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EMO-1096 VOL 4

Shemya AFB, Alaska 1992 IRP FIELD INVESTIGATION REPORT

Volume 4 of 4
APPENDIXES E AND F

FINAL

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Prepared for
U.S. Air Force
Elmendorf AFB, Alaska
11th Air Control Wing
11th Civil Engineering Operations Squadron
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For
Environmental Management Operations
Under a Related Services Agreement
with the U.S. Department of Energy
Environmental Management Operations
Richland, Washington 99352

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APPENDIX E
SOIL BORING LOGS

This appendix contains the soil boring logs completed during the second shift of the 1992 IRP Field Season on Shemya. These logs present the collected field data. The sites presented herein are:

- Water Gallery
- FT-1
- FT-2
- SW-10
- SW-12
- PS-1A
- PS-8.

These are the only sites where soil boring activities were performed during the 1992 IRP Field Season.

PROJECT NUMBER	BORING NUMBER	SHEET	OF
B0131941.SS	WGW1	1	1

SOIL BORING LOG

PROJECT SHEMYA LOCATION WATER GALLERY

ELEVATION _____ DRILLING CONTRACTOR 11TH CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼" ID HSA

WATER LEVELS _____ START 28AUG92 FINISH 28AUG92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	Run #1	0.5			0.0-0.4 Topsoil: light to medium brown, clayey silt with fine sand, SM/ML, roots, organics, plant matter, moisture, soft	
2		1.2				2.0
3		1.9			0.4-1.2 Peat: dark brown, some Sand, roots, organic matter, moist, soft.	
4						
5		5.5			1.2-2.0 Silty Sand: dark brown, SM, fine sand, moist, trace roots, soft	BENTONITE CHIPS
6					2.0-4.0 Core Loss	
7	Run #2				4.0-7.0 Silty Sand some peat: as above, 6.0 to 7.0 is gray brown and wet.	
8						
9					7.0-9.0 Core Loss	
10	Run #3				9.0-12.8 PEAT (PT): dark brown, trace fi sand, Organic Matter, Wet. More organic matter than 0.4 to 1.1 - dk. brown -	
11		11.0				11.5
12						BENTONITE PELLETS
13					12.8-13.0 GRAVEL (GW) with peat, some sand and clay. Gravel is angular	13.5
14	Run #4	14.0			13.0-13.5 AS ABOVE	14
15					13.5-15.0 Med Red Brown Gravel (GW) SAND some SILT, CLAY. FINE to medium SAND. WET	FILTER PACK
16					15.0-16.0 CORE LOSS	SCREEN
17	No Smpl				16.0-19.0 CENTER BIT	
18						
19					EOH 19.0' BGS	18.5

BLANK AT BASE = 0.3
CAP = 0.2

CENTRALIZER JUST ABOVE TOP OF SCREEN [X]

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.SS	WGW2	1	1

SOIL BORING LOG

PROJECT SHEMYA LOCATION WATER GALLERY

ELEVATION _____ DRILLING CONTRACTOR 11th CEDS

DRILLING METHOD AND EQUIPMENT CME 850 4¼" ID HSA

WATER LEVELS _____ START 8/29/92 FINISH 29 Aug 92 LOGGER Reynolds/Peterson

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		0.5			0.0-1.2 Silty Sand: SM, dark brown, moist, som peat, soft,	1'6" EP 8/29
	RUN #1	1.0				
		1.5	5.5			Bentonite Chips
5		5.0	7.0		1.2-5.5 Peat: PT, dark brown, moist, soft, some sand, roots, organics, some black.	
					5.5-7.0 CORE LOSS	
					7.0-8.5 Peat PT as above	
	RUN #2	8.5	100%		8.5-9.0 Gravel: GW, brown to dark green, some sand, some clay, wet, soft, some peat.	7.5 Bentonite Pellets
9.5 10		9.0				
10	CB				9.0-11.0 Center Bit	
	SS 2ft.	12.0	2	10-17-19-18	11.0-13.0 Gravel: Gray, GW, moist, hard, fractured, ~~some clay~~, DE 8/29	3" split spoon
	SS	14.5	1.5'	28-49-50/4	weathered, hornblende dacite porphyry, angular, some sand	FILTER PACK SCREEN
	CB				13.0-14.5 Gravel as above: GW	
15	SS		1.0	14-19 0/6	possible weathered bedrock more competent. Refusal on split spoon.	
16	CB				14.5-15.0 center Bit	
	CB				15.0-16.0 Gravel as above; wet	Blow in @ 16.0 drive spoon through. center Bit to 18.0
	SS	19.0	1½	7-10-19	16-16.5 Center Bit	
					16.5-18 Center Bit	
20 20	CB			~~11-12-11-32~~	18-19.5 GRAVEL AS ABOVE: WET	
					19.5-22.5 center Bit	
	SS	22.5	1	11-12-11-32	22.5-23.5 Gravel As above: wet	
						Cut off 3' of blank

PROJECT NUMBER	BORING NUMBER	
BOI 31941. SS	WGW3	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION Water Gallery

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4 1/4 ID HSA

WATER LEVELS _____ START 3/AUG92 FINISH 31AUG92 LOGGER Reynolds/Peterson

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5		1-1-3	0.0-1.0 Top Soil; Brown	
2	SS#1	2.0	1.5'		1.0-2.5 Fine-Medium Silty Sand (SM) Dark Brown, loose, roots (Fine) moderately moist	1.5 Bentonite Chips
3						4.9 Bentonite Pellets
4	SS#2	3.5	1.5'	1-1-2-3	2.5-3.0 Silty Sand as above	
5	CB				3.0-4.0 Gravel with Sand (GW), brown, moist, loose, some wood, gravel fine to 3".	4.4
6	SS#3	6.0	1.0	14-60R	4.0-4.5 Core Loss	
7	SS#4		0.3	50R 4"	4.5-5.5 Center Bit	
8	CB				5.5-6.0 As Above	
9	SS#5		0.25	50/3 R	6.0-6.5 Gravel with Sand (GW), grey, wet, loose	Filter Rock
10					6.5-7.0 Center Bit	
11	SS#6			54/2 R	7.0-7.3 As above	12.5
12					7.3-8.5 Center Bit	
13					8.5-8.75 As Above	
14					8.75-11.0 Center Bit	
15					11.0-11'2" Core loss	
					11.2-11.5 Center Bit	
					TD 11.5	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.SS	WGW4	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION Water Gallery

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼" ID HSA

WATER LEVELS _____ START 31 AUG 92 FINISH 31 Aug 92 LOGGER Reynolds/Petersen

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		0.5			0.0-1.0 Topsoil	
1	SS #1	1.5	1.5'	1-2-2	1.0-1.5 Topsoil: Silty Sand, SM, brown moist, soft, some roots, and organics	
2		2.0				
3	SS #2			1-1-1-1	1.5-2.5 Silty Sand: SM, dark gray, moist, soft, loose.	
4		4.0	2.0		2.5-4.5 as above	
5	SS #3		0.5	2-4	4.5-5.0 as above	
					5.0-5.5 core loss	
6	SS #4	6.0	1.0	1-2-4	5.5-6.5 Gravel with sand: (SW) brown to gray, wet at 6.1, loose	6.1
7						
8	SS #5	7.5		12-28-75-D Rfor 3"	6.5-7.0 Core Loss	8.0
		8.5			7.0-8.75 Gravel with Sand (SW) "Weathered bedrock" dark gray; wet, hard, hornblende dacite porphyry.	Sand-Filter Pack
9						
10	35 #6	10.3	0.3			screen
11	CB				8.75-10.0 Center Bit	
12	SS #7 CB	12.3	0.3	58/4"	10.0-10.3 as above	13.0
					10.3-12.0 Center Bit	
					12.0-12.3 As Above	
					12.3-13.0 Center Bit	
					TD 13.0	

PROJECT NUMBER	BORING NUMBER	SHEET	OF
301319.41.SS	WGW5	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION Water Gallery

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4"¼" ID HSA

WATER LEVELS _____ START 9/1/92 FINISH 9/1/92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-5.0 Cuttings: Silty Sand SM, moist, soft, dark brown, some roots.	
2						
3	CB				5.0-6.5 Peat: (PT) dark brown, moist, soft, some sand, roots	← Bentonite Slurry
4						
5					6.5-7.0 Gravel: (GW) gray, "weathered bedrock", some sand, moist, hard, hornblende dacite porphyry.	Top Bentonite Chips
6	SS#1	6.5 7.0	2'	½-½-6-8		Top Bentonite Pellets
7						
8	CB				7.0-10.0 CenterBit: probably as above.	Top Sand
9						
10					10.0-11.5 as above harder	Top Screen 10.0
11	SS#2	10.5	1.5'	14-35-56R	11.5-15.0 Cuttings; probably as above. Hard to drill.	
12						
13	CB					
14						
15						Bottom Screen 15.0
					TD 15.0'	
						Cut off 2 or 3' of blank

PROJECT NUMBER	BORING NUMBER	
B01 31941.SS	WGW6	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION WG W6

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4 1/4 ID HSA

WATER LEVELS _____ START 9/1/92 FINISH 9/1/92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0 - 5.0 Cuttings: Probably (SM) Silty Sand, dark gray, moist.	
2	CB					
3					5.0 - 6.8 Peat: (PT) dark brown, moist soft, some sand, roots	← Bentonite Slurry
4						
5					6.8-7.0 Gravel: (GW) gray, weathered bedrock, some sand, moist, hard, hornblende dacite porphyry.	
6	SS#1	6.8 7.0	2.0	0-0-2-12		Top Bentonite Chips 6.0
7					7.0 - 10.0 Cuttings: probably as above	Top Bentonite Pellets 7.6
8	CB				10.0 - 12.0 as above	
9						
10					12.0 - 16.5 cuttings probably as above	Top Sand 9.7
11	SS #2	11.0	2.0	9-14-17-18		
12						Top Screen 11.5
13	CB					
14						
15	SS#3		0.0	50R 2"		
16	CB					
					TD 16.5	

CH2M HILL

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	MW-7	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION WGW7

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9/2/92 FINISH 02 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-5.0 Cuttings: probably silty sand (SM)	
2	CB				5.0-5.5 Silty Sand: (SM) dark brown to black, moist, soft.	← Bentonite Chips
3					5.5-6.0 Gravel: (SW) dark gray to gray, some sand, moist, loose, hornblende dacite porphyry.	Top Pellets 3.5
4						
5						
6	SS#1	5.5 6.6	1.0	1-1-2-4	6.0-7.0 core loss	Top Sand 6.5
7						
8	CB				7.0-9.0 Cuttings: probably as above gravel.	Top Screen 8.0
9					9.0-14.0 as above: gravel, dark brown 9.0-10.0, gray 10.0-11.0, more sand 9.0-10.0.	
10	SS#2	10.0 11.0	2.0	12-30-32-50R 4"		
11						
12					11.0-14.0 Cuttings: probably as above	
13	CB					Bottom Screen 13.0
14						← Bearing Formation
					TD 14.0	

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
BOI 31941.SS	WGW 8	SHEET / OF /

SOIL BORING LOG

PROJECT Shemya LOCATION Water Gallery

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 02 Sept 92 FINISH 02 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-5.0 Cuttings: probably silty sand	
2					5.0-6.0 Cuttings: probably peat	
3	CB				6.0-6.5 Peat: (PT) dark brown, moist soft, some sand, roots	
4						← Bentonite Slurry
5					6.5-7.0 Gravel: (GW) gray "weathered rock", some sand, soft to hard, hornblende dacite porphyry	
6						Top Bentonite Pellets
7	SS #1	6.5 7.0	1.0	4-7-9	7.0-10.0 Cuttings: probably as above	
8	CB					Top Bentonite Pellets
9					10.0-12.0 gravel as above	
10					12.0-16.5 gr cuttings: probably as	Top Sand 10.0
11	SS #2	10.5 11.5		16-32-43-50/4 R	above. very hard, almost refusal	
12						Top Screen 12.0
13						
14						
15						
16						
17					TD 17.0	

PROJECT NUMBER	BORING NUMBER		
BOI 31941 .SS	FT1 W1	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT1

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9 Sept. 92 FINISH _____ LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS .6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-4.0 Cuttings: Silty Sand and Gravel (GM) Dark brown to black, moist, soft. Hornblende dark porphyry.	
2	CB					
3					4.0-4.5 Silty Sand and Gravel (SM/GM) as above	
4						Grout
5	SS#1	4.5	1.0	5-5-6-5	4.5-5.0 Gravel: (GM) dark gray to dark green, loose, dry; greenstone.	
6					5.0-5.5 Core Loss	
7	CB				5.5-9.0 Cuttings:	7.0 Top Bentonite Chips
8					9.0-10.0 Clayey Gravel (GC): dark brown to dark green, loose to compact, dry; clay stone and greenstone, some sand.	
9						
10	SS#2	9.5	1.0	2-3-5-2		9.7 Bentonite Pellets
11					10.0-11.0 Core Loss	11.5 Top Sand
12					11.0-16.5 cuttings: as above	
13					16.5-18.5 Sandy Clay: (CL) dark green, moist, soft, hard to drill, some gravel.	13.5 Screen Top
14	SS#3		0.0	40R/0"		Samples from Cuttings.
15		14.0				
16	CB					
17						
18						18.5 Screen Bottom

100% Bentonite Slurry
Bentonite Chips
Bentonite Pellets
Sand-Filter Pack

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.SS	FT 1W2	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION FT 1

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 8 Sept 92 FINISH 9 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0 - 3.0 Cuttings: Silty Sand & Gravel (GM), dark brown, moist, loose	
2	CB				3.0-4.0 Gravel: (GM) light gray to dark green, claystone, dry, hard to drill, weathered bedrock	
3						
4						
5	SS#1	4.5		5-3-50R/0.3'	4.0 - 5.0 Gravel (GM) as above	
					5.0-5.5 Core Loss	
6					5.5-9.0 Cuttings: Claystone, light green	
7	CB				9.0-9.2 Claystone: light green, hard, dry, powders when augered.	
8						
9	SS#2	9.2	0.2	40R/0.2	9.2 - 14.0 Cuttings	
10					14.0-14.4 Core Loss	
11	CB				14.4-19.5 Cuttings as above	
12						
13						
14	SS#3	14.0	0.0	50R/0.4'		
15						
16						
17	CB					
18						
19	19.5					Cuttings Sample
19.5					TD 19.5	
					Dry Hole	

REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	FT/W3	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT 1

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9 Sept. 92 FINISH 9 Sept. 92 LOGGER DR

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0 - 3.0 Cuttings: Silty Gravel (GM) dark brown, wet, loose, some sand, roots present.	
2	CB					
3						
4					3.0 - 4.5 Claystone: light to dark green, hard, dry, powders on drills.	
5	SS#1	4.6	2.0	23-8-2-1	4.5-4.6 Claystone: as above.	
6					4.6-6.5 core loss	
7					6.5-9.5 cuttings: claystone as above	
8	CB				9.5-11.5 Claystone: as above, wet zone at 10.5 feet, some clay present	
9						
10	SS#2	10.5	1.5	4-4-17-42	11.5-14.5 Cuttings: Claystone as above	
11					14.5-16.5 Claystone: as above hard, dry, some gravel	
12						
13	CB				16.5-20.0 cuttings: claystone as above.	
14						
15	SS#3		2.0	16-37-38-50		
16		16.5				
17						
18	CB					
19						
20					TD 20.0 Dry Hole	

Test Pit

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI31941-33	FT1T1 and T2	1	1

Test Pit ~~SOIL~~ BORING LOG

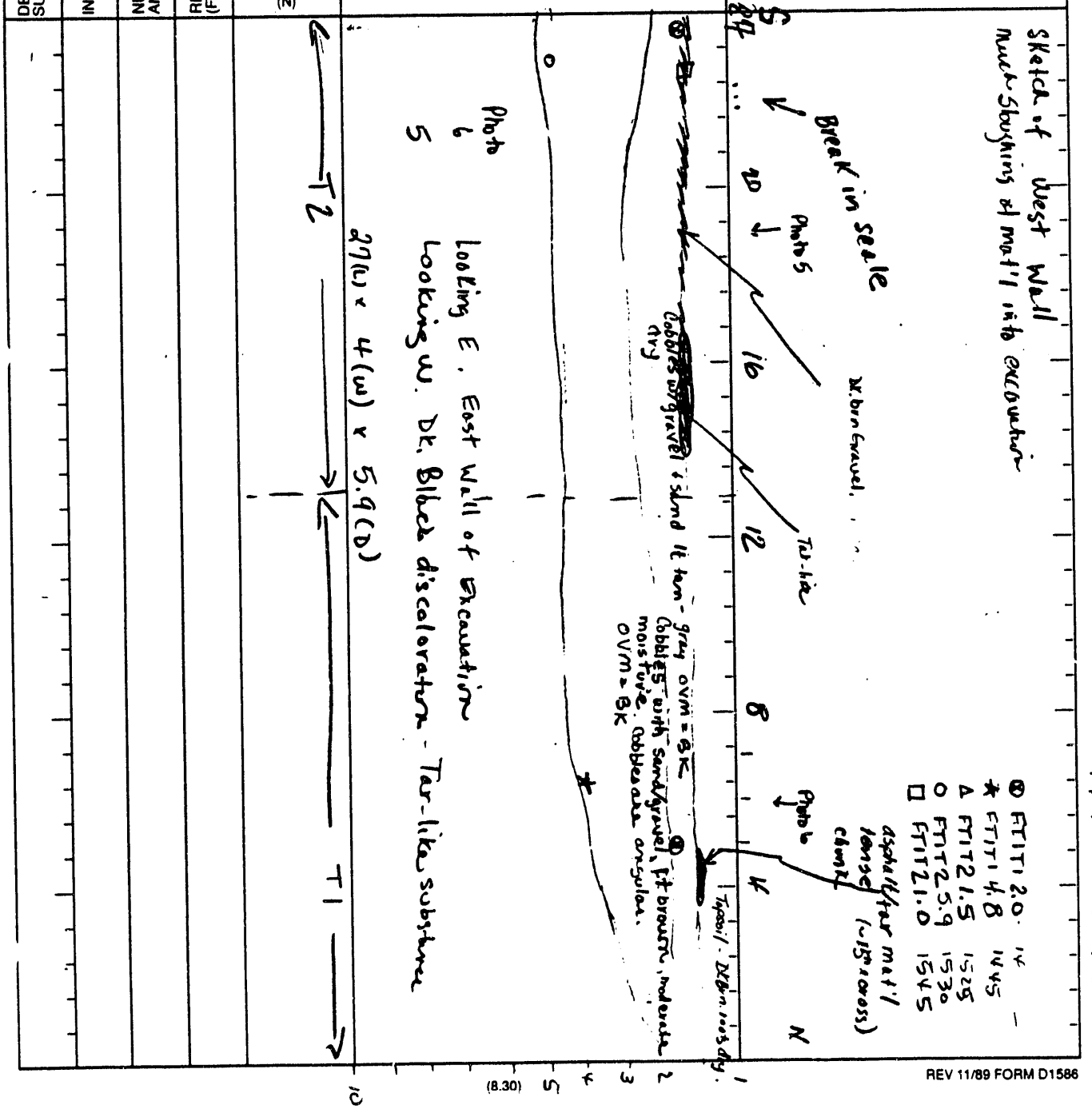
PROJECT Shemya AFB LOCATION Five Training Area 1

ELEVATION _____ DRILLING CONTRACTOR USAF

DRILLING METHOD AND EQUIPMENT John Deere 610 C Turbo Backhoe

WATER LEVELS _____ START 08 Sept 92 FINISH 08 Sept 92 LOGGER Aeboser

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION



FT1T1 and T2

REV 11/89 FORM D1586

CRMHILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
80131941.35	FT1T3	1	

SOIL BORING LOG

PROJECT Shemya AFB LOCATION Fire Training Area 1

ELEVATION _____ DRILLING CONTRACTOR USAF

DRILLING METHOD AND EQUIPMENT John Deere 610CTurbo backhoe

WATER LEVELS _____ START 8Sep92 FINISH 8Sep92 LOGGER Petersen

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					(1) Gravel with sand, med reddish-brown, dry, compact/dense (2) M-F gravel w/sand, dk brn-blk, dry, dense, broken glass, rusty nails, metal 13 (L) 3.6 (W) 6.9 (D)	East Wall Sketch Photo of East wall Photo #4 Little Ceiling/- walls fairly straight Showing N + FT1T3 0.5 ⊕ FT1T3 6.9 FT1T3
0					Cobble w/gravel dk brown, dry, moderately compact/dense — ? — — ? — — ? — — Mabove moist, loose	16 12 8 4 0
0.5						
1						
2						
3						
(8.30)						
5						
6						

REV 11/89 FORM D1586

PROJECT NUMBER	BORING NUMBER	SHEET	OF
80131941.55	FT1T4	1	1

SOIL BORING LOG

PROJECT Sherrya AFB LOCATION Fire Training Area #1

ELEVATION _____ DRILLING CONTRACTOR USAF

DRILLING METHOD AND EQUIPMENT John Deere 610CT urbo Backhoe

WATER LEVELS _____ START 09Sep92 FINISH 9Sep92 LOGGER Peterson

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	Note: none observed (wood, rocks) on west wall 2½ percent @ ~5' from N to Southend 1½' depth. Asphaltlike substance		(4) Gravel (GW) w/ sand, some small cobbles. Particles are rounded. Med gray-brown, moist, no debris in this layer	(1) Gravel w/ sand & Silt, Med. Red-Brown, dry, compact/dense (2) Sand with Med-Course Gravel, DK Brown-Black, dry, scrap metal, glass, charred wood waste, wire. does not appear disturbed/previously burned. (3) Cobbles & Sm Boulders (angular) Med. Gray-brown, loose, dry. Scrap metal, pipes, wood waste.	13.9 (L) x 6.4 (W) x 6.1 (D) (6.30)	East Wall mud sloughing into hole N 16 12 8 4 0 6 4 2 0 (1) (2) (3) (4) (2) @ FT1T4 1,2 0920 Photo #3 FT1T4 1,2D 0930 ★ FT1T4 0950 Photo #2. East wall. Clipboard for scale. FT1 T4

REV 11/89 FORM D1586

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
BOI 31941.SS	FT2W1	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVEL AND DATE _____ START 10Sept. 92 FINISH 10Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR; MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB	0.5			0.0-0.4 Asphalt		0.5 Top Chips
2	SP#1		1.5	5-7-7	0.4-0.8 Fill		2.0 Top Pellets
3	CB				0.8-1.0 Cuttings: Silty Sand (SM) dark brown, moist, loose		
4	SP#2		2.0	2-4-6-6	1.0-2.5 Silty Sand: as above		4.0 Top Sand
5		5.0			2.5-3.0 Cuttings: Silty Sand as above		
6	SP#3		2.0	1-2-2-2	3.0-5.0 Silty Sand: as above		
7		7.0			5.0-7.0 Silty Sand: as above		
8	SP#4		1.5	1-1-1-1	7.0-9.0 Silty Sand: as above, wet		
9			X		9.0-11.0 Silty Sand: as above, wet		
10	SP#5		1.5	1-1-1-1	11.0-11.5 Cuttings: as above		11.5
11			X				
12	CB						

blank 3'
blank 5'
screen 6'

REV 7/86 FORM D1586

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.SS	FT2B2	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9Sept92 FINISH 9Sept. 92 LOGGER Poynard

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0 - 0.4 Asphalt:	
2	CB				0.4 - 1.5 Fill	
3					1.5 - 4.3 Cuttings: probably silty sand	
4	4.3			2-3-2-2	4.3 - 6.3 Silty Sand: (SM) dark gray moist, medium to fine grained, soft loose	
5	SS#1	5.0	2.0			
6	6.3				6.3 - 9.5 Cuttings: Silty sand as above	
7	CB				9.5 - 11.0 Silty sand as above, wet	
8					11.0 - 11.5 Core loss	
9	9.5					
10	SS#2	10.0	1.5	1-1-2-2		
11			X			
12	11.5				TD 11.5	
13					water at 9.5-11.0'	
14						
15						
16						
17						
18						

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.55	FT2B3	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9Sept.92 FINISH 9Sept.92 LOGGER DR

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-0.4 Asphalt	
2	CB				0.4-1.5 Fill: petroleum odor	
3					1.5-4.0 Cuttings: Silty Sand (SM) brown, moist, loose, petroleum odor	
4						
5	SP #1	5.0	2.0	2-2-2-2	4.0-6.0 Silty Sand (SM) as above, wet.	
6						
7					TD 6.0	
8					water in borehole at 5.0-6.0'	
9						
10						
11						
12						

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	FT2B4	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9Sept.92 FINISH 9Sept92 LOGGER DR

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-0.4 Asphalt: rotten	
2	CB				0.4-0.6 Fill	
3					0.6-4.0 Cuttings: Silty Sand (SM) moist, dark brown to dark grey, loose, Petroleum smell.	
4						
5	SS#1	5.0		1-2-2-2		
6			X		4.0-5.5 Silty Sand: (SM) as above	
7	CB				5.5-6.0 Core Loss	
8					6.0-8.0 Cuttings: silty sand as above wet at 6.0'	
9						
10					TD 8.0	
					water at 6.0'	

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
BOI 31941.SS	FT2W5	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVEL AND DATE _____ START 10Sept. 92 FINISH 10Sept. 92 LOGGER DR/BP

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1		0.5			0.0-0.4 Asphalt;		Chips
	2	CB				0.4-0.6 Fill		2.2 Top pellets
	3					0.6-4.0 Cuttings: Silty Sand (SM) dark brown, moist, loose		3.5 Top Sand
	4							
	5	SS#1	5.0	2.0	4-5-4-4	4.0-6.0 Silty Sand: as above some peat lenses		5.2 Top Screen
	6					6.0-9.0 Cuttings: Silty Sand, as above, wet @ 7½ to 8' on center rod.		
	7							
	8	CB						
	9					9.0-10.5 Silty Sand: as above		
	10	SS#2	10.0	1.5	1-1-1-1	10.5-11.0 Core Loss		
	11			X				
	12	CB						
						TD 12.2		

blank 3'
blank 5'
screen 7'

REV 11/82 FORM D1586

CH2M HILL

PROJECT NUMBER	BORING NUMBER		
801 31941.55	FT2B6	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 9 Sept 92 FINISH 9 Sept. 92 LOGGER DR

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB	0.5			0.0-0.4 Asphalt : rotten	
	SS#1		2.0	2-4-4-4	0.4-0.6 Fill	
2					6.0-1.0 Cuttings : silty sand (SM) dark gray, moist, loose, petroleum odor	
3	SS#2					
4		5.0	2.0	1-1-1-1	1.0-3.0 silty sand : as above	
5					3.0-5.0 Silty Sand: as above	
6	SS#3		2.0	1-0-1-0	5.0-7.0 Silty Sand: as above, wet	
7						
8					TD 7.0' water at 5.0'	
9						
10						

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	FT2W7	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION FT2

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 10Sept.92 FINISH 10Sept.92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1		0.5			0.0-0.4 Asphalt	Chips
2	CB				0.4-0.7 Fill	1.5
3					0.7-4.0 Cuttings: Silty Sand (SM) dark brown, moist.	Filter Pack
4						3.5
5	SS#1	5.0	1.6	1-1-0-1	4.0-5.5 Silty Sand (SM) as above with peat layers @ 5.0-5.5'.	5.0
6					5.5-9.0 Cuttings: as above with peat. Water on center bit at ±8.5'. Peat layers 5.5-8.5.	Sand-Filter Pack
7	CB					
8						
9					9.0-11.0 Silty Sand: as above	
10	SS#2	10.0	2.0	1-2-2-4		
11						11.0
12					TD 11.0	

blank 3'
blank 5'
screen 6'

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BOI 31941.SS	SW10W1	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION SW10

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 5 Sept. 92 FINISH 7 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB				0.0-1.0 Cuttings: Silty Sand, dark brown to black, (SM), moist, soft, loose, roots present	
2	SS#1	1.5	1.0	1-9-7-4	1.0-1.5 as above	
3		2.0			1.5-1.8 Gravel (GM) hornblende dacite porphyry	Top Bentonite chips
4	SS#2		1.5	1-3-5-8	1.8-2.0 Sandy Gravel (GM) dark brown, wet, loose, soft, claystone	
5					2.0-3.0 Core Loss	
6	SS#3			7-14-50R/0.5'	3.0-4.0 Sandy Gravel: as above	
7					4.0-4.5 Gravel: (GM) dark brown, wet, fracture,	Top Sand 7.0
8	SS#4		0.8	20-50R/0.5'	4.5-5.0 Core Loss:	
9	CB				5.0-6.0 Sandy Gravel (GM) dark brown, wet, loose,	Top Screen 8.5
10	SS#5		0.5	64R/0.5'	6.0-6.5 Claystone: brown to dark brown, fracture, hard, moist not wet, claystone, "weathered bedrock", iron staining	
11	CB				6.5-7.0 Cuttings: as above	
12	SS#6		0.4	60R/0.4	7.0-7.8 Claystone: as above	TD 13.5
13	CB				7.8-8.0 Core loss	
					8.0-9.0 Cuttings: probably as above	
					9.0-9.5 as above	
					9.5-11.0 Cuttings: probably as above wet	
					11.0-11.4 Claystone: as above	
					11.4-13.5 Cuttings: probably as above.	
					TD 13.5	New Split Spoons

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	SW10W2	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION SW10

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 7Sept.92 FINISH _____ LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-3.0 Cuttings: Silty Sand, dark brown (SM) Loose, moist	
2						1.5
3	CB				3.0-5.0 Cuttings: Sandy Gravel, (GM) dark brown, loose, moist	
4						
5					5.0-6.0 Gravel: (GM) gray to dark brown, some silty sand, moist, loose	
6	SS#1		1.0	3-3-8-4	6.0-7.0 Core Loss	
7					7.0-9.0 Cuttings: probably as above	
8	CB				9.0-11.0 Hornblende Dacite Porphyry light to dark gray, fracture, hard, some sand,	Rock in bit. Damaged split spoon as pulled. Auger 9.0 tilted. Hard drilling. Put new teeth on center bit
9						
10	SS#2	10.0	2.0	14-15-21-15	11.0-14.0 Cuttings probably as above	10.1
11					14.0-15.0 Hornblende Dacite Porphyry as above	11.5
12					15.0-18.5 Cuttings: probably as above	
13	CB					13.5
14						
15	SS#3	15.0	1.0	4-5-9		
16						
17	CB					
18						
19					TO 18.5	18.5

100% Bentonite Slurry

Bentonite Chips

Bentonite Pellets

Sand-Filter Pack

Screened Interval

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET / OF /
BOI 31941.SS	SW10W3	

SOIL BORING LOG

PROJECT Shemya LOCATION SW10

ELEVATION DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVEL AND DATE START 10Sept. 92 FINISH LOGGER DR/BP

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1					0.0-5.0 Cuttings: Sandy gravel metal = rods and wire. Voids		Very hard, large gravel metal rods & wire. Moved Rig 3 times
	2							
	3	CB						
	4							
	5							
	6	SS#1		1.0	2-2-2-3	5.0-6.0: Gravel: (GM) brown to gray, loose, some silty sand, moist, hornblende dacite porphyry. Voids		
	7							
bit plugged	8	SS#2		0.5	2-2-3-3	6.0-7.0 Core Loss		
	9					7.0-7.5 Silty Gravel: (GM) dark brown, loose, some sand, moist		
	10	SS#3	9.5	0.5	3-1-2-2	7.5-9.0 Core Loss		
bit plugged	11							
	12	SS#4	11.5	0.5	1-30-23-8	9.0-9.5 silty gravel: as above hornblende dacite porphyry.		
bit plugged	13					9.5-11.0 Core Loss		
	14	SS#5	13.5	0.5	6-6-5-3	11.0-11.5 silty gravel: as above		
bit plugged	15					11.5-13.0 Core Loss		
	16	SS#6		0.6	25-50/0.1	13.0-13.5 Silty Gravel: as above		OVM reading Meter Out
	17	CB				13.5-15.0 Core loss:		
	18					15.0-15.3 Gravel: (GP/GW) dark gray, wet, loose, sorted, rounded, coarse grained.		
	19					15.3-15.6 Claystone: dark gray, wet, fractured, hard.		
	20					15.6-17.0 Cuttings: probably as above.		
						TD 17.0 ft		

PROJECT NUMBER	BORING NUMBER		
BOI 31941.SS	SW12W1	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION SW12

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 3 Sept. 92 FINISH 3 Sept 92 LOGGER _____

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB			39-50R1"	0.0-1.0 Silty Sand (SM) dark brown to black, moist, soft, loose	1.5 Chips
	SS#1		0.5		1.0-1.5 claystone: dark gray, wet-hard, fractured.	2.5 Pellets
2	CB				1.5-3.0 Cuttings as above, wet to dry	
3	SS#2		0.3	70R 6"	3.0-3.5 claystone as above	
4	CB				3.5-5.0 Cutting: as above	
5	SS#3		0.75	22-50R3"	5.0-5.75 Claystone as above	4.6 Filter Pack
6	CB				5.75-7.0 Cuttings as above	5.5 Screen
7	SS#4	7.5	0.75	25-68R3"	7.0-7.75 Claystone as above dry, hard	
8	CB	8.5			7.75-9.00 Cuttings: as above wet	Sampled cuttings, could not obtain a split spoon sample
9	SS#5		0.3	50R/3"	9.0-9.3 Claystone as above	10.5
10	CB				9.3-10.5 Cuttings as above	
	Refusal				TD 10.5	Well Construction

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
80E 31941.93	SW12 W2	1	1

SOIL BORING LOG

PROJECT Shemya AFB LOCATION SW12 -

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT 4 1/4" HSA CME 850

WATER LEVELS _____ START 3Sept92 FINISH 4 Sept. 92 LOGGER Reynolds/Petersen

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	CB				0-4.5 CenterBit: probably fill	
					4.5-5.0 Fill: gravel (GM), dark brown with iron staining, wet, loose, metal	
					5.0-6.5 Core Loss: probably voids	
5	SS#1	5.0	0.5	0-0 1-1-drop-drop	6.5-9.5 No Cutting: probably voids, and fill & dump material.	
					9.5-11.5 Void	
	CB				11.5-12.0 Fill gravel (GM) dark brown, wet, iron staining, some clay.	
					12.0-13.5 Gravel: (GM) "weathered bedrock, angular, fractured, dry to moist, dark green to black.	
10	SS#2 2'Void		2.0	1-5-12-14	13.5-14.5 No Cuttings: probably as above gravel. Boulder?	
					14.5-15.0 Fill gravel (GM) dark brown, wet, some sand some clay	
	CB				15.0-16.0 Gravel (GM) "weathered bedrock" dark green to black. dry angular fractured	
15	SS#3		1.5	8-27-30-42	16.0-19.5 No Cuttings: probably gravel as above, hard drilling.	
	CB				19.5-24.5 Gravel and Voids	
					24.5-24.7 Core Loss	
20	SS#4		0	50/3 R		
					TD 24.7	
	CB				abandon with 100% bentonite slurry to 1' BGS. Powdered bentonite to	
25	SS#5		0	50/2 R		

PROJECT NUMBER	BORING NUMBER	SHEET / OF
BOI 31941.55	SW12W3	

SOIL BORING LOG

PROJECT Shemya LOCATION SW12

ELEVATION _____ DRILLING CONTRACTOR 11th CEDS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 4 Sept. 94 FINISH 5 Sept. 94 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB				0.0-1.0 Top soil / Peat	
2	SS #1		2.0	4-4-6-8	1.0-1.5 Peat (PT) dark brown, moist soft, roots	
3					1.5-3.0 Gravel (GM), dark brown, fractured, moist, some clay, "claystone"	
4	SS #2	3.5	2.0	1-1-2-26		
5					3.0-3.5 Gravel as above	
6	SS #3		1.9	32-49-33-70 R/5	3.5-5.0 Peat (PT) as before	
7	SS#4		0.7	5-50R/02	5.0-5.2 Peat (PT) as above	Grout
8					5.2-7.0 Gravel (GM), claystone as before.	
9	CB				7.0-7.7 Gravel (GM) as above Dry & powdery 7.4-7.7	
10	SS#5		0.0	50R/0.4	7.7-10.0 Cuttings as above gravel "weathered bedrock"	
11					10.0-10.4 Core Loss	
12	CB					12.0 Top of Bentonite Chips
13	SS#6		0.0	50R/0.2	10.4-13.0 Cuttings, as above	
14					13.0-13.2 Core Loss	
15	CB				13.2-17.0 Cuttings as above	15.3 Top of Bentonite Pellets
16					17.0-20.0 Cuttings as above	
17	SS#7		0.0	50R/0.1	20.0-20.2 Core Loss	17.0' Top of Sand
18					20.2-24.0 Cuttings as above wet	
19						19.0' Top of Screen
20	SS#8			50R/0.2		
21						
22	CB					
23						
24					TD 24.0	
25						

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
130I 31941.55	NCDB2 (PS1A)	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION NCD

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 12Sept.92 FINISH 12Sept.92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-10.0 Fill	
2					10.0-10.3 Silty Sand (SM) dark brown, moist, rounded, some sorting, loose.	
3					10.3-11.3 claystone: dark brown, to brown, moist to dry, hard fractured.	
4						
5						
6	CB					
7						
8						
9						
10						
11	SS#1	11.3	1.3	19-65-50/4"		
12					TD 11.3	

PROJECT NUMBER	BORING NUMBER	
BOI 31941.55	NCOB1 (PS-1A)	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION NCO

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 12Sept.92 FINISH 12Sept.92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-10.0 Fill	
2					10.0-10.4 Fill	
3					10.4-11.5 Claystone: brown to dark brown, hard, fractured, moist to dry,	
4						
5						
6	CB					
7						
8						
9						
10	SS#1	11.5		21-52-53R/0.5'		
11						
12					TD 11.5	

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
BOI 31941.55	OWAB1 (DS-8)	SHEET 1	OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION OWA

ELEVATION _____ DRILLING CONTRACTOR 11th CEDS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 11 Sept. 92 FINISH 11 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-4.5 Cuttings: Fill	
2	CB				4.5-5.0 Fill	
3					5.0-6.5 Silty Sand: dark gray, (SM), moist, loose	
4						
5	SS#1			4-5-4-3		
6		6.5	2.0			
7					TD 6.5'	

PROJECT NUMBER	BORING NUMBER
BOI 3194.55	OWAB2 (PS-8) SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION OWA

ELEVATION _____ DRILLING CONTRACTOR 11th CEDS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 11 Sept. 92 FINISH 11 Sept. 92 LOGGER DR

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB			3-4-5-8	0.0-4.0 Fill	
2					4.0-5.0 Silty Sand: (SM) dark gray, moist, loose	
3					5.0-6.0 Clayey Gravel: (GM) dark brown to light gray, moist, loose, some sand and silt, gravel is hornblend dacite porphyry.	
4	SS#1					
5						
6					TD 6.0	
7						

CK.M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
BDI 3194.55	OWAB3 (MS-8)	1	1

SOIL BORING LOG

PROJECT Shemya LOCATION OWA

ELEVATION DRILLING CONTRACTOR 11th CEDS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS START 11Sept 92 FINISH 11th Sept. 92 LOGGER DR2/MSP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1					0.0-4.8 Fill	
2					4.8-6.2 Silty Sand: dark gray, (SM), moist, loose	
3	CB				6.2-6.5 Clayey gravel (GM) dark brown to light gray, moist, loose	
4						
5	SS#1	5.5	2.0	3-5-3-4		
6						
7					TD 6.5	

PROJECT NUMBER	BORING NUMBER
BOI 3194.55	OWAB4(PS-8) SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION OWA

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVELS _____ START 11 Sept. 92 FINISH 11 Sept. 92 LOGGER DR/BP

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
1	CB				0.0-2.0 Cuttings: Peat	
2					2.0-4.0 Peat (PT)	
3	SSH1	4.0	2.0	0-0-0-0		
4					TD 4.0	
5						
6						
7						

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
BOI 31941.55	OWAB5(PS-8)	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Shemya LOCATION OWA

ELEVATION _____ DRILLING CONTRACTOR 11th CEOS

DRILLING METHOD AND EQUIPMENT CME 850 4¼ ID HSA

WATER LEVEL AND DATE _____ START 11 Sept. 92 FINISH 11 Sept. 92 LOGGER DR/BP

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1	CB				0.0-2.0 Cuttings Peat:		
	2					2.0-4.0 Peat (PT)		
	3	SP#1			0-0-0-0			
	4					TD 4.0		

Appendix F
Data Validation

Appendix F
DATA VALIDATION

Data were reviewed using EPA data review guidelines from *Laboratory Data Validation; Functional Guidelines for Evaluating Inorganics Analyses*, November 1988 (EPA 1988a); and *Laboratory Data Validation, Functional Guidelines for Evaluating Organics Analyses* (EPA 1988b). The validation of data associated with analyses performed offsite is summarized in the Data Quality Assurance Reports (attached). These reports summarize data validation for specified Sample Delivery Groups (SDGs). The SDGs for offsite laboratory data validation are given in Table F.1.

The validation of data associated with analyses performed onsite is summarized in the report entitled "Onsite Laboratory Data Validation" (attached).

Data review included but was not limited to:

- Holding times
- Matrix spikes
- Blanks
- Calibration
- Duplicates

The review process included data qualification when necessary. Data qualifiers include:

J = Estimated, usable for limited purposes. The data are qualitatively acceptable, but the quantity is estimated.

R = Rejected, unusable. The data are qualitatively and quantitatively unacceptable.

U = Undetected. The result is undetected at the PQL. The data are acceptable.

