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Automated Report

Technical Report for

Marathon Oil

MOC POND C

22633700/ PO# 4800011767 LINE ITEM# 30

SGS Accutest Job Number: D58260

Sampling Date: 05/29/14



Report to:

**Marathon Oil Company
743 Horizon Court Suite 220
Grand Junction, CO 81056
sdistel@marathonoil.com**

ATTN: Scott Distel

Total number of pages in report: 41



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

**Scott Heideman
Laboratory Director**

Client Service contact: Renea Lewis 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY CO (CO00049), EPA 515.4 Provisional

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Test results relate only to samples analyzed.



ACCUTEST

March 29, 2016

Scott Distel
Marathon Oil Company
743 Horizon Court Suite 220
Grand Junction, CO 81056

Subject: Reissue Letter for Accutest Job: D58260

Dear Mr. Distel:

It has come to our attention that there have been certain instances of possible testing inconsistencies that occurred at Accutest Mountain States from July 2012 to September 2014.

As a result, the enclosed revised report is being issued to you. This report cancels and supersedes the original report issued by Accutest Mountain States.

Sincerely,

Scott Heideman
Laboratory Director

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Table of Contents

-1-

Section 1: Sample Summary	4
Section 2: Case Narrative/Conformance Summary	5
Section 3: Summary of Hits	12
Section 4: Sample Results	13
4.1: D58260-1: SURFACE	14
4.2: D58260-2: BOTTOM	18
4.3: D58260-3: POND C_TRIP BLANK	22
Section 5: Misc. Forms	23
5.1: Chain of Custody	24
Section 6: GC/MS Volatiles - QC Data Summaries	25
6.1: Method Blank Summary	26
6.2: Blank Spike Summary	27
6.3: Matrix Spike/Matrix Spike Duplicate Summary	28
Section 7: GC Volatiles - QC Data Summaries	29
7.1: Method Blank Summary	30
7.2: Blank Spike Summary	31
7.3: Matrix Spike/Matrix Spike Duplicate Summary	32
Section 8: GC Semi-volatiles - QC Data Summaries	33
8.1: Method Blank Summary	34
8.2: Blank Spike Summary	35
8.3: Matrix Spike/Matrix Spike Duplicate Summary	36
Section 9: General Chemistry - QC Data Summaries	37
9.1: Method Blank and Spike Results Summary	38
9.2: Duplicate Results Summary	39
9.3: Matrix Spike Results Summary	40
9.4: Matrix Spike Duplicate Results Summary	41

1

2

3

4

5

6

7

8

9



Sample Summary

Marathon Oil

Job No: D58260

MOC POND C

Project No: 22633700/ PO# 4800011767 LINE ITEM# 30

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D58260-1	05/29/14	10:35 SD	05/30/14	AQ	Surface Water	SURFACE
D58260-2	05/29/14	10:50 SD	05/30/14	AQ	Surface Water	BOTTOM
D58260-3	05/29/14	13:00 SD	05/30/14	AQ	Trip Blank Water	POND C_TRIP BLANK

CASE NARRATIVE / CONFORMANCE SUMMARY**Client:** Marathon Oil**Job No:** D58260**Site:** MOC POND C**Report Date** 2/9/2016 2:15:10 PM

On 05/30/2014, 2 sample(s), 1 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D58260 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B**Matrix:** AQ**Batch ID:** V3V1806

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D58268-3MS, D58268-3MSD were used as the QC samples indicated.
- V3V1806-MB, V3V1806-BS, D58268-3MS, D58268-3MSD, D58260-1, -2, and -3: See BFB Note 2.

Volatiles by GC By Method SW846 8015B**Matrix:** AQ**Batch ID:** GGA1234

- All samples were analyzed within the recommended method holding time.
- Sample(s) D57538-4MS, D57538-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B**Matrix:** AQ**Batch ID:** OP10010

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57538-5MS, D57538-5MSD were used as the QC samples indicated.

Wet Chemistry By Method EPA 300.0/SW846 9056**Matrix:** AQ**Batch ID:** GP12703

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D58260-1MS, D58260-1MSD were used as the QC samples for the Chloride, Sulfate, Chloride analysis.

