



## LABORATORY DATA CONSULTANTS, INC.

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GSI Pacific, Inc.  
181 S. Kukui Street  
Honolulu, HI 96813  
ATTN: Ms. Sonia Shjegstad

May 27, 2014

SUBJECT: Revised Makua Military Reservation, Oahu, HI, Data Validation

Dear Ms. Shjegstad

Enclosed are the revised validation reports for the fractions listed below. Please replace the previously submitted report with the enclosed revised report.

**LDC Project #31789:**

**SDG #**

006615, 006616/006617  
320-6575-2, 320-6575-3

**Fraction**

Volatiles, Explosives, Perchlorate

- Added text to address Trip Blank samples received frozen and shattered by the laboratory

Please feel free to contact us if you have any questions.

Sincerely,

Andrew Kong  
Project Manager/Senior Chemist

Level III

**LDC #31789 (GSI Pacific, Inc. - Honolulu, HI / Makua Military Reservation, Oahu, HI)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Expl. (8330A)		CLO <sub>4</sub> (6850)																															
				W	T	W	T	W	T	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	006615	05/08/14	05/30/14	0	8	0	8	-	-																														
B	006616/006617	05/08/14	05/30/14	0	11	0	11	-	-																														
C	320-6575-2	05/08/14	05/30/14	-	-	-	-	0	8																														
D	320-6575-3	05/08/14	05/30/14	-	-	-	-	0	3																														
Matrix: Water/Tissue																																							
Total				T/AK	0	19	0	19	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31 through February 11, 2014  
**LDC Report Date:** May 27, 2014  
**Matrix:** Tissue  
**Parameters:** Volatiles  
**Validation Level:** EPA Level III  
**Laboratory:** ARDL, Inc.  
**Sample Delivery Group (SDG):** 006615

**Sample Identification**

MAK111C  
MAK113C  
MAK114C  
MAK115C  
MAK116C  
MAK117C  
MAK118C  
MAK120C  
MAK116CMS  
MAK116CMSD

## Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. GC/MS Instrument Performance Check**

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

## **III. Initial Calibration**

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within method and validation criteria.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

## **V. Blanks**

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## **VI. Surrogate Spikes**

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples (LCS)**

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

## **IX. Regional Quality Assurance and Quality Control**

Not applicable.

## **X. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XI. Target Compound Identifications**

Raw data were not reviewed for this SDG.

## **XII. Compound Quantitation**

Raw data were not reviewed for this SDG.

## **XIII. Tentatively Identified Compounds (TICs)**

Raw data were not reviewed for this SDG.

## **XIV. System Performance**

Raw data were not reviewed for this SDG.

## **XV. Overall Assessment of Data**

The laboratory indicated sample Trip Blank was received frozen and all vials shattered, therefore no results were provided.

Data flags are summarized at the end of this report if data has been qualified.

## **XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**Makua Military Reservation  
Volatiles - Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Volatiles - Laboratory Blank Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Volatiles - Field Blank Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

LDC #: 31789A1

## VALIDATION COMPLETENESS WORKSHEET

Date: 5/19/14

SDG #: 006615

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: JVB

2nd Reviewer: E

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 2/11/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	2 RSD $\leq$ 15%
IV.	Continuing calibration/ICV	A	COV/ICV $\leq$ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	Laboratory indicated TB sample received from and shattered, therefore no results provided.
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:

Tissue

1	MAK111C	11	Blk 3/18/14	21	31
2	MAK113C	12		22	32
3	MAK114C	13		23	33
4	MAK115C	14		24	34
5	MAK116C	15		25	35
6	MAK117C	16		26	36
7	MAK118C	17		27	37
8	MAK120C	18		28	38
9	MAK116CMS	19		29	39
10	MAK116CMSD	20		30	40

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31 through February 11, 2014  
**LDC Report Date:** May 19, 2014  
**Matrix:** Tissue  
**Parameters:** Explosives  
**Validation Level:** EPA Level III  
**Laboratory:** ARDL, Inc.  
**Sample Delivery Group (SDG):** 006615

### Sample Identification

MAK111C  
MAK113C  
MAK114C  
MAK115C  
MAK116C  
MAK117C  
MAK118C  
MAK120C  
MAK116CMS  
MAK116CMSD

## Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330A for Explosives.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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Raw data were not reviewed for this SDG. The review was based on QC data.

