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Environmental
Restoration
Contractor

ERC Team

Interoffice Memorandum

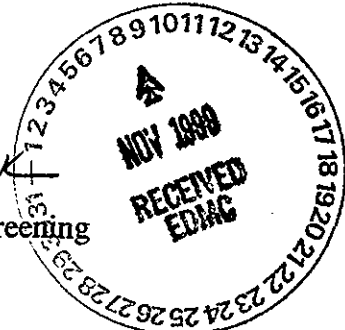
Job No. 22192
Written Response Required? NO
Closes CCN: N/A
OU: 200-ZP-2
TSD: N/A
ERA: CCI, Vapor Extraction
Subject Code:

TO: Data Management, H6-07

DATE: October 16, 1995

COPIES: Document Control, H4-79, w/a
Project Files, H4-79, w/a
EAL Files, X2-10, w/a
~~Sample Management, H4-14, w/a~~

FROM: Richard B. Kerkow *RBK*
Field Services / Field Screening
H6-01, 372-9282



DELAYED DUE TO
INCORRECT MSIN
PLEASE NOTIFY SENDER

45091

SUBJECT: DATA PACKAGE FOR 200-ZP-2 SOIL GAS SURVEY, SEPTEMBER 1995, Rev 0.
(HEIS NUMBERS BOGJY8 THROUGH BOGK78 - 91 SAMPLES)

REFERENCES: BHI 1995a, *Description of Work To Perform A Soil Gas Investigation At The 200-ZP-2 Vapor Extraction Site (VES)*, ERC Memo #020881, August 25, 1995, Bechtel Hanford, Inc., Richland, Washington.

BHI 1995b, *Field Screening Procedures*, BHI-EE-05, Bechtel Hanford, Inc., Richland, Washington.

BHI 1995c, *Field Screening (On-Site Measurements) Quality Assurance Plan*, BHI-EE-08, Bechtel Hanford, Inc., Richland, Washington.

The attached data package provides the analytical results of a soil gas survey at the 200-ZP-2 Operable Unit (OU), Carbon Tetrachloride ERA Site, during the month of September 1995. The sampling and analysis requirements for this study were established in the referenced description of work (BHI 1995a).

Table A-1 lists the analytical results for all samples analyzed in support of this study. Sample analysis was performed according to BHI-EE-05, Field Screening Procedure (FSP) 1.6, *Analysis of Volatile Organic Compounds in Soil Gas* (BHI 1995b). Samples were analyzed using a Photovac 10S Plus (10S Plus) (a trademark of Photovac International Inc.), gas chromatograph (GC). The 10S Plus is a self-contained, battery-powered, portable GC with a photoionization detector (PID). For the purposes of this study the 10S Plus was equipped with a 10 meter, non-polar, wide-bore capillary column, and an 11.7 eV photoionization lamp. The 10S Plus was operated isothermally at an oven temperature of 40°C and used ultra high-purity air as the carrier gas, at a flow rate of 5 mL/minute. Vapor samples were introduced into the GC by syringe injection, using an injection volume of 1.0 mL. The 10S Plus is equipped with a method library of compounds based on the established retention times of known VOCs. Detected analytes are quantified by evaluating peak

Data Package for 200-ZP-2 Soil Gas Survey, September 1995, Rev 0.

~~D. R. Jordan, X2-10~~

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area and an appropriate response factor for each compound of interest compared to known concentrations of compounds run as calibration standards. The calibration standard used for the daily instrument calibration update was obtained from a commercially prepared, bottled gas mixture containing NIST traceable compounds with a concentration tolerance of $\pm 2\%$. The calibration standard contained methylene chloride (dichloromethane - abbreviated DCM, CH_2Cl_2) at a concentration of 1.5 ppm-v; chloroform (trichloromethane - abbreviated TCM, CHCl_3) at a concentration of 1.0 ppm-v; carbon tetrachloride (tetrachloromethane - abbreviated CCl_4) at a concentration of 0.8 ppm-v; trichloroethylene (ethylene trichloride - abbreviated TCE, ClCHCCl_2) at a concentration of 0.96 ppm-v; and 1,1,2-trichloroethane (vinyl trichloride - abbreviated 112 TCA, ClCHCCl_2) at a concentration of 0.94 ppm-v. The acceptable calibration tolerance for daily calibration update (Cal Std) was $\pm 10\%$ (ASTM, 1993). At the end of each days analytical session the same calibration standard was analyzed to determine calibration drift (Cal check). Calibration deviation was tracked on a control chart prepared in accordance with BHI-EE-05, FSP 1.14, *Use of Control Charts* (BHI 1995b). Instrument response was within the acceptable control limit of $\pm 15\%$.

The Quality Assurance level for this work corresponds to level QA-2, as defined in the referenced Quality Assurance Plan (BHI 1995c). Quality control samples were analyzed to ensure overall reliability of the data. Analytical instruments were calibrated and operated in accordance with the referenced field screening procedures and/or the manufacturer's recommendations. Quality control samples included calibration standard samples (Cal Std), calibration check samples (Cal check), ambient air / equipment blanks (ambient), and duplicate samples (d). Calibration standard samples and calibration check samples were run daily to confirm instrument accuracy.

Method detection limits (MDLs) were developed in accordance with BHI-EE-05, FSP 1.15, *Method Detection Limits* (BHI 1995b), and are based on the analytical methodology described in section 3.3 of this report. MDLs for this study were established at the following concentration levels: 0.030 ppm-v for methylene chloride; 0.020 ppm-v for chloroform and 0.010 ppm-v for carbon tetrachloride. Compounds which have been reported as not detected (ND) may be present in trace concentrations at or near the MDL for that compound.

Chain-of-Custody was established by logging sample receipt on the mobile laboratory chain-of-custody sheets in accordance with BHI-EE-05, FSP 1.10 *Field Screening Chain of Custody* (BHI 1995c).


Richard B. Kerkow

QA Reviewer: Paul E Duerksen Date: 10/18/95

Data Package for 200-ZP-2 Soil Gas Survey, September 1995, Rev 0.~~D. B. Jordan, Y2-10~~

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- Attachments:
- A - Table A-1. *200-ZP-2 Soil Gas Survey, September 1995, Data.*
 - B - Chain of Custody Sheets (BHI-EE-134 and BHI-EE-136).
 - C - Instrument Calibration Curves and Method Detection Limit.
 - D - Photovac 10S Plus GC Instrument Logbook pages (EL-1264).

