F $0015 - Field

0052006

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45098

Thank you.

DIS

Original received 4-22-96. D. Ayres

029881

Environmental Restoration Contractor **ERC Team**

Interoffice Memorandum

Job No. 22192
Written Response Required? NO
Closes CCN: N/A
OU: 200-UP-1
TSD: N/A
ERA: N/A
Subject Code: 8630

TO: F. W. Gustafson, H9-11

DATE: April 19, 1996

COPIES: See Below

FROM: Duane Jacques
Analytical Services/Field Services
H9-10/372-9400

SUBJECT: **200-UP-1 PUMP AND TREAT PROCESS MONITORING RESULTS, DECEMBER 1995 THROUGH MARCH 1996, REV 0**

REFERENCES:

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

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

3. BHI, 1995, *200-UP-1 Field Screening Support Logbook*, EL-1277, Bechtel Hanford, Inc., Richland, Washington.

This data package contains field screening results for process water samples analyzed to monitor the 200-UP-1 Pump and Treat System. The Quality Assurance level for this work corresponds to QA-1 as specified in the reference 1 (BHI 1995a). The samples with HEIS numbers reported in this document were managed under SAF B96-029. Samples reported without HEIS numbers were collected and analyzed to monitor the system but are not a part of SAF B96-029.

Attachment 1 contains Volatile Organic Compound (VOC) and total uranium results for process water samples collected from selected portions of the 200-UP-1 Pump and Treat System. The VOC samples were analyzed using a Photovac 10S Plus portable gas chromatograph operated in accordance with Field Screening Procedure (FSP) 1.1, *Aqueous Headspace Analysis of Volatile Organic Compounds in Water* (BHI 1995b). Information concerning operation of the gas chromatograph is contained in the instrument logbook EL-1269.

The total uranium samples were analyzed using a ChemChek KPA-11a Kinetic Phosphorescence Analyzer operated in accordance with FSP 1.22, *Kinetic Phosphorescence Analysis of Total Uranium in Water* (BHI 1995b). Information concerning use of the ChemChek KPA-11a as well as

preparation of VOC calibration standards and samples is contained in the referenced field logbook EL-1277. Sample custody information for all samples reported in this document is also contained in field logbook EL-1277.

Please contact me if you have any questions on this information.

Duane Jacques

Duane Jacques, Scientist

QA Review by: Paul E Dwerksen

IDJ:idj

Attachments:

Attachment 1. 200-UP-1 Pump and Treat Process Monitoring, Field Screening Results, December 1995 through March 1996
Attachment 2. Headspace Gas Chromatography Checklist(s)

Copies:
A. Hopkins, H9-11, w/attachment 1 only
[redacted]
W. S. Thompson, N1-28, w/attachment 1 only
C. D. Wittreich, H9-12, w/attachment 1 only
BHI Document Control, H4-79, w/a