TABLE F-1. Sample Delivery Groups (SDGs)

Sample Number	Group Number
SOSSFT206, SOSSFT216, SOSSWG11, SOSSFT228, SOSSFT238, SOSSFT104, SOSSFT114, SOSSFT124, SOSSWG27, SOSSWG42, SOSSWG43, SOSSFT248, GWWG110, SOSSFT251	33393
SOSSSW1064, SOSSSW1065, SOSSSW1066, SOSSSW1067, SOSSW1068, SOSSSW1069, SOSSSW1070, SOSSSW1072, SOSSSW1073, SOSSSW1074, SOSSSW1071, GWWG130, GWWG64, GWWG65, SOSSW1075, SSSOFT263, SOSSWG52, Trip Blank	33425
SHDL01, SHDL02, SHDL03, SHDL04, SHDL05, SOSW4146, SWHL08ER, SWHL06ER, SWHL07-3, SWHL06-3, SWHL05-3, SWHL01-3, SWHL02, SWHL03, SWHL04, Trip Blank 5, Trip Blank, Trip Blank 3	33457
SOSW10100, SWSW10101, SOSW10102, SOSW1276, SOSW1277, SOSW1278, SOSW1279, SOSW1280, SOSW1281, SOSW1282, SOSW1283, SOSW1284, SOSW1285, SOSW1286, SOSW1287, SOSW10103, SOSW10104, SOSW10105, SW1276TC, SOSW1277DL	33463
SOSW4100, SOSW489, SOSW490, SOSW491, SOSW492, SOSW493, SOSW494, SOSW495, SOSW496, SOSW497, SOSW498, SOSW499, SOFT2128, SOFT2134, SOFT2136	33464
SOSW4137, SOSW4138, SOSW4139, SOSW4140, GWWG76, SOSW414OTP3	33489
SW1251, COOLER31, PS2520.5, WGW25.0	33795
WGW36.0, WGW50.5, WGW76.0	33827

TABLE F-1. Sample Delivery Groups (SDGs)

Sample Number	Group Number
SW12W17.73, SW12W32003, SW10W215.0, SW10W18.0, WGW4	33864
FT1T12.0, FT1T14.8, FT1T21.0, FT1T25.9, FT1T30.5, FT1T36.7, FT1W219.5, FT2B20.5, FT2B20.5D, FT2B25.0, FT2B210.0, FT1W114.0, FT1W2ER, FT1T46.1, FT1T41.2, FT1T41.2D, FT1W316.5, FT2B30.5, FT2B35.0, FT2B40.5, FT2B45.0, FT2B60.5, FT2B65.0	33880
SW10W313.5, FT2W17.0, OWAB16.5, OWAB25.0, OWAB35.5, OWAB44.0, OWAB54.0	33895
FT1-W1, FT2-ER, FT2-W1, FT2-W5, FT2-W7, SW10-W1, SW10-W2, SW10-W3, SW12-W1, SW12-W3, SW12-W4, Trip Blank, Trip Blank 1, Trip Blank 2, Trip Blank 3	33932

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

D = The sample was diluted prior to analysis.

No qualifier = Data are acceptable

Holding Times

Holding times for all samples were reviewed during data validation. Holding time criteria are specified in SW 846.

Matrix Spikes

For matrix spike analyses, one sample in every SDG is divided into two aliquots. One is analyzed in the normal fashion while the other is spiked with known amounts of certain analytes and reanalyzed. A comparison of the detected value for the spiked sample (after subtracting the original sample concentration) with the actual amount indicates the accuracy of the method for spiked analytes. Accuracy is a combined parameter taking into account method suitability as well as matrix effects. It is possible in certain instances to isolate the matrix effects from the method suitability by using the method precision data. For example, in the event of a good precision agreement, any accuracy deviations can be attributed to matrix effects.

The 1988 EPA Functional Guidelines criteria for matrix spike recoveries are 75 to 125 percent of the spiked amount for inorganics. The criteria for organics analyses are as specified in SW 846 and are different for each analyte. Recoveries outside of specified limits result in data qualification depending upon the sample concentration. Low recoveries indicate a low bias (underestimation). High recoveries indicate a high bias (overestimation).

Blanks

Method blanks are indications of any contamination originating from the laboratory glassware and reagents that are used in the sample preparation and analysis. Trip blanks are indications of any contamination originating in the field. The implication of contamination from blanks is that there is a possibility of false

positive results. According to the Functional Guidelines, the analyte values that are less than five times the contamination concentration in the corresponding method blank are considered to be suspect. The source of these analytes cannot be attributed with any certainty to the sample itself or the method blank; therefore, the reported values of samples associated with contaminated method blanks are considered estimates only.

Calibration

The objective in establishing compliance requirements for satisfactory instrument calibration is to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the sample analysis runs. The inability to achieve calibration criteria indicates severe problems in the analytical system. Any data generated under such conditions should be considered suspect.

Calibration of the ICP for analysis of inorganics should be as per SW 846. Criteria for initial and continuing calibration for organic analyses are:

1. All average Relative Response Factors (RRF) for Target Compound List (TCL) compounds must be greater than or equal to 0.05.

2. All Percent Relative Standard Deviations (%RSD) must be less than or equal to 30 percent.

3. All Percent Difference (%D) must be less than or equal to 25 percent.

Duplicates

To establish laboratory duplicate precision, a sample is divided in two portions and analyzed in duplicate to establish the reproducibility (precision) of the laboratory sample preparation and analysis procedures, and the homogeneity of the sample matrix. In accordance with the 1988 Functional Guidelines for Inorganics (EPA 1988a), the duplicate results must be within a relative percent difference (RPD) of ±35 percent for soil/sediment sample values of at least five times the Contract Required Detection Limit (CRDL),

or within one CRDL (plus or minus) for values below five times the CRDL. For organics, the RPD must be within the advisory limits established in the appropriate IFB (EPA 1988b). Duplicate precision information does not lend itself to a prediction of bias.

The attached data quality assurance reports (for offsite laboratory analyses) and the attached report entitled "Onsite Laboratory Data Validation" (for onsite laboratory analyses) present data validation and discussions regarding data quality.

References

U.S. Environmental Protection Agency (EPA). 1988a. Laboratory Data Validation; Functional Guidelines for Evaluating Inorganics Analyses, November 1988.

U.S. Environmental Protection Agency (EPA). 1988b. Laboratory Data Validation, Functional Guidelines for Evaluating Organics Analyses, February 1988.

MEMORANDUM

DATE: October 27, 1992

TO: Task Monitor, USEPA Region 10

FROM: Cindy Lucangioli, CH2M Hill, Data Reviewer

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SDG 33457
Laboratory: CH2M Hill, Redding, CA

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Five soil and thirteen water samples were analyzed for GC/MS VOA's, five soil samples and 10 water samples were analyzed for BNA's, and Pesticide/PCB's. Ten water samples were analyzed for total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness - Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	BNA EXT	BNA ANAL	Pest/PCB EXT	Pest/PCB ANA
SHDL01	7/26/92	7/30	8/3	8/6	8/17	8/4	8/14
SHDL02	7/26/92	7/30	8/3	8/6	8/17	8/4	8/14
SHDL03	7/26/92	7/30	8/4	8/6	8/17	8/4	8/14
SHDL04	7/26/92	7/30	8/3	8/6	8/17	8/4	8/14
SHDL05	7/26/92	7/30	8/4	8/6	8/17	8/4	8/14
TRIPBLANK_5	7/26/92	7/30	8/6	NA		NA	
SOSW4146	7/26/92	7/30	8/6	7/30	8/5	7/30	8/13
SWHL08ER	7/26/92	7/30	8/6	7/30	8/5	7/30	8/13
SWHL06ER	7/26/92	7/30	8/6	7/30	8/5	7/30	8/13
SWHL07-3	7/26/92	7/30	8/6	7/30	8/5	7/30	8/14
SWHL06-3	7/26/92	7/30	8/6	7/30	8/5	7/30	8/14
SWHL05-3	7/26/92	7/30	8/7	7/30	8/6	7/30	8/14
TRIPBLANK	7/26/92	7/30	8/6	NA		NA	
SWHL01-3	7/26/92	7/30	8/7	7/30	8/6	7/30	8/14
SWHL02	7/26/92	7/30	8/6	7/31	8/6	7/30	8/14
SWHL03	7/26/92	7/30	8/6	7/30	8/6	7/30	8/14
SWHL04	7/26/92	7/30	8/6	7/30	8/6	7/30	8/14
TRIPBLANK_3	7/26/92	7/30	8/6	NA		NA	

GC/MS VOLATILE ORGANIC ANALYSIS

GC/MS Tune

All Bromofluorobenzene tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

Methylene chloride and Acetone were detected in the method blanks associated with sample data. Methylene chloride was reported as detected in the TRIP BLANK_5 and TRIP BLANK_3 and Methylene chloride and acetone were detected in the TRIP BLANK. Trip blanks have been associated with sample data referenced on the same chain of custody sheet. Please reference the GC/MS VOA tables for a summary of contaminants and concentrations detected in the method blanks and trip blank associated with sample data.

Surrogates - Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate - Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on LGN 33425 water sample SOSSSW1067 and a non client soil sample associated with this SDG and SDG 33463. Form III's were not provided in this package but were reviewed in the associated SDG's and met acceptance criteria. No

data qualifiers were required.

Internal Standard Performance - Acceptable

Internal standard performance met acceptance criteria. No data qualifiers were required.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC) - Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliveriable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

Form IV for the blank analyzed 8/4/92 @ 10:21 referenced the wrong soil blank. A corrected form has been requested (and received) from the laboratory.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for descrepancies.

Semivolatile Organic Analysis

GC/MS Tune

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's

greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

Bis(2-ethylhexyl)phthalate was detected in one of the method blanks associated with sample data. Please reference the GC/MS BNA tables for a summary of contaminants and concentrations detected in the method blank associated with sample data.

Surrogates - Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on water sample SWHL03 and met MS/MSD criteria. Soil MS/MSD was analyzed on LGN 33463 sample S0SW10102. Percent recovery acceptance criteria was exceeded for 4-Nitrophenol and 2,4-Dinitrotoluene. Please reference the MS/MSD summary tables for percent recoveries and RPD's. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance - Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC) - Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliveriable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

The Form V for 8/5/92 had the incorrect date of injection. A corrected Form has been requested from the laboratory.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for descrepancies.

Pesticide/PCB Analysis

Calibration

The laboratory indicated analysis was performed using 8080 criteria. No initial calibration was performed 8/11/91 for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254. Aroclor 1260 was calibrated 8/12/92. All calibrated analytes had relative percent differences less than 20%.

All continuing calibration criteria %D's were met. No continuing calibration (single point) was analyzed for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Target compounds reported in associated sample data for which no calibration was performed, have been rejected (R). Aroclor 1260 has been qualified in associated sample data as estimated (J4/UJ4) due to the lack of a continuing calibration. Please reference the 8080 tables for a summary of data qualifers associated with sample data.

DDT and Endrin breakdown was within acceptance limits.

Contract Required Detection Limits (CROL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

No contaminants were reported as detected in the method blank.

Surrogates - Acceptable

The surrogate Decachlorobiphenyl was below the suggested range for several samples. Samples having poor surrogate performance have been qualified as estimated (J4/UJ4). Please reference the Pesticide/PCB tables for a summary of affected samples and data qualifiers.

Matrix Spike/Matrix Spike Duplicate - Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) associated with soil sample data was analyzed on SDG 33363 and was not provided for review in this SDG. Water MS/MSD was analyzed on SDG 33445 and was not provided for review in this SDG. No sample data have been qualified due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

For the analysis dated 8/9/92 both the DB-5 and the DB-1701 column were indicated as the primary column. No initial calibration summary form was recieved for the analytes other than alpha and gamma chlordane on the DB-5 column for the 8/9/92 analysis. The reviewer requested a run log or equivalent in order to associated samples/sample data with the calibrations provided. Resubmissions and clarification have been requested (and received) from the laboratory.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. No calibration was performed for the multipeak compounds Toxaphene and the aroclors with the exception of aroclor 1260. Lack of calibration resulted in the rejection of affected sample data. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8080 analysis.

TOTAL PETROLEUM HYDROCARBONS

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration.

Blanks - Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Spike Analysis - Acceptable

There was insufficient sample provided for a TPH water spike. However, LCS analyses were within acceptance criteria. No sample data have been qualified on the basis of missing spike summary information.

Duplicate Analysis - Acceptable

There was insufficient sample provided for a TPH water duplicate. No sample data have been qualified on the basis of missing duplicate summary information.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. No other discrepancies were noted.

VOA_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 624/8240

Case No:

SDG No: 33457

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/3/92

Instrument ID: 5100

Method Blank ID: SBLKS1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SDHL01								
SDHL02								
SDHL04								

Date: 7/31/92 Time: 0940 1105

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. %RSD>30 (20.5)	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks: Meth.	Blanks: Trip	Qualifiers (+/-)
Chloromethane 0.010 (#)				28.5			J2/U52
Bromomethane 0.100							
Vinyl Chloride 0.100 (*)							
Chloroethane 0.010							
Methylene Chloride 0.010					3	5	J1,U51/-
Acetone 0.010						5	
Carbon Disulfide 0.010				27.4			J2/U52
1,1-Dichloroethene 0.100 (*)		22.0		30.8			↓
1,1-Dichloroethane 0.200 (#)				26.3			
1,2-Dichloroethene (total) 0.010							
Chloroform 0.200 (*)							
1,2-Dichloroethane 0.100							
2-Butanone 0.010							
1,1,1-Trichloroethane 0.100							
Carbon Tetrachloride 0.100							
Vinyl Acetate							
Bromodichloromethane 0.200							
1,2-Dichloropropane 0.010 (*)							
cis-1,3-Dichloropropene 0.200							
Trichloroethene 0.300							
Dibromochloromethane 0.100							
1,1,2-Trichloroethane 0.100							
Benzene 0.500 AR							
trans-1,3-Dichloropropene 0.100							
Bromoform 0.100 (#)							
4-Methyl-2-Pentanone 0.010							
2-Hexanone 0.010							
Tetrachloroethene 0.200							
1,1,2,2-Tetrachloroethane 0.500 (#)							
Toluene 0.400 (*)(AR)							
Chlorobenzene 0.500 (#)(AR)							
Ethylbenzene 0.100 (*)(AR)							
Styrene 0.300 (AR)							
Xylenes (total) 0.300 (AR)							

Qualifiers: I S # 1; I S # 2; I S # 3

TICs Reported In Blank(s): Reported as: RT (µg/kg, µg/L)

NONE

Case No:
SDG No: 33457

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/4/92

Instrument ID: 5100

Method Blank ID: SBLKS2

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SDHL03								
SDITL05								

Date: 7/31/92 Time: 0913 1021

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)				29.1			J2/U52	
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010					9	5	J1/U51	/
Acetone 0.010					9	5	J1,U51	I
Carbon Disulfide 0.010				28.5			J2,U52	S
1,1-Dichloroethene 0.100 (*)		20.5		27.2				#
1,1-Dichloroethane 0.200 (#)				26.2			↓	1
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

TICs Reported in Blank(s): Reported as: NONE RT (ug/kg, ug/L)

Case No: _____
SDG No: 33457

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/6/92

Instrument ID: 5100

Method Blank ID: VBLKW1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SDHLOGER								
SOSW4146								
SWHLO2								
SWHLO3								
SWHLO4								
SWHLO6-3								
SWHLO7-3								
SWHLO8ER								
Trip Blank								
Trip Blank-3								

Date: 5/5/92 Trip Blank - 5 Time: 1134 1232

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. RRF<.05 (20.5)	Initial Cal. %RSD>30	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks: Meth.	Blanks: Trip	Qualifiers (+/-)
Chloromethane 0.010 (#)							
Bromomethane 0.100							
Vinyl Chloride 0.100 (*)							
Chloroethane 0.010							
Methylene Chloride 0.010		42.0			8	5/5	J12,U52 2/U52
Acetone 0.010				38.7		5/	J2,U52 IS#
Carbon Disulfide 0.010							
1,1-Dichloroethene 0.100 (*)							
1,1-Dichloroethane 0.200 (#)							
1,2-Dichloroethene (total) 0.010							
Chloroform 0.200 (*)							
1,2-Dichloroethane 0.100							
2-Butanone 0.010		21.4		35.2			J2,U52/-
1,1,1-Trichloroethane 0.100							
Carbon Tetrachloride 0.100							
Vinyl Acetate							
Bromodichloromethane 0.200							
1,2-Dichloropropane 0.010 (*)							IS# 2
cis-1,3-Dichloropropene 0.200							
Trichloroethene 0.300							
Dibromochloromethane 0.100							
1,1,2-Trichloroethane 0.100							
Benzene 0.500 AR							
trans-1,3-Dichloropropene 0.100							
Bromoform 0.100 (#)							
4-Methyl-2-Pentanone 0.010				28.0			J2,U52/-
2-Hexanone 0.010				29.3			↓ IS# 3
Tetrachloroethene 0.200							
1,1,2,2-Tetrachloroethane 0.500 (#)							
Toluene 0.400 (*)(AR)							
Chlorobenzene 0.500 (#)(AR)							
Ethylbenzene 0.100 (*)(AR)							
Styrene 0.300 (AR)							
Xylenes (total) 0.300 (AR)							

TICs Reported In Blank(s): Reported as: NONE RT (ug/kg, ug/L)

Case No: _____
SDG No: 33457

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/7/92

Instrument ID: 5100

Method Blank ID: VBLKW2

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SW1L01-3								
SW1L05-3								

Date: 8/5/92 Time: 0904 1034

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. (20.5) RRF<.05	Initial Cal. %RSD>30	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010		42.0		28.1	15	5/5	J12, UJ12/	UJ2
Acetone 0.010				43.8	9	5	↓	I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								#
1,1-Dichloroethane 0.200 (#)								1
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010				41.4			J2/UJ2	
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200				-26.5			J2/UJ2	I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

TICs Reported In Blank(s): Reported as: NONE RT (µg/kg, µg/L)

VOA_MSD.FRM

Site: Shemya Air Force Base--IRP Project

Method 624/8240

Case No:

SDG No: 33457

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
SDL06ER	101	102	92				
SOSW4146	97	99	89				
SWHL01-3	102	102	102				
SWHL02	99	100	97				
SWHL03	98	99	92				
SWHL04	98	98	90				
SWL05-3	99	98	101				
SWL06-3	102	101	97				
SWL07-3	99	100	94				
SWL08ER	103	102	94				
Trip Blank	100	101	94				
Trip Blank-3	96	100	100				
Trip Blank-5	101	106	94				

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound: SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
1,1-Dichloroethene (*)	61-145	102	61-145	114	14	11	
Trichloroethene	71-120	97	71-120	109	14	12	
Benzene AR	76-127	107	76-127	113	11	5	
Toluene (*)(AR)	76-125	113	76-125	118	13	4	
Chlorobenzene (#)(AR)	75-130	107	75-130	114	13	6	
SOIL SAMPLES							
1,1-Dichloroethene (*)	59-172		59-172		22		
Trichloroethene	62-137		62-137		24		
Benzene AR	66-142		66-142		21		
Toluene (*)(AR)	59-139		59-139		21		
Chlorobenzene (#)(AR)	60-133		60-133		21		

Case No:

SDG No: 33457

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
SDITL01				102	88	86	
SDITL02				102	87	87	
SDITL03				103	87	89	
SDITL04				101	89	81	
SDITL05				107	84	88	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172	99	59-172	96	22	3	
Trichloroethene		62-137	90	62-137	92	24	2	
Benzene	AR	66-142	91	66-142	90	21	1	
Toluene	(*)(AR)	59-139	94	59-139	93	21	1	
Chlorobenzene	(#)(AR)	60-133	96	60-133	97	21	1	

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
8/17/92	SD1TL01																
Inst. ID:	SD1TL02																
ENCOS-XL	SD11L03																
	SD1TL04																
MBlnk ID:	SD1TL05																
SBLK51																	
Ext. Dates:																	
8/6/92																	

Date: 8/12/92 Time: 1159 0848

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)					ok			
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								I
Benzyl Alcohol (BN)								S
1,2-Dichlorobenzene (BN)								#
2-Methylphenol (A)								1
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)								
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								I
bis(2-Chloroethoxy)methane (BN)								S
2,4-Dichlorophenol (A)								#
1,2,4-Trichlorobenzene (BN)								2
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)				-40.8			J2/UJ2	
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)				-27.3			J2/UJ2	I
2-Chloronaphthalene (BN)								S
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								3
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								
2,2'-Oxybis (1-Chloropropane)				25.4			J2/UJ2	

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1

BNA

Analysis Date:
8/17/92

Instrument ID:
INCUS-XL

Date: 8/12/92 Time: 1159 0848

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								IS#3
Acenaphthene (*)(BN)								
2,4-Dinitrophenol (A)(#)								
4-Nitrophenol (A)(#)							•	
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								IS#4
4-Nitroaniline (BN)								
4,6-Dinitro-2-Methylphenol (A)								
N-Nitrosodiphenylamine (BN)(*)								
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								IS#5
Butylbenzyl Phthalate (BN)								
3,3'-Dichlorobenzidene (BN)								
Benzo(a)anthracene (BN)								
bis(2-ethylhexyl)phthalate (BN)								
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								IS#6
Benzo(b)fluoranthene (BN)								
Benzo(k)fluoranthene (BN)								
Benzo(a)pyrene (BN)(*)								
Indeno(1,2,3-cd)pyrene (BN)								
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s): None

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 8/5/92

Inst. ID: INCOS-X2

MBlnk ID: SBLKW1

Ext. Dates: 7/30/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
SD1L06ER																
SOSW4146																
SW1L01-3																
~~SW1L03~~																
~~SW1L04~~																
~~SW1L05-3~~																
SW1L06-3																
SW1L07-3																
SW1L08ER																

Date: 7/27/92 Time: 0933 1636

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)								
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)								
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)		22.2					J2/U52	
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								
2,2-oxybis(1-Chloropropane)				25.4				

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1

BNA

Analysis Date:
8/5/92

Instrument ID:
INCOS-XL

Date: 7/27/92 Time: 0933 1636

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								IS#3
Acenaphthene (*)(BN)								
2,4-Dinitrophenol (A)(#)								
4-Nitrophenol (A)(#)								
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								IS#4
4-Nitroaniline (BN)				-38.2			J2/UJ2	
4,6-Dinitro-2-Methylphenol (A)								
N-Nitrosodiphenylamine (BN)(*)								
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								IS#5
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								
3,3'-Dichlorobenzidene (BN)								
Benzo(a)anthracene (BN)								
bis(2-ethylhexyl)phthalate (BN)								
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								IS#6
Benzo(b)fluoranthene (BN)								
Benzo(k)fluoranthene (BN)								
Benzo(a)pyrene (BN)(*)								
Indeno(1,2,3-cd)pyrene (BN)								
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

	Reported as:	RT	(µg/kg, µg/L)
TICs Reported In Blank(s):	1. UNKNOWN	3.83	2

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
8/6/92	SW1LO2																
Inst. ID:																	
INCOS-XL																	
MBlnk ID:																	
SBLKW2																	
Ext. Dates:																	
7/31/92																	

Date: 7/27/92 Time: 0725 1222

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	20.5 %RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)					ok			
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)								
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)		22.2						
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33457

Table 1

BNA

Analysis Date:
8/6/92

Instrument ID:
INCOS-KL

Date: 7/27/92 Time: 0725 1222

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)				-25.7				S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

	Reported as:	RT	(µg/kg, µg/L)
TICs Reported In Blank(s):	1. 4-Pentenal, 2-Ethyl	3.80	3

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33457

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<.>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
8/6/92	SWH601-3																
Inst. ID:	SWH603																
INCOS-XL	SWH604																
	SWH603 3																
MBlnk ID:																	
SBLKW1																	
Ext. Dates:																	
7/30/92																	

Date: 7/27/92 Time: 0725 0721636

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)							
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)					/		
2-Nitrophenol (A)(*)							
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)		22.2					-
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS #1

IS #2

IS

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33457

Table 1

BNA

Analysis Date:
8/6/92

Instrument ID:
INCOS-XL

Date: 7/27/92 Time: 0725 1636

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)				-25.7				S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

SVOA_MSD.AQ

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33457

Table 2-AQUEOUS. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	35-114	43-116	33-141	10-110	21-110	10-123	33-110	16-110	
SDHL06ER	88	79	80	80	75	71	80	60	
SOSW4146	82	77	78	73	69	69	74	56	
SWHL01-3	86	91	80	79	75	80	77	74	
SWHL02	74	81	49	71	64	74	66	63	
SWHL03	92	85	91	86	77	82	79	63	
SWHL04	81	82	76	74	68	73	71	69	
SWHL05-3	78	86	61	74	72	77	72	69	
SWHL06-3	86	85	63	76	72	73	74	69	
SWHL07-3	85	76	69	71	69	78	74	53	
SWHL08ER	81	83	75	75	70	72	73	68	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
Phenol	12-110	59	12-110	63	42	7	
2-Chlorophenol	27-123	60	27-123	63	40	5	
1,4-Dichlorobenzene	36-97	59	36-97	61	28	3	
N-Nitroso-di-n-propylamine	41-116	68	41-116	73	38	7	
1,2,4-Trichlorobenzene	39-98	67	39-98	72	28	7	
4-Chloro-3-methylphenol	23-97	63	23-97	69	42	9	
Acenaphthene	46-118	56	46-118	64	31	13	
4-Nitrophenol	10-80	52	10-80	57	50	9	
2,4-Dinitrotoluene	24-96	62	24-96	68	38	9	
Pentachlorophenol	9-103	68	9-103	77	50	12	
Pyrene	26-127	72	26-127	79	31	9	

Case No:

SDG No: 33457

Table 2-SOIL. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	
SDHL01	68	66	67	68	62	72	64	61	
SDHL02	63	60	61	63	57	62	60	56	
SDHL03	82	79	77	79	74	85	75	68	
SDHL04	79	76	82	76	68	82	72	68	
SDHL05	81	79	74	77	72	83	73	65	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90		26-90		35		
2-Chlorophenol	25-102		25-102		50		
1,4-Dichlorobenzene	28-104		28-104		27		
N-Nitroso-di-n-propylamine	41-126		41-126		38		
1,2,4-Trichlorobenzene	38-107		38-107		23		
4-Chloro-3-methylphenol	26-103		26-103		33		
Acenaphthene	31-137		31-137		19		
4-Nitrophenol	11-114		11-114		50		
2,4-Dinitrotoluene	28-89		28-89		47		
Pentachlorophenol	17-109		17-109		47		
Pyrene	35-142		35-142		36		

PEST_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:
SDG No: 33457

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/13/92

Instrument ID: 3400

Method Blank ID: PBLK #1

Extraction Date: 7/30/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SOSW4146			X					
	SWHLO8ER			X					
	SWHLO6ER			X					
	SWHLO7-3			X					
	SWHLO6-3				X				
	SWHLO5-3				X				
	SWHLO1-3				X				
	SWHLO2				X				
	SWHLO3				X				
	SWHLO4				X				

Column: DB-5 Primary / Secondary Compound:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
8/11/92 Cont. Cal. date/month		8/13	8/14						
Time									
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:

SDG No: 33457

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/13/92

Instrument ID: 3400

Method Blank ID: PBLKS1

Extraction Date: 8/4/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SHDLO1			X					
	SHDLO2			X					
	SHDLO3			X					
	SHDLO4			X					
	SHDLO5			X	X		X		

Column: DB-5 Primary / Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		8/14	8/15	8/16	8/17				
Time									
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor		15.3			20.7				
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_MSD.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33457

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	~~Aqueous~~ TCMX	~~Soil~~ DCB	
(Acceptance Range, %R):	~~(24-154)~~ 60-130	~~(20-150)~~ 60-150	
SDHLO1	74	97	
SDHLO2	77	98	
SDHLO3	75	96	
SDHLO4	72	88	
SDHLO5	72	107	
SOSW4146	71	68	
SWHLO8ER	73	66	
SDHLO6ER	74	55	~~J4~~ / ~~UJ4~~
SWHLO7-3	61	42	J4 / UJ4
SWHLO6-3	63	51	=
SWHLO5-3	64	51	
SWHLO1-3	66	~~45~~	J4 / UJ4
SWHLO2	66	51	↓

~~Surrogate = Dibutylchlorendate (DBC)~~ surrogate

TCMX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123	90	56-123	82	14	9.3	
Heptachlor	40-131	102	40-131	94	20	8.2	
Aldrin	40-120	87	40-120	83	22	4.7	
Dieldrin	52-126	110	52-126	100	18	9.5	
Endrin	56-121	99	56-121	95	21	4.1	
4,4'-DDT	38-127	92	38-127	84	27	9.1	
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127		46-127		50		
Heptachlor	35-130		35-130		31		
Aldrin	34-132		34-132		43		
Dieldrin	31-134		31-134		38		
Endrin	42-139		42-139		45		
4,4'-DDT	23-134		23-134		50		

Case No:

SDG No: 33457

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	~~Aqueous~~ TCMX	~~Soil~~ DCB	
(Acceptance Range, %R):	~~(24-154)~~ 60-150	~~(20-150)~~ 60-130	
SWHL03	67	53	J4/UJ4
SWHL04	76	49	↓

~~Surrogate — Dibutylchlorendate (DBC)~~ Surrogate TCMX = Tetrachloro-m-xylene DCB = Decachlorobiphenyl

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127		46-127		50		
Heptachlor	35-130		35-130		31		
Aldrin	34-132		34-132		43		
Dieldrin	31-134		31-134		38		
Endrin	42-139		42-139		45		
4,4'-DDT	23-134		23-134		50		

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: October 26, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33393
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "SW-846 1986 Edition and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". One water sample was analyzed for volatile organics by method 8010/8020 Modified and 13 soil samples were analyzed for total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample Number	Date Sampled	VTSR	VOA Analyzed	TPH Analyzed
SOSSFT206	7/15/92	7/27	NA	8/6
SOSSFT216	7/16/92	7/24	NA	8/6
SOSSWG11	7/16/92	7/24	NA	8/6
SOSSFT228	7/16/92	7/24	NA	8/6
SOSSFT238	7/16/92	7/24	NA	8/6
SOSSFT104	7/17/92	7/24	NA	8/6
SOSSFT114	7/17/92	7/24	NA	8/6
SOSSFT124	7/17/92	7/24	NA	8/6
SOSSWG27	7/17/92	7/24	NA	8/6
SOSSWG42	7/17/92	7/24	NA	8/6
SOSSWG43	7/17/92	7/24	NA	8/6
SOSSFT248	7/19/92	7/24	NA	8/6
GWWG110	7/19/92	7/22	7/27	NA
SOSSFT251	7/19/92	7/24	NA	8/6

Volatile Organic Analysis

Calibration

An internal standard method of quantitation was used for the 8010 and 8020 analyses. In accordance with SW-846 methodology, target compounds with relative percent differences (%RSD's) exceeding 20 % in the initial calibration and percent differences (%D's) exceeding 15% in the continuing calibration check standard have been qualified as estimated (J2) due to calibration criteria exceedance. Please reference the attached tables for a summary of data qualifiers.

Blanks-Acceptable

No compounds were detected in the 8010 or 8020 method blanks.

Surrogates-Acceptable

All surrogate recoveries were greater than 90% recovery for both 8010 and 8020 analyses. 1,4-Dichlorobutane was used as a surrogate for the 8010 analysis and Fluorobenzene was used for the 8020 analyses. Control limits for surrogate recovery were not provided and no sample data has been qualified on the basis of surrogate recoveries.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on SDG 33489, sample 6GGW676 for 8010/8020 volatiles. Percent recoveries ranged from 42% to 118% with the greatest RPD being 5.8%. Since no control limit criteria were provided, no sample data have been qualified on the basis of MS/MSD results.

Internal Standard Performance-Acceptable

No criteria for internal standard performance were provided. Sample data have not been qualified on the basis of internal standard performance.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Total Petroleum Hydrocarbons

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration.

Blanks-Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Matrix Spike/Matrix Spike Duplicate-Acceptable

There was insufficient sample provided for a TPH water matrix MS/MSD. TPH samples S0SSFT206, S0SSFT216 and S0SSWG11 are associated with QC from SDG: 22388. The remaining samples in this batch are associated with QC from SDG: 22389. No problems were indicated in the case narrative for MS/MSD associated with sample data however, the associated QC samples were not included in this package and have not been reviewed. No sample data have been qualified on the basis of missing MS/MSD summary information.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. The following discrepancies were observed in the data package: Chain of Custody records indicate the request for the GC method 8015 on the soil samples. No 8015 sample

data was provided in the data package. Additionally, SW-846 methodology requires that a QC check standard be analyzed; there was no evidence that a QC check was performed for the 8010 or 8020 analysis.

602_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 602/8020

Case No:

SDG No: 33373

Table 1
Purgeable Aromatics Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/27/92

Instrument ID: GC-3700

Method Blank ID: Method BLK

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
		AR	All	Aqueous Range* (83-115)*	Soil Range* (88-119)*		
	GWWG110						

Compound	IC/CCV QC Check Std., ug/L Range**		Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Blanks Trip	Qualifiers (+/-)
tert-Butylmethyl ether	--		--			--		ok	NA	
Benzene	15.4-24.6		14.4-23.5	113	112	48	0.4			
Toluene	15.5-24.5		15.2-23.7	114	112	43	0.9			
Chlorobenzene	16.1-23.9		15.7-22.4	118	118	35	0.4			
Ethylbenzene	12.6-27.4		13.9-24.3	113	112	54	0.9			
Total xylenes	--		--	109	109	--	0.4			
1,3-Dichlorobenzene	14.5-25.5	20.09	15.4-22.9	114	114	39	0.9			J2
1,2-Dichlorobenzene	13.6-26.4		14.4-23.9	117	116	50	0.9			
1,4-Dichlorobenzene	13.9-26.1		14.5-22.8	112	112	44	0.4			

* Ranges are based on project-specific control charts (average recovery +/- 3 SD).
** The QC check std. and MS/MSDs use a nominal 20 ug/L spike concentration.

601_CAL.FRM

Site: Shemaya Air Force Base--IRP Project

Method 601/8010

Case No:

SDG No: 33393

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/27/92

Instrument ID: GC-3700

Method Blank ID: Method BLK

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
		AR	All	Aqueous Range (65-127)*	Soil Range (67-136)*		
	GWWG110						

Compound	JC/CCV QC Check Std, ug/L		Spike Recovery, %R & RPD					Blanks		Qualifiers
	Range**	Std.	Range**	MS	MSD	RPD	Actual	Lab	Trip	(+/-)
Chloromethane	11.9-28.1		6.2-25.0	42	44	121	5.8	OK	NA	
Bromomethane	11.7-28.3		8.0-19.9	89	92	85	3.9			
Dichlorodifluoromethane	--	20.51	--	117	115	--	1.7			J2
Vinyl Chloride	13.7-26.3		13.5-24.6	86	82	58	4.8			
Chloroethane	15.4-24.6		14.5-22.0	79	76	41	3.2			
Methylene chloride	15.5-24.5		12.2-22.3	81	78	59	3.1			
Trichlorofluoromethane	13.3-26.7		12.2-23.3	82	80	63	3.1			
1,1-Dichloroethene	12.6-27.4		13.7-23.8	78	80	54	3.2			
1,1-Dichloroethane	16.8-23.2		14.5-21.4	77.5	82	38	5.6			
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0	79	82	49	3.7			
Chloroform	15.0-25.0	7.93	14.8-21.7	86	84	38	1.2			J2
1,2-Dichloroethane	14.3-25.7		15.8-23.6	82	85	40	4.2			
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8	83	84	44	1.2			
Carbon tetrachloride	13.7-26.3		14.5-22.7	86	82	44	4.8			
Bromodichloromethane	15.2-24.8		16.1-26.7	86	88	49	2.9			
1,2-Dichloropropane	14.8-25.2		15.4-24.6	84	85	46	0.6			
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4	86	84	64	2.4			
Trichloroethene	15.4-24.6		13.5-22.3	82	81	49	1.8			
Dibromochloromethane	13.1-26.9		14.7-28.4	101	101	64	0.0			
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5	90	86	46	4.0			
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4	90	88	64	2.3			
Bromoform	14.7-25.3	26.78	11.1-23.2	107	106	70	0.5			
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4	108	104	75	3.8			J2
Tetrachloroethene	14.0-26.0		13.3-24.5	84	83	59	0.6			
Chlorobenzene	14.4-25.6		14.2-23.4	89	86	49	2.8			
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8	92	88	76	4.4			
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1	94	90	87	5.4			
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6	90	84	44	0.6			
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0			70				

* The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
** The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: October 27, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33425
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Fourteen soil and four water samples were analyzed for GC/MS VOA's, eleven soil samples were analyzed for BNA's, and Pesticide/PCB's. Three water samples were analyzed for volatile organics by method 8010/8020 Modified and three soil sample was analyzed for total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	BNA EXT. ANA	Pest/PCB EXT ANA	VOA 8010/8020	TPH
SOSSSW1064	7/22/92	7/25	7/27	7/27 8/3	7/27 8/11	NA	NA
SOSSSW1065	7/22/92	7/25	7/27	7/27 8/3	7/27 8/11	NA	NA
SOSSSW1066	7/22/92	7/25	7/27	7/27 8/3	7/27 8/11	NA	NA
SOSSSW1067	7/22/92	7/25	7/28	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1068	7/22/92	7/25	7/27	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1069	7/22/92	7/25	7/28	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1070	7/22/92	7/25	7/28	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1072	7/22/92	7/25	7/28	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1073	7/22/92	7/25	7/27	7/27 8/3	7/27 8/12	NA	NA
SOSSSW1074	7/22/92	7/25	7/27	7/27 8/3	7/27 8/12	NA	NA
SOSSW1071	7/22/92	7/25	7/27	7/27 8/5	7/27 8/12	NA	NA
GWWG130	7/22/92	7/25	7/28	NA	NA	7/29	NA
GWWG64	7/22/92	7/25	7/28	NA	NA	7/29	NA
GWWG65	7/22/92	7/25	7/28	NA	NA	7/29	NA
SOSSSW1075	7/22/92	7/25	7/28	NA	NA	NA	8/6
SSSOFT263	7/21/92	7/25	7/27	NA	NA	NA	8/6
SOSSWG52	7/20/92	7/25	7/28	NA	NA	NA	8/6
TRIP BLANK	7/20/92	7/25	7/28	NA	NA	NA	NA
SOSSSW1068R	7/22/92	7/25	7/28	NA	NA	NA	NA
SOSSSW1072RC	7/22/92	7/25	NA	NA	7/27 8/12	NA	NA

GC/MS Volatile Organic Analysis

GC/MS Tune

All Bromofluorobenzene tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

Methylene chloride and Acetone were detected in the method blanks associated with sample data. Methylene chloride was reported as detected in the trip blank. Please reference the GC/MS VOA tables for a summary of contaminants and concentrations detected in the method blanks and trip blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client water sample and met MS/MSD criteria. Soil MS/MSD was analyzed on sample SOSSSW1067 and met MS/MSD criteria. No data qualifiers were required.

Internal Standard Performance-Acceptable

Sample SOSSSW1068 and its reanalysis exhibited low internal standard performance for 1,4-Difluorobenzene and Chlorobenzene-d5 indicating a matrix effect. Only sample data from the first analysis have been included in this report. Associated target compounds have been qualified as estimated (J4/UJ4) due to poor internal standard performance.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

Semivolatile Organic Analysis

GC/MS Tune

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

Bis(2-ethylhexyl)phthalate was detected in one of the method blanks associated with sample data. Please reference the GC/MS BNA tables for a summary of contaminants and concentrations detected in the method blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client water sample and met MS/MSD criteria. It should be noted that a water MS/MSD is not applicable to a soil batch. No sample data have been qualified due to the lack of an appropriate MS/MSD analysis.

Internal Standard Performance-Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No soil MS/MSD was analyzed in association with sample data.

Pesticide/PCB Analysis

Calibration

The laboratory indicated analysis was performed using 8080 criteria. No initial calibration was performed 8/11/91 for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Arocolor 1260 was calibrated 8/12/92 only for the reanalysis of sample SOSSSW1072. All calibrated analytes had relative percent differences less than 20%.

All continuing calibration criteria %D's were met. No continuing calibration (single point) was analyzed on 8/12 for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Aroclor 1260 had continuing calibrations analyzed 8/13/92 and 8/14/92 and is only associated with the reanalysis of sample SOSSSW1072. Target compounds reported in associated sample data for which no calibration was performed, have been rejected (R). Please reference the 8080 tables for a summary of data qualifiers associated with sample data.

DDT and Endrin breakdown information was not provided.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal or below Method 8080 practical qualitation limits.

Blanks-Acceptable

No contaminants were reported as detected in the method blank.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW suggested criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) associated with sample data was analyzed on SDG 33353 and was not provided for review in this SDG. No sample data have been qualified due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No calibration was performed for the multipeak compounds Toxaphene and the aroclors with the exception of aroclor 1260 which was associated with one sample analysis. Lack of calibration resulted in the rejection of affected sample data. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8010 or 8020 analysis.

8010/8020 Volatile Organic Analysis

Calibration

An internal standard method of quantitation was used for the 8010 and 8020 analyses. In accordance with SW-846 methodology, target compounds with relative percent differences (%RSD's) exceeding 20 % in the initial calibration and percent differences (%D's) exceeding 15% in the continuing calibration check standard have been qualified as estimated (J2) due to calibration criteria exceedance. Please reference the attached tables for a summary of data qualifiers.

Blanks-Acceptable

No compounds were detected in the 8010 or 8020 method blanks.

Surrogates-Acceptable

All surrogate recoveries were greater than 90% recovery for both 8010 and 8020 analyses. 1,4-Dichlorobutane was used as a surrogate for the 8010 analysis and Fluorobenzene was used for the 8020 analyses. Control limits for surrogate recovery were not provided and no sample data has been qualified on the basis of surrogate recoveries.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on SDG 33489, sample 6WW676 for 8010/8020 volatiles. Percent recoveries ranged from 42% to 118% with the greatest RPD being 5.8%. Since no control limit criteria were provided, no sample data have been qualified on the basis of MS/MSD results.

Internal Standard Performance-Acceptable

No criteria for internal standard performance were provided. Sample data have not been qualified on the basis of internal standard performance.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Spike-Insufficient

Laboratory Contact

The laboratory analyzed a continuing calibration verification sample and applied the continuing calibration check criteria outlined in method 8010A, Table 3, rather than 15%D criteria as outlined in Method 8000A, Section 7.4.3.4. Control limits specified in Table 3 have been applied to the sample data.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8010 or 8020 analysis.

Total Petroleum Hydrocarbons

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration. Instrument detection limits were equal to or below method.

Blanks-Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank. LCS was within control limits and no data qualifiers were required.