Table A-1. 200-ZP-2 Soil Gas Survey, September 1995, Data.

SAMPLE INFORMATION						ANALYTICAL DATA				
Date Sampled	Sample Point	Lambert Coordinates		HEIS Number	Purge Vol (mL)	Date Analyzed	DCM (ppm-v)	TCM (ppm-v)	CCI4 (ppm-v)	TCE (ppm-v)
		E	N							
9/18/95	Cal Std	NA	NA	B0GJY8	NA	9/18/95	1.500	1.000	0.800	0.960
9/18/95	Ambient	NA	NA	B0GJY9	240	9/18/95	ND	ND	ND	ND
9/18/95	79-02	566330	135377	B0GJZ0	240	9/18/95	ND	ND	ND	ND
9/18/95	W-5	566363	135368	B0GJZ1	240	9/18/95	ND	ND	ND	ND
9/18/95	N-9	566392	135400	B0GJZ2	240	9/18/95	ND	ND	ND	ND
9/18/95	N-7	566441	135415	B0GJZ3	240	9/18/95	ND	ND	ND	ND
9/18/95	95-12	566730	135575	B0GJZ4	240	9/18/95	ND	ND	ND	ND
9/18/95	95-11	566732	135635	B0GJZ5	240	9/18/95	ND	ND	ND	ND
9/18/95	94-03R	566716	135688	B0GJZ6	240	9/18/95	ND	ND	0.072	ND
9/18/95	95-13	566815	135525	B0GJZ7	240	9/18/95	ND	ND	ND	ND
9/18/95	95-15	566875	135585	B0GJZ8	240	9/18/95	ND	ND	ND	ND
9/18/95	86-07R	566821	135608	B0GJZ9	240	9/18/95	ND	ND	ND	ND
9/18/95	95-05	566703	135830	B0GK00	240	9/18/95	ND	ND	ND	ND
9/18/95	95-06	566750	135830	B0GK01	240	9/18/95	ND	ND	ND	ND
9/18/95	95-07	566794	135830	B0GK02	240	9/18/95	ND	ND	ND	ND
9/18/95	95-08	566845	135830	B0GK03	240	9/18/95	ND	ND	ND	ND
9/18/95	95-09	566940	135830	B0GK04	240	9/18/95	ND	ND	0.036	ND
9/18/95	94-05	566792	135773	B0GK05	240	9/18/95	ND	ND	0.017	ND
9/18/95	71-06	566427	135196	B0GK06	240	9/18/95	ND	ND	ND	ND
9/18/95	71-05	566397	135164	B0GK07	240	9/18/95	ND	ND	ND	ND
9/18/95	71-04	566368	135133	B0GK08	240	9/18/95	ND	ND	0.024	ND
9/18/95	Cal Check	NA	NA	B0GK09	NA	9/18/95	1.440	0.950	0.750	0.890
9/19/95	Cal Std	NA	NA	B0GK10	NA	9/19/95	1.500	1.000	0.800	0.960
9/19/95	Ambient	NA	NA	B0GK11	240	9/19/95	ND	ND	ND	ND
9/19/95	d 94-03R	566716	135688	B0GK12	240	9/19/95	ND	ND	0.080	ND
9/19/95	94-04	566744	135721	B0GK13	240	9/19/95	ND	ND	ND	ND
9/19/95	95-14	566805	135663	B0GK14	240	9/19/95	ND	ND	ND	ND
9/19/95	93-01	566963	135765	B0GK15	240	9/19/95	ND	ND	ND	ND
9/19/95	94-10	566934	135733	B0GK16	240	9/19/95	ND	ND	ND	ND
9/19/95	94-09	566904	135702	B0GK17	240	9/19/95	ND	ND	0.016	ND
9/19/95	95-10	566925	135580	B0GK18	240	9/19/95	ND	ND	ND	ND
9/19/95	94-08	566871	135688	B0GK19	240	9/19/95	ND	ND	ND	ND
9/19/95	94-07	566842	135636	B0GK20	240	9/19/95	ND	ND	ND	ND
9/19/95	94-02	566689	135654	B0GK21	240	9/19/95	ND	ND	ND	ND
9/19/95	94-01	566670	135644	B0GK22	240	9/19/95	ND	ND	ND	ND
9/19/95	86-02	566665	135448	B0GK23	240	9/19/95	ND	ND	ND	ND
9/19/95	79-11	566576	135360	B0GK24	240	9/19/95	ND	ND	ND	ND
9/19/95	79-10	566549	135325	B0GK25	240	9/19/95	ND	ND	ND	ND
9/19/95	79-09R	566518	135287	B0GK26	240	9/19/95	ND	ND	ND	ND
9/19/95	RST 4-3	566810	135970	B0GK27	240	9/19/95	ND	ND	ND	ND
9/19/95	RST 4-2	566809	135945	B0GK28	240	9/19/95	ND	ND	0.035	ND
9/19/95	RST 4-1	566809	135920	B0GK29	240	9/19/95	ND	ND	0.087	ND
9/19/95	87-09	566603	135477	B0GK30	240	9/19/95	ND	ND	ND	ND
9/19/95	79-13	566635	135417	B0GK31	240	9/19/95	ND	ND	ND	ND
9/19/95	79-12	566602	135385	B0GK32	240	9/19/95	ND	ND	ND	ND
9/19/95	Cal Check	NA	NA	B0GK33	NA	9/19/95	1.500	.0960	0.800	0.930

Notes: d = Duplicate Sample
 NA = Not Applicable
 ND = Not Detected

Table A-1. 200-ZP-2 Soil Gas Survey, September 1995, Data.