Attachment 1

029881

200-UP-1 Pump and Treat System

Field Screening Results, December 1995 through March 1996

SAF B96-029

Sample Location	*HEIS Number*	*Sample Date*	*Analysis Date*	*Chloroform (µg/L)*	*Carbon TetraCl (µg/L)*	*TCE (µg/L)*	*Uranium (µg/L)*
Extraction Well		12/7/95	12/7/95	4.8	42	2.0	NA
Pre Treat	B0GSZ2	12/5/95	12/15/95	NA	NA	NA	291
Pre Treat	B0GSZ4	12/7/95	12/15/95	NA	NA	NA	295
Post Lead	B0GSZ3	12/5/95	12/15/95	NA	NA	NA	<0.50
Post Lead	B0GSZ5	12/7/95	12/15/95	NA	NA	NA	<0.50
Pre GAC 1	B0GFZ9	12/7/95	12/7/95	<4.0	46	7.6	NA
Post GAC 1		12/7/95	12/7/95	<4.0	5.8	<2.0	NA
Post GAC 2	B0GG00	12/7/95	12/7/95	<4.0	4.5	<2.0	NA
Injection Well		12/7/95	12/7/95	<4.0	2.1	<2.0	NA
Pre GAC 1		12/12/95	12/12/95	NA	29	NA	NA
Post GAC 1		12/12/95	12/12/95	NA	3.5	NA	NA
Post GAC 2		12/12/95	12/12/95	NA	2.8	NA	NA
Injection Well		12/12/95	12/12/95	NA	2.5	NA	NA
Extraction Well		12/15/95	12/15/95	5.1	42	1.9u	NA
Pre Treat	B0GSZ6	12/14/95	12/15/95	NA	NA	NA	304
Post Lead	B0GSZ7	12/14/95	12/15/95	NA	NA	NA	<0.50
Pre GAC 1	B0GG01	12/15/95	12/15/95	6.0	42	6.4	NA
Pre GAC 2		12/15/95	12/15/95	<4.0	4.7	<2.0	NA
Post GAC 2	B0GG02	12/15/95	12/15/95	<4.0	3.5	<2.0	NA
Injection Well		12/15/95	12/15/95	<4.0	3.6	<2.0	NA
Extraction Well		12/21/95	12/21/95	5.3	53	3.5	NA
Pre Treat	B0GSZ8	12/19/95	12/22/95	NA	NA	NA	314
Pre Treat	B0GZ53	12/21/95	12/22/95	NA	NA	NA	317
Post Lead	B0GSZ9	12/19/95	12/22/95	NA	NA	NA	<0.50
Post Lead	B0GZ52	12/21/95	12/22/95	NA	NA	NA	<0.50
Pre GAC 1	B0GG03	12/21/95	12/21/95	4.1	47	10	NA
Pre GAC 2		12/21/95	12/21/95	<4.0	4.9	<2.0	NA
Post GAC 2	B0GG04	12/21/95	12/21/95	<4.0	3.5	<2.0	NA
Injection Well		12/21/95	12/21/95	<4.0	2.9	<2.0	NA
Extraction Well		12/29/95	12/29/95	3.8u	57	2.8	NA
Pre Treat	B0GZ54	12/27/95	12/29/95	NA	NA	NA	320
Pre Treat		12/29/95	12/29/95	NA	NA	NA	320
Post Lead	B0GZ55	12/27/95	12/29/95	NA	NA	NA	<0.50
Post Lead		12/29/95	12/29/95	NA	NA	NA	<0.50
Pre GAC 1	B0GSW1	12/29/95	12/29/95	6.1	47	8.7	NA
Post GAC 1		12/29/95	12/29/95	<4.0	6.6	<2.0	NA
Post GAC 2	B0GSW2	12/29/95	12/29/95	<4.0	3.7	<2.0	NA
Injection Well		12/29/95	12/29/95	<4.0	3.8	<2.0	NA
Extraction Well		1/4/96	1/4/96	4.3	57	4.0	NA
Pre Treat		1/2/96	1/3/96	NA	NA	NA	330
Pre Treat	B0GZ58	1/4/96	1/12/96	NA	NA	NA	320
Post Lead		1/2/96	1/3/96	NA	NA	NA	<0.50
Post Lead	B0GZ59	1/4/96	1/12/96	NA	NA	NA	<0.50
Pre GAC 1	B0GSW3	1/4/96	1/4/96	6.0	53	13	NA
Post GAC 1		1/4/96	1/4/96	<4.0	7.0	<2.0	NA
Post GAC 2	B0GSW4	1/4/96	1/4/96	<4.0	2.9	<2.0	NA
Injection Well		1/4/96	1/4/96	<4.0	3.2	<2.0	NA

