ORIGINAL (Red)

SECTION 7

7.0 LABORATORY DATA

7.1 Sample Data Summary

The attached data summary contains only compounds which were identified as detected in at least one sample. The complete list of compounds analyzed for, their results, and the associated detection limits are located as an appendix. Results for tentatively identified compounds appear following the organic data section of this report.

The following codes are used in the data summary to indicate the confidence in the laboratory results:

CODES RELATING TO IDENTIFICATION
(confidence concerning presence or absence of compounds):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION
(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

SAMPLE DATA SUMMARY

1) F38806 06	7) CW 248	7) CW 249	7) CW 250	7) CW 251	7) CW 252	7) CW 247	7) CW 257	7) CW 253	7) CW 254	7) CW 255	7) CW 256
2) PA 335	8) HW-1	8) HW-2	8) HW-3	8) HW-4	8) HW-5	8) HW-0	8) S-0	8) S-1	8) S-2	8) S-3	8) S-4
3) IT Grinnel	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) Sol	9) Sol	9) Sol	9) Sol
4) PA 071	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low	10) Low
5) Organic	11)	11)	11)	11)	11)	11)	11)	11) 1.4/22/430	11) 1.5/25/240	11) 1.2/200	11) 1.1/200
6) ITCorporation, Cerritos	12) 5-6	12) 6	12) 6	12) 6	12) 6	12) 6	12)	12)	12)	12)	12)
	13) 640 umhos	13) 660 umhos	13) 640 umhos	13) 620 umhos	13) 620 umhos	13) 7 umhos	13)	13)	13)	13)	13)
	14) 0	14) 0	14) 0	14) 0	14) 0	14) 0	14)	14) 74	14) 77	14) 83	14) 83
	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/Kg	15) ug/Kg	15) ug/Kg	15) ug/Kg

COMPOUNDS DETECTED	DETECT LIMIT	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS
Methylene Chloride	5	3 B	3 B	2 B	3 B	12 B	7	5	17 B	23 B	4 B	14 B
Acetone	10	2 B	3 B	2 B	3 B	2 B	3 J	2 J	17 B	42 B	14 B	18 B
1,1,1-Trichloro-ethane	5	2 B					10					
Toluene	5						2 J					
Phenol	10								910 J	4400		
4-Methyl phenol	10									440 J		
2,4-dimethyl phenol	10								280 J	930 J		
Phenanthrene	10								1400 J	470 J		
Fluoranthene	10								860 J	390 J		
Pyrene	10								1400 J	650 J		
bis (2-ethylhexyl) Phthalate	10				36 J				2300 R			
Aroclor 1254	1.0								1200	640		
fluorene	10								320 J			
anthracene	10								370 J			
benzo(a)anthracene	10								520 J			
benzo(a)pyrene	10								490 J			

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9) PHASE
10) CONCENTRATION
11) DILUTION FACTOR (VOA/BNA/PCB)
12) PH
13) FIELD MEASUREMENTS
14) PERCENT SOLID
15) UNITS

MCW 250 and MCW 251 are field duplicates.
MCW 255 and MCW 256 are field duplicates.
CW 247 is a field blank
CW 257 is a field blank

(DRW) 1/14/1988

SAMPLE DATA SUMMARY

1) F3 8806 06	7) CW258	7)	7)	7)	7)	7)	7)	7)	7)	7)	7)	7)
2) PA-335	8) S-5	8)	8)	8)	8)	8)	8)	8)	8)	8)	8)	8)
3) IT Grinnel	9) Soil	9)	9)	9)	9)	9)	9)	9)	9)	9)	9)	9)
4) PA 071	10) LOW	10)	10)	10)	10)	10)	10)	10)	10)	10)	10)	10)
5) Organic	11) 1/1/42	11)	11)	11)	11)	11)	11)	11)	11)	11)	11)	11)
6) IT Corporation, Cerritos	12)	12)	12)	12)	12)	12)	12)	12)	12)	12)	12)	12)
	13)	13)	13)	13)	13)	13)	13)	13)	13)	13)	13)	13)
	14) 88	14)	14)	14)	14)	14)	14)	14)	14)	14)	14)	14)
	15) ug/kg	15)	15)	15)	15)	15)	15)	15)	15)	15)	15)	15)

COMPOUNDS DETECTED	DETECT LIMIT	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS
Methylene Chloride	5	10 B										
Acetone	10	15 B										
1,1,1-Trichloro-ethane	5											
Toluene	5											
Phenol	10											
4-Methyl phenol	10											
Phenanthrene	10											
Fluoranthene	10	49 J										
Pyrene	10											
Dis(2-Ethylhexyl) phthalate	10											
Aroclor 1260	1.0											

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12) PH
13) FIELD MEASUREMENTS
14) PERCENT SOLID
15) UNITS

ORIGINAL (Red)

SAMPLE DATA SUMMARY

1) F3-8806-06	7) MCW912	7) MCW913	7) MCW914	7) MCW915	7) MCW916	7) MCW911	7) MCW917	7) MCW918	7) MCW919	7) MCW920	7) MCW921
2) PA 335	8) HW-1	8) HW-2	8) HW-3	8) HW-4 Dup HW3	8) HW-5	8) HW-0	8) S-1	8) S-2	8) S-3	8) S-4	8) S-5
3) ITT Grinnell	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) Sol	9) Sol	9) Sol	9) Sol	9) Sol
4) 42 071	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW
5) Inorganic	11)	11)	11)	11)	11)	11)	11) .261	11) .286	11) .238	11) .236	11) .247
6) JTC Environmental Consultants	12) 5-6	12) ~6	12) ~6	12) ~6	12) ~6	12) ~6	12)	12)	12)	12)	12)
	13) 640 umho	13) 640 umhos	13) 640 umhos	13) 620 umhos	13) 620 umhos	13) 9 umhos	13)	13)	13)	13) 84.8	13)
	14) 0	14) 0	14) 0	14) 0	14) 0	14) 0	14) 76.6	14) 69.9	14) 84.1		14) 81.0
	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) mg/Kg	15) mg/Kg	15) mg/Kg	15) mg/Kg	15) mg/Kg

COMPOUNDS DETECTED	DETECT. LIMIT	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS
Aluminum	168							13300.0	13200.0	14100.0	14800.0	9300.0
Antimony	58								L 62.7			
Arsenic	3.9							7.6	7.6	10.0	7.0	4.7
Barium	11	14.4	17.8	22.0	18.7	15.1		108.0 L	118.0 L	80.3 L	80.3 L	103.0 L
Beryllium	0.8			1.0 B				1.2 B	0.69 B	1.3 B	1.0 B	0.44 B
Cadmium	3.7							6.0 L	7.9 L	3.0 L	2.8 L	
Calcium	403	99100.0	113000.0	100000.0	93600.0	60300.0		36200.0 J	32100.0 J	4850.0 J	5160.0 J	1720.0 J
Chromium	6.9							103.0	115.0	39.7	35.9	7.5 L
Cobalt	7.2									9.0	9.9	14.4
Copper	22.							126.0	226.0	693.0	689.0	416
Iron	30.	132.0 B	77.8 B	184.0 B	115.0 B	89.5 B	40.0	25200.0	35400.0	29100.0	26600.0	23000.0
Lead	0.9	1.2 B	2.2 B	2.0 B	2.3 B	1.4 B	15.3	600.0	648.0	215.0	217.0	36.2
Magnesium	495	14600.0	12100.0	12200.0	11700.0	23200.0		14600.0	13800.0	2660.0	2740.0	761.0
Manganese	6.1	20.4 J			17.8 J	23.8 J		7600.0	6930.0	1050.0	1070.0	965.0
Mercury	0.14										0.13	
Nickel	16.							20.5 B	21.7 B	44.0 L	40.9 L	16.4 B
Potassium	873	3680.0 B	3810.0 B	3680.0 B	3650.0 B	3280.0 B	1150.0	1720.0 B	1740.0 B	1600.0 B	1500.0 B	2290.0

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MCW914 and MCW915 are aqueous field duplicates
MCW919 and MCW920 are solid field duplicates
MCW911 is a field blank

Dilution factor x det'n limit (left column) = sample detection limit.

ORIGINAL (Red)

SAMPLE DATA SUMMARY

1) F38806 06	7) MCW912	7) MCW913	7) MCW914	7) MCW915	7) MCW916	7) MCW911	7) MCW917	7) MCW918	7) MCW919	7) MCW920	7) MCW921
2) PA 335	8) HW-1	8) HW-2	8) HW-3	8) HW-4 Dup HW3	8) HW-5	8) HW-0	8) S-1	8) S-2	8) S-3	8) S-4	8) S-5
3) ITT Grinnell	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) AQ	9) Sol	9) Sol	9) Sol	9) Sol	9) Sol
4) 42- 071	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW	10) LOW
5) Inorganic	11)	11)	11)	11)	11)	11)	11) .261	11) .286	11) .238	11) .236	11) .247
6) JTC Environmental Consultants	12) 5-6	12) ~6	12) ~6	12) ~6	12) ~6	12) ~6	12)	12)	12)	12)	12)
	13) 640 umhos	13) 660 umhos	13) 640 umhos	13) 620 umhos	13) 620 umhos	13) 9 umhos	13)	13)	13)	13)	13)
	14) O	14) O	14) O	14) O	14) O	14) O	14) 76.6	14) 69.9	14) 84.1	14) 84.8	14) 81.0
	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) ug/l	15) mg/kg	15) mg/kg	15) mg/kg	15) mg/kg	15) mg/kg

COMPOUNDS DETECTED	DETECT LIMIT	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS
Selenium	3.1					3.2		1.3	1.6	1.2	0.90	0.93
Silver	8.2								4.0 J			
Sodium	2869	8690.0 J	9240.0 J	6010.0 J	5290.0 J	10300.0 J		14500.0 J	16300.0 J	15200.0 J	15500.0 J	
Vanadium	14							19.4 L	21.7 L	23.5 L	22.5 L	13.3 L
Zinc	12.		269.0					11200.0 J	12300.0 J	10200.0 J	10100.0 J	123.0

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ORIGINAL (Red)

ORIGINAL (Red)

7.2 Quality Assurance Review

7.2.1 Organic Data: Lab Case 9997

7.2.1.1 Introduction

Four solid and seven aqueous samples were analyzed for acid, base-neutral, and pesticide/polychlorinated biphenyl (PCB) compounds through the EPA Contract Laboratory Program (CLP). Included in the sample set were two field duplicate pairs and two field blanks.

The data have been fully reviewed to determine the usability of results according to the National Guidelines. (Areas examined in detail are listed in the Support Documentation appendix.) Data quality was acceptable for most compounds, with detection limit capability demonstrated by meeting criteria for holding times, surrogate and matrix spike recoveries, and instrument tuning and calibration. Blank contamination included low levels of several volatile compounds and common semivolatile laboratory contaminants. Qualitative problems affected several results.

Principal areas of concern included blank contamination, low response factors for 2-butanone, and the addition of several semivolatile compounds to the data summary for two samples.

7.2.1.2 Qualifiers

- Several results have been flagged as undetected because of blank contamination (B). The concentrations of the following compounds were not significantly higher in the affected samples than the levels in all associated blanks. This includes all results for methylene chloride, acetone, and 1,1,1-trichloroethane in all samples except CW247 and CW257, which are field blanks.

- The result for bis(2-ethylhexyl) phthalate in sample CW253 has been flagged as unreliable (R). The instrument level result was only slightly higher than the range considered attributable to blank contamination, and there were no other phthalates detected in this sample. Further information would be necessary to determine if this common contaminant is actually present in this sample.

ORIGINAL (Red)

- The result for bis(2-ethylhexyl) phthalate has been flagged as estimated (J) in aqueous sample CW251, because no trace of this compound was detected in the field duplicate, sample CW250.

- The reviewer added a number of compounds to the data summary for samples CW253 and CW254. The laboratory provided mass spectra for these compounds but did not believe that these spectra matched acceptably with the reference spectra. Based on the careful evaluation of all information, the reviewer has added the following compounds to these samples:

Sample	Compound	Concentration
CW253	2,4-dimethylphenol	280 ug/kg
	fluoranthene	860 ug/kg
	fluorene	320 ug/kg
	anthracene	370 ug/kg
	benz(a)anthracene	520 ug/kg
	benzo(a)pyrene	490 ug/kg
CW254	phenanthrene	470 ug/kg
	fluoranthene	390 ug/kg

The sample spectra matched acceptably with the reference spectra, and the compounds eluted at the expected retention times. (All spectra and quantitation lists are included in the Support Documentation appendix to this report.)

- The identification and quantitation for the Aroclor results in samples CW253 and CW254 are considered confident. All of the characteristic peaks were present at the expected retention times and exhibited very similar area ratios to those found in the standard chromatograms. No gas chromatography/mass spectrometry (GC/MS) confirmation was available due primarily to the low levels involved.

- The detection limits for 2-butanone may be higher than reported for all samples where this compound was not detected. Response factors of less than 0.05 were observed for all continuing calibration standards. This is a common problem with this compound, because EPA requires the use of a quantitation ion that is a minor component of the spectrum of this compound.

- Tentatively identified compounds that are not demonstrated artifacts or laboratory contaminants are summarized immediately following this report.

- Sample results that are below the calibration range of the analysis have been flagged as estimated (J) on the data summary, where no other flag exists.

7.2.1.3 Support Data

The Support Documentation appendix to this report documents the above findings associated with blank contamination, low response factors for 2-butanone, and the addition of several semivolatile compounds to the data summary. This report has been formatted to address only those issues directly affecting the application of the data to the subject investigation.

SAMPLE DATA SUMMARY: ORGANIC TENTATIVELY IDENTIFIED COMPOUNDS

Satd HC = saturated hydrocarbon
PAH - polynuclear aromatic hydrocarbon
ND = none detected
poss = possible
X = number of compounds in category

SAMPLE NUMBER	ANALYSIS FRACTION (VOA/BNA)	ESTIMATED CONCENTRATION VALUE	UNITS	QUALIFIER CODE	COMPOUND NAME
					There were NO VOA or BNA TIC's for samples CW 248 - CW 252, and NO VOA TIC's for samples CW253 - CW256 and CW258.
CW253	BNA	16000	ug/kg	TOT	Satd HC (6)
		1800		ISO	Bis(Methyl Ethyl) phenol $C_{12}H_8O$
		9000		TOT/UNK	unsat HC of unknown sub (2)
		43000		TOT/UNK	unknown aromatics (3)
		60,000		TOT/UNK	unknowns (6)
CW254		13200		TOT	Satd HC (6)
		47000		UNK/TOT	unknown aromatics (3)
		99000		TOT/ISO	C_3 alkyl benzenes (7) C_9H_{12}
		33000		TOT/ISO	C_3 alkyl phenols (2) $C_9H_{11}OH$
		5000		UNK	possible aromatics
		2000		ISO	Bis(methyl ethyl) phenol $C_{12}H_8O$
CW255		18000		UNK/TOT	unknowns (3)
		96000		TOT/UNK	unsatd HC of unk. subst. (16)
		4000		UNK	poss aromatic
CW256		180,000		TOT/UNK	unsaturated HC of unk subst. (20)
CW258		380			hexadecanoic acid
		3700		UNK	unsatd HC - poss alcohol
		2600		TOT	aldehydes (2)
		2600			satd HC
		430			(ho)esterol
		750		TOT/UNK	unknowns (2)

DEFINITIONS OF QUALIFIER CODES:

SUS = SUSPECTED FALSE POSITIVE RESULT: Compound is either a common laboratory contaminant, or else a possible reaction byproduct (artifact) attributable to the chemical reagents used for sample preparation and analysis. This result is suspect even though this compound was not found in any associated blanks.

UNK = UNKNOWN COMPOUND: Library search result unreasonable or of very low matching quality.

TOT = TOTAL CONCENTRATION REPORTED: Represents the sum of several compounds detected all belonging to the same chemical class.

ISO = OR ISOMER: Compound identification is not selective for this isomer only. This result may instead represent the presence of a similar compound comprised of the same atoms bonded together in a different arrangement or substitution pattern.

ORIGINAL (Red)

7.2.2 Inorganic Data: Lab Case 9997

7.2.2.1 Summary

Five solid and six aqueous samples were analyzed for metals and cyanide through the EPA CLP. Included in the sample set were two duplicate pairs and two field blanks.

The data have been fully reviewed to determine the usability of results according to the National Guidelines. (Areas examined in detail are listed in the Support Documentation appendix.) Overall, data quality was good for nearly all metals and for cyanide. Detection limit capability was demonstrated for most elements and cyanide by meeting criteria for holding times, spike recoveries, calibration check standards, and linear-range analyses. Low levels of a few metals were detected in the laboratory and field blanks, and qualitative problems affected some of the data.

