations:

(a) Northeast corner wall and bottom
(b) Southeast corner wall and bottom
(c) Southwest corner wall and bottom
(d) Northwest corner wall and bottom
(e) Middle bottom

- collected sample in quart jar - completely full - no hood space.

Confirmation Soil Sample

FEDERAL EXPRESS QUESTIONS? CALL 800-238-5355 TOLL FREE.

7092701442

7092701442

1160-6493-9 | 5-12-88

TOM COVILLI | 314 946-0102

ST. CHARLES OFFICE SERVICES (Allstates)

217 N. Second Street

St. Charles MO 63301

To: Joe Kresse

UOA LABORATORY

340 S. 66th Street

Houston TX 77011

Cash

1	1	LBS	
		LBS	
		LBS	
		LBS	
1	1	LBS	

Drop Box

5/13/88 1120

YOUR DECLARED VALUE

DAMAGES OR LOSS

DELAY

CONSEQUENTIAL DAMAGES

DO NOT SHIP CASH OR CURRENCY

Federal Express Use

Extra Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

PART 2701173800 REV. 8/87 PRINTED U.S.A. NCRFC

007

SENDER'S COPY/RETAIN FOR TRACE PURPOSES

FEDERAL EXPRESS

BILL TO: ST CHARLES OFFICE SERVICES
217 N 2ND ST
ST CHARLES, MO 63301

SENDER ACTIVITY SUMMARY

PAGE 2 OF 2
DATE 05/25/88

INVOICE NO. 6-465-00230 ACCOUNT NO. 1160-6493-9

TRACKING NOS REFERENCE	SENDER'S NAME AND ACCOUNT ADDRESS	RECIPIENT INFORMATION AND PROOF OF DELIVERY	PACKAGES & WEIGHT	SERVICES	CHARGES	NET CHARGES
7092701442	TOM COVILLI ST CHARLES OFFICE SERVICES 217 N 2ND ST ST CHARLES, MO 63301	JOE KRESSE UOA LABORATORY 340 S 66TH ST HOUSTON, TX 77011 AA DELIVERED 05/13/88 09:22	1/ 6	OVRNIGHT BOX DISCOUNT	39.00 -3.00	
7309527 1	DROP OFF 05/12/88	SIGNED: C.MILLER				31.00
8685956511	KEN YOUNG ST CHARLES OFFICE SERVICES 217 N 2ND ST ST CHARLES, MO 63301	VICK CLADDING HOSCH EPPEHENGER ET AL ATTOR 100 N BROADWAY-STE 1500 SAINT LOUIS, MO 63102 AA DELIVERED 05/13/88 09:08	1/ 4	OVRNIGHT BOX DISCOUNT	28.50 -3.00	
8176642 1	DROP OFF 05/12/88	SIGNED: B.MITCHELL				25.50
		SENDER SUBTOTAL	98.50	PAY THIS AMOUNT		98.50

FEC-M-146 8/84

Confirmation Sent Simple

CHAIN OF CUSTODY RECORD

Proj No.

Project Name: [illegible]

Samplers (Signature): [illegible]

Sta. No.	Date	Time	Comp	Grab	Station Location	No. of Containers	pH, TOX, Phenols	EP TOX metals	VOA's, ABN's	Oil & grease	Reactivity (cyanide)		Remarks
	[illegible]	[illegible]	✓		0509-CS	1 glass qt	✓	✓	✓	✓	✓		

Relinquished by: (Signature)	Date Time	Received by: (Signature)	Relinquished by: (Signature)	Date Time	Received by: (Signature)
Relinquished by: (Signature)	**Date Time**	**Received by: (Signature)**	**Relinquished by: (Signature)**	**Date Time**	**Received by: (Signature)**
Relinquished by: (Signature)	**Date Time**	**Received for Laboratory by: (Signature)**		**Remarks**	
[illegible]	5/13/88	[illegible]	5-13-88 10AM	Sample IN TACT	

05 05 1988 11:03 HERBERT HOLD INC 713 641 4126 P.01

D. RADIOLOGICAL

1. SAMPLING DATA
2. CHAIN-OF-CUSTODY INFORMATION
3. ANALYSIS

R. M. WESTER and ASSOCIATES, INC.

215 INDACOM DRIVE • ST. PETERS, MISSOURI 63376 • (314) 928-9628

May 20, 1988

Mr. Tom Covilli, C.I.H.
Allstates Environmental Services, Inc.
217 North Second Street
St. Charles, MO 63301

Dear Mr. Covilli:

In response to your request for a report on our recent surveys and environmental sampling efforts at the MidCoast Aviation site at Lambert-St. Louis International Airport, the following information is provided.