Attachment 1

029881

200-UP-1 Pump and Treat System

Field Screening Results, December 1995 through March 1996

SAF B96-029

Sample Location	*HEIS Number*	*Sample Date*	*Analysis Date*	*Chloroform (µg/L)*	*Carbon TetraCl (µg/L)*	*TCE (µg/L)*	*Uranium (µg/L)*
Extraction Well		1/12/96	1/12/96	4.2	65	5.2	NA
Pre Treat	B0GZ60	1/11/96	1/12/96	NA	NA	NA	330
Post Lead	B0GZ61	1/11/96	1/12/96	NA	NA	NA	<0.50
Pre GAC 1	B0GSW5	1/12/96	1/12/96	5.9	62	16	NA
Post GAC 1		1/12/96	1/12/96	<4.0	8.5	<2.0	NA
Post GAC 2	B0GSW6	1/12/96	1/12/96	<4.0	4.0	<2.0	NA
Injection Well		1/12/96	1/12/96	<4.0	3.4	<2.0	NA
Extraction Well		1/18/96	1/18/96	4.1	48	5.6	NA
Pre Treat	B0GZ62	1/16/96	1/19/96	NA	NA	NA	330
Pre Treat	B0GZ64	1/18/96	1/19/96	NA	NA	NA	330
Post Lead	B0GZ63	1/16/96	1/19/96	NA	NA	NA	0.72
Post Lead	B0GZ65	1/18/96	1/19/96	NA	NA	NA	0.62
Pre GAC 1	B0GSW7	1/18/96	1/18/96	4.0	52	15	NA
Post GAC 1		1/18/96	1/18/96	<4.0	9.6	<2.0	NA
Post GAC 2	B0GSW8	1/18/96	1/18/96	<4.0	2.5	<2.0	NA
Injection Well		1/18/96	1/18/96	<4.0	2.2	<2.0	NA
Pre Treat	B0GZ66	1/23/96	1/25/96	NA	NA	NA	337
Pre Treat	B0GZ68	1/25/96	1/25/96	NA	NA	NA	343
Post Lead	B0GZ67	1/23/96	1/25/96	NA	NA	NA	<0.50
Post Lead	B0GZ69	1/25/96	1/25/96	NA	NA	NA	<0.50
Injection Well		1/26/96	1/26/96	<4.0	2.0	<2.0	NA
Extraction Well		2/1/96	2/1/96	2.8u	51	2.5	NA
Pre Treat	B0GZ70	1/30/96	2/14/96	NA	NA	NA	330
Pre Treat	B0GZ72	2/1/96	2/14/96	NA	NA	NA	330
Post Lead	B0GZ71	1/30/96	2/14/96	NA	NA	NA	<0.50
Post Lead	B0GZ73	2/1/96	2/14/96	NA	NA	NA	<0.50
Pre GAC 1	B0GSW9	2/1/96	2/1/96	4.9	49	6.5	NA
Post GAC 1		2/1/96	2/1/96	<4.0	15	<2.0	NA
Post GAC 2	B0GSX0	2/1/96	2/1/96	<4.0	3.3	<2.0	NA
Injection Well		2/1/96	2/1/96	<4.0	2.9	<2.0	NA
Extraction Well		2/9/96	2/9/96	<4.0	59	3.7	NA
Pre Treat	B0GZ76	2/8/96	2/14/96	NA	NA	NA	330
Post Lead	B0GZ77	2/8/96	2/14/96	NA	NA	NA	<0.50
Pre GAC 1	B0GSX1	2/9/96	2/9/96	<4.0	51	5.9	NA
Post GAC 1		2/9/96	2/9/96	<4.0	19	<2.0	NA
Post GAC 2	B0GSX2	2/9/96	2/9/96	<4.0	3.6	<2.0	NA
Injection Well		2/9/96	2/9/96	<4.0	1.2	<2.0	NA
Extraction Well		2/15/96	2/15/96	<4.0	47	2.9	NA
Pre Treat	B0GZ78	2/13/96	2/14/96	NA	NA	NA	330
Pre Treat	B0GZ80	2/15/96	2/22/96	NA	NA	NA	331
Post Lead	B0GZ79	2/13/96	2/14/96	NA	NA	NA	<0.50
Post Lead	B0GZ81	2/15/96	2/22/96	NA	NA	NA	0.69
Pre GAC 1	B0GSX3	2/15/96	2/15/96	<4.0	46	6.7	NA
Post GAC 1		2/15/96	2/15/96	<4.0	17	<2.0	NA
Post GAC 2	B0GSX4	2/15/96	2/15/96	<4.0	2.7	<2.0	NA
Injection Well		2/15/96	2/15/96	<4.0	3.1	<2.0	NA