Principal areas of concern included blank contamination, four linear-range recoveries that were out of quality-control limits, some low spike recoveries, and some serial dilution and laboratory duplicate imprecision.

7.2.2.2 Qualifiers

- Five metals were detected in the laboratory blanks. Therefore, several results have been flagged as undetected because of blank contamination (B). The levels of the following metals in the associated samples are not significantly higher than the levels detected in all associated blanks. The following table lists each metal and the affected results.

Element	Affected Results
beryllium	all results
iron	all aqueous results except MCW911
potassium	all results except MCW911 and MCW921
nickel	MCW917, MCW918, and MCW921
lead	all aqueous results except MCW911

Note: MCW911 is the aqueous field blank.

ORIGINAL (Red)

- The linear-range recoveries for beryllium, cadmium, and chromium were low for one of the analyses. This suggests the possibility of slightly higher detection limits for samples where these metals were not detected and that low-level positive results may be slightly higher than reported. In particular, all solid results for cadmium and sample MCW921 for chromium have been flagged as biased low (L). All positive results for beryllium may also be slightly higher than reported but have been previously flagged (B).

- The linear-range recovery for silver was high; however, the pre-digestion spike recoveries were low for silver in both aqueous sample MCW912 and solid sample MCW917. Consequently, no direction of bias can confidently be determined for this metal. The result for silver in sample MCW918 has been flagged as estimated (J), and detection limits in all other samples are also considered estimated.

- Slightly low pre-digestion spike recoveries occurred for barium, beryllium, cadmium, nickel, and vanadium in solid sample MCW917. These recoveries were all greater than 60 percent but less than 67 percent, suggesting that all positive solid results may be slightly higher than reported. These results have been flagged as biased low (L), except where previously flagged.

- The cyanide pre-digestion spike recovery was 55 percent in solid sample MCW917. The post-digestion spike recovery was 93 percent for the same sample, suggesting that loss of this analyte occurred during the distillation procedure. Detection limits for cyanide may be slightly higher than reported in all solid samples.

- The pre-digestion spike recovery was low for antimony in solid sample MCW917. Detection limits may be higher than reported for all solid samples except MCW918, where antimony was detected. This result has been flagged as biased low (L).

- Laboratory duplicate imprecision was observed for sodium in aqueous sample MCW912 and for calcium in solid sample MCW917. Consequently, all solid results for sodium in all aqueous samples and calcium in all solid samples have been flagged as estimated (J). These differences may be the result of sample inhomogeneity.

ORIGINAL (Red)

- Serial dilution imprecision was observed for sodium and zinc in solid sample MCW917. The diluted result was lower than the expected value for sodium and higher than expected for zinc. All solid results for these two metals are considered estimated and are flagged (J), except for sample MCW921, which contains a significantly lower concentration of nearly all metals.

- Serial dilution imprecision was also observed for manganese in aqueous sample MCW912. The presence of unusually high concentrations of calcium, magnesium, and sodium (122,000 ug/l combined concentration) may be the cause for the higher diluted result. All aqueous results for manganese have been flagged as estimated (J).

- All solid lead results were reported from the furnace analysis. Good agreement was noted between the plasma and furnace analyses, adding confidence to the values reported. All furnace results were within 20 percent of the plasma results and within 10 percent for samples MCW918, MCW919, and MCW920.

- The reviewer corrected the serial dilution reporting forms. The laboratory switched the results for the two samples, making it appear that the percent differences for nearly all metals in both samples far exceeded criteria.

- Field duplicate imprecision was observed for manganese between aqueous samples MCW914 and MCW915. All aqueous results for this metal are also considered estimated for this reason.

ORIGINAL (Red)

7.2.1.3 Support Data

The Support Documentation appendix to this report contains findings regarding blank contamination, matrix and digestion spike recoveries, cyanide data, and serial dilution tabulations. The text of this report has been formatted to address only those issues affecting the application of the data to the subject investigation.

ORIGINAL
(Red)

SECTION 8

8.0 TOXICOLOGICAL EVALUATION

8.1 Summary

Elevated levels of some metals were detected in the inactive lagoon soil samples. Zinc was found at levels for which phytotoxicity and effects on livestock have been seen; however, these effects are pH-dependent. The land is not used to support agriculture or animals, and access is restricted. Other metals detected at notable levels were lead, antimony, cadmium, and manganese. All of the metals are soil bound (this, too, is pH-dependent), and the vegetative cover reduces exposure potential. No significant health effects can be predicted from the metals at these levels.

Phenol, 4-methylphenol, and 2,4-dimethylphenol were confidently identified at low levels, and bis(methylethyl)phenol and two C_3-alkylphenols were tentatively identified in on-site soil. There is no evidence to suggest that these chemicals would produce a significant environmental impact. Seven C_3-alkylbenzenes were tentatively identified in on-site soil. Some leaching of these compounds to groundwater is possible; the potential impact on groundwater could not be assessed, because the depth to groundwater in this area is unknown. Alkylbenzenes are generally considered to be relatively nontoxic except at acute high-level exposure. Direct contact with soil is unlikely.

Polycyclic aromatic hydrocarbons (PAHs) were detected at low levels in the southern inactive lagoon. No significant environmental impacts would be expected from the levels present.

A polychlorinated biphenyl (PCB), Aroclor 1254, was detected at low levels in some on-site soil. This persistent compound is not well absorbed from soil. There is no evidence to suggest that these levels would result in a significant environmental impact.

No significant contamination was measured in any of the home wells, with the exception of one phthalate ester at a low level.

8.2 Support Data

In assessing the inactive lagoon soil, different exposure pathways must be considered. Surface soil runoff is reported to drain into the active lagoon (see section 2.2), and the active lagoon discharges into an unnamed tributary to Shawnee Run. This discharge is monitored by the Pennsylvania Bureau of Water Quality Management, has an NPDES permit, and is beyond the scope of this report. The focus, therefore, will be on direct contact as the primary exposure route. Further impacts of wastewater on inactive lagoons are not expected, since waste is piped directly to the separation pools and from there to the active lagoon.

Notable levels of zinc were detected in all on-site soil samples (from 10,100 to 12,300 mg/kg), which is not surprising at a facility where zinc is used to coat iron (galvanizing). It is significant that this area, which consists of two inactive lagoons, is well vegetated. Zinc can be phytotoxic, but a pH close to neutral can minimize plant uptake of this metal.[1,2] Livestock have been reported to show effects from consuming forage grown in soil with zinc levels up to approximately 10,000 mg/kg.[1,2]

The ITT Grinnell site is an active facility surrounded by a fence; animals are not deliberately kept on site, and accidental entry of wild animals is not likely. The site is not used for agricultural purposes. Zinc is not noted for its toxicity to humans and is, in fact, an essential element; absorption from soil is usually not significant because of its tendency to bind to soil particles. At high levels, zinc can irritate the gastrointestinal tract.[3] Some zinc salts can cause dermatitis.[4] Direct contact with this soil is unlikely because the area is fenced and well vegetated, and this portion of the site is inactive.

Elevated levels of cadmium were detected in all on-site soils, ranging from 2.8 to 7.9 mg/kg. Cadmium toxicity is generally observed from occupational exposure to high concentrations of dusts and fumes. At such high levels, it has been seen to affect the prostate and the renal, respiratory, and hematopoietic systems.[4] No significant environmental impact is expected at these levels. Possible direct contact would be even less significant when cadmium's adsorption to soil and the presence of vegetation are considered.

Elevated levels of lead were detected in the soil of the inactive lagoon located south of the active lagoon (600 mg/kg and 648 mg/kg). Lead at high levels has been known to affect the hematopoietic, renal, and nervous systems.[3] Children, because of their high absorption rate and developing nervous systems, are especially vulnerable. At this site, direct contact is limited, and no children are expected on site. Lead also binds to soil particles, limiting its availability.[5] No significant environmental impacts are expected from these levels.

One soil sample taken from the southern inactive lagoon revealed an elevated level of antimony (62.7 mg/kg). Antimony has produced toxicity at high levels in industrial settings; it has been found to be an irritant and an emetic. Like most metals, it is slowly absorbed and is not generally available when adsorbed onto soil particles.[3,4] From the limited data available, it appears that this may be a localized rather than widespread contamination; however, no definite conclusions can be drawn.

One soil sample from the southern inactive lagoon revealed an elevated level of manganese (7,600 mg/kg); the other revealed a level (6,930 mg/kg) below the upper range of typical nonpolluted eastern United States soils but significantly higher than background (965 mg/kg).[6] Manganese is a minor irritant; toxicity is primarily observed in occupational settings from inhalation exposure.[3,4] It is an essential element; daily intake ranges from 2 to 9 mg, and gastrointestinal absorption is estimated to be less than five percent.[3] It is not absorbed well from soil; there is no evidence to suggest significant environmental impacts.

All of the metals, since they are strongly soil bound, are generally not very mobile. Leaching into groundwater is rarely a concern when considering soil metals. A low soil pH, however, can increase the mobility and availability of soil metals, including plant uptake. It is possible that acidic wastewater was once dumped into the inactive lagoon (see section 1.2). However, stressed vegetation might be observed with the zinc levels present if soil pH were low; this was not observed during the site visit. From available data, the soil pH cannot be definitely determined. Surface runoff of metals is unlikely because of their low mobility and the existence of vegetation at the site.

In the southern inactive lagoon, phenol (910 ug/kg and 4,400 ug/kg), 4-methylphenol (440 ug/kg), and 2,4-dimethylphenol (280 ug/kg and 930 ug/kg) were detected. Bis(methylethyl)phenol (1,800 ug/kg and 2,000 ug/kg), and two C_3-alkylphenols (32,000 ug/kg) were tentatively identified. Phenols can be a wastewater component from steel mill operations.[7] These semivolatile compounds are irritants; the confidently identified chemicals are experimental neoplastigens (a neoplastigen is a substance that causes unusual or abnormal tissue growth).[8] There is no evidence to suggest that these levels would pose a health hazard.

Seven C_3-alkylbenzenes were tentatively identified at 99,000 ug/kg. Local wells draw water from the Conestoga Formation at depths from 100 to 500 feet (see section 3.1). This formation, on the whole, has typical well depths from 38 to 502 feet (see section 3.3.3). The exact depth to groundwater at this particular point is undetermined. The potential exists for alkylbenzenes, as semivolatile compounds, to leach through soil to some degree.

A typical C_3-alkylbenzene is cumene. It is described as being mildly toxic via skin contact, causing irritation and central nervous system depression at high levels.[8] However, alkylbenzenes are considered to be relatively nontoxic except during acute exposure to high concentrations; they appear to be detoxified by metabolic processes.[3]

PAHs were detected at low levels in the southern inactive lagoon soil sample (up to 5,360 ug/kg) and the background soil sample (49 ug/kg). PAHs are generally nonvolatile, immobile, and persistent in the environment. They occur widely in petroleum products and from the combustion of organic material; therefore, they are often found near roads and railroads. Note that the ITT Grinnell site is bordered by roads to the east and south and a railroad to the north. Although PAHs can cause dermatitis in sensitive individuals, no significant environmental impact is expected from these levels. Two of the PAHs found in one of the samples are suspect human carcinogens [benz(a)anthracene (520 ug/kg) and benzo(a)pyrene (490 ug/kg)]. Due to the no-threshold theory of carcinogenicity, a slight increase in cancer risk cannot be ruled out, although prolonged, repeated exposure is not expected to occur.

Aroclor 1254 was detected in the soil of the inactive southern lagoon at 1,200 ug/kg and 640 ug/kg. These are far below the EPA action level of 25,000 ug/kg recommended for limited-access areas. While PCBs have been reported to cause chloracne, liver damage, and cancer, usually from high-level chronic exposure, they are strongly adsorbed to soil and not well absorbed.[4,5] They are persistent and usually not mobile.[5] Because of this and the high degree of vegetation, PCBs in surface soil runoff into the tributary would be expected to be minimal. At such levels, no significant environmental impact would be expected.

Groundwater flow is reported to be to the north and northwest (see section 3.3.3). Home wells to the northwest, northeast, and southwest were sampled. Bis(2-ethylhexyl) phthalate (DEHP) was detected in one home well sample, but not its duplicate, at 36 ug/l. No criteria have been developed for DEHP, but a risk reference dose (RfD) of 20 ug/kg per day has been given.[9] For a 70-kilogram person consuming 2 liters of water from this well every day, an exposure of 1 ug/kg per day would result. This is about 20 times less than the RfD. DEHP is also considered to be a suspect human carcinogen with a cancer potency of 1.4×10^{-2} $(mg/kg/day)^{-1}$.[9] From this, a theoretical cancer risk of approximately 1.5×10^{-5}, or about 15 cases per million people, may be calculated. It should be noted that phthalates are ubiquitous in the environment; the general population is exposed to them through many more significant routes, including plastics.[3] In conclusion, no acute or chronic effects are expected; however, some increase in the overall cancer risk cannot be ruled out. No other significant levels of organic or inorganic contaminants were detected in home wells.

A background soil sample was obtained. Fluoranthene, a PAH, was detected at 49 ug/kg. No adverse effects are expected from contact with this soil.

APPENDIX A

PROJECT NAME: ITT Grinnell
TDD NO.: F3-8806-06

EPA SITE NO.: PA 335
REGION: III

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

CASE/SAS NO.: 9998
TYPE OF ANALYSIS: VOA/BNA/PEST/PCB
CONTRACT LABORATORY: IT Cerritos
APPLICABLE IFB OR SOW: 1/87
REVIEWER: Roy Cohen
REVIEW DATE: March 17, 1989

APPLICABLE SAMPLE NO's.: CW247-CW258

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL — CHECK (✓) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW				PROBLEM AREAS IDENTIFIED — CHECK (✓) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW				SUPPORT DOCUMENTATION ATTACHMENTS — CHECK (✓) IF YES OR IDENTIFY ATTACHMENT NO.			
	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB
HOLDING TIMES	✓											
BLANK ANALYSIS RESULTS: TARGET COMPOUNDS	✓								X			
BLANK ANALYSIS RESULTS: TENTATIVE I.D.s	✓								X			
SURROGATE SPIKE RESULTS	✓								X			
MATRIX SPIKE RESULTS	✓								X			
DUPLICATE ANALYSIS RESULTS	✓											
TARGET COMPOUND MATCHING QUALITY	✓						X				X	
TENTATIVELY IDENTIFIED COMPOUNDs	✓											
DFTPP & BFB SPECTRUM TUNE RESULTS	✓											
GC INSTRUMENT PERFORMANCE	✓											
INITIAL CALIBRATIONS	✓											
CONTINUING CALIBRATIONS	✓					X				X		
QUANTITATION OF RESULTS	✓											
OTHERS	✓											

COMMENTS:

BLANK ANALYSIS RESULTS FOR TARGET COMPOUNDS

FRACTION	TYPE	CONC	MATRIX	SAMPLE #	SOURCE OF H_2O	CONTAMINANTS (CONCENTRATION / DETECTION LIMIT)	
VOA	low aq lab blank			VBlk1 7/15	lab 251	methylene Chloride	10 ug/l
						acetone	4 ug/l
						1,1,1-Trichloroethane	4 ug/l (2)
VOA	low aq lab blank			VBlk2 7/18	lab 250	methylene Chloride	11 ug/l
						acetone	4 ug/l
						1,1,1-TCEa	1.3 ug/l (2)
VOA	low aq solid blk			VBlk3 7/15	lab 221 572	methylene Chloride	9 ug/kg
						acetone	11 ug/kg
						1,1,1-Trichloroethane	3 ug/kg
						toluene	1 ug/kg
VOA	low aq field blank			CW247	NUS	methylene Chloride	7 ug/l
						acetone	3 ug/l
						1,1,1-TCEa	10 ug/l
						toluene	2 ug/l
VOA	low aq field blank			CW257	NUS 252	methylene Chloride	5 ug/l
						acetone	2 ug/l
						1,1,1-TCEa	2.5 ug/l (2)
BNA	low aq lab blank			SBlk1 7/15/89	lab 1478	bis(2-ethyl hexyl) phthalate	0.5 ug/l (2)
BNA	low aq lab blank			SBlk2	lab 1453	bis(2-ethylhexyl) phthalate	0.5 ug/l (2)
	low solid lab blank			SBlk3	lab 1453	bis(2-ethylhexyl) phthalate	12 ug/kg
BNA	low aq field blank			CW247	NUS 1477	bis(2-ethyl-hexyl) phthalate	0.8 ug/l (2)

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY. TENTATIVELY IDENTIFIED COMPOUNDS IN BLANKS ARE LISTED ON A SEPARATE FORM.

COMMENTS:

(1) RESULT REPORTED BY LABORATORY AND CONFIRMED BY REVIEWER.