SAMPLE INFORMATION						ANALYTICAL DATA				
Date Sampled	Sample Point	Lambert Coordinates		HEIS Number	Purge Vol (mL)	Date Analyzed	DCM	TCM	CCI4	TCE
		E	N				(ppm-v)	(ppm-v)	(ppm-v)	(ppm-v)
9/20/95	Cal Std	NA	NA	B0GK34	NA	9/20/95	1.500	1.000	0.800	0.960
9/20/95	Ambient	NA	NA	B0GK35	240	9/20/95	ND	ND	ND	ND
9/20/95	d 94-03R	566716	135688	B0GK36	240	9/20/95	ND	ND	0.047	ND
9/20/95	d 95-09	566940	135830	B0GK37	240	9/20/95	ND	ND	0.028	ND
9/20/95	d RST4-1	566809	135920	B0GK38	240	9/20/95	ND	ND	0.079	ND
9/20/95	86-06	566795	135586	B0GK39	240	9/20/95	ND	ND	ND	ND
9/20/95	86-05-01	566772	135561	B0GK40	240	9/20/95	ND	ND	ND	ND
9/20/95	86-05	566754	135543	B0GK41	240	9/20/95	ND	ND	ND	ND
9/20/95	86-08	566787	135483	B0GK42	240	9/20/95	ND	ND	ND	ND
9/20/95	86-04	566728	135512	B0GK43	240	9/20/95	ND	ND	0.033	ND
9/20/95	86-03	566702	135481	B0GK44	240	9/20/95	ND	ND	ND	ND
9/20/95	85-02	567064	135491	B0GK45	240	9/20/95	ND	ND	ND	ND
9/20/95	85-01R	566970	135480	B0GK46	240	9/20/95	ND	ND	0.056	ND
9/20/95	86-09	566876	135486	B0GK47	240	9/20/95	ND	ND	ND	ND
9/20/95	87-06	566533	135498	B0GK48	240	9/20/95	ND	ND	ND	ND
9/20/95	87-05	566509	135475	B0GK49	240	9/20/95	ND	ND	ND	ND
9/20/95	87-04	566481	135443	B0GK50	240	9/20/95	ND	ND	ND	ND
9/20/95	79-06	566451	135411	B0GK51	240	9/20/95	ND	ND	ND	ND
9/20/95	79-05	566422	135379	B0GK52	240	9/20/95	ND	ND	ND	ND
9/20/95	79-04	566392	135348	B0GK53	240	9/20/95	ND	ND	ND	ND
9/20/95	Cal Check	NA	NA	B0GK54	NA	9/20/95	1.480	.0970	0.800	0.950
9/21/95	Cal Std	NA	NA	B0GK55	NA	9/21/95	1.500	1.000	0.800	0.960
9/21/95	Ambient	NA	NA	B0GK56	240	9/21/95	ND	ND	ND	ND
9/21/95	d 94-03R	566716	135688	B0GK57	240	9/21/95	ND	ND	0.098	ND
9/21/95	79-07	566455	135225	B0GK58	240	9/21/95	ND	ND	ND	ND
9/21/95	79-08	566487	135259	B0GK59	240	9/21/95	ND	ND	ND	ND
9/21/95	71-01	566341	135009	B0GK60	240	9/21/95	ND	ND	ND	ND
9/21/95	71-02	566339	135101	B0GK61	240	9/21/95	ND	ND	ND	ND
9/21/95	71-03	566335	135193	B0GK62	240	9/21/95	ND	ND	0.022	ND
9/21/95	79-01	566332	135285	B0GK63	240	9/21/95	ND	ND	ND	ND
9/21/95	79-03	566362	135317	B0GK64	240	9/21/95	ND	ND	0.059	ND
9/21/95	W-1	566391	135285	B0GK65	240	9/21/95	ND	ND	ND	ND
9/21/95	103-01	566316	135837	B0GK66	240	9/21/95	ND	ND	ND	ND
9/21/95	95-02	566319	135745	B0GK67	240	9/21/95	ND	ND	ND	ND
9/21/95	95-01	566322	135653	B0GK68	240	9/21/95	ND	ND	0.029	ND
9/21/95	87-03	566419	135472	B0GK69	240	9/21/95	ND	ND	ND	ND
9/21/95	87-02	566324	135561	B0GK70	240	9/21/95	ND	ND	ND	ND
9/21/95	87-01R	566326	135471	B0GK71	240	9/21/95	ND	ND	ND	ND
9/21/95	N-6	566515	135371	B0GK72	240	9/21/95	ND	ND	ND	ND
9/21/95	N-5	566486	135370	B0GK73	240	9/21/95	ND	ND	ND	ND
9/21/95	N-2	566485	135341	B0GK74	240	9/21/95	ND	ND	ND	ND
9/21/95	RST 2-4	566525	135175	B0GK75	240	9/21/95	ND	ND	ND	ND
9/21/95	RST 2-3	566525	135150	B0GK76	240	9/21/95	ND	ND	ND	ND
9/21/95	RST 2-2	566525	135125	B0GK77	240	9/21/95	ND	ND	ND	ND
9/21/95	Cal Check	NA	NA	B0GK78	NA	9/21/95	1.460	0.970	0.790	0.930

Notes: d = Duplicate Sample
 NA = Not Applicable
 ND = Not Detected

Instrument: Photovac 10S Plus GC, Serial # TA920107
 Method: 5mL/min flow, 11.7 eV lamp, 1.0 mL injection
 Logbook: Photovac Instrument Log, EL-1264, pages 26-33
 SAF: B95-100