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- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. Initial Calibration**

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

## **IV. Blanks**

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## **V. Surrogate Recovery**

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

## **VII. Laboratory Control Samples (LCS)**

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

### **VIII. Target Compound Identification**

Raw data were not reviewed for this SDG.

### **IX. Compound Quantitation**

Raw data were not reviewed for this SDG.

### **X. System Performance**

Raw data were not reviewed for this SDG.

### **XI. Overall Assessment of Data**

Data flags are summarized at the end of this report if data has been qualified.

### **XII. Field Duplicates**

No field duplicates were identified in this SDG.

**Makua Military Reservation  
Explosives - Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Explosives - Laboratory Blank Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Explosives - Field Blank Data Qualification Summary - SDG 006615**

No Sample Data Qualified in this SDG

LDC #: 31789A40

**VALIDATION COMPLETENESS WORKSHEET**

Date: 5/19/14

SDG #: 006615

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: NG

2nd Reviewer: L

**METHOD:** HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 2/11/14
II.	Initial calibration	A	ry
III.	Calibration verification/ICV	A	CCV/ICV = 15%
IV.	Blanks	A	
V.	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:

Tissue

1	MAK111C	11	B10176 MB	21		31	
2	MAK113C	12		22		32	
3	MAK114C	13		23		33	
4	MAK115C	14		24		34	
5	MAK116C	15		25		35	
6	MAK117C	16		26		36	
7	MAK118C	17		27		37	
8	MAK120C	18		28		38	
9	MAK116CMS	19		29		39	
10	MAK116CMSD	20		30		40	

Notes: 2,4 - DNT, RDX, NG

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31 through February 11, 2014  
**LDC Report Date:** May 27, 2014  
**Matrix:** Tissue  
**Parameters:** Volatiles  
**Validation Level:** EPA Level III  
**Laboratory:** ARDL, Inc.  
**Sample Delivery Group (SDG):** 006616/006617

### Sample Identification

MAK120L  
MAK121L  
MAK122L  
MAK123L  
MAK124L  
MAK126L  
MAK127L  
MAK128L  
MAK116L  
MAK117L  
MAK118L  
MAK123LMS  
MAK123LMSD

## Introduction

This data review covers 13 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

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- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. GC/MS Instrument Performance Check**

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

## **III. Initial Calibration**

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within method and validation criteria.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

## **V. Blanks**

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## **VI. Surrogate Spikes**

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK123LMS/MSD (MAK123L)	Styrene	52.6 (79-127)	33.1 (79-127)	45.6 (≤25)	J (all detects) UJ (all non-detects)	A

## VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

## IX. Regional Quality Assurance and Quality Control

Not applicable.

## X. Internal Standards

All internal standard areas and retention times were within QC limits.

## XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

## XII. Compound Quantitation

Raw data were not reviewed for this SDG.

## XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

## XIV. System Performance

Raw data were not reviewed for this SDG.

## XV. Overall Assessment of Data

The laboratory indicated sample Trip Blank was received frozen and all vials shattered, therefore no results were provided.

Data flags are summarized at the end of this report if data has been qualified.

## **XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**Makua Military Reservation  
 Volatiles - Data Qualification Summary - SDG 006616/006617**

SDG	Sample	Compound	Flag	A or P	Reason
006616/ 006617	MAK123L	Styrene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD)

**Makua Military Reservation  
 Volatiles - Laboratory Blank Data Qualification Summary - SDG 006616/006617**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
 Volatiles - Field Blank Data Qualification Summary - SDG 006616/006617**

No Sample Data Qualified in this SDG

LDC #: 31789B1  
 SDG #: 006616/006617  
 Laboratory: ARDL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level III

Date: 5/19/14  
 Page: 1 of 1  
 Reviewer: NG  
 2nd Reviewer: E

**METHOD:** GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>1/31 - 2/11/14</u>
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	<u>? RSD ≤ 30% ?</u>
IV.	Continuing calibration/ICV	A	<u>CV/ICV ≤ 20 %</u>
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	<u>Laboratory indicated TB sample received frozen and shattered, therefore no sample multi provided.</u>
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