Duplicate Analysis-Acceptable

There was insufficient sample provided for a TPH water matrix MS/MSD. However, LCS analyses were within acceptance criteria. No sample data have been qualified on the basis of missing MS/MSD summary information.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. No other discrepancies were noted.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: October 27, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33425
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". Eleven soil samples were analyzed for ICP metals The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	ICP METALS PREP ANA
SOSSSW1064	7/22/92	7/25	8/5 8/6
SOSSSW1065	7/22/92	7/25	8/5 8/6
SOSSSW1066	7/22/9S	7/25	8/5 8/6
SOSSSW1067	7/22/92	7/25	8/5 8/6
SOSSSW1068	7/22/92	7/25	8/5 8/6
SOSSSW1069	7/22/92	7/25	8/5 8/6
SOSSSW1070	7/22/92	7/25	8/5 8/6
SOSSSW1072	7/22/92	7/25	8/5 8/11
SOSSSW1073	7/22/92	7/25	8/5 8/11
SOSSSW1074	7/22/92	7/25	8/5 8/11
SOSSW1071	7/22/92	7/25	8/5 8/11

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs) with the exception of GFAA metals which were reported at the method detection limit.

Blanks

Cobalt was found below the CRDL in the continuing calibration blanks associated with samples analyzed on 8/11/92 and did not require qualification.

ICP Interference check Sample-Acceptable

Though ICP interference check samples were analyzed and met acceptance criteria, no data qualifiers were required.

Laboratory Control Sample-Acceptable

The LCS's were within control limits established by the EPA.

Duplicate Sample Analysis

Duplicate sample analysis, sample SS0SSW1064, associated with samples analyzed 8/6/92 met criteria. Duplicate sample analysis, SDG 33464 sample SOSW489, associated with samples analyzed 8/11/92 was outside of acceptance criteria for Iron and Manganese. Associated sample data have been qualified as estimated (J4/UJ4) due to poor precision.

Spike Sample Analysis

Spiked sample analysis, sample SS0SSW1064, associated with samples analyzed 8/6/92 and SDG 33464 sample SOSW489, associated with samples analyzed 8/11/92 was above acceptance criteria for Manganese. Associated sample data have been qualified as estimated for detected results (J4/---) due to a potentially high bias.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

VOA_CAL.FRM

Site: Shemya Air Force Base-IRP Project

Method 624/8240

Case No:

SDG No: 33425

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/27/92

Instrument ID: 5100

Method Blank ID: VBLKS1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SOSSSW1064								
SOSSSW1065								
SOSSSW1066								
SOSSSW1068							<	<
SOSSSW1072								
SOSSSW1073								
SOSSSW1074								

Date: 7/27/92 Time: 1635 1741

Compound:	SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
		RRF<.05	%RSD>~~30~~ 25	RRF<.05	%D>25	Meth.	Trip	(+/-)
Chloromethane	0.010 (#)							
Bromomethane	0.100							
Vinyl Chloride	0.100 (*)							
Chloroethane	0.010							
Methylene Chloride	0.010		29.7			15		J1, U51
Acetone	0.010					2		J1, U51
Carbon Disulfide	0.010							
1,1-Dichloroethene	0.100 (*)							
1,1-Dichloroethane	0.200 (#)							
1,2-Dichloroethene (total)	0.010							
Chloroform	0.200 (*)							
1,2-Dichloroethane	0.100							
2-Butanone	0.010							
1,1,1-Trichloroethane	0.100							
Carbon Tetrachloride	0.100							
Vinyl Acetate								
Bromodichloromethane	0.200							
1,2-Dichloropropane	0.010 (*)							
cis-1,3-Dichloropropene	0.100							
Trichloroethene	0.300							
Dibromochloromethane	0.100							
1,1,2-Trichloroethane	0.100							
Benzene	0.500 AR							
trans-1,3-Dichloropropene	0.100							
Bromoform	0.100 (#)		22.9					~~J2/U52~~
4-Methyl-2-Pentanone	0.010							
2-Hexanone	0.010							
Tetrachloroethene	0.200							
1,1,2,2-Tetrachloroethane	0.500 (#)							
Toluene	0.400 (*)(AR)							
Chlorobenzene	0.500 (#)(AR)							
Ethylbenzene	0.100 (*)(AR)							
Styrene	0.300 (AR)							
Xylenes (total)	0.300 (AR)							

IS #1 — IS #2 — IS #3

TICs Reported In Blank(s): Reported as: None RT (µg/kg, µg/L)

VOA_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 624/8240

Case No:

SDG No: 33425

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/28/92

Instrument ID: 5700

Method Blank ID: VBLKS2

Sample Identifier:	Hold Time Out, days AR	Hold Time Out, days All	Standards: (<,>) Surrogates S1	S2	S3	ISTDs IS1	IS2	IS3
SOSSSW1067								
SOSSSW1068RE							<	<
SOSSSW1069								
SOSSSW1070								
SOSSSW1071								

Date: 7/27/92 Time: 0915 1022

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. %RSD>30	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010								
Methylene Chloride 0.010		69.7			6			
Acetone 0.010					3			I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (°)								#
1,1-Dichloroethane 0.200 (#)								1
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)		22.9					~~52/052~~	
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (°)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

TICs Reported In Blank(s): Reported as: None RT (µg/kg, µg/L)

VOA_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 624/8240

Case No:

SDG No: 33425

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/28/92

Instrument ID: 5700

Method Blank ID: VBLKW1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
Trip Blank								

Date: 7/15/92 Time: 1617 1717

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>~~30~~ 20.5	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)				-36.8			J2/UJ2	
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)				-30.4			J2/UJ2	
Chloroethane 0.010								
Methylene Chloride 0.010		54.3		66.9	5		J12,UJ12	/UJ2
Acetone 0.010		23.3			4		E	I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)		30.3					J2/UJ2	I
cis-1,3-Dichloropropene 0.200		23.3					~~J2/UJ2~~	S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010		25.7						
Tetrachloroethene 0.200				-35.8			J2/UJ2	I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s): None

VOA_MSD.FRM Site: Shemya Air Force Base--IRP Project Method 624/8240

Case No:

SDG No: 33425

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
Trip Blank	100	101	103				
SOSSS W1064				112	86	105	
SOSSS W1065				107	98	105	
SOSSS W1066				105	97	99	
SOSSS W1067				104	96	92	
SOSSS W1068				115	76	101	
SOSSS W1068 RE				112	82	90	
SOSSS W1069				102	98	91	
SOSSS W1070				100	100	93	
SOSSS W1071				102	100	94	
SOSSS W1072				106	94	103	
SOSSS W1073				108	98	104	
SOSSS W1074				104	98	104	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145	100	61-145	99	14	1	
Trichloroethene		71-120	95	71-120	93	14	2	
Benzene	AR	76-127	110	76-127	108	11	2	
Toluene	(*)(AR)	76-125	106	76-125	104	13	2	
Chlorobenzene	(#)(AR)	75-130	105	75-130	104	13	1	
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172	102	59-172	114	22	11	
Trichloroethene		62-137	97	62-137	109	24	12	
Benzene	AR	66-142	107	66-142	113	21	5	
Toluene	(*)(AR)	59-139	113	59-139	118	21	4	
Chlorobenzene	(#)(AR)	60-133	107	60-133	114	21	6	

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33425

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
8/3/92		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Inst. ID:	-W1064																
4600	-W1065																
	-W1066																
MBlnk ID:	-W1067																
SBLK31	W1068																
	-W1069																
Ext. Dates:	-W1070																
7/27/92	-W1074																
	-W1072																
	-W1073																

Date: 7/30/92 Time: 1204 1343

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)	OK	OK						
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)								
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)				-25.2			J2/UJ2	
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)				-26.2			J2/UJ2	IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33425

Table 1

BNA

Analysis Date:
8/3/92

Instrument ID:
4600

Date: 7/30/92 Time: 1204 1343

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)				-28.0			J2/UJ2	
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)					34		J1,UJ1	5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):

	Reported as:	RT	(µg/kg, µg/L)
1.	UNKNOWN	5.35	750
2.	UNKNOWN	6.02	13000
3.	UNKNOWN	6.37	360
4.	UNKNOWN	7.10	74
5.	UNKNOWN	7.68	210
6.	2-Cyclohexen-1-one	8.05	97
7.	2-(5H)-Furanone, 5,5	8.32	180
8.	Hexanoic acid, 2-Ethyl	11.50	77
9.	Cyclododecene	26.84	97

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 7/30/92 8/5/92
Inst. ID: INCOS-XL
MBlnk ID: SBLLS1
Ext. Dates: 7/27/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
-W1071																

Date: 7/27/92 Time: 0933 1343

Compound: SPCC (#) CCC(°) / Acidic (A) Base/Neutral (BN)	Initial Cal. RRF<.05	Initial Cal. %RSD>30 (20.5)	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Lab	Blanks Field	Qualifiers (+/-)	
Phenol (°)(A)	Ok	Ok						
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (°)(BN)								I
Benzyl Alcohol (BN)								S
1,2-Dichlorobenzene (BN)								#
2-Methylphenol (A)								1
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(°)								
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								I
bis(2-Chloroethoxy)methane (BN)								S
2,4-Dichlorophenol (A)								#
1,2,4-Trichlorobenzene (BN)								2
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(°)				-35 L				
4-Chloro-3-methylphenol (A)(°)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(°)								
2,4,5-Trichlorophenol (A)				-36.L				I
2-Chloronaphthalene (BN)								S
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								3
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

2,2-oxybis(1-Chloropropane)

25.4

32/52

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1

BNA

Analysis Date:
8/5/92

Instrument ID:
INCOS-X L

Date: 7/27/92 Time: 0933 1343

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)				-38.2			J2/UJ2	S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):	Reported as:	RT	(µg/kg, µg/L)
	1. Unknown	5.35	750
	2. " "	6.02	13000
	3. " "	6.37	360
	4. " "	7.10	74
	5. " "	7.68	210
	6. 2-Cyclohexene-1-one	8.05	97
	7. 2-(5H)-Furanone, 5,5-	8.32	180
	8. Hexanoic Acid, 2-Ethyl	11.50	77
	9. Cyclododecane	26.84	97

Case No:

SDG No: 33425

Table 2-AQUEOUS. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R								
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	35-114	43-116	33-141	10-110	21-110	10-123	33-110	16-110	Qualifiers (+/-)

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
Phenol	12-110	54	12-110	63	42	15	
2-Chlorophenol	27-123	56	27-123	65	40	15	
1,4-Dichlorobenzene	36-97	42	36-97	64	28	42	
N-Nitroso-di-n-propylamine	41-116	61	41-116	74	38	19	
1,2,4-Trichlorobenzene	39-98	59	39-98	73	28	21	
4-Chloro-3-methylphenol	23-97	66	23-97	75	42	13	
Acenaphthene	46-118	64	46-118	68	31	6	
4-Nitrophenol	10-80	63	10-80	52	50	19	
2,4-Dinitrotoluene	24-96	62	24-96	72	38	15	
Pentachlorophenol	9-103	86	9-103	91	50	6	
Pyrene	26-127	70	26-127	80	31	13	

Case No:

SDG No: 35425

Table 2-SOIL. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	
SOSSSW1064	84	89	83	78	74	93	72	74	
SOSSSW1065	82	83	82	78	73	88	73	72	
SOSSSW1066	79	83	77	76	72	84	71	72	
SOSSSW1067	78	82	73	77	74	86	70	70	
SOSSSW1068	86	74	68	68	63	80	66	65	
SOSSSW1069	73	77	82	77	67	65	70	71	
SOSSSW1070	78	79	77	74	67	83	69	65	
SOSSSW1071	75	84	71	73	63	70	70	61	
SOSSSW1072	75	85	75	75	66	83	69	68	
SOSSSW1073	76	74	78	74	68	76	68	68	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90		26-90		35		
2-Chlorophenol	25-102		25-102		50		
1,4-Dichlorobenzene	28-104		28-104		27		
N-Nitroso-di-n-propylamine	41-126		41-126		38		
1,2,4-Trichlorobenzene	38-107		38-107		23		
4-Chloro-3-methylphenol	26-103		26-103		33		
Acenaphthene	31-137		31-137		19		
4-Nitrophenol	11-114		11-114		50		
2,4-Dinitrotoluene	28-89		28-89		47		
Pentachlorophenol	17-109		17-109		47		
Pyrene	35-142		35-142		36		

Case No:_____

SDG No: 33425

Table 2-SOIL SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	
50555W1074	76	76	75	76	71	80	69	68	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90		26-90		35		
2-Chlorophenol	25-102		25-102		50		
1,4-Dichlorobenzene	28-104		28-104		27		
N-Nitroso-di-n-propylamine	41-126		41-126		38		
1,2,4-Trichlorobenzene	38-107		38-107		23		
4-Chloro-3-methylphenol	26-103		26-103		33		
Acenaphthene	31-137		31-137		19		
4-Nitrophenol	11-114		11-114		50		
2,4-Dinitrotoluene	28-89		28-89		47		
Pentachlorophenol	17-109		17-109		47		
Pyrene	35-142		35-142		36		

PEST_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:

SDG No: 33425

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/11/92

Instrument ID: varian 3400

Method Blank ID: PBLKS

Extraction Date: 7/27/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SOSSSW1064								
	SOSSSW1065								
	SOSSSW1066								
	SOSSSW1067								
	SOSSSW1068								
	SOSSSW1069								
	SOSSSW1070								
	SOSSSW1072								
	SOSSSW1073								
	SOSSSW1074								
	SOSSSW1071								

Column: DB-5 Primary / Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
Cont. Cal. date/month		8/11	8/12	8/12					
Time									
alpha-BHC	OK	OK	OK	OK					
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	↑	↑	↑	↑					R2
Aroclor-1016 (PCB-1016)	NOT CALIBRATED →								
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)	↓	↓	↓	↓					↓
~~Dibutylchlorendate (DBC)~~ Surr: TCMX	OK								

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

DCB OK

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33425

Confirmation

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/11/92

Matrix

Instrument ID: Varian 3400

Method Blank ID: PBLKS

Extraction Date: 7/27/92

Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
	Ext.	Anal.	1	2	3	4	5	6
SO555W1064								
SO555W1065								
SO555W1066								
SO555W1067								
SO555W1068								
SO555W1069								
SO555W1070								
SO555W1072								
SO555W1073								
SO555W1074								
SO555W1071								

Column: Primary / Compound: DB 1701 Secondary	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
Cont. Cal. date/month		8/11	8/12	8/12					
Time									
alpha-BHC		ok	ok	ok					
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD	20.11								J2/UJ2
Endosulfan sulfate	22.20								J2/UJ2
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NOT CALIBRATED →								R2
Aroclor-1016 (PCB-1016)	↓	↓	↓	↓					
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)	↓	↓	↓	↓					↓
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33425

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/13/92

Instrument ID: Varian 3400

Method Blank ID: PBLK S

Extraction Date: 7/27/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
SOIL	50555W1072R								

Column: DB-1701 Primary / Secondary

Compound:

Compound:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
8/12 Cont. Cal. date/month		8/13	8/14						
Time									
alpha-BHC	NC								
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)	5.48	3.95	3.66						
~~Dibutylchlorendate~~ (DBC) Surr.	6.81								

TCMX

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

NO C 13 Surr 2.29

NC = Not calibrated

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33425

Confirmation

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/13/92

Instrument ID: Varian 3400

Method Blank ID: PBLKS

Extraction Date: 7/27/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
SOIL	SO55SW1072R								

Column: Primary / Secondary Compound: DB-5	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
8/12 Cont. Cal. date/month		8/13							
Time									
alpha-BHC	~~NC~~ OK	NC							J2/UJ2
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									R2
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)	7.69	14.48	13.03						
~~Dibutylchlorendate (DBC)~~ Surr.	3.24								

TCMX

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

DCB 2.16

NC = NOT calculated

PEST_MSD.FRM Site: Shemva Air Force Base-IRP Project Method 608/8080

Case No:

SDG No: 33425

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	TCMX ~~Aqueous~~	DCB ~~Soil~~	
(Acceptance Range, %R):	(24-154)	(20-150)	
SO555W1064	75	95/109	
SO555W1065	65	104	
SO555W1066	66	96	
SO555W1067	69	128	
SO555W1068	59	113	
SO555W1069	71	104	
SO155W1070	73	126	
SO555W1072	70	102	
SO555W1073	98	111	
SO555W1074	65	90	
SO555W1071	64	90	
SO555W1072RE	66	114	

Surrogate = ~~Dibutylchlorendate (DBC)~~ TCMX = Tetrachloro meta xylene
DCB = Decachlorobiphenyl

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	ND	46-127	ND	50	ND	
Heptachlor	35-130	↓	35-130	↓	31	↓	
Aldrin	34-132	↓	34-132	↓	43	↓	
Dieldrin	31-134	↓	31-134	↓	38	↓	
Endrin	42-139	↓	42-139	↓	45	↓	
4,4'-DDT	23-134	↓	23-134	↓	50	↓	

ND- Not determined due to dilution

601_CAL.FRM | Site: Shemaya Air Force Base--IRP Project | Method 601/8010

Case No:

SDG No: 53425

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/29/92

Instrument ID: GC-3600

Method Blank ID: VBLKW

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R			Qualifiers
		AR	All	Aqueous Range* (65-127)	Soil Range* (67-136)	ISTD, %R	
water	GWWG130						
	GWWG64						
	GWWG65						

Compound	QC Check Std., ug/L Range**	Std.	Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Trip	Qualifiers (+/-)
Chloromethane	11.9-28.1		6.2-25.0			121		ok		
Bromomethane	11.7-28.3		8.0-19.9			85				
Dichlorodifluoromethane	--		--			--				
Vinyl Chloride	13.7-26.3		13.5-24.6			58				
Chloroethane	15.4-24.6		14.5-22.0			41				
Methylene chloride	15.5-24.5		12.2-22.3			59				
Trichlorofluoromethane	13.3-26.7		12.2-23.3			63				
1,1-Dichloroethene	12.6-27.4		13.7-23.8			54				
1,1-Dichloroethane	16.8-23.2		14.5-21.4			38				
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0			49				
Chloroform	15.0-25.0		14.8-21.7			38				
1,2-Dichloroethane	14.3-25.7		15.8-23.6			40				
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8			44				
Carbon tetrachloride	13.7-26.3		14.5-22.7			44				
Bromodichloromethane	15.2-24.8		16.1-26.7			49				
1,2-Dichloropropane	14.8-25.2		15.4-24.6			46				
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Trichloroethene	15.4-24.6		13.5-22.3			49				
Dibromochloromethane	13.1-26.9		14.7-28.4			64				
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5			46				
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Bromoform	14.7-25.3		11.1-23.2			70				
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4			75				
Tetrachloroethene	14.0-26.0		13.3-24.5			59				
Chlorobenzene	14.4-25.6		14.2-23.4			49				
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8			76				
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1			87				
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6			44				
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0			70				

*The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
**The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

602_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 602/8020

Case No:

SDG No: 33425

Table 1
Purgeable Aromatics Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/29/92

Matrix: water

Instrument ID: GC-3600

Method Blank ID: VBLKW

Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
	AR	All	Aqueous Range (83-115)*	Soil Range (88-119)*		
GWWG130						
GWWG64						
GWWG65						

Compound	QC Check Std., ug/L Range**		Spike Recovery, %R & RPD: Range**	MS	MSD	RPD	Actual	Blanks: Lab	Trip	Qualifiers (+/-)
tert-Butylmethyl ether	--		--			--				
Benzene	15.4-24.6		14.4-23.5			48				
Toluene	15.5-24.5		15.2-23.7			43				
Chlorobenzene	16.1-23.9		15.7-22.4			35				
Ethylbenzene	12.6-27.4		13.9-24.3			54				
Total xylenes	--		--			--				
1,3-Dichlorobenzene	14.5-25.5		15.4-22.9			39				
1,2-Dichlorobenzene	13.6-26.4		14.4-23.9			50				
1,4-Dichlorobenzene	13.9-26.1		14.5-22.8			44				

* Ranges are based on project-specific control charts (average recovery +/- 3 SD).
** The QC check std. and MS/MSDs use a nominal 20 ug/L spike concentration.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: October 27, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33463
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". Fifteen soil samples were analyzed for ICP metals. Four soil samples were analyzed for TCLP metals. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	ICP METALS PREP	ICP METALS ANA	TCLP METALS PREP ANA
SOSW10100	7/23/92	7/30	8/5	8/11	NA
SOSW10101	7/23/92	7/30	8/5	8/11	NA
S0SW10102	7/23/9S	7/30	8/5	8/11	NA
SOSW1276	7/23/92	7/30	8/5	8/11	NA
SOSW1277	7/23/92	7/30	8/5	8/11	NA
S0SW1278	7/23/92	7/30	8/5	8/11	NA
SOSW1279	7/23/92	7/30	8/5	8/11	NA
SOSW1280	7/23/92	7/30	8/5	8/11	NA
SOSW1281	7/23/92	7/30	8/5	8/11	NA
SOSW1282	7/23/92	7/30	8/5	8/11	NA
SOSW1283	7/23/92	7/30	8/5	8/11	NA
SOSW1284	7/23/92	7/30	8/5	8/11	NA
SOSW1285	7/23/92	7/30	8/5	8/11	NA
SOSW1286	7/23/92	7/30	8/5	8/11	NA
SOSW1287	7/23/92	7/30	8/5	8/11	NA
SOSW10103	7/23/92	7/30	NA		8/6
SOSW10104	7/23/92	7/30	NA		8/6
SOSW10105	7/23/92	7/30	NA		8/6
W1276TC	7/23/92	7/30	NA		8/6

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs).

Blanks-Acceptable

Cobalt was found below the CRDL in the continuing calibration blanks associated with samples analyzed on 8/11/92 and no data qualifiers were applied.

ICP Interference Check Sample-Acceptable

The laboratory analyzed these check samples and met acceptance criteria.

Laboratory Control Sample-Acceptable

The LCS's met the EPA control limits for soils, and no data qualifiers were required.

Duplicate Sample Analysis

Duplicate sample analysis, sample SOSW10102, met acceptance criteria and no data qualifiers were required.

Spike Sample Analysis

Spiked sample analysis, sample SOSW10102 exceeded acceptance criteria for Manganese and associated sample data have been qualified as estimated (J4) for Manganese reported as detected due to a potentially high bias.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

TCLP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs).

Blanks-Acceptable

The initial calibration blank, continuing calibration blanks and the method blank were within acceptance limits.

Laboratory Control Sample-Acceptable

The LCS's met the EPA control limits for soils, and no data qualifiers were required.

Duplicate Sample Analysis

Duplicate sample analysis, sample SOSW10103, met acceptance criteria and no data qualifiers were required.

Spike Sample Analysis

Spiked sample analysis, sample SOSW10103 met acceptance criteria and no data qualifiers were required.

Sample Analysis-Acceptable

All sample analysis met technical requirements. Sample SOSW10103 exceeded the regulatory limits for Lead.

Laboratory Contact

Dates of TCLP analysis were requested and received from the laboratory.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. A work order change memo indicates the TCLP analysis on these samples was cancelled on 8/3/92.

Case No:
SDG No: 33463

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/31/92

Instrument ID: 5700

Method Blank ID: VBLKS1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SOSW10100								
SOSW10101								
SOSW10102								
SOSW1276								
SOSW1277								
SOSW1278								
SOSW1279								
SOSW1280								
SOSW1281								
SOSW1282								

Date: 7/31/92 Time: 1620 1653

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. %RSD>30 (20.5)	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010					4		J1,UJ1/-	
Acetone 0.010					6		↓	I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)		22.0					JL/UJ2	#
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010					3		J1,UJ1/-	
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s): None

Case No:
SDG No: 33463

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/31/92

Instrument ID: 5700

Method Blank ID: VBLK51

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
505W1283								
505W1284								
505W1286								
505W1287								

Date: 7/31/92 Time: 1620 1653

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010					54		51,051/-	
Acetone 0.010					6		"	IS#1
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)		22.0					52/052	
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010					3		31,051/-	
Tetrachloroethene 0.200								IS#3
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (*)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Case No: _____
SDG No: 33463

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/3/92

Instrument ID: 5700

Method Blank ID: VBLKS2

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SDSW1285								

Date: 7/31/92 Time: 0940 1105

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)				28.5			J2/UJ2	
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010								
Methylene Chloride 0.010					3			
Acetone 0.010								IS#1
Carbon Disulfide 0.010				29.4			J2/UJ2	
1,1-Dichloroethene 0.100 (°)		22.0		30.8			↓	
1,1-Dichloroethane 0.200 (#)				26.3				
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								IS#3
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (°)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

Case No:

SDG No: 33463

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
SOSW10100				105	96	93	
SOSW10101				106	96	98	
SOSW10102				105	96	98	
SOSW1276				102	97	93	
SOSW1277				112	91	92	
SOSW1278				105	94	91	
SOSW1279				105	98	89	
SOSW1280				113	88	96	
SOSW1281				105	94	93	
SOSW1282				102	98	94	
SOSW1283				102	97	92	
SOSW1284				106	92	88	
SOSW1285				104	96	94	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172	99	59-172	96	22	3	
Trichloroethene		62-137	90	62-137	92	24	2	
Benzene	AR	66-142	91	66-142	90	21	1	
Toluene	(*)(AR)	59-139	94	59-139	93	21	1	
Chlorobenzene	(#)(AR)	60-133	96	60-133	97	21	1	

Case No:

SDG No: 33463

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
Sample Identifier:	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
SOSW1286				104	90	88	
SOSW1287				105	92	85	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

	SPCC (#) CCC (*)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
Spike Compound:	Aromatic (AR)	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172		59-172		22		
Trichloroethene		62-137		62-137		24		
Benzene	AR	66-142		66-142		21		
Toluene	(*)(AR)	59-139		59-139		21		
Chlorobenzene	(#)(AR)	60-133		60-133		21		

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33463

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 8/13/92
Inst. ID: 5052W10100 / 5052W10101 / 5052W10102 — 2NCOS-XL
MBlnk ID: SBLKS1
Ext. Dates: 8/5/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
5052W10100																
5052W10101																
5052W10102																

Date: 8/12/92 Time: 1554 0043

Compound: SPCC (#) CCC(°) Acidic: (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (°)(A)	Ok	Ok	Ok	Ok				
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (°)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(°)					/			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(°)								
4-Chloro-3-methylphenol (A)(°)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(°)								
2,4,5-Trichlorophenol (A)								IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33463

Table 1

BNA

Analysis Date:
8/13/92

Instrument ID:
INCOS-XL

Date: 8/12/92 Time: 1554 0043

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)					37		51,451/-	
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):

	Reported as:	RT	(µg/kg, µg/L)
1.	1,3,5-Cycloheptatriene	4.98	270
2.	UNKNOWN	6.52	690
3.	2-Pentanone, 4-hydroxy-4	7.35	14000
4.	UNKNOWN	7.67	170
5.	UNKNOWN	9.27	250
6.	UNKNOWN	10.17	210
7.	UNKNOWN	11.24	210
8.	UNKNOWN	12.57	100
9.	Hexadecanoic acid	27.87	350
10.	UNKNOWN	28.91	120
11.	Cyclohexadecane	29.46	380
12.	UNKNOWN	29.56	80
13.	UNKNOWN	30.32	92

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33463

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
8/19/92		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Inst. ID:	505W1276																
INCOS-XL	505W1277																
	505W1278																
MBlnk ID:	505W1279																
SBLK51																	
Ext. Dates:																	
8/5/92																	

Date: 8/12/92 Time: 1250 0043

Compound: SPCC (#) CCC(*) / Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)	Ok	Ok						
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								I
Benzyl Alcohol (BN)								S
1,2-Dichlorobenzene (BN)								#
2-Methylphenol (A)								1
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)					/			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								I
bis(2-Chloroethoxy)methane (BN)								S
2,4-Dichlorophenol (A)								#
1,2,4-Trichlorobenzene (BN)								2
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)				-30.4			32/052	
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								I
2-Chloronaphthalene (BN)								S
2-Nitroaniline (BN)								#
Dimethyl Phthalate (BN)								3
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33463

Table 1

BNA

Analysis Date:
8/14/92

Instrument ID:
INCOS-XL

Date: 8/12/92 Time: 1250 0043

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)				-38.9			J2/UJ2	#
4-Nitrophenol (A)(#)								3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)				-27.9			J2/UJ2	#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)				-27.7	37		J12, UJ12	
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):	Reported as:	RT	(µg/kg, µg/L)
1.	1,3,5-Cycloheptatriene	4.98	270
2.	UNKNOWN	6.52	690
3.	2-Pentanone, 4-hydroxy-4-	7.35	14000
4.	UNKNOWN	7.67	170
5.	" "	9.27	250
6.	" "	10.17	210
7.	" "	11.24	210
8.	" "	12.57	100
9.	Hexadecanoic Acid	27.87	350
10.	UNKNOWN	28.91	120
11.	Cyclohexadecane	29.46	380
12.	UNKNOWN	29.56	80
13.	" "	30.32	92

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33463

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
8/17/92		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Inst. ID:	505W1277DL																
INCOS-XL	505W1280																
	505W1281																
MBlnk ID:	505W1282																
SBLK51	505W1283																
	505W1284																
Ext. Dates:	505W10100																
8/5/92																	

Date: 8/12/92 Time: 1159 0043

Compound: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (°)(A)	OK	OK	OK					
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (°)(BN)								I
Benzyl Alcohol (BN)								S
1,2-Dichlorobenzene (BN)								#
2-Methylphenol (A)								1
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(°)					✓			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								I
bis(2-Chloroethoxy)methane (BN)								S
2,4-Dichlorophenol (A)								#
1,2,4-Trichlorobenzene (BN)								2
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(°)							—	
4-Chloro-3-methylphenol (A)(°)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)				-40.8			J2/UJ2	
2,4,6-Trichlorophenol (A)(°)								
2,4,5-Trichlorophenol (A)				-27.3			J2/UJ2	I
2-Chloronaphthalene (BN)								S
2-Nitroaniline (BN)								#
Dimethyl Phthalate (BN)								3
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base-IRP Project

Method 625/8270

Case No:

SDG No: 33463

Table 1

BNA

Analysis Date:
8/17/92

Instrument ID:
INCOS-XL

Date: 8/12/92 Time: 1159 0043

Compound: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (°)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(°)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(°)					37		J, UJ/-	
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(°)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(°)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(°)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):

	Reported as:	RT	(µg/kg, µg/L)
1.	1,3,5-Cycloheptatriene	4.98	270
2.	UNKNOWN	6.52	690
3.	2-Pentanone, 4-hydroxy-4-	7.35	14000
4.	UNKNOWN	7.67	170
5.	" "	9.27	250
6.	" "	10.17	210
7.	" "	11.24	210
8.	" "	12.57	100
9.	Hexadecanoic Acid	27.57	350
10.	UNKNOWN	28.91	120
11.	Cyclohexadecane	29.46	380
12.	Unknown	29.56	80
13.	" "	30.32	92

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33463

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 8/18/92
Inst. ID: INCOS-XL
MBlnk ID: SBLK1
Ext. Dates: 8/5/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
SOSW1285																
SOSW1286																
SOSW1287																

Date: 8/12/92 Time: 0835 0043

Compound: SPCC (#) CCC(*) / Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)	Ok	Ok					
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							IS#1
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							IS#2
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)				-31.4			J2/U52
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)				-31.4			J2/U52 IS#3
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

Site: Shemya Air Force Base-IRP Project

Method 625/8270
Case No:
SDG No: 33463

Table 1

BNA

Analysis Date:
8/18/92

Instrument ID:
INCOS-XL

Date: 8/12/92 Time: 0835 0043

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)				-26.8			J2/U52	
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)				-27.5			J2/U52	
Pentachlorophenol (A)(*)					37		J1, U51/-	
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):

	Reported as:	RT	(µg/kg, µg/L)
1.	1,3,5-Cycloheptatriene	4.98	270
2.	UNKNOWN	6.52	690
3.	2-Pentanone, 4-hydroxy-4-	7.35	14000
4.	UNKNOWN	7.67	170
5.	" "	9.27	250
6.	" "	10.17	210
7.	" "	11.24	210
8.	" "	12.57	100
9.	Hexadecanoic acid	27.87	350
10.	UNKNOWN	28.91	120
11.	Cyclohexadecane	29.46	380
12.	UNKNOWN	29.56	80
13.	" "	30.32	92

SVOA_MSD.SL | Site: Shemya Air Force Base--IRP Project | Method 625/8270

Case No:

SDG No: 33463

Table 2-SOIL. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	
SOSW10100	86	81	72	80	77	81	77	78	
SOSW10101	78	86	84	78	66	77	73	70	
SOSW10102	80	86	84	82	73	92	77	66	
SOSW1276	66	70	71	65	58	64	64	58	
SOSW1277	68	76	71	69	61	80	67	44	
SOSW1277DL	75	75	87	80	71	74	74	50	
SOSW1278	74	82	76	73	63	80	71	54	
SOSW1279	66	73	73	67	58	70	64	54	
SOSW1280	78	76	73	77	69	72	71	42	
SOSW1281	74	72	76	75	63	62	68	56	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90	68	26-90	60	35	12	
2-Chlorophenol	25-102	71	25-102	63	50	12	
1,4-Dichlorobenzene	28-104	65	28-104	62	27	5	
N-Nitroso-di-n-propylamine	41-126	83	41-126	74	38	11	
1,2,4-Trichlorobenzene	38-107	79	38-107	71	23	11	
4-Chloro-3-methylphenol	26-103	79	26-103	67	33	16	
Acenaphthene	31-137	80	31-137	73	19	9	
4-Nitrophenol	11-114	121	11-114	117	50	3	
2,4-Dinitrotoluene	28-89	91	28-89	76	47	18	
Pentachlorophenol	17-109	93	17-109	73	47	24	
Pyrene	35-142	98	35-142	84	36	15	

SVOA_MSD.SL Site: Shemya Air Force Base--IRP Project Method 625/8270

Case No:_____

SDG No: 33463

Table 2-SOIL. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	Qualifiers (+/-)
SOSW1282	72	74	78	73	64	67	67	48	
SOSW1283	77	76	83	79	68	73	71	49	
SOSW1284	75	71	82	78	66	75	72	45	
SOSW1285	69	71	75	69	62	74	65	46	
SOSW1286	71	73	78	71	63	71	65	46	
SOSW1287	66	66	78	66	60	71	59	44	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90		26-90		35		
2-Chlorophenol	25-102		25-102		50		
1,4-Dichlorobenzene	28-104		28-104		27		
N-Nitroso-di-n-propylamine	41-126		41-126		38		
1,2,4-Trichlorobenzene	38-107		38-107		23		
4-Chloro-3-methylphenol	26-103		26-103		33		
Acenaphthene	31-137		31-137		19		
4-Nitrophenol	11-114		11-114		50		
2,4-Dinitrotoluene	28-89		28-89		47		
Pentachlorophenol	17-109		17-109		47		
Pyrene	35-142		35-142		36		

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33463

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed:

Instrument ID:

Method Blank ID:

Extraction Date:

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SOSW10101								
	SOSW1276								
	SOSW1272								
	SOSW1278								
	SOSW1279								
	SOSW1280								
	SOSW1281								
	SOSW1282								
	SOSW1283								
	SOSW10100								

Column: DB-5 Primary / Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		8/20	8/20	8/21	8/21				
Time									
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor	20.17								52/52
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NC	NC	NC	NC	NC	NC			R2
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

NC = NOT CALIBRATED

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33465

Confirmation

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed:

Instrument ID:

3400

Method Blank ID:

PBLK

Extraction Date:

8/4/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SOSW10101								
	SOSW1276								
	SOSW1277								
	SOSW1278								
	SOSW1279								
	SOSW1280								
	SOSW1281								
	SOSW1282								
	SOSW1283								
	SOSW10100								

Column: Primary / Secondary Compound: DB-1701	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
Cont. Cal. date/month		8/20	8/20	8/21	8/21				
Time									
alpha-BHC									
beta-BHC	24.53								
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I	20.26								
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD	27.11								
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NC	NC	NC	NC	NC				
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

NC = NOT CALIBRATED

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33463

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/20/92

Instrument ID: 3400

Method Blank ID: PBLK

Extraction Date: 8/4/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
SOIL	505W10102								
	505W1284								
	505W1285								
	505W1286								
	505W1287								

Column: DB 5 Primary / Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
Cont. Cal. date/month		8/20	8/20	8/21	8/21			ok	
Time									
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor	20.17								
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NC	NC	NC	NC	NC	NC			
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

NC = NOT CALIBRATED

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33463

Confirmation

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/20/92

Instrument ID: 3400

Method Blank ID: PBLK1

Extraction Date: 8/4/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	SOSW1010 2								
	SOSW1284								
	SOSW 1285								
	SOSW 1286								
	SOSW 1287								

Column: Primary / Secondary Compound: DB-1701	Calibrations: Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		8/20	8/20	8/21	8/21				
Time									
alpha-BHC									
beta-BHC	24.53								
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I	20.26								
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD	27.11								
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NC	NC	NC	NC	NC	NC			
Aroclor-1016 (PCB-1016)	↓	↓	↓	↓	↓				
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

Case No:

SDG No: 33463

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	~~Aqueous~~ TCX	~~Soil~~ DCB	
(Acceptance Range, %R):	~~(24-154)~~ 60-150	~~(20-150)~~ 60-150	
SOSW10100	69	109	
SOSW10101	69	98	
SOSW10102	68	92	
SOSW1276	68	89	
SOSW1277	66	102	
SOSW1278	67	99	
SOSW1279	70	103	
SOSW1280	73	110	
SOSW1281	69	96	
SOSW1282	71	97	
SOSW1283	66	105	
SOSW1284	60	94	
SOSW1285	65	83	

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	87	46-127	90	50	3.7	
Heptachlor	35-130	93	35-130	97	31	4.0	
Aldrin	34-132	90	34-132	93	43	3.3	
Dieldrin	31-134	94	31-134	98	38	4.0	
Endrin	42-139	98	42-139	102	45	4.3	
4,4'-DDT	23-134	83	23-134	88	50	5.1	

Case No:

SDG No: 33463

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	Aqueous	Soil	
(Acceptance Range, %R):	(24-154)	(20-150)	
SOSW1286	70	114	
SOSW1287	69	96	

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127		46-127		50		
Heptachlor	35-130		35-130		31		
Aldrin	34-132		34-132		43		
Dieldrin	31-134		31-134		38		
Endrin	42-139		42-139		45		
4,4'-DDT	23-134		23-134		50		

MEMORANDUM

DATE: October 29, 1992

TO: Task Monitor, USEPA Region 10

FROM: Cindy Lucangioli, CH2M Hill, Data Reviewer

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SDG 33463
Laboratory: CH2M Hill, Redding, CA

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Fifteen soil samples were analyzed for GC/MS VOA's, BNA's, Pesticide/PCB's and total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness - Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	BNA EXT	BNA ANAL	Pest/PCB EXT	Pest/PCB ANA
SOSW10100	7/23/92	7/30	7/31	8/5	8/14	8/4	8/21
SOSW10101	7/23/92	7/30	7/31	8/5	8/14	8/4	8/20
SOSW10102	7/23/92	7/30	7/31	8/5	8/14	8/4	8/21
SOSW1276	7/23/92	7/30	7/31	8/5	8/14	8/4	8/20
SOSW1277	7/23/92	7/30	7/31	8/5	8/14	8/4	8/20
SOSW1278	7/23/92	7/30	7/31	8/5	8/14	8/4	8/20
SOSW1279	7/23/92	7/30	7/31	8/5	8/14	8/4	8/20
SOSW1280	7/23/92	7/30	7/31	8/5	8/17	8/4	8/20
SOSW1281	7/23/92	7/30	7/31	8/5	8/17	8/4	8/20
SOSW1282	7/23/92	7/30	7/31	8/5	8/17	8/4	8/20
SOSW1283	7/23/92	7/30	7/31	8/5	8/17	8/4	8/20
SOSW1284	7/23/92	7/30	7/31	8/5	8/17	8/4	8/21
SOSW1285	7/23/92	7/30	8/3	8/5	8/18	8/4	8/21
SOSW1286	7/23/92	7/30	8/1	8/5	8/18	8/4	8/21
SOSW1287	7/23/92	7/30	8/1	8/5	8/18	8/4	8/21
SOSW1277DL	7/23/92	7/30	NA	8/5	8/17	NA	

GC/MS VOLATILE ORGANIC ANALYSIS

GC/MS Tune

All Bromofluorobenzene tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

Methylene chloride, Acetone and 2-Hexanone were detected in the method blanks associated with sample data. Please reference the GC/MS VOA tables for a summary of contaminants and concentrations detected in the method blanks and trip blank associated with sample data.

Surrogates - Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate - Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client soil sample and met acceptance criteria. No data qualifiers were required.

Internal Standard Performance - Acceptable

Internal standard performance met acceptance criteria. No data qualifiers were required.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC) - Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliveriable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

The case narrative indicated only that Methylene chloride and Acetone were method blank contaminants, while the Form I for VBLKS1 indicates 2-Hexanone was also a contaminant. Clarification has been requested from the laboratory.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for descrepancies.

Semivolatile Organic Analysis

GC/MS Tune

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated

(J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

Pentachlorophenol was detected in the method blank associated with sample data. Please reference the GC/MS BNA tables for a summary of contaminants and concentrations detected in the method blank associated with sample data.

Surrogates - Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample S0SW10102. Percent recovery acceptance criteria was exceeded for 4-Nitrophenol and 2,4-Dinitrotoluene. Please reference the MS/MSD summary tables for percent recoveries and RPD's. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance - Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC) - Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliveriable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for descrepancies.

Pesticide/PCB Analysis

Calibration

The laboratory indicated analysis was performed using 8080 criteria. No initial calibration was performed for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254. Aroclor 1260 was calibrated 8/17/92. All calibrated analytes had relative percent differences less than 20%.

All continuing calibration criteria %D's were met. No continuing calibration (single point) was analyzed for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Target compounds reported in associated sample data for which no calibration was performed, have been rejected (R). Please reference the 8080 tables for a summary of data qualifers associated with sample data.

DDT and Endrin breakdown information was not provided.

Contract Required Detection Limits (CROL) - Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks - Acceptable

No contaminants were reported as detected in the method blank.

Surrogates - Acceptable

The surrogate Decachlorobiphenyl was below the suggested

range for several samples. Samples having poor surrogate performance have been qualified as estimated (J4/UJ4). Please reference the Pesticide/PCB tables for a summary of affected samples and data qualifiers.