Analyst: *Duane Jacques, 10/16/95*
 Duane Jacques

MOBILE LABORATORY DATA/LOG SHEET

Site Name: 200-ZP-2 Soil Gas 9/95

Date: 9/18/95

	Sample Number	Sample Time	Sample Type(*)	Sampler (initials)	Analysis Time	Analytical Results	Comments
A	BOGJY8	0940	Cal	IDJ	0949	Good cal	DCM = 1.33 OK
B	BOGJY9	0945	Ambient	RBK	0958	No detects	NA
A	BOGJZ0	1020	79-02	RBK	1028	No detects	79-02 NA
B	BOGJZ1	1022	W-5	RBK	1035	No detects	W-5 NA
A	BOGJZ2	1046	N-9	RBK	1059	No detects	NA
B	BOGJZ3	1052	N-7	RBK	1104	No detects	NA
A	BOGJZ4	1115	95-12	RBK	1129	No detects	NA
B	BOGJZ5	1119	95-11	RBK	1135	DCM = 0.15 ?	Small peaks on shoulder at inj. peak
C	BOGJZ6	1123	94-03R	RBK	1144	DCM = 38.26 ? CCl ₄ = 72 ppb	NA *
A	BOGJZ7	1216	95-13	RBK	1235	ND	NA
B	BOGJZ8	1222	95-15	RBK	1241	ND	NA
C	BOGJZ9	1226	86-07R	RBK	1248	DCM = 0.38	NA *
A	BOGK00	1322	95-05	RBK	1341	ND	NA
B	BOGK01	1328	95-06	RBK	1347	ND	NA
C	BOGK02	1333	95-07	RBK	1354	ND	NA
A	BOGK03	95-08	1410	RBK	1429	ND	NA
B	BOGK04	95-09	1415	RBK	1434	CCl ₄ = 0.036	NA
C	BOGK05	94-05	1420	RBK	1441	ATCCl ₄ = 0.017	NA
A	BOGK06	71-06	1457	RBK	1514	ND	NA
B	BOGK07	71-05	1501	RBK	1520	ND	NA
C	BOGK08	71-04	1506	RBK	1526	CCl ₄ = 0.024	NA

BHI-EE134, 05/95

* Samples BOGJZ5 & BOGJZ6 - Tentative identification of DCM was not confirmed by second column ^{9/18/95} ident analysis.

Field Screening Chain of Custody/Sample Documentation

Project: 200-ZP-2 Soil Gas Survey

Date: 9/19/95

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
BOGK11	1045	Ambient air equipment blank	2.5 mL syrn.	1108	GC	No detects	
A BOGK12	1106	94-03R		1123		Duplicate / CCl ₄ = 0.080 ppm	
B BOGK13	1110	94-04		1130		No detects	
C BOGK14	1115	95-14		1137		No detects	
A BOGK15	1155	93-01		1212		No detects	
B BOGK16	1200	94-10		1218		No detects	
C BOGK17	1204	94-09		1224		CCl ₄ = 16 ppb	
A BOGK18	1234	95-10		1255		DCM = .24 ppm ? *	
B BOGK19	1242	94-08		1301		No detects	
C BOGK20	1247	94-07		1306		No detects	
A BOGK21	1325	94-02		1346		No detects	

Notes: * Sample BOGK18 - Tentative identification of DCM not confirmed by second column analysis.

Samples Collected By: RB Kenkow

Received By: I. D. Jacques
Date/Time: _____

Analyzed By: T. D. Jacques

Field Screening Chain of Custody/Sample Documentation

Project: 200-2P-2 Soil Gas Survey

Date: 9/19/95

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
B0GK22	1331	94-01	2.5 ml syr	1351	GC	No detects	
B0GK23	1337	86-02		1357		No detects	
B0GK24	1406	79-11		1417		No detects	
B0GK25	1410	79-10		1423		No detects	
B0GK26	1417	79-09R		1429		No detects	
B0GK27	1440	RST4-3		1500		No detects	
B0GK28	1445	RST4-2		1506		CDly = ^{0.011} 35 ppb 0.027 ppb	
B0GK29	1450	RST4-1		1516		CDly = 87 ppb	
B0GK30	1535	87-09		1555		No detects	
B0GK31	1542	79-13		1601		No detects	
B0GK32	1548	79-12		1606		No detects	

Notes: _____

Samples Collected By: R. B. Kerkow

Received By: L. D. Jacques
Date/Time: _____

Analyzed By: L. D. Jacques

Field Screening Chain of Custody/Sample Documentation

Project: 200-2P-2 Soil Gas Survey

Date: 9/20/95

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
²⁰⁵ BOGK35	0945	Ambient air	1 L bag	1027	GC	No detects	
²⁰⁵ BOGK36	1050	94-03R	2.5ml syr	1113		dupl. DCM = 0.31 ² * CCl ₄ = 0.047	
BOGK37	1057	95-09		1120		dupl. CCl ₄ = 0.028	
BOGK38	1103	RST. 4-1		1126		dupl. CCl ₄ = 0.079	
+ BOGK39	1153	86-06		1213		No detects	
⇒ BOGK40	1158	86-05-1		1221		No detects	
BOGK41	1204	86-05		1227		No detects	
+ BOGK42	1255	86-08		1316		No detects	
⊖ BOGK43	1300	86-04		1321		CCl ₄ = 33 ppb	
⊖ BOGK44	1306	86-03	✓	1328		No detects	
BOGK45	1348	85-02	✓	1410	✓	No detects	

Notes: * Sample BOGK36 - Tentative identification of DCM not confirmed by second column analysis

Samples Collected By: R. B. Kerkow Received By: I. D. Jaczma Analyzed By: I. D. Jaczma
 Date/Time: _____

Field Screening Chain of Custody/Sample Documentation

Project: 200-ZP-2 Soil Gas Survey

Date: 9/20/95

fx →

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
B0GK46	1355	85-01R	2.5mLsyr	1418	GC	CCl ₄ = 56. ppb	
B0GK47	1400	86-09		1425		No detects	
B0GK48	1448	87-06		1504		No detects	
B0GK49	1451	87-05		1511		No detects	
B0GK50	1457	87-04		1518		No detects	
B0GK51	1525	79-06		1543		No detects	
B0GK52	1531	79-05		1550		No detects	
B0GK53	1535	79-04		1556		No detects	

Notes: _____

Samples Collected By: R. B. Kerkow

Received By: I. D. Jacques
Date/Time: _____

Analyzed By: I. D. Jacques

Field Screening Chain of Custody/Sample Documentation

Project: 200-2P-2 Soil Gas Survey

Date: 9/21/95

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
BOGK56	0900	Ambient Air	1 L bag	0907	10S Plus	No detects	
BOGK57	0906	94-03R &	2.5 mL syr	0926		Duplicate CCl ₄ = 98 ppb	
BOGK58	0912	79-07		0932		No detects	
BOGK59	0918	79-08		0939		No detects	
BOGK60	0958	71-01		1014		No detects	
BOGK61	1003	71-02		1020		No detects	
BOGK62	1007	71-03		1026		CCl ₄ = 22 ppb	
BOGK63	1100	79-01		1117		No detects	
BOGK64	1106	79-03		1123		CCl ₄ = 59 ppb	
BOGK65	1109	W-1		1131		No detects	
BOGK66	1152	103-01		1212		No detects	

