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SITE MANAGEMENT SECTION

MEMORANDUM

TO: Royal Nadeau
EPA/ERT

FROM: Anthony Lombardo
ERT/TAT

George Klinger
ERT/TAT

THRU: W. Scott Butterfield
ERT/TATL

SUBJECT: Results of U.S. Scrap, Chicago, Illinois
Preliminary Soil Gas Survey

DATE: September 19, 1985

TAT-12-F-00134
TDD 12-8509-01
PCS 3088

GENERAL

A preliminary soil gas survey was performed at the U.S. Scrap, Chicago, Illinois site on September 4-9, 1985, by Royal Nadeau and Allen Humphrey of EPA/ERT, George Klinger of ERT/TAT, and three ERRU field technicians. Approximately 69 stations were surveyed. Wherever possible, stations were screened for % Lower Explosive Limit (%LEL), % gas (as methane), temperature, and total organic vapors (as benzene).

Air bag samples were taken at 48 stations. Of these, 24 were analyzed in the field for aromatic hydrocarbons and total hydrocarbons using a Photovac portable gas chromatograph. Twenty-eight (28) samples were analyzed in-house for the same parameters using a Photovac. Eight samples were selected for analysis by GC/MS at a later time. They were fixed onto Tenax sorbent tubes on September 13. Samples analyzed in-house may have low recoveries due to sample degradation.

An MSA Gascope combustible gas meter was used to measure % LEL and % gas. These readings are for total organic vapors as methane. One-hundred % LEL is defined as the minimum amount of methane in air needed for combustion to occur. The detection limit of this instrument in either mode is at least four orders of magnitude above that of the Photovac.

Tables of preliminary soil gas survey results, Photovac results, and chromatograms are attached.

PROBLEMS/SOLUTIONS

An unmarked sample bag was received in-house for analysis. This was analyzed and showed a significant amount of total volatile organics, toluene, and xylene.

Two bag samples are unaccounted for; these are C22 and E32. They were not analyzed in the field or received for analysis in-house. The data sheet for Sample B12 was missing; this sample was analyzed in the field using the Photovac.

The same Photovac was used for in-field and in-house analyses. In-field analyses were conducted using its SE-30 chromatographic column (the unit has two different columns). The SE-30 column did not function property during the in-house analysis of the samples which forced the utilization of the Photovac's second column; a CSP-20 M column. This column does not permit separation and accurate quantification of TCE (trichloroethylene) and PCE (perchloroethylene).

TABLE 1

RESULTS FROM THE PRELIMINARY SOIL GAS SURVEY
AT U.S. SCRAP SITE
CHICAGO, ILLINOIS
CONDUCTED BY U.S. EPA/ERT

STATION	HNU (PPM)	%LEL	%GAS	TOTAL V.O. (AS TOLUENE)	TEMP. (°F)	DEPTH (FT.)	BAG SAMPLE
A13	0	0	0	-	71[5]	2.5	
A14	1	0	54	-	78	3.5	
A16	0	0	25	-	78	3.0	
A18	0	0	20	>100	-	3.0	X
A22	0	0	0	-	-	-	
B05	-	-	-	128	84	2.5	X
B09	11	-	-	ND	74.8	2.5	X
B12	-	-	-	1000	-	1.5	X
B14	100	0	0	-	77	4.5	
B20	2	0	0	-	-	5.0	
B24	-	0	0	91.4	70	3.0	X
B26	-	0	0	6.65	62	4.0	X
B27	-	-	-	98.5	83.5	4.0	X
B28	-	-	-	49.7	-	4.5	X
B30	-	-	-	3.32	73	3.5	X
B32	-	0	0	25[4], 9.8+	89	3.0	X
C07	15	-	-	ND	-	2.5	X
C08	3.5	-	-	-	74.5	3.0	
C09	30	-	-	>1000	70.9	3.5	X
C10	7	-	-	-	71.5	4.5	
C11	20	0	0	-	95.2	2.5	
C12	13	0	0	>1000	82.3	4.5	X
C13	0	0	4	-	70[5]	4.0	
C14	120	-	-	800	70	4.0	X
O18	-	-	-	-	93	1.5	
C20	1	0	0	-	71	2.0	
C22	15	0	0	-	72	5.6	X
C24	-	0	0	282	-	4.0	X
C27	-	-	-	1.8	87	4.0	X

ND : Not detected.
%LEL : Lower Explosive Limit (as methane).
%Gas : % volatile organics (as methane).
V.O. : Volatile Organics.
- : Not recorded or no analysis.
+ : In-field, in-house analyses respectively.
1 : Penetration not possible, refusal seven times.
2 : Two samples taken, north and south of mark.
3 : Ambient air.
4 : See Table 3.
5 : Result questionable.
6 : Bag marked as C30.

RESULTS FROM THE PRELIMINARY SOIL GAS SURVEY
AT U.S. SCRAP SITE
CHICAGO, ILLINOIS
CONDUCTED BY U.S. EPA ERT

STATION	HNU (PPM)	%LEL	%GAS	TOTAL V.O. (AS TOLUENE)	TEMP. (°F)	DEPTH (FT.)	BAG SAMPLE
C28	-	-	-	-	103	5.0	
C30	-	-	-	228	72	4.0	X
C32	-	0	0	ND, 211+	88	4.0	X
C33	-	-	-	8.5	88	5.0	X
D07	25	0	-	>1000		3.0	X
D08[2]	190	0	0	1300	84	2.5	X
D08	100	-	-	-		5.0	
D09	20	-	-	250	74.8	3.5	X
D10	2	-	-	>1000	70.4	2.5	X
D11	8	-	-	-	73.3	4.0	
D12	20	0	20	>1000	54	4.0	X
D14	-	0	0	ND	65	3.5	X
D20	20	0	0	10	72	5.0	X
D22	2.5	0	0	-	74	2.6	
D24	-	0	0	ND, 10.6+	68	3.0	X
D26	-	-	-	ND, 129	75	4.5	X
D27	-	-	-	412	91	4.0	X
D28	-	-	-	1198	88	5.0	X
D30[6]	-	-	-	107	71	3.5	X
D32	6	-	-	-	88	2.0	X
D33	-	-	-	349	-	5.0	X
E03	17	-	-	>100<1000	75.5	2.0	X
E03	54	0.2	-	>100<1000	74.9	5.0	X
E05	-	-	-	-	73	2.0	X
E10	-	-	-	-	75.0	2.0	
E11	25	44	0	1000	68.2	2.5	X
E12	-	0	52	>1000	67.6	4.5	X
E14	5	0	0	-	-	3.0	
E16	14	0	0	ND	76	2.0	X
E18	5	0	0	-	68	3.0	
E20[1]	-	-	-	-	-	-	
E22	90	-	-	690	77	4.0	X
E24	-	0	0	1113	71	2.4	X
E26	-	-	-	392	71	2.5	X
E27	-	0	0	100, 1881	83	4.5	X
E28	-	-	-	-	73	1.0	
E30	-	-	-	50.7	-	5.0	X
E32	8	0	0	-	83	2.5	X
F25	-	-	-	3568	85	4.5	X
F27	-	0	0	4512	88	4.0	X
[illegible][3]	-	-	-	1.5	-	-	X
[illegible][3]	-	-	-	ND	-	-	X

IN-HOUSE PRELIMINARY ANALYSIS OF
SOIL GAS SAMPLES
FROM
U.S. GRAP SITE
CHICAGO, ILLINOIS

STATION		RESULTS (PPM)					
		SAMPLE VOLUME (UL)	TOTAL AS TOLUENE	BENZENE	TOLUENE	ETHYL BENZENE	XYLE
B05	2.5 FT.	50	[illegible]	[illegible]	ND	ND	14.9
B24	3 FT.	50	91.4	ND	2.61	ND	ND
B26	4 FT.	50	6.65	ND	2.15	4.52	ND
B27		50	98.5	5.41	2.21	0.72	2.11
B28	4.5 FT.	50	49.7	2.12	15.5	23.3	ND
B30	3.5 FT.	50	3.32	ND	0.11	ND	ND
B32		50	9.8	0.133	0.192	0.014	ND
C24	4 FT.	50	282	ND	6.40	41.6	5.71
C27		50	1.8	ND	ND	ND	ND
C30**	4 FT.	50	228	14.5	16.6	44.5	12.8
C32	4 FT.	50	711	213*	ND	2.33	ND
C33	5 FT.	50	8.5	ND	ND	ND	ND
DW		50	1.5	ND	ND	ND	ND
D24		50	10.6	0.10	0.085	0.86	ND
D26		50	129	8.0	15.9	ND	11.7
D27		50	412	23.3	2.35	2.20	ND
D28	5 FT.	50	1198	523	ND	6.13	ND
D30**	4 FT.	50	107[illegible]	[illegible].8	1.87	ND	ND
D32		50	92.3	0.88	0.52	48.2	ND
D33	5 FT.	50	349	185*	10.3	18.8	ND
E05	2 FT.	50	20.2	1.52	1.30	ND	ND
E22	4 FT.	50	690	489*	26.3	ND	8.31
E24		50	1113	180	62.2	ND	9.0[illegible]
E26	2.5 FT.	50	392	0.50	3.53	32.4	15.[illegible]
E27	4.5 FT.	50	1881	97.2	203	ND	ND
E30	5 FT.	50	50.7	11.6	6.13	ND	8.[illegible]
F25		5	3568	1540*	277	203	ND
F27	4 FT.	5	4512	74.3	202	98.1	ND
Unmarked Sample		50	251.	ND	2.62	ND	31.[illegible]