Our survey on May 6, 1988 consisted of a walk-over scan of the entire excavation area employing a Ludlum Model 19 Micro R Meter. This instrument utilizes a 1 x 1" thallium-doped sodium iodide scintillator to measure low-level gamma radiation fields.

The basic scanning technique consisted of a slow walk, holding the instrument extended from the body in such a manner that the detector was positioned approximately one meter above the surface of the ground. Additionally, the instrument was slowly waved back and forth, from side to side, so that a sinusoidal search pattern was described along the axis of the surveyor's path.

At any point at which a sudden increase in the count rate was perceived, via the integral audio unit, an effort was made, by close monitoring of the ground, barrels, etc., in the vicinity, to determine if the higher count rate was due to randon fluctuations in the background or the real presence of a relatively higher concentration of radioactivity. The count rate across the entire area varied within the range of five to eight microrems per hour, with the higher levels being observed down in trenches, as is normal, due to the change in geometry. Furthermore, at any location at which an obvious visual anomaly was noted, e.g., drums or other equipment, or a variation in the coloration or composition of the soil, detailed, close-scanning ($\leq$ six inches from contact) was performed. No "hot spots" or items were detected.

Also, on this day, a sample was taken, of approximately four liters, from the small sump pond that then existed

near the center of the excavation. The sample (MCA-01, -02,-03) had the appearance of an oily-brown, aqueous emulsion. Samples MCA-02 and -03 were subsequently composited by our analytical contractor to ensure that a proper counting geometry was obtained. Sample MCA-01 was retained by us. Further, even though the separate sample numbers would seem to imply significantly different sample locations or types, this was not truly the case and no significant differences in concentrations of radioactivity should be expected.

Soil sampling on May 11, 1988 was accomplished with a 3½ plain steel bucket auger. Depths were verified by the use of a semi-rigid steel pocket tape to ensure that the indicated levels were attained regardless of the influence of such variables as soil friability, density, moisture content, or composition.

Sampling points were selected by pre-scanning the area of interest at close range (≤ one foot) with a Ludlum Model 44-10 gamma scintillation probe. This instrument utilizes a two-by two-inch NaI (Tl) crystal for great sensitivity in detecting low levels of photonic radiation in the field. An effort was made to sample at those points at which the highest photon flux was detected, to develop a "worst case" estimate of the concentrations of radioactivity in the area. One-minute counts were performed with the probe at contact with the soil before each sample was removed. Additionally, in a effort to comply with Linda Black's specified preference for alpha detection, an effort was made to take the initial sample at sites at which alpha counts also registered significantly above background, although this is not standard operating procedure in environmental health physics. The lack of significant findings of radioactivity in the soil at locations where alpha counts were elevated may be due to the presence of Th-230 and/or uranium at levels below the lower limit of detectability (LLD) or, more likely, to differences in the transfer coefficient of radon (-220 or -222) from soil to air. The latter can be greatly variable from one spot to another on the ground surface.

A general scan of the area was also done with the 2 x 2" gamma scintillator, with count rates running generally between 10,000 and 11,000. The highest levels observed were at contact with the surface in relatively small patches of ground such as one roughly 6' x 10', some 15 feet west of the current sump pond where an average count rate of nearly 13,000 was seen.

The lack of correlation between observed levels of photonic radiation in the field and analytical results from the laboratory may be due to the presence of uranium at concentration below the LLD, and/or varying levels in the concentrations of K-40, which were not reported by the laboratory.