Notes: _____

Samples Collected By: R. B. Kerkow

Received By: I. D. Jacques
Date/Time: _____

Analyzed By: I. D. Jacques

Field Screening Chain of Custody/Sample Documentation

Project: 200-2P-2 Soil gas Survey

Date: 9/21/95

Sample	Time Collected	Description	Container	Time Analyzed	Analysis	Results / Comments	Ref
BOGK67	1200	95-02	2.5mlsyr	1220	10s Plus GC	No detects	
BOGK68	1204	95-01	↓	1227		CCl ₄ = 29 ppb	
BOGK69	1234	87-03		1252		No detects	
BOGK70	1240	87-02		1258		No detects	
BOGK71	1244	87-01R		1304		No detects	
BOGK72	1308	N-6		1322		No detects	
BOGK73	1312	N-5		1328		No detects	
BOGK74	1316	N-2		1334		No detects	
BOGK75	1345	RST2-4		1359		No detects	
BOGK76	1348	RST2-3		1405		No detects	
BOGK77	1352	RST2-2		1412		No detects	

Notes: _____

Samples Collected By: R.B. Kukow

Received By: I. D. Jacques
 Date/Time: _____

Analyzed By: I. D. Jacques

9/15/95

PHOTOVAC 105 PLUS INSTRUMENT LOG
EL-1264 R.B. Kerker

001A-2E

- 0900 Arrived at 200-ZP-2 (2-1A CR16), MOBILE LAB Location. Set up Photovac 105 Plus as follows: installed 11.7 eV lamp. # 390024, changed septa in injection port #1, set carrier flow to 40 PSI and 5 ml/min.
- 0920 Started up 105 Plus. and set to auto run / cool to warm-up
- 1155 Called up Aromatic.gx file to modify into CCl₄ soil gas method. Updated method and named it CCl₄VES.gx Saved under C:\Plus\Methods.
- 1245 Calibrated to 21 ppm DCM, TCM, CCl₄, TCE, 1,2-DCM Mix.
- 1258 Analyzed 10 ppm DCM, TCM, 1,2-DCM. Added to method.
- 1313 Analyzed 10.9 ppm CCl₄ standard. Added to method.
- 1328 Analyzed 20 ppm DCM, TCM, 1,2-DCM mix. Added to method.
- 1341 Analyzed 27.6 ppm CCl₄ standard. Added to method.
- 1416 Began running 1 ppm DCM, TCM, CCl₄ mix for MDL determination.
- 1540 Completed experiments. Shut down 105 Plus.
- 1600 Left site.

9/18/95

PHOTOVAC INSTRUMENT LOG BOOK
EL-1264

Kuang Jaeger

- 0845 Arrived at 68N-1785 mobile lab set up at 200-Z-1A VES. Installed 11.7-V lamp in 10 S Plus. Installed new septum. Set carrier gas pressure at 40 psi. ~~Set in~~ Turned on detector lamp and began warming up instrument on autoloop.
- 0940 Filled 1 Liter bag with 5 Hydrocarbon ppm mix. Set 10 S Plus flow to 5 ml/min.
- 0949 Analyzed calibration standard using 1ml inj. Good cal. DCM was 1.33 instead of 1.5. Ok because DCM will not be an analyte of concern. ^{BOGJ48.gc}
- 0958 Analyzed Ambient air/equipment blank. BOGJ49.gc
- 1028 Analyzed 79-02 sample. BOGJ20.gc
- 1035 Analyzed W-5 sample. BOGJ21.gc
- 1059 Analyzed N-9 sample. BOGJ22.gc
- 1104 Analyzed N-7 sample. BOGJ23.gc
- 1129 Analyzed 95-12 sample. BOGJ24.gc
- 1135 Analyzed 95-11 sample. BOGJ25.gc
- 1144 Analyzed 94-03R sample. BOGJ26.gc
- 1220 Installed new septum. Ran cal check
DCM = 1.28 (-4%) TCM = 1.0 ($\pm 0\%$) oC14 = 0.80 ($\pm 0\%$)
TCE = 0.95 (-1%)
- 1223 Ran Calibration standard to recal. Good recal. Only DCM was significantly changed. This resets the cal from 949.
- 1235 Analyzed 95-13 sample. BOGJ27.gc
- 1241 Analyzed 95-15 sample. BOGJ28.gc
- 1248 Analyzed 86-07R sample. BOGJ29.gc
- 1341 Analyzed 95-05 sample. BOGK00.gc
- 1347 Analyzed 95-06 sample. BOGK01.gc
- 1354 Analyzed 95-07 sample. BOGK02.gc

9/15/95

EL-1264

Duan Jang

- 1429 Analyzed 95-08 sample. BOGK03.gc
1434 Analyzed 95-09 sample. BOGK04.gc
1441 Analyzed 94-05 sample. BOGK05.gc
1449 Reanalyzed 94-05 sample out of bag. saved as
BOGK05.gc
1514 Analyzed 71-06 sample. BOGK06.gc
1520 Analyzed 71-05 sample. BOGK07.gc
1526 Analyzed 71-04 sample. BOGK08.gc
1534 Analyzed Cal check. BOGK09.gc DCM = 1.44 (-4)
TCM = 0.95 (-5%) CCl₄ = 0.75 (-6%) TCE = 0.89 (-7%)
1545 Shut down 105 Plus. Installed 10.6 eV lamp.