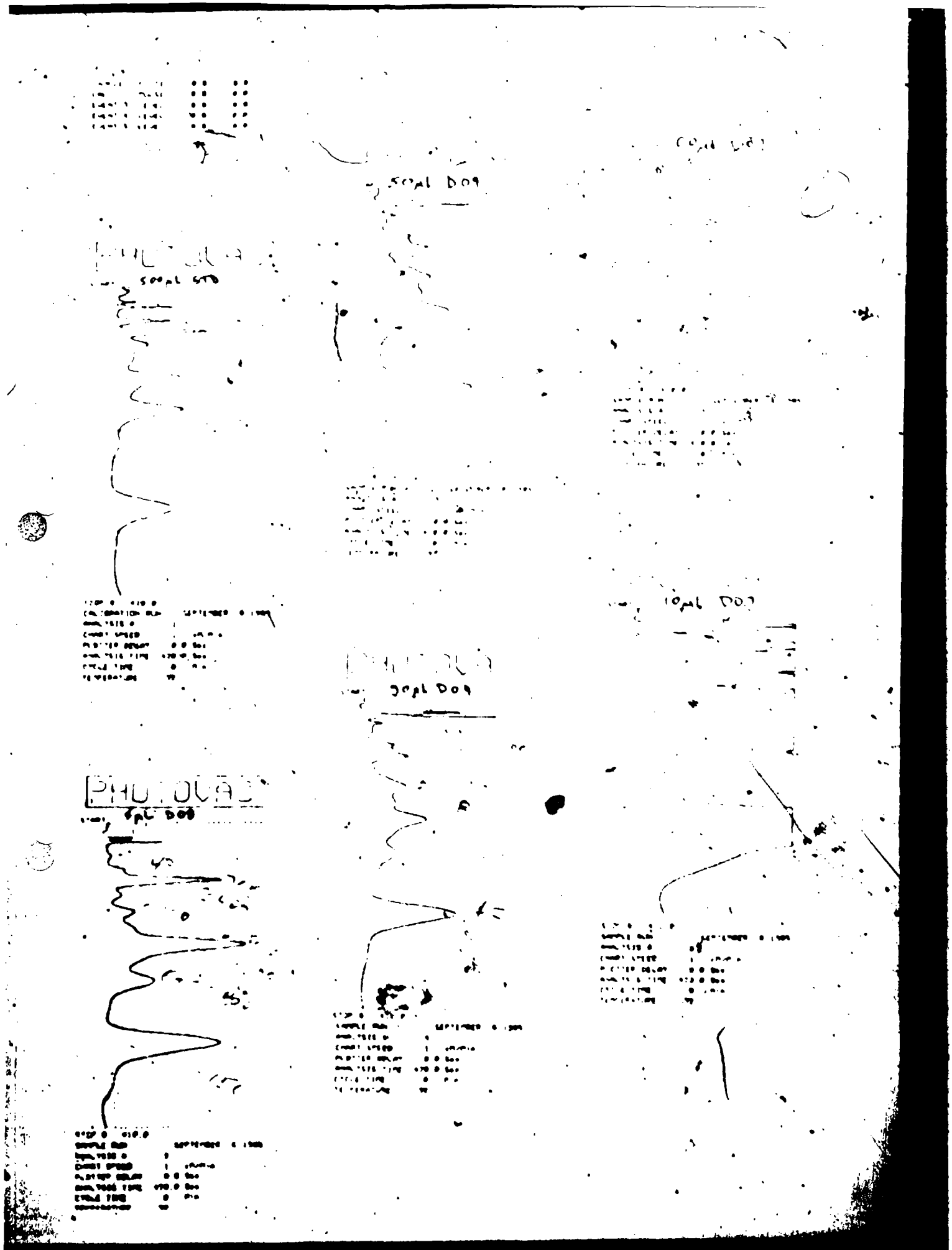
* : Benzene is a main constituent.
** : Both bags were marked as C30. The above may be reversed.

TABLE 3

IN FIELD PHOTOVAC ANALYSES OF
SOIL GAS SAMPLES
FROM
U.S. SCRAP SITE
CHICAGO, ILLINOIS

STATION		SAMPLE VOLUME (UL)	TOTAL (AS TOLUENE)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE	TCE
A18		50	>100	50	50	100	>100	100*
B09		50	ND	ND	ND	ND	ND	ND
B12		5	1000	40	50	50	100	200*
B32		50	LARGE UNKNOWN 25 PPM	ND	ND	ND	ND	ND
C07		50	ND	ND	ND	ND	ND	ND
C09	3.5 FT.	5	>1000	100	500	500	>1000	ND*
C12		5	>1000	ND	>1000	>1000	>1000	1000
C14		5	800	100	200	50	200	200
C32		50	ND	ND	ND	ND	ND	ND
D07		5	>1000	ND	>	>10	>10	>100
D08	2.5 FT.	5	1000	40	100	ND	150	400
D09	3.5 FT.	50	50	8	8	ND	12	ND
D10		5	>1000	>1000	>1000	200	>1000	>100
D12	4 FT.	50	>1000	ND	>1000	ND	>1000	ND
D14		50	ND	ND	ND	ND	ND	ND
D20		50	10	ND	ND	ND	ND	ND
D24		50	ND	ND	ND	ND	ND	ND
D26		50	ND	ND	>100	>100	>100	ND
E03	2 FT.	5	>100<1000	>100	>100	10	>100	>100*
E03	5 FT.	5	>100<1000	>100	>100	10	>100	>100*
E11		5	1000	50	1000	100	1000	100
E12	4.5 FT.	5	>1000	>1000	>1000	>100	>1000	>1000
E16		50	ND	ND	ND	ND	ND	ND
E27		50	100	10	10	10	20	ND
UW		50	ND	ND	ND	ND	ND	ND

* PCE detected.


50µL DO9
500µL STD
10µL DO9
90µL DO9
PHOTOVAC
5µL DO8

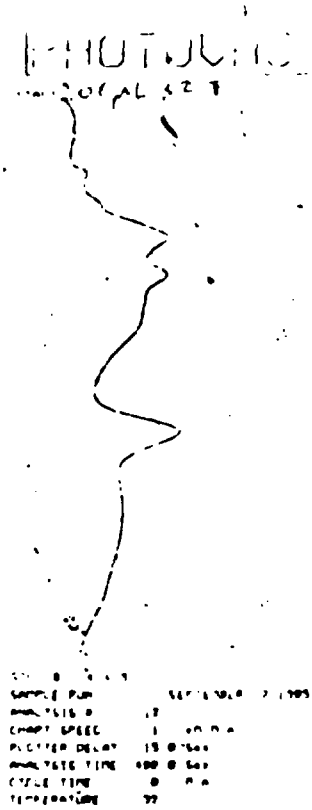
DOT

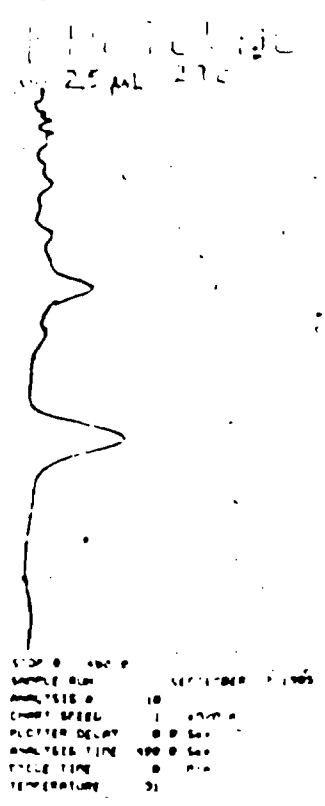
500µL STD

(UL)

PHOTOVAC
500 µL STD

PHOTOVAC





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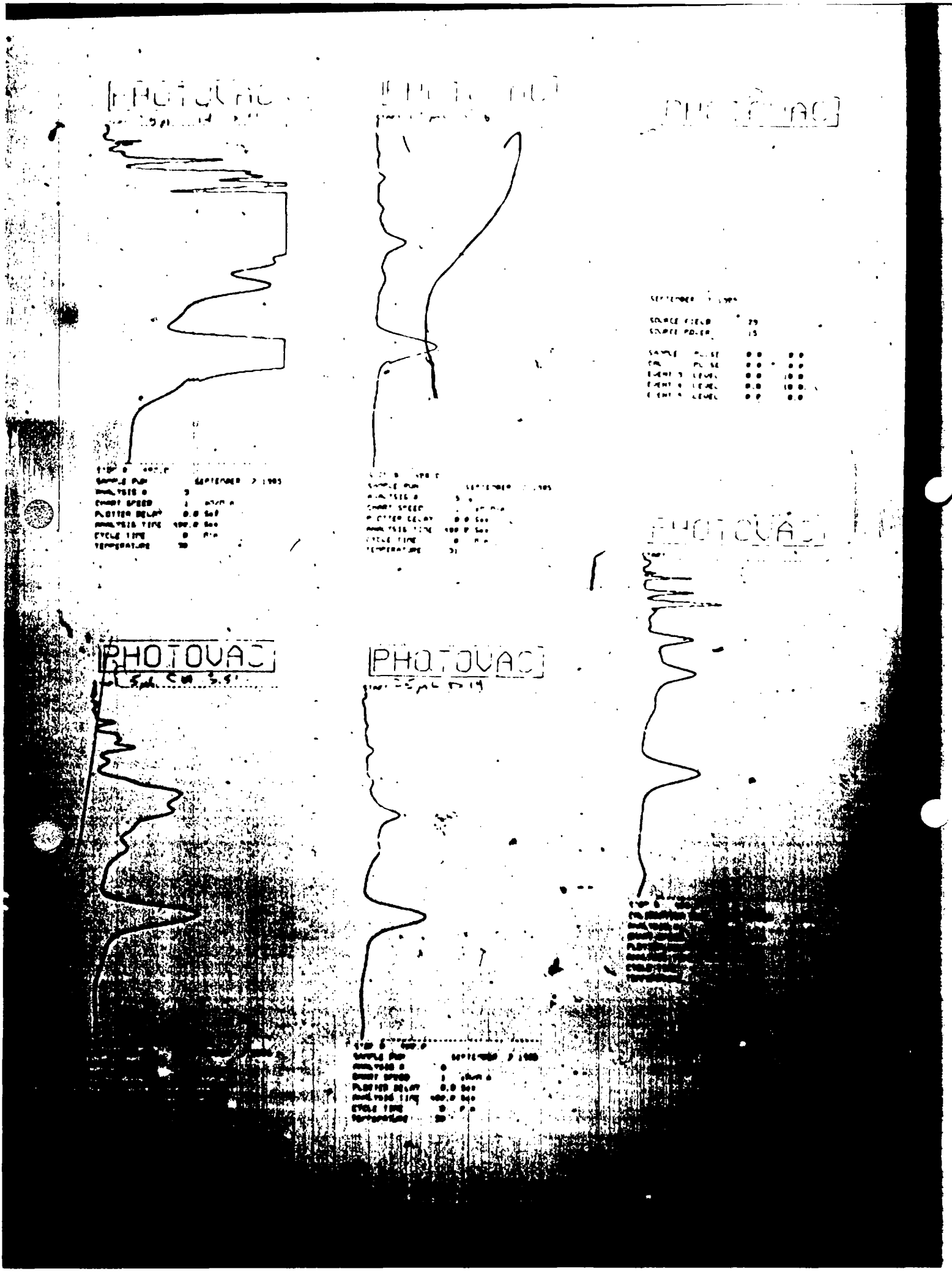
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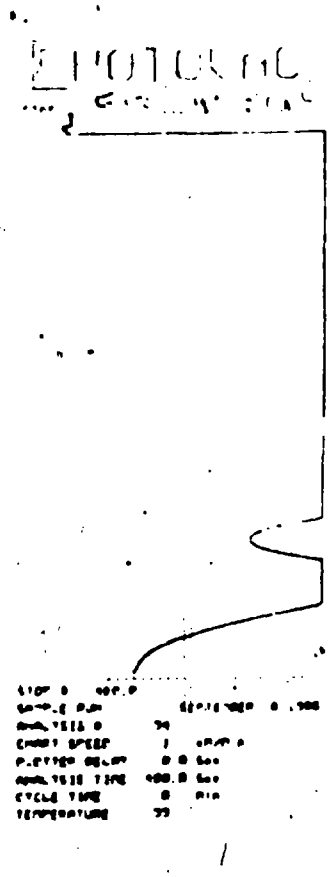