On May 17, 1988, a water sample was taken from the currently existent sump pond which lies towards the northeastern corner of the excavation. This pond is roughly 5' x 10' and perhaps as much as two and a half feet deep in places. It is conjectured that the water contained therein is largely the result of the upward or lateral seepage of ground water rather than representing an accumulation of rainwater or other surface runoff. Tha sample consisted of a relatively clear suspension of light brown dirt in water, in sharp contrast to the first liquid sample obtained at the site. Some of the dirt, in fact, was in advertently knocked in from the embankment in the course of sampling.

Analysis of this sample, as reported, indicated the presence of Ra-226 and Ra-228 at levels which mandate remedial actions according to U.S. Department of Energy (DOE) guidelines. Further site characterization and notification of the appropriate authorities should therefore be undertaken.

References: EML Procedures Manual (HASL-300), twenty-sixth edition; U.S. DOE; NY: 1983

DOE Order 5480.1A (Chapter XI)

If you have any further questions, or if we can be of further assistance, please don't hesitate to call.

Sincerely,

R. M. Wester & Associates, Inc.

C. J. Alston

C. J. Alston
Associate Radiation Safety Officer

CJA/sp

ENVIRONMENTAL SAMPLES

Sample I.D.	Type/Location	Date	Depth	Gamma CPM	Alpha DPM
MCA-001sw MCA-002sw MCA-003sw	liquid/original sump pond	5/6/88	0-24"	6uR/hr	N/A
MCA-004-01A MCA-005-01B	soil/spoils pile from above drum level, on west side	5/11/88 5/11/88	0-6" 12-18"	10,850 14,484	30 N/A
MCA-006-02A MCA-007-02B	soil/spoils pile from intermediate level below drums, north side	5/11/88 5/11/88	0-6" 12-18"	10,738 14,635	N/A N/A
MCA-008-03A MCA-009-03B	soil/spoils pile; final level below drums, west side	5/11/88 5/11/88	0-6" 12-18"	11,459 16,534	40 N/A
MCA-010-04A MCA-011-04B	soil/as above, east side	5/11/88 5/11/88	0-6" 12-18"	10,442 11,710	N/A N/A
MCA-012-05A MCA-013-05B	soil/spoils pile of truck bed, south side	5/11/88 5/11/88	0-6" 12-18"	10,631 16,094	N/A N/A
MCA-014-06A MCA-015-06B MCA-016-06C	soil/approx. 21 ft. west of E2750, N2750	5/11/88 5/11/88 5/11/88	0-6" 6-12" 12-18"/ 18"	10,310 13,201 15,928/ 17,360	19 N/A N/A
MCA-017-07A MCA-018-07B	soil/approx. 20 ft. west of second sump pond	5/11/88 5/11/88	0-6" 6-12"/ 12"	14,598 19,778/ 20,797	0 N/A
MCA-019-08sw	water/second sump pond	5/17/88	0-12"	N/A	N/A

EQUIPMENT SURVEYS

All results are given as disintegrations per minute (dpm) of gross alpha activity per 100 square centimeters. Where a "less than" value is given, it represents the lower limit of detectability (LLD) at the 95% confidence level.

Tri-Rinse Corporation; Drum Crusher, RMJ Machinery Inc., Serial Number 1100

		Direct	Removable
1.	Trailer tires, Right Side	<18	0
2.	Trailer tires, Left Side	<18	0
3.	Trailer wheelwell, Right Side	<18	0
4.	Trailer wheelwell, Left Side	<18	0
5.	Trailer top, rear	19	3
6.	Trailer top, Right Side	<18	0
7.	Trailer top, Left Side	<18	0
8.	Crusher top	<18	3
9.	Generator top	<18	0
10.	Crusher door, outer	<18	0
11.	Crusher door, inner	<18	0
12.	Crusher floor	<18	0
13.	Crusher press, bottom	<18	0
14.	Crusher press, top	19	0
15.	Crusher wall, left	<18	0
16.	Crusher wall, right	<18	0
17.	Crusher wall, rear	<18	0