(2) RESULT INFERRED FROM QUANTITATION LIST, DIAGNOSTICS, CHROMATOGRAM AND/OR SPECTRA.

BLANK ANALYSIS RESULTS FOR TENTATIVELY IDENTIFIED COMPOUNDS

ALL TENTATIVELY IDENTIFIED COMPOUNDS FOUND IN BLANK ANALYSES ARE LISTED BELOW:

SAMPLE #	FRACTION	SCAN #(S) OR R.T	ESTIMATED CONCENTRATION	COMPOUND NAME	COMMENTS
VBlk1	VOA	251	4 ug/l	1,1,1-Trichloroethane (.325)	(NLS)
↓	↓	344	<1% IS@407	NLS	
		382	<1% IS@407	NLS	(IS: 162, 407, 544)
VBlk2	VOA			ND	
VBlk3	VOA	211	2% IS@130	NLS	(IS: 130
		468	<1% IS@393		393
↓	↓	571	<1% IS@543	↓	543)
CW247	VOA	184	2% IS@161	NLS	
CW257	VOA	184	2% IS@162	NLS	
SBlk1	BNA	164	10 ug/l	(205, 207) silorane	IS: 378
		229	3% IS@378	NLS	563
		238	3% IS@378		825
		300	6% IS@378		1040
		444	<1% IS@378		1434
		724	1% IS@825		1631
		1161	1% IS@1040	phthalate	
↓	↓	1393	2% IS@1434	↓	
SBlk2	BNA	454	2% IS@588	NLS	IS 588
		502	5% IS@588		802
		929	<1% IS@1125		1125
		1238	<1% IS@1125		1397
		1402	<1% IS@1397		1903
		1487	<1% IS@1397	↓	2160
		1544	0.8 ug/l	phthalate	
		1593	<1% IS@1397	NLS	
↓	↓	1850	<1% IS@1903	NLS	
SBlk3	BNA	461	1000 ug/kg	ketone	IS: 587
		505	2% IS@587	NLS	802
		542	2% IS@587		1124
		553	5% IS@587		1398
		656	1% IS@587		1903
		810	1% IS@802		2161
		944	2% IS@1124		
		1402	1% IS@1398		
		1487	<1% IS 1398		
		1545	<1% IS @ 1398	phthalate	
		1594	1% IS@1398		
		1851	2% IS@1903		
↓	↓	1966	2% IS@1903	↓	
SW247	BNA	224	5% IS@378	NLS	IS: 378
		300	5% IS@378		563
		444	2% IS@378		825
		723	1% IS@825		1040
		740	2% IS@825		1434
		1160	<1% IS@1040	NLS = no library search conducted	1631
↓	↓	1393	1% IS@1434	↓	
		257	3% IS@378		

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	CW247	99	102	94		0
02	CW248	100	101	93		0
03	CW249	99	100	93		0
04	CW250	100	101	93		0
05	CW251	97	99	95		0
06	CW252	100	102	93		0
07	CW252MS	98	95	98		0
08	CW252MSD	98	95	99		0
09	CW257	100	98	95		0
10	VBLK1	101	104	94		0
11	VBLK2	100	100	96		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	CW253	99	101	117		0
02	CW254	100	99	117		0
03	CW255	100	97	107		0
04	CW255MS	99	99	114		0
05	CW255MSD	99	98	115		0
06	CW256	100	95	110		0
07	CW258	103	93	111		0
08	VBLK3	99	101	104		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromofluorobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

Matrix Spike - EPA Sample No.: CW252

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	36.6	73	61-145
Trichloroethene	50.0	0	47.4	95	71-120
Benzene	50.0	0	42.6	85	76-127
Toluene	50.0	0	47.8	96	76-125
Chlorobenzene	50.0	0	58.1	116	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.0	35.1	70	4	14	61-145
Trichloroethene	50.0	45.0	90	5	14	71-120
Benzene	50.0	40.2	80	6	11	76-127
Toluene	50.0	45.9	92	4	13	76-125
Chlorobenzene	50.0	56.2	112	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: CW 252
GCMSC VOA 5ML CONTRACT# 7469 CASE# 9998 SDG# CW 247

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

Matrix Spike - EPA Sample No.: CW255 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	60.2	0	45.8	76	59-172
Trichloroethene	60.2	0	57.0	95	62-137
Benzene	60.2	0	52.6	87	66-142
Toluene	60.2	0	49.8	83	59-139
Chlorobenzene	60.2	0	66.6	111	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	60.2	45.1	75	1	22	59-172
Trichloroethene	60.2	57.2	95	0	24	62-137
Benzene	60.2	52.6	87	0	21	66-142
Toluene	60.2	49.4	82	1	21	59-139
Chlorobenzene	60.2	65.9	110	1	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: CW255
GCMSB VOA 5G CASE#9998 SDG#CW247

7A

VOLATILE CONTINUING CALIBRATION CHECK

'ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

nstrument ID: GCMSB Calibration date: 07/15/88 Time: 1005

Lab File ID: LSVEB242 Init. Calib. Date(s): 07/11/88 07/11/88

atrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

'in RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
Chloromethane	#	0.436	0.494	-13.3	#
Bromomethane		1.137	1.370	-20.5	
Vinyl Chloride	*	1.229	1.317	-7.2	*
Chloroethane		0.764	0.828	-8.4	
Methylene Chloride		1.535	1.809	-17.9	
Acetone		0.585	0.504	13.9	
Carbon Disulfide		3.690	3.132	15.1	
1,1-Dichloroethene	*	1.140	1.087	4.6	*
1,1-Dichloroethane	#	2.391	2.289	4.3	#
1,2-Dichloroethene (total)		1.543	1.162	24.7	
Chloroform	*	2.953	2.445	17.2	*
1,2-Dichloroethane		2.170	~~1.908~~	12.1	
2-Butanone		0.031	0.025	19.4	
1,1,1-Trichloroethane		0.366	0.568	-55.2	
Carbon Tetrachloride		0.353	0.351	0.6	
Vinyl Acetate		0.891	0.888	0.3	
Bromodichloromethane		0.435	0.426	2.1	
1,2-Dichloropropane	*	0.335	0.327	2.4	*
cis-1,3-Dichloropropene		0.569	0.538	5.4	
Trichloroethene		0.401	0.361	10.0	
Dibromochloromethane		0.398	0.358	10.1	
1,1,2-Trichloroethane		0.286	0.285	0.3	
Benzene		0.753	0.758	-0.7	
trans-1,3-Dichloropropene		0.221	0.213	3.6	
Bromoform	#	0.420	0.294	30.0	#
4-Methyl-2-Pentanone		0.749	0.722	3.6	
2-Hexanone		0.457	0.376	17.7	
Tetrachloroethene		0.478	0.420	12.1	
1,1,2,2-Tetrachloroethane	#	0.655	0.647	1.2	#
Toluene	*	0.597	0.668	-11.9	*
Chlorobenzene	#	0.870	0.811	6.8	#
Ethylbenzene	*	0.443	0.395	10.8	*
Styrene		0.878	0.753	14.2	
Xylenes (Total)		0.570	0.489	14.2	
Toluene-d8		1.003	1.176	-17.3	
Bromofluorobenzene		0.703	0.735	-4.6	
1,2-Dichloroethane-d4		1.903	1.949	-2.4	

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	CW247	57	61	67	75	71	77		0
02	CW248	54	59	59	70	62	63		0
03	CW249	55	62	50	73	67	81		0
04	CW250	61	65	63	71	65	45		0
05	CW251	54	59	57	58	61	56		0
06	CW251MS	71	73	74	48	64	91		0
07	CW251MSD	71	70	97	64	63	82		0
08	CW252	51	59	61	71	68	59		0
09	SBLK1	53	58	66	71	62	64		0
10	SBLK2	63	68	82	74	58	71		0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

evel:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	CW253	59	56	73	71	54	44		0
02	CW254	51	60	64	67	50	45		0
03	CW255	72	78	76	84	62	73		0
04	CW255MS	102	114	102	128 *	96	107		1
05	CW255MSD	107	111	106	129 *	95	107		1
06	CW256	80	73	104	86	66	64		0
07	CW258	53	54	54	59	44	66		0
08	SBLK3	61	64	74	77	56	66		0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

atrix Spike - EPA Sample No.: CW251

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	201	0	98.6	49	12- 86
2-Chlorophenol	204	0	161	79	27-123
1,4-Dichlorobenzene	108	0	79.4	74	36 97
N-Nitroso-di-n-prop.(1)	106	0	97.0	92	41 116
1,2,4-Trichlorobenzene	104	0	86.0	83	39 98
4-Chloro-3-methylphenol	210	0	165	79	23 97
Acenaphthene	101	0	68.4	68	46-118
4-Nitrophenol	201	0	86.4	43	10- 80
,4-Dinitrotoluene	102	0	62.4	61	24- 96
entachlorophenol	210	0	119	57	9-103
Pyrene	101	0	83.2	82	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	201	105	52	-6	42	12- 86
2-Chlorophenol	204	163	80	-1	40	27-123
1,4-Dichlorobenzene	108	79.8	74	0	28	36 97
N-Nitroso-di-n-prop.(1)	106	93.0	88	4	38	41 116
1,2,4-Trichlorobenzene	104	85.2	82	1	28	39 98
4-Chloro-3-methylphenol	210	162	77	3	42	23 97
cenaphthene	101	68.8	68	0	31	46-118
4-Nitrophenol	201	78.2	39	10	50	10- 80
2,4-Dinitrotoluene	102	59.8	59	3	38	24- 96
Pentachlorophenol	210	110	52	9	50	9-103
Pyrene	101	84.2	83	-1	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CW251
GCMSK, CASE#9998,SDG#CW247,EXT 1L:2ML 07/15/88

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

atrix Spike - EPA Sample No.: CW255 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	8090	0	7180	89	26- 90
2-Chlorophenol	8210	0	8270	101	25-102
1,4-Dichlorobenzene	4350	0	4230	97	28 104
N-Nitroso-di-n-prop.(1)	4270	0	4730	111	41 126
1,2,4-Trichlorobenzene	4180	0	4510	108 *	38 107
4-Chloro-3-methylphenol	8450	0	7930	94	26 103
Acenaphthene	4060	0	4270	105	31-137
4-Nitrophenol	8090	0	8870	110	11-114
4-Dinitrotoluene	4100	0	2920	71	28- 89
entachlorophenol	8450	0	7480	89	17-109
Pyrene	4060	0	4330	107	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	8090	7100	88	1	35	26- 90
2-Chlorophenol	8210	8330	102	-1	50	25-102
1,4-Dichlorobenzene	4350	4310	99	-2	27	28 104
N-Nitroso-di-n-prop.(1)	4270	4650	109	2	38	41 126
1,2,4-Trichlorobenzene	4180	4510	108 *	0	23	38 107
4-Chloro-3-methylphenol	8450	7320	87	8	33	26 103
enaphthene	4060	4250	105	0	19	31-137
4-Nitrophenol	8090	7930	98	12	50	11-114
2,4-Dinitrotoluene	4100	2960	72	-1	47	28- 89
Pentachlorophenol	8450	6060	72	21	47	17-109
Pyrene	4060	4370	108	-1	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

PD: 0 out of 11 outside limits
Spike Recovery: 2 out of 22 outside limits

OMMENTS: CW255-CASE#9998-SDG#CW247
GCMSI-EXT 07/14/88-30.0G:10ML-7.5ML:0.75ML-100UL:500ML

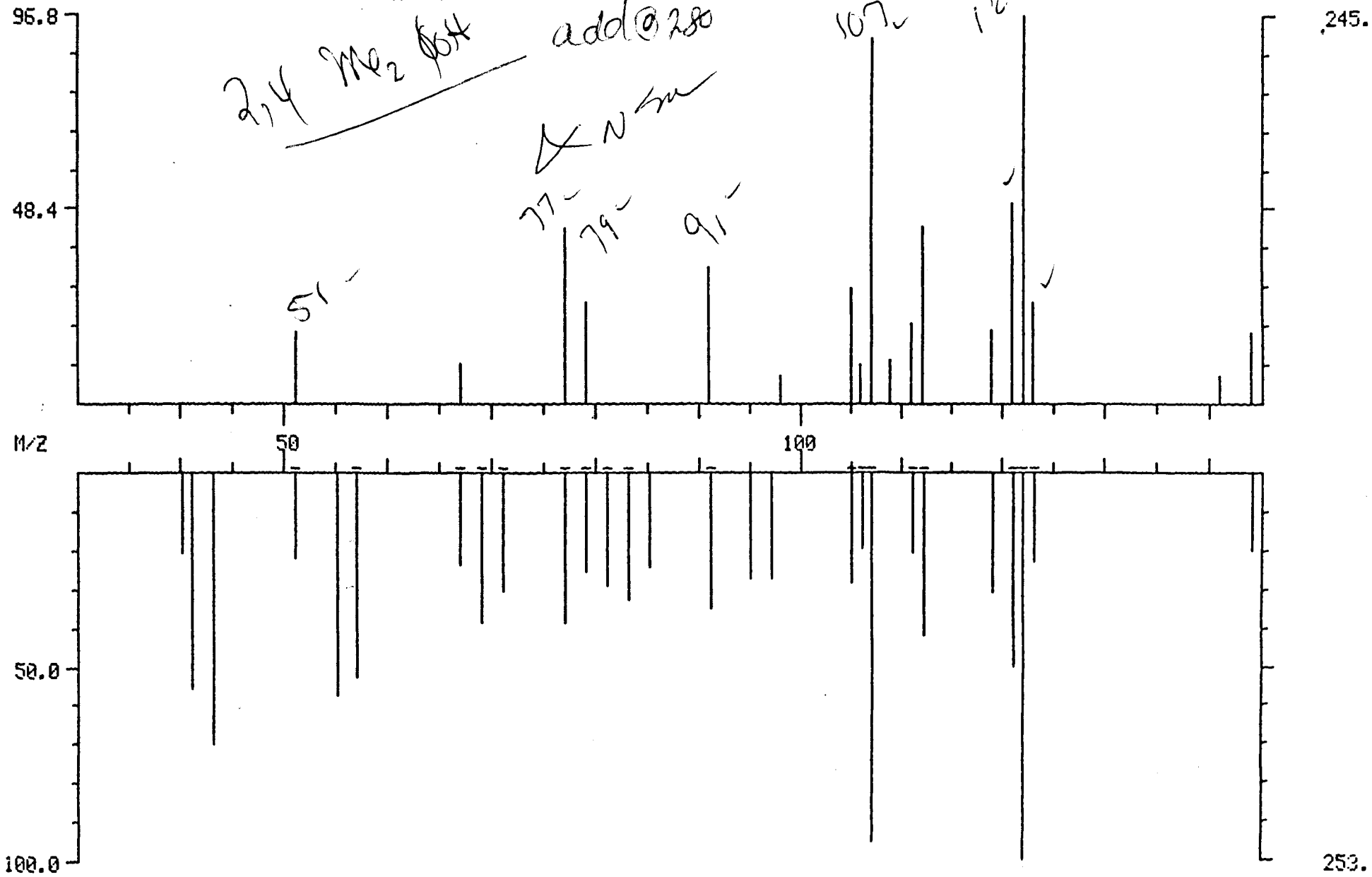
C0496

ORIGINAL (Red)

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 12:52
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #772
CALI: FI080588 #7

BASE M/Z: 122/ 122
RIC: 1411./ 2643.