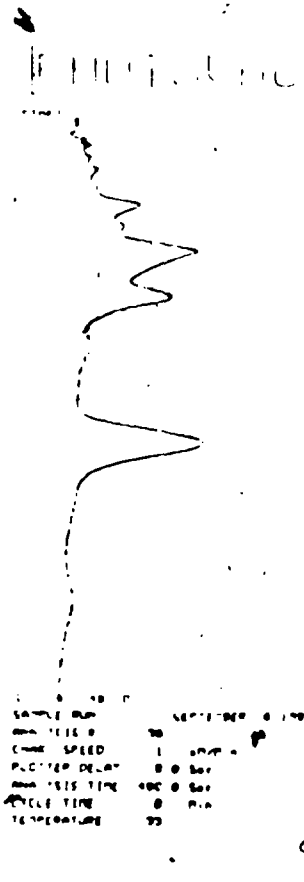

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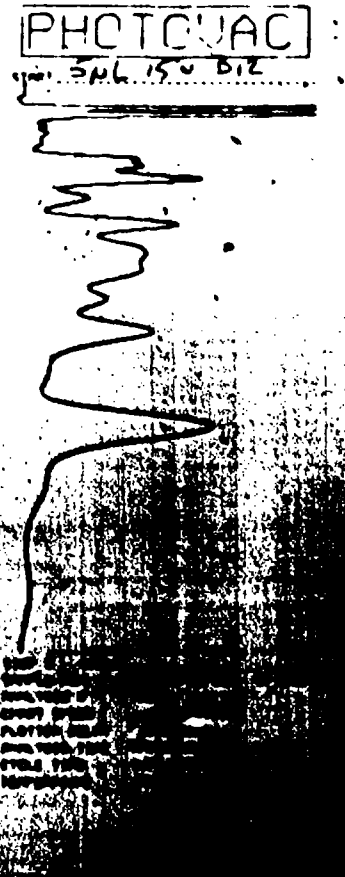
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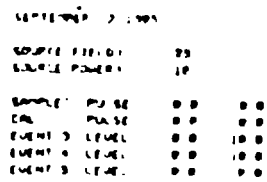
PHOTOVAC
CHART SPEED
PLOTTER DELAY
TEMPERATURE



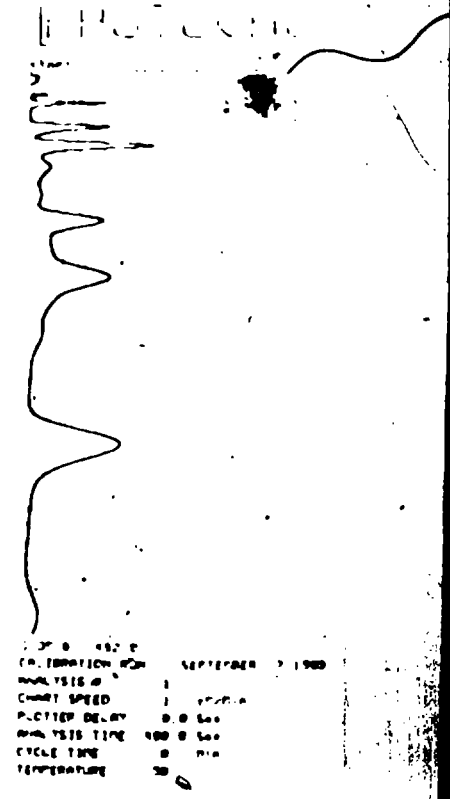
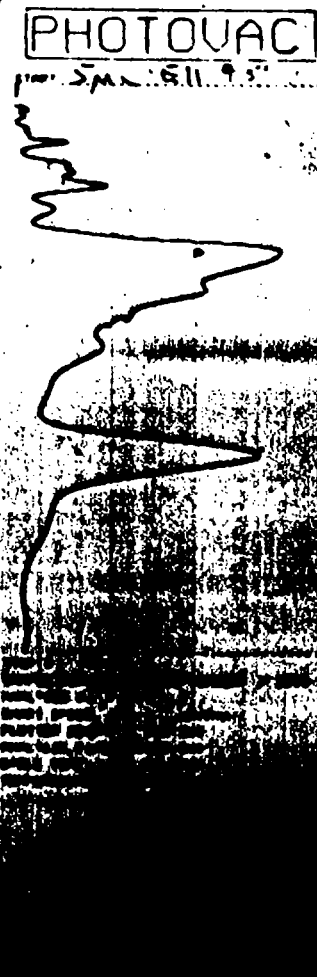


CHART SPEED
PLOTTER DELAY
CYCLE TIME
TEMPERATURE

PHOTOVAC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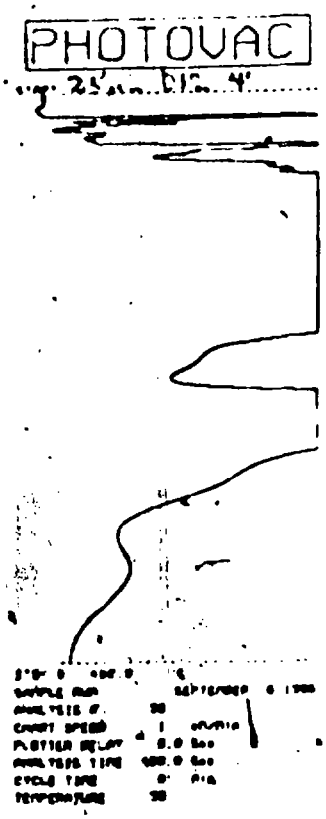
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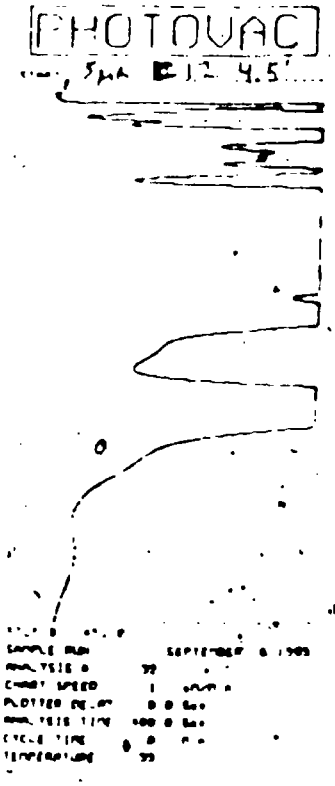
25 µm D12 4'

PHOTOVAC
50 µL D20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5 µL D12 4.5'