Matrix Spike/Matrix Spike Duplicate - Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) associated with soil sample data was analyzed on sample SOSW10102 and met acceptance criteria. No data qualifiers were required due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification - Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

The surrogates were reported from the confirmation column rather than the primary column. A resubmission has been requested (and received) regarding surrogate recoveries from the primary column.

Data Use and Overall Assesment

Sample data is considered to be usable as qualified by the reviewer. No calibration was performed for the multipeak compounds Toxaphene and the aroclors with the exception of aroclor 1260. Lack of calibration resulted in the rejection of affected sample data. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8080 analysis.

TOTAL PETROLEUM HYDROCARBONS

Calibration

A single point calibration standard was analyzed for the

initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration.

Blanks - Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Spike Analysis - Acceptable

Sample SOSW10101 was used for a TPH spike and met acceptance criteria. No data qualifiers were required.

Duplicate Analysis - Acceptable

Sample SOSW10101 was used for a TPH duplicate and met acceptance criteria. No data qualifiers were required.

Laboratory Control Sample - Acceptable

The LCS met acceptance criteria and no data qualifiers were required.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. No other discrepancies were noted.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 25, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33464
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Twelve soil samples were analyzed for GC/MS VOA's, BNA's, Pesticide/PCB's and total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	BNA EXT ANAL	Pest/PCB EXT ANA	TPH
SOSW489	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW490	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW491	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW492	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW493	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW494	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW495	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW496	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW497	7/25/92	7/30	8/3	8/7 8/19	8/7 8/19	8/16
SOSW498	7/25/92	7/30	8/4	8/7 8/20	8/7 8/20	8/16
SOSW4100	7/25/92	7/30	8/3	8/7 8/20	8/7/8/20	8/16
SOSW499	7/25/92	7/30	NA	NA	NA	8/16
SOFT2128	7/23/92	7/30	NA	NA		*
SOFT2134	7/25/92	7/30	NA	NA		*
SOFT2136	7/25/92	7/30	NA	NA		*
SOSW492RE	7/25/92	7/30	8/3	NA	8/7 8/21	NA
SOSW498RE	7/25/92	7/30	8/4	NA	8/7 8/21	NA
SOSW489RE	7/25/92	7/30	NA	NA	8/7 8/21	NA
SOSW490RE	7/25/92	7/30	NA	NA	8/7 8/21	NA
SOSW496RE	7/25/92	7/30	NA	NA	8/7 8/21	NA
SOSW4100RE	7/25/92	7/30	NA	NA	8/7 8/21	NA

*Listed in case narrative but not present in data package.

GC/MS Volatile Organic Analysis

GC/MS Tune

All Bromofluorobenzene tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

Methylene chloride and Acetone were detected in the method blanks associated with sample data. Please reference the GC/MS VOA tables for a summary of contaminants and concentrations detected in the method blanks and trip blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client soil sample associated with SDG: 33463 and met acceptance criteria. No data qualifiers were required.

Internal Standard Performance

Internal standard performance met acceptance criteria with the exception of samples SOSW492 and SOSW498 which were below acceptance criteria for chlorobenzene-d5. These samples have been qualified as estimated (J4/UJ4) due to poor internal standard performance.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data with the exception of those identified with a "B" qualifier which have been qualified as undetected and estimated due to blank contamination (UJ1).

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were found.

Semivolatile Organic Analysis

GC/MS Tune

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

No target compounds were reported as detected and no data qualifiers were required.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample S0SW10102. Percent recovery acceptance criteria was exceeded for 4-Nitrophenol and 2,4-Dinitrotoluene. Please reference the MS/MSD summary tables for percent recoveries and RPD's. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance-Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for discrepancies.

Pesticides/PCBs

Calibration

The laboratory indicated analysis was performed using 8080 criteria. No initial calibration was performed for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, and in some instances aroclor 1254. Aroclor 1260 was calibrated 8/17/92. All calibrated analytes had relative percent differences less than 20%.

All continuing calibration criteria %D's were met. No continuing calibration (single point) was analyzed for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254, and in some instances aroclor 1260. Target compounds reported in associated sample data for which no calibration was performed, have been rejected (R). Please reference the 8080 tables for a summary of data qualifiers associated with sample data.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

No contaminants were reported as detected in the method blank.

Surrogates-Acceptable

The surrogate Decachlorobiphenyl was below the suggested range for several samples. Samples having poor surrogate performance have been qualified as estimated (J4/UJ4). Please reference the Pesticide/PCB tables for a summary of affected samples and data qualifiers.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) associated with soil sample data was analyzed on sample SOSW10102 and met acceptance criteria. No sample data have been qualified due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

The surrogates were reported from the confirmation column rather than the primary column. A resubmission has been requested and received regarding surrogate recoveries from the primary column.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No calibration was performed for the multipeak compounds Toxaphene and the aroclors with the exception of aroclor 1260. Lack of calibration resulted in the rejection of affected sample data. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8080 analysis.

Total Petroleum Hydrocarbons

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration.

Blanks-Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Spike Analysis-Acceptable

Sample SOSW10101 was used for a TPH spike and met acceptance criteria. No data qualifiers were required.

Duplicate Analysis-Acceptable

Sample SOSW10101 was used for a TPH duplicate and met acceptance criteria. No data qualifiers were required.

Laboratory Control Sample-Acceptable

The LCS met acceptance criteria and no data qualifiers were required.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No other discrepancies were noted.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 25, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33464
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". Eleven soil samples were analyzed for ICP metals. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	ICP METALS PREP	ICP METALS ANA
SOSW489	7/25/92	7/30	8/5	8/11
S0SW490	7/25/92	7/30	8/5	8/11
SOSW491	7/25/9S	7/30	8/5	8/11
SOSW492	7/25/92	7/30	8/5	8/11
SOSW493	7/25/92	7/30	8/5	8/11
S0SW494	7/25/92	7/30	8/5	8/11
S0SW495	7/25/92	7/30	8/5	8/11
SOSW496	7/25/92	7/30	8/5	8/11
SOSW497	7/25/92	7/30	8/5	8/11
SOSW498	7/25/92	7/30	8/5	8/11
SOSW4100	7/25/92	7/30	8/5	8/11

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptablee

All instrument detection levels were equal to or below required detection limits (CRDLs).

Blanks

Cobalt was found below the CRDL in the continuing calibration blanks associated with samples analyzed on 8/12/92 and also in the preparation blank at 1.1 mg/kg. Associated sample data have been qualified as estimated (J1/UJ1) due to blank contamination.

ICP Interference check Sample-Acceptable

Though ICP interference check samples met acceptance criteria.

Laboratory Control Sample-Acceptable

The LCS's were within control limits.

Duplicate Sample Analysis

Duplicate sample analysis, sample SOSW489, was outside of acceptance criteria for Iron and Manganese. Associated sample data have been qualified as estimated (J4/UJ4) due to poor precision.

Spike Sample Analysis

Spiked sample analysis, sample SOSW489, exceeded acceptance criteria for Manganese. Associated sample data have been qualified as estimated (J4/UJ4) for Manganese reported as detected due to a potentially high bias.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

Case No:
SDG No: 33464

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/3/92

Instrument ID: 5100

Method Blank ID: VBLKS1

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
505W490								
505W491								
505W489								
505W492								<
505W493								
505W494								
505W495								
505W496								
505W497								
505W4100								

Date: 7/31/92 Time: 0940 1105

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. (20.5) %RSD>30	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)				28.5			JL/UJ2	
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010								
Methylene Chloride 0.010					J		J1,UJ1/-	
Acetone 0.010								IS# 1
Carbon Disulfide 0.010				29.4			JL/UJ2	
1,1-Dichloroethene 0.100 (°)		22.0		30.8			↓	
1,1-Dichloroethane 0.200 (#)				26.3				
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								IS# 2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								IS# 3
Tetrachloroethene 0.200								
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (°)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s): None

Case No:
SDG No: J3464

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/4/92

Instrument ID: 5700

Method Blank ID: VBLK57

Sample Identifier:	Hold Time Out, days AR	Hold Time Out, days All	Standards: (<,>) Surrogates S1	S2	S3	ISTDs IS1	IS2	IS3
505W498								<
505W498 RE								<

Date: 7/31/92 Time: 0913 1021

Compound:	SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. %RSD>30 (20.5)	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane	0.010 (#)				29.1			J2/U52	
Bromomethane	0.100								
Vinyl Chloride	0.100 (*)								
Chloroethane	0.010								
Methylene Chloride	0.010					9		J1,U51/-	
Acetone	0.010					9		↓	I
Carbon Disulfide	0.010				28.5			J2/U52	S
1,1-Dichloroethene	0.100 (*)		22.0		27.2			↓	#
1,1-Dichloroethane	0.200 (#)				26.2			↓	1
1,2-Dichloroethene (total)	0.010								
Chloroform	0.200 (*)								
1,2-Dichloroethane	0.100								
2-Butanone	0.010								
1,1,1-Trichloroethane	0.100								
Carbon Tetrachloride	0.100								
Vinyl Acetate									
Bromodichloromethane	0.200								
1,2-Dichloropropane	0.010 (*)								I
cis-1,3-Dichloropropene	0.200								S
Trichloroethene	0.300								#
Dibromochloromethane	0.100								2
1,1,2-Trichloroethane	0.100								
Benzene	0.500 AR								
trans-1,3-Dichloropropene	0.100								
Bromoform	0.100 (#)								
4-Methyl-2-Pentanone	0.010								
2-Hexanone	0.010								I
Tetrachloroethene	0.200								S
1,1,2,2-Tetrachloroethane	0.500 (#)								#
Toluene	0.400 (*)(AR)								3
Chlorobenzene	0.500 (#)(AR)								
Ethylbenzene	0.100 (*)(AR)								
Styrene	0.300 (AR)								
Xylenes (total)	0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s): None

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
SOSW4100				103	80	86	
SOSW489				124	76	89	
SOSW490				113	83	91	
SOSW491				108	98	93	
SOSW492				106	85	93	
SOSW492RE				109	80	89	
SOSW493				110	88	88	
SOSW494				104	82	85	
SOSW495				103	85	87	
SOSW496				100	85	85	
SOSW497				97	87	88	
SOSW498				121	75	90	
SOSW498RE				110	74	87	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172		59-172		22		
Trichloroethene		62-137		62-137		24		
Benzene	AR	66-142		66-142		21		
Toluene	(*)(AR)	59-139		59-139		21		
Chlorobenzene	(#)(AR)	60-133		60-133		21		

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 334621

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 8/19/92
Inst. ID: 4600
MBlnk ID: SBLKS1
Ext. Dates: 8/7/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
SOSW497																
SOSW489																
SOSW490																
SOSW491																
SOSW492																
SOSW493																
SOSW494																
SOSW495																
SOSW496																
SOSW498																
SOSW4100																

Date: 8/17/92 Time: 1422 1601

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	20.5 %RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)					ok			
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)					✓			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)		22.6		-30.4			32/052	
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base-IRP Project

Method 625/8270

Case No:

SDG No: 33464

Table 1

BNA

Analysis Date:
8/19/92

Instrument ID:
4600

Date: 8/17/92 Time: 1422 1601

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)				-30.8			52/452	
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

TICs Reported In Blank(s):

	Reported as:	RT	(µg/kg, µg/L)
1.	Acetic Acid, 1-methylalkyl-ε	6.32	3700
2.	UNKNOWN	7.13	48000
3.	Heptane, 2,3-Dimethyl	7.22	580
4.	UNKNOWN	7.33	580
5.	Hydroperoxide, 1,1-Dimethyl	7.80	170
6.	UNKNOWN	8.62	1800
7.	UNKNOWN	8.90	220
8.	UNKNOWN	9.29	600
9.	Ethanol, 2,2'-OXYBIS-, DIACE	10.49	170
10.	2,3-Butanedione	11.29	940
11.	1-Undecene, 5-Methyl	18.14	140
12.	Hexadecanoic Acid	23.65	380
13.	Decane, 1-Fluoro	29.49	1000

SVOA_MSD.SL

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No: 33464

Table 2-SOIL. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Soil Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120	30-115	18-137	24-113	25-121	19-122	20-130	20-130	
SOSW4100	80	83	64	92	85	101	84	75	
SOSW489	76	84	66	85	81	98	82	72	
SOSW490	83	90	76	92	87	105	90	78	
SOSW491	77	82	76	85	80	97	81	73	
SOSW492	79	86	67	88	81	104	85	72	
SOSW493	74	84	63	84	76	105	80	65	
SOSW494	71	75	56	79	75	93	74	66	
SOSW495	78	82	64	88	85	100	84	71	
SOSW496	77	86	67	88	83	106	83	72	
SOSW497	89	102	86	106	101	122	100	88	
SOSW498	69	75	65	80	70	97	72	58	

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
SOIL SAMPLES							
Phenol	26-90	66	26-90	59	35	8	
2-Chlorophenol	25-102	69	25-102	64	50	8	
1,4-Dichlorobenzene	28-104	59	28-104	56	27	5	
N-Nitroso-di-n-propylamine	41-126	77	41-126	71	38	8	
1,2,4-Trichlorobenzene	38-107	75	38-107	68	23	10	
4-Chloro-3-methylphenol	26-103	84	26-103	74	33	13	
Acenaphthene	31-137	77	31-137	69	19	11	
4-Nitrophenol	11-114	122	11-114	104	50	16	
2,4-Dinitrotoluene	28-89	79	28-89	70	47	12	
Pentachlorophenol	17-109	102	17-109	89	47	14	
Pyrene	35-142	88	35-142	74	36	17	

PEST_CAL.FRM | Site: Shemya Air Force Base--IRP Project | Method 608/8080

Case No:
SDG No: 33462

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/19/92

Instrument ID: 3400

Method Blank ID: PBLK51

Extraction Date: 8/7/92

Matrix	Sample Identifier:	Hold Time Out, days Ext.	Anal.	Last IND Standard before Analysis 1	2	3	4	5	6
	SOSW489								
	SOSW490								
	SOSW491								
	SOSW492								
	SOSW493								
	SOSW494								
	SOSW495								
	SOSW496								
	SOSW497								
	SOSW498								

Column: DB-5 Primary / Secondary Compound:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
Cont. Cal. date/month		8/19	8/19	8/20	8/20	8/21	8/21		
Time									
alpha-BHC		OK	OK	OK	OK				
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor	20.17								J2/UJ2
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene	NO Cal								JZ/R
Aroclor-1016 (PCB-1016)	NO Cal								JZ/R
Aroclor-1221 (PCB-1221)	↓								↓
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)	↓								↓
Aroclor-1260 (PCB-1260)						OK	OK		
~~Dibutylchlorendate (DBC)~~ TCX Surr. DCB									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:
SDG No: 33464

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/19/92

Instrument ID: 3400

Method Blank ID: PBLKS1

Extraction Date: 8/7/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
		Ext.	Anal.	1	2	3	4	5	6
	505W4100								
	505W489RE								
	505W490RE								
	505W496RE								
	505W497RE								
	505W498RE								
	505W4100RE								

Column: DB-5 Primary / Secondary Compound:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		8/19	8/19	8/20	8/20	8/21	8/21		
Time									
alpha-BHC		Ok	Ok	Ok	Ok				
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor	20.17								J2/UJ2
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)						Ok	Ok		
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_MSD.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:

SDG No: 33464

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	~~Aqueous~~ TCX	~~Soil~~ DCB	
(Acceptance Range, %R):	~~60-150 (24-154)~~	~~60-150 (20-150)~~	
SOSW489	70	~~9~~98	
SOSW490	73	~~98~~107	
SOSW491	70	~~10~~113	
SOSW492	66	~~11~~94	
SOSW493	69	~~9~~97	
SOSW494	61	~~9~~71	
SOSW495	72	~~7~~103	
SOSW496	71	~~10~~93	
SOSW497	75	43	
SOSW498	65	~~9~~103	
30SW4100	69	~~10~~108	
SOSW489 RE	87	~~10~~114	
SOSW490 RE	86	~~11~~117	

~~Surrogate = Dibutylchlorendate (DBC)~~ Surrogate TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123	~~87~~	56-123		14		
Heptachlor	40-131	~~89~~	40-131		20		
Aldrin	40-120	~~83~~	40-120		22		
Dieldrin	52-126	~~92~~	52-126		18		
Endrin	56-121	~~95~~	56-121		21		
4,4'-DDT	38-127	~~8~~	38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	87	46-127	91	50	4.6	
Heptachlor	35-130	89	35-130	94	31	4.4	
Aldrin	34-132	83	34-132	86	43	4.5	
Dieldrin	31-134	92	31-134	91	38	0.8	
Endrin	42-139	95	42-139	100	45	5.2	
4,4'-DDT	23-134	84	23-134	88	50	4.1	

Case No:

SDG No: 33464

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	Aqueous	Soil	
(Acceptance Range, %R):	(24-154)	(20-150)	
SOSW496RE	87	~~114~~ 114	
SOSW497RE	92	114 119	
SOSW498RE	79	114 118	
SOSW4100RE	83	119	

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127		46-127		50		
Heptachlor	35-130		35-130		31		
Aldrin	34-132		34-132		43		
Dieldrin	31-134		31-134		38		
Endrin	42-139		42-139		45		
4,4'-DDT	23-134		23-134		50		

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Kathy Wakeman, Data Reviewer

DATE: November 27, 1992

SUBJECT: Organic and Inorganic Analysis Data Validation Report
Client: Shemya No.: 33795
Lab: CH2M HILL, Redding, California; and Montgomery, Alabama

PROJECT: BOI31941.RT.RD

A review of the organic (VOA and TPH) analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work," 3/90. Two soil samples were analyzed for volatile organic compounds by CH2M HILL in Redding, California, and two water samples were analyzed for total petroleum hydrocarbons by CH2M HILL in Montgomery, Alabama. The conclusions presented herein are based on the information provided for the review.

Volatile Organic Analysis

Timeliness-Acceptable

The soil samples were analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Sample Number	Date Sampled	Time Sampled	Date Received	Date Analyzed
SW151	8/30/92	1445	9/2/92	9/9/92
Cooler 31	8/30/92	1000	9/2/92	9/9/92

GC/MS Tune

Tune data were not provided in this package.

Calibration-Acceptable

The initial calibration met RRF criteria. Bromoform exceeded the % RSD criteria (26.78%). None of the TCL compounds were detected in the samples nor in the associated method blank. Therefore, the CRQL values for Bromoform were qualified "UJ2" (estimated quantitation limit).

The continuing calibration exhibited %Ds greater than 25% for Chloromethane (78.50%) and Bromoform (36.25%). Neither of these compounds was detected in the samples or associated method blank. The CRQL values for these compounds were qualified "UJ2" (estimated quantitation limit).

Blanks-Acceptable

No target compounds were detected in the method blanks.

Contract Required Quantitation Limit (CRQL)-Acceptable

The analyte CRQLs are equal to CLP CRQLs.

Surrogates-Acceptable

All surrogate recoveries were within the required control limits.

Control Matrix Spike

The matrix spike was performed on sample 33489005 from a different SDG. The data were not reported in this data package.

Internal Standard Performance

Internal standard performance data were not provided in this data package.

Field Duplicates

No field duplicates were identified in this group of samples.

TCL Compound Identification-Acceptable

Level II deliverables do not require mass spectra to be provided in the data package. It must be assumed that the laboratory has correctly identified the TCL compounds.

Tentatively Identified Compounds (TIC)-Acceptable

Mass spectra are not required for a Level I deliverable. It must be assumed that the laboratory has correctly identified any TIC compounds.

Laboratory Contact

No laboratory contact was made regarding the volatile organic analysis.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Total Petroleum Hydrocarbons

Timeliness-Acceptable

The samples were analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Sample Number	Date Sampled	Time Sampled	Date Received	Date Analyzed
PS2520.5	8/27/92	1135	9/2/92	9/18/92
WGW25.0	8/27/92	0955	9/2/92	9/18/92

Initial Calibration-Acceptable

All initial calibration standards met technical requirements for percent recovery.

Continuing Calibration-Acceptable

All continuing calibration standards met technical requirements for percent recoveries.

Instrument Detection Limits-Acceptable

The instrument detection limits were equal to or below the detection limits expected for this method.

Blanks-Acceptable

No TPH contaminants were detected in any of the blanks.

Laboratory Control Sample-Acceptable

The percent recovery for the laboratory control sample was within criteria.

Duplicate Sample Analysis-Acceptable

A non-client sample was used for duplicate sample analysis. The RPD's were within the control limits.

Spiked Sample Analysis-Acceptable

A non-client sample was used for the spike sample analysis. The percent recovery was within control limits.

Sample Analysis-Acceptable

All sample analysis met technical requirements as evaluated from the data provided.

Laboratory Contact

No laboratory contact was made.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Case No: _____
SDG No: 33795

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/9

Instrument ID: GC-3700

Method Blank ID: Method Blank W

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
SW1251								
Cooler 51								

Date: _____ Time: _____ _____

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal. 7/10 & 7/13 RRF<.05	Initial Cal. %RSD>~~30~~ 20.3	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks and ND Meth.	Blanks and ND Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)				78.5			J2/UJ2	
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010								
Acetone 0.010								IS#
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								2
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)		26.78		36.25			J2/UJ2	
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								IS#
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (*)(AR)								3
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:
SDG No: 33795

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/9/92

Instrument ID: GC-3700

Method Blank ID: MethodBlank W

Matrix: water	Hold Time Out, days		Standards: (<,>)			
			Surrogate Recoveries, %R		ISTD, %R	
Sample Identifier:	AR	All	Aqueous Range (65-127)*	Soil Range (67-136)*		Qualifiers
SW1251						
Cooler 31						

Compound	QC Check Std., ug/L		Spike Recovery, %R & RPD					Blanks		Qualifiers
	Range**	Std.	Range**	MS	MSD	RPD	Actual	all N/D Lab	all N/D Trip	(+/-)
Chloromethane	11.9-28.1		6.2-25.0			121				
Bromomethane	11.7-28.3		8.0-19.9			85				
Dichlorodifluoromethane	–		–			–				
Vinyl Chloride	13.7-26.3		13.5-24.6			58				
Chloroethane	15.4-24.6		14.5-22.0			41				
Methylene chloride	15.5-24.5		12.2-22.3			59				
Trichlorofluoromethane	13.3-26.7		12.2-23.3			63				
1,1-Dichloroethene	12.6-27.4		13.7-23.8			54				
1,1-Dichloroethane	16.8-23.2		14.5-21.4			38				
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0			49				
Chloroform	15.0-25.0		14.8-21.7			38				
1,2-Dichloroethane	14.3-25.7		15.8-23.6			40				
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8			44				
Carbon tetrachloride	13.7-26.3		14.5-22.7			44				
Bromodichloromethane	15.2-24.8		16.1-26.7			49				
1,2-Dichloropropane	14.8-25.2		15.4-24.6			46				
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Trichloroethene	15.4-24.6		13.5-22.3			49				
Dibromochloromethane	13.1-26.9		14.7-28.4			64				
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5			46				
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Bromoform	14.7-25.3		11.1-23.2			70				
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4			75				
Tetrachloroethene	14.0-26.0		13.3-24.5			59				
Chlorobenzene	14.4-25.6		14.2-23.4			49				
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8			76				
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1			87				
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6			44				
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0			70				

* The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
** The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

Case No:

SDG No: 33795

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
Method Blank W							
5W1257							
Cooler 31							

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1.1-Dichloroethene	(*)	59-172		59-172		22		
Trichloroethene		62-137		62-137		24		
Benzene	AR	66-142		66-142		21		
Toluene	(*)(AR)	59-139		59-139		21		
Chlorobenzene	(#)(AR)	60-133		60-133		21		

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 27, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33880 and 33864
Lab: CH2M HILL, Redding, California: Enseco-Cal

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Four soil samples were analyzed for GC/MS volatile organics, GCMS semivolatile organics, Pesticide/PCB's, and one water samples for GC 8010/8020 VOAs for SDG 33864. Twenty three soil samples were analyzed for GC/MS volatile organics, GCMS semivolatile organics,and Pesticide/PCB's for SDG 33880. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	GC/MS BNA	8010/ 8020 VOA	PEST/PCB EXT ANAL
SW12W17.73	9/3/92	9/10	9/16	9/16 10/8	NA	9/17 10/7
SW12W32003	9/5/92	9/10	9/16	9/16 10/8	NA	9/17 10/7
WGW4	9/6/92	9/10	NA	NA	9/16	NA
SW10W215.0	9/7/92	9/10	9/16	9/16 10/8	NA	9/17 10/7
SW10W18.0	9/5/92	9/10	9/16	9/16 10/8	NA	9/17 10/7

Timeliness

Sample ID	Date Sampled	VTSR	GC/MS VOA	GC/MS BNA	PEST/PCB EXT ANAL
FT1T12.0	9/8/92	9/12	9/23 +1	9/16 10/11	9/17 10/8
FT1T14.8	9/8/92	9/12	9/18	9/16 10/13	9/17 10/8
FT1T21.0	9/8/92	9/12	9/22	9/16 10/13	9/17 10/7
FT1T25.9	9/8/92	9/12	9/18	9/16 10/11	9/17 10/7
FT1T30.5	9/8/92	9/12	9/23 +1	9/16 10/13	9/17 10/7
FT1T36.7	9/8/92	9/12	9/22	9/16 10/11	9/17 10/7
FT1W219.5	9/8/92	9/12	9/21	9/16 10/11	9/17 10/7
FT2B20.5	9/9/92	9/12	9/22	9/16 10/13	9/17 10/8
FT2B20.5D	9/9/92	9/12	9/24	9/21 10/13	9/21 10/14
FT2B25.0	9/9/92	9/12	9/23	9/21 10/13	9/21 10/14
FT2B210.0	9/9/92	9/12	9/22RE 9/23	9/21 10/13	9/21 10/14 9/25 10/15RE +1
FT1W114.0	9/8/92	9/12	9/24	9/21 10/13	9/21 10/14
FT1W2ER	9/9/92	9/12	9/16	9/15 10/12	N9/16 1015
FT1T46.1	9/9/92	9/12	9/21	9/21 10/13	9/21 10/14
FT1T41.2	9/9/92	9/12	9/21	9/21 10/13	9/21 10/14
FT1T41.2D	9/9/92	9/12	9/22 RE 9/23	10/9 10/16 +16	9/17 10/7
FT1W316.5	9/9/92	9/12	9/16	9/16 10/10	9/17 10/8
FT2B30.5	9/9/92	9/12	9/18	9/16 10/13 9/16 10/9	9/17 10/8
FT2B35.0	9/9/92	9/12	9/18	9/16 10/8	9/17 10/8
FT2B40.5	9/9/92	9/12	9/18	9/16 10/11	9/17 10/8
FT2B45.0	9/9/92	9/12	9/18	9/16 10/11	9/17 10/8
FT2B60.5	9/9/92	9/12	9/18	9/21 10/10	9/17 10/8
FT2B65.0	9/9/92	9/12	9/18	9/16 10/13	9/17 10/08

Volatile Organic Analysis

GC/MS Tune-Acceptable

All BFB tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

The following samples had target compound values reported which exceeded linear range of the instrument with no subsequent dilution: FT2B30.5, FT2B45.0, FT2B60.5, FT2B35.ODL. Associated sample data have been qualified for those compounds exceeding linear range as estimated (J2).

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

Methylene chloride and Toluene were detected in the method blank. Associated sample data has have been qualified as estimated or undetected and estimated (J1/UJ1) due to method blank contamination.

Surrogates

Surrogate recoveries were outside of acceptance criteria for several samples (see Table 1). Associated sample data have been qualified J4/UJ4 due to surrogate criteria exceedance.

Matrix Spike/Matrix Spike Duplicate

Matrix Spike/Matrix Spike Duplicate (MS/MSD) were analyzed on sample FT2B35.0 and had 5/5 RPD and 5/10 percent recoveries outside acceptance limits, sample SW12W320 had 1/5 RPD and 1/10 percent recovery outside acceptance limits and sample FT2B25.0 met acceptance criteria. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance

Internal standard areas were outside of control limits for samples: FT1T41.2D and FT2B210.0 and their reextractions. Please reference the table 1's for which internal standards were outside of control limits. Associated sample data has been qualified as estimated (J4/UJ4) only for those compounds affected by poor internal standard performance.

Field Duplicates

Samples FT1T41.2 and its duplicate FT1T41.2D as well as FT2B20.5 and its duplicate FT2B20.5D were identified as field duplicates associated with these SDG's. Target compounds reported as detected and RPD's have been calculated as shown below.

The positive results for target compounds in the duplicate pair(s) and the reviewer calculated RPD value for each analyte are reported below. Data is not qualified by the reviewer based on the field duplicate results.

Analyte	Sample No.___ Amount (ug/L)	Sample No.FT1T41.2D Amount (ug/L)	RPD
Toluene	3700J	160	NC
Ethylbenzene	14,000W	3	NC
Xylene	2,200J	17	NC

NC = Not Caiculable

Analyte	Sample No.FT2B20.5 Amount (ug/L)	Sample No.FT1T41.2D Amount (ug/L)	RPD
Xylene	19	1,300U	NC

NC = Not Calculable

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, only TIC's identified with a "B" flag have been qualified as untected and estimated (UJ1) due to blank contamination in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were found.

Semivolatile Organic Analysis

GC/MS Tune-Acceptable

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks

Di-n-butylphthalate were detected in the method blank. Associated sample data has have been qualified as estimated or undetected and estimated (J1/UJ1) due to method blank contamination.

Surrogates

Surrogate recoveries were diluted out in two samples and since no other data was provided to confirm acceptable surrogate recoveries (a lesser dilution) sample data have been qualified J4/UJ4 due to surrogate criteria exceedance.

Matrix Spike/Matrix Spike Duplicate

Matrix Spike/Matrix Spike Duplicate (MS/MSD) were analyzed on sample FT1W114.0 and had 1/5 RPD and 1/10 percent recoveries outside acceptance limits. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance-Acceptable

Internal standard performance met acceptance criteria. No data qualifiers were required.

Field Duplicates

Samples FT1T41.2 and its duplicate FT1T41.2D as well as FT2B20.5 and its duplicate FT2B20.5D were identified as field duplicates associated with these SDG's. Target compounds reported as detected and RPD's have been calculated as shown below.

The positive results for target compounds in the duplicate pair(s) and the reviewer calculated RPD value for each analyte are reported below. Data is not qualified by the reviewer based on the field duplicate results.

Analyte	Sample No.FT1741.2 Amount (ug/L)	Sample No.FT1T41.2D Amount (ug/L)	RPD
Di-n-butylphthalate	140	3,900	NC
Chrysene	150	3,900	NC
bis(2-ethylhexyl)phthalate	92	3,900	NC
Benzo(a)pyrene	140	3,900	NC
Naphthalene	390U	46J	NC
Butylbenzyl phthalate	390U	130J	NC

NC = Not Calculable

Analyte	Sample No.FT2B20.5 Amount (ug/L)	Sample No.FT2B20.5D Amount (ug/L)	RPD
bis(2-ethylheyxl)phthalate	700J	1,400J	NC

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, only TIC's identified with a "B" flag have been qualified as

untected and estimated (UJ1) due to blank contamination in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were found.

Pesticides/PCB Analysis

Calibration-Acceptable

The laboratory indicated analysis was performed using 3/90 SOW criteria. All calibration criteria were met. Please reference the 8080 tables for a summary of data qualifiers associated with sample data.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

No contaminants were reported as detected in the method blank.

Surrogates

Surrogate were outside of acceptance limits for the majority of the samples. Surrogate recoveries below acceptance criteria and above 10% have been qualified as estimated (J4/UJ4). Those samples that exhibit surrogate recoveries below 10% have been qualified as estimated (J4)for detected compounds and rejected (R) for non-detects. Please reference the Pesticide/PCB tables for a summary of affected samples and data qualifiers.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample FFT2B30.5 and exceeded acceptance criteria for all compounds resulting in data qualification for this sample as estimated (J4/UJ4). MS/MSD recoveries for FT2B210.0 met acceptance criteria. Please reference the QC summary table for reported values.

Field Duplicates

The positive results for target compounds in the duplicate pair(s) and the reviewer calculated RPD value for each analyte are reported below. Data is not qualified by the reviewer based on the field duplicate results.

Analyte	Sample No.FT1T41.2 Amount (ug/L)	Sample No.FT1T41.2 Amount (ug/L)	RPD
All U			

Analyte	Sample No. FT2B20.5 Amount (ug/L)	Sample No.FT2B20.5D Amount (ug/L)	RPD
All U			

TCL Compound Identification-Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were found.

GC Volatile Organic Analysis 8010/8020

Calibration

The laboratory indicated analysis was performed using SW-846, Revision 1 criteria. Response factors less than 0.05 %RSD's greater than 20% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria were met. RRF's less than 0.05 and %D's greater than 15% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to one part per billion.

Blanks-Acceptable

No contaminants were reported as detected in the method blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were reported as acceptable, however acceptance limits were not provided. No data qualifiers were applied based on the lack of surrogate recovery criteria.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample FT2W17.0 and met acceptance criteria. No data qualifiers were required.

Internal Standard Performance-Acceptable

Internal standard performance met acceptance criteria. No data qualifiers were required.

Field Duplicates-Acceptable

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Since no analytes were reported as detected in the sample, second column confirmation was not required.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No QC check standard was reported as analyzed by the laboratory and therefore sample analysis was non-compliant with the method. Sample data have been qualified as estimated (J4/UJ4) due to the lack of a QC check standard.

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed:
9/22/92

Instrument ID:
HP #1

Method Blank ID:
VBLK
W1626

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FTIT21.0								
FTIT36.7								
FTIT41.20			>	>	>		<	<
FTZB20.5								

Date: 9/22/92 Time: 1846 1953

Compound:	SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
		RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip	(+/-)	
Chloromethane	0.010 (#)								
Bromomethane	0.100								
Vinyl Chloride	0.100 (*)								
Chloroethane	0.010		48.9		-34.4			J/UJ	
Methylene Chloride	0.010		20.5			8		J, UJ/UJ	
Acetone	0.010		65.0		32.6			J/UJ	I
Carbon Disulfide	0.010								S
1,1-Dichloroethene	0.100 (*)								#
1,1-Dichloroethane	0.200 (#)								
1,2-Dichloroethene (total)	0.010								
Chloroform	0.200 (*)								
1,2-Dichloroethane	0.100								
2-Butanone	0.010								
1,1,1-Trichloroethane	0.100								
Carbon Tetrachloride	0.100								
Vinyl Acetate									
Bromodichloromethane	0.200								
1,2-Dichloropropane	0.010 (*)								I
cis-1,3-Dichloropropene	0.200								S
Trichloroethene	0.300								#
Dibromochloromethane	0.100								2
1,1,2-Trichloroethane	0.100								
Benzene	0.500 AR								
trans-1,3-Dichloropropene	0.100								
Bromoform	0.100 (#)								
4-Methyl-2-Pentanone	0.010								
2-Hexanone	0.010								
Tetrachloroethene	0.200								I
1,1,2,2-Tetrachloroethane	0.500 (#)			0.497					S
Toluene	0.400 (*)(AR)					1		-, UJ/-	#
Chlorobenzene	0.500 (#)(AR)								3
Ethylbenzene	0.100 (*)(AR)								
Styrene	0.300 (AR)								
Xylenes (total)	0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/23/92

Instrument ID: HP#1

Method Blank ID: VBLK#3 W1627

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FTIT12.0		+1						
FTIT30.5		+1						
FTIT41.2 D RE			>	>				<

Date: 9/22/92 Time: 1354 1440

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010		48.9		-28.2			J/UJ	
Methylene Chloride 0.010		20.5			8		J,UJ/UJ	
Acetone 0.010		65.0		26.9			J/UJ	IS#1
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010				35.0			J/UJ	
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010				43.4			J/UJ	
2-Hexanone 0.010								
Tetrachloroethene 0.200								IS#3
1,1,2,2-Tetrachloroethane 0.500 (#)			0.455					
Toluene 0.400 (*)(AR)					2		-,UJ/-	
Chlorobenzene 0.500 (#)(AR)					2		-,UJ/-	
Ethylbenzene 0.100 (AR)								
Styrene 0.300 (AR)				42.2			J/UJ	
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/16/92

Instrument ID: HP3

Method Blank ID: VBLK20

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FTIW316.5								
SW1@W18.0								
SW1OW215.0								
SW12W17.7								
SW12W320								

Date: 9/15/92 Time: 1216 1306

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)				-26.4			J/UJ	
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)				-29.4			J/UJ	
Chloroethane 0.010								
Methylene Chloride 0.010		38.4			5		J/UJ	
Acetone 0.010		25.4		35.1			J/UJ	IS#
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010				41.1			J/UJ	
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								2
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010				37.9			J/UJ	
2-Hexanone 0.010				43.9			↓	
Tetrachloroethene 0.200								IS#
1,1,2,2-Tetrachloroethane 0.500 (#)								3
Toluene 0.400 (*)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/KG, µg/L)

TICs Reported in Blank(s):

Case No:_____
SDG No:_____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/18/92

Instrument ID: HP43

Method Blank ID: VBLK25

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT1T 14.8								
FT1T 25.9								
FT2B 30.5								
FT2B 35.0								
FT2B 40.5								
FT2B 45.0								
FT2B 60.5								
FT2B 65.0								

Date: 9/17/92 Time: 1125 1426

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)				-32.4			J/UJ	
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)				-31.2			J/UJ	
Chloroethane 0.010				-30.7			J/UJ	
Methylene Chloride 0.010		39.2			270		J-BE/UJ	
Acetone 0.010								I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								#
1,1-Dichloroethane 0.200 (#)								1
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)					360		J, UJ/—	#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)					300		J, UJ/—	

Reported as: F,T (ug/kg, ug/L)

TICs Reported in Blank(s):

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/21/92

Instrument ID: HP#3

Method Blank ID: VBLK20

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FTIW219.5				>				
FT2B35.0 DL								
FT2B65.0 DL								

Date: 9/17/92 Time: 1040 1153

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip	(+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010		3			340			
Methylene Chloride 0.010		39.2		26.3	340		J, UJ/UJ	
Acetone 0.010								IS#
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (°)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								IS#
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								IS#
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (°)(AR)								
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

TICs Reported in Blank(s): Reported as: RT (µg/kg, µg/L)

Case No: _____
SDG No: _____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/16/92

Instrument ID: HP 1

Method Blank ID: VBLK62

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT1WZER								

Date: 7/2/92 Time: 1106 1152

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010		39.2			12		J12/U12	
Acetone 0.010								I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								#
1,1-Dichloroethane 0.200 (#)								1
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010				27.4			J2/U2	
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010				28.6			J2/U2	
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)			1367				J2	S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:_____
SDG No:_____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/22/92

Instrument ID: HP 1

Method Blank ID: VBLK

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT2B210.0RE			<	>				<

Date: 9/22/92 Time: 1900 1953

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)							J2/UJ2	
Chloroethane 0.010		48.9		-34.4				
Methylene Chloride 0.010					8		J1,UJ1/-	
Acetone 0.010		65.0		32.6			J2/UJ2	IS#
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								2
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								IS#
Tetrachloroethene 0.200								
1,1,2,2-Tetrachloroethane 0.500 (#)			.497		1		J1,UJ1/-	3
Toluene 0.400 (*)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No: _____
SDG No: _____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/23/92

Instrument ID: HP #1

Method Blank ID: VBLK3

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT2B210.0			<	>				
FT2B25.0								

Date: 9/22/92 Time: 1354 1440

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010		48.9		-28.2			J2/UJ2	
Methylene Chloride 0.010					8		J1, UJ1/-	
Acetone 0.010		65.0		26.9			J2/UJ2	IS#1
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (°)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010				35.0			J2/UJ2	
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)				43.4			J2/UJ2	
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								IS#3
1,1,2,2-Tetrachloroethane 0.500 (#)			1455					
Toluene 0.400 (°)(AR)					2		J1, UJ1/-	
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (°)(AR)				42.2			J2/UJ2	
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed:

9/24/92

Instrument ID:

HP#2

Method Blank ID:

VBLK2

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FTIW114.0								

Date: 9/23/92 Time: 1118 1223

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010		40.8			6		J12, UJ2	UJ2
Acetone 0.010				-63.9			J2/UJ2	I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								#
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100				-27.4			J2/UJ2	
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Case No:_____
SDG No:_____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/21/92

Instrument ID: HP 3

Method Blank ID: VBLK 20

Sample Identifier:	Hold Time Out, days AR	Hold Time Out, days All	Standards: (<,>) Surrogates S1	S2	S3	ISTDs IS1	IS2	IS3
FTIT41.2			<	<	<			
FTIT46.1			<	<	<			

Date: 9/17/92 Time: 1640 1153

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal. RRF<.05	Initial Cal. %RSD>30	Continuing Cal. RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)
Chloromethane 0.010 (#)							
Bromomethane 0.100							
Vinyl Chloride 0.100 (°)							
Chloroethane 0.010							
Methylene Chloride 0.010		39.2		26.3	340		J12,U3J2) U2
Acetone 0.010							
Carbon Disulfide 0.010							
1,1-Dichloroethene 0.100 (°)							
1,1-Dichloroethane 0.200 (#)							
1,2-Dichloroethene (total) 0.010							
Chloroform 0.200 (°)							
1,2-Dichloroethane 0.100							
2-Butanone 0.010							
1,1,1-Trichloroethane 0.100							
Carbon Tetrachloride 0.100							
Vinyl Acetate							
Bromodichloromethane 0.200							
1,2-Dichloropropane 0.010 (°)							
cis-1,3-Dichloropropene 0.200							
Trichloroethene 0.300							
Dibromochloromethane 0.100							
1,1,2-Trichloroethane 0.100							
Benzene 0.500 AR							
trans-1,3-Dichloropropene 0.100							
Bromoform 0.100 (#)							
4-Methyl-2-Pentanone 0.010							
2-Hexanone 0.010							
Tetrachloroethene 0.200							
1,1,2,2-Tetrachloroethane 0.500 (#)	.486		.496				
Toluene 0.400 (°)(AR)							
Chlorobenzene 0.500 (#)(AR)							
Ethylbenzene 0.100 (°)(AR)							
Styrene 0.300 (AR)							
Xylenes (total) 0.300 (AR)							

IS #1
IS #2
IS #3

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No:
SDG No:

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/24/92

Instrument ID: HP#3

Method Blank ID: VBLK29

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT2B20.5								

Date: 9/17/92 Time: 1153 1239

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers (+/-)	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010		39.2		44.1	7		J12, UJ12 /	UJ2
Acetone 0.010								IS#
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (*)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								2
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								IS#
Tetrachloroethene 0.200								
1,1,2,2-Tetrachloroethane 0.500 (#)	.486		.419					
Toluene 0.400 (*)(AR)					1		J1, UJ1 /	3
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

VOA_MSD.FRM

Site: Shemya Air Force Base--IRP Project

Method 624/8240

Case No:_____

SDG No:_____

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
FT1741-2 D				146	120	123	J4/J5
FT1741-2 DRE				169			↓
FT1W219.5					114		↓

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172	77	59-172	29 #	22	91 #	
Trichloroethene		62-137	97	62-137	50 #	24	64 #	
Benzene	AR	66-142	103	66-142	16 #	21	146 #	
Toluene	(*)(AR)	59-139	381 #	59-139	254 #	21	40 #	
Chlorobenzene	(#)(AR)	60-133	127	60-133	71	21	57 #	

VOA_MSD.FRM

Site: Shemya Air Force Base-IRP Project

Method 624/8240

Case No:_____

SDG No:_____

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172	117	59-172	113	22	3	
Trichloroethene		62-137	119	62-137	114	24	4	
Benzene	AR	66-142	126	66-142	140	21	11	
Toluene	(*)(AR)	59-139	120	59-139	149	21	22#	
Chlorobenzene	(#)(AR)	60-133	131	60-133	125	21	5	

Case No:_____

SDG No:_____

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	
~~FBLK~~							
FT2B210.0				67	115		
FT2B210.0 RE				46	179		
FFIT41.2				0 D	0 D	0 D	
FTIT46.1				0 D	0 D	0 D	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (*) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(*)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(*)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(*)	59-172		59-172		22		
Trichloroethene		62-137		62-137		24		
Benzene	AR	66-142		66-142		21		
Toluene	(*)(AR)	59-139		59-139		21		
Chlorobenzene	(#)(AR)	60-133		60-133		21		

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/12/92	FTWZBR																
Inst. ID:																	
F19																	
MBlnk ID:																	
SBLKW1																	
Ext. Date:																	
9/15/92																	

Date: 8/21/92 Time: 1553 1747

Compounds: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)					clr		
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)				-28.2			J2/UJ2
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)				-36.1			J2/UJ2
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS #1

IS #2

IS

Site: Onemya Air Force Base-IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/12/92

Instrument ID:
F19

Date: 8/21/92 Time: 1553 1747

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30 (>20?5)	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)								3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)				-31.9			J2/UJ2	
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)				-39.6			J2/UJ2	I
3,3'-Dichlorobenzidene (BN)				-72.7			↓	S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)				-39.3			J2/UJ2	5
Chrysene (BN)								...
Di-n-Octyl Phthalate (BN)(*)		25.7		-64.1			J2/UJ2	
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
10/13/92		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Inst. ID:	FF1T41.2																
F21	FF1T46.1																
	FF1W114.0																
MBlnk ID:	FT2B20.5D																
SBLK2S	FT2B210.0																
	FT2B25.0																
Ext. Dates:																	
9/21/92																	

Date: 10/5/92 Time: 0746 0843

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)							
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)				-28.8			J2/UJ2
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS#1

IS#2

IS#3

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/13/92

Instrument ID:
F21

Date: 10/8/92 Time: 0746 0843

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/13/92																	
Inst. ID:	FT1T30.5																
F19																	
MBlnk ID:																	
SBlk1A																	
Ext. Dates:																	
9/16/92																	

Date: 8/21/92 Time: 1703 1757

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)	ok	ok						
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(*)					/			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								IS#3
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1

BNA

Analysis Date:
10/13/92

Instrument ID:
F19

Date: 8/21/92 Time: 1703 1751

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)	ok	ok						I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/11/92	FT2B40.5																
Inst. ID:	FT2B45.0																
FZ1	FT1T12.0																
	FT1T25.9																
MBlnk ID:	FT1T36.7																
SBLK1	FT1W219.5																
Ext. Dates:																	
9/16/92																	

Date: 10/8/92 Time: 1458 0136

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (*)(A)	Ok	Ok						
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (*)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)				28.2			JQ/UJQ	
2-Nitrophenol (A)(*)					/			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(*)								
4-Chloro-3-methylphenol (A)(*)								
2-Methylnaphthalene (BN)				-36.1			JQ/UJQ	
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(*)								
2,4,5-Trichlorophenol (A)								IS
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Otis Air Force Base-IRP Project

Method 625/8270
Case No:
SDG No:

Table 1

BNA

Analysis Date:
10/11/92
Instrument ID:
F21

Date: 10/8/92 Time: 1458 0136

Compounds: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)	ok	ok						I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)				-31.9	940		JQ/UJQ	
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)				-39.6			JQ/UJQ	I
3,3'-Dichlorobenzidene (BN)				-72.7			↓	S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)				-39.3			JQ/UJQ	5
Chrysene (BN)								...
Di-n-Octyl Phthalate (BN)(*)				-64.1			JQ/UJQ	
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base-IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
10/13/92		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Inst. ID:	FTIT14.8																
F19	FTIT21.0																
	FT2B30.5																
MBlnk ID:	FT2B20.5																
SBlk1A	FT2B65.0			D	D	D	D	D	D	D	D						
Ext. Dates:																	
7/16/92																	

Date: 8/21/92 Time: 1553 1751

Compound: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (°)(A)	Ok	ok					
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (°)(BN)							I
Benzyl Alcohol (BN)							S
1,2-Dichlorobenzene (BN)							#
2-Methylphenol (A)							1
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)				-28.5			JQ/UJQ
Isophorone (BN)				-33.3			↓
2-Nitrophenol (A)(°)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							I
bis(2-Chloroethoxy)methane (BN)							S
2,4-Dichlorophenol (A)							#
1,2,4-Trichlorobenzene (BN)							2
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(°)							—
4-Chloro-3-methylphenol (A)(°)							
2-Methylnaphthalene (BN)				-32.2			JQ/UJQ
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(°)							
2,4,5-Trichlorophenol (A)							I
2-Chloronaphthalene (BN)							S
2-Nitroaniline (BN)				-25.7			JQ/UJQ
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

Site: Shemya Air Force Base-IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/13/92

Instrument ID:
F19

Date: 8/21/92 Time: 1553 1757

Compounds: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)	OK	OK						IS # 3
Acenaphthene (*)(BN)								
2,4-Dinitrophenol (A)(#)				30.7			JQ/UJQ	
4-Nitrophenol (A)(#)				-27.0			↓	
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								IS # 4
4-Nitroaniline (BN)								
4,6-Dinitro-2-Methylphenol (A)								
N-Nitrosodiphenylamine (BN)(*)								
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)				-38.0	970		JB/UJB	
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)				-41.6			JQ/UJQ	IS # 5
3,3'-Dichlorobenzidene (BN)				-57.0			↓	
Benzo(a)anthracene (BN)								
bis(2-ethylhexyl)phthalate (BN)				-40.7			JQ/UJQ	
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)				-70.5			JQ/UJQ	
Benzo(b)fluoranthene (BN)								IS # 6
Benzo(k)fluoranthene (BN)								
Benzo(a)pyrene (BN)(*)								
Indeno(1,2,3-cd)pyrene (BN)								
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/8/92	SW12W17-7																
Inst. ID:	SW12W320																
F21	SW10W2150																
	SW10W18-0																
MBlnk ID:	FT2B35.0			D	D	D	D	D	D	D	D						
SOIL1																	
Ext. Dates:																	
9/16/92																	

Date: 10/8/92 Time: 2100 0136

Compound: SPCC (#) CCC(°) / Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
Phenol (°)(A)	ok	ok	ok	ok				
bis (2-Chloroethyl)ether (BN)								
2-Chlorophenol (A)								
1,3-Dichlorobenzene (BN)								
1,4-Dichlorobenzene (°)(BN)								IS#1
Benzyl Alcohol (BN)								
1,2-Dichlorobenzene (BN)								
2-Methylphenol (A)								
bis(2-Chloroisopropyl)ether (BN)								
4-Methylphenol (A)								
N-Nitroso-Dipropylamine (BN)(#)								
Hexachloroethane (BN)								
Nitrobenzene (BN)								
Isophorone (BN)								
2-Nitrophenol (A)(°)					/			
2,4-Dimethyl Phenol (A)								
Benzoic Acid (A)								IS#2
bis(2-Chloroethoxy)methane (BN)								
2,4-Dichlorophenol (A)								
1,2,4-Trichlorobenzene (BN)								
Naphthalene (BN)								
4-Chloroaniline (BN)								
Hexachlorobutadiene (BN)(°)								
4-Chloro-3-methylphenol (A)(°)								
2-Methylnaphthalene (BN)								
Hexachlorocyclopentadiene (BN)(#)								
2,4,6-Trichlorophenol (A)(°)								
2,4,5-Trichlorophenol (A)								IS
2-Chloronaphthalene (BN)								
2-Nitroaniline (BN)								
Dimethyl Phthalate (BN)								
Acenaphthylene (BN)								
2,6-Dinitrotoluene (BN)								

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/8/92

Instrument ID:
F21

Date: 10/8/92 Time: 2100 0136

Compound: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)	ok	ok	ok	ok				I
Acenaphthene (°)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(°)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(°)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)					940		J1,031/—	
Fluoranthene (BN)(°)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(°)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(°)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/10/92																	
Inst. ID:	FTB 60.5																
P21																	
MBlnk ID:																	
SBLKMT																	
Ext. Dates:																	
9/21/92																	

Date: 10/8/92 Time: 2100 0222

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)	ok	ok					
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS #1

IS #2

IS

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/10/92

Instrument ID:
F21

Date: 10/8/92 Time: 2100 0222

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								IS # 3
Acenaphthene (*)(BN)								
2,4-Dinitrophenol (A)(#)				53.7			J2/UJ2	
4-Nitrophenol (A)(#)								
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								IS # 4
4-Nitroaniline (BN)								
4,6-Dinitro-2-Methylphenol (A)				25.9			J2/UJ2	
N-Nitrosodiphenylamine (BN)(*)								
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								IS # 5
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								
3,3'-Dichlorobenzidene (BN)								
Benzo(a)anthracene (BN)								
bis(2-ethylhexyl)phthalate (BN)								
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								IS # 6
Benzo(b)fluoranthene (BN)								
Benzo(k)fluoranthene (BN)								
Benzo(a)pyrene (BN)(*)								
Indeno(1,2,3-cd)pyrene (BN)								
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
10/10/92																	
Inst. ID:	FT1W316.5																
FT1																	
MBlnk ID:																	
SB1K1																	
Ext. Dates:																	
9/16/92																	

Date: 10/8/92 Time: 2100 0136

Compounds: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (°)(A)	ok	ok					
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (°)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(°)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(°)							
4-Chloro-3-methylphenol (A)(°)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(°)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS #1

IS #2

IS

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/10/92

Instrument ID:
F21

Date: 10/8/92 Time: 2100 0136

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)		Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
		RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline	(BN)	Ok	Ok						I
Acenaphthene	(*)(BN)								S
2,4-Dinitrophenol	(A)(#)				53.7			J2/UJ2	#
4-Nitrophenol	(A)(#)							•	3
Dibenzofuran	(BN)								
2,4-Dinitrotoluene	(BN)								
Diethyl Phthalate	(BN)								
4-Chlorophenyl-phenylether	(BN)								
Fluorene	(BN)								I
4-Nitroaniline	(BN)								S
4,6-Dinitro-2-Methylphenol	(A)				45.7			J2/UJ2	#
N-Nitrosodiphenylamine	(BN)(*)								4
4-Bromophenyl-phenylether	(BN)								
Hexachlorobenzene	(BN)								
Pentachlorophenol	(A)(*)								
Phenanthrene	(BN)								
Anthracene	(BN)								
Di-n-Butyl Phthalate	(BN)								
Fluoranthene	(BN)(*)								
Pyrene	(BN)								
Butylbenzyl Phthalate	(BN)								I
3,3'-Dichlorobenzidene	(BN)								S
Benzo(a)anthracene	(BN)								#
bis(2-ethylhexyl)phthalate	(BN)								5
Chrysene	(BN)								
Di-n-Octyl Phthalate	(BN)(*)								
Benzo(b)fluoranthene	(BN)								I
Benzo(k)fluoranthene	(BN)								S
Benzo(a)pyrene	(BN)(*)								#
Indeno(1,2,3-cd)pyrene	(BN)								6
Dibenz(a,h)anthracene	(BN)								
Benzo(g,h,i)perylene	(BN)								

Reported as: RT (µg/kg, µg/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 10/16/92

Inst. ID: F21

MBlnk ID: SBLK5RX

Ext. Dates: 10/9/92

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
FTIT41-20	+16															

Date: 10/16/92 Time: 1154 1853

Compound: SPCC (#) CCC(°) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (°)(A)	ok	ok	ok	ok			
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (°)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(°)					✓		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(°)							
4-Chloro-3-methylphenol (A)(°)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(°)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS #1

IS #2

IS

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
10/16/92

Instrument ID:
F21

Date: 10/16/92 Time: 1154 1853

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)	ok	ok	ok	ok				I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)					140		J1, UJ1/-	
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

SVOA_MSD.AQ

Site: Shemya Air Force Base--IRP Project

Method 625/8270

Case No:_____

SDG No:_____

Table 2-AQUEOUS. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R								Qualifiers (+/-)
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	23-120 35-114	30-115 43-116	18-137 33-141	24-113 10-110	25-121 21-110	19-122 10-123	20-130 33-110	20-130 16-110	
FT2B35.0	0	0	0	0	0	0	0	0	J4/WJ4
FT2B65.0	0	0	0	0	0	0	0	0	J4

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

SPCC (#) CCC (*) Spike Compound: Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
Phenol	12-110		12-110		42		
2-Chlorophenol	27-123		27-123		40		
1,4-Dichlorobenzene	36-97		36-97		28		
N-Nitroso-di-n-propylamine	41-116		41-116		38		
1,2,4-Trichlorobenzene	39-98		39-98		28		
4-Chloro-3-methylphenol	23-97		23-97		42		
Acenaphthene	46-118		46-118		31		
4-Nitrophenol	10-80		10-80		50		
2,4-Dinitrotoluene	24-96		24-96		38		
Pentachlorophenol	9-103		9-103		50		
Pyrene	26-127		26-127		31		

PEST_CAL.FRM

Site: Shemya Air Force Base-IRP Project

Method 608/8080

Case No:

SDG No:

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/7/92

Matrix

Instrument ID: GC #2 A

Method Blank ID: PB16601

Extraction Date: ~~10/7/92~~ 9/17/92

Sample Identifier:	Hold Time Out, days Ext.	Anal.	Last IND Standard before Analysis 1	2	3	4	5	6	SS
SW10W215.0									
SW12W17-7									
SW 12W320.0									<
SW10W18.0									
FTIT21.0									
FTIT25.9									
FTIT305									<
FTIT36.7									
FTIT41.20									<
FTIW219.5									

Column: DB-608 Primary / Secondary

Compound:

	Init. Cal. %RSD>10	Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
10 Cont. Cal. date/month		7	8	9	10			OK	None
Time		2018	1259	1959	1432				
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Arocior-1016 (PCB-1016)									
Arocior-1221 (PCB-1221)									
Arocior-1232 (PCB-1232)									
Arocior-1242 (PCB-1242)									
Arocior-1248 (PCB-1248)									
Arocior-1254 (PCB-1254)									
Arocior-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No:

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/8/92

Matrix

Instrument ID: GC 42A

Method Blank ID: PBLK01

Extraction Date: 9/17/92

Sample Identifier:	Hold Time Out, days Ext.	Anal.	Last IND Standard before Analysis 1	2	3	4	5	6	SS
FT1W316.5									<
FT1T12.0									<
FT1T14.8									<
FT2B20.5									<
FT2B30.5									<<
FT2B35.0									<
FT2B40.5									<
FT2B45.0									<
FT2B65.0									<
FT2B60.5									<<

Column: DB-608 Primary / Secondary

Compound:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20% 1	2	3	4	5	6	Blank	Qualifiers (+/-)
10 Cont. Cal. date/month		7	8	9	10			OK	
Time		2018	1259	1959	1432				NONE
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL_FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No:

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/14/92

Instrument ID: GC 42A

Method Blank ID: PB1402

Extraction Date: 9/21/92

Matrix	Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis						
		Ext.	Anal.	1	2	3	4	5	6	SS
	FT1T41.2									«
	FT1T46.1									
	FT1W114.0									<
	FT2B20.5 D									«
	FT2BZ10.0									<
	FT2B25.0									

Columns: DB-608 Primary Secondary Compounds:	Calibrations: Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month									
Time								OK	
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No:

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/15/92

Matrix

Instrument ID: GC 424

Method Blank ID: PBLK2

Extraction Date: 9/25/92

Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
	Ext.	Anal.	1	2	3	4	5	6
FT20210.0 RX								

Columns: AB-608 Primary / Secondary Compounds:	Init. Cal. %RSD>10	Calibrations: Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month									
Time								OK	
alpha-BHC		OK							
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_CAL_FRM | Site: Shemya Air Force Base-IRP Project | Method 608/8080

Case No:_____

SDG No:_____

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/15/92

Instrument ID: GC42A

Method Blank ID: PBLK03

Extraction Date: 9/16/92

Matrix

Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
	Ext.	Anal.	1	2	3	4	5	6
FTIW2ER								

Column: DB-608 Primary / Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month									
Time								ok	
alpha-BHC		ok							
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_MSD.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:_____

SDG No:_____

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		
	~~TCX Aqueous~~	~~DCB Soil~~	
(Acceptance Range, %R):	~~60-150 (24-154)~~	~~60-150 (20-150)~~	Qualifiers (+/-)
FT1T12.0	53	37	J4 / UJ4
FT1T14.8	50	33	
FT1T30.5		~~51~~ 39	
FT1T41.2D		46	
FT1W316.5	55		
FT2B20.5	43	21	
FT2B30.5	53	0	J / R
FT2B35.0	53	19	J4 / UJ4
FT2B40.5	57	22	
FT2B45.0	47	23	
FT2B60.5	43	0	J4 / R
FT2B65.0	57	14	J4 / UJ4
SW12W320.0	32	51	↓

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	25	46-127	24	50	4	
Heptachlor	35-130	21	35-130	20	31	5	
Aldrin	34-132	18	34-132	18	43	0	
Dieldrin	31-134	18	31-134	18	38	0	
Endrin	42-139	17	42-139	17	45	0	
4,4'-DDT	23-134	13	23-134	16	50	-21	

Case No:_____

SDG No:_____

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		
	~~TCX Aqueous~~	~~DCB Soil~~	
(Acceptance Range, %R):	~~60-150 (24-154)~~	~~60-150 (20-150)~~	Qualifiers (+/-)
FT1T41.2	47	4	J4 / R4
FT1W114.0	43	38	
FT2B20-5D	38	6	J4 / R4
FT2B2100 RX	57		

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	62	46-127	72	50	15	
Heptachlor	35-130	61	35-130	70	31	14	
Aldrin	34-132	61	34-132	69	43	12	
Dieldrin	31-134	67	31-134	75	38	11	
Endrin	42-139	68	42-139	78	45	14	
4,4'-DDT	23-134	68	23-134	79	50	15	

TABLE 1
Volatile Qualifier Summary
Calibrations, Blanks, Holding Time, Surrogates, Internal Standards

Date Analyzed:
9/16/92 - 9/17/92

Instrument ID:
3600

Method Blank ID:
VBLK1

Sample Identifier:	Hold Time Out		Standards: (↑,↓) Surrogate			Internal (IS)		
	Ar	All	1	2	3	1	2	3
WGW4								

Init. Cal. Date: 9/8/92 Cont. Cal. Time:_____

Volatiles (Method 8010/601)	Initial Cal. RSD >20	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
Bromodichloromethane				OK			
Bromoform							
Bromomethane	23.6	-16.80					J2/UJ2
Carbon tetrachloride							
Chlorobenzene							
Chloroethane							
2-Chloroethylvinyl ether							
Chloroform							
Chloromethane							
Dibromochloromethane							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1-Dichloroethene							
1,2-Dichloropropane							
trans-1,2-Dichloroethene							
cis-1,3-Dichloropropene							
trans-1,3-Dichloroethene							
Methylene Chloride							
1,1,2,2-Tetrachloroethane	29.8						J2/UJ2
Tetrachloroethene							
1,1,1-Trichloroethane							
1,1,2-Trichloroethane							
Trichloroethene							
Trichlorofluoromethane							
Vinyl chloride							
Dichlorodifluoromethane(601)							
Dichlorodifluoromethane	-	-24.7					J2/UJ2
Dibromomethane							
trans-1,3-Dichloropropene							
1-Chlorohexane							
1,1,1,2-Tetrachloroethane							
1,2,3-Trichloropropane							
bis(2-Chloroisopropyl ether)							
cis-1,2-Dichloroethene							

TABLE 1 - continued
Volatile Qualifier Summary

Init. Cal. Date: 5/8/92 Cont. Cal. Time: _____

AROMATICS (Method 8020/602)	Initial Cal. %RSD >30	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
				OK			
Benzene							
Chlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Ethylbenzene							
Toluene							
Total Xylenes							
Bromobenzene							
Chlorotoluene							

Case No:
SDG No: 33964

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/16/92

Instrument ID: 3600

Method Blank ID: VBLK1

Matrix / Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R			Qualifiers
	AR	All	Aqueous Range* (65-127)*	Soil Range* (67-136)*	ISTD, %R	
WGW4						

Compound	QC Check Std., ug/L Range**	Std.	Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Trip	Qualifiers (+/-)
Chloromethane	11.9-28.1		6.2-25.0	98.0	97.0	121	1.0			
Bromomethane	11.7-28.3		8.0-19.9	87.5	96.5	85	7.5			
Dichlorodifluoromethane	-		-	88.0	91.0	-	3.4			
Vinyl Chloride	13.7-26.3		13.5-24.6	102	102	58	0.5			
Chloroethane	15.4-24.6		14.5-22.0	96.0	96.0	41	0			
Methylene chloride	15.5-24.5		12.2-22.3	116	120	59	3.0			
Trichlorofluoromethane	13.3-26.7		12.2-23.3	102	104	63	1.9			
1,1-Dichloroethene	12.6-27.4		13.7-23.8	98.5	96.5	54	2.1			
1,1-Dichloroethane	16.8-23.2		14.5-21.4	102	103	38	0.5			
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0	102	102	49	0			
Chloroform	15.0-25.0		14.8-21.7	101	99.0	38	2.0			
1,2-Dichloroethane	14.3-25.7		15.8-23.6	102	99.5	49	2.5			
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8	95.5	91.5	44	4.3			
Carbon tetrachloride	13.7-26.3		14.5-22.7	97.5	93.5	44	4.2			
Bromodichloromethane	15.2-24.8		16.1-26.7	99.5	99.0	49	0.5			
1,2-Dichloropropane	14.8-25.2		15.4-24.6	99.0	98.0	46	1.0			
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4	95.5	93.0	64	2.7			
Trichloroethene	15.4-24.6		13.5-22.3	99.0	98.0	49	1.0			
Dibromochloromethane	13.1-26.9		14.7-28.4	94.5	92.0	64	2.7			
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5	98.5	99.5	46	1.0			
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4	97.5	96.5	64	1.0			
Bromoform	14.7-25.3		11.1-23.2	102	105	79	3.4			
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4	97.0	102	75	4.5			
Tetrachloroethene	14.0-26.0		13.3-24.5	100	98.0	59	2.5			
Chlorobenzene	14.4-25.6		14.2-23.4	94.0	94.5	49	0.5			
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8	100	102	76	2.0			
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1	100	104	87	3.9			
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6	95.0	95.0	44	0			
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0			70				

*The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
**The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

602_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 602/8020

Case No:

SDG No: 33864

Table 1
Purgeable Aromatics Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/16/92

Instrument ID: 360

Method Blank ID: VBLK1

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
		AR	All	Aqueous Range* (83-115)*	Soil Range* (88-119)*		
	WGW4						

Compound	QC Check Std., ug/L Range**		Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Blanks Trip	Qualifiers (+/-)
tert-Butylmethyl ether	–		–			–				
Benzene	15.4-24.6		14.4-23.5	90.5	91.5	48	1.1			
Toluene	15.5-24.5		15.2-23.7	91.5	92.5	43	1.1			
Chlorobenzene	16.1-23.9		15.7-22.4	89.5	90.5	35	1.1			
Ethylbenzene	12.6-27.4		13.9-24.3	89.5	90.5	54	1.1			
Total xylenes	–		–	89.5	91.8	–	2.6			
1,3-Dichlorobenzene	14.5-25.5		15.4-22.9	86.5	95.5	39	9.9			
1,2-Dichlorobenzene	13.6-26.4		14.4-23.9	89.0	96.0	50	7.6			
1,4-Dichlorobenzene	13.9-26.1		14.5-22.8	87.0	92.5	44	6.1			

* Ranges are based on project-specific control charts (average recovery +/- 3 SD).
** The QC check std. and MS/MSDs use a nominal 20 ug/L spike concentration.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 27, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33880 and 33864
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". Four soil samples were analyzed for ICP metals and TOC for SDG 33864 and twenty three soil samples were analyzed for ICP metals and TOC for SDG 33880. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

33684

Sample ID	Date Sampled	VTSR	ICP METALS	TOC
SW12W17.73	9/3/92	9/10	9/28 9/28	NP
SW12W32003	9/5/92	9/10	9/28 9/28	NP
WGW4	9/6/92	9/10	NA	NA
SW10W215.0	9/7/92	9/10	9/28 9/28	NP
SW10W18.0	9/5/92	9/10	9/28 9/28	NP
NP = Not Provided				

Timeliness

33880

Sample ID	Date Sampled	VTSR	ICP METALS	TOC
FT1T12.0	9/8/92	9/12	9/23 9/28	NP
FT1T14.8	9/8/92	9/12	9/23 9/28	NP
FT1T21.0	9/8/92	9/12	9/23 9/28	NP
FT1T25.9	9/8/92	9/12	9/23 9/28	NP
FT1T30.5	9/8/92	9/12	9/23 9/28	NP
FT1T36.7	9/8/92	9/12	9/23 9/28	NP
FT1W219.5	9/8/92	9/12	9/23 9/28	NP
FT2B20.5	9/9/92	9/12	9/23 9/28	NP
FT2B20.5D	9/9/92	9/12	9/23 9/28	NP
FT2B25.0	9/9/92	9/12	9/23 9/28	NP
FT2B210.0	9/9/92	9/12	9/23 9/28	NP
FT1W114.0	9/8/92	9/12	9/23 9/28	NP
FT1W2ER	9/9/92	9/12	9/23 9/28	NP
FT1T46.1	9/9/92	9/12	9/23 9/28	NP
FT1T41.2	9/9/92	9/12	9/23 9/28	NP
FT1T41.2D	9/9/92	9/12	9/23 9/28	NP
FT1W316.5	9/9/92	9/12	9/23 9/28	NP
FT2B30.5	9/9/92	9/12	9/23 9/28	NP
FT2B35.0	9/9/92	9/12	9/23 9/28	NP
FT2B40.5	9/9/92	9/12	9/23 9/28	NP
FT2B45.0	9/9/92	9/12	9/23 9/28	NP
FT2B60.5	9/9/92	9/12	9/23 9/28	NP
FT2B65.0	9/9/92	9/12	9/23 9/28	NP
NP = Not Provided				

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration

Continuing standard calibration checks met acceptance criteria for percent recovery, however were non-compliant in regards to frequency. No data has been qualified on the basis of frequency noncompliance.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs), with the exception of the GFAA metals, which were within acceptance limits for analysis by ICP.

Blanks

Cobalt, silver, vanadium, zinc, aluminum, lead, and selenium were found below the CRDL in the initial and continuing calibration blanks associated with samples analyzed on 10/2/92. Associated sample data have been qualified as estimated (J1/UJ1) due to blank contamination.

ICP Interference check Sample-Acceptable

Though ICP interference check samples met acceptance criteria.

Laboratory Control Sample-Acceptable

The LCS's were within control limits.

Duplicate Sample Analysis

Duplicate sample analysis, sample FT2B65.0, was outside of acceptance criteria for chromium. Duplicate sample FT1T12.0 exceeded acceptance limits for thallium and vanadium. Duplicate sample SW12W3 met acceptance criteria. Associated sample data have been qualified as estimated (J4/UJ4) due to poor precision.

Field Duplicates

Analyte	FT1T41.2	FT1T41.2D	RPP
Al	11,300	11,200	0.2
Sb	55.3	21.6	87.6
As	21.5	36.9	52.7
Ba	39.6	155	87.4
Be	0.61	0.55	10.3
Cd	8.3	11.0	27.9
Ca	3,310	5,060	41.8
Cr	79.9	87.3	8.8
Co	18.0	30.3	50.9
Cu	193	23.8	156
Fe	132,000	142,000	7.3
Pb	671	293	78.4
Mg	8,790	7,880	11
Mn	459	530	14
Ni	111	101	9.4
K	11.90	726	48
Se	7.5U	7.2U	NC
Ag	0.23U	3.7	NC
Na	1,130	1,120	0.8
Th	13.9	68.3	132
V	86.3	98.0	13
Zn	1,320	1,110	17
Mo	14.0	11	24
Analyte	**FT2B20.5**	**FT2B20.5D**	**RPP**
Al	4,620	8,920	621
Sb	4.0U	4.0U	NC
As	7.1U	7.1U	NC
Ba	7.4	9.9	29
Be	0.25	0.25	0
Cd	0.45	0.73	47
Ca	2,860	5,400	62
Cr	3.5	7.1	68
Co	4.0	6.9	53
Cu	46.2	48.1	4.0
Fe	5,990	12,600	71
Pb	7.3U	7.3U	NC
Mg	4,990	5,960	18
Mn	271	369	31
Ni	6.0	9.5	45
K	208	349	51
Se	7.7	7.1U	NC
Ag	0.22U	0.22U	NC
Na	550	1,290	80
Th	5.4	15.4	96
V	11.7	39.6	109
Zn	20.2	29.6	38
Mo	0.88	0.88U	NC
TOC	6,330	ND	NC

ND = Not Done
NC = Not Calculated

Spike Sample Analysis

Spiked sample analysis, sample FT2B65.0 was below acceptance criteria for antimony, sample FT1T12.0 was below acceptance limits for lead, manganese and zinc, and sample SW12W3 was below criteria for antimony. Associated sample data have been qualified as estimated (J4/UJ4) for copper reported as detected due to a potentially low bias.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. Form I's and Form IV's did not have "B" code for values reported between the IDL and CRDL. The date listed on the Form X is outside of the quarterly requirement and IDL's were listed as MDL's. Form XIV indicates frequency of CCV's is non-compliant.

TOC Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery, however only a single point calibration was performed. Associated sample data have been qualified as estimated (J2/UJ2) due to insufficient calibration standards.

Continuing Calibration-Acceptable

Continuing standard calibration checks met acceptance criteria for percent recovery and frequency.

Instrument Detection Limits-Acceptable

All instrument detection levels met or were below method specific limits.

Blanks

The preparation blank, method blank, ICB and CCB's were all undetected at the reporting limit.

Laboratory Control Sample-Acceptable

The LCS's were within control limits.

Duplicate Sample Analysis

Duplicate sample analysis met criteria.

Spike Sample Analysis

Spiked sample analysis met acceptance criteria.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 27, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33895
Lab: CH2M HILL, Redding, California: Enseco - CAL

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". Seven soil samples were analyzed for GC/MS volatile organics, GC 8010/8020 VOAs, Pesticide/PCB's, and total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	8010/ 8020 VOA	PEST/PCB EXT ANAL	TPH
FT2W17.0	9/10/92	9/15	NA	9/24	NA	10/5
SW10W313.5	9/10/92	9/15	9/24	NA	NA	NA
OWAB16.5	9/11/92	9/15	NA	NA	9/21 10/16	NA
OWAB25.0	9/11/92	9/15	NA	NA	9/21 10/16	NA
OWAB35.5	9/11/92	9/15	NA	NA	9/21 10/16	NA
OWAB44.0	9/11/92	9/15	NA	NA	9/21 10/16	NA
OWAB54.0	9/11/92	9/15	NA	NA	9/21 10/16	NA

Volatile Organic Analysis

GC/MS Tune-Acceptable

All BFB tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks

Methylene chloride was detected in the method blank. Associated sample data has have been qualified as estimated or undetected and estimated (J1/UJ1) due to method blank contamination.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample SW10W313 and met acceptance criteria. No sample data have been qualified due to MS/MSD performance.

Internal Standard Performance-Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, only TIC's identified with a "B" flag have been qualified as untected and estimated (UJ1) due to blank contamination in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. See laboratory contact for discrepancies.

GC Volatile Organic Analysis 8010/8020

Calibration

The laboratory indicated analysis was performed using SW-846, Revision 1 criteria. Response factors less than 0.05 %RSD's greater than 20% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria were met. RRF's less than 0.05 and %D's greater than 15% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to one part per billion.

Blanks-Acceptable

No contaminants were reported as detected in the method blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were reported as acceptable, however acceptance limits were not provided. No data qualifiers were applied based on the lack of surrogate recovery criteria.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample FT2W17.0 and met acceptance criteria. No data qualifiers were required.

Internal Standard Performance-Acceptable

Internal standard performance met acceptance criteria. No data qualifiers were required.

Field Duplicates-Acceptable

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Since no analytes were reported as detected in the sample, second column confirmation was not required.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No QC check standard was reported as analyzed by the laboratory and therefore sample analysis was non-compliant with the method. Sample data have been qualified as estimated (J4/UJ4) due to the lack of a QC check standard.

Pesticide/PCB Analysis

Calibration-Acceptable

The laboratory indicated analysis was performed using 3/90 SOW criteria. All calibration criteria were met. Please reference the 8080 tables for a summary of data qualifiers associated with sample data.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptablee

No contaminants were reported as detected in the method blank.

Surrogates

Surrogate were below the suggested range for samples OWAB44.0 AND OWAB54.0. Samples having poor surrogate performance have been qualified as estimated (J4/UJ4). Please reference the Pesticide/PCB tables for a summary of affected samples and data qualifiers.

Matrix Spike/Matrix Spike Duplicate

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on sample OWAB16.5 and exceeded acceptance criteria for Dieldrin and 4,4-DDT. Please reference the

QC summary table for reported values. No sample data have been qualified due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were found.

Total Petroleum Hydrocarbons

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2/UJ2) due to single point calibration.

Blanks-Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Spike Analysis-Acceptable

Sample SOSW10101 was used for a TPH spike and met acceptance criteria. No data qualifiers were required.

Duplicate Analysis-Acceptable

Sample SOSW10101 was used for a TPH duplicate and met acceptance criteria. No data qualifiers were required.

Laboratory Control Sample-Acceptable

The LCS met acceptance criteria and no data qualifiers were required.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. No other discrepancies were noted.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: November 27, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33895
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". One soil samples was analyzed for ICP metals. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	ICP METALS PREP	ICP METALS ANA
SW10W313.5	9/10/92	9/15	10/7	10/8

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs).

Blanks

Cobalt, silver and thallium were found below the CRDL in the initial and continuing calibration blanks associated with samples analyzed on 10/2/92. Associated sample data have been qualified as estimated (J1/UJ1) due to blank contamination.

ICP Interference Check Sample-Acceptable

Though ICP interference check samples met acceptance criteria.

Laboratory Control Sample-Acceptable

The LCS's were within control limits.

Duplicate Sample Analysis

Duplicate sample analysis, sample SOSW489, was outside of acceptance criteria for thallium and molybdenum. Associated sample data have been qualified as estimated (J4/UJ4) due to poor precision.

Spike Sample Analysis

Spiked sample analysis, sample SOSW489, exceeded acceptance criteria for copper. Associated sample data have been qualified as estimated (J4/UJ4) for copper reported as detected due to a potentially high bias.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

Case No:
SDG No: 35825

8010/8020 VOA's
FT2W17.0

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 7/24/92

Instrument ID: 3600

Method Blank ID: MB

Matrix / Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
	AR	All	Aqueous Range (65-127)*	Soil Range (67-136)*		
FT2W17.0						

Compound	QC Check Std., ug/L		Spike Recovery, %R & RPD					Blanks		Qualifiers
	Range**	Std.	Range**	MS	MSD	RPD	Actual	Lab	Trip	(+/-)
Chloromethane	11.9-28.1	12.15	6.2-25.0	134	116	121	14			
Bromomethane	11.7-28.3	18.54	8.0-19.9	107	98	85	9			
Dichlorodifluoromethane	-	17.9	-	120	105	-	13			
Vinyl Chloride	13.7-26.3	15.4	13.5-24.6	128	112	58	13			
Chloroethane	15.4-24.6	19.1	14.5-22.0	126	111	41	13			
Methylene chloride	15.5-24.5	19.5	12.2-22.3	151	134	59	12			
Trichlorofluoromethane	13.3-26.7	19.1	12.2-23.3	120	112	63	7.1			
1,1-Dichloroethene	12.6-27.4	19.7	13.7-23.8	119	105	54	12			
1,1-Dichloroethane	16.8-23.2	19.6	14.5-21.4	127	111	38	13			
trans-1,2-Dichloroethene	12.8-27.2	19.9	14.5-24.0	125	105	49	17			
Chloroform	15.0-25.0	18.5	14.8-21.7	122	106	38	14			
1,2-Dichloroethane	14.3-25.7	20.0	15.8-23.6	132	115	40	13			
1,1,1-Trichloroethane	14.2-25.8	19.6	13.9-21.8	116	100	44	16			
Carbon tetrachloride	13.7-26.3	19.9	14.5-22.7	109	94	44	14			
Bromodichloromethane	15.2-24.8	19.6	16.1-26.7	118	105	49	12			
1,2-Dichloropropane	14.8-25.2	19.2	15.4-24.6	120	104	46	13			
cis-1,3-Dichloropropene	12.8-27.2	21.1	13.6-26.4	100	90	64	11			
Trichloroethene	15.4-24.6	20.5	13.5-22.3	104	96	49	8.3			
Dibromochloromethane	13.1-26.9	18.7	14.7-28.4	103	96	64	7.4			
1,1,2-Trichloroethane	15.7-24.3	18.1	13.4-21.5	120	111	46	7.2			
trans-1,3-Dichloropropene	12.8-27.2	19.2	13.6-26.4	107	96	64	11			
Bromoform	14.7-25.3	19.7	11.1-23.2	100	98	70	2.2			
1,1,2,2-Tetrachloroethane	9.8-30.2	18.4	12.0-26.4	112	104	75	7.6			
Tetrachloroethene	14.0-26.0	20.0	13.3-24.5	85.2	80	59	5.8			
Chlorobenzene	14.4-25.6	19.7	14.2-23.4	83.4	78	49	11			
1,3-Dichlorobenzene	9.9-30.1	21.2	12.0-26.8	57.4	56	76	1.5			
1,2-Dichlorobenzene	14.0-26.0	19.6	11.5-29.1	61.7	60	87	2.8			
1,4-Dichlorobenzene	13.9-26.1	21.9	14.4-22.6	64.8	64	44	0.7			
2-Chloroethylvinyl ether	12.0-28.0	/	13.0-27.0	/	/	70	/			

*The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
**The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

TABLE 1
Volatile Qualifier Summary
Calibrations, Blanks, Holding Time, Surrogates, Internal Standards

Date Analyzed:

9/24/92

Instrument ID:

3000

Method Blank ID:

MB

Sample Identifier:	Hold Time Cut		Standards: (1,4)					
			Surrogate			Internal (IS)		
	Ar	All	1	2	3	1	2	3
FT2W17.0								

Init. Cal. Date: 9/8/92 Cont. Cal. Time:_____

COMPOUNDS (Method 8010/601)	Initial Cal. %RSD >20	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
Bromodichloromethane							
Bromoform							
Bromomethane		-23.0					J2/UJ2
Carbon tetrachloride							
Chlorobenzene							
Chloroethane							
2-Chloroethylvinyl ether							
Chloroform							
Chloromethane		-39.2					J2/UJ2
Dibromochloromethane							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1-Dichloroethene							
1,2-Dichloropropane							
trans-1,2-Dichloroethene							
cis-1,3-Dichloropropene							
trans-1,3-Dichloroethene							
Methylene Chloride							
1,1,2,2-Tetrachloroethane	29.8						J2/UJ2
Tetrachloroethene							
1,1,1-Trichloroethane							
1,1,2-Trichloroethane							
Trichloroethene							
Trichlorofluoromethane							
Vinyl chloride	23.6						J2/UJ2
Dichlorodifluoromethane(601)							
Dichlorodifluoromethane							
Dibromomethane							
trans-1,3-Dichloropropene							
1-Chlorohexane							
1,1,1,2-Tetrachloroethane							
1,2,3-Trichloropropane							
bis(2-Chloroisopropyl ether)							
cis-1,2-Dichloroethene							

TABLE 1 - continued
Volatile qualifier Summary

Init. Cal. Dates 9/8/92 Cont. Cal. Time: _____

Analytes (Method 8020/602)	Initial Cal. %RSD >20	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
Benzene							
Chlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
Ethylbenzene							
Toluene							
Total Xylenes							
Bromobenzene							
Chlorotoluene							

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Kathy Wakeman, Data Reviewer

DATE: November 28, 1992

SUBJECT: Organic and Inorganic Analysis Data Validation Report
Client: Shemya No.: 33827
Lab: CH2M HILL, Redding, California; and Montgomery, Alabama

PROJECT: BOI31941.RT.RD

A review of the organic (VOA and TPH) analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work", 3/90. Three soil samples were analyzed for volatile organic compounds by CH2M HILL in Redding, California, and three water samples were analyzed for total petroleum hydrocarbons by CH2M HILL in Montgomery, Alabama. The conclusions presented herein are based on the information provided for the review.

Volatile Organic Analysis

Timeliness-Acceptable

The samples were analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Sample Number	Date Sampled	Time Sampled	Date Received	Date Analyzed
WGW36.0	8/31/92	1050	9/5/92	9/11/92
WGW50.5	9/1/92	1010	9/5/92	9/11/92
WGW76.0	9/2/92	1130	9/5/92	9/11/92

GC/MS Tune-Acceptable

Tune data were not provided in this package.