Odesco Corporation; International Pump Truck, Illinois License Number P57261

		Direct	Removable
1.	Driver side step	<12	6
2.	Floorboards	<12	0
3.	Pedals	<12	0
4.	L.F. Tire	<12	3
5.	R.F. Tire	<12	0
6.	L.F. Fender	<12	0

		Direct	Removable
7.	R.F. Fender	<12	6
8.	R.R. Tire	<12	0
9.	L.R. Tire	<12	0
10.	R.R. Mudguard	<12	0
11.	Hose couplings	<12	6
12.	R. Side Deck Top	<12	3
13.	L. Side Deck Top	<12	0
14.	Hoses	<12	3

INSTRUMENTATION

1. Ludlum Model 2220 Scaler/Ratemeter
2. Ludlum Model 43-65 Alpha Scintillation Probe (ZnS)
3. Ludlum Model 44-10 Gamma Scintillation Probe (NaI)
4. Ludlum Model 19 Micro R Meter (NaI)
5. Ludlum Model 2200 Scaler/Ratemeter
6. Ludlum Model 43-10 Alpha Scintillator (ZnS)

R. M. WESTER & ASSOCIATES, INC.

CC1

Chain-of-Custody

Client: Allstates Environmental Services, Inc.

Project No: Mid Coast Aviation

Due Date: _____ Report To: _____

Date Received: 5-12-88

Received By: Tom Cerilli

Sample Location: MCA-STL

Item No.	Sample No.	Sample ID	Matrix	Analysis Required	Sample Date	Comments	Preservative
1.	MCA-004	01A	Soil		5-11-88	Sample splits	None
2.	MCA-005	01B	"		"		"
3.	MCA-006	02A	"		"		"
4.	MCA-007	02B	"		"		"
5.	MCA-008	03A	"		"		"
6.	MCA-009	03B	"		"		"
7.	MCA-010	04A	"		"		"
8.	MCA-011	04B	"		"		"
9.	MCA-012	05A	"		"		"
10.	MCA-013	05B	"		"		"
11.	MCA-014	06A	"		"		"
12.	MCA-015	06B	"		"		"
13.	MCA-016	06C	"		"		"

Items	Date	Signature Received	Analysis	Relinquished By	Returned By	Date	Received By

R. M. WESTER & ASSOCIATES, INC.

CC1

Chain-of-Custody

Client: Allstates Environmental Services, Inc.

Project No: Mid Coast Aviation

Due Date: _____ Report To: _____

Date Received: 5-12-88

Received By: Tom Covilli

Sample Location: MCA - STL

Item No.	Sample No.	Sample ID	Matrix	Analysis Required	Sample Date	Comments	Preservative
1.	MCA-017	07A	Soil		5-11-88	Sample splits	None
2.	MCA-018	07B	"		"		"
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							

Items	Date	Signature Received	Analysis	Relinquished By	Returned By	Date	Received By