PHOTOVAC
25 µL D20

PHOTOVAC

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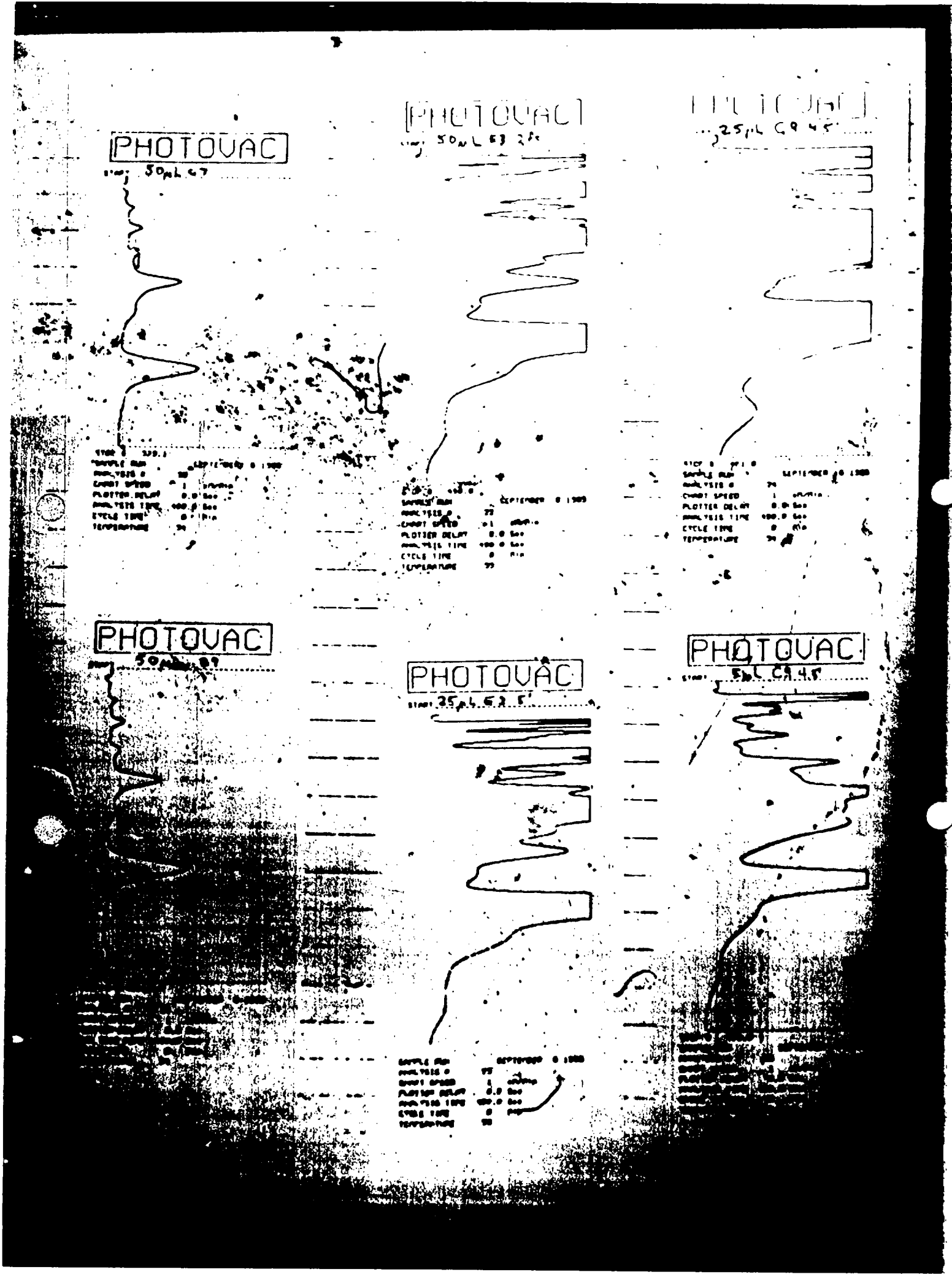
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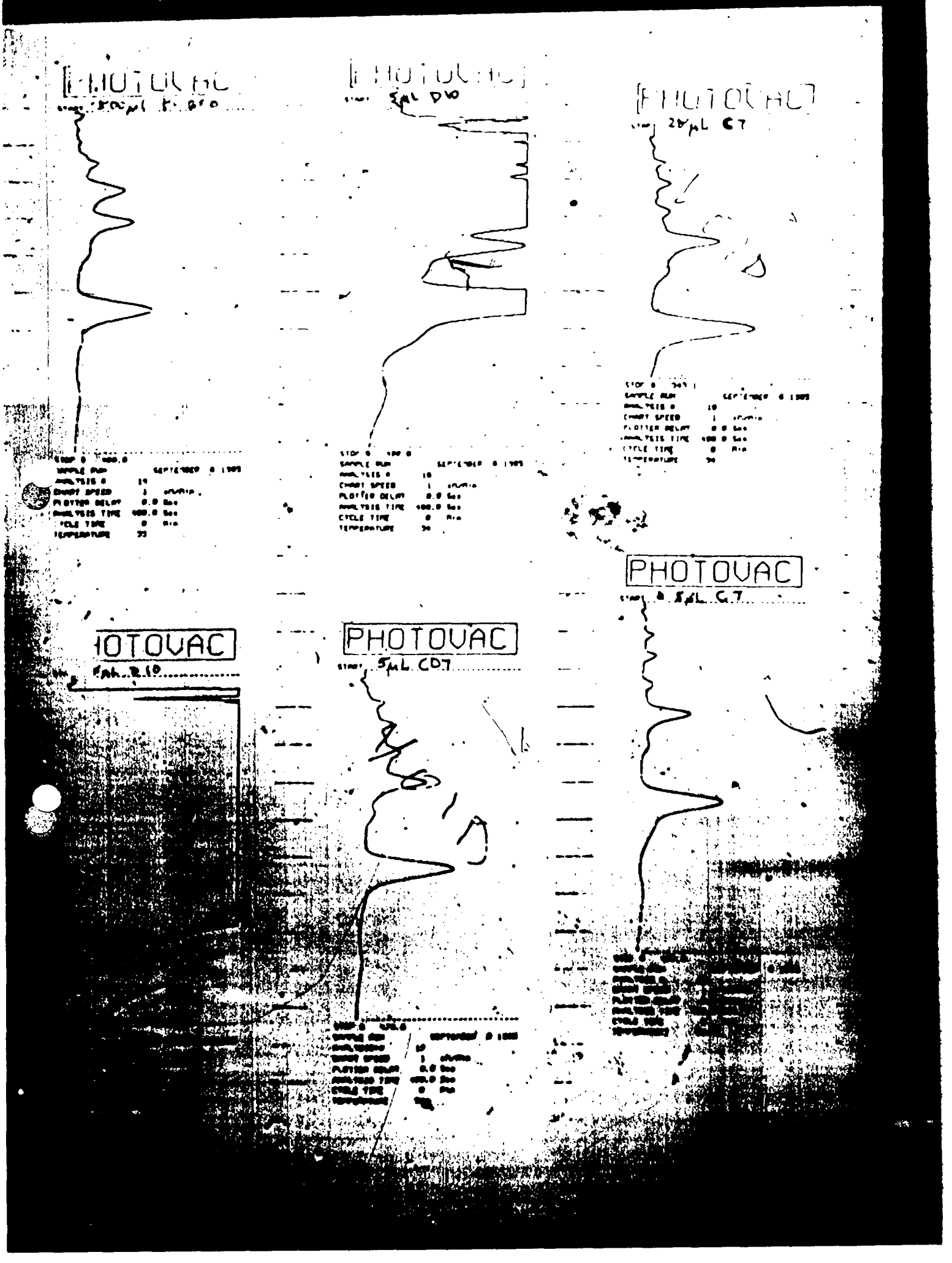

PHOTOVAC
5μL D10
PHOTOVAC
28μL C7
PHOTOVAC
5μL C7
PHOTOVAC
5μL CD7

Samples Done Inhouse

RUN # 14 SEP/09/85 15 56
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.06	121630	BV		0.000
0.20	21[illegible]	D VV		0.000
0.27	[illegible]52	VH		0.000
0.33	1.2562E+07	SHH		1.014
0.55	1.5559E+07	ISHH		1.026
1.02	7013600	TBV	3	1.141
1.32	8893500	TVV	4	1.181
2.01	840200	ITVB		0.000

TOTAL AREA= 4.5276E+07
MUL FACTOR= 1.0000E+00

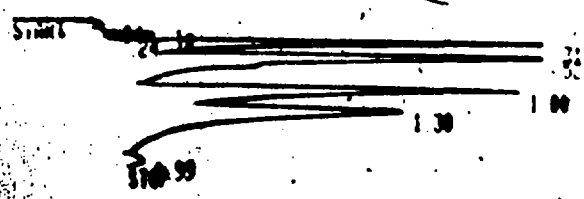
500 µl Std

CALIB ESTD

REF % RTW= 5
% RTW= 5

CAL #	RT			AMT	
1 =	3	1		= 1	0
2 =	5	2	2	CLEAR #	
	5	2		= 1	0
3 =	1	0	0	= 1	0
4 =	1	3		= 1	0
5 =					

REF PK CAL # 2
REF PK CAL #



RUN # 15 SEP/09/85 16 03 10
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.04	61735	PV		0.000
0.18	358390	VV		0.000
0.24	127410	VH		0.000
0.31	1.3032E+07	SHH	1	10.000
0.52	1.8815E+07	ISHH	2R	10.000
1.00	6868200	TBV	3	10.000
1.30	6859700	TVV	4	10.000
1.99	217960	ITVB		0.000

TOTAL AREA= 4.5532E+07
MUL FACTOR= [illegible]

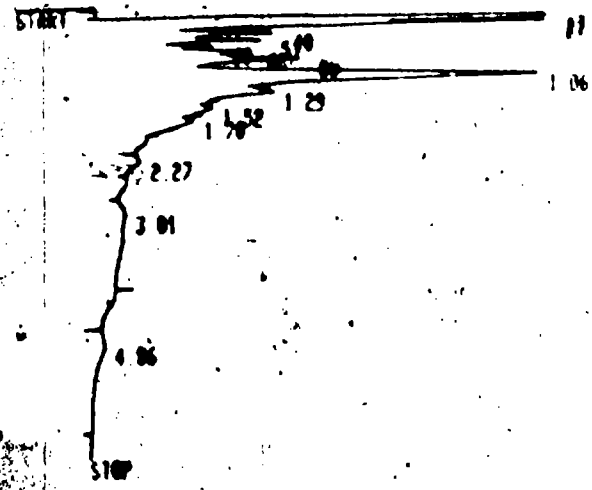
RUN # 15 SEP/09/85 16 03 10
WORKFILE ID: C
WORKFILE NAME:

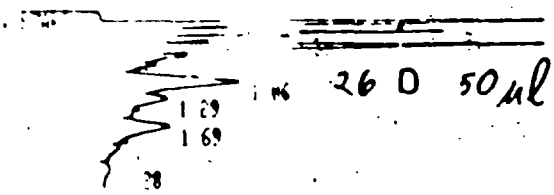
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.04	61735	PV		0.000
0.18	358390	VV		0.000
0.24	127410	VH		0.000
0.31	1.3032E+07	SHH		0.000
0.52	1.8815E+07	ISHH		0.000
1.00	6868200	TBV	3	0.986
1.30	6859700	TVV	4	0.911
1.99	217960	ITVB		0.000

TOTAL AREA= 4.5532E+07
MUL FACTOR= [illegible]

Unmarked Sample - 50µl - Col. 2





26 D 50µl

RUN # 16 SEP/09/85 16 08 12
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.17	6698200	SPH		0.000
0.21	2.3043E+07	DSHB		0.000
0.27	1067000	DTBP		0.000
0.40	664500	TPV		[illegible]
0.51	492010	TVP	2R	
0.60	198550	TPV		
0.68	720040	TVV		0.000
0.80	1531500	TVV		0.000
1.06	7994500	TVV		0.000
1.29	2132000	TVV	4	3.100
[illegible]	[illegible]	TVV		0.000
[illegible]	[illegible]	TVB		0.000
[illegible]	144000	TBV		0.000
[illegible]	[illegible]	TPB		0.000
[illegible]	[illegible]	BP		0.000