CPD #22

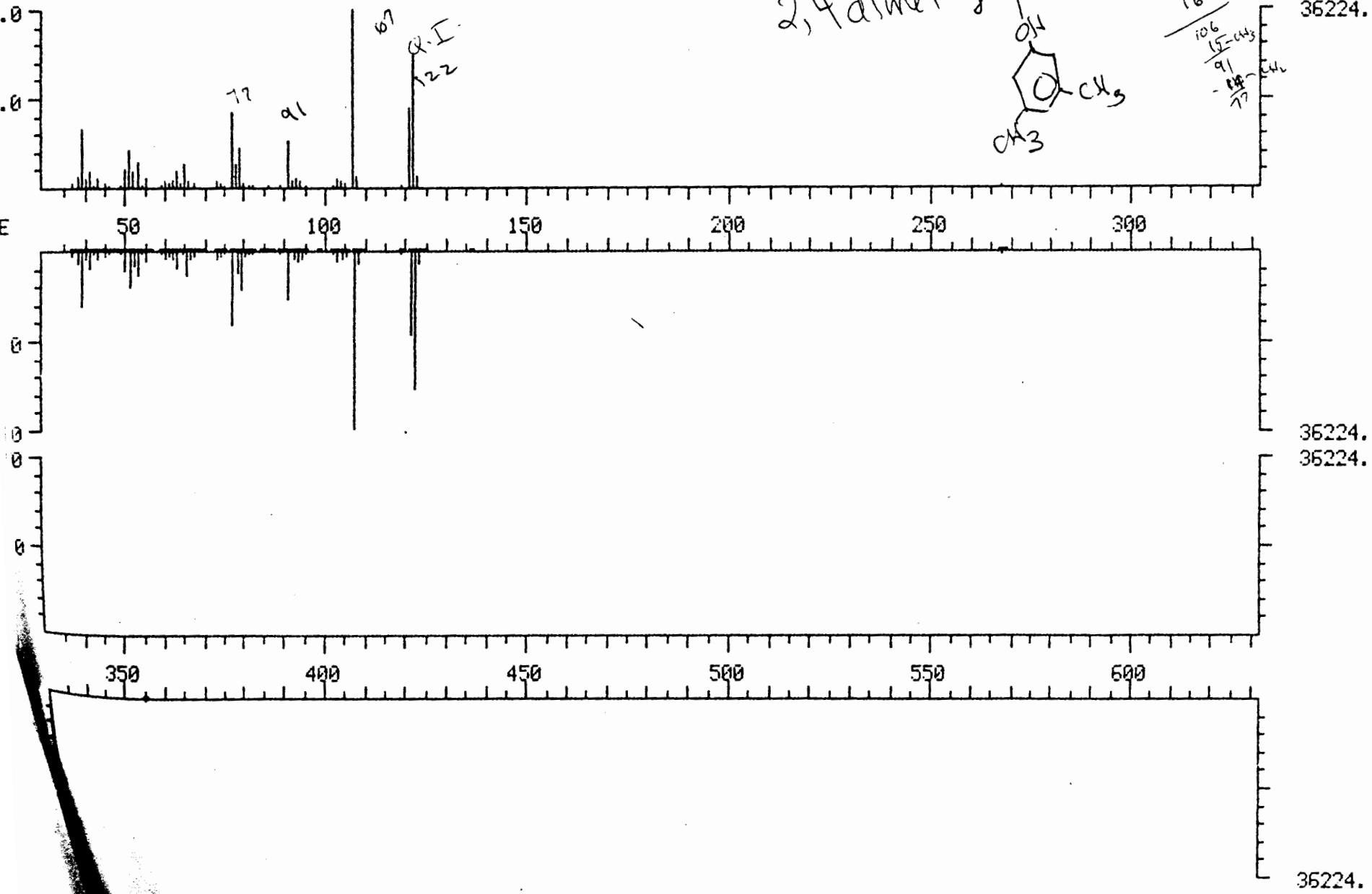
DUAL MASS SPECTRUM
01/08/83 15:50:00 + 13:37
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

DATA: STD051 #778
CALI: STD051 #1

BASE M/E: 107/ 107
RIC: 202495./ 197887.

2,4 dimethyl phenol

122 - 16 - O
106 - 15 - CH3
91 - CH2
77

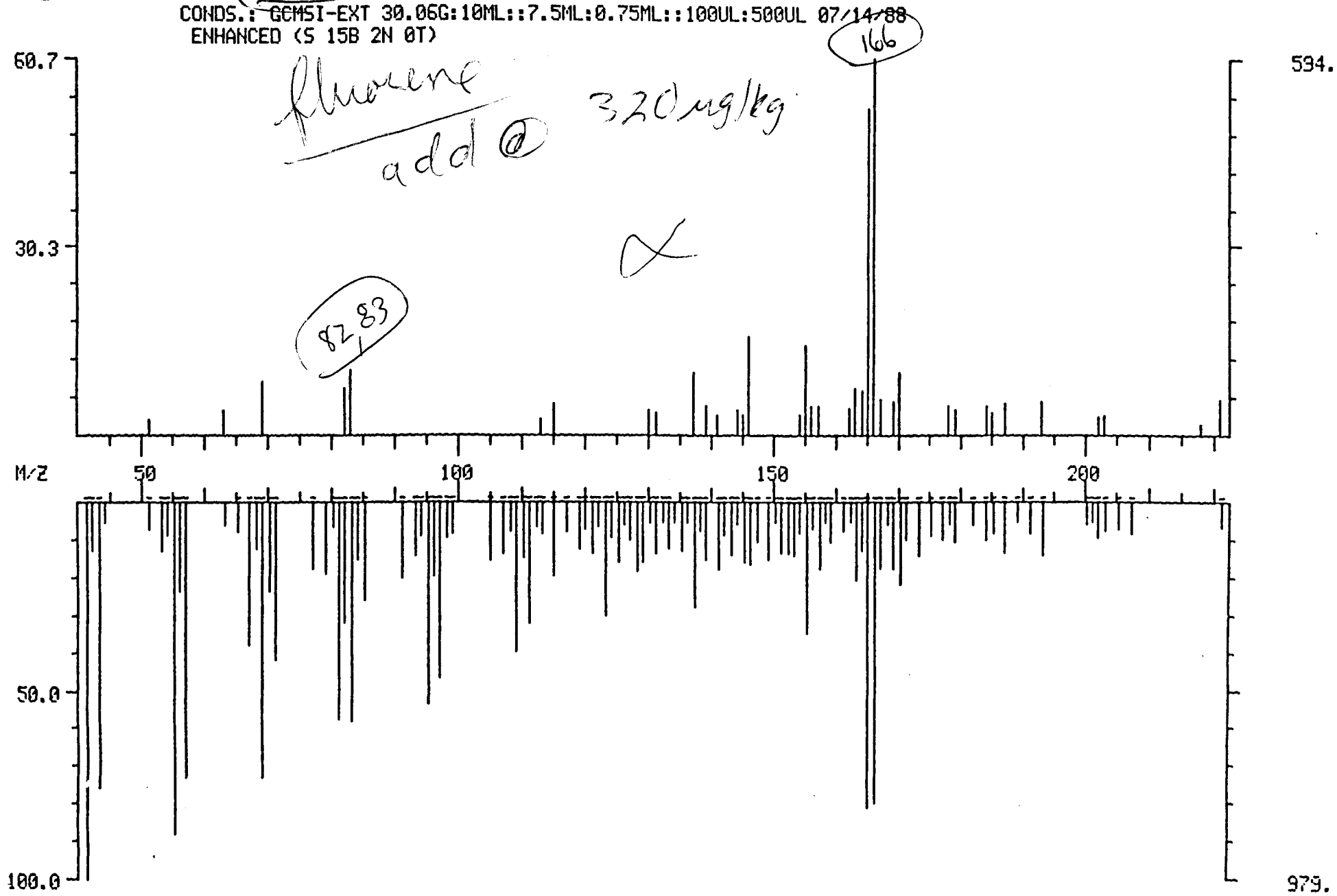


00502

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 20:26
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #1226
CALI: FI080588 #7

BASE M/Z: 166/ 41
RIC: 3035./ 20703.

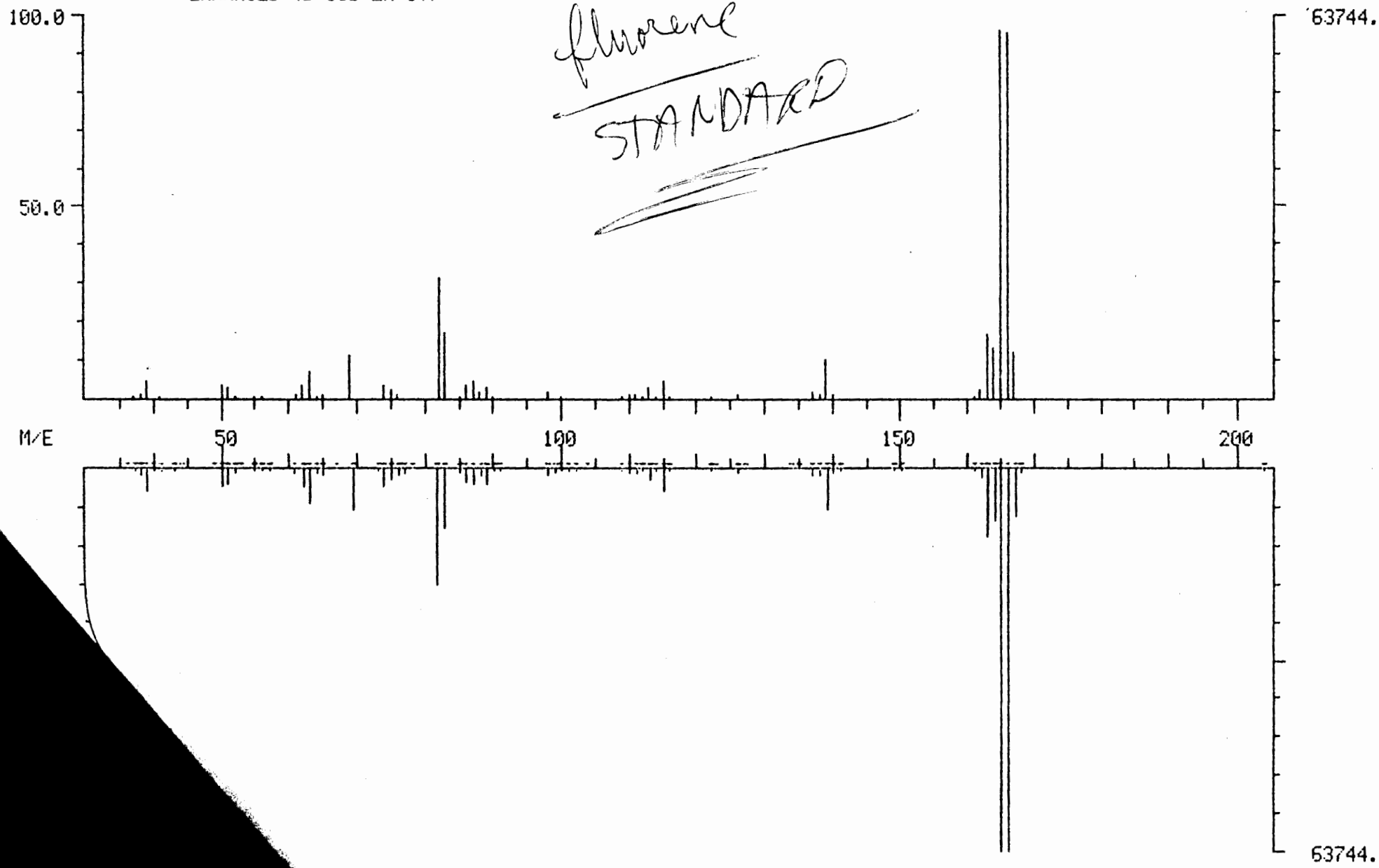


DUAL MASS SPECTRUM
01/08/83 15:50:00 + 20:03
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

CPD #46

DATA: STD051 #1146
CALI: STD051 #1

BASE M/E: 165/ 166
RIC: 240639./ 260351.



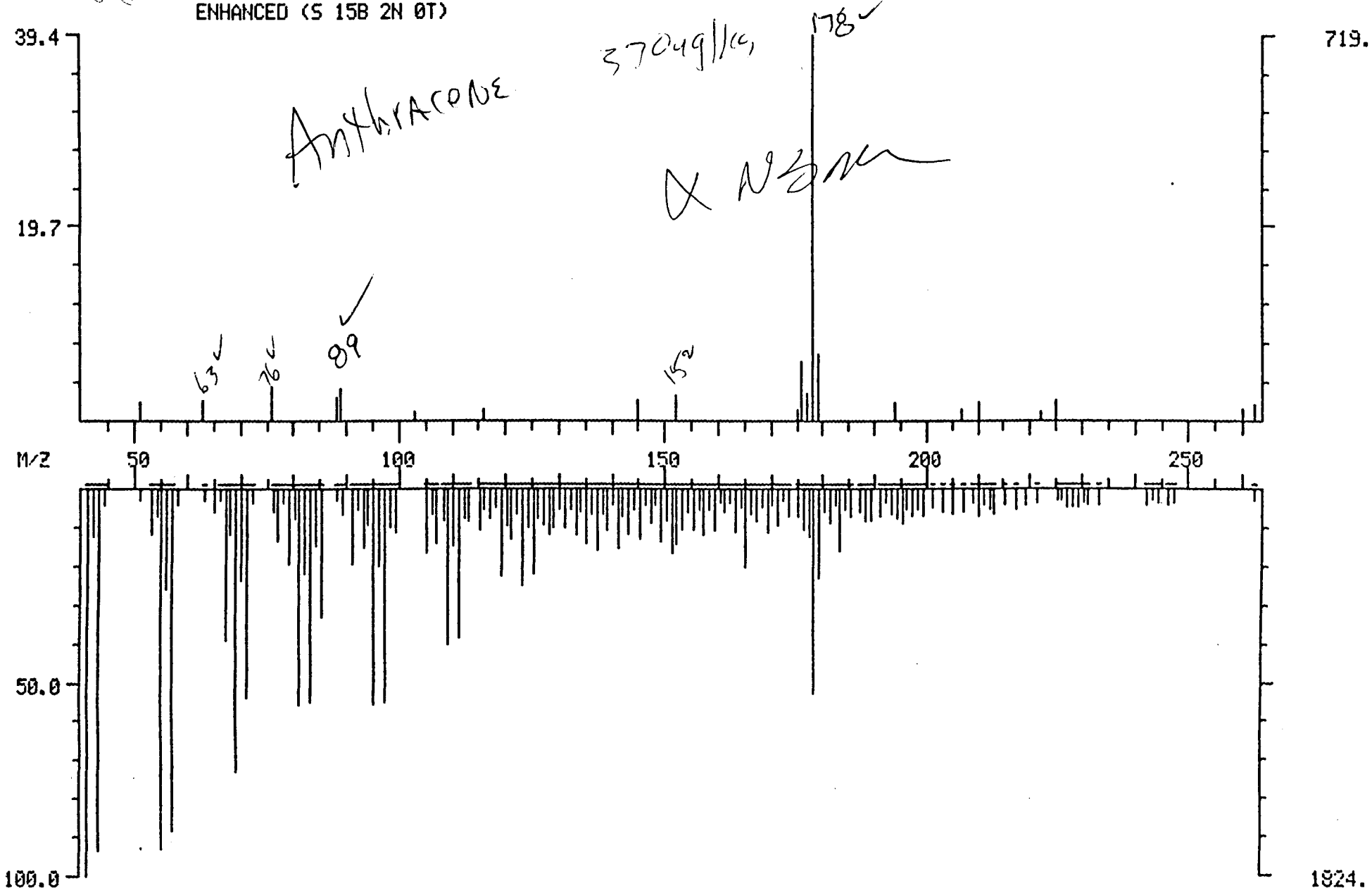
00507

Original (Red)

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 23:32
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GEMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #1412
CALI: FI080588 #7

BASE M/Z: 178/ 41
RIC: 1589./ 39807.



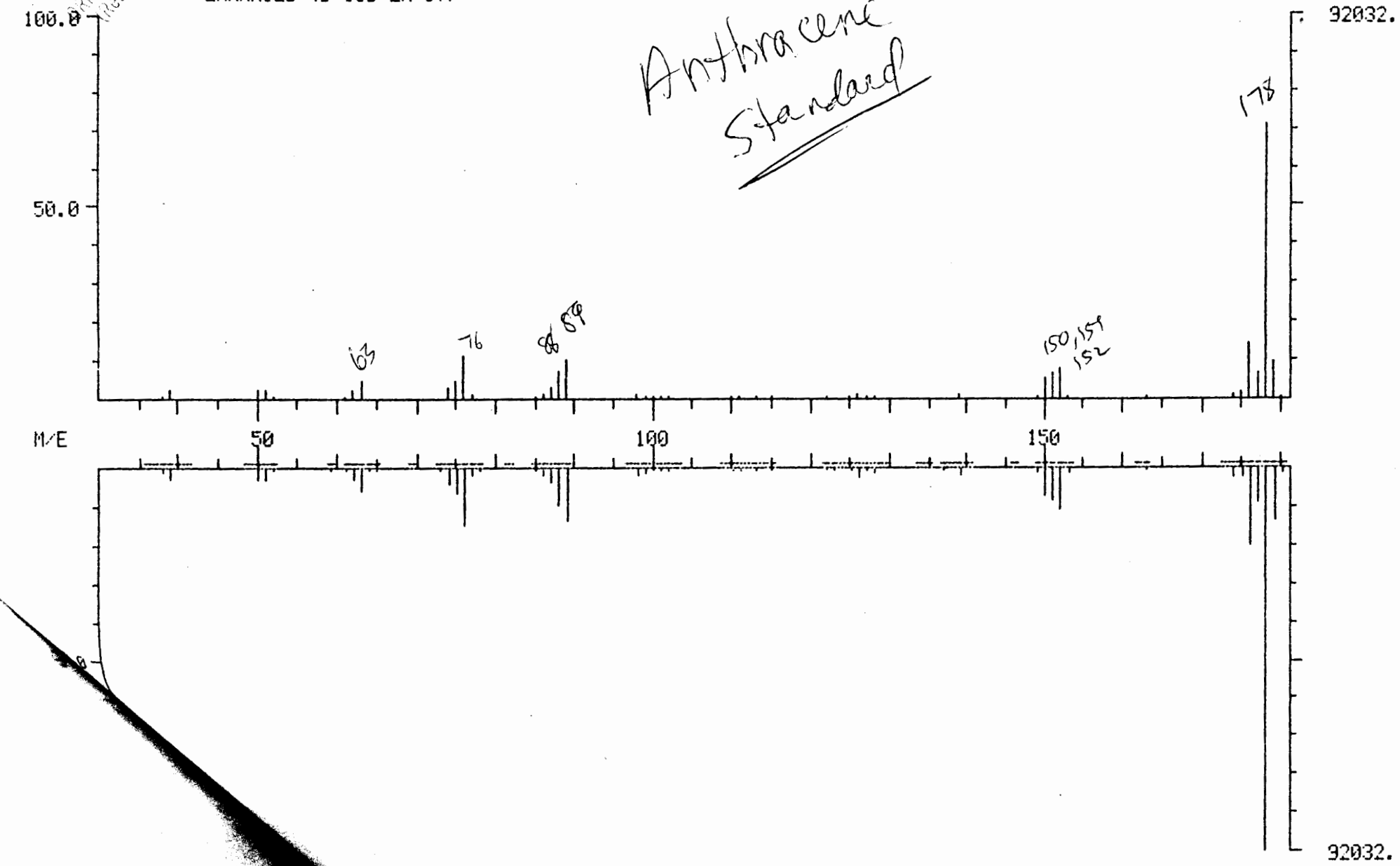
DUAL MASS SPECTRUM
01/08/83 15:50:00 + 22:37
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

CPD #56

DATA: STD051 #1292
CALI: STD051 #1

BASE M/E: 178/ 178
RIC: 180735./ 252671.