9/19/95

EL-1264

Quane Jaczma

- 1000 Arrived at 200-2-1A creato conduct 200-2P-2 soil gas analysis.
- 1010 Installed 11.7 eV lamp in 10 S Plus. Installed new septum. Set HP air carrier gas at 40 psi. Turned on detector lamp. Lamp started OK.
- 1015 Set 10S Plus to autoloop and began warming up instrument in autorun configuration.
- 1050 Collected 1 ppm DCM, TCM, CCl₄, TCE, 112-TCA mix in 1 L bag.
- 1059 Analyzed 5 hydrocarbon mix calibration standard BOGK10.gc
Good calibration.
- 1108 Analyzed ambient air/equipment blank. BOGK11.gc. No detects.
- 1123 Analyzed 94-03R duplicate sample. BOGK12.gc
- 1130 Analyzed 94-04 sample. BOGK13.gc
- 1137 Analyzed 95-14 sample. BOGK14.gc
- 1212 Analyzed 93-01 sample. BOGK15.gc
- 1218 Analyzed 94-10 sample. BOGK16.gc
- 1224 Analyzed 94-09 sample. BOGK17.gc
- 1255 Analyzed 95-10 sample. BOGK18.gc
- 1301 Analyzed 94-08 sample. BOGK19.gc
- 1306 Analyzed 94-07 sample. BOGK20.gc
- 1315 Replaced septum. Reset carrier gas flow to 5 ml/min.
- 1317 Analyzed calibration check. DCM = 1.39 (-7%)
TCM = 0.96 (-4%) CCl₄ = 0.68 (-15%) TCE = 0.84 (-12%)
Reset instrument calibration
- 1346 Analyzed 94-02 sample. BOGK21.gc
- 1351 Analyzed 94-01 sample. BOGK22.gc
- 1357 Analyzed 86-02 sample. BOGK23.gc
- 1417 Analyzed 79-11 sample. BOGK24.gc
- 1423 Analyzed 79-10 sample. BOGK25.gc
- 1429 Analyzed 79-09R sample. BOGK26.gc

9/19/95

EL-1264

Duane Jorgensen

- 1500 Analyzed RST 4-3 sample. BOGK 27.gc
1506 Analyzed RST 4-2 sample. BOGK 28.gc
1516 Analyzed RST 4-1 sample. BOGK 29.gc
1529 Analyzed 5 Hydrocarbon mix cal check. BOGK 33.gc
DCM = 1.5 ($\pm 0\%$) TCM = 0.96 (-4%) CCl₄ = 0.80 ($\pm 0\%$)
TCE = 0.93 (-3%)
- 1555 Analyzed 87-09 sample. BOGK 30.gc
1601 Analyzed 79-13 sample. BOGK 31.gc
1606 Analyzed 79-12 sample. BOGK 32.gc
1615 Shut down 10 S Plus. Installed 10.6 eV lamp.
Set carrier gas on low flow to purge GC column.
-