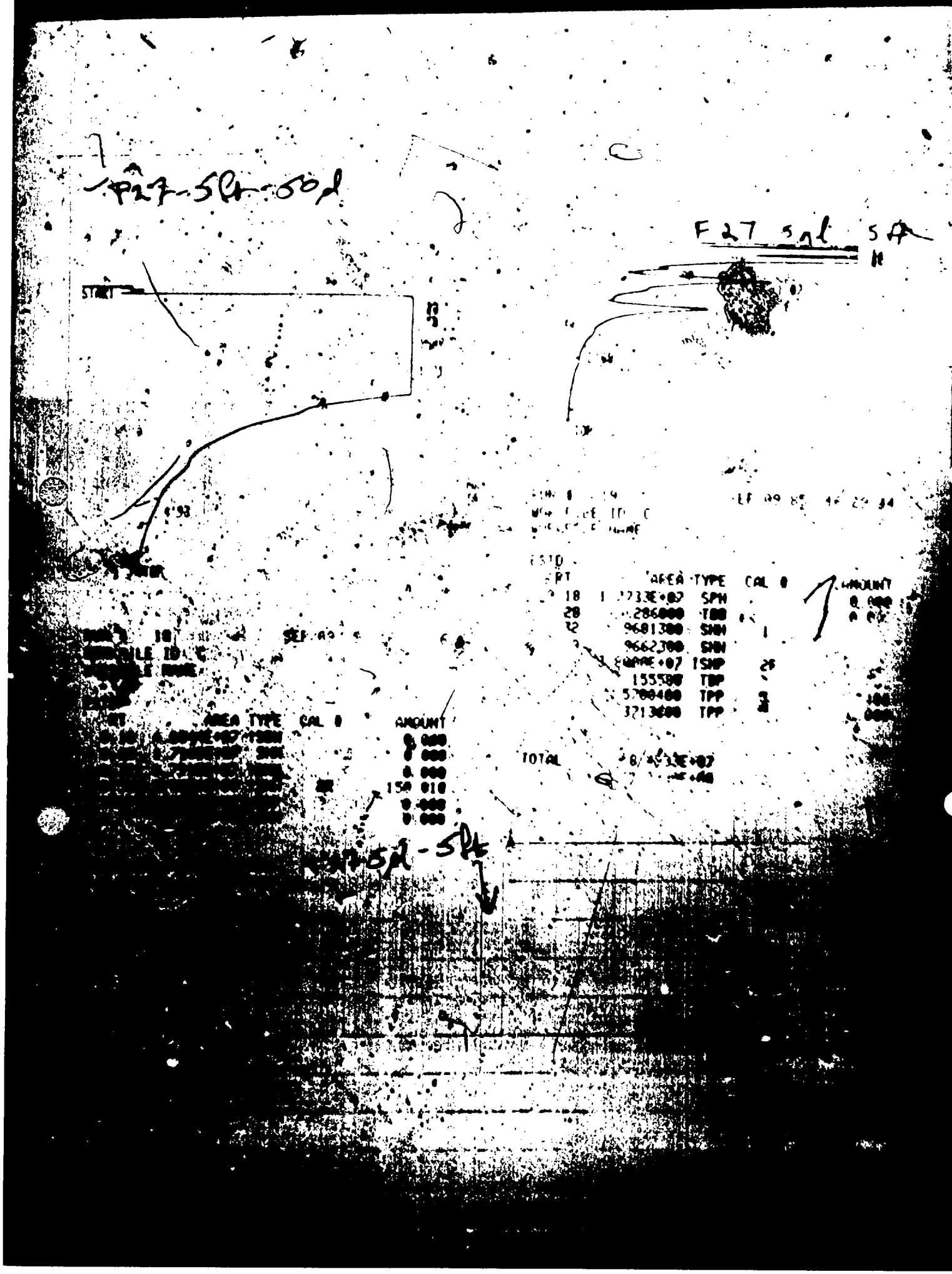
[illegible]D-50µl

RUN # 17 SEP/09/85 16 17 22
WORKFILE ID: C
WORKFILE NAME:

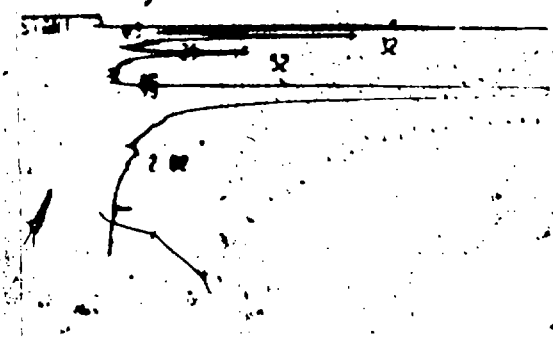
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.17	1.4429E+07	ISBP		0.000
0.27	296360	TBV		0.000
0.31	1037900	DTVV	1	0.796
0.39	763800	TVV		0.000
0.51	2949800	TVV	2R	1.568
0.66	375560	TVV		0.000
0.79	1310[illegible]	TVP		0.000
1.06	2209000	TPV		0.000
1.29	801220	TVV	4	1.168
1.69	1162200	TVV		0.000
2.28	73679	TPP		0.000

TOTAL AREA= 2.4230E+07


F27-5ft-50d
F27 5gl 5ft
START
AREA TYPE CAL 0 AMOUNT
18 1 2733E+07 SPH
28 286000 TBB
32 9681300 SHH
9662300 SHH
155580 TBP
5700400 TPP
3713600 TPP
TOTAL
AREA TYPE CAL 0 AMOUNT
150 010
5gl-5ft

D32 3' 50 µl



RUN # 26 SEP/09/85 1 1
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 00	17982	BH		0 000
0 19	5246000	SHH		0 000
0 32	1149300	TBV	1	0 882
0 39	102020	DTVP		0 000
0 52	983570	TPD	2R	0 523
0 82	14507	TBP		0 000
93	13563	TPD		0 000
11	2.557[illegible]+07	SVP	3	42 198
02	46165			0 000

TOTAL AREA= 3.314[illegible]
[illegible]

RUN # 28 SEP/09/85 17 42 37
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 02	47180	BV		0 000
0 17	182300	VH		0 000
0 30	1 2074E+07	SHH		0 000
0 52	1 3706E+07	ISHH	2R	7 285
1 00	6806600	TBV		0 000
1 31	7711600	TVV	4	11 242
2 00	359010	TVP		0 000

TOTAL AREA= 4.0887E+07
MUL FACTOR= 1 0000E+00

EDIT CALIB

CAL # 1
RT=
AMT=
EA=

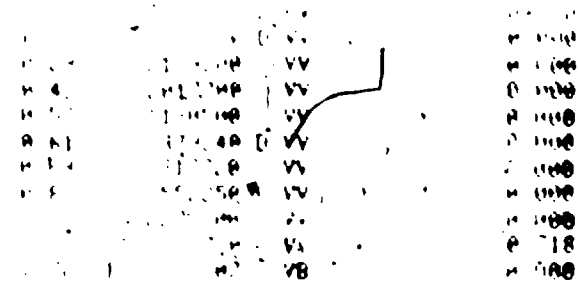
CAL # 3
RT= 1
AMT=
AMT AREA=

CAL #

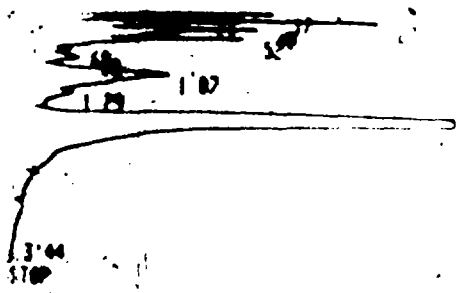
RUN # 28
WORKFILE ID C
WORKFILE NAME

ESTD
RT
0 00
0 17
[illegible]

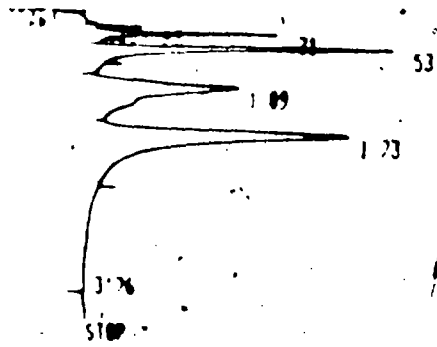
✓ 24C 4' ↓ 50 µl



TOTAL AREA [illegible]18E+07
MUL FACTOR [illegible]00E+00



✓ 630 4' 50 µl



RUN # 20 SEP/09/85 16 36 32
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.17	1.3404E+07	ISBM		0.000
0.21	262500	OTBP		0.000
0.27	1872500	TPV		0.000
0.40	1636000	TVV		0.000
0.52	1204500	TVV	2R	0.640
0.60	44679	TPV		0.[illegible]
0.80	183000	TVP		0.[illegible]0
1.07	2522000	TPV	3	[illegible].163
1.29	391460	TVV	4	0.571
1.70	[illegible]	TVP		0.000

RUN # 22 SEP/09/85 16 46 44
WORKFILE ID C
WORKFILE NAME

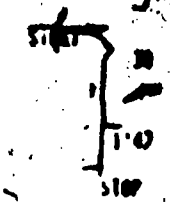
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	29430	PV		0.000
0.23	174540	VV		0.000
0.31	943590	VB	1	0.[illegible]
0.53	2550100	BB		0.000
1.09	3824000	PV		0.000
1.73	7136900	VB		0.000

TOTAL AREA= 1.[illegible]
MUL FACTOR= 1.[illegible]

50 µl (dup)