Attachment 1

029881

200-UP-1 Pump and Treat System

Field Screening Results, December 1995 through March 1996

SAF B96-029

Sample Location	*HEIS Number*	*Sample Date*	*Analysis Date*	*Chloroform (µg/L)*	*Carbon TetraCl (µg/L)*	*TCE (µg/L)*	*Uranium (µg/L)*
Extraction Well		2/23/96	2/23/96	<4.0	55	2.9	NA
Pre Treat	B0GZ82	2/20/96	2/22/96	NA	NA	NA	330
Pre Treat	B0GZ84	2/22/96	2/22/96	NA	NA	NA	324
Post Lead	B0GZ83	2/20/96	2/22/96	NA	NA	NA	<0.50
Post Lead	B0GZ85	2/22/96	2/22/96	NA	NA	NA	0.57
Pre GAC 1	B0GSX5	2/23/96	2/23/96	<4.0	49	17	NA
Post GAC 1		2/23/96	2/23/96	<4.0	21	<2.0	NA
Post GAC 2	B0GSX6	2/23/96	2/23/96	<4.0	2.7	<2.0	NA
Injection Well		2/23/96	2/23/96	<4.0	4.3	<2.0	NA
Post GAC 1		2/27/96	2/27/96	NA	24	NA	NA
Post GAC 2		2/27/96	2/27/96	NA	4.3	NA	NA
Injection Well		2/27/96	2/27/96	NA	4.4	NA	NA
Extraction Well		3/1/96	3/1/96	4.7	53	2.0	NA
Pre Treat	B0GZ86	2/27/1996	3/5/1996	NA	NA	NA	330
Pre Treat	B0GZ88	2/29/1996	3/5/1996	NA	NA	NA	327
Post Lead	B0GZ87	2/27/1996	3/5/1996	NA	NA	NA	<0.50
Post Lead	B0GZ89	2/29/1996	3/5/1996	NA	NA	NA	<0.50
Pre GAC 1	B0GSX7	3/1/96	3/1/96	4.6	52	9.6	NA
Post GAC 1		3/1/96	3/1/96	5.4	27	<2.0	NA
Post GAC 2	B0GSX8	3/1/96	3/1/96	<4.0	4.5	<2.0	NA
Injection Well		3/1/96	3/1/96	<4.0	4.4	<2.0	NA
Extraction Well		3/7/96	3/7/96	6.4	70	3.4	NA
Pre Treat	B0GZ90	3/5/96	3/5/96	NA	NA	NA	326
Pre Treat	B0H7Q8	3/7/96	3/14/96	NA	NA	NA	314
Post Lead	B0GZ91	3/5/96	3/5/96	NA	NA	NA	<0.50
Post Lead	B0H7Q9	3/7/96	3/14/96	NA	NA	NA	<0.50
Pre GAC 1	B0GSX9	3/7/96	3/7/96	<4.0	27	47	NA
Post GAC 1		3/7/96	3/7/96	6.0	29	<2.0	NA
Post GAC 2	B0GSY0	3/7/96	3/7/96	<4.0	5.9	<2.0	NA
Injection Well		3/7/96	3/7/96	<4.0	5.9	<2.0	NA
Extraction Well		3/14/96	3/14/96	<4.0	76	4.0	NA
Pre Treat	B0H7R0	3/12/96	3/14/96	NA	NA	NA	323
Pre Treat	B0H7R2	3/14/96	3/14/96	NA	NA	NA	322
Post Lead	B0H7R1	3/12/96	3/14/96	NA	NA	NA	<0.50
Post Lead	B0H7R3	3/14/96	3/14/96	NA	NA	NA	<0.50
Pre GAC 1	B0GHT8	3/14/96	3/14/96	7.9	76	17	NA
Post GAC 1		3/14/96	3/14/96	7.4	39	<2.0	NA
Post GAC 2	B0GHT9	3/14/96	3/14/96	<4.0	8.6	<2.0	NA
Injection Well		3/14/96	3/14/96	<4.0	8.1	<2.0	NA
Extraction Well		3/21/96	3/21/96	7.0	74	3.5	NA
Pre Treat	B0H7R4	3/19/96	4/8/96	NA	NA	NA	323
Pre Treat	B0H7R6	3/21/96	4/8/96	NA	NA	NA	308
Post Lead	B0H7R5	3/19/96	4/8/96	NA	NA	NA	<0.50
Post Lead	B0H7R7	3/21/96	4/8/96	NA	NA	NA	<0.50
Pre GAC 1	B0H7V0	3/21/96	3/21/96	5.8	68	37	NA
Post GAC 1		3/21/96	3/21/96	6.2	38	<2.0	NA
Post GAC 2	B0H7V1	3/21/96	3/21/96	<4.0	9.7	<2.0	NA
Injection Well		3/21/96	3/21/96	<4.0	7.8	<2.0	NA