9/20/95

EL-1264

Duane Jaimes

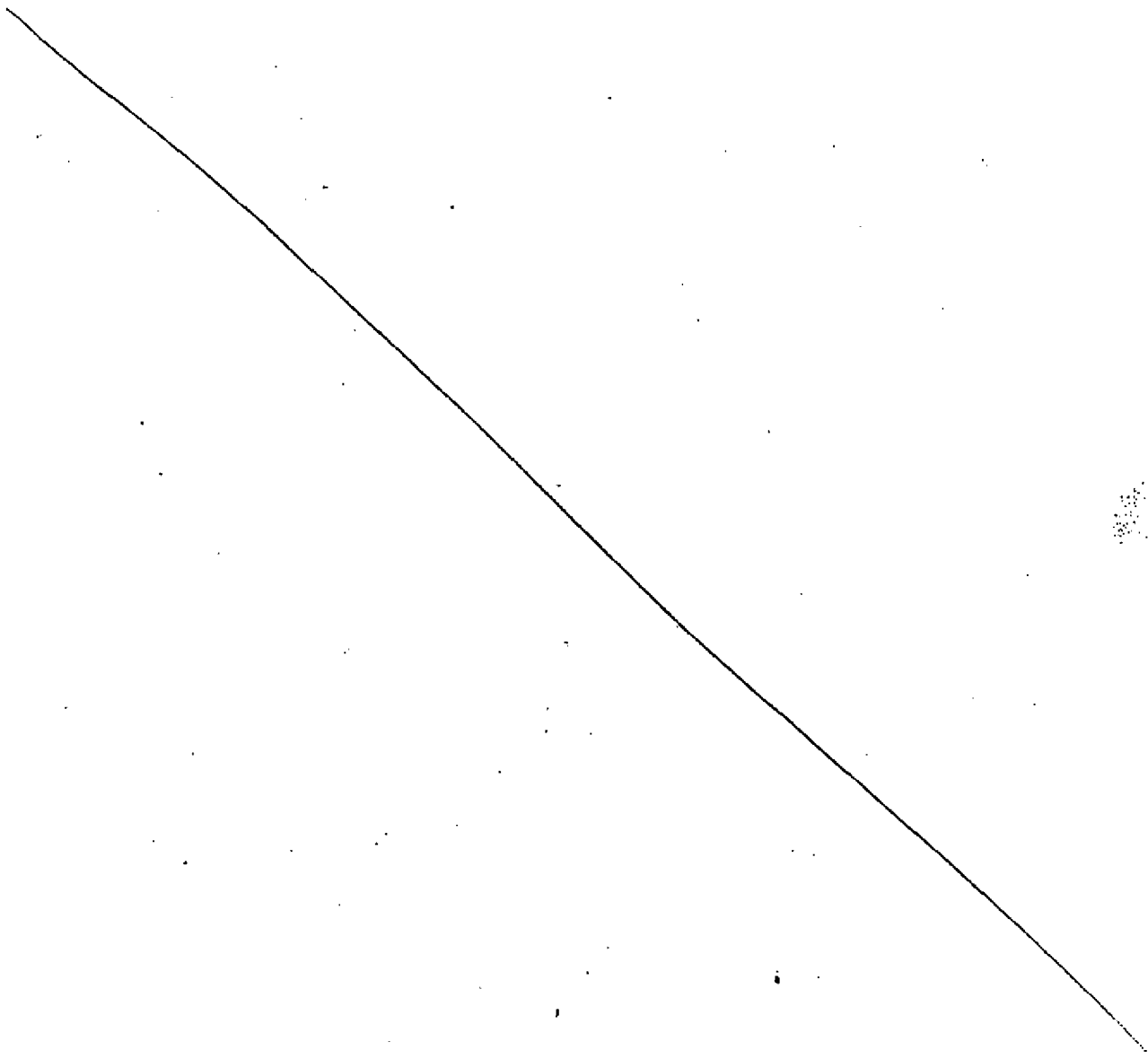
3--VUU

- 0910 Arrived at 68N-1985 mobile lab located at 200-2-1A VES. Installed 11.7 eV lamp in 10S Plus. Installed new septum and set carrier gas pressure at 40psi.
- 0915 Turned on 10S Plus and detector lamps. Set 10S Plus on auto loop to warming instrument. Instrument will used to analyze gas samples for 200-2P-2.
- 0945 Filled new 1L Tedlar bag with 1ppm hydrocarbon mix standard gas.
- 1015 Set 10S Plus flow rates to 5 ml/min
- 1017 Analyzed 1ppm hydrocarbon mix calibration standard. Good calibration. BOGK34.gc
- 1027 Analyzed ambient air/equipment blank. BOGK35.gc
- 1113 Analyzed 94-03R duplicate sample. BOGK36.gc
- 1120 Analyzed 95-09 duplicate sample. BOGK37.gc
- 1126 Analyzed RST4-1 duplicate sample. BOGK38.gc
- 1213 Analyzed 86-06 sample. BOGK39.gc
- 1221 Analyzed 86-05-1 sample. BOGK40.gc
- 1227 Analyzed 86-05 sample. BOGK41.gc
- 1316 Analyzed 86-08 sample. BOGK42.gc
- 1321 Analyzed 86-04 sample. BOGK43.gc
- 1328 Analyzed 86-03 sample. BOGK44.gc
- 1335 Reset carrier gas flow rate. Installed new septum.
- 1339 Analyzed 1ppm 5 Hydrocarbon mix check standard.
 $DCEM = 1.35 (-10\%)$ $TCM = 0.87 (-13\%)$ $CC14 = 0.77 (-4\%)$
 $TCE = 0.86 (-10\%)$ Reset instrument calibration.
- 1410 Analyzed 85-02 sample. BOGK45.gc
- 1418 Analyzed 85-01R sample. BOGK46.gc
- 1425 Analyzed 86-09 sample. BOGK47.gc
- 1504 Analyzed 87-06 sample. BOGK48.gc
- 1511 Analyzed 87-05 sample. BOGK49.gc
- 1518 Analyzed 87-04 sample. BOGK50.gc

9/20/95

EL-1264

Luane Jacques

- 1526 Analyzed 1 ppm 5 hydrocarbon mix calibration check.
DCM = 1.48 (-1%) TCM = 0.97 (-3%) CCl₄ = 0.80 (±0%)
TCE = 0.95 (-1%) BOGK54.gc
- 1543 Analyzed 79-06 sample. BOGK51.gc
- 1550 Analyzed 79-05 sample. BOGK52.gc
- 1556 Analyzed 79-04 sample. BOGK53.gc
- 1600 Turned off detector. Installed 10.6 eV lamp.
i Shut down equipment
- 