Blank

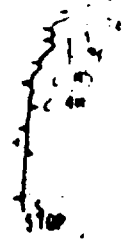


1.72

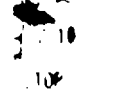
16:40

RUN # 23
WORKFILE

E-30 5'
50ul



C-27 50ul



RUN 0 32 SEP/09/85 17 33 51
WORKFILE ID: C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL 0	AMOUNT
0.18	1.1070E+07	SPB		0.000
0.31	1515000	TBV	1	1.163
0.41	668350	TVV		0.000
0.53	839700	TVV		0.000
0.61	218160	TVV		0.000
0.70	152060	TVV		0.000
0.83	264030	TVV		0.000
1.11	1966300	TVV		0.000
1.34	680260	TVV	4	0.625
1.59	283210	TVV		0.000
1.76	465060	TVV		0.0
2.05	131930	TVP		0.0
2.40	39746	TPB		0.0

TOTAL AREA= 1.8216E+07

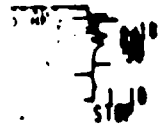
RUN 0 34 SEP/09/85 17 39 31
WORKFILE ID C
WORKFILE NAME
NO CALIB PEAKS FOUND

AREA%

RT	AREA	TYPE	AR/HT	AREA%
0.18	95071	PV	0.030	14.838
0.24	64749	D VV	0.060	10.105
0.33	48289	D VV	0.044	7.524
0.41	113230	VV	0.058	17.750
0.47	54087	VV	0.042	8.441
0.53	175270	VV	0.114	27.432
1.10	83119	VV	0.190	13.989

TOTAL AREA= 640730
MUL FACTOR= 1.0000E+00

C-27 50 ul



RUN 0 35 SEP/09/85 17 42 05
WORKFILE ID: C
WORKFILE NAME:
NO CALIB PEAKS FOUND

AREA%

RT	AREA	TYPE	AR/HT	AREA%
0.18	[illegible]	PV	[illegible]	17.[illegible]
0.24	62310	D VV	[illegible]	10.[illegible]
0.33	45989	D VV	[illegible]	7.[illegible]
0.41	116550	VV	[illegible]	19.[illegible]
0.47	55447	VV	[illegible]	9.613
0.53	149730	VB	[illegible]	25.959
1.10	43246	PV	[illegible]	7.497

TO
MU

D-27 5.5 50.ok

RUN # 36
WORKFILE ID: C
WORKFILE NAME:

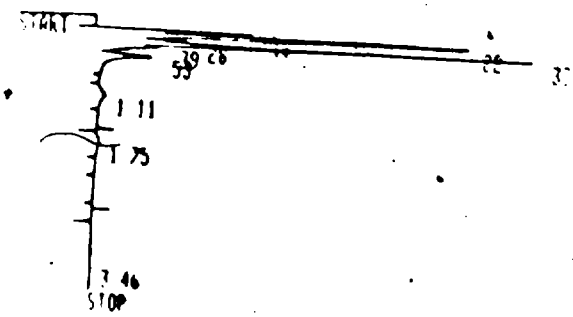
SEP/09/85 17 44 53

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 18	7090900	SBH		0 000
0 22	1 7148E+07	SHH		0 000
0.28	8915500	SHH		0 000
0.33	3 9945E+07	VSHH		0 000
0.39	1480900	DTBB		0 000
0.53	5.1960E+07	SHB		0 000
0.82	323700	TBP		0 000
1.11	1.1217E+07	TPV		0 000
1.31	2479000	TVV	4	0 000
1.75	5894600	TVV		3 614
2.30	707650	TPP		0 000
3.01	38670	TPB		
4.30	455500	BV		
5.05	144410	I VP		

TOTAL AREA= 1.4701E+08

D-21 5 ul
D-27 5 ul



RUN # 37
WORKFILE ID C
WORKFILE NAME
NO CALIB PEAKS FOUND

SEP/09/85 17:51:24

AREA%

RT	AREA	TYPE	AR/HT	AREA%
0 18	453760	BH	0 023	7 775
0 22	1752900	SHH	0 037	30 034
0 28	48138	TBB	0 018	0 825
0 33	2816600	SHB	0 052	48 261
0 39	46485	DTBB	0 028	0 797
0 53	322490	TBP	0 059	5 526
1 11	149470	TPV	0 149	2 561
1 75	86870	BV	0 169	1 489
3 46	159570	I BH	0 706	2 734

TOTAL AREA= 5836300

Standard 500 ul

RUN # 38 SEP/09/85 17 57 32
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 03	126980	BV		0 000
0 17	231640	VV		0 000
0 24	66870	VH		0 000
0 30	1 1879E+07	SHH	1	9 115
0 52	1 4483E+07	1SHP	2R	7 65[illegible]
1 00	6135900	TBV	3	10 125
1 31	6985000	TVV	4	10 183
2 00	166290	TVP		0 000

TOTAL AREA= 4 0075E+07
MUL FACTOR= 1 0000E+00

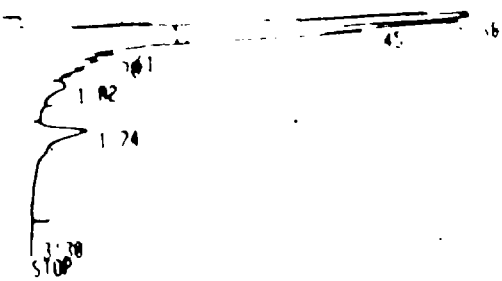
DELETE CALIB

CALIB ESTD

REF % RTW= 6
% RTW= 6

CAL #	RT			AMT
1 =	3	0	=	0
2 =	5	2	=	0
3 =	1	0	=	1 0
4 =	1	3 1	=	1 0
5 =				

REF PK CAL # 2
REF PK CAL #



RUN # 39 SEP/09/85 18 05 47
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 18	394120	VH		0 000
0 22	1307400	SHH		0 000
0 28	2 5420E+07	SHB		0 000
0 38	1005200	TBV		0 000
0 45	638530	DTVB		0 000
0 61	93037	TBP		0 000
0 70	167390	TPV		0 000
1 02	167590	TPB	3	0 273
1 74	1308900	TBB		0 000

TOTAL AREA= 3 0502E+07
MUL FACTOR= 1 0000E+00

JDW 50 ul

RUN # 38 SEP/09/85 17 57 32
WORKFILE ID C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.03	126900	BV		0 000
0.17	231640	VV		0.000
0.24	66870	VH		0.000
0.30	1.1879E+07	SHH	1	10 000
0.52	1.4483E+07	1SHP	2R	0 000
1.00	6135900	TBV	3	10 000
1.31	6985000	TVV	4	10 000
2.00	166290	TVP		0 000

[illegible] 0075E+07

RUN # 41 SEP/09/85 18:10:20
WORKFILE ID C

RT	AREA	TYPE	CAL #	AMOUNT
0.18	27717	VV		0.000
0.25	30356	VV		0.000
0.39	43828	VV		0.000
0.53	59557	VP	2R	0.041
2.04	364290	VV		0.000

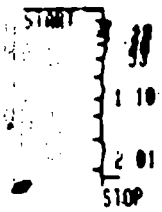
TOTAL AREA= 525740
MUL FACTOR= 1.0000E+00

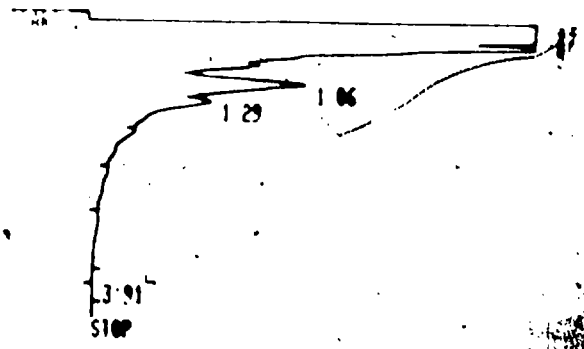
D-32 2' 50ul

RT	AREA	TYPE	CAL #	AMOUNT
0.18	48136	BV		0.000
0.33	78851	VV		0.000
0.40	58563	VV		0.000
0.53	125200	VV	2R	0.086
1.10	126040	VB		0.000
1.73	32552	I PH		0.000

TOTAL AREA= 469340
MUL FACTOR= 1.0000E+00

C30 4' 50ul





RUN # 42 SEP/09/85 18:14:14
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	27533	VV		0.000
0.22	22207	D VV		0.000
0.40	54316	VV		0.000
0.53	48701	VV	2R	0.034
1.10	30422	VV		0.000
2.01	64857	VV		0.000

TOTAL AREA= 247200
MUL FACTOR= [illegible]E+00

[illegible] ul (new syringe)

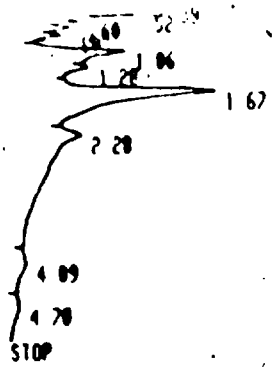
SEP/09/85 18:17:40

RUN # 44 SEP/09/85 18:[illegible]
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.17	1.1243E+07	[illegible]		[illegible]
0.21	1.4765E+07	[illegible]		[illegible]
0.27	1.7891E+07	[illegible]		[illegible]
0.40	2.5[illegible]E+07	[illegible]		[illegible]
0.51	2.5[illegible]	[illegible]	2R	[illegible]
1.06	2.7[illegible]	[illegible]		[illegible]
1.29	[illegible]	[illegible]		[illegible]

TOTAL AREA= 8.1755E+07



E-26 5'
50 µl

0.12	215430	VH		
0.30	1 1.[illegible]E+07	[illegible]		[illegible]
0.50	1 2[illegible]	[illegible]	2R	8.765
0.96	4496400	TBV	3	[illegible]
1.25	5145900	TVV	4	7.367

TOTAL AREA= 3.3[illegible]E+07
M[illegible]CTOR= 1.0000E+00

DELETE CALIB

CAL ESTD

REF % RTW= 6
% RTW=

RUN # 57 SEP/09/85 19 21 50
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	1766600	SPH		0.000
0.22	44280	DTBP		0.000
0.28	[illegible]59976	TPB	1	0.050
0.32	3.3441E+07	ISHH		0.000
0.39	378950	TBP		0.000
0.52	511530	TPV	2R	0.353
0.60	206920	TVV		0.000
0.68	308290	TVV		0.000
0.80	207030	TVV		0.000
1.06	1985600	TPV	3	3.236
1.28	1115000	TVV	4	1.597
1.67	6789600	TVV		0.000
2.28	4514100	TVV		0.000
4.09	[illegible]94870	TVV		0.000
4.70	[illegible]08090	ITVB		0.000