Calibration-Acceptable

The initial calibration met RRF criteria. Bromoform and 1,1,2,2,-Tetrachlorethane exceeded the % RSD criteria (23.57% and 29.48%, respectively). None of the TCL compounds were detected in the samples nor in the associated method blank. Therefore the CRQL values for these compounds were qualified "UJ2" (estimated quantitation limit).

The continuing calibration met RRF criteria. Chloromethane, Bromomethane and Bromoform exceeded the %D (25%) criteria. None of the TCL compounds were detected in the samples nor in the associated method blank. Therefore, the CRQL values for these compounds were qualified "UJ2" (estimated quantitation limit).

Blanks-Acceptable

No target compounds were detected in the method blanks.

Contract Required Quantitation Limit (CRQL)-Acceptable

The analyte CRQLs are equal to CLP CRQLs.

Surrogates-Acceptable

All surrogate recoveries were within the required control limits.

Control Matrix Spike

The matrix spike was performed on non-client samples (Lab Nos. 33827MD4 and 33827D05). The percent recoveries and RPDs were all within control limits.

Internal Standard Performance

Internal standard performance data were not provided in this data package.

Field Duplicates

No field duplicates were identified in this group of samples.

TCL Compound Identification-Acceptable

Level I deliverables do not require mass spectra to be provided in the data package. It must be assumed that the laboratory has correctly identified the TCL compounds.

Tentatively Identified Compounds (TIC)-Acceptable

Mass spectra are not required to be provided by the laboratory for Level I deliverables. It must be assumed that the laboratory has correctly identified any TIC compounds.

Laboratory Contact

No laboratory contact was made regarding the volatile organic analysis.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Total Petroleum Hydrocarbons

Timeliness-Acceptable

The samples were analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Sample Number	Date Sampled	Time Sampled	Date Received	Date Analyzed
WGW36.0	8/31/92	1050	9/5/92	9/18/92
WGW50.5	9/1/92	1010	9/5/92	9/18/92
WGW76.0	9/2/92	1130	9/5/92	9/18/92

Initial Calibration-Acceptable

All initial calibration standards met technical requirements for percent recovery.

Continuing Calibration-Acceptable

All continuing calibration standards met technical requirements for percent recoveries.

Instrument Detection Limits-Acceptable

The instrument detection limits were equal to or below the detection limits expected for this method.

Blanks-Acceptable

No TPH contaminants were detected in any of the blanks.

Laboratory Control Sample-Acceptable

The percent recovery for the laboratory control sample was within criteria.

Duplicate Sample Analysis-Acceptable

A non-client sample (Lab ID No. 22697) was used for duplicate sample analysis. The RPDs were within the control limits.

Spiked Sample Analysis-Acceptable

A non-client sample (Lab ID No. 22697) was used for the spike sample analysis. The percent recovery was within control limits.

Sample Analysis-Acceptable

All sample analysis met technical requirements as evaluated from the data provided.

Laboratory Contact

No laboratory contact was made.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Case No:
SDG No: 33827

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/11

Instrument ID: GC-3600

Method Blank ID: Method Blank

Sample Identifier:	Hold Time Out, days		Standards: (S,2)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
WGW 36.0								
WGW 50.5								
WGW 76.0								

Date: _____ Time: _____ _____

Compound: SPCC (#) CCC(*) Aromatic (AR)	9/8 Initial Cal.		9/11 Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	ND Meth.	NA Trip	(+/-)	
Chloromethane 0.010 (#)				26.4 / 28.2			J2/UJ2	
Bromomethane 0.100		23.57		25.1/35.2/			J2/UJ2	
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010								
Methylene Chloride 0.010								
Acetone 0.010								I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (*)								#
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)				/30.6/			~~J~~/UJ2	
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)		29.84					J2/UJ2	S
Toluene 0.400 (*)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

~~Reviewer~~

~~Supervisor~~

Case No: _____

SDG No: 33827

Table 2. VOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R			Soil Sample Recovery, %R			Qualifiers (+/-)
	1	2	3	1	2	3	
(Acceptance Range, %R):	88-110	86-115	76-114	81-117	74-121	70-121	

S1 = Toluene-d8, S2 = Bromofluorobenzene, S3 = 1,2-dichloroethane-d4

MS/MSD Data Summary

Spike Compound:	SPCC (#) CCC (°) Aromatic (AR)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
		Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES								
1,1-Dichloroethene	(°)	61-145		61-145		14		
Trichloroethene		71-120		71-120		14		
Benzene	AR	76-127		76-127		11		
Toluene	(°)(AR)	76-125		76-125		13		
Chlorobenzene	(#)(AR)	75-130		75-130		13		
SOIL SAMPLES								
1,1-Dichloroethene	(°)	59-172		59-172		22		
Trichloroethene		62-137		62-137		24		
Benzene	AR	66-142		66-142		21		
Toluene	(°)(AR)	59-139		59-139		21		
Chlorobenzene	(#)(AR)	60-133		60-133		21		

Case No:
SDG No: 33827

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/11

Instrument ID: GC-3600

Method Blank ID: Method Blank

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
		AR	All	Aqueous Range * (65-127)	Soil Range * (67-136)		
	WGW36.0						
	WGW50.5						
	WGW70.0						

Compound	QC Check Std., ug/L		Spike Recovery, %R & RPD					Blanks		Qualifiers
	Range**	Std.	Range**	MS	MSD	RPD	Actual	Lab	Trip	(+/-)
Chloromethane	11.9-28.1		6.2-25.0			121				
Bromomethane	11.7-28.3		8.0-19.9			85				
Dichlorodifluoromethane	--		--			--				
Vinyl Chloride	13.7-26.3		13.5-24.6			58				
Chloroethane	15.4-24.6		14.5-22.0			41				
Methylene chloride	15.5-24.5		12.2-22.3			59				
Trichlorofluoromethane	13.3-26.7		12.2-23.3			63				
1,1-Dichloroethene	12.6-27.4		13.7-23.8			54				
1,1-Dichloroethane	16.8-23.2		14.5-21.4			38				
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0			49				
Chloroform	15.0-25.0		14.8-21.7			38				
1,2-Dichloroethane	14.3-25.7		15.8-23.6			40				
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8			44				
Carbon tetrachloride	13.7-26.3		14.5-22.7			44				
Bromodichloromethane	15.2-24.8		16.1-26.7			49				
1,2-Dichloropropane	14.8-25.2		15.4-24.6			46				
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Trichloroethene	15.4-24.6		13.5-22.3			49				
Dibromochloromethane	13.1-26.9		14.7-28.4			64				
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5			46				
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4			64				
Bromoform	14.7-25.3		11.1-23.2			70				
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4			75				
Tetrachloroethene	14.0-26.0		13.3-24.5			59				
Chlorobenzene	14.4-25.6		14.2-23.4			49				
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8			76				
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1			87				
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6			44				
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0			70				

* The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
** The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Kathy Wakeman, Data Reviewer

DATE: December 1, 1992

SUBJECT: Organic and Inorganic Analysis Data Validation Report
Client: Shemya No.: 33932
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the organic and inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work," 3/90. Fifteen water samples were analyzed for selected organic and inorganic parameters. The conclusions presented herein are based on the on the information provided for the review.

Volatile Organic Analysis

Timeliness-Acceptable

The samples were analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Sample Number	Date Sampled	Time Sampled	Date Received	Date Analyzed	Time Analyzed
SW12-W3	9/13/92	1345	9/17/92	9/24/92	2206
SW-12-W4	9/13/92	1400	9/17/92	9/24/92	2236
SW-12-W1	9/13/92	1440	9/17/92	9/24/92	2305
Trip Blank 1	NP*	NP*	9/17/92	9/24/92	1937
SW10-W1	9/13/92	1540	9/17/92	9/24/92	2336
SW10-W2	9/13/92	1615	9/17/92	9/24/92	0005
FT1-W1	9/13/92	1650	9/17/92	9/24/92	0035
Trip Blank	NP*	NP*	9/17/92	9/24/92	2007
SW10-W3	9/14/92	1430	9/17/92	9/24/92	0105
FT2-W5	9/14/92	1515	9/17/92	9/25/92	1137
Trip Blank 2	NP*	NP*	9/17/92	9/24/92	2037
FT2-W7	9/14/92	1545	9/17/92	9/25/92	1207
FT2-W1	9/14/92	1620	9/17/92	9/24/92	0233
FT2-ER	9/14/92	1650	9/17/92	9/24/92	2136
Trip Blank 3	NP*	NP*	9/17/92	9/24/92	2106

*NP = Information not provided on chain-of-custody.

GC/MS Tune-Acceptable

All Bromofluorobenzene tune criteria were met for the initial calibration and all dates of sample analysis.

Calibration-Acceptable

The initial calibration met RRF criteria. Methylene chloride exceeded the % RSD criteria (55.0%). All of the samples and the associated method blanks exhibited low levels of methylene chloride. Therefore, all samples will be qualified as estimated (J2/UJ2). The continuing calibration for 9/24/92 met RRF and %D criteria. No qualifiers were requ d.

The continuing calibration for 9/25/92 met RRF criteria. Methylene chloride, acetone, and trichloroethene exceeded the %D criteria. The samples will be qualified as estimated (J2/UJ2).

Blanks-Acceptable

The method blanks exhibited methylene chloride contamination. The samples exhibited methylene chloride values that were less than ten times the blank value. Therefore, the samples were qualified "UJ1" as undetected.

The trip blanks were considered associated only with those samples that appeared on the same page of the chain-of-custody. The methylene chloride levels in the four trip blanks were not greater than the value detected in the method blanks. Therefore, the qualifiers were assigned based on the method blanks.

Contract Required Quantitation Limit (CRQL)-Acceptable

The analyte CRQLs are equal to CLP CRQLs.

Surrogates-Acceptable

All surrogate recoveries were within the required control limits.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Sample FT2-W7 was used for matrix spike/matrix spike duplicate analysis. Percent recoveries and RPDs were within limits.

Internal Standard Performance-Acceptable

All internal standard areas were within the required control limits.

Field Duplicates

No field duplicates were identified in this group of samples.

TCL Compound Identification-Acceptable

Since Level II deliverables do not require mass spectra to be provided in the data package, it must be assumed that the laboratory has correctly identified the TCL compounds.

Tentatively Identified Compounds (TIC)-Acceptable

Since Level II deliverables do not require mass spectra to be provided in the data package, it must be assumed that the laboratory has correctly identified the TIC compounds. No TICs were detected in the method blanks or trip blanks.

Laboratory Contact

No laboratory contact was made regarding the volatile organic analysis.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Semivolatile Organic Analysis

Timeliness-Acceptable

The samples were extracted and analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

GC/MS Tune-Acceptable

All Decafluorotriphenylphosphine tune criteria were met for the initial calibration and all dates of sample analysis.

Calibration-Acceptable

The initial calibration met RRF criteria. Naphthalene and 3-Nitroaniline exceeded the % RSD criteria The samples were qualified as J2/UJ2 for these compounds. The continuing calibration met RRF criteria. 4-Chloroaniline exceeded the %D criteria. Samples were qualified J2/UJ2 for this compound.

Blanks-Acceptable

No TCL compounds were detected in the method blanks. Two TIC compounds were detected (Benzeneacetic acid and an unknown) but Level II deliverables do not require mass spectra to be included. Therefore, the reviewer cannot confirm the identification of the TICs and no qualifiers were assigned.

Surrogates-Acceptable

Surrogate recoveries were outside control limits for samples FT2-W1 and FT2-W1MSD for TPH. Since only one faction was outside the control limits, no qualifiers were assigned.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix spike/matrix spike duplicate analysis was performed on sample FT2-W1. The % Rec had 6 out of 22 outside limits, and RPD had 1 out of 11 outside control limits. No qualifiers were required.

Internal Standard Performance-Acceptable

All internal standard QC criteria were met.

Field Duplicates

No field duplicates were identified with this group of samples.

TCL Compound Identification-Acceptable

Since Level II deliverables do not require that mass spectra be provided in the data package, it must be assumed that the laboratory has correctly identified the TCL compounds.

Tentatively Identified Compounds (TIC)-Acceptable

Mass spectra are not required for Level II deliverables. It must be assumed that the laboratory has correctly identified the TIC compounds.

Laboratory Contact

No laboratory contact was made regarding the semivolatile organic analysis.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Pesticides/PCBs

Timeliness-Acceptable

The samples were extracted and analyzed within the technical holding times (40 CFR 136 Water Criteria). There are no contractual holding time criteria.

Instrument Performance

No instrument performance data were provided in the data package. No evaluation of the DDT Retention Time, Retention Time Windows, DDT/Endrin Degradation Check, or DBC Retention Time Check was possible because of the lack of information as provided by the laboratory. These criteria are required for Level II deliverables.

Calibration-Acceptable

All pesticide calibration QC criteria were met.

Blanks-Acceptable

No compounds were detected in the method blank.

Surrogates

Sample FT2-W1 exhibited a surrogate % Rec of 9.8% for Decachlorobiphenyl. This sample has been qualified "R" as unusable for all compounds. Results were provided for one analysis with no indication of primary on conformation column. All other sample surrogates were within control limits.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix spike/matrix spike duplicate analysis was performed on sample SW12-W3. % Rec had 4 out of 12 outside limits, and RPD had 0 out of 5 outside limits.

Field Duplicates

No field duplicates were identified with this group of samples.

Contract Required Quantitation Limits (CRQL)-Acceptable

The analyte CRQLs are equal to CLP CRQLs.

TCL Compound Identification-Acceptable

Chromatograms are not required for Level II deliverables. It must be assumed that the laboratory has correctly identified the TCL compounds.

Laboratory Contact

No laboratory contact was made regarding the pesticide/PCB analysis.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Metals Analysis

Timeliness-Acceptable

All holding times were within technical requirements (40 CFR 136).

Initial Calibration-Acceptable

All initial calibration standards met technical requirements for percent recovery. The frequency requirement was exceeded between the ICU and CCUI on the ICP analysis dated 9/30/92. No qualifiers were assigned because all other QC met criteria.

Continuing Calibration-Acceptable

All continuing calibration standards met technical requirements for frequency and percent recovery.

Instrument Detection Limits (IDL)

All instrument detection limits except arsenic, lead, and selenium were equal to or below contract required detection limits (CRDLs). The contract under which these

analyses were performed allowed that arsenic, lead, and selenium would be analyzed by ICP. The higher than CRDL IDLs are therefore acceptable.

The date of the detection limits (Form 10) was found to be 02/12/92. The IDL studies are required to be analyzed quarterly. The Form 10 IDLs exceed the requirement by four months. No qualifiers were assigned, but this is noncompliant with the 3/90 SOW.

Blanks

Background levels for each metal found in the preparation blank, the initial blank, and continuing calibration blanks were below IDLs.

ICP Interference Check

Percent recoveries for the ICP interference check samples for all metals were within technical requirements.

Laboratory Control Sample (LCS)-Acceptable

Frequency and percent recoveries for the laboratory control sample met criteria.

Duplicate Sample Analysis-Acceptable

All of the criteria (±20% RPD or ICPDL) for the duplicate sample analysis were met. Molybdenum was flagged "*" but is not a TAL analyte and has no CRDL. No qualifiers were assigned for this analyte.

Spike Sample Analysis-Acceptable

All of the criteria (75 to 125%) for the spiked sample analysis were met except for antimony (61.5%). As a result, all antimony data will be flagged as estimated (J4/UJ4).

ICP Serial Dilution

ICP serial dilution analysis data were not provided as required in the data package.

Furnace AA Analysis

No furnace analysis was required by the contract. All metals were analyzed by ICP.

Mercury Analysis

No mercury analysis was required.

Sample Analysis

All sample analysis met technical requirements. The laboratory has not correctly used the "B" flag to denote sample values between the IDL and CRDL, as required by 3/90 SOW.

Laboratory Contact

No laboratory contact was made.

Data Use and Overall Assessment

The data are considered usable as qualified by the reviewer.

Case No:
SDG No: 33932

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/24

Instrument ID: 5100

Method Blank ID: VBLKW1

Sample Identifier:	Hold Time Out, days AR	Hold Time Out, days All	Standards: (<,>) Surrogates S1	S2	S3	ISTDs IS1	IS2	IS3
SW12-W3								
SW12-W4								
SW12-W1								
Trip Blank								
SW10-W1								
SW10-W2								
FT1-W1								
Trip Blank1								
SW10-W3								
FT2-W1								

Date: _____ Time: [redacted] 1908

Compound: SPCC (#) CCC(°) CAP 0.530mm Aromatic (AR)	Initial Cal. 9/2 0958 & 1216 RRF<.05	Initial Cal. %RSD>30 (20.5)	Continuing Cal. 9/24/[redacted] RRF<.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010								
Methylene Chloride 0.010		55.0			12B		J1,2/4J1,2	
Acetone 0.010								I
Carbon Disulfide 0.010								S
1,1-Dichloroethene 0.100 (°)								#
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								I
cis-1,3-Dichloropropene 0.200								S
Trichloroethene 0.300								#
Dibromochloromethane 0.100								2
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								
Tetrachloroethene 0.200								I
1,1,2,2-Tetrachloroethane 0.500 (#)								S
Toluene 0.400 (°)(AR)								#
Chlorobenzene 0.500 (#)(AR)								3
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No: _____
SDG No: 33932

(2)

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 4/24

Instrument ID: 5100

Method Blank ID: VBLKW1

Sample Identifier:	Hold Time Out, days		Standards: (≤2)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
Trip Blank 2								
FT2-ER								
Trip Blank 3								

Date: _____ Time: _____ _____

Compound: SPCC (#) CCC(°) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip	(+/-)	
Chloromethane 0.010 (#)								
Bromomethane 0.100								
Vinyl Chloride 0.100 (°)								
Chloroethane 0.010								
Methylene Chloride 0.010					12B		J/UJ	
Acetone 0.010								IS#1
Carbon Disulfide 0.010								
1,1-Dichloroethene 0.100 (°)								
1,1-Dichloroethane 0.200 (#)								
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (°)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (°)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								IS#3
Tetrachloroethene 0.200								
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (°)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (°)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

Case No: _____
SDG No: 33932

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 9/25

Instrument ID: 5100

Method Blank ID: VBLKW2

Sample Identifier:	Hold Time Out, days		Standards: (S,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
FT2-W5								
FT2-W7								
FT2-W7MS								
FT2-W7MSD								
FT2-W1DL								

Date: _____ Time: _____ 1106

Compound: CAP 0.530mm	SPCC (#) CCC(*) Aromatic (AR)	9/2 Initial Cal.		9/25 Continuing Cal.		Blanks		Qualifiers (+/-)	
		RRF<.05	%RSD>30	RRF<.05	%D>25	Meth.	Trip		
Chloromethane	0.010 (#)								
Bromomethane	0.100								
Vinyl Chloride	0.100 (*)								
Chloroethane	0.010								
Methylene Chloride	0.010		65.0		33.5	148		J1,2/UJ1,2	
Acetone	0.010				41.5			J2/UJ2	IS
Carbon Disulfide	0.010								
1,1-Dichloroethene	0.100 (*)								
1,1-Dichloroethane	0.200 (#)								
1,2-Dichloroethene (total)	0.010								
Chloroform	0.200 (*)								
1,2-Dichloroethane	0.100								
2-Butanone	0.010								
1,1,1-Trichloroethane	0.100								
Carbon Tetrachloride	0.100								
Vinyl Acetate									
Bromodichloromethane	0.200								
1,2-Dichloropropane	0.010 (*)								IS
cis-1,3-Dichloropropene	0.200								#
Trichloroethene	0.300				29.3			J2/UJ2	2
Dibromochloromethane	0.100								
1,1,2-Trichloroethane	0.100								
Benzene	0.500 AR								
trans-1,3-Dichloropropene	0.100								
Bromoform	0.100 (#)								
4-Methyl-2-Pentanone	0.010								
2-Hexanone	0.010								IS
Tetrachloroethene	0.200								#
1,1,2,2-Tetrachloroethane	0.500 (#)								3
Toluene	0.400 (*)(AR)								
Chlorobenzene	0.500 (#)(AR)								
Ethylbenzene	0.100 (*)(AR)								
Styrene	0.300 (AR)								
Xylenes (total)	0.300 (AR)								

Reported as: RT (ng/kg, ng/L)

TICs Reported in Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No: 33932

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date: 10/2

Inst. ID: 4600

MBlnk ID: SBLKW1 (Method-Blank)

Ext. Dates: 9/19

Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
			Surrogate								Internal (IS)					
	Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
FT1-W1																
FT2-ER																
FT2-W1					X											
FT2-W5																
FT2-W7																
SW10-W1																
SW10-W2																
SW10-W3																
SW12-W1																
SW12-W3																
SW12-W4																

Date: _____ Time: _____ 1533

Compounds: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	10/2 Initial Cal.		10/2 Continuing Cal.		Blanks		Qualifiers
	RRF<.05	20.5 %RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)							
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)		21.1					J2/UJ2
4-Chloroaniline (BN)				30.6			J2/UJ2
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)							
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							

IS#1

IS#2

IS#3

Site: Shemya Air Force Base-IRP Project

Method 625/8270

Case No:

SDG No: 33932

Table 1

BNA

Analysis Date:

Instrument ID:

Date: _____ Time: _____ _____

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	20.5 %RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)		22.6					J2/UJ2	I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)							•	#
4-Nitrophenol (A)(#)								3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitroaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)								
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)								
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)								6
Dibenz(a,h)anthracene (BN)								
Benzo(g,h,i)perylene (BN)								

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

SVOA_MSD.AQ | Site: Shemya Air Force Base–IRP Project | Method 625/8270

Case No:

SDG No: 33932

Table 2-AQUEOUS. SVOA Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Aqueous Sample Recoveries, %R								
	S1	S2	S3	S4	S5	S6	S7	S8	
(Acceptance Range, %R):	35-114	43-116	33-141	10-110	21-110	10-123	33-110	16-110	Qualifiers (+/-)
FT2-W1			29						NONE
FT2-W1 MSD			28						NONE

S1 = Nitrobenzene-d5, S2 = 2-fluorobiphenyl, S3 = terphenyl-d14, S4 = phenol-d5, S5 = 2-fluorophenol, S6 = 2,4,6-tribromophenol, S7 = 2-chlorophenol-d4, S8 = 1,2-dichlorobenzene-d4

MS/MSD Data Summary

FT2-W1 SPCC (#) CCC (*)	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
Spike Compound: Aromatic (AR)	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
Phenol	12-110		12-110		42		
2-Chlorophenol	27-123		27-123		40		
1,4-Dichlorobenzene	36-97		36-97		28		
N-Nitroso-di-n-propylamine	41-116	126	41-116	120	38		NONE
1,2,4-Trichlorobenzene	39-98		39-98		28		
4-Chloro-3-methylphenol	23-97		23-97		42		
Acenaphthene	46-118		46-118		31		
4-Nitrophenol	10-80	91	10-80	86	50		NONE
2,4-Dinitrotoluene	24-96		24-96		38		
Pentachlorophenol	9-103	114	9-103	116	50		NONE
Pyrene	26-127		26-127		31	35	NONE

Case Narrative discusses possible matrix problems with sample FT2-W1

PEST_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 608/8080

Case No:

SDG No: 33932

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 10/7

Matrix

Instrument ID: Varian 3400

Method Blank ID: Method Blank

Extraction Date: 9/18

Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
	Ext.	Anal.	1	2	3	4	5	6
SW12-W3L								
SW12-W4L								
SW12-W1L								
SW10-W1L								
SW10-W2L								
SW10-W2								
SW10-W3L								
FT2-W5L								
FT2-W7L								
FT2-W1L								
FT2-ERL								

Column: DB-1701 x Primary Secondary Compound:	Calibrations: Init. Cal. %RSD>10	Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		10							
10/6 Time		7							
alpha-BHC									
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

Validation Criteria:	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_MSD.FRM Site: Shemya Air Force Base--IRP Project Method 608/8080

Case No:

SDG No: 33932-

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	Aqueous	Soil	
(Acceptance Range, %R):	(24-154)	(20-150)	
FT2-W1	Decachlorobiphenyl 9.4	—	R

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

SW12-W3 Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123	130	56-123	136	14		NONE
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126	129	52-126		18		NONE
Endrin	56-121	127	56-121		21		NONE
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127		46-127		50		
Heptachlor	35-130		35-130		31		
Aldrin	34-132		34-132		43		
Dieldrin	31-134		31-134		38		
Endrin	42-139		42-139		45		
4,4'-DDT	23-134		23-134		50		

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: December 2, 1992

SUBJECT: Organic Analysis Data Validation Report
Shemya Air Force Base: SGD 33489
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the organic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "3/90 SOW, SW-846 1990 Edition, Revision 1, and EPA methods for water and wastewater, and by the "Functional Guidelines for Evaluating Organic Analysis, revision 2/88". four soil samples were analyzed for GC/MS VOA's, BNA's, and Pesticide/PCB's. One water samples was analyzed for volatile organics by method 8010/8020 Modified and four soil sample was analyzed for total petroleum hydrocarbons by method 418.1 modified. The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	GC/MS VOA	BNA EXT. ANA	Pest/PCB EXT ANA	VOA 8010/8020	TPH
SOSW4137	7/28/92	8/3	8/4	8/7 8/20	8/7 8/22	NA	8/16
SOSW4138	7/28/92	8/3	8/4	8/7 8/20	8/7 8/22	NA	8/16
SOSW4139	7/28/9S	8/3	8/4	8/7 8/20	8/7 8/22	NA	8/16
SOSW4140	7/28/92	8/3	8/4	8/7 8/20	8/7 8/22	NA	8/16
6WW676	7/28/92	8/3	NA	NA	NA	8/9	NA
SOSW414OTP3	7/28/92	8/3	8/4	8/7 8/20	8/7 8/22	NA	8/16

GC/MS Volatile Organic Analysis

GC/MS Tune

All Bromofluorobenzene tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS VOA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

Methylene chloride and Acetone were detected in the method blanks associated with sample data. Please reference the GC/MS VOA tables for a summary of contaminants and concentrations detected in the method blanks and trip blank associated with sample data.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client soil sample and met MS/MSD criteria. No data qualifiers were required.

Internal Standard Performance-Acceptable

Internal standards met acceptance criteria.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

Semivolatile Organic Analysis

GC/MS Tune

All DFTPP tune criteria were met.

Calibration

The laboratory indicated analysis was performed using 3/90 SOW criteria. RRF's less than 0.05 and %RSD's greater than 30% have been qualified as estimated (J2/UJ2).

All continuing calibration criteria (3/90 SOW) were met. RRF's less than 0.05 and %D's greater than 25% have been qualified in associated sample data as estimated (J2/UJ2). Please reference the attached GC/MS BNA tables for a summary of data qualifiers.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

No contaminants were reported as detected in the method blanks associated with sample data. No data qualifiers were required.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on a non client soil sample and met MS/MSD criteria.

Internal Standard Performance-Acceptable

Internal standard areas were within control limits.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Mass spectra data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Tentatively Identified Compounds (TIC)-Acceptable

TIC's were reported as required. Since mass spectral data are not a required deliverable for Level 2, no TIC's have been qualified in associated sample data.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer.

Pesticide/PCB Analysis

Calibration

The laboratory indicated analysis was performed using 8080 criteria. No initial calibration was performed 8/11/91 for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Arocolor 1260 was calibrated 8/12/92 only for the reanalysis of sample SOSSSW1072. All calibrated analytes had relative percent differences less than 20%.

All continuing calibration criteria %D's were met. No continuing calibration (single point) was analyzed on 8/12 for the following compounds: Toxaphene, aroclor 1016, aroclor 1221, aroclor 1232, aroclor 1242, aroclor 1248, aroclor 1254 and aroclor 1260. Aroclor 1260 had continuing calibrations analyzed 8/13/92 and 8/14/92 and is only associated with the reanalysis of sample SOSSSW1072. Target compounds reported in associated sample data for which no calibration was performed, have been rejected (R). Please reference the 8080 tables for a summary of data qualifiers associated with sample data.

DDT and Endrin breakdown was within acceptance limits.

Contract Required Detection Limits (CRQL)-Acceptable

The analyte CRQL's are equal to 3/90 SOW CLP CRQL's.

Blanks-Acceptable

No contaminants were reported as detected in the method blank.

Surrogates-Acceptable

All surrogate recoveries were within 3/90 SOW suggested criteria. No data qualifiers were required.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) associated with sample data was analyzed on SDG 33353 and was not provided for review in this SDG. No sample data have been qualified due to MS/MSD analysis.

Field Duplicates

No field duplicates were identified as associated with this SDG.

TCL Compound Identification-Acceptable

Chromatograms and raw data are not required for a Level 2 deliverable. Target compounds reported by the laboratory are assumed to be correct.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No calibration was performed for the multipeak compounds Toxaphene and the aroclors with the exception of aroclor 1260 which was associated with one sample analysis. Lack of calibration resulted in the rejection of affected sample data. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8010 or 8020 analysis.

8010/8020 Volatile Organic Analysis

Calibration

An internal standard method of quantitation was used for the 8010 and 8020 analyses. In accordance with SW-846 methodology, target compounds with relative percent differences (%RSD's) exceeding 20 % in the initial calibration and percent differences (%D's) exceeding 15% in the continuing calibration check standard have been qualified as estimated (J2/UJ2) due to calibration criteria exceedance. Please reference the attached tables for a summary of data qualifiers.

Blanks-Acceptable

No compounds were detected in the 8010 or 8020 method blanks.

Surrogates-Acceptable

All surrogate recoveries were greater than 90% recovery for both 8010 and 8020 analyses. 1,4-Dichlorobutane was used as a surrogate for the 8010 analysis and Fluorobenzene was used for the 8020 analyses. Control limits for surrogate recovery were not provided and no sample data has been qualified on the basis of surrogate recoveries.

Matrix Spike/Matrix Spike Duplicate-Acceptable

Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed on SDG 33489, sample 6WW676 for 8010/8020 volatiles. Percent recoveries ranged from 42% to 118% with the greatest RPD being 5.8%. No sample data have been qualified on the basis of MS/MSD results.

Internal Standard Performance-Acceptable

No criteria for internal standard performance were provided. Sample data have not been qualified on the basis of internal standard performance.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

The laboratory analyzed a continuing calibration verification sample and applied the continuing calibration check criteria outlined in method 8010A, Table 3, rather than 15%D criteria as outlined in Method 8000A, Section 7.4.3.4. Control limits specified in the calibration section have been applied to the sample data.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. Additionally, SW-846 methodology requires that a QC check standard (from a source other than the calibration standard) be analyzed; there was no evidence that a QC check was performed for the 8010 or 8020 analysis.

Total Petroleum Hydrocarbons

Calibration

A single point calibration standard was analyzed for the initial and the continuing calibration check standard for the total petroleum hydrocarbon (TPH) analysis. Though method 418.1 does not specifically state that a single point calibration is not acceptable for an initial calibration, industry standard suggests a minimum of three calibration standards be analyzed. Associated sample data have been qualified as estimated (J2) due to single point calibration.

Blanks-Acceptable

No TPH was detected in the initial calibration blank (ICB), the continuing calibration blank (CCB) or the method blank.

Matrix Spike/Matrix Spike Duplicate-Acceptable

There was insufficient sample provided for a TPH water matrix MS/MSD. However, LCS analyses were within acceptance criteria. No sample data have been qualified on the basis of missing MS/MSD summary information.

Field Duplicates

No field duplicates were identified as associated with this SDG.

Laboratory Contact

None.

Data Use and Overall Assessment

The data is considered usable as qualified by the reviewer. No other discrepancies were noted.

MEMORANDUM

TO: Task Monitor, U.S. EPA Region X

FROM: Cindy Lucangioli, CH2M HILL, Data Reviewer

DATE: December 2, 1992

SUBJECT: Inorganic Analysis Data Validation Report
Shemya Air Force Base: SGD 33489
Lab: CH2M HILL, Redding, California

PROJECT: BOI31941.RT.RD

A review of the inorganic analysis data for the above referenced case has been performed. The following comments refer to the laboratory analysis in meeting the Quality Control Specifications outlined in the "CLP Statement of Work, Inorganics Analyses, Revision 7/88 and by the "Functional Guidelines for Evaluating Inorganic Analysis, revision 2/88". Four soil samples were analyzed for ICP metals The conclusions presented herein are based on the information provided for the review.

Timeliness-Acceptable

Sample ID	Date Sampled	VTSR	ICP METALS PREP	ICP METALS ANA
SOSW4137	7/28/92	8/3	8/10	8/13
SOSW4138	7/28/92	8/3	8/10	8/13
SOSW4139	7/28/9S	8/3	8/10	8/13
SOSW4140	7/28/92	8/3	8/10	8/13

ICP Metals Analysis

Initial Calibration-Acceptable

All initial calibration standards met acceptance criteria for frequency and percent recovery.

Continuing Calibration-Acceptable

All continuing standard calibration checks met acceptance criteria for frequency and percent recovery.

Instrument Detection Limits-Acceptable

All instrument detection levels were equal to or below required detection limits (CRDLs).

Blanks

Molybdenum was found at a negative value, whose absolute value was above the IDL in the initial calibration blank. Associated sample data have been qualified as estimated (J1/UJ1) up to five times the absolute value found in the blank for molybdenum due to potentially low biased results.

ICP Interference check Sample-Acceptable

Though ICP interference check samples are not a requirement for Level 2 deliverables the laboratory analyzed these check samples and met acceptance criteria.

Laboratory Control Sample-Acceptable

The LCS's were within control limits established by the EPA.

Duplicate Sample Analysis

Duplicate sample analysis associated with samples data met criteria.

Spike Sample Analysis

Spiked sample analysis associated with samples data exceeded criteria for Manganese. Associated sample data have been qualified as estimated (J4/UJ4) due to spike recovery exceedance.

ICP Serial Dilution

ICP serial dilution is not required for a Level 2 deliverable.

Sample Analysis-Acceptable

All sample analysis met technical requirements.

Laboratory Contact

None.

Data Use and Overall Assessment

Sample data is considered to be usable as qualified by the reviewer. No discrepancies were observed.

CASE NARRATIVE FOR VOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL CLIENT: SHEMYA

CASE NO. : N/A CONTRACT NO.: N/A

LAB ID : 33489 SDG # : N/A

I. RECEIPT

A. Date: August 3, 1992

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE	pH
33489001	SOSW4137	SOIL	07/28/92	N/A	08/04/92	N/A
33489002	SOSW4138	SOIL	07/28/92	N/A	08/04/92	N/A
33489003	SOSW4139	SOIL	07/28/92	N/A	08/04/92	N/A
33489004	SOSW4140	SOIL	07/28/92	N/A	08/04/92	N/A
33489K06	TRIPBLANK	WATER	07/03/92	N/A	08/06/92	≤2
BLANK	VBLKS1	SOIL	N/A	N/A	08/04/92	N/A
BLANK	VBLKW1	WATER	N/A	N/A	08/06/92	N/A

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, extraction time is not applicable.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding Times: All met.

B. Analytical Exceptions : No exceptions were encountered.

These samples have been analyzed using protocols specified in the USEPA CLP 1990 Statement of Work Document number OLM01.8. The Statement of Work requires that the most recent release of the NIST/EPA/MSDC mass spectral library be used. The library searches for these samples were performed using the most recent release of the NIST/EPA/MSDC mass spectral library available for the Finnigan Mat series 4000 and 5100 mass spectrometers.

000002

CH2M HILL Quality Analytical Laboratory
5090 Caterpillar Road, Redding, California 96003-1412
916.244.5227
FAX 916.244.4109

IV. QUALITY CONTROL

A. Method Blank : Methylene chloride and Acetone were detected in the method blanks associated with these samples but were within acceptable CLP limits.

B. Surrogate Recoveries : All surrogate recoveries met acceptable CLP limits.

C. Matrix Spike Results : The soil MS/MSD associated with this contract was performed on a non-client sample and will be reported with sample group 33463. The water MS/MSD associated with this contract was also performed on a non-client sample and will be reported with sample group 33425. Therefore, Form III and the associated MS/MSD information will not be included with this package. MS/MSDs are normally performed on a 1 per 20 basis. However, an MS/MSD was performed on a 1 per 35 basis for the soil samples due to an oversight by the analyst.

Please note Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL sample identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 8-19-92

Brian Geers Date
Organics Division Manager

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CASE NARRATIVE FOR SEMIVOLATILE MASS SPECTROMETRY SAMPLES

LABORATORY: CH2M HILL

CLIENT: CH2M HILL/BOI SHEMYA

CASE NO. : N/A

CONTRACT NO.: N/A

LAB ID : 33489

SDG # : N/A

I. RECEIPT

A. Date: August 3, 1992

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
33489001	SOSW4137	SOIL	07/28/92	08/07/92	08/20/92
33489002	SOSW4138	SOIL	07/28/92	08/07/92	08/20/92
33489003	SOSW4139	SOIL	07/28/92	08/07/92	08/20/92
33489004	SOSW4140	SOIL	07/28/92	08/07/92	08/20/92
BLANK	SBLKS1	SOIL	N/A	08/07/92	08/19/92

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: All met.

B. Extraction Exceptions : Sample extractions proceeded as normal. No exceptions were encountered.

CH2M HILL Quality Analytical Laboratory

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B6

III. ANALYSIS

A. Holding Times: All met.

B. Analytical Exceptions : Gel Permeation Chromatography (GPC) cleanup was performed during sample extraction on all soil samples and the associated blank(s) to remove matrix interferences, as required by 1990 CLP SOW.

These samples have been analyzed using protocols specified in the USEPA CLP 1990 Statement of Work Document number OLM01.8. The Statement of Work requires that the most recent release of the NIST/EPA/MSDC mass spectral library be used. The library searches for these samples were performed using the most recent release of the NIST/EPA/MSDC mass spectral library available for the Finnigan Mat series 4000 and 5100 mass spectrometers.

IV. QUALITY CONTROL

A. Method Blank : The method blank(s) associated with these samples met CLP limits.

B. Surrogate Recoveries : All surrogate recoveries met acceptable CLP limits.

C. Matrix Spike Results : MS/MSDs are done on a 1 per 20 basis. The MS/MSD associated with this contract was performed on sample 33464009 (SOSW497) and will be reported with that contract. Therefore, Form III and the associated MS/MSD information will not be included with this package.

Please note Forms II, IV, V, and VIII have numbers to the immediate left of each table. These numbers are sequential only and have no relation to CH2M HILL sample identification numbers.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 8-24-92

Brian Geers **Date**
Organics Division Manager

CH2M HILL Quality Analytical Laboratory *5090 Caterpillar Road, Redding, California 96003-1412* *916.244.5227 FAX 916.244.4109*

CASE NARRATIVE FOR CLP PESTICIDES

LABORATORY : CH2M HILL - REDDING **CLIENT** : SHEMYA

CASE NO : N/A **CONTRACT NO.**: N/A

LAB REF. ID : 33489 **SDG #** : N/A

I. RECEIPT

A. Date: August 3, 1992

B.

LAB ID	CLIENT SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
33489001	SOSW4137	Soil	07/28/92	08/07/92	08/22/92
33489002	SOSW4138	Soil	07/28/92	08/07/92	08/22/92
33489003	SOSW4139	Soil	07/28/92	08/07/92	08/22/92
33489004	SOSW4140	Soil	07/28/92	08/07/92	08/22/92
33489M01	SOSW4137MS	Soil	07/28/92	08/07/92	08/22/92
33489D01	SOSW4137MSD	Soil	07/28/92	08/07/92	08/22/92
SBLK8-7	METHOD BLANK	Soil	N/A	08/07/92	08/19/92

C. Documentation Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : No exceptions were encountered.

III. ANALYSIS

A. Holding Times: All holding times were met.

B. Analytical Exceptions : All soil samples are reported on a dry weight basis.

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IV. QUALITY CONTROL

A. Method Blank : The method blanks met QC limits.

B. Surrogate Recoveries : All samples met acceptable QC criteria.

C. Matrix Spike Results: MS/MSD are done on a 1 per 20 sample basis. The MS/MSD associated with the soil samples in this contract was performed on sample 33489001 (SOSW4137) and is reported with this contract.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Brian Geers 9-1-92

Brian Geers **Date**
Manager, Organics Division

000068

CH2M HILL Quality Analytical Laboratory
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FAX 916.244.4109

CASE NARRATIVE FOR PURGEABLE HALOCARBONS/AROMATICS

LABORATORY :	CH2M HILL LABORATORIES	**CLIENT** :	SHEMYA
CASE NO. :	N/A	**CONTRACT NO.**:	N/A
LAB REF. NO.:	33489	**SDG NO.** :	N/A

I. RECEIPT

A. Date: August 3, 1992

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
33489005	6GGW676	Water	07/27/92	N/A	08/09/92
33489M05	6GGW676 MS	Water	07/27/92	N/A	08/09/92
33489D05	6GGW676 MSD	Water	07/27/92	N/A	08/09/92
METHOD BLK	N/A	Water	N/A	N/A	08/09/92

C. Documentation Exceptions : No exceptions were encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : No exceptions were encountered.

IV. QUALITY CONTROL

A. Method Blank : The associated method blank met acceptable QC criteria.

B. Surrogate Recoveries : All met acceptable QC limits.

C. Matrix Spike Results: The MS/MSD associated with these samples was performed on sample 33489005 (6WW676) and is included in this data package.

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FAX 916.244.4109

BC

V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Brian Geers 8-21-92

Brian Geers **Date**
Manager, Organics Division

CH2M HILL Quality Analytical Laboratory
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FAX 916.244.4109

CASE NARRATIVE

SDG: SHEMYA5

I. Holding Times:
Holding times were met.

II. Analysis:

A. Blanks
All acceptance criteria were met.

B. Calibration
All acceptance criteria were met.

C. ICP Interference Check Samples
All acceptance criteria were met.

D. Spike Sample Analysis
All acceptance criteria were met.

E. Duplicate Sample Analysis
All acceptance criteria were met.

F. Laboratory Control Sample Analysis
All acceptance criteria were met.

G. ICP Serial Dilution
Not required for this level QC.

H. Other
A non client sample was used to provide QA/QC results for this Data Package because the upgrade in QC level was not effective until the day of analysis.