Uranium Series (4n + 2)*

Nuclide	Historical name	Half-life	Major radiation energies (MeV) and intensities† α	β	γ
$^{238}_{92}U$	Uranium I	4.51×10^{9}y	4.15 (25%) 4.20 (75%)	---	---
$^{234}_{90}Th$	Uranium X_1	24.1d	---	0.103 (21%) 0.193 (79%)	0.063c‡ (3.5%) 0.093c (4%)
$^{234}_{91}Pa^{m}$	Uranium X_2	1.17m	---	2.29 (98%)	0.765 (0.30%) 1.001 (0.60%)
99.87% | 0.13% $^{234}_{91}Pa$	Uranium Z	6.75h	---	0.53 (66%) 1.13 (13%)	0.100 (50%) 0.70 (24%) 0.90 (70%)
$^{234}_{92}U$	Uranium II	2.47×10^{5}y	4.72 (28%) 4.77 (72%)	---	0.053 (0.2%)
$^{230}_{90}Th$	Ionium	8.0×10^{4}y	4.62 (24%) 4.68 (76%)	---	0.068 (0.6%) 0.142 (0.07%)
$^{226}_{88}Ra$	Radium	1602y	4.60 (6%) 4.78 (95%)	---	0.186 (4%)
$^{222}_{86}Rn$	Emanation Radon (Rn)	3.823d	5.49 (100%)	---	0.510 (0.07%)
$^{218}_{84}Po$	Radium A	3.05m	6.00 (~100%)	0.33 (~0.019%)	---
99.98% | 0.02% $^{214}_{82}Pb$	Radium B	26.8m	---	0.65 (50%) 0.71 (40%) 0.98 (6%)	0.295 (19%) 0.352 (36%)
$^{218}_{85}At$	Astatine	~2s	6.65 (6%) 6.70 (94%)	? (~0.1%)	---
$^{214}_{83}Bi$	Radium C	19.7m	5.45 (0.012%) 5.51 (0.008%)	1.0 (23%) 1.51 (40%) 3.26 (19%)	0.609 (47%) 1.120 (17%) 1.764 (17%)
99.98% | 0.02% $^{214}_{84}Po$	Radium C'	164μs	7.69 (100%)	---	0.799 (0.014%)
$^{210}_{81}Tl$	Radium C"	1.3m	---	1.3 (25%) 1.9 (56%) 2.3 (19%)	0.296 (80%) 0.795 (100%) 1.31 (21%)
$^{210}_{82}Pb$	Radium D	21y	3.72 (.000002%)	0.016 (85%) 0.061 (15%)	0.047 (4%)
$^{210}_{83}Bi$	Radium E	5.01d	4.65 (.00007%) 4.69 (.00005%)	1.161 (~100%)	---
~100% | .00013% $^{210}_{84}Po$	Radium F	138.4d	5.305 (100%)	---	0.803 (0.0011%)
$^{206}_{81}Tl$	Radium E"	4.19m	---	1.571 (100%)	---
$^{206}_{82}Pb$	Radium G	Stable	---	---	---

*This expression describes the mass number of any member in this series, where n is an integer.
Example: $^{206}_{82}Pb$ (4n + 2).....4(51) + 2 = 206

†Intensities refer to percentage of disintegrations of the nuclide itself, not to original parent of series.

‡Complex energy peak which would be incompletely resolved by instruments of moderately low resolving power such as scintillators.

Data taken from: Table of Isotopes and USNRDL-TR-807

Thorium Series (4n)*

Nuclide	Historical name	Half-life	Major radiation energies (MeV) and Intensities† α	β	γ
$^{232}_{90}Th$	Thorium	1.41×10^{10}y	3.95 (24%) 4.01 (76%)	---	---
$^{228}_{88}Ra$	Mesothorium I	6.7y	---	0.055 (100%)	---
$^{228}_{89}Ac$	Mesothorium II	6.13h	---	1.18 (35%) 1.75 (12%) 2.09 (12%)	0.34c‡ (15%) 0.908 (25%) 0.96c (20%)
$^{228}_{90}Th$	Radiothorium	1.910y	5.34 (28%) 5.43 (71%)	---	0.084 (1.6%) 0.214 (0.3%)
$^{224}_{88}Ra$	Thorium X	3.64d	5.45 (6%) 5.68 (94%)	---	0.241 (3.7%)
$^{220}_{86}Rn$	Emanation Thoron (Tn)	55s	6.29 (100%)	---	0.55 (0.07%)
$^{216}_{84}Po$	Thorium A	0.15s	6.78 (100%)	---	---
$^{212}_{82}Pb$	Thorium B	10.64h	---	0.346 (81%) 0.586 (14%)	0.239 (47%) 0.300 (3.2%)
$^{212}_{83}Bi$	Thorium C	60.6m	6.05 (25%) 6.09 (10%)	1.55 (5%) 2.26 (55%)	0.040 (2%) 0.727 (7%) 1.620 (1.8%)
64.0% / 36.0%					
$^{212}_{84}Po$	Thorium C'	304ns	8.78 (100%)	---	---
$^{208}_{81}Tl$	Thorium C''	3.10m	---	1.28 (25%) 1.52 (21%) 1.80 (50%)	0.511 (23%) 0.583 (86%) 0.860 (12%) 2.614 (100%)
$^{208}_{82}Pb$	Thorium D	Stable	---	---	---

*This expression describes the mass number of any member in this series, where n is an integer.
Example: $^{232}_{90}Th$ (4n).....4(58) = 232

†Intensities refer to percentage of disintegrations of the nuclide itself, not to original parent of series.