Validated Samples: Tissue

1	MAK120L	11	MAK118L	21	1	BLK 3/21/14	31
2	MAK121L	12	MAK123LMS	22	X	↓ 3/25/14	32
3	MAK122L	13	MAK123LMSD	23			33
4	MAK123L	14		24			34
5	MAK124L	15		25			35
6	MAK126L	16		26			36
7	MAK127L	17		27			37
8	MAK128L	18		28			38
9	MAK116L	19		29			39
10	MAK117L	20		30			40

## TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC. 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. 1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31 through February 11, 2014  
**LDC Report Date:** May 19, 2014  
**Matrix:** Tissue  
**Parameters:** Explosives  
**Validation Level:** EPA Level III  
**Laboratory:** ARDL, Inc.  
**Sample Delivery Group (SDG):** 006616/006617

### Sample Identification

MAK120L  
MAK121L  
MAK122L  
MAK123L  
MAK124L  
MAK126L  
MAK127L  
MAK128L  
MAK116L  
MAK117L  
MAK118L  
MAK123LMS  
MAK123LMSD

## Introduction

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- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. Initial Calibration**

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

## **IV. Blanks**

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

No field blanks were identified in this SDG.

## **V. Surrogate Recovery**

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

## **VII. Laboratory Control Samples (LCS)**

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

### **VIII. Target Compound Identification**

Raw data were not reviewed for this SDG.

### **IX. Compound Quantitation**

Raw data were not reviewed for this SDG.

### **X. System Performance**

Raw data were not reviewed for this SDG.

### **XI. Overall Assessment of Data**

Data flags are summarized at the end of this report if data has been qualified.

### **XII. Field Duplicates**

No field duplicates were identified in this SDG.

**Makua Military Reservation  
Explosives - Data Qualification Summary - SDG 006616/006617**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Explosives - Laboratory Blank Data Qualification Summary - SDG 006616/006617**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Explosives - Field Blank Data Qualification Summary - SDG 006616/006617**

No Sample Data Qualified in this SDG

LDC #: 31789B40

**VALIDATION COMPLETENESS WORKSHEET**

Date: 5/19/14

SDG #: 006616/006617

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: SVG

2nd Reviewer: E

**METHOD:** HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 2/11/14
II.	Initial calibration	A	ry
III.	Calibration verification/ICV	A	CV/1W ≤ 15 ?
IV.	Blanks	A	
V.	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

Validated Samples:

Tissue

1	MAK120L	11	MAK118L	21	B10173 MB	31	
2	MAK121L	12	MAK123LMS	22	B10181 ↓	32	
3	MAK122L	13	MAK123LMSD	23		33	
4	MAK123L	14		24		34	
5	MAK124L	15		25		35	
6	MAK126L	16		26		36	
7	MAK127L	17		27		37	
8	MAK128L	18		28		38	
9	MAK116L	19		29		39	
10	MAK117L	20		30		40	

Notes: RDX, NG

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31 through February 11, 2014  
**LDC Report Date:** May 19, 2014  
**Matrix:** Tissue  
**Parameters:** Perchlorate  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** 320-6575-2

### Sample Identification

MAK120L  
MAK121L  
MAK122L  
MAK123L  
MAK124L  
MAK126L  
MAK127L  
MAK128L

## Introduction

This data review covers 8 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6850 for Perchlorate.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. LC/MS Instrument Performance Check**

Instrument performance check is not required by the method.

## **III. Initial Calibration**

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the limit of detection verification (LODV) standard were less than or equal to 30.0% for all compounds.

## **V. Blanks**

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the method blanks.

No field blanks were identified in this SDG.

## **VI. Surrogate Spikes**

Surrogates were not required by the method.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

### IX. Regional Quality Assurance and Quality Control

Not applicable.

### X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
MAK121L	18-O Perchlorate	250877259 (267494947-1069979786)	Perchlorate	J (all detects) UJ (all non-detects)	P
MAK122L	18-O Perchlorate	251816764 (267494947-1069979786)	Perchlorate	J (all detects) UJ (all non-detects)	P
MAK123L	18-O Perchlorate	178072775 (267494947-1069979786)	Perchlorate	J (all detects) UJ (all non-detects)	P
MAK127L	18-O Perchlorate	266855640 (267494947-1069979786)	Perchlorate	J (all detects) UJ (all non-detects)	P
MAK128L	18-O Perchlorate	262506285 (267494947-1069979786)	Perchlorate	J (all detects) UJ (all non-detects)	P

### XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

### XII. Compound Quantitation

Raw data were not reviewed for this SDG.