TOTAL AREA= 5.[illegible]E+07
MUL FACTOR= 1.[illegible]

ESCAPE

CALIB ESTD

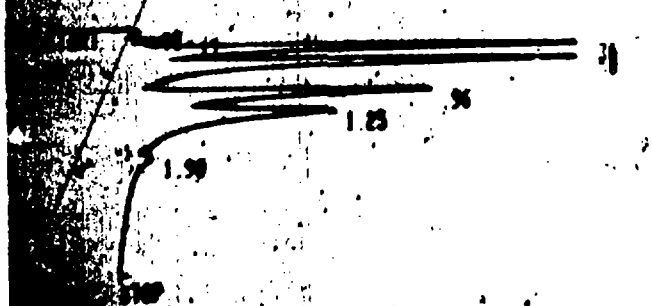
REF % RTW= 6
% RTW= 6

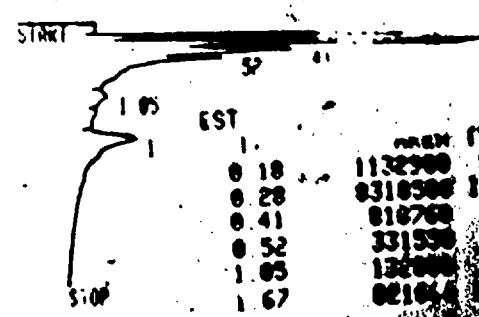
CAL #	RT			AMT	
1 =	3		=	1	0
2 =	5		=	1	0
3 =	9	6	=	1	0
4 =	1	2 5	=	1	0
5 =					

REF PK CAL # 2.
REF PK CAL #

√24B 3' 50 µl

Std 500 µl





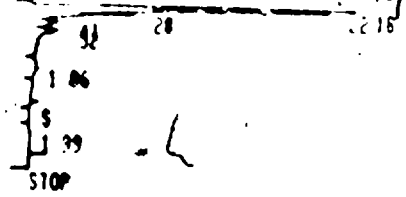
EST

1.	AREA	TYPE	CAL
0.18	1132900	SPH	
0.28	8318500	ISHP	
0.41	818760	TBV	
0.52	331550	TVB	2R
1.05	132000	TBV	
1.67	821064	ITPB	

TOTAL AREA [illegible]

SEP/09/85 19 27 40

C-30 4' 5ml



RUN # 45 SEP/09/85 18 58
WORKFILE ID: C
WORKFILE NAME:

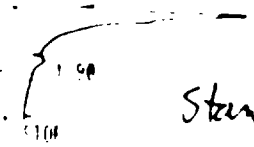
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	269430	PB		0 000
0.[illegible]	54638	PBP		0 000
0.28	245596	TPP		0 000
0.41	67497	TPP		0 000
0.52	67711	TPB	2R	0 047
1.06	100580	TBV	3	0 164
1.99	20759	PB		0 000

TOTAL AREA= 3742900
MUL FACTOR= 1 0000E+00

standard 500ul

Standard 500ul



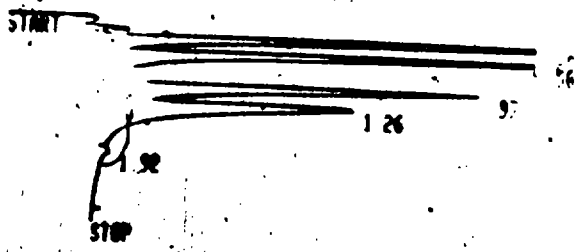
RUN # 49 SEP/09/85 16 45 09
WORKFILE ID C
WORKFILE NAME

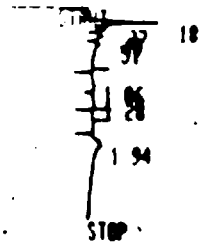
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 03	107280	BV		0 000
0 17	218350	VV		0 000
0 23	93753	VH		0 000
0 30	1 1670E+07	SHH	1	9 824
0 50	1 3262E+07	ISHH	2R	9 157
0 96	4805700	TBV	3	7 832
1 25	5377900	TVV	4	7 639
1 90	748750	TVP		0 000

TOTAL AREA= 3 5883E+07
MUL FACTOR= 1 0000E+00

✓ 33C 5' 50 ml





RUN # 46 SEP/09/85 18 [illegible]
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.[illegible]	[illegible]	BV		0.000
0.17	[illegible]	VV		0.000
0.25	1.[illegible]E+07	[illegible]	1	9.915
0.[illegible]	1.[illegible]E+07	[illegible]	2R	9.233
0.[illegible]	[illegible]	TBV	3	9.079
[illegible]	[illegible]	TVV	4	8.689
[illegible]	[illegible]	TVB		0.000

[illegible]317E+07
[illegible]+00

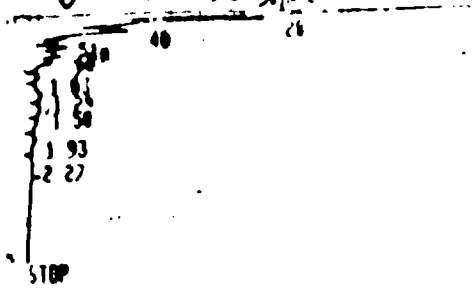
RUN # 50 SEP/09/85 18 40 [illegible]
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	485960	VV	[illegible]	[illegible]
0.27	72930	BVV	[illegible]	[illegible]
0.40	131220	VV	[illegible]	[illegible]
0.51	155900	VB	[illegible]	[illegible]
1.06	36363	PV	[illegible]	[illegible]
1.28	22662	VB	[illegible]	[illegible]
1.94	312140	I BP	[illegible]	[illegible]

[illegible] 1136800

B-27 50 µl



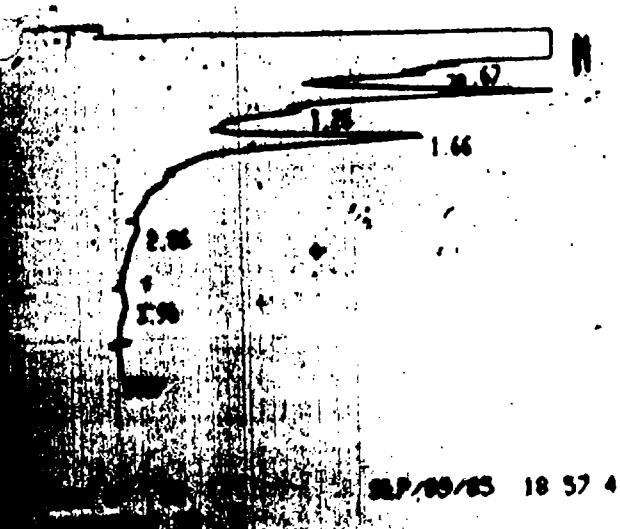
RUN # 51 SEP/09/85 18 52 43
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	
0.18	1.1338E+07	ISHP		0 100
0.28	642260	TBP	1	0 541
0.40	382200	TPV		0 000
0.51	30895	DTPV	2R	0 021
0.60	158050	TPV		0 000
0.68	114290	TVV		0 000
0.79	72273	TVB		0 [illegible]
1.03	44175	TBP	3	0 [illegible]
1.29	147490	TPV	4	0 211
1.50	157590	TVV		0 000
1.93	53239	TVP		0 000
2.27	25007	TPB		0 000

TOTAL AREA= 1.3149E+07
MUL FACTOR= 1.0000E+00

24-E 3' 50 µl

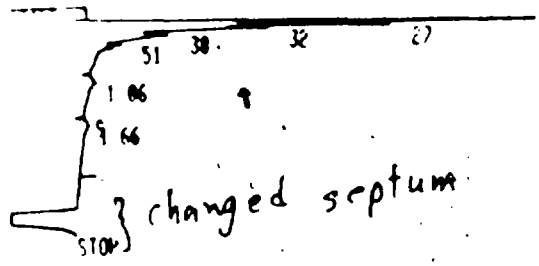


SEP/09/85 18 57 41

0 21	3 1454E+07	ISPH		0 000
0 28	2 1400E+07	SHH		18 016
0 32	1 4543E+07	DSHH		0 000
0 38	2 2355E+07	SHH		0 000
0 51	9013000	SHH	2R	6 223
0 59	3 8199E+07	ISHH		0 000
0 67	178790	TBV		0 000
0 78	432620	TVP		0 000
1 05	4618700	TPV		0 000
1 26	631730	TVP	4	0 904
1 66	4661400	TVB		0 000
2 86	51162	TBP		0 000
3 95	164290	TPP		0 000

TOTAL AREA= 1 4770E+08
MUL FACTOR= 1 0000E+00

24-E 5 µl



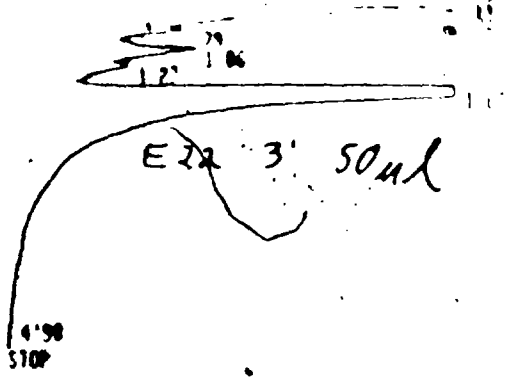
changed septum

RUN # 53 SEP/09/85 [illegible] 35
WORKFILE ID C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0 21	7005000	SPB		0 [illegible]
0 27	621700	TBV	1	0 [illegible]
0 32	265330	DTVP		0 [illegible]
0 38	94196	TPB		0.000
0 51	50200	TBB	2R	0.035
1 06	129500	TBB		0.000
1 66	137140	BB		0 000