Anthracene Standard



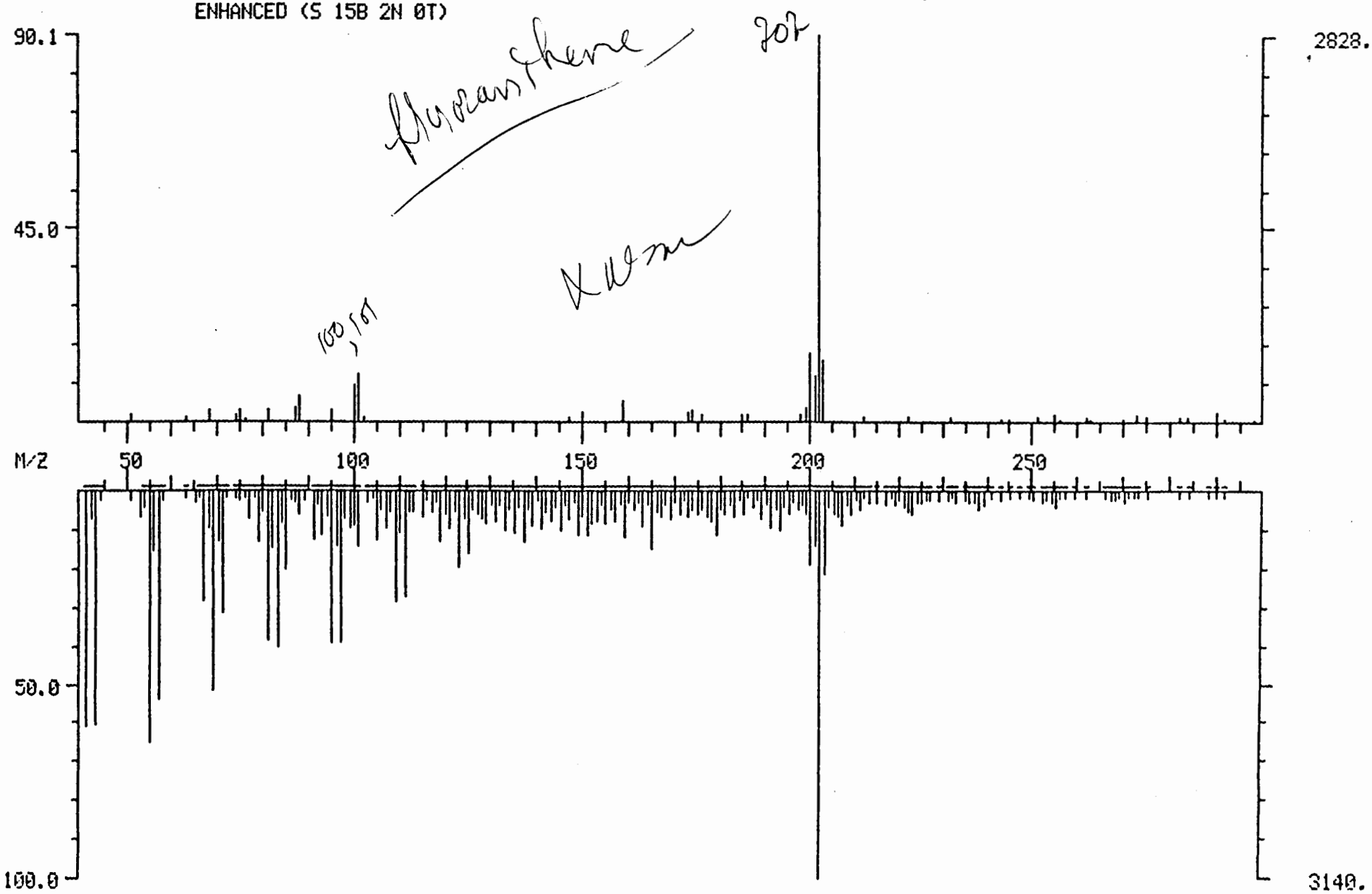
C0509

ORIGINAL (Red)

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 27:10
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #1630
CALI: FI080588 #7

BASE M/Z: 202/ 202
RIC: 6791./ 54399.

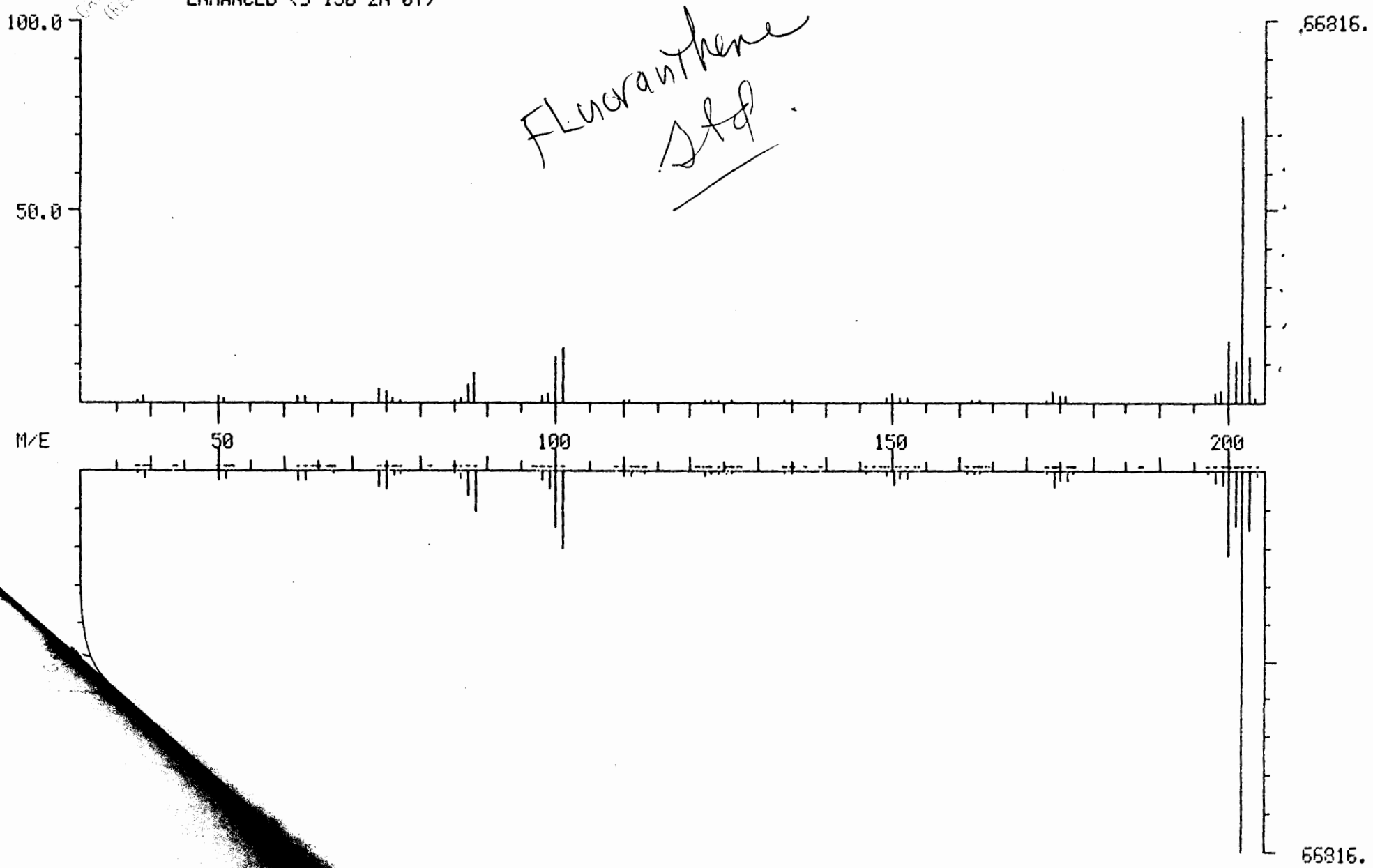


DUAL MASS SPECTRUM
01/08/83 15:50:00 + 25:32
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

CPD #58

DATA: STD051 #1459
CALI: STD051 #1

BASE M/E: 202/ 202
RIC: 135423./ 184575.



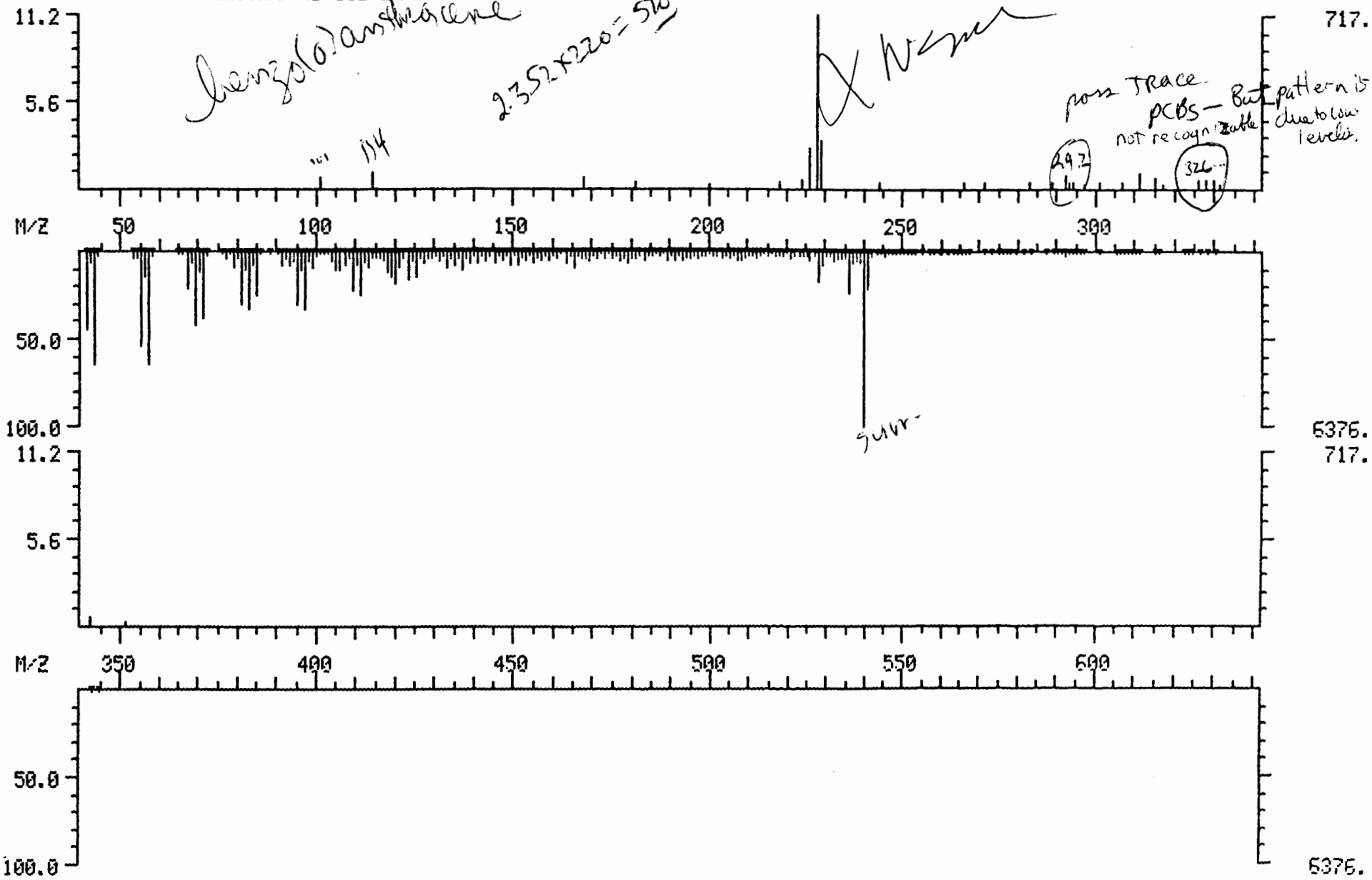
Fluoranthene
Std.

0513

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 31:46
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #1906
CALI: FI080588 #7

BASE M/Z: 228/ 240
RIC: 2019./ 97535.

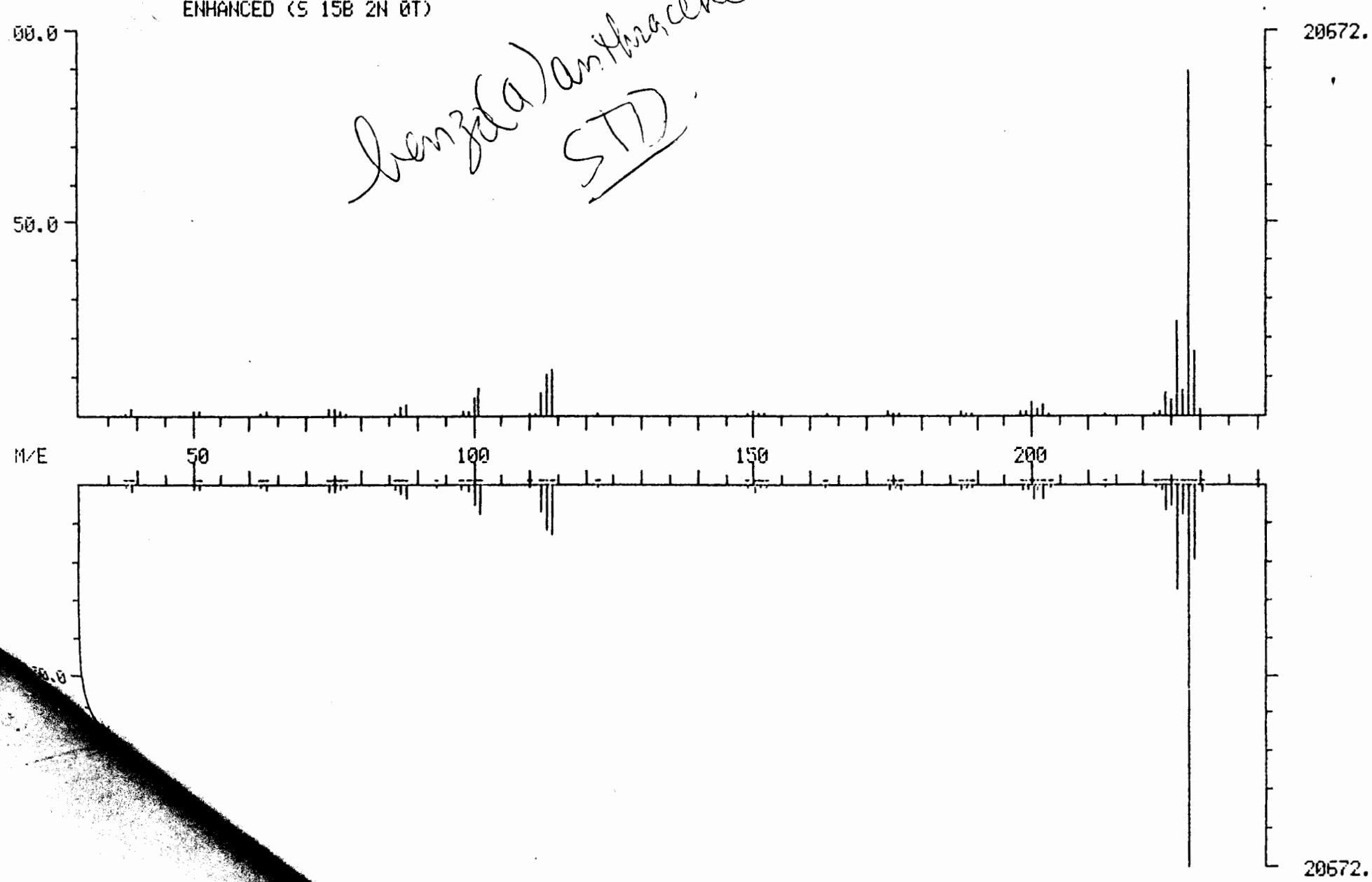


DUAL MASS SPECTRUM
01/08/83 15:50:00 + 29:08
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

CPD #68

DATA: STD051 #1665
CALI: STD051 #1

BASE M/E: 228/ 228
RIC: 47615./ 53887.