‡Complex energy peak which would be incompletely resolved by instruments of moderately low resolving power such as scintillators.

Data taken from: Lederer, C. M., Hollander, J. M., and Perlman, I., Table of Isotopes (6th ed.; New York: John Wiley & Sons, Inc., 1967) and Hogan, O. H., Zigman, P. E., and Mackin, J. L., Beta Spectra (USNRDL-TR-802 [Washington, D.C.: U.S. Atomic Energy Commission, 1964]).

Controls for Environmental Pollution, Inc.

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PAGE 1 CEP, Inc. REPORT LAB # 88-05-271

RECEIVED 05/18/88 05/17/88 09:02:03

REPORT TO: Allstate Environmental Serv
217 North Second St
St. Charles, MO 63301

ATTEN: Tom Coville

CLIENT: ALLSTATE ENV SAMPLES: 3
COMPANY: Allstate Environmental Service
FACILITY:

WORK ID: Environmental
TAKEN: 05/13/88
TRANS: Federal Express
TYPE: Soil
P.O. #:
INVOICE: under separate cover

PREPARED BY: Controls for Environmental Pollution, Inc
1525 Rosina Avenue
Santa Fe, NM 87502

ATTEN:
PHONE: (505) 982-9841

VERIFIED BY

CONTACT: GAIL

Remainder of sample(s) for routine analysis will be disposed of three weeks from final report date. Sample(s) for bacteria analysis only, will be disposed of one day after final report. This is not applicable if other arrangements have been made.

SAMPLE IDENTIFICATION

01	#513-01	Bu	T S
02	#513-02	Bu	T S
03	#513-03	Bu	T S

CEP, Inc. TEST CODES and NAMES used on this report

ALPHAS Gross Alpha

Controls for Environmental Pollution, Inc.

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PAGE 2

REPORT OF ANALYSIS

LAB # 88-05-271

SAMPLE IDENTIFICATION		DATE COLLECTED	TYPE OF ANALYSIS	pCi/gram
F512-01	Bq: T.C.	05/10/88	Gross Alpha	1.84+/-0.5
F512-02	Bq: T.C.	05/10/88	Gross Alpha	1.74+/-0.5
F512-03	Bq: T.C.	05/10/88	Gross Alpha	1.14+/-0.4

Controls for Environmental Pollution, Inc.

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PAGE 1 CEP, Inc. REPORT LAB # 88-05-272

RECEIVED 05/16/88 05/16/88 14:45:27

REPORT TO: Allstate Environmental Service
217 North Second St
St Charles, MO 63301

ATTEN: Joe Sovilla

PREPARED BY: Controls for Environmental Pollution, Inc.
1525 Rosina Street
Santa Fe, NM 87502

ATTEN:

PHONE: (505) 982-9841

VERIFIED BY

CONTACT MAIL

CLIENT: ALLSTATE ENV SAMPLES: 1

COMPANY: Allstate Environmental Service

FACILITY:

Remainder of sample(s) for routine analysis will be disposed of three weeks from final report date. Sample(s) for bacteria analysis only will be disposed of one day after final report. This is not applicable if other arrangements have been made.

WORK ID: Environmental

TAKEN: 05/13/88

TRANS: Federal Express

TYPE: Liquid

P. O. #:

INVOICE: under separate cover

* High statistics due to large amount of solids. Sample had two distinct layers, results are an average of multiple analyses.

SAMPLE IDENTIFICATION	CEP, Inc.	TEST CODES and NAMES used on this report
D1 #513-ABCD-L	ALPHA1	Gross Alpha

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Controls for Environmental Pollution, Inc.

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REPORT OF ANALYSIS

LAB # 88-05-272

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	pCi/liter
0013-ABCM-L	05/10/88	Gross Alpha	4500+/-3000