Wet Chemistry By Method SM 2540C-2011

Matrix: AQ

Batch ID: GN24929

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D58242-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM 2540D-2011

Matrix: AQ

Batch ID: GN24951

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D58210-2DUP were used as the QC samples for the Solids, Total Suspended analysis.

Wet Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ

Batch ID: GN24906

- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: D58260-1, D58260-2

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Data Comparison Report

Company Name: Marathon Oil

Project Description: MOC POND C

Job Number: D58260

Result Comparison

2

Method	Client ID	Lab ID	Sample			Original			Corrected			
			Date	Time	Analyte	Result	Qual	RL	Result	Qual	RL	Units
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	Benzene	ND		0.00025	ND		0.00025	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	Xylene (total)	ND		0.0015	ND		0.0015	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	Ethylbenzene	ND		0.00031	ND		0.00031	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	Toluene	ND		0.0010	ND		0.0010	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	1,2-Dichloroethane-D4	97.0			97.0			%
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	Toluene-D8	99.0			99.0			%
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	SURFACE	D58260-1	05/29/2014	10:35	4-Bromofluorobenzene	96.0			96.0			%
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	Benzene	ND		0.00025	ND		0.00025	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	Xylene (total)	ND		0.0015	ND		0.0015	mg/l
Original Footnote:												
Corrected Footnote: Inj: See BFB Note 2.												

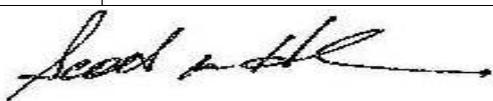
Result Comparison

2

Method	Client ID	Lab ID	Sample			Original			Corrected			
			Date	Time	Analyte	Result	Qual	RL	Result	Qual	RL	Units
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	Ethylbenzene	ND		0.00031	ND		0.00031	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	Toluene	ND		0.0010	ND		0.0010	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	1,2-Dichloroethane-D4	100			100			%
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	Toluene-D8	98.0			98.0			%
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	BOTTOM	D58260-2	05/29/2014	10:50	4-Bromofluorobenzene	97.0			97.0			%
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	Benzene	ND		0.00025	ND		0.00025	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	Xylene (total)	ND		0.0015	ND		0.0015	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	Ethylbenzene	ND		0.00031	ND		0.00031	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	Toluene	ND		0.0010	ND		0.0010	mg/l
Original Footnote:												
Corrected Footnote:	Inj: See BFB Note 2.											

Result Comparison

2

Method	Client ID	Lab ID	Sample			Original			Corrected				
			Date	Time	Analyte	Result	Qual	RL	Result	Qual	RL	Units	
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	1,2-Dichloroethane-D4	95.0			95.0				%
Original Footnote:													
Corrected Footnote:	Inj: See BFB Note 2.												
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	Toluene-D8	98.0			98.0				%
Original Footnote:													
Corrected Footnote:	Inj: See BFB Note 2.												
SW846 8260B	POND C_TRIP BLANK	D58260-3	05/29/2014	13:00	4-Bromofluorobenzene	95.0			95.0				%
Original Footnote:													
Corrected Footnote:	Inj: See BFB Note 2.												
													

4-Bromofluorobenzene Mass Spectral Tune Evaluation Footnotes

For the analysis of volatiles using United States Environmental Protection Agency (EPA) methods 524.2, 624 and 8260 by gas chromatograph/ mass spectrometer (GC/MS), the MS tune performance must be evaluated each 12-hour period using the mass ratios of 4-Bromofluorobenzene (BFB). The instrument performance must pass all the mass intensity criteria provided in the applicable method to allow for further calibration and sample analysis.

The tune verification is performed automatically by the quantitation software using an Autofind function. The Autofind function automatically selects a spectrum from the BFB total ion chromatograph and evaluates the spectrum. The spectrum automatically selected is the average of the top three scans, with the background subtracted. The BFB ratios from the subsequent spectrum are evaluated against the method tune criteria.

The standard operating procedures (SOPs) used by the laboratory at the time of analysis also allowed for the tune to be evaluated manually using industry standard practices. If the tune was evaluated manually the method used, which is summarized below, is noted as a footnote on the sample result form.