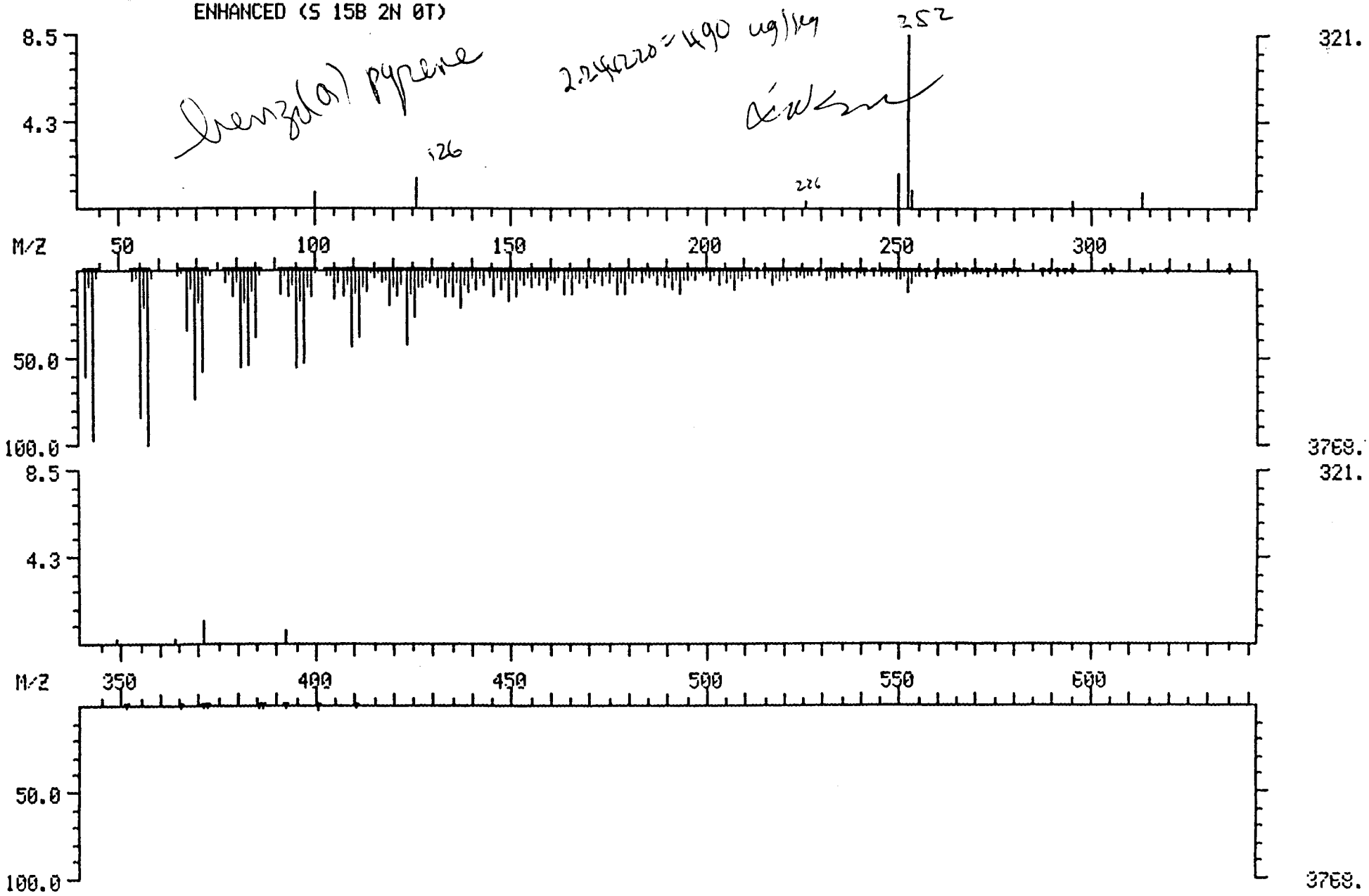


00519

DUAL MASS SPECTRUM
08/05/88 16:47:00 + 35:57
SAMPLE: CW253-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI8 #2157
CALI: FI080588 #7

BASE M/Z: 252/ 57
RIC: 642./ 79103.



benzo(a) pyrene

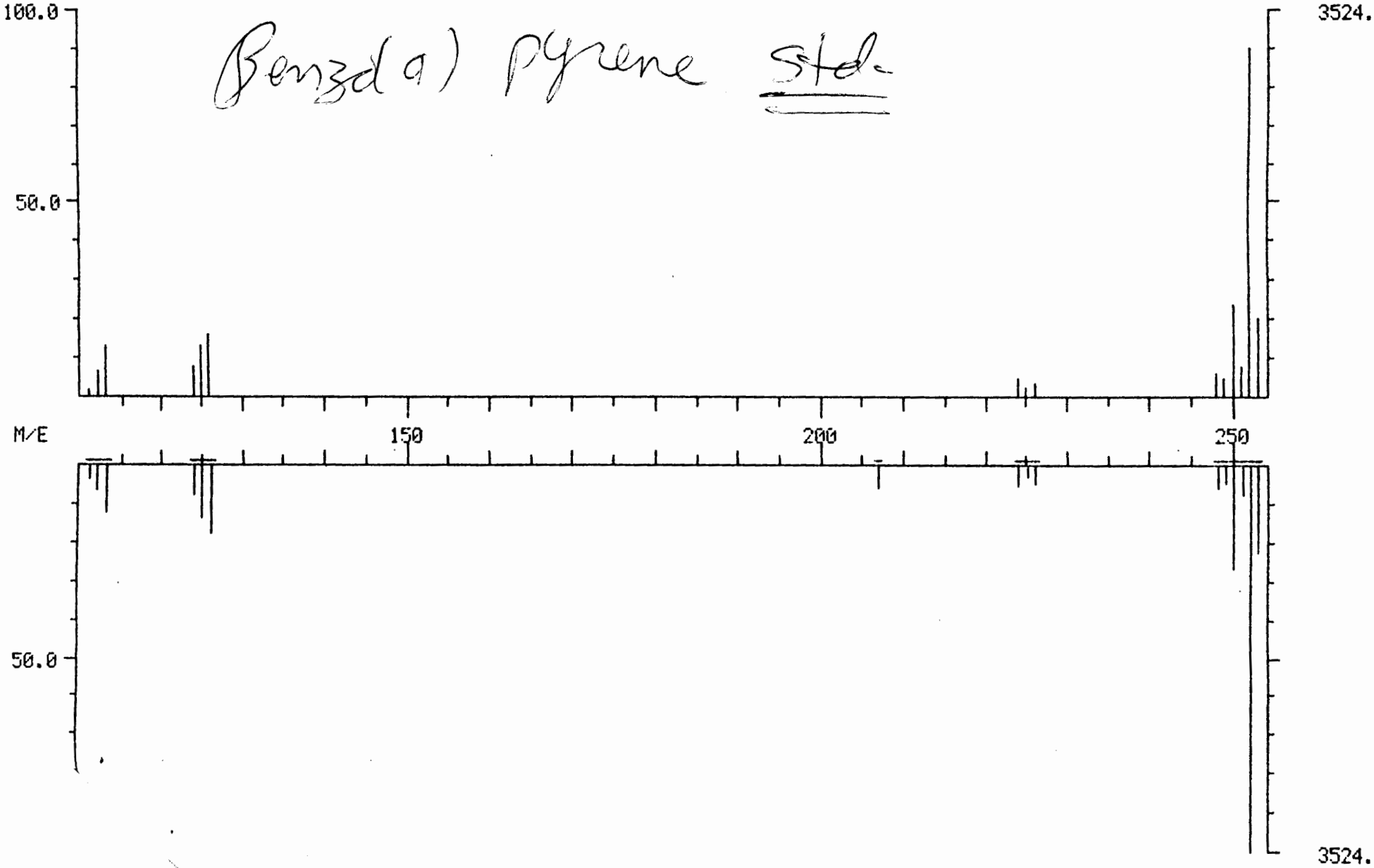
2.246220 = 490 ug/kg

CPD # 77

DUAL MASS SPECTRUM
01/08/83 15:50:00 + 32:30
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

DATA: STD051 #1857
CALI: STD051 #1

BASE M/E: 252/ 252
RIC: 7791./ 8767.



Quantitation Report File: 47238EI8 00488

Data: 47238EI8.TI
08/05/88 16:47:00
Sample: CW253-CASE#9998-SDG#CW247
Conds.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
Formula: DFTEI227 Instrument: GCMSI Weight: 0.000
Submitted by: BDCEI697 Analyst: PH#99I Acct. No.: FI080588

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name	
1	CI30 1,4-DICHLOROBENZENE-D4	(INTERNAL STANDARD)
2	C315 PHENOL	
3	C325 BIS(2-CHLOROETHYL) ETHER	
4	C330 2-CHLOROPHENOL	
5	C335 1,3-DICHLOROBENZENE	
6	C340 1,4-DICHLOROBENZENE	
7	C345 BENZYL ALCOHOL	
8	C350 1,2-DICHLOROBENZENE	
9	C355 2-METHYLPHENOL	
10	C360 BIS(2-CHLOROISOPROPYL) ETHER	
11	C365 4-METHYLPHENOL	
12	C370 N-NITROSO-DI-N-PROPYLAMINE	
13	C375 HEXACHLOROETHANE	
14	CS45 PHENOL-D5	(SURROGATE)
15	CS50 2-FLUOROPHENOL	(SURROGATE)
16	CI40 NAPHTHALENE-D8	(INTERNAL STANDARD)
17	C410 NITROBENZENE	
18	C415 ISOPHORONE	
19	C420 2-NITROPHENOL	
20	C425 2,4-DIMETHYLPHENOL	
21	C430 BENZOIC ACID	
22	C435 BIS(2-CHLOROETHOXY) METHANE	
23	C440 2,4-DICHLOROPHENOL	
24	C445 1,2,4-TRICHLOROBENZENE	
25	C450 NAPHTHALENE	
26	C455 4-CHLOROANILINE	
27	C460 HEXACHLOROBUTADIENE	
28	C465 4-CHLORO-3-METHYLPHENOL	(PARA-CHLORO-META-CRESOL)
29	C470 2-METHYLNAPHTHALENE	
30	CS20 NITROBENZENE-D5	(SURROGATE)
31	CI50 ACENAPHTHENE-D10	(INTERNAL STANDARD)
32	C510 HEXACHLOROCYCLOPENTADIENE	
33	C515 2,4,6-TRICHLOROPHENOL	
34	C520 2,4,5-TRICHLOROPHENOL	
35	C525 2-CHLORONAPHTHALENE	
36	C530 2-NITROANILINE	
37	C535 DIMETHYLPHTHALATE	
38	C540 ACENAPHTHYLENE	
39	C543 2,6-DINITROTOLUENE	
40	C545 3-NITROANILINE	
41	C550 ACENAPHTHENE	
42	C555 2,4-DINITROPHENOL	
43	C560 4-NITROPHENOL	
44	C565 DIBENZOFURAN	
45	~~C570 2,4-DINITROTOLUENE~~	
46	C580 DIETHYLPHTHALATE	
47	C585 4-CHLOROPHENYL-PHENYL ETHER	

DT = 1ug/g

No	Name
48	C590 FLUORENE
49	C595 4-NITROANILINE
50	CS25 2-FLUOROBIPHENYL (SURROGATE)

df=220. 00489

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot	
1	152	589	9:49	1	1.000	A BB	37829.	40.000 UG/L	10.62	
2	94	571	9:31	1	0.969	A BB	5875.	4.017 UG/L	1.07	PHENOL
3	NOT FOUND									
4	NOT FOUND									
5	NOT FOUND									
6	NOT FOUND									
7	NOT FOUND									
8	NOT FOUND									
9	NOT FOUND									
10	NOT FOUND									
11	108	687	11:27	1	1.166	A BB	899.	~~0.783 UG/L~~	0.21	<DT
12	70	685	11:25	1	1.163	A BB	1168.	~~1.390 UG/L~~	0.37	
13	NOT FOUND									
14	99	569	9:29	1	0.966	A BB	18560.	14.346 UG/L	3.81	
15	112	422	7:02	1	0.716	A BB	15372.	10.888 UG/L	2.89	
16	136	803	13:23	16	1.000	A BB	145392.	40.000 UG/L	10.62	
17	77	687	11:27	16	0.856	A BB	430.	~~0.285 UG/L~~	0.08	<DT
18	NOT FOUND									
19	NOT FOUND									
20	107	772	12:52	16	0.961	A BB	1431.	~~1.263 UG/L~~	0.34	
21	122	805	13:25	16	1.002	A BB	1343.	3.855 UG/L	1.02	
22	NOT FOUND									
23	NOT FOUND									
24	NOT FOUND									
25	128	806	13:26	16	1.004	A BB	2521.	~~0.658 UG/L~~	0.17	?
26	127	829	13:49	16	1.032	A BB	53.	~~0.032 UG/L~~	0.01	<DT
27	NOT FOUND									
28	NOT FOUND									
29	142	933	15:33	16	1.162	A BB	3118.	~~0.737 UG/L~~	0.20	
30	82	684	11:24	16	0.852	# BV	7579.	5.927 UG/L	1.57	
31	164	1126	18:46	31	1.000	M XX	73417.	40.000 UG/L	10.62	
32	NOT FOUND									
33	NOT FOUND									
34	NOT FOUND									
35	NOT FOUND									
36	65	1054	17:34	31	0.936	# VB	992.	~~1.487 UG/L~~	0.40	
37	163	1098	18:18	31	0.975	# VV	2089.	~~0.770 UG/L~~	0.20	
38	152	1096	18:16	31	0.973	# VV	2282.	~~0.581 UG/L~~	0.15	<DT
39	165	1112	18:32	31	0.988	# VV	786.	~~1.434 UG/L~~	0.38	
40	NOT FOUND									
41	153	1131	18:51	31	1.004	# VB	1272.	~~0.580 UG/L~~	0.15	<DT
42	NOT FOUND									
43	109	1188	19:48	31	1.055	# VV	1231.	~~6.292 UG/L~~	1.67	
44	168	1163	19:23	31	1.033	A BB	795.	~~0.234 UG/L~~	0.06	<DT
45	165	1173	19:33	31	1.042	# VV	969.	~~1.215 UG/L~~	0.32	
46	149	1234	20:34	31	1.096	# VV	1580.	~~0.701 UG/L~~	0.19	<DT
47	NOT FOUND									
48	166	1226	20:26	31	1.089	# VV	4171.	~~1.471 UG/L~~	0.39	
49	138	1254	20:54	31	1.114	# VV	331.	~~1.050 UG/L~~	0.28	
50	172	1010	16:50	31	0.897	# VB	16355.	5.631 UG/L	1.50	

Quantitation Report File: 47238EI8 00491

Data: 47238EI8.TI
08/05/88 16:47:00
Sample: CW253-CASE#9998-SDG#CW247
Conds.: GCMSI-EXT 30.06G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
Formula: DFTEI227 Instrument: GCMSI Weight: 0.000
Submitted by: BDCEI697 Analyst: PH#99I Acct. No.: FI080588