III. Certification:

I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

Signed: Fred Bickell Date: 8/21/92
Fred Bickell/Cations Supervisor

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Name: CH2MHILL_____ Contract: SHEMYA_AFB

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.:SHEMYA

SOW No.: 3/90_

EPA Sample No.	Lab Sample ID
__SAMPLE_____	__33526008____
_OSW4137_____	__33489001____
_OSW4138_____	__33489002____
_OSW4139_____	__33489003____
_OSW4140_____	__33489004____
__SAMPLS_____	__33526008S___
__SAMPLD_____	__33526008D___
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

_____

_____

_____

_____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Donald R Hull Name: Donald R. Hull_____

Date: 8/21/92 Title: Inorganics Division Manager

CASE NARRATIVE
General Chemistry

Lab Number: 22422

Client/Project: SHEMYA

I. Holding Time:
The percent moisture was received outside of holding time.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike Sample(s):
All acceptance criteria were met.

D. Duplicate Sample(s):
All acceptance criteria were met.

E. Lab Control Sample(s):
All acceptance criteria were met.

F. Other:
The QC associated with 22422 is included in the 22389 data package.

III. Documentation Exceptions:
None.

IV. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verfied by the following signature.

SIGNED: _____ DATE: 18AUG92

Kevin A. Sanders
Inorganics Division Manager

000082

COVER PAGE
GENERAL CHEMISTRY ANALYSES DATA PACKAGE
Level 2 and 3

Lab Name: CH2M HILL LABORATORIES Lab Number(s): 22422

Client/Project: SHEMYA Project No: BOI31941.FS

Client Sample ID	CH2M HILL/LMG Lab Sample ID	CH2M HILL/LRD Lab Sample ID	Lab Sample ID
SOSW4140TP3	22422001	33489004	

Comments: THE SOIL QC ASSOCIATED WITH 22422 IS INCLUDED IN THE 22389 DATA PACKAGE.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Joe Basile for Name: Kevin A. Sanders

Date: 9/1/92 Title: Inorganic Division Manager

Case No:_____
SDG No:_____

Table 1
VOA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/4/92

Instrument ID: 5100

Method Blank ID: VBLK51

Sample Identifier:	Hold Time Out, days		Standards: (<,>)					
			Surrogates			ISTDs		
	AR	All	S1	S2	S3	IS1	IS2	IS3
505W4137								
505W4138								
505W4139								
505W4140								

Date: 7/31/92 Time: 0913 1021

Compound: SPCC (#) CCC(*) Aromatic (AR)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Meth.	Trip	(+/-)	
Chloromethane 0.010 (#)				29.1				
Bromomethane 0.100								
Vinyl Chloride 0.100 (*)								
Chloroethane 0.010		22.3						
Methylene Chloride 0.010					9	7	J1, UJ1/-	
Acetone 0.010		23,6			9		J1& UJ1/-	IS#1
Carbon Disulfide 0.010				28.5			J2/UJ2	
1,1-Dichloroethene 0.100 (*)		22.0		27.2			↓	
1,1-Dichloroethane 0.200 (#)				26.2			↓	
1,2-Dichloroethene (total) 0.010								
Chloroform 0.200 (*)								
1,2-Dichloroethane 0.100								
2-Butanone 0.010								
1,1,1-Trichloroethane 0.100								
Carbon Tetrachloride 0.100								
Vinyl Acetate								
Bromodichloromethane 0.200								
1,2-Dichloropropane 0.010 (*)								IS#2
cis-1,3-Dichloropropene 0.200								
Trichloroethene 0.300								
Dibromochloromethane 0.100								
1,1,2-Trichloroethane 0.100								
Benzene 0.500 AR								
trans-1,3-Dichloropropene 0.100								
Bromoform 0.100 (#)								
4-Methyl-2-Pentanone 0.010								
2-Hexanone 0.010								IS#3
Tetrachloroethene 0.200								
1,1,2,2-Tetrachloroethane 0.500 (#)								
Toluene 0.400 (*)(AR)								
Chlorobenzene 0.500 (#)(AR)								
Ethylbenzene 0.100 (*)(AR)								
Styrene 0.300 (AR)								
Xylenes (total) 0.300 (AR)								

Reported as: RT (µg/kg, µg/L)

TICs Reported in Blank(s):

TABLE 1
VOA Qualifier Summary
Calibrations, Blanks, Holding Time, Surrogates, Internal Standards

Date Analyzed:

8/6/92

Instrument ID:

5700

Method Blank ID:

VBLKW1

Sample Identifier:	Hold Time Out Ar	Hold Time Out All	Standards: (<,>) Surrogate 1	Surrogate 2	Surrogate 3	Internal (IS) 1	Internal (IS) 2	Internal (IS) 3
Trip Blank								

Date: 8/5/92 Time: 1109 1232

COMPOUND:	SPCC(#) CCC(*)	Initial Cal. RRF<.05	Initial Cal. %RSD>30	Continuing Cal. RRF <.05	Continuing Cal. %D>25	Blanks Meth.	Blanks Trip	Qualifiers (+/-)	
Chloromethane	0.010 #								
Bromomethane	0.100								
Vinyl Chloride	0.100 *								
Chloroethane	0.010								
Methylene Chloride	0.010		42.0			8		J2/UJ2	
Acetone	0.010				38.7			↓	I
Carbon Disulfide	0.010								S
1,1-Dichloroethene	0.100 *								#
1,1-Dichloroethane	0.200 #								1
1,2-Dichloroethene(total)									
Chloroform	0.200 *								
1,2-Dichloroethane	0.100								
2-Butanone	0.010		21.4		35.2			J2/UJ2	
1,1,1-Trichloroethane	0.100								
Carbon Tetrachloride	0.100								
Vinyl Acetate									
Bromodichloromethane	0.200								
1,2-Dichloropropane	0.010 *								I
cis-1,3-Dichloropropene	0.2								S
Trichloroethene	0.300								#
Dibromochloromethane	0.100								2
1,1,2-Trichloroethane	0.100								
Benzene	0.500								
0.1 trans-1,3-Dichloropropene									
Bromoform	0.100 #								
4-Methyl-2-Pentanone	0.010		22.4					J2/UJ2	
2-Hexanone	0.010				28.0			↓	
Tetrachloroethene	0.300				-29.3			↓	I
0.5 1,1,2,2-Tetrachloroethane	#								S
Toluene	0.4 *								#
Chlorobenzene	0.5 #								3
Ethylbenzene	0.1 *								
Styrene	0.3								
Xylenes(total)	0.3								

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

Site: Shemya Air Force Base--IRP Project

Method 625/8270
Case No:
SDG No:

Table 1. BNA Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Analysis Date:	Sample Identifier:	Hold Time Out, days		Standards: (<,>)													
				Surrogate								Internal (IS)					
		Ext.	Anal.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
8/10/92	SOSW4137																
Inst. ID:	SOSW4138																
~~4800~~	SOSW4139																
INCOS-X2	SOSW4140																
MBlnk ID:																	
SBLKS1																	
Ext. Dates:																	
8/7/92																	

Date: 8/12/92 Time: 1527 1601

Compounds: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers
	RRF<.05	%RSD>30 (20.5)	RRF<.05	%D>25	Lab	Field	(+/-)
Phenol (*)(A)	Ok	Ok			Ok		
bis (2-Chloroethyl)ether (BN)							
2-Chlorophenol (A)							
1,3-Dichlorobenzene (BN)							
1,4-Dichlorobenzene (*)(BN)							
Benzyl Alcohol (BN)							
1,2-Dichlorobenzene (BN)							
2-Methylphenol (A)							
bis(2-Chloroisopropyl)ether (BN)							
4-Methylphenol (A)							
N-Nitroso-Dipropylamine (BN)(#)							
Hexachloroethane (BN)							
Nitrobenzene (BN)							
Isophorone (BN)							
2-Nitrophenol (A)(*)					/		
2,4-Dimethyl Phenol (A)							
Benzoic Acid (A)							
bis(2-Chloroethoxy)methane (BN)							
2,4-Dichlorophenol (A)							
1,2,4-Trichlorobenzene (BN)							
Naphthalene (BN)							
4-Chloroaniline (BN)							
Hexachlorobutadiene (BN)(*)							
4-Chloro-3-methylphenol (A)(*)							
2-Methylnaphthalene (BN)							
Hexachlorocyclopentadiene (BN)(#)				-34.4			J2/UJ2
2,4,6-Trichlorophenol (A)(*)							
2,4,5-Trichlorophenol (A)							
2-Chloronaphthalene (BN)							
2-Nitroaniline (BN)							
Dimethyl Phthalate (BN)							
Acenaphthylene (BN)							
2,6-Dinitrotoluene (BN)							
N-Nitrosodimethylamine		-28.9		-28.9			J2/UJ2

IS #1

IS #2

IS

Method 625/8270

Case No:

SDG No:

Table 1

BNA

Analysis Date:
8/20/92

Instrument ID:
INCOS-XL

Date: 8/12/92 Time: 1527 1601

Compound: SPCC (#) CCC(*) Acidic (A) Base/Neutral (BN)	Initial Cal.		Continuing Cal.		Blanks		Qualifiers	
	RRF<.05	%RSD>30	RRF<.05	%D>25	Lab	Field	(+/-)	
3-Nitroaniline (BN)								I
Acenaphthene (*)(BN)								S
2,4-Dinitrophenol (A)(#)								#
4-Nitrophenol (A)(#)							•	3
Dibenzofuran (BN)								
2,4-Dinitrotoluene (BN)								
Diethyl Phthalate (BN)								
4-Chlorophenyl-phenylether (BN)								
Fluorene (BN)								I
4-Nitrosaniline (BN)								S
4,6-Dinitro-2-Methylphenol (A)								#
N-Nitrosodiphenylamine (BN)(*)								4
4-Bromophenyl-phenylether (BN)								
Hexachlorobenzene (BN)				-25.2			J2/UJ2	
Pentachlorophenol (A)(*)								
Phenanthrene (BN)								
Anthracene (BN)								
Di-n-Butyl Phthalate (BN)								
Fluoranthene (BN)(*)								
Pyrene (BN)								
Butylbenzyl Phthalate (BN)								I
3,3'-Dichlorobenzidene (BN)								S
Benzo(a)anthracene (BN)								#
bis(2-ethylhexyl)phthalate (BN)								5
Chrysene (BN)								
Di-n-Octyl Phthalate (BN)(*)				25.6			J2/UJ2	
Benzo(b)fluoranthene (BN)								I
Benzo(k)fluoranthene (BN)								S
Benzo(a)pyrene (BN)(*)								#
Indeno(1,2,3-cd)pyrene (BN)				31.6			J2/UJ2	6
Dibenz(a,h)anthracene (BN)				26.0			↓	
Benzo(g,h,i)perylene (BN)				32.2				

Reported as: RT (ug/kg, ug/L)

TICs Reported In Blank(s):

PEST_CAL.FRM

Site: Shemya Air Force Base-IRP Project

Method 608/8080

Case No:_____

SDG No:_____

Table 1
Pesticide/PCBs Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/22/92

Matrix

Instrument ID: 3400

Method Blank ID: PBLK 1

Extraction Date: 8/7/92

Sample Identifier:	Hold Time Out, days		Last IND Standard before Analysis					
	Ext.	Anal.	1	2	3	4	5	6
SOSW4137								
SOSW4138								
SOSW4139								
SOSW4140								

Column: DB-5 Primary / Secondary Compounds:	Init. Cal. %RSD>10	Continuing, %D>15% or 20%						Blank	Qualifiers (+/-)
		1	2	3	4	5	6		
Cont. Cal. date/month		8/22							
Time									
alpha-BHC		ok						ok	
beta-BHC									
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor	20.17								
Endrin ketone									
alpha-chlordane									
gamma-chlordane									
Toxaphene									
Aroclor-1016 (PCB-1016)									
Aroclor-1221 (PCB-1221)									
Aroclor-1232 (PCB-1232)									
Aroclor-1242 (PCB-1242)									
Aroclor-1248 (PCB-1248)									
Aroclor-1254 (PCB-1254)									
Aroclor-1260 (PCB-1260)									
Dibutylchlorendate (DBC) Surr.									

* Validation Criteria:

	Primary Column		Secondary Column
Detected compounds	%D < 15	and	%D < 20
Undetected compounds	%D < 20	or	%D < 20

PEST_MSD.FRM

Site: Shemya Air Force Base-IRP Project

Method 608/8080

Case No:_____

SDG No:_____

Table 2. Pesticide/PCBs Surrogate and Matrix Spike Quality Control Summary

Surrogate Data Summary

Sample Identifier:	Surrogate Recoveries, %R		Qualifiers (+/-)
	~~Aqueous~~ TCX	~~Soil~~ DCB	
(Acceptance Range, %R):	~~(24-134)~~ 60-150	~~(30-150)~~ 60-150	

Surrogate = Dibutylchlorendate (DBC)

MS/MSD Data Summary

Spike Compound:	Matrix Spike, Recovery, %R		Matrix Spike Duplicate, Recovery, %R		MS/MSD Precision, RPD		Qualifiers (+/-)
	Range	Actual	Range	Actual	Range	Actual	
AQUEOUS SAMPLES							
gamma-BHC (Lindane)	56-123		56-123		14		
Heptachlor	40-131		40-131		20		
Aldrin	40-120		40-120		22		
Dieldrin	52-126		52-126		18		
Endrin	56-121		56-121		21		
4,4'-DDT	38-127		38-127		27		
SOIL SAMPLES							
gamma-BHC (Lindane)	46-127	87	46-127	91	50	4.6	
Heptachlor	35-130	89	35-130	94	31	4.4	
Aldrin	34-132	83	34-132	86	43	4.5	
Dieldrin	31-134	92	31-134	91	38	0.8	
Endrin	42-139	95	42-139	100	45	5.2	
4,4'-DDT	23-134	84	23-134	88	50	4.1	

TABLE 1
Volatile Qualifier Summary
Calibrations, Blanks, Holding Time, Surrogates, Internal Standards

Date Analyzed:

8/9/92

Instrument ID:

GC3700

Method Blank ID:

VBLK1

Sample Identifier:	Hold Time Out		Standards: (↑,↓) Surrogate			Internal (IS)		
	Ar	All	1	2	3	1	2	3
BWW676								

Init. Cal. Date: 7/3/92 Cont. Cal. Time:_____

Compounds (Method 8010/601)	Initial Cal. %RSD >20	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
Bromodichloromethane							
✓ Bromoform	26.8	22.8					J2/UJ2
Bromomethane							
Carbon tetrachloride							
Chlorobenzene							
✓ Chloroethane		-18.0					J2/UJ2
2-Chloroethylvinyl ether							
✓ Chloroform		-15.7					J2/UJ2
✓ Chloromethane		-42.0					↓
Dibromochloromethane							
1,2-Dichlorobenzene							
✓ 1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,1-Dichloroethane							
✓ 1,2-Dichloroethane		-18.2					J2/UJ2
1,1-Dichloroethene							
1,2-Dichloropropane							
trans-1,2-Dichloroethene							
cis-1,3-Dichloropropene							
trans-1,3-Dichloroethene							
✓ Methylene Chloride		-16.3					J2/UJ2
✓ 1,1,2,2-Tetrachloroethane		-21.0					↓
✓ Tetrachloroethene		-15.6					
1,1,1-Trichloroethane							
✓ 1,1,2-Trichloroethane		-17.6					J2/UJ2
✓ Trichloroethene		-15.8					↓
Trichlorofluoromethane							
Vinyl chloride							
Dichlorodifluoromethane(601)							
✓ Dichlorodifluoromethane	20.2						J2/UJ2
Dibromomethane							
trans-1,3-Dichloropropene							
1-Chlorohexane							
1,1,1,2-Tetrachloroethane							
1,2,3-Trichloropropane							
bis(2-Chloroisopropyl ether)							
cis-1,2-Dichloroethene							

TABLE 1 - continued
Volatile Qualifier Summary

Init. Cal. Date: 7/13/92 Cont. Cal. Time: _____

AROMATICS (Method 8020/602)	Initial Cal. %RSD >30	Continuing Cal. %D >15	Correlation Coefficient	Blanks Method	Blanks Trip 1	Blanks Trip 2	Qualifiers (+/-)
Benzene		CR		CR			
Chlorobenzene							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene	20.1						J2/UJ2
1,4-Dichlorobenzene							
Ethylbenzene							
Toluene							
Total Xylenes							
Bromobenzene							
Chlorotoluene							

601_CAL_FRM

Site: Shemaly Air Force Base--IRP Project

Method 601/8010

Case No:_____

SDG No:_____

Table 1
Purgeable Halocarbon Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/9/92

Matrix

Instrument ID: GC-370V

Method Blank ID: VBLA1

Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
	AR	All	Aqueous Range * (65-127)	Soil Range * (67-136)		
GWW67G						

Compound	QC Check Std., ug/L Range**	Std.	Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Trip	Qualifiers (+/-)
Chloromethane	11.9-28.1		6.2-25.0	42	44	121	5.8	OK		
Bromomethane	11.7-28.3		8.0-19.9	89	92	85	3.9			
Dichlorodifluoromethane	-		-	117	115	-	1.7			
Vinyl Chloride	13.7-26.3		13.5-24.6	86	82	58	4.8			
Chloroethane	15.4-24.6		14.5-22.0	79	76	41	3.2			
Methylene chloride	15.5-24.5		12.2-22.3	81	78	59	3.1			
Trichlorofluoromethane	13.3-26.7		12.2-23.3	82	80	63	3.1			
1,1-Dichloroethene	12.6-27.4		13.7-23.8	78	80	54	3.2			
1,1-Dichloroethane	16.8-23.2		14.5-21.4	78	82	38	5.6			
trans-1,2-Dichloroethene	12.8-27.2		14.5-24.0	79	82	49	3.7			
Chloroform	15.0-25.0		14.8-21.7	86	84	38	1.2			
1,2-Dichloroethane	14.3-25.7		15.8-23.6	82	85	40	4.2			
1,1,1-Trichloroethane	14.2-25.8		13.9-21.8	83	84	44	1.2			
Carbon tetrachloride	13.7-26.3		14.5-22.7	86	82	44	4.8			
Bromodichloromethane	15.2-24.8		16.1-26.7	86	88	49	2.9			
1,2-Dichloropropane	14.8-25.2		15.4-24.6	84	85	46	0.6			
cis-1,3-Dichloropropene	12.8-27.2		13.6-26.4	86	84	64	2.4			
Trichloroethene	15.4-24.6		13.5-22.3	82	81	49	1.8			
Dibromochloromethane	13.1-26.9		14.7-28.4	101	101	64	0			
1,1,2-Trichloroethane	15.7-24.3		13.4-21.5	90	86	46	4.0			
trans-1,3-Dichloropropene	12.8-27.2		13.6-26.4	90	88	64	2.3			
Bromoform	14.7-25.3		11.1-23.2	107	106	70	0.5			
1,1,2,2-Tetrachloroethane	9.8-30.2		12.0-26.4	108	104	75	3.8			
Tetrachloroethene	14.0-26.0		13.3-24.5	84	83	59	0.6			
Chlorobenzene	14.4-25.6		14.2-23.4	89	86	49	2.8			
1,3-Dichlorobenzene	9.9-30.1		12.0-26.8	92	88	76	4.4			
1,2-Dichlorobenzene	14.0-26.0		11.5-29.1	94	90	87	5.4			
1,4-Dichlorobenzene	13.9-26.1		14.4-22.6	90	89	44	0.6			
2-Chloroethylvinyl ether	12.0-28.0		13.0-27.0	/	/	70	/			

* The ranges are based on the project-specific control charts (average recovery +/- 3 standard deviations).
** The QC check std. and MS/MSDs use nominal 20 ug/L spike concentration.

602_CAL.FRM

Site: Shemya Air Force Base--IRP Project

Method 602/8020

Case No:

SDG No:

Table 1
Purgeable Aromatics Qualifier Summary (Calibrations, Blanks, Holding Time, Surrogates, Internal Standards)

Date Analyzed: 8/9/92

Instrument ID: GC 3700

Method Blank ID: VBLA1

Matrix	Sample Identifier:	Hold Time Out, days		Standards: (<,>) Surrogate Recoveries, %R		ISTD, %R	Qualifiers
		AR	All	Aqueous Range (83-115)*	Soil Range (88-119)*		
	GWW676						

Compound	QC Check Std., ug/L Range**		Spike Recovery, %R & RPD Range**	MS	MSD	RPD	Actual	Blanks Lab	Blanks Trip	Qualifiers (+/-)
tert-Butylmethyl ether	-		-	104	102	-	1.5			
Benzene	15.4-24.6		14.4-23.5	113	112	48	0.4			
Toluene	15.5-24.5		15.2-23.7	114	112	43	0.9			
Chlorobenzene	16.1-23.9		15.7-22.4	118	118	35	0.4			
Ethylbenzene	12.6-27.4		13.9-24.3	113	112	54	0.9			
Total xylenes	-		-	109	109	-	0.4			
1,3-Dichlorobenzene	14.5-25.5		15.4-22.9	114	114	39	0.9			
1,2-Dichlorobenzene	13.6-26.4		14.4-23.9	117	116	50	0.9			
1,4-Dichlorobenzene	13.9-26.1		14.5-22.8	112	112	44	0.4			

** Ranges are based on project-specific control charts (average recovery +/- 3 SD).
The QC check std. and MS/MSDs use a nominal 20 ug/L spike concentration.

Onsite Laboratory Data Validation

CSL Objectives

The objective of the close support lab (CSL) was to support the Shemya Air Force Base (SAFB) project by providing onsite analytical services in a real time situation.

The documentation and QA/QC program was sufficient to demonstrate laboratory performance for comparison of the SAFB project objectives. It included chain-of-custody information; raw instrument output including chromatograms, instrument logs, sample and data management logs, complete reports of QC sample performance; and laboratory notebooks. Instrument calibration and performance results, method detection limit study performance data, and laboratory QC sample data were also included in the documentation.

Calibration

VOCs

Target analytes for volatile organic compound (VOC) analysis include the typical fuel components of benzene, toluene, ethylbenzene and the xylene (BTEX) isomers. Chlorinated solvents tetrachloroethane, or perchloroethene (PCE), and trichloroethene (TCE), have also been identified at the SAFB site. The sample matrices include water, soil, and sediment. The sample preparation for the soil and sediment involves a methanol/water extraction. A photoionization detector (PID) was used to determine the volatile aromatic hydrocarbons in potentially contaminated fuel samples, and a Hall electrolytic conductivity detector (HECD) connected in series measured the presence of halogenated solvents. A method detection limit (MDL) had been proposed for water of 10 ug/L (ppb) and 50 ug/kg (ppb) for soil, although lower limits of 1.0 ug/L for water and 10 ug/kg for soil were routinely obtained.

An initial calibration (IC) was performed by using aqueous calibration standards of five concentration levels for each target analyte. The concentrations of the standards range from 1.0 to 110 ug/L and 1.0 ug/L to 220 ug/L which bracket the linear range of the gas chromatograph (GC) instrument. The relative standard deviation (RSD) was less than 20 percent for each target analyte (Tables 1 and 2). Therefore, the relative response factor (RRF) of each compound can be assumed to be invariant, and the average RRF can be used for calculations. IC curves were generated for the aromatic hydrocarbons on the PID and the solvents on the HECD (Figures 1 and 2). Internal and surrogate standards were prepared at 50 ug/L each and added to all standards, blanks, samples, and spikes. The internal and surrogate standards provided a response similar to the response of the target analytes in the midpoint standard used for daily calibration. The internal standards used for the aromatic hydrocarbons and chlorinated solvents were bromofluorobenzene (BFB) and chlorobromopropane (CBP), respectively. The surrogate standards used for the aromatic

hydrocarbons and chlorinated solvents were a,a,a-trifluorotoluene (TFT) and bromochloromethane (BCM), respectively. Surrogate recovery charts were plotted for the PID and the HECD (Figure 3). Specifications for recovery values were 60 to 140 percent. If the recovery was out of that range, the sample was prepared again and reanalyzed.

Instrument calibration was monitored by evaluation of a daily or continuing calibration (CC) standard which was the midpoint standard for the IC. The CC was analyzed at least every 24 hours of instrument operation. If the CC standard was greater than 20 percent difference, it was considered out of proper specifications and corrective actions were taken (Table 3).

TPHs

Target analytes for the total petroleum hydrocarbons (TPH) include higher molecular weight hydrocarbons typically found in diesel fuels. The sample matrix includes soil and sediment that requires a freon extraction prior to analysis by a fixed wave infrared spectrophotometer. A method detection limit of 15.0 mg/kg (ppm) in soil was proposed, although difficult matrix effects produced a 25 mg/kg limit which was satisfactory for this SAFB project.

An IC was performed by using aqueous calibration standards of 10 concentrations of each target analyte. The concentrations of the standards range from 4.5 to 825 mg/L bracketing the linear range of the instrument. The IC was split into a low level IC, 4.5 to 140 mg/L, and a high level IC, 140 to 825 mg/L (Table 4). This enabled more accurate determination for low and high level samples. IC curves were generated for the low and high level standards (Figure 4).

Instrument calibration was monitored by evaluation of a CC standard which was the midpoint standard for the IC. The CC was analyzed at least every 24 hours of instrument operation. If the CC standard was greater than a 20 percent difference, it was considered out of proper specifications and corrective actions were taken.

Precision and Accuracy

VOCs

Precision and accuracy were determined by evaluating standards, blanks, matrix spikes, duplicates, and surrogate recoveries. Precision, or the repeatability of an instrument, was determined primarily by analyzing duplicate standards, matrix spikes, and samples. Statistical calculations were performed on the matrix spikes (MS) and the matrix spike duplicates (MSD). A precision value of +/- 25 relative percent difference (RPD) was proposed for MS/MSD VOC samples. There were four cases where this 25 percent value was exceeded throughout both Phases I and II (Table 5). On July 17 and 19, duplicate spike values produced 30 to 40 RPD

attributed to a soil matrix effect. There were no target analytes identified above the method detection limit in any soil sample on those dates. The other two instances occurred on September 3 and 6, in water samples. The RPD values ranged from 25 to 29 percent and appeared consistent throughout all the contaminant spike recoveries. The actual percent recovery values were approximately 70 percent for the first spike and 100 percent for the duplicate. It was concluded that the first matrix spike was inadvertently injected with less than the required amount of the CC mid-point standard, and therefore produced significantly less recovery. Matrix spike recovery charts were generated for both detectors (Figures 5 and 6).

Accuracy values, or the closeness to the actual value, was determined by examination of matrix spike recoveries. The proposed accuracy specification was 60 to 140 percent recovery for each spiked constituent. This range of values was never exceeded for any spiked sample on any day throughout both Phases I and II. To ensure that the operating system was free from contaminants prior to sample introduction, an organic free water blank was analyzed. This blank was analyzed immediately following every CC standard of the day. If there was any target analyte identified above the method detection limit, another blank would be analyzed. This procedure would be performed repeatedly if necessary, although for this project it was not necessary. A soil extract blank was also analyzed prior to all soil sample analysis. This blank was composed of organic free water and 500 uL of Purge and Trap grade methanol. This blank was used to determine if there was any initial contamination above the method detection limit in the water or the methanol solvent used to extract the soil samples.

TPHs

Precision was also determined for TPHs by evaluation of MS/MSD's (Table 6). The range of acceptable RPD was also +/- 25 percent. The values calculated for RPD never exceeded the limits for any sample for any day through both Phases I and II. Actually, most RPD results were less than 10 percent.

Accuracy values was also determined by examination of matrix spike recoveries. The proposed accuracy specification was 60 to 140 percent recovery for TPH. This range of values was never exceeded for any spiked sample on any day throughout both Phases I and II. Matrix spike recovery charts were generated for the TPH analysis and are presented in Figure 7.

Procedure Deviations

VOCs

Initially, some contaminants were identified in the methanol slightly above the method detection limit. The contaminated methanol was used until a new uncontaminated methanol was received. The detection limits had to be elevated from 10 ug/kg to

25 ug/kg, during this part of Phase I, which was still below the project proposed limits.

TPHs

Prior to analysis for TPH on the IR spectrophotometer, a silica gel cleanup of the freon extract was proposed with silica gel filters. The filters were found to be contaminated, containing hydrocarbons which interfered with standard IR determination. This problem was resolved by using granular silica gel as a cleanup procedure following extraction and sonication. This silica produced an absorbance value in a blank of approximately 0.010. A new IC was produced which resembled the first IC, and therefore a standard procedure was developed which compensated for the silica residue in all samples on a daily basis.

The original 5-gram soil sample amount was reduced to 2 grams after difficulty in obtaining consistent MS/MSD results. The soil was evidently not well mixed in the VOA vials which were used for extraction. The 2-gram samples produced very repeatable results and the problem was avoided.

Onsite vs. Offsite Data

VOCs

The data generated at the onsite CSL was compared to confirmatory sample data sent to CH2M HILL's environmental laboratory in Redding, CA. Duplicate samples were submitted to the offsite laboratory at a frequency of 10 percent as stated in the project proposal for additional confidence in the onsite CSL data. A summary of BTEX, TCE, and PCE analytes is presented in Table 7, and the TPH data is presented in Table 8.

There were 43 samples submitted for confirmatory analysis of BTEX, TCE, and PCE. There were 29 samples which were evaluated as below the instrument detection limit (<1 ug/L or <10 ug/kg) for BTEX, TCE, and PCE. Comparison of the non-detected samples agreed very well including an insignificant variance of detection limit values. There was only one sample out of the 43 BTEX, TCE, and PCE analyses that did not compare well between the onsite and the offsite analysis. Onsite analysis of sample SW10-68 indicated levels of toluene, ethylbenzene, and the xylenes of 62.8, 54.2 and 171 ug/L, respectively, although the offsite laboratory results were all less than their 12 ug/L detection limit. Six other samples delivered suspicious comparisons, containing extremely elevated levels of BTEX. These samples were not used because of the suspicious nature of the results.

There were 34 samples submitted for confirmatory analysis of TPH. There were 17 samples determined to be below the detection limit for TPH analysis (25 mg/kg). Although all of the 17 non-detected samples agreed well between the two

laboratories, several other values were determined by the onsite laboratory to contain higher levels of TPH. After investigation of both methods used by the laboratories, it was discovered that the offsite laboratory used only a one-point curve whereas the onsite laboratory compared the sample to either a low concentration five-point-curve or a high concentration five-point-curve. The dual-standard calibration will deliver more consistent repeatable results whether the sample contains low or high amounts of TPHs.

Figure 1 PID Initial Calibration Curves

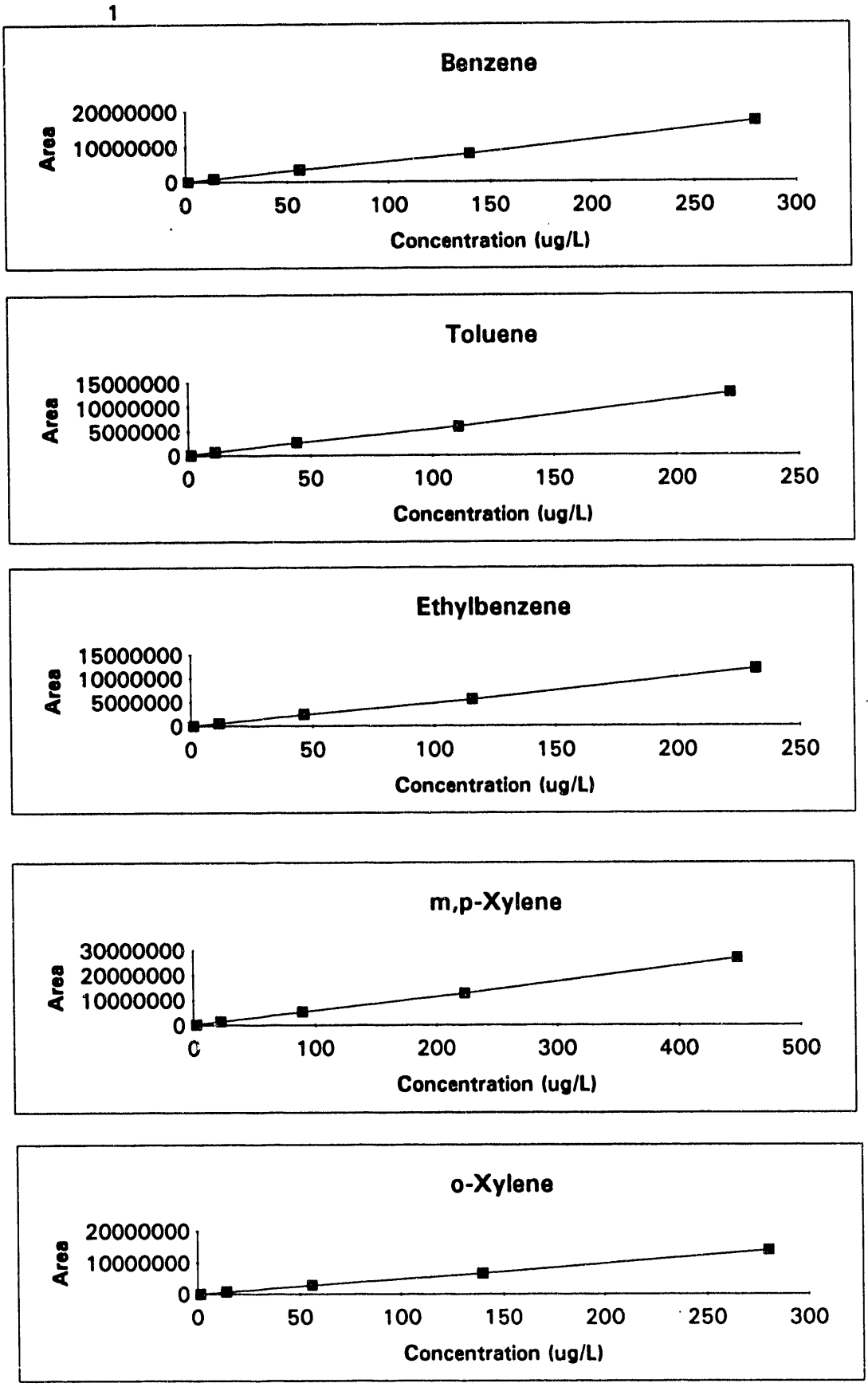
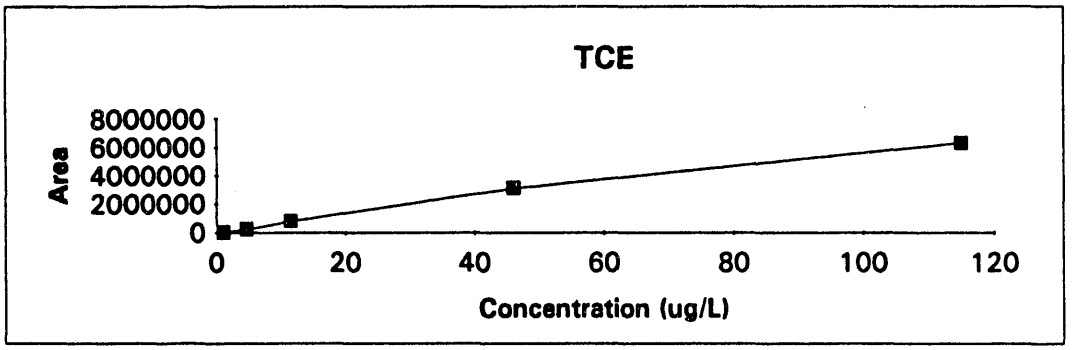


Figure 2 HECD Initial Calibration Curves



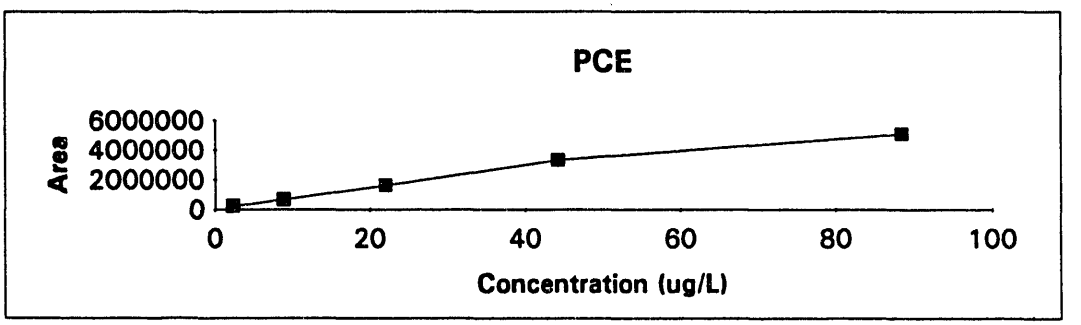
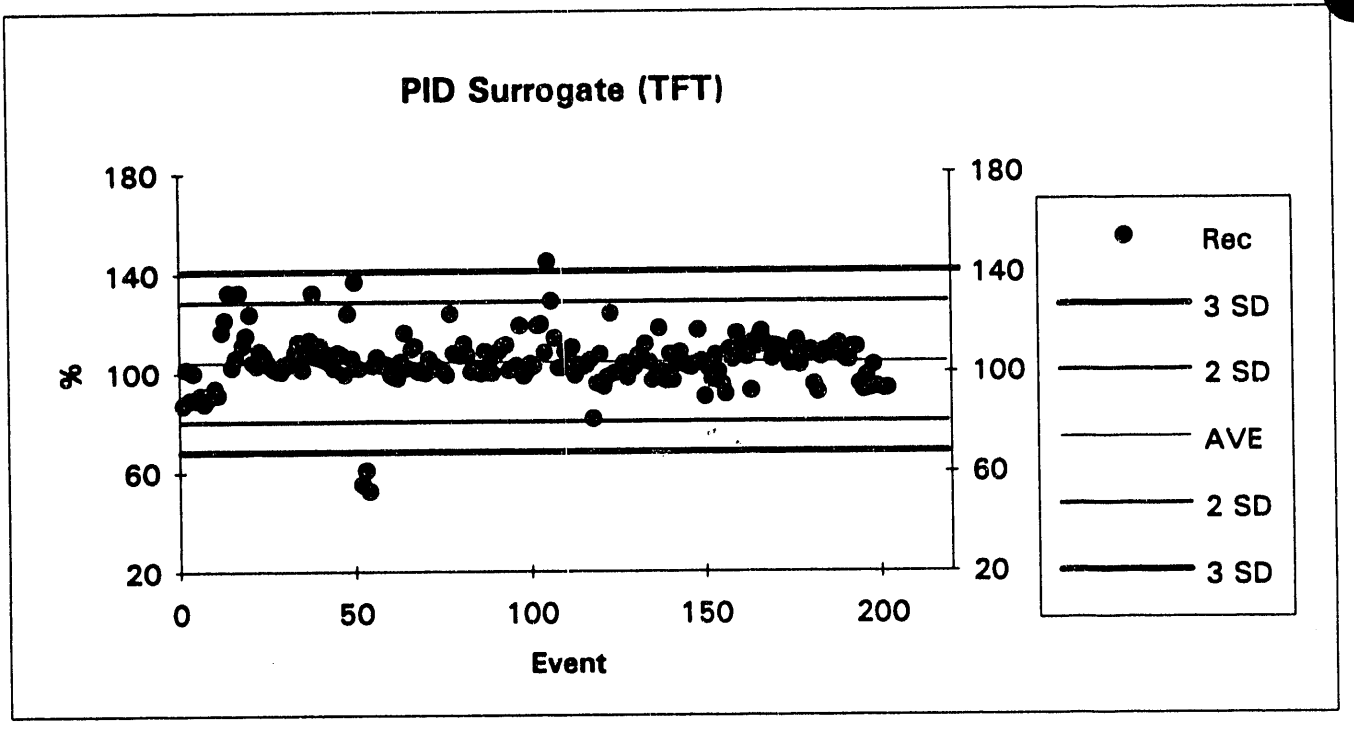


Figure 3 Surrogate Recovery Charts



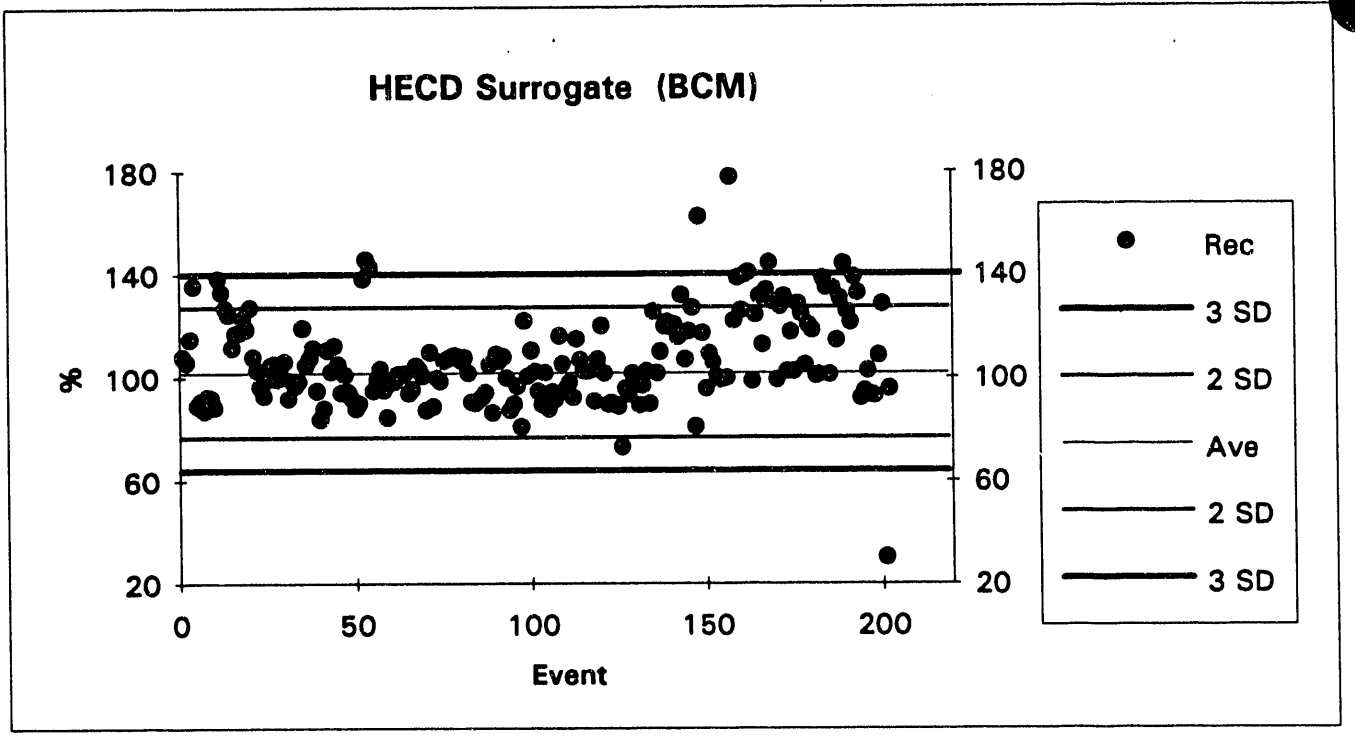
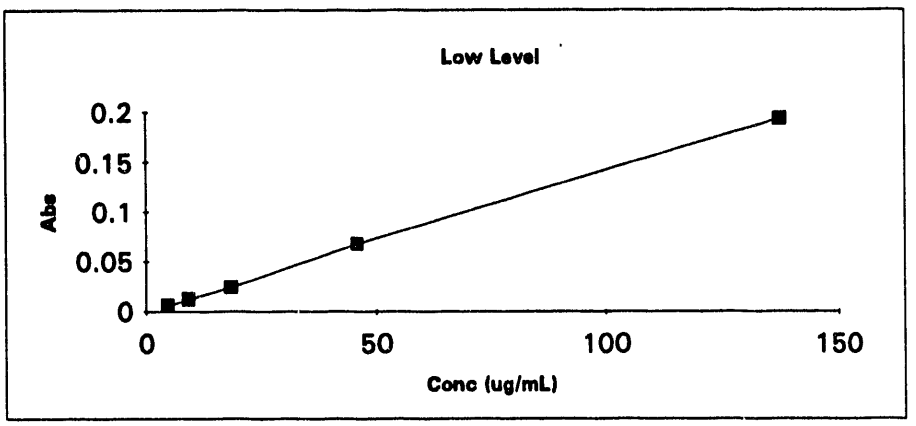