Attachment 1

029881

200-UP-1 Pump and Treat System

Field Screening Results, December 1995 through March 1996

SAF B96-029

Sample Location	*HEIS Number*	*Sample Date*	*Analysis Date*	*Chloroform (µg/L)*	*Carbon TetraCl (µg/L)*	*TCE (µg/L)*	*Uranium (µg/L)*
Extraction Well		3/28/96	3/28/96	5.4	86	3.7	NA
Pre Treat	B0H7R8	3/26/96	4/8/96	NA	NA	NA	321
Pre Treat	B0H7S0	3/28/96	4/8/96	NA	NA	NA	314
Post Lead	B0H7R9	3/26/96	4/8/96	NA	NA	NA	<0.50
Post Lead	B0H7S1	3/28/96	4/8/96	NA	NA	NA	1.1
Pre GAC 1	B0H7V2	3/28/96	3/28/96	7.2	88	20	NA
Post GAC 1		3/28/96	3/28/96	6.1	50	<2.0	NA
Post GAC 2	B0H7V3	3/28/96	3/28/96	<4.0	12.0	<2.0	NA
Injection Well		3/28/96	3/28/96	<4.0	12	<2.0	NA

NA - Not Analyzed

u - Value less than practical quantitation limit

Analyst: Duane Jacques 4/17/96

D. Jacques

VOA Instrument: Photovac 10S Plus GC, Serial # BJDG203
Method: 5 mL/min HP Air, 11.7 eV lamp, 250 uL injection
Logbook: Photovac Instrument Log, EL-1269

Uranium Instrument: ChemChek KPA-11a, Serial # 9445050065
Method: Kinetic Phosphorescence
Logbook: 200-UP-1 Project Log, EL-1277

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	12/7/95
	c. Date of check standard:	12/7/95
	Calculation Check (One Standard)	
	d. Show calculation:	chloroform 8700 µg/mL x 0.5µL = 4350 $\frac{4350}{30 mL}$ = 145 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	not recorded
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes *
	b. Date of analysis:	12/12/95
	c. Date of check standard: *	not calibrated for chloroform, TCE but only carbon tet reported
	Calculation Check (One Standard)	
	d. Show calculation:	
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	77°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:		4/17/96
2.	a.	Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b.	Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard		
	a.	Check standard for each analyte:	Yes
	b.	Date of analysis:	12/15/95
	c.	Date of check standard:	12/15/95
	Calculation Check (One Standard)		
	d.	Show calculation:	tetrachloromethane (carbon tet) 4.9 µL × 780 µg/mL = $\frac{3822}{30\,mL}$ = 127 ≈ 130 µg/L
	e.	Agrees with analyst:	Yes
3.	a.	Is a sample dilution required?	No; cal check is near sample conc
	b.	If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.		NA
5.	Analyte Identification		
	a.	Confirmed by MS:	not done
	b.	Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:		70°F
7.	a.	Reviewer's name:	PAUL E DUERKSEN
	b.	Reviewer's signature:	Paul E Duerksen

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	12/21/95
	c. Date of check standard:	12/21/95
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.6 µL × 1400 µg/mL = 840 / 30 mL H_2O = 28 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	NO; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	70°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	12/29/95
	c. Date of check standard:	12/29/95
	Calculation Check (One Standard)	
	d. Show calculation:	TCM 0.50 µL x 8700 µg/mL = 4350 $\frac{4350}{30\,mL}$ = 145 µg/L ≈ 150
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	74°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