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name	
51	CS55 2,4,6-TRIBROMOPHENOL	(SURROGATE)
52	CI60 PHENANTHRENE-D10	(INTERNAL STANDARD)
53	C610 4,6-DINITRO-2-METHYLPHENOL	
54	C615 N-NITROSODIPHENYLAMINE	
55	C625 4-BROMOPHENYL-PHENYL ETHER	
56	C630 HEXACHLOROBENZENE	
57	C635 PENTACHLOROPHENOL	
58	C640 PHENANTHRENE rep'd by lab	
59	C645 ANTHRACENE	
60	C650 DI-N-BUTYLPHTHALATE	
61	C655 FLUORANTHENE	
62	CI70 CHRYSENE-D12	(INTERNAL STANDARD)
63	C715 PYRENE	
64	C720 BUTYLBENZYLPHTHALATE	
65	C725 3,3'-DICHLOROBENZIDINE	
66	C730 BENZO(A)ANTHRACENE	
67	C740 CHRYSENE	
68	C745 BIS(2-ETHYLHEXYL)PHTHALATE	
69	CS30 TERPHENYL-D14	(SURROGATE)
70	CI75 PERYLENE-D12	(INTERNAL STANDARD)
71	C760 DI-N-OCTYLPHTHALATE	
72	C765 BENZO(B)FLUORANTHENE	
73	C770 BENZO(K)FLUORANTHENE	
74	C775 BENZO(A)PYRENE	
75	C780 INDENO(1,2,3-CD)PYRENE	
76	C785 DIBENZ(A,H)ANTHRACENE	
77	C790 BENZO(G,H,I)PERYLENE	

df=220

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot	
51	330	1276	21:16	31	1.133	A BB	2224.	8.815 UG/L	2.34	
52	188	1400	23:20	52	1.000	M XX	114045.	40.000 UG/L	10.62	
53	NOT FOUND									
54	169	1258	20:58	52	0.899	# VV	1364.	~~1.321 UG/L~~	0.35	NW
55	NOT FOUND									
56	NOT FOUND									
57	NOT FOUND									
58	178	1404	23:24	52	1.003	M XX	17104.	6.146 UG/L	1.63	PHEN
59	178	1412	23:32	52	1.009	# VV	4996.	~~1.683 UG/L~~	0.45	NW
60	149	1547	25:47	52	1.105	# VV	9945.	~~2.446 UG/L~~	0.65	NW
61	202	1630	27:10	52	1.164	# VV	12736.	~~3.891 UG/L~~	1.03	NW
62	240	1908	31:48	62	1.000	# VB	75253.	40.000 UG/L	10.62	
63	202	1670	27:50	62	0.875	# VV	15383.	6.162 UG/L	1.64	PYRENE
64	149	1829	30:29	62	0.959	# VV	3836.	~~2.674 UG/L~~	0.71	NW
65	252	1916	31:56	62	1.004	# VV	327.	~~0.805 UG/L~~	0.21	<DT
66	228	1906	31:46	62	0.999	M XX	4849.	~~2.352 UG/L~~	0.62	NW

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
67	228	1912	31:52	62	1.002	# VV	7616.	4.214 UG/L	1.12
68	149	1958	32:38	62	1.026	# VV	16760.	10.012 UG/L	2.66
69	244	1718	28:38	62	0.900	# VB	12196.	7.265 UG/L	1.97
70	264	2168	36:08	70	1.000	# VB	45253.	40.000 UG/L	10.62
71	149	2072	34:32	70	0.956	# VV	7554.	3.254 UG/L	0.86
72	252	2105	35:05	70	0.971	M XX	7059.	4.778 UG/L	1.27
73	252	2109	35:09	70	0.973	M XX	1371.	0.843 UG/L	0.22
74	252	2157	35:57	70	0.995	# VV	3154.	2.240 UG/L	0.60
75	276	2335	38:55	70	1.077	A BB	933.	0.796 UG/L	0.21
76	278	2341	39:01	70	1.080	# BB	614.	0.536 UG/L	0.14
77	276	2373	39:33	70	1.095	A BB	782.	0.660 UG/L	0.18

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R.Fac	R.Fac(L)	Ratio
51	21:14	1.00	1.133	1.00	8.81	50.00	0.024	0.137	0.18
52	23:17	1.00	1.000	1.00	40.00	40.00	1.000	1.000	1.00
53	20:52		0.896						
54	20:59	1.00	0.901	1.00	1.32	50.00	0.010	0.362	0.03
55	22:02		0.946						
56	22:23		0.961						
57	23:03		0.990						
58	23:21	1.00	1.003	1.00	6.15	50.00	0.120	0.976	0.12
59	23:30	1.00	1.009	1.00	1.68	50.00	0.035	1.041	0.03
60	25:44	1.00	1.105	1.00	2.45	50.00	0.070	1.426	0.05
61	27:06	1.00	1.164	1.00	3.89	50.00	0.089	1.148	0.08
62	31:43	1.00	1.000	1.00	40.00	40.00	1.000	1.000	1.00
63	27:46	1.00	0.875	1.00	6.16	50.00	0.164	1.327	0.12
64	30:26	1.00	0.960	1.00	2.67	50.00	0.041	0.762	0.05
65	31:47	1.00	1.002	1.00	0.81	50.00	0.003	0.216	0.02
66	31:41	1.00	0.999	1.00	2.35	50.00	0.052	1.096	0.05
67	31:49	1.00	1.003	1.00	4.21	50.00	0.081	0.961	0.08
68	32:31	1.00	1.025	1.00	10.01	50.00	0.178	0.890	0.20
69	28:33	1.00	0.900	1.00	7.27	50.00	0.130	0.892	0.15
70	36:01	1.00	1.000	1.00	40.00	40.00	1.000	1.000	1.00
71	34:26	1.00	0.956	1.00	3.25	50.00	0.134	2.052	0.07
72	34:56	1.00	0.970	1.00	4.78	50.00	0.125	1.306	0.10
73	35:03	1.00	0.973	1.00	0.84	50.00	0.024	1.437	0.02
74	35:51	1.00	0.995	1.00	2.24	50.00	0.056	1.245	0.04
75	38:49	1.00	1.078	1.00	0.80	50.00	0.016	1.036	0.02
76	38:56	1.00	1.081	1.00	0.54	50.00	0.011	1.013	0.01
77	39:28	1.00	1.096	1.00	0.66	50.00	0.014	1.048	0.01

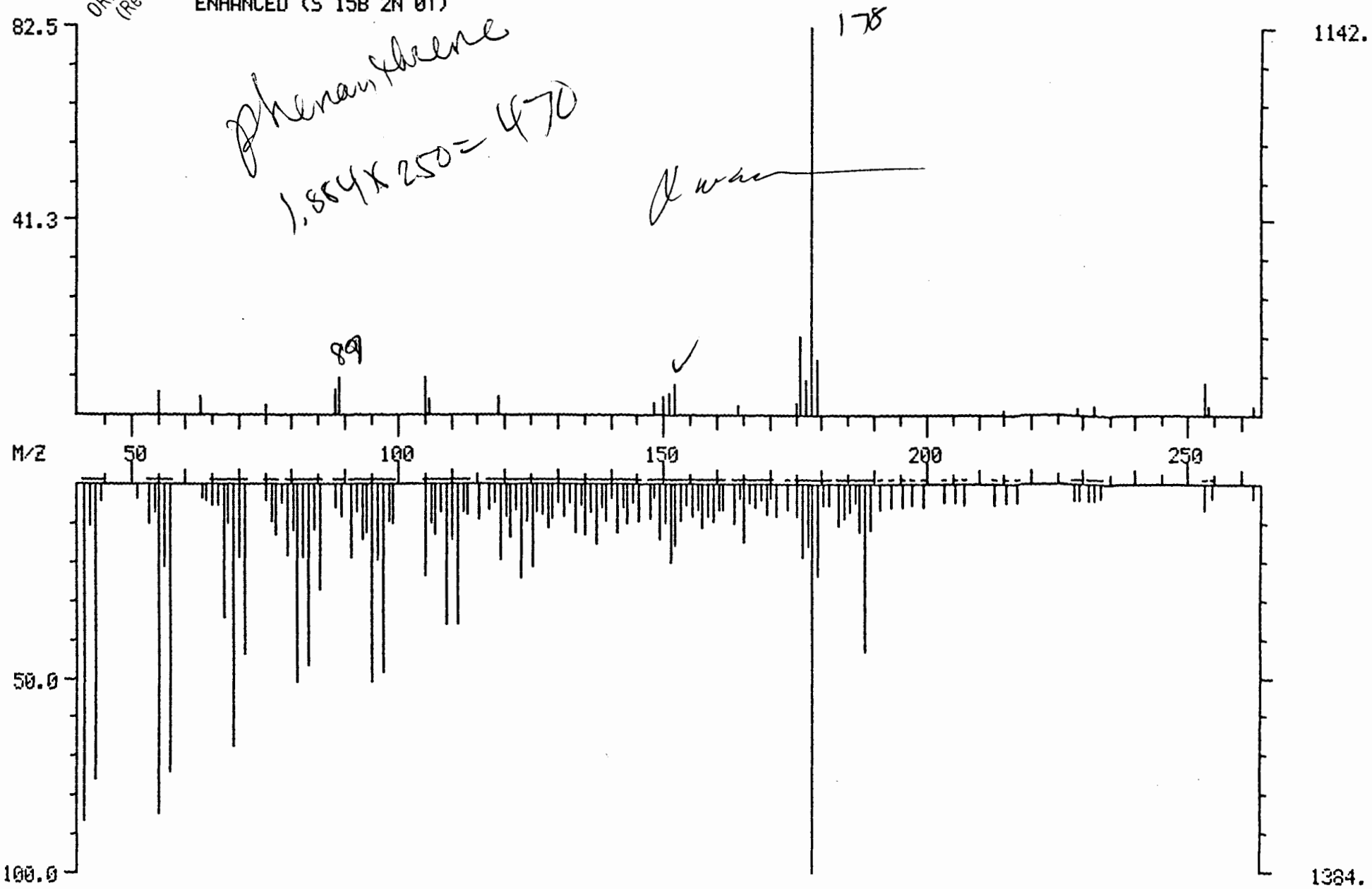
00563

CW254 ~~CW258~~ ORIGINAL (Red)

DUAL MASS SPECTRUM
08/05/88 14:39:00 + 23:22
SAMPLE: ~~CW238~~-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 29.90G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI6 #1402
CALI: FI080588 #7

BASE M/Z: 178/ 178
RIC: 2703./ 28127.

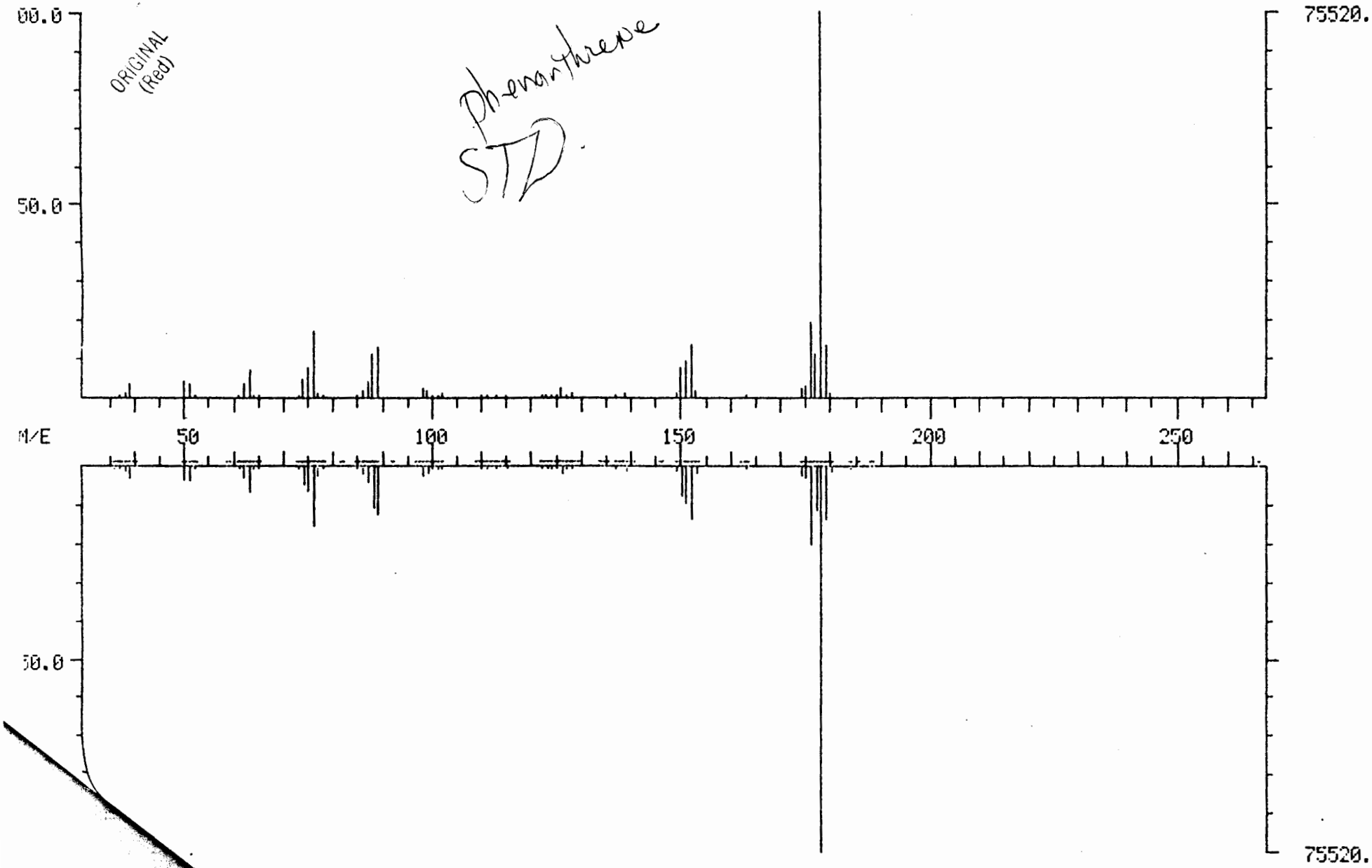


phenanthrene

1.884 X 250 = 470

01/08/03 15:30:00 + 22:29
SAMPLE: ABNHSL @ 100 UG/ML
CONDS.:
ENHANCED (S 15B 2N 0T)

CALI: STD051 #1 RIC: 220927./ 216831.



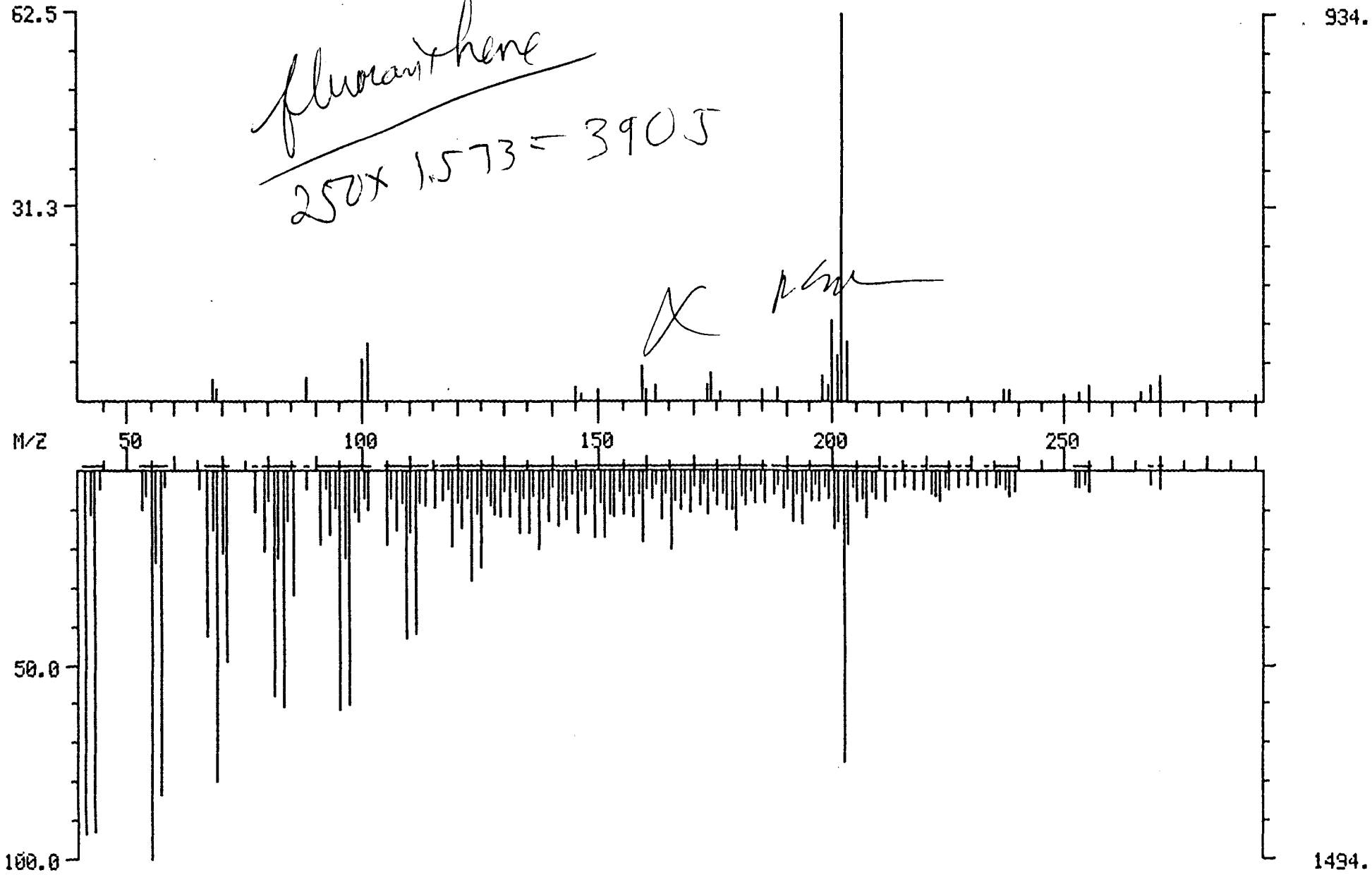
0564

ORIGINAL (Red) CW254 ~~CW258~~ 3N

DUAL MASS SPECTRUM
08/05/88 14:39:00 + 27:08
SAMPLE: ~~CW233~~-CASE#9998-SDG#CW247
CONDS.: GCMSI-EXT 29.90G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
ENHANCED (S 15B 2N 0T)