### XIII. System Performance

Raw data were not reviewed for this SDG.

### XIV. Overall Assessment

Data flags are summarized at the end of this report if data has been qualified.

## **XV. Field Duplicates**

No field duplicates were identified in this SDG.

**Makua Military Reservation  
Perchlorate - Data Qualification Summary - SDG 320-6575-2**

SDG	Sample	Compound	Flag	A or P	Reason
320-6575-2	MAK121L MAK122L MAK123L MAK127L MAK128L	Perchlorate	J (all detects) UJ (all non-detects)	P	Internal standards (area)

**Makua Military Reservation  
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 320-6575-2**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Perchlorate - Field Blank Data Qualification Summary - SDG 320-6575-2**

No Sample Data Qualified in this SDG

LDC #: 31789C87

**VALIDATION COMPLETENESS WORKSHEET**

Date: 5/19/14

SDG #: 320-6575-2

Level III

Page: 1 of 1

Laboratory: Test America, Inc.

Reviewer: SW

2nd Reviewer: A

**METHOD:** LC/MS Perchlorate (EPA SW846 Method 6850)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 2/11/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD ≤ 15?
IV.	Continuing calibration/ICV	A	CV/ICV ≤ 15% LODV ≤ 30%
V.	Blanks	A	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	N	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

Validated Samples:

Tissue

1	MAK120L	11	MB 320-39835/1-A	21		31	
2	MAK121L	12		22		32	
3	MAK122L	13		23		33	
4	MAK123L	14		24		34	
5	MAK124L	15		25		35	
6	MAK126L	16		26		36	
7	MAK127L	17		27		37	
8	MAK128L	18		28		38	
9		19		29		39	
10		20		30		40	



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** January 31, 2014  
**LDC Report Date:** May 19, 2014  
**Matrix:** Tissue  
**Parameters:** Perchlorate  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** 320-6575-3

### Sample Identification

MAK116L  
MAK117L  
MAK118L

## Introduction

This data review covers 3 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6850 for Perchlorate.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## **I. Technical Holding Times**

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## **II. LC/MS Instrument Performance Check**

Instrument performance check is not required by the method.

## **III. Initial Calibration**

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the limit of detection verification (LODV) standard were less than or equal to 30.0% for all compounds.

## **V. Blanks**

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the method blanks.

No field blanks were identified in this SDG.

## **VI. Surrogate Spikes**

Surrogates were not required by the method.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

### IX. Regional Quality Assurance and Quality Control

Not applicable.

### X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
MAK117L	18-O Perchlorate	197702077 (265284950-1061139798)	Perchlorate	J (all detects) UJ (all non-detects)	P
MAK116L	18-O Perchlorate	258782050 (265284950-1061139798)	Perchlorate	J (all detects) UJ (all non-detects)	P

### XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

### XII. Compound Quantitation

Raw data were not reviewed for this SDG.

### XIII. System Performance

Raw data were not reviewed for this SDG.

### XIV. Overall Assessment

Data flags are summarized at the end of this report if data has been qualified.

### XV. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation  
Perchlorate - Data Qualification Summary - SDG 320-6575-3**

SDG	Sample	Compound	Flag	A or P	Reason
320-6575-3	MAK117L MAK116L	Perchlorate	J (all detects) UJ (all non-detects)	P	Internal standards (area)

**Makua Military Reservation  
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 320-6575-3**

No Sample Data Qualified in this SDG

**Makua Military Reservation  
Perchlorate - Field Blank Data Qualification Summary - SDG 320-6575-3**

No Sample Data Qualified in this SDG

**METHOD:** LC/MS Perchlorate (EPA SW846 Method 6850)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	? RSD ≤ 15%
IV.	Continuing calibration/ICV	A	CCV/ICV ≤ 15%    WDV ≤ 30%
V.	Blanks	A	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	N	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

Validated Samples: *Tissue*

1	MAK116L	11	MB 320-39835/1A	21		31	
2	MAK117L	12		22		32	
3	MAK118L	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