029881

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	1/4/96
	c. Date of check standard:	1/4/96
	Calculation Check (One Standard)	
	d. Show calculation:	CCl_4 $2.6\,\mu L \times 780\,\mu g/mL =$ $\frac{2028}{30\,mL\,H_2O} = 68\,\mu g/\mu L$
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	72°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	1/12/96
	c. Date of check standard:	1/12/96
	Calculation Check (One Standard)	
	d. Show calculation:	chloroform 0.70 µL x 8700 µg/mL = 6090 / 30 mL H_2O = 203 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	74°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	1/18/96
	c. Date of check standard:	1/18/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE $0.7\,\mu L \times 1400\,\mu g/mL =$ $\frac{980}{30\,mL\,H_2O} = 33\,\mu g/L$
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample cond
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	72°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	1/26/96
	c. Date of check standard:	1/26/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.6 µL x 1400 µg/mL = 840 840 / 30 mL H_2O = 28 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	73° F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	2/1/96
	c. Date of check standard:	2/1/96
	Calculation Check (One Standard)	
	d. Show calculation:	chloroform 0.6 µL x 8700 µg/mL = $\frac{5220}{30\ mL\ H_2O}$ = 174 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	75°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	2/9/96
	c. Date of check standard:	2/9/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.50 µL × 1400 µg/mL = 700 / 30 ml H_2O = 23 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample conc
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	70°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	2/15/96
	c. Date of check standard:	2/15/96
	Calculation Check (One Standard)	
	d. Show calculation:	CCl4 2.2µL × 780 µg/mL = $\frac{1716}{30\text{mL } H_2O}$ = 57 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample con
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	71°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	~~2/15/96~~ 2/23/96 PED 4/17/96
	c. Date of check standard:	2/23/96
	Calculation Check (One Standard)	
	d. Show calculation:	chloroform 0.6 µL × 8700 mg/mL = $\frac{5220}{30\ mL\ H_2O}$ = 174 mg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample cor
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	71°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes *
	b. Date of analysis:	~~2/15/96~~ 2/27/96 PED 4/17/96
	c. Date of check standard: *	not calibrated for chloroform or ~~but only carbon tet reported~~
	Calculation Check (One Standard)	
	d. Show calculation:	CCl4 0.8 µL x 780 µg/mL = 624 / 30 mL H_2O = 21 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample cor
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	73° F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	~~2/15/96~~ 3/1/96 PEW 4/17/96
	c. Date of check standard:	3/1/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.6 µL x 1400 µg/mL = 840 840 / 30 mL H_2O = 28 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample con
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	72°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

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1.	Date:		4/17/96
2.	a.	Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b.	Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard		
	a.	Check standard for each analyte:	Yes
	b.	Date of analysis:	~~2/15/96~~ 3/7/96 PSD 4/17/96
	c.	Date of check standard:	3/7/96
	Calculation Check (One Standard)		
	d.	Show calculation:	chloroform 0.7 µL x 8700 = 6090 / 30mL H_2O = 203 µg/L
	e.	Agrees with analyst:	Yes
3.	a.	Is a sample dilution required?	No; cal check is near sample cor
	b.	If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.		NA
5.	Analyte Identification		
	a.	Confirmed by MS:	not done
	b.	Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:		71°F
7.	a.	Reviewer's name:	PAUL E DUERKSEN
	b.	Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	~~2/15/96~~ 3/14/96 PED 4/17/96
	c. Date of check standard:	3/14/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.6 µL x 1400 = ~~5220~~ 840 / 30 mL H_2O = ~~174~~ 28 µg/L PED 4/17/96
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample con
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	70°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	~~2/15/96~~ 3/21/96 PED 4/17/96
	c. Date of check standard:	3/21/96
	Calculation Check (One Standard)	
	d. Show calculation:	TCE 0.7 µL x 1400 µg/mL = 980 980 / 30 mL H_2O = 33 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample con
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	70°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen

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HEADSPACE GAS CHROMATOGRAPHY CHECKLIST

1.	Date:	4/17/96
2.	a. Minimum 3 point calibration curve:	Yes; but calibration based on single standard
	b. Date 3 point minimum calibration curve was prepared:	10/25/95
3.	Calibration Check Standard	
	a. Check standard for each analyte:	Yes
	b. Date of analysis:	~~2/15/96~~ 3/28/96 PEW 4/17/96
	c. Date of check standard:	3/28/96
	Calculation Check (One Standard)	
	d. Show calculation:	CCl4 7.1 µL × 780 µg/mL = 5538 30 mL H_2O = 185 µg/L
	e. Agrees with analyst:	Yes
3.	a. Is a sample dilution required?	No; cal check is near sample cor
	b. If yes, check calculation.	NA
4.	If data has been converted from ppm to ppb or vice versa, check conversion.	NA
5.	Analyte Identification	
	a. Confirmed by MS:	not done
	b. Confirmed by second column:	not done
6.	Average temperature of laboratory during analysis:	73°F
7.	a. Reviewer's name:	PAUL E DUERKSEN
	b. Reviewer's signature:	Paul E Duerksen