DATA: 47238EI6 #1628
CALI: FI080588 #7

BASE M/Z: 202/ 55
RIC: 2563./ 35263.



fluoranthene

250 x 1.573 = 390.5

Quantitation Report File: 47238EI6

00549

Data: 47238EI6.TI CW254
08/05/88 14:39:00 ~~CW258~~ SN
Sample: ~~CW238~~-CASE#9998-SD~~0~~#CW247
Conds.: GCMSI-EXT 29.90G:10ML::7.5ML:0.75ML::100UL:500UL 07/14/88
Formula: DFTEI227 Instrument: GCMSI Weight: 0.000
Submitted by: BDCEI697 Analyst: PH#99I Acct. No.: FI080588

ORIGINAL (Red)

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

No	Name		
51	CS55	2,4,6-TRIBROMOPHENOL	(SURROGATE)
52	CI60	PHENANTHRENE-D10	(INTERNAL STANDARD)
53	C610	4,6-DINITRO-2-METHYLPHENOL	
54	C615	N-NITROSODIPHENYLAMINE	
55	C625	4-BROMOPHENYL-PHENYL ETHER	
56	C630	HEXACHLOROBENZENE	
57	C635	PENTACHLOROPHENOL	
58	C640	PHENANTHRENE	
59	C645	ANTHRACENE	
60	C650	DI-N-BUTYLPHTHALATE	
61	C655	FLUORANTHENE	
62	CI70	CHRYSENE-D12	(INTERNAL STANDARD)
63	C715	PYRENE	
64	C720	BUTYLBENZYLPHTHALATE	
65	C725	3,3'-DICHLOROBENZIDINE	
66	C730	BENZO(A)ANTHRACENE	
67	C740	CHRYSENE	
68	C745	BIS(2-ETHYLHEXYL)PHTHALATE	
69	CS30	TERPHENYL-D14	(SURROGATE)
70	CI75	PERYLENE-D12	(INTERNAL STANDARD)
71	C760	DI-N-OCTYLPHTHALATE	
72	C765	BENZO(B)FLUORANTHENE	
73	C770	BENZO(K)FLUORANTHENE	
74	C775	BENZO(A)PYRENE	
75	C780	INDENO(1,2,3-CD)PYRENE	
76	C785	DIBENZ(A,H)ANTHRACENE	
77	C790	BENZO(G,H,I)PERYLENE	

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
51	330	1275	21:15	31	1.133	A BB	2422.	9.993 UG/L	2.63
52	188	1398	23:18	52	1.000	# VV	106248.	40.000 UG/L	10.51
53	NOT FOUND								
54	169	1262	21:02	52	0.903	# VV	1113.	~~1.157 UG/L~~	0.30
55	NOT FOUND								
56	NOT FOUND								
57	NOT FOUND								
58	178	1402	23:22	52	1.003	# VV	4884.	~~1.884 UG/L~~	0.50
59	178	1410	23:30	52	1.009	# VV	1699.	~~0.614 UG/L~~	0.16 <DT
60	149	1546	25:46	52	1.106	# VV	3601.	~~0.951 UG/L~~	0.25
61	202	1628	27:08	52	1.165	# VV	4797.	~~1.573 UG/L~~	0.41
62	240	1906	31:46	62	1.000	# VB	82929.	~~40.000 UG/L~~	10.51
63	202	1668	27:48	62	0.875	# VV	7203.	~~2.618 UG/L~~	0.69
64	149	1829	30:29	62	0.960	# VV	4141.	~~2.620 UG/L~~	0.69
65	252	1913	31:53	62	1.004	A BB	59.	~~0.133 UG/L~~	0.03 <DT
66	228	1904	31:44	62	0.999	# BV	2209.	~~0.972 UG/L~~	0.26

2F
SOIL PESTICIDE SURROGATE RECOVERY

ORIGINAL (Red)

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No: _____ SDG No.: CW247

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
1	CW253	125	0
2	CW254	67	0
3	CW255	97	0
4	CW255MS	95	0
5	CW255MSD	96	0
6	CW256	102	0
7	CW258	114	0
8	PBLK1	113	0
9	PBLK1	115	0
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

CORRECTED
APPROVED: N. Carpenter
DATE: 9/16/88

ADVISORY QC LIMITS (20-150)

S1 (DBC) = Dibutylchlorendate

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

FORM II PEST-2 1/87 Rev.

99 8/1/88

2E
WATER PESTICIDE SURROGATE RECOVERY

00968

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No: _____ SDG No.: CW247

ORIGINAL

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
1	CW247	115	0
2	CW248	105	0
3	CW249	107	0
4	CW250	113	0
5	CW251	121	0
6	CW252	99	0
7	CW252MS	124	0
8	CW252MSD	114	0
9	PBLK3	112	0
10			
11			
12			
13			
14			
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29			
30			

ADVISORY QC LIMITS (24-154)

S1 (DBC) = Dibutylchlorendate

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogates diluted out

FORM II PEST-1 1/87 Rev.

DJ 8/3/88

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

Matrix Spike - EPA Sample No.: CW255 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	32.9	0.0	28.6	87	46-127
Heptachlor	32.8	0.0	33.5	102	35-130
Aldrin	32.8	0.0	20.5	63	34-132
ieldrin	80.5	0.0	58.3	72	31-134
ndrin	80.2	0.0	50.9	63	42-139
4,4'-DDT	80.2	0.0	53.9	67	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	32.9	28.9	88	1	50	46-127
Heptachlor	32.8	32.0	98	5	31	35-130
Aldrin	32.8	17.9	55	14	43	34-132
Dieldrin	80.5	50.5	63	14	38	31-134
Endrin	80.2	46.8	58	8	45	42-139
,4'-DDT	80.2	48.4	60	11	50	23-134

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS: _____

JJ 8/1/88

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: IT CERRITOS Contract: 68-01-7469

Lab Code: IT Case No.: 9998 SAS No.: _____ SDG No.: CW247

Matrix Spike - EPA Sample No.: CW252

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	0.205	0.000	0.220	107	56-123
Heptachlor	0.204	0.000	0.200	98	40-131
Aldrin	0.204	0.000	0.190	93	40-120
Dieldrin	0.501	0.000	0.510	102	52-126
Endrin	0.499	0.000	0.490	98	56-121
,4'-DDT	0.499	0.000	0.510	102	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	0.205	0.210	102	5	15	56-123
Heptachlor	0.204	0.180	88	11	20	40-131
Aldrin	0.204	0.200	98	5	22	40-120
Dieldrin	0.501	0.480	96	6	18	52-126
Endrin	0.499	0.440	88	11	21	56-121
4,4'-DDT	0.499	0.480	96	6	27	38-127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS: _____

JJ 8/3/88

PROJECT NAME: ITT Grinnell
TDD NO.: F3-8806-06

EPA SITE NO.: PA 335
REGION: III

SUPPORT DOCUMENTATION FOR THE REVIEW OF INORGANIC ANALYTICAL DATA PACKAGE

ORIGINAL (Red)

CASE/SAS NO.: 9998
TYPE OF ANALYSIS: metals, CN
CONTRACT LABORATORY: JTC
APPLICABLE IFB OR SOW: 7/87
REVIEWER: R. Cohen
REVIEW DATE: March 15, 1989

APPLICABLE SAMPLE NO's.: mcw911-921

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL — CHECK (✓) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW					PROBLEM AREAS IDENTIFIED — CHECK (✓) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW					SUPPORT DOCUMENTATION ATTACHMENTS — CHECK (✓) IF YES OR IDENTIFY ATTACHMENT NO.				
	ALL APPLICABLE ANALYSES	ICP OR A.A. METALS	FURNACE METALS	COLD VAPOR MERCURY	CYANIDE	ALL APPLICABLE ANALYSES	ICP OR A.A. METALS	FURNACE METALS	COLD VAPOR MERCURY	CYANIDE	ALL APPLICABLE ANALYSES	ICP OR A.A. METALS	FURNACE METALS	COLD VAPOR MERCURY	CYANIDE
HOLDING TIMES	✓														
BLANK ANALYSIS RESULTS	✓					✓					✓				
MATRIX SPIKES (PRE-DIGESTION)	✓					✓					✓				
DUPLICATES	✓										✓				
QUANTITATION OF RESULTS	✓														
DETECTION LIMITS/SENSITIVITY	✓														
INITIAL CALIBRATIONS	✓														
CONTINUING CALIBRATIONS	✓														
LABORATORY CONTROL STANDARDS	✓														
ICP LINEAR RANGE ANALYSIS	✓						✓				✓				
ICP INTERFERENCE CHECKS	✓														
ICP SERIAL DILUTIONS	✓										✓				
GFAA POST-DIGESTION SPIKES	✓										✓				
GFAA DUPLICATE BURNS	✓														
GFAA STANDARD ADDITIONS	✓										✓				
OTHERS	✓														

COMMENTS:

BLANK ANALYSIS RESULTS

TASK	TYPE	CONC	MATRIX	SAMPLE #	SOURCE OF H_2O	CONTAMINANTS (CONCENTRATION / DETECTION LIMI	
Metals	low lab blk - initial calibration				lab	potassium	1680 ug/l •
	Continuing Calibrations				lab	potassium lead	1415 ug/l 2.5 ug/l
	preparation blanks				lab	potassium lead nickel beryllium	1548 ug/l 1.0 ug/l 18.2 ug/l • 2.0 ug/l •
	field blank			mcw911	DI H2S	iron lead potassium	40 ug/l • 15.3 ug/l • 1157 ug/l

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHI
SAMPLE ANALYTICAL DATA SUMMARY.

COMMENTS:

(1) RESULT REPORTED BY LABORATORY AND CONFIRMED BY REVIEWER.

(2) RESULT INFERRED FROM RAW DATA

• = highest level of particular metal

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: JTC ENVIRONMENTAL CNSLTS. CONTRACT: 68-W8-0023

Lab Code: JTC Case No.: 9998 SAS No.: SDG No.: MCW911

AA CRDL Standard Source: SPEX

ICP CRDL Standard Source: FISHER

Concentration Units: ug/L

Analyte	CRDL Standard for AA True	Found	%R	CRDL Standard for ICP Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum								
Antimony				120.0	91.7	76.4	133.9	111.6
Arsenic	10.0	10.9	109.5					
Barium								
Beryllium				10.0	5.8	58.0	7.4	74.0
Cadmium				10.0	7.9	79.4	8.8	88.0
Calcium								
Chromium				20.0	22.8	114.0	12.1	60.5
Cobalt				100.0	107.9	107.9	107.8	107.8
Copper				50.0	56.6	113.2	37.0	73.9
Iron								
Lead	5.0	5.0	100.0					
Magnesium								
Manganese				30.0	35.9	119.7	33.9	113.0
Mercury								
Nickel				80.0	76.3	95.4	84.5	105.6
Potassium	5000.0	5406.9	108.1					
Selenium	5.0	5.6	112.0					
Silver				20.0	31.5	157.5	24.9	124.5
Sodium								
Thallium	10.0	10.9	108.5					
Vanadium				100.0	114.0	114.0	111.2	111.2
Zinc				40.0	33.4	83.5	54.6	136.5

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: JTC ENVIRONMENTAL CNSLTS. CONTRACT: 68-W8-0023

Lab Code: JTC Case No.: 9998 SAS No.: SDG No.: MCW911

AA CRDL Standard Source: SPEX

ICP CRDL Standard Source:

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead	5.0	4.8	96.0					
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								

U.S. EPA - CLP

3
BLANKS

Lab Name: JTC ENVIRONMENTAL CNSLTS. Contract: 68-W8-0029

Lab Code: JTC Case No.: 9998 SAS No.: SDG No.: MCW911

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/Kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	169.0	U	169.0	U	169.0	U	169.0	U	33.800	U	P
Antimony	59.0	U	59.0	U	59.0	U	59.0	U	11.800	U	P
Arsenic	3.9	U	3.9	U	3.9	U	3.9	U	.780	U	P
Barium	11.0	U	11.0	U	11.0	U	11.0	U	2.200	U	P
Beryllium	.8	U	.8	U	.8	U	.8	U	.160	U	P
Cadmium	3.7	U	3.7	U	3.7	U	3.7	U	.740	U	P
Calcium	403.0	U	403.0	U	403.0	U	403.0	U	80.600	U	P
Chromium	6.9	U	6.9	U	6.9	U	6.9	U	1.380	U	P
Cobalt	7.2	U	7.2	U	7.2	U	7.2	U	1.440	U	P
Copper	22.0	U	22.0	U	22.0	U	22.0	U	4.400	U	P
Iron	30.0	U	30.0	U	30.0	U	30.0	U	6.000	U	P
Lead	.9	U	.9	U	.9	B	.9	U	.240	B	P
Magnesium	495.0	U	495.0	U	495.0	U	495.0	U	99.000	U	P
Manganese	6.1	U	6.1	U	6.1	U	6.1	U	1.220	U	P
Mercury	.2	U	.2	U	.2	U	.2	U	.100	U	CV
Nickel	16.0	U	16.0	U	16.0	U	16.0	U	3.640	B	P
Potassium	1621.1	B	1415.0	B	1282.0	B			255.294	B	A
Selenium	3.1	U	3.1	U	3.1	U	3.1	U	.620	U	P
Silver	8.2	U	8.2	U	8.2	U	8.2	U	1.640	U	P
Sodium	2869.0	U	2869.0	U	2869.0	U	2869.0	U	573.800	U	P
Thallium	2.3	U	2.3	U	2.3	U	2.3	U	.460	U	P
Vanadium	14.0	U	14.0	U	14.0	U	14.0	U	2.800	U	P
Zinc	12.0	U	12.0	U	12.0	U	12.0	U	2.400	U	P
Cyanide	10.0	U	10.0	U	10.0	U			2.000	U	AS

U.S. EPA - CLP

3
BLANKS

ORIGINAL (Red)

Lab Name: JTC ENVIRONMENTAL CNSLTS. Contract: 68-W8-0023

Lab Code: JTC Case No.: 9998 SAS No.: SDG No.: MCW911

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			169.0	U					169.000	U	P
Antimony			58.0	U					58.000	U	P
Arsenic			3.9	U	3.9	U	3.9	U	3.900	U	F
Barium			11.0	U					11.000	U	P
Beryllium			.9	U					2.000	B	P
Cadmium			3.7	U					3.700	U	P
Calcium			408.0	U					408.000	U	P
Chromium			6.9	U					6.900	U	P
Cobalt			7.2	U					7.200	U	P
Copper			22.0	U					22.000	U	P
Iron			30.0	U					30.000	U	P
Lead									.900	U	F
Magnesium			495.0	U					495.000	U	P
Manganese			6.1	U					6.100	U	P
Mercury									.200	U	CV
Nickel			16.0	U					16.000	U	P
Potassium									1548.000	B	A
Selenium			3.1	U	3.1	U	3.1	U	3.100	U	F
Silver			8.2	U					8.200	U	P
Sodium			2869.0	U					2869.000	U	P
Thallium			2.3	U					2.300	U	F
Vanadium			14.0	U					14.000	U	P
Zinc			12.0	U					12.000	U	P
Cyanide									10.000	U	AS