9/21/95

EL-1264

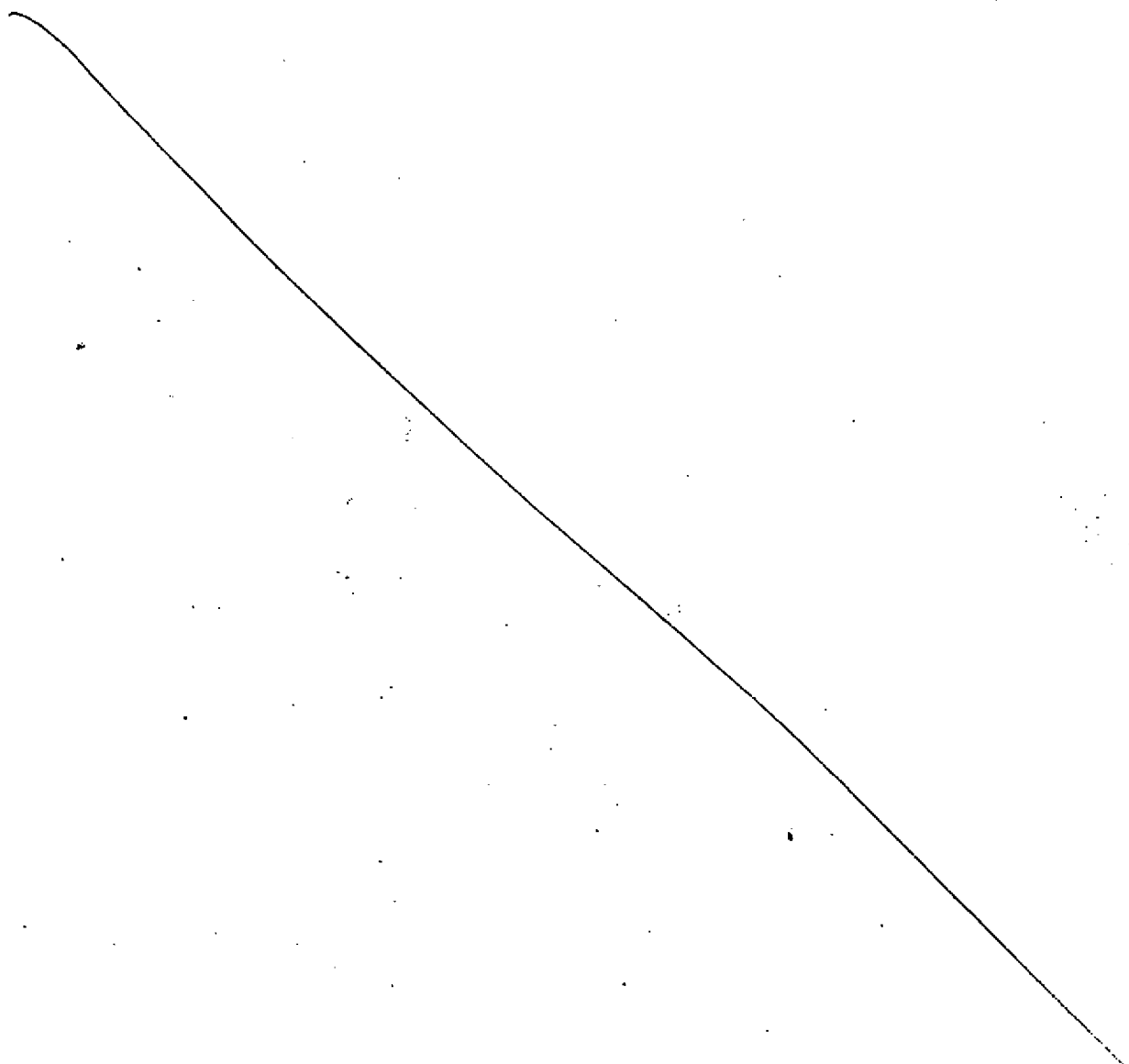
BOGK55-71

- 0750 Arrived at 68N-1985 mobile lab located at 200-2-1A crib site. Will use Photovac 105 Plus to analyze soil gas
- 0755 Installed 11.7 eV lamp and new septum. Carrier gas ~~Turned on 105 Plus and ^{105g} detector lamp.~~ was set at 40 psi. Turned on 105 Plus and detector lamp.
- 0800 Set 105 Plus to warm up ~~on~~ auto loop.
- 0830 Filled 1 L Tedlar bag with 1 ppm 5 hydrocarbon mix.
- 0855 Reset 105 Plus detector and back flush flow rates to 5 ml/min.
- 0858 Analyzed 1 ppm 5 hydrocarbon calibration standard. BOGK55.gc. Good calibration.
- 0907 Analyzed ambient air/equipment blank sample. BOGK56.gc
- 0926 Analyzed 94-031R duplicate sample. BOGK57.gc
- 0932 Analyzed 79-07 sample. BOGK58.gc
- 0939 Analyzed 79-08 sample. BOGK59.gc
- 1014 Analyzed 71-01 sample. BOGK60.gc
- 1020 Analyzed 71-02 sample. BOGK61.gc
- 1026 Analyzed 71-03 sample. BOGK62.gc
- 1117 Analyzed 79-01 sample. BOGK63.gc
- 1123 Analyzed 79-03 sample. BOGK64.gc
- 1131 Analyzed W-1 sample. BOGK65.gc
- 1135 Reset instrument flow rates to 5 ml/min. Installed new septum.
- 1141 Analyzed calibration gas as cal check. DCM = 1.40 (-7%)
TCM = 0.94 (-6%) CCl₄ = 0.73 (-9%) TCE = 0.90 (-6%)
Reset instrument calibration.
- 1212 Analyzed 103-01 sample. BOGK66.gc
- 1220 Analyzed 95-02 sample. BOGK67.gc
- 1227 Analyzed 95-01 sample. BOGK68.gc
- 1252 Analyzed 87-03 sample. BOGK69.gc
- 1258 Analyzed 87-02 sample. BOGK70.gc
- 1304 Analyzed 87-01R sample. BOGK71.gc

9/21/95

EL-1264

Bruane Jacques

- 1322 Analyzed N-6 sample. BOGK72.gc
1328 Analyzed N-5 sample. BOGK73.gc
1334 Analyzed N-2 sample. BOGK74.gc
1340 Analyzed 1 ppm 5 hydrocarbon calibration check
DCM = 1.46 (-3%) TCM = 0.97 (-3%) CCl₄ = 0.79 (-1%)
TCE = 0.93 (-3%) BOGK78.gc
1359 Analyzed RST 2-4 sample. BOGK75.gc
1405 Analyzed RST 2-3 sample. BOGK76.gc
1412 Analyzed RST 2-2 sample. BOGK77.gc
1420 Turned off detector. Replaced 10.6 eV (amp).
Placed instrument in off configuration.
- 

200-ZP-2 Soil Gas Survey: September 15, 1995
Calibration Curves and MDLs

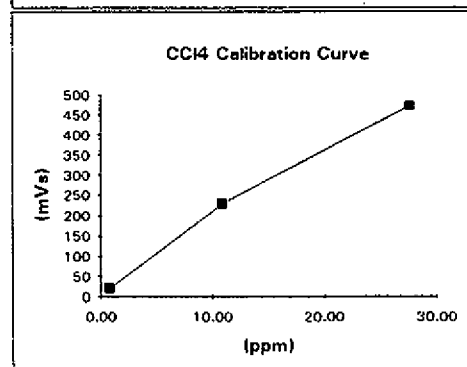
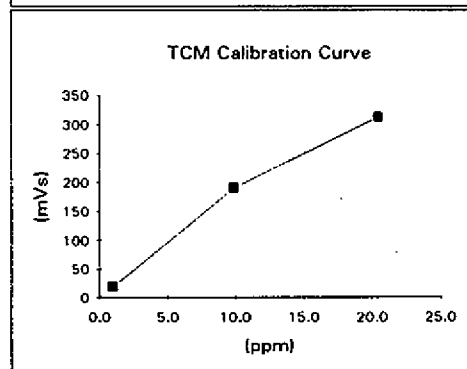
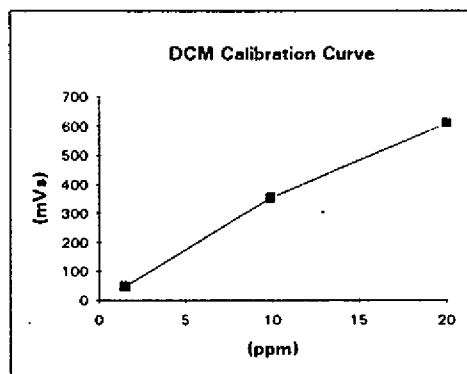
Calibration Data

DCM (ppm)	Response (mVs)
1.5	46.93
9.9	353.9
20.0	609.0

TCM (ppm)	Response (mVs)
1.0	19.25
9.9	191.0
20.5	312.3

CCl4 (ppm)	Response (mVs)
0.80	20.34
10.9	230.0
27.6	472.4

Calibration Curves



MDL Calculations for DCM, TCM, and CCl4

Reference: BHI-EE-05, Field Screening Procedure 1.15.

Run #	DCM	TCM	CCl4
1	0.146	0.123	0.100
2	0.140	0.116	0.100
3	0.144	0.127	0.105
4	0.130	0.125	0.105
5	0.136	0.123	0.102
6	0.125	0.118	0.099
7	0.130	0.121	0.102
Average	0.136	0.122	0.102
MDL	0.026	0.013	0.008

Analyst: Duane Jacques
Duane JacquesDate: 10/16/95

Instrument: Photovac 10S Plus, SN TA920107

Method: 11.7 eV lamp, UP air @ 5 mL/min, 1.0 mL sample injection

Logbook: Photovac 10S Plus Instrument Log, EL-1264, page 0044-25