TOTAL AREA= 8383100



RT	AREA	TYPE	CAL #	AMOUNT
0.03	10090	FF		0.000
0.19	510[illegible]00	FF		0.000
0.2[illegible]	[illegible]994000	DSHH		0.000
0.26	8363500	SHH		0.000
0.3[illegible]	1.0928E+07	DSHH	1	9.724
0.39	1.1302E+07	SHH		0.000
0.52	2.5850E+07	SHH	2R	20.364
0.69	28697	TBP		0.000
0.80	1567000	TPB		0.000
1.07	1.2488E+08	SHB		0.000
1.67	1.4207E+07	TBB		0.000

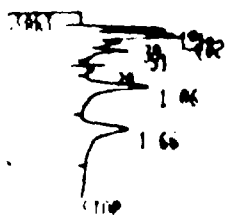
RUN # 60 SEP/09/85 19 39 4
WORKFILE ID: C
WORKFILE NAME:

TOTAL AREA= 2.0924E+08
MUL FACTOR= 1.0000E+00

27E 5 ul

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
[illegible]	[illegible]8100	SPH		0.0[illegible]
	5.2963E+07	ISHH		0.0[illegible]
[illegible].41	1743000	TBV		0.0[illegible]
0.52	3334400	TVB	2R	2.6[illegible]
0.79	124510	TBP		0.0[illegible]
1.06	1331900	TPV		0.0[illegible]
1.27	427820	TVP	4	0.[illegible]
1.67	2.0004E+07	ITPB		0.[illegible]



TOTAL AREA= 8.7547E+07
MUL FACTOR= 1.0000E+00

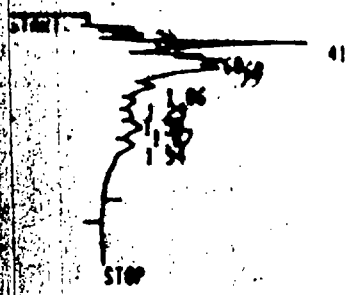
RUN # 62 SEP/09/85 19 51 49
WORKFILE ID C
WORKFILE NAME

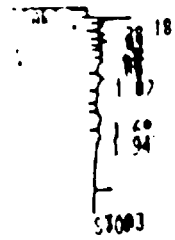
√27E 4' 50ul

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.19	245980	BV		0.000
0.21	328540	D VV		0.000
0.28	423290	VV		0.000
0.32	498500	D VV		0.000
0.39	399720	VV		0.000
0.51	380190	VV	2R	0.300
0.79	57700	BV		0.000
1.06	924640	VP		0.000
1.66	1264400	PV		0.000

TOTAL AREA= 4515000
MUL FACTOR= [illegible]



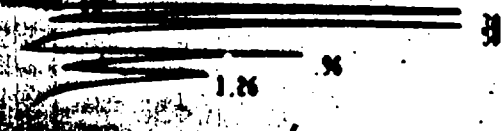


RUN # 63 SEP/09/85 19 56 4.
WORKFILE ID: C
WORKFILE NAME:

ESTD RT	AREA	TYPE	CAL #	AMOUNT
[illegible]	247620	PV		0 000
[illegible]	433270	VV		0 000
[illegible]	2674300	VV		0 000
[illegible]	813430	VV		0.000
[illegible]	1519200	VV		0 000
0.79	2736600	VV		0 000
1 06	1417900	VV		0 000
1 [illegible]	764500	VV	4	1 486
1.50	766990	VV		0 000
1.67	1235900	VV		0 000
1.94	1555300	VB		0 000

TOTAL AREA= 1 4167E+07
MUL FACTOR= 1.0000E+00

Standard 500 ul

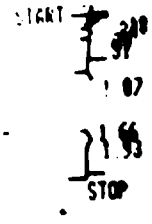


SEP/09/85 20:01 15

AREA	TYPE	CAL #	AMOUNT
65912	PV		0 000
1[illegible]	VV		0.000
1.0000E+07	BMM	1	9.633
[illegible]	BMP	2R	8.753
[illegible]	TVV	3	9 564
[illegible]	TVV	4	9 30[illegible]

RUN # 65 SEP/09/85 20 05 17
WORKFILE ID: C
WORKFILE NAME

ESTD RT	AREA	TYPE	CAL #	AMOUNT
0 18	229460	PV		0 000
0 28	164040	VV		0 000
0 41	181000	VV		0 000
0 52	164740	VV	2R	0.130
0 60	995923	VV		0.000
0 68	163080	VV		0.000
0 80	298360	VV		0.000
1 07	318170	VV		0 000
[illegible]	281640	VV		0.000
[illegible]	348050	VB		0.000

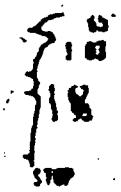


30 ul
3 ul
50 ml

RUN # 68 SEP/09/85 20 [illegible] 31
WORKFILE ID: C
WORKFILE NAME:

ESTD RT	AREA	TYPE	CAL #	AMOUNT
0.10	77677	PV		[illegible]
0.24	56228	VV		[illegible]
0.39	23974	VV		[illegible]
0.51	13656	VB	2R	[illegible]
1.07	93934	BP		[illegible]
1.66	22973	PV		[illegible]
1.93	79957	VB		[illegible]

TOTAL AREA= 368418
MUL FACTOR= 1 0000E+00



B 28 4.5'

50 µl

(new syringe

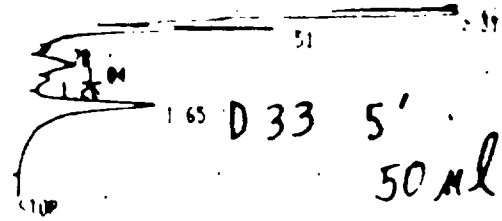
RUN # 69 SEP/09/85 20 16 00
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	687620	PV		0.000
0.30	238750	VV	1	0.212
0.52	1969200	VV	2R	1.551
0.65	607680 D	VV		0.000
1.03	1045300	VV	3	2.325
1.67	238350	VV		0.000
1.95	736310	VV		0.000

AREA= 5523200
MUL FACTOR= 1.0000E+00

B 26 5' 50 µl ↓



D 33 5'

50 µl

RUN # 71 SEP/09/85 20 23 29
WORKFILE ID: C
WORKFILE NAME

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	1.1794E+07	SPH		0.000
0.31	2.0798E+07	ISHH	1	18.499
0.51	1304500	TBB	2R	1.028
0.78	29612	TBP		0.000
1.04	846740	TPV	3	1.883
1.26	293540	TVV	4	0.570
1.65	3707300	TVP		0.000

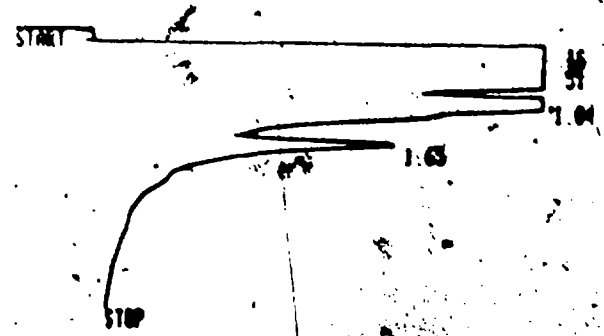
TOTAL AREA= 3.8766E+07
MUL FACTOR= 1.0000E+00

25 F. 50 µl ↓

SEP/09/85 20:19:50

				AMOUNT
[illegible]	[illegible]	PV		0.000
[illegible]	[illegible]	VV		0.000
[illegible]	[illegible]	VV	2R	0.215
[illegible]	[illegible]	VP		0.000
[illegible]	[illegible]	PV	3	0.452
[illegible]	[illegible]	VV		0.000
[illegible]	[illegible]	VP		0.000

[illegible]



RUN # 72 SEP/09/85 20:27:10
WORKFILE ID: C
WORKFILE NAME:

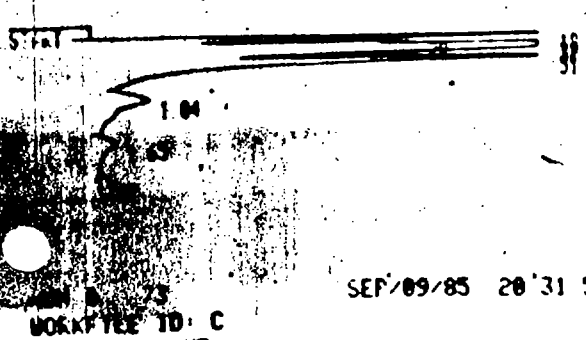
ESTD

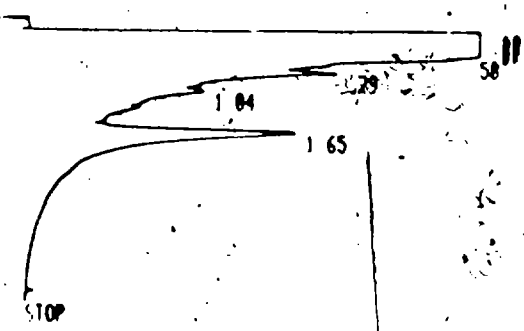
RT	AREA	TYPE	CAL #	AMOUNT
0.18	2.5[illegible]	[illegible]		[illegible]
0.32	0.11[illegible]	[illegible]		[illegible]
0.51	9.67[illegible]	[illegible]		[illegible]
1.04	1.1[illegible]	[illegible]		[illegible]
1.65	3621000	[illegible]		[illegible]

TO[illegible]
MUL [illegible]

25 F 5 ul

D 28 5' 5 ul





RUN # 73 SEP/09/85 20:31 56
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	5895400	SBM		0.00
0.28	124770	TBB		0.00
32	1.6628E+07	SHM		0.00
37	1.2188E+07	ISHM		0.00
51	3517700	TBB	2R	2.771
1.04	913710	TBP	3	2.03
1.65	377520	TPV		0.00

RUN # 74 SEP/09/85 20:35 11
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.19	8881000	SPM		0.00
0.22	1.6761E+07	DSHM		0.00
0.28	1.6[illegible]09E+07	SHM		0.000
0.[illegible]	5.6496E+07	†SHM		0.000
0.37	1001000	DTBB		0.000
0.50	3.1470E+07	ISHP		0.000
0.79	521240	TBP		[illegible]
1.04	[illegible]	TVB	[illegible]	[illegible]
1.65	[illegible]	TBV		0.000

TOTAL AREA= 1.3383E+08
MUL FACTOR= 1.0000E+00