Figure 4 TPH Initial Calibration Curves



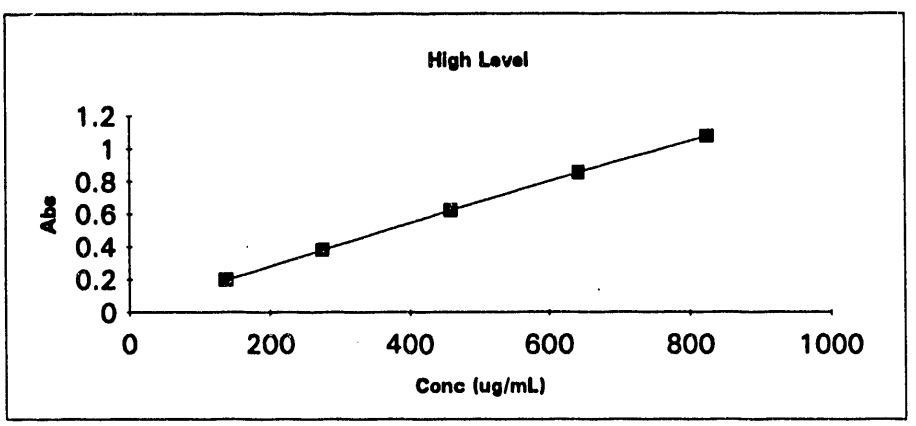
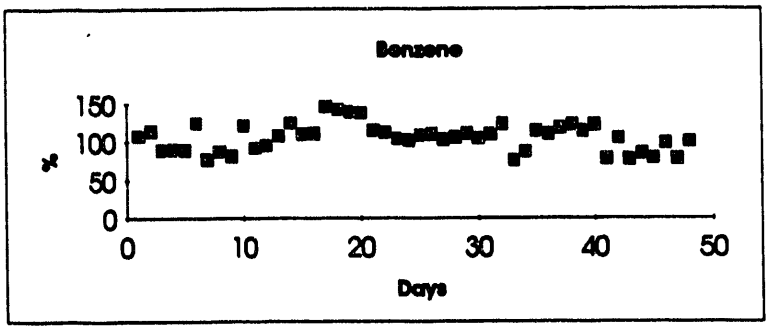
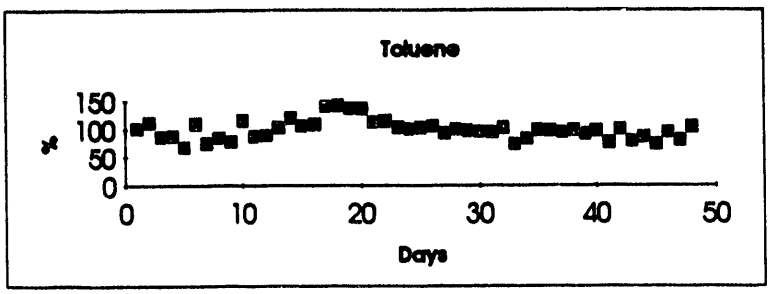
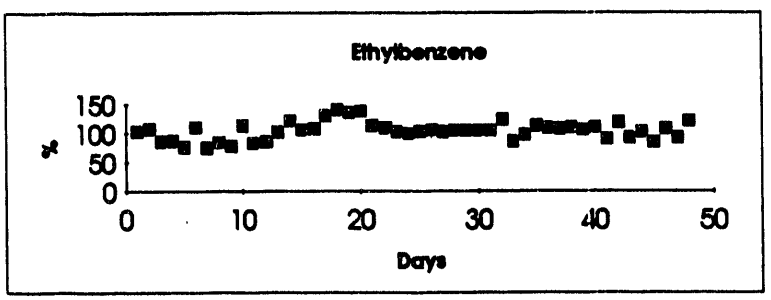
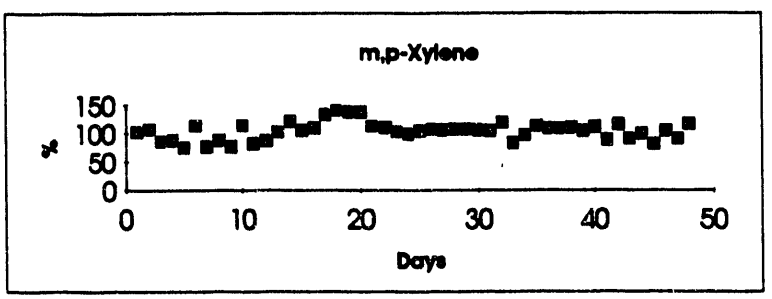


Figure 5 PID Matrix Spike Recovery Charts









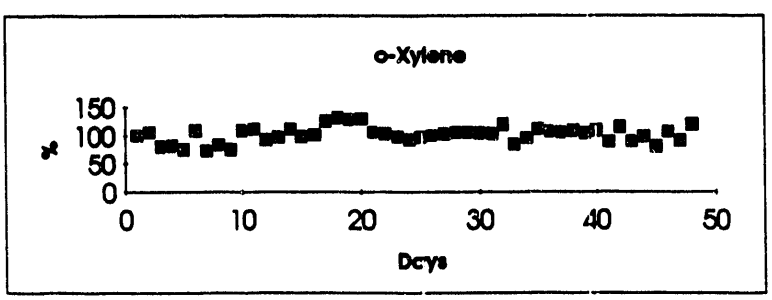
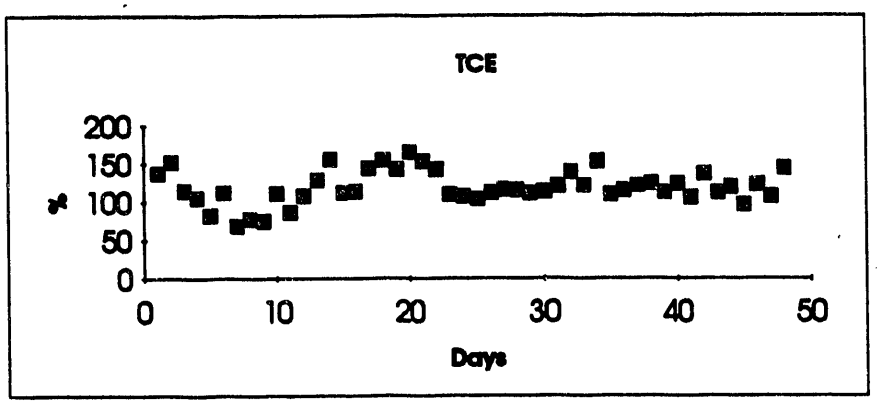


Figure 6 HECD Matrix Spike Recovery Charts



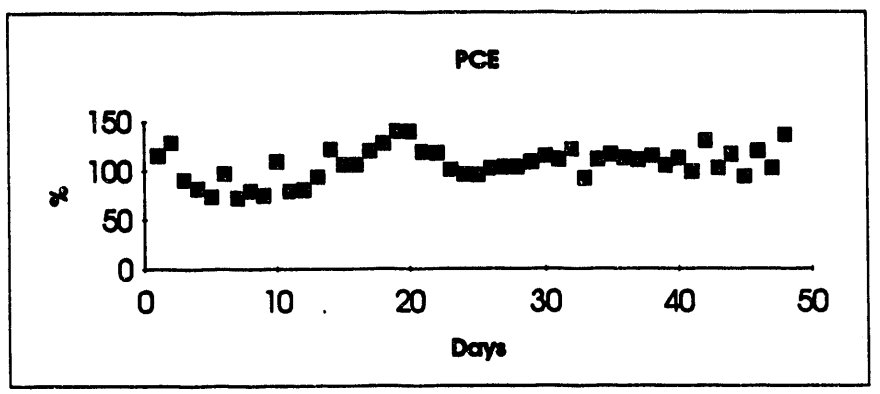


Figure 7 TPH Matrix Spike Recovery Chart

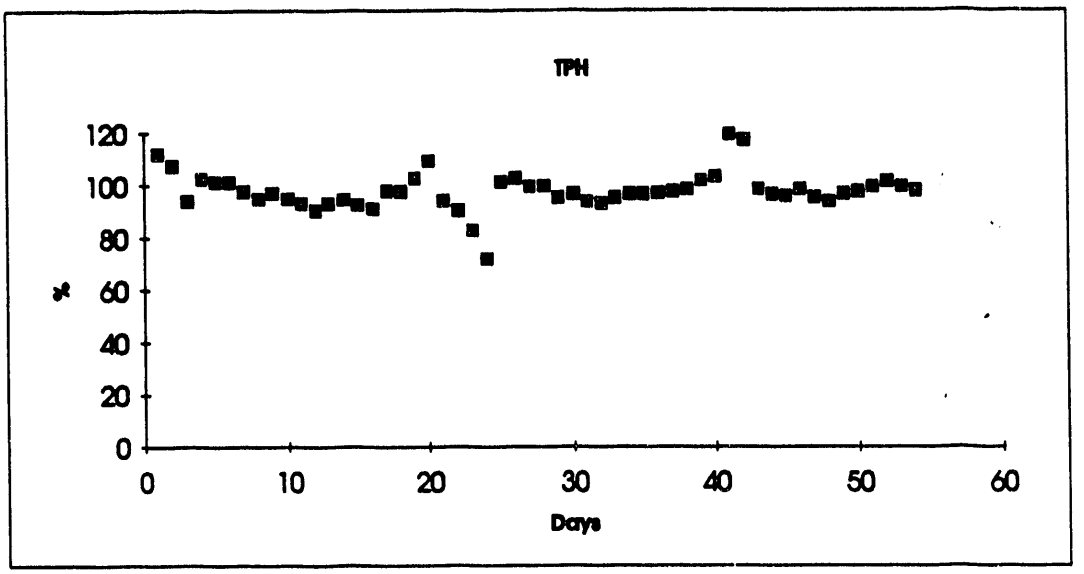


Table 1 VOC Initial Calibration IC - 14/07/92						
Compound	Conc. (ug/L)	Area Count	RRF	Mean RRF	Std Dev	%RSD
Benzene	1.4	67383	48130.7	58993.8	6875.1	11.7
	14	928176	66298.3			
	56	3476537	62081.0			
	140	8011035	57221.7			
	280	17146400	61237.1			
Toluene	1.1	54814	49830.9	55665.4	3918.5	7.0
	11.1	657596	59242.9			
	44.4	2565844	57789.3			
	111	5937301	53489.2			
	222	12870400	57974.8			
Ethylbenzene	1.2	50093	41744.2	48690.5	4096.7	8.4
	11.6	593219	51139.6			
	46.4	2344467	50527.3			
	116	5602023	48293.3			
	232	12005600	51748.3			
m,p-Xylene	2.2	112373	51078.6	57118.5	3745.5	6.6
	22.4	1343085	59959.2			
	89.6	5313241	59299.6			
	224	12511300	55854.0			
	448	26611600	59400.9			
o-Xylene	1.4	77892	55637.1	50787.3	3050.1	6.0
	14	710768	50769.1			
	56	2820271	50362.0			
	140	6608728	47205.2			
	280	13989700	49963.2			
TCE (PID)	1.1	29852	27138.2	33715.2	3903.3	11.6
	11.5	417772	36328.0			
	46	1667063	36240.5			
	115	3809034	33122.0			
	230	8221911	35747.4			
PCE (PID)	2.2	43883	19946.8	25303.0	3052.2	12.1
	22.1	591123	26747.6			
	88.4	2364873	26752.0			
	221	5681968	25710.3			
	442	12092300	27358.1			
TCE (HECD) 15/07/92	1.1	55186	50169.1	57157.7	10074.5	17.6
	4.6	210442	45748.3			
	11.5	776358	67509.4			
	46	3118475	67792.9			
	115	6275409	54568.8			
PCE (HECD) 15/07/92	2.21	206410	93398.2	75238.9	12708.0	16.9
	8.84	674551	76306.7			
	22.1	1631118	73806.2			
	44.2	3321038	75136.6			
	88.4	5087143	57546.9			

Table 2 VOC Initial Calibration IC - 26/08/92						
Compound	Conc. (ug/L)	Area Count	RRF	Mean RRF	Std Dev	%RSD
Benzene	1.4	75245	53746.4	52765.7	5264.3	10.0
	5.6	341845	61043.8			
	14	684583	48898.8			
	28	1333733	47633.3			
	140	7350884	52506.3			
Toluene	1.11	78807	70997.3	60598.2	10866.9	17.9
	4.44	323645	72893.0			
	11	545771	49615.5			
	22	1128352	51288.7			
	111	6459788	58196.3			
Ethylbenzene	1.2	58143	48452.5	47911.7	4086.0	8.5
	4.64	219894	47390.9			
	11.6	512158	44151.6			
	23.2	1044781	45033.7			
	116	6325434	54529.6			
m,p-Xylene	2.24	141768	63289.3	59016.2	4520.9	7.7
	8.96	517584	57766.1			
	22.4	1229154	54872.9			
	44.8	2458566	54878.7			
	224	14397400	64274.1			
o-Xylene	1.4	72375	51696.4	49632.5	3979.7	8.0
	5.6	269683	48157.7			
	14	662499	47321.4			
	28	1273689	45488.9			
	140	7769742	55498.2			
TCE (PID)	1.1	38023	34566.4	33532.3	2105.8	6.3
	4.6	168094	36542.2			
	11.5	358067	31136.3			
	23	740668	32203.0			
	115	3819553	33213.5			
PCE (PID)	2.21	64148	29026.2	26885.8	2825.2	10.5
	8.84	261587	29591.3			
	22.1	526900	23841.6			
	44.2	1054062	23847.6			
	221	6214985	28122.1			
TCE (HECD)	1.1	100433	91302.7	91493.3	15898.1	17.4
	4.6	510273	110928.9			
	11.5	1117462	97170.6			
	23	2094902	91082.7			
	115	7702884	66981.6			
PCE (HECD)	2.21	230123	104128.1	85484.9	28077.7	32.8
	8.84	924915	104628.4			
	22.1	2079711	94104.6			
	44.2	3874654	87661.9			
	221	8155217	36901.4			

Table 3 Continuing Calibration Summary

Standard Concentrations (ug/L):			
Benzene	14.0	TCE	11.5
Toluene	11.1	PCE	22.1
Ethylbenzene	11.6		
m,p - Xylene	22.4		
o - Xylene	14.0		

Analysis Date	Benzene	%	Toluene	%	Ethyl-benzene	%	m,p-Xylene	%	o-Xylene	%	TCE	%	PCE	%
	(ug/L)	Diff	(ug/L)	Diff	(ug/L)	Diff	(ug/L)	Diff	(ug/L)	Diff	(ug/L)	Diff	(ug/L)	Diff
14/07/92	15.5	10.7	11.8	6.3	12.5	7.8	24.2	8.0	14.3	2.1	12.5	8.7	23.9	8.1
14/07/92	14.3	2.1	11.0	-0.9	11.5	-0.9	22.1	-1.3	12.8	-8.6	11.5	0.0	22.0	-0.5
15/07/92	13.3	-5.0	10.2	-8.1	10.7	-7.8	20.5	-8.5	12.2	-12.9	10.7	-7.0	20.7	-6.3
15/07/92	12.7	-9.4	9.9	-10.6	10.2	-11.8	19.6	-12.4	11.4	-18.4	10.9	-5.4	19.3	-12.5
16/07/92	14.7	5.0	11.2	0.9	11.6	-0.4	22.3	-0.7	12.9	-8.0	12.9	12.0	21.8	-1.5
17/07/92	12.7	-9.0	9.8	-12.1	10.2	-12.1	19.7	-12.2	11.5	-17.7	12.1	5.2	18.1	-18.1
18/07/92	12.6	-10.3	9.7	-12.7	10.1	-12.9	19.4	-13.2	11.6	-17.1	9.9	-13.8	20.9	-5.4
19/07/92	11.3	-19.6	8.6	-22.9	9.0	-22.5	17.3	-22.7	10.0	-28.6	11.6	0.8	17.6	-20.5
19/07/92	13.1	-6.4	10.1	-9.0	10.6	-8.5	20.5	-8.5	11.9	-14.7	13.5	17.4	20.6	-6.8
20/07/92	13.2	-5.7	10.1	-9.0	10.4	-10.3	20.2	-9.8	11.7	-16.4	13.3	15.7	19.5	-11.8
20/07/92	12.7	-9.4	9.7	-12.3	10.2	-12.5	19.6	-12.7	11.8	-15.7	13.1	13.9	19.6	-11.4
21/07/92	12.2	-12.9	9.4	-15.3	9.7	-16.4	18.7	-16.5	11.0	-21.4	9.0	-21.7	18.8	-14.9
21/07/92	13.4	-4.1	10.8	-2.5	11.2	-3.4	21.9	-2.2	12.6	-10.0	10.9	-5.2	22.1	0.1
22/07/92	16.0	14.1	12.8	15.1	13.1	12.5	25.4	13.3	14.8	5.8	16.4	42.2	23.4	5.7
22/07/92	12.5	-10.7	10.1	-9.0	10.2	-11.8	19.9	-11.2	11.6	-17.1	10.0	-13.0	19.2	-13.1
23/07/92	13.3	-4.8	10.5	-5.1	11.0	-5.4	21.2	-5.2	12.4	-11.3	11.7	1.8	22.5	1.7
24/07/92	15.6	11.4	11.3	1.8	11.7	0.9	22.7	1.3	13.0	-7.5	13.7	19.1	22.8	3.2
25/07/92	12.9	-7.9	10.6	-4.5	10.4	-10.2	20.2	-9.8	11.7	-16.4	12.8	11.3	19.7	-10.9
27/07/92	12.5	-10.7	9.8	-11.7	10.2	-11.9	19.7	-12.1	11.6	-17.1	12.5	8.7	18.9	-14.5
28/07/92	14.2	1.4	11.0	-1.1	11.5	-1.0	22.3	-0.3	13.0	-7.3	11.9	3.7	22.7	2.5
29/07/92	16.2	15.7	12.6	13.5	13.5	16.4	26.6	18.8	15.5	10.7	13.3	15.7	24.5	10.9
30/07/92	12.3	-12.1	9.4	-15.3	9.8	-15.4	19.1	-14.7	11.2	-19.9	9.5	-17.4	17.8	-19.5
8/08/92	11.7	-16.1	9.2	-16.8	9.7	-16.4	18.8	-16.0	11.8	-15.7	14.9	29.6	21.5	-2.7
9/08/92	12.8	-8.6	9.8	-11.7	10.1	-12.8	19.7	-12.1	11.6	-16.9	13.4	16.5	21.1	-4.5
26/08/92	14.5	3.5	10.6	-4.2	11.5	-0.9	22.4	0.1	14.2	1.4	12.3	7.0	22.1	0.0
27/08/92	14.7	5.0	11.4	2.4	12.4	6.9	24.9	11.2	16.7	19.3	13.0	13.0	23.4	5.9
28/08/92	13.1	-6.1	10.2	-8.1	12.2	5.3	23.4	4.5	14.6	4.4	13.7	19.1	26.4	19.5
29/08/92	13.1	-6.1	9.3	-16.2	11.2	-3.4	21.3	-4.9	13.4	-4.3	13.1	13.9	25.8	16.7
30/08/92	12.1	-13.6	9.3	-16.2	11.2	-3.1	21.0	-6.1	13.3	-5.0	13.1	13.9	24.8	12.2
31/08/92	12.7	-9.3	10.0	-9.9	12.2	5.4	23.1	3.1	14.5	3.6	13.0	13.0	24.3	10.0
1/9/92	11.7	-16.4	9.0	-18.6	11.2	-3.4	21.2	-5.2	13.1	-6.4	12.9	12.2	24.2	9.5
2/9/92	11.8	-15.7	9.1	-18.0	11.2	-3.4	20.8	-7.0	13.1	-6.4	13.2	14.8	24.6	11.3
3/9/92	12.1	-13.4	9.3	-16.1	11.5	-0.9	21.5	-4.0	13.5	-3.6	13.0	13.0	24.6	11.3
4/9/92	11.9	-15.0	9.5	-14.4	11.5	-0.5	21.4	-4.5	13.8	-1.4	13.4	16.5	24.5	10.9
5/9/92	11.3	-19.3	9.1	-18.0	11.3	-2.6	21.3	-4.9	13.2	-5.4	12.8	11.3	23.7	7.2
6/9/92	11.7	-16.4	9.4	-15.3	11.6	0.0	21.8	-2.5	13.6	-2.6	13.4	16.5	24.4	10.4
7/9/92	11.3	-19.3	9.1	-18.0	11.3	-2.4	21.2	-5.3	13.3	-5.0	12.9	12.2	24.2	9.5

Table 4 TPH Initial Calibration Curves

IC 7/14/92

TPH Conc. (ug/mL)	Abs.	
4.58	0.006	
9.17	0.012	r = 0.9997
18.3	0.024	m = 704.1
45.8	0.068	b = 0.262
137.5	0.194	
137.5	0.194	
275.0	0.381	r = 0.9997
458.4	0.623	m = 777.3
641.8	0.857	b = -19.3
825.1	1.077	

r = 0.9994
m = 759.3
b = -5.1

Table 5 VOC Matrix Spike Data

Standard Concentrations (ug/L):

Benzene	140.0
Toluene	111.0
Ethylbenzene	116.0
m,p - Xylene	224.0
o - Xylene	140.0
TCE	116.0
PCE	221.0

Date Analyzed	Lab ID #	Benz Sample (ug/L)	Benz Spike (ug/L)	% Rec.	% Diff	Toluene Sample (ug/L)	Toluene Spike (ug/L)	% Rec.	% Diff	E-benz Sample (ug/L)	E-benz Spike (ug/L)	% Rec.	% Diff	m,p-Xy Sample (ug/L)	m,p-Xy Spike (ug/L)	% Rec.	% Diff
15/07/92	016sms	11.7	162.9	108		24.6	136.1	100		6.5	127.2	104		21.4	251.5	103	
15/07/92	016smsd	11.7	171.0	114	5.2	24.6	148.0	111	10.1	6.5	130.9	107	3.0	21.4	260.8	107	4.0
16/07/92	042wms	0.0	124.4	89		0.0	95.1	86		0.0	99.8	86		0.0	191.0	85	
16/07/92	042wmsd	0.0	126.8	91	1.9	0.0	97.6	88	2.6	0.0	100.8	87	1.0	0.0	194.4	87	1.8
17/07/92	051sms	23.6	147.5	89		112.6	187.4	67		28.5	117.0	76		112.6	280.7	75	
17/07/92	051smsd	23.6	197.9	125	33.8	112.6	234.0	109	47.5	28.5	155.8	110	36.0	112.6	366.6	113	40.7
18/07/92	111sms	0.0	106.2	76		0.0	82.7	75		0.0	85.9	74		0.0	171.1	76	
18/07/92	111smsd	0.0	122.0	87	13.8	0.0	93.7	84	12.5	0.0	97.8	84	13.0	0.0	193.9	87	12.5
19/07/92	121 wms	0.0	112.5	80		0.0	86.4	78		0.0	89.7	77		0.0	172.9	77	
19/07/92	121wmsd	0.0	169.0	121	40.1	0.0	127.7	115	38.6	0.0	131.6	113	37.9	0.0	253.1	113	37.7
20/07/92	129sms	0.0	128.5	92		0.0	96.4	87		0.0	96.3	83		0.0	184.9	83	
20/07/92	129smsd	0.0	133.5	95	3.8	0.0	98.6	89	2.3	0.0	99.9	86	3.7	0.0	196.9	88	6.3
21/07/92	150wms	0.0	150.5	108		0.0	114.7	103		0.0	119.2	103		0.0	229.9	103	
21/07/92	150wmsd	0.0	173.6	124	14.3	0.0	133.5	120	15.1	0.0	140.5	121	16.4	0.0	268.7	120	15.6
22/07/92	177wms	0.0	152.5	109		0.0	116.5	105		0.0	122.2	105		0.0	237.5	106	
22/07/92	177wmsd	0.0	155.1	111	1.7	0.0	120.7	109	3.5	0.0	125.5	108	2.7	0.0	243.1	109	2.3
24/07/92	202sms	0.0	203.8	146		0.0	155.9	140		0.0	151.6	131		0.0	297.5	133	
24/07/92	202smsd	0.0	198.6	142	-2.6	0.0	158.1	142	1.4	0.0	161.2	139	6.1	0.0	312.9	140	5.0
25/07/92	222wms	0.0	193.8	138		0.0	150.8	136		0.0	158.4	137		0.0	305.9	137	
25/07/92	222wmsd	0.0	192.8	138	-0.5	0.0	152.2	137	0.9	0.0	160.1	138	1.1	0.0	309.1	138	1.0
26/07/92	270wms	0.0	161.4	115		0.0	124.3	112		0.0	130.4	112		0.0	252.7	113	
26/07/92	270wmsd	0.0	156.1	112	-3.3	0.0	126.5	114	1.8	0.0	126.1	109	-3.4	0.0	244.2	109	-3.4
29/07/92	276wms	0.0	144.8	103		0.0	114.0	103		0.0	118.5	102		0.0	230.4	103	
29/07/92	276wmsd	0.0	141.8	101	-2.1	0.0	110.8	100	-2.8	0.0	114.5	99	-3.4	0.0	222.1	99	-3.7
30/07/92	H2Oms	0.0	151.5	108		0.0	113.6	102		0.0	119.9	103		0.0	232.7	104	
30/07/92	H2Omsd	0.0	153.9	110	1.6	0.0	117.4	106	3.3	0.0	123.3	106	2.8	0.0	238.7	107	2.5
27/8/92	294ms	0.0	143.6	103		0.0	103.3	93		0.0	118.6	102		0.0	236.6	106	
27/8/92	294msd	0.0	146.8	105	2.2	0.0	110.2	99	6.5	0.0	121.5	105	2.4	0.0	240.0	107	1.4
28/8/92	302ms	0.0	155.7	111		0.0	106.5	96		0.0	120.9	104		0.0	238.2	106	
28/8/92	302msd	0.0	146.1	104	-6.4	0.0	105.5	95	-0.9	0.0	122.0	105	0.9	0.0	237.9	106	-0.1
29/8/92	313ms	0.0	153.6	110		0.0	104.2	94		0.0	121.7	105		0.0	234.8	105	
29/8/92	313msd	0.0	172.3	123	11.5	0.0	114.3	103	9.2	0.0	144.5	125	17.1	0.0	265.6	119	12.3
30/8/92	316ms	0.0	106.0	76		0.0	81.1	73		0.0	98.7	85		0.0	186.8	83	
30/8/92	316msd	0.0	121.1	87	13.3	0.0	92.3	83	12.9	0.0	114.0	98	14.4	0.0	216.3	97	14.6
31/8/92	328ms	0.0	158.7	113		0.0	109.8	99		0.0	130.3	112		0.0	252.8	113	
31/8/92	328sms	0.0	152.5	109	-4.0	0.0	108.4	98	-1.3	0.0	126.7	109	-2.8	0.0	242.0	108	-4.4
1/9/92	328smsd	0.0	165.4	118		0.0	105.1	95		0.0	124.2	107		0.0	240.9	108	
1/9/92	339smsd	0.0	170.4	122	3.0	0.0	109.5	99	4.1	0.0	127.9	110	2.9	0.0	244.1	109	1.3
2/9/92	354ms	0.0	159.4	114		0.0	102.4	92		0.0	122.4	106		0.0	234.2	105	
2/9/92	354msd	0.0	171.0	122	7.0	0.0	107.6	97	5.0	0.0	127.7	110	4.2	0.0	248.1	111	5.8
3/9/92	364ms	0.0	109.3	78		0.0	84.1	76		0.0	104.2	90		0.0	194.1	87	
3/9/92	364msd	0.0	146.3	105	29.0	0.0	111.0	100	27.6	0.0	138.0	119	27.9	0.0	258.0	115	28.3
4/9/92	370sms	0.0	108.2	77		0.0	86.6	78		0.0	107.5	93		0.0	200.9	90	
4/9/92	370smsd	0.0	119.1	85	9.6	0.0	95.8	86	10.1	0.0	117.4	101	8.8	0.0	220.4	98	9.3
5/9/92	380sms	1.6	112.0	79		0.0	81.0	73		0.0	96.9	84		0.0	181.0	81	
5/9/92	380smsd	1.6	139.0	98	21.8	0.0	104.2	94	25.1	0.0	124.9	108	25.2	0.0	233.2	104	25.2
6/9/92	387wms	0.0	108.7	78		0.0	88.1	79		0.0	108.0	93		0.0	202.7	90	
6/9/92	387wmsd	0.0	139.7	100	25.0	0.0	115.6	104	27.0	0.0	139.7	120	25.6	0.0	262.5	117	25.7

Table 5 Cont'd

Standard Concentrations (ug/L):

140.0	Benzene
111.0	Toluene
116.0	Ethylbenzene
224.0	m,p - Xylene
140.0	o - Xylene
115.0	TCE
221.0	PCE

o-Xy Sample (ug/L)	o-Xy Spike (ug/L)	% Rec.	% Diff	TCE Sample (ug/L)	TCE Spike (ug/L)	% Rec.	% Diff	PCE Sample (ug/L)	PCE Spike (ug/L)	% Rec.	% Diff
20.6	159.9	100		6.8	164.4	137		10.7	266.1	116	
20.6	168.4	106	5.9	6.8	181.4	152	10.2	10.7	295.9	129	11.0
0.0	111.8	80		35.0	166.6	114		0.0	200.4	91	
0.0	113.9	81	1.9	35.0	156.0	105	-8.4	0.0	180.0	81	-10.7
25.8	131.1	75		3.3	97.8	82		8.3	170.2	73	
25.8	176.9	108	35.7	3.3	132.7	113	31.2	8.3	222.4	97	27.8
0.0	102.4	73		0.0	78.7	68		0.0	158.1	72	
0.0	116.2	83	12.6	0.0	89.3	78	12.6	0.0	175.0	79	10.1
0.0	102.9	74		0.0	85.8	75		0.0	164.7	75	
0.0	152.4	109	38.8	0.0	127.7	111	39.3	0.0	241.4	109	37.8
0.0	156.2	112		0.0	98.9	86		0.0	174.0	79	
0.0	129.6	93	-18.6	0.0	124.2	108	22.7	0.0	177.7	80	2.1
0.0	135.0	96		0.0	147.3	128		0.0	207.4	94	
0.0	154.7	111	13.6	0.0	178.9	156	19.4	0.0	268.5	121	25.7
0.0	137.4	98		0.0	128.8	112		0.0	233.6	106	
0.0	141.0	101	2.6	0.0	130.8	114	1.5	0.0	233.6	106	0.0
0.0	175.2	125		0.0	165.3	144		0.0	264.7	120	
0.0	184.2	132	5.0	0.0	177.7	155	7.2	0.0	282.1	128	6.4
0.0	179.3	128		0.0	163.6	142		0.0	308.5	140	
0.0	180.6	129	0.7	0.0	189.0	164	14.4	0.0	309.2	140	0.2
0.0	146.8	105		0.0	175.5	153		0.0	261.6	118	
0.0	143.1	102	-2.6	0.0	163.4	142	-7.1	0.0	258.7	117	-1.1
0.0	134.4	96		0.0	125.9	109		0.0	222.0	100	
0.0	130.5	93	-2.9	0.0	122.4	106	-2.8	0.0	211.4	96	-4.9
0.0	136.7	98		0.0	119.5	104		0.0	209.9	95	
0.0	139.4	100	2.0	0.0	128.3	112	7.1	0.0	224.9	102	6.9
0.0	144.8	103		0.0	133.5	116		0.0	228.3	103	
0.0	147.6	105	1.9	0.0	131.9	115	-1.2	0.0	228.2	103	0.0
0.0	147.9	106		0.0	127.2	111		0.0	239.5	108	
0.0	146.6	105	-0.9	0.0	130.7	114	2.7	0.0	253.8	115	5.8
0.0	144.6	103		0.0	139.0	121		0.0	244.8	111	
0.0	166.3	119	14.0	0.0	159.8	139	13.9	0.0	269.1	122	9.5
0.0	117.4	84		0.0	139.7	121		0.0	203.0	92	
0.0	133.9	96	13.1	0.0	175.6	153	22.8	0.0	245.5	111	19.0
0.0	154.7	111		0.0	126.2	110		0.0	256.0	116	
0.0	149.6	107	-3.4	0.0	132.5	115	4.9	0.0	247.4	112	-3.4
0.0	147.2	105		0.0	139.5	121		0.0	244.2	110	
0.0	152.7	109	3.7	0.0	143.0	124	2.5	0.0	254.2	115	4.0
0.0	145.5	104		0.0	129.7	113		0.0	231.0	105	
0.0	151.7	108	4.2	0.0	141.5	123	8.7	0.0	247.9	112	7.1
0.0	123.2	88		0.0	121.3	105		0.0	217.5	98	
0.0	162.0	116	27.2	0.0	157.1	137	25.7	0.0	286.0	129	27.2
0.0	126.2	90		0.0	128.2	111		0.0	225.5	102	
0.0	138.1	99	9.0	0.0	137.0	119	6.6	0.0	256.5	116	12.9
0.0	113.3	81		0.0	111.0	97		0.0	207.5	94	
0.0	149.2	107	27.3	0.0	140.3	122	23.3	0.0	263.9	119	23.9
0.0	126.5	90		0.0	122.6	107		0.0	225.3	102	
0.0	166.9	119	27.5	0.0	165.4	144	29.7	0.0	300.6	136	28.6

Table 6 TPH Matrix Spike Data

Standard Concentration (ug/mL)
TPH = 229

Date Analyzed	Lab ID #	TPH Sample (ug/L)	TPH Spike (ug/L)	% Rec.	% Diff
15/07/92	8ms	24	280	112	
15/07/92	8msd	24	270	107	-3.6
16/07/92	30ms	88	303	94	
16/07/92	30msd	88	322	102	6.1
17/07/92	74ms	2	233	101	
17/07/92	74msd	2	233	101	0.0
18/07/92	104ms	2	225	97	
18/07/92	104msd	2	219	95	-2.7
19/07/92	113ms	4	226	97	
19/07/92	113msd	4	221	95	-2.2
20/07/92	135ms	12	225	93	
20/07/92	135msd	12	219	90	-2.7
21/07/92	160ms	2	215	93	
21/07/92	160msd	2	218	94	1.4
22/07/92	190ms	1	212	92	
22/07/92	190msd	1	209	91	-1.4
23/07/92	202ms	1	225	98	
23/07/92	202msd	1	224	97	-0.4
25/07/92	233ms	4	239	103	
25/07/92	233msd	4	254	109	6.1
27/07/92	252ms	26	241	94	
27/07/92	252msd	26	232	90	-3.8
28/07/92	272ms	281	470	83	
28/07/92	272msd	281	445	72	-5.5
29/07/92	278ms	5	236	101	
29/07/92	278msd	5	240	103	1.7
27/8/92	295ms	1	228	99	
27/8/92	295msd	1	229	100	0.4
28/8/92	302sms	1	219	95	
28/8/92	302smsd	1	222	97	1.4
29/8/92	313ms	1	215	93	
29/8/92	313msd	1	214	93	-0.5
31/8/92	328ms	1	219	95	
31/8/92	328sms	1	222	97	1.4
1/9/92	342ms	19	240	97	
1/9/92	342msd	19	241	97	0.4
2/9/92	354ms	1	224	97	
2/9/92	354msd	1	226	98	0.9
4/9/92	368ms	1	234	102	
4/9/92	368msd	1	237	103	1.3
5/9/92	381ms	5	278	119	
5/9/92	381msd	5	273	117	-1.8
6/9/92	384ms	1	226	98	
6/9/92	384msd	1	221	96	-2.2
8/9/92	400ms	1	220	96	
8/9/92	400msd	1	226	98	2.7
9/9/92	419ms	1	219	95	
9/9/92	419msd	1	215	93	-1.8
10/9/92	457ms	1	222	97	
10/9/92	457msd	1	224	97	0.9
11/9/92	460ms	24	251	99	
11/9/92	460msd	24	256	101	2.0
12/9/92	474ms	7	234	99	
12/9/92	474msd	7	231	98	-1.3

Table 7. On-Site vs. Off-Site Data

Sample ID	BENZENE		TOLUENE		E-BENZENE		XYLENES		TCE		PCE	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
FT1T36.7	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12
FT1W1	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
FT2B30.5	<20000	5600	240000	210000	55000	56000	720000	680000	<20000	<15000	<20000	<15000
FT2B35.0	<20000	<22000	610000	460000	130000	120000	630000	590000	<20000	<15000	<20000	<15000
FT2B40.5	<20000	<13000	42000	13000	<20000	<13000	140000	160000	<20000	<15000	<20000	<15000
FT2B45.0	<20000	<5000	550000	260000	70000	46000	660000	620000	<20000	<15000	<20000	<15000
FT2B60.5	<20000	<7000	220000	190000	23000	20000	450000	540000	<20000	<15000	<20000	<15000
FT2B65.0	<20000	<21000	260000	450000	85000	97000	390000	640000	<20000	<15000	<20000	<15000
FT2W1	512	460	896	720	511	690	2750	2000	<10	<10	<10	<10
FT2W5	<1	<10	<1	<10	<1	<10	<10	<10	<1	<10	<1	<10
FT2W7	<1	<10	<1	<10	<1	<10	<10	<10	<1	<10	<1	<10
SW10-68	<10	<12	62.8	<12	54.2	<12	171	<12	<10	<12	<10	<12
SW10-101	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
SW10-102	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
SW1051	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
10W215.0	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
SW10W2	5.1	3.0	2.9	2.0	1.6	<1	<10	<10	<1	<10	<1	<10
SW10W3	3.6	<10	1.7	<10	<1	<10	6.2	2.0	<1	<10	<1	<10
SW1251	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SW12-78	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
SW12-83	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12
SW12-84	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11	<10	<11
SW12W1	1.6	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
SW12W3	1.9	<10	0.5	<10	<1	<10	<1	<10	<1	<10	<1	<10
SW4-89	<10	<22	<10	<22	<10	<22	<10	<22	<10	<22	<10	<22
SW4-91	<10	<22	<10	<22	<10	<22	<10	<22	<10	<22	<10	<22
SW4-95	<10	<14	<10	<14	<10	<14	<10	<14	<10	<14	<10	<14
SW4-137	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12	<10	<12
SW4-138	<25	<13	<25	<13	<25	<13	<25	<13	<25	<13	<25	2
SW4-139	<25	<12	<25	<12	<25	<12	<25	<12	<25	<12	<25	<12
HL-01	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
HL-02	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
HL-03	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
HL-04	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<1
HL-05	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<1
HL-06	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<1
HL-07	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10	<1	<10
SDHL-01	<10	<13	<10	<13	<10	<13	<10	<13	<10	<13	<10	<13
WGGW-76	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
WG-110	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
W36.0	<10	<1.1	<10	<1.1	<10	<1.1	<10	<1.1	<10	<1.1	<10	<1.1
WG4	<1	<1	<1	<1	<1	<1	<1	<1	16.4	13.0	<1	<1
SHGWWG-62	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

All values are in ug/L or ug/kg

Table 8. TPH On-Site vs Off-Site Data

Sample ID	TPH	
	ON	OFF
FT2-128	29360	18330
FT2-134	20200	11950
SW4-95	<25	21.3
WGGN-76	<25	1.7
W36.0	<25	1.7
SHSOSSFT104	1192	734
SHSOSSFT114	<25	15.7
SHSOSSFT124	117	53.1
SHSOSSFT2-06	6150	1990
SHSOSSFT2-16	3630	2160
SHSOSSFT2-28	4210	1700
SHSOSSFT2-38	1780	863
SHSOSSFT2-48	1800	810
SO-FT2-128	2930	18300
SO-FT2-134	2010	11900
FT2W17.0	<25	18.7
SHSOSSW10-100	909	548
SHSOSSW10-101	<25	19.7
SHSOSSW10-102	<25	6.4
SHSOSSW12-76	<25	31.7
SHSOSSW12-77	<25	18.4
SHSOSSW12-78	43	69.7
SHSOSSW12-79	<25	10.9
SHSOSSW12-80	88	84.9
SHSOSSW12-81	<25	20.6
SHSOSSW12-82	<25	42.4
SHSOSSW12-83	<25	9.9
SHSOSSW12-84	<25	11.9
SHSOSSW12-85	<25	3.9
SHSOSSW12-86	<25	12.1
SHSOSSW12-87	<25	7.8
SHSOSSWG11	4763	212
SHSOSSWG27	55	327
SHSOSSWG40	35	174

All values are in mg/kg