If the tune does not pass using Autofind or one of the prescribed methods from the applicable SOPs, that will also be noted in the footnote section for the batch analysis.

BFB Note #1

The BFB tune criteria were evaluated by manually selecting a single spectrum from the tune total ion chromatograph and performing a background subtraction using a single scan no more than 20 scans away from the elution of BFB. The single scan chosen for BFB was either the scan at the apex of the peak, the scan preceding to the apex, or the scan proceeding the apex. The BFB ratios of the subsequent spectrum were evaluated against the method tune criteria.

BFB Note #2

The BFB tune criteria were evaluated by manually averaging the spectra across the entire BFB peak and performing a background subtraction using a single scan no more than 20 scans away from the elution of BFB. The BFB ratios from the subsequent spectrum were evaluated against the method tune criteria.

BFB Note #3

The BFB tune criteria were evaluated by manually averaging two spectra and performing a background subtraction using a single scan no more than 20 scans away from the elution of BFB. The spectra used for averaging were either the scan at the apex of the peak and the scan preceding to the apex, or the scan at the apex of the peak and the scan proceeding the apex. The BFB ratios from the subsequent spectrum were evaluated against the method tune criteria.

Summary of Hits

Job Number: D58260
Account: Marathon Oil
Project: MOC POND C
Collected: 05/29/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D58260-1 SURFACE

Chloride		204	5.0		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		698	10		mg/l	SM 2540C-2011
Sulfate		69.6	5.0		mg/l	EPA 300.0/SW846 9056
pH		10.00			su	SM4500HB+ -2011/9040C

D58260-2 BOTTOM

Chloride		215	5.0		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		704	10		mg/l	SM 2540C-2011
Sulfate		72.0	5.0		mg/l	EPA 300.0/SW846 9056
pH		9.98			su	SM4500HB+ -2011/9040C

D58260-3 POND C_TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: SURFACE Lab Sample ID: D58260-1 Matrix: AQ - Surface Water Method: SW846 8260B Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
---	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3V30882.D	1	05/31/14	JL	n/a	n/a	V3V1806
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00025	mg/l	
108-88-3	Toluene	ND	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	ND	0.0020	0.00031	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	97%		62-130%
2037-26-5	Toluene-D8	99%		70-130%
460-00-4	4-Bromofluorobenzene	96%		69-130%

(a) See BFB Note 2.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: SURFACE Lab Sample ID: D58260-1 Matrix: AQ - Surface Water Method: SW846 8015B Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
---	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA21982.D	1	05/30/14	EV	n/a	n/a	GGA1234
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.20	0.050	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	90%		60-140%		

ND = Not detected RL = Reporting Limit E = Indicates value exceeds calibration range	MDL = Method Detection Limit J = Indicates an estimated value B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound
--	--

4.1
4

Report of Analysis

Client Sample ID: SURFACE Lab Sample ID: D58260-1 Matrix: AQ - Surface Water Method: SW846-8015B SW846 3510C Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
---	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH021376.D	1	06/05/14	JS	06/03/14	OP10010	GFH997
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	62%		10-130%		

ND = Not detected RL = Reporting Limit E = Indicates value exceeds calibration range	MDL = Method Detection Limit J = Indicates an estimated value B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound
--	--

4.1
4

Report of Analysis

Client Sample ID: SURFACE	Date Sampled: 05/29/14
Lab Sample ID: D58260-1	Date Received: 05/30/14
Matrix: AQ - Surface Water	Percent Solids: n/a
Project: MOC POND C	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	204	5.0	mg/l	10	05/31/14 12:49	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	698	10	mg/l	1	06/03/14	RW	SM 2540C-2011
Solids, Total Suspended	< 5.0	5.0	mg/l	1	06/04/14	AK	SM 2540D-2011
Sulfate	69.6	5.0	mg/l	10	05/31/14 12:49	JB	EPA 300.0/SW846 9056
pH	10.00		su	1	06/02/14 11:15	AK	SM4500HB+ -2011/9040C

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: BOTTOM Lab Sample ID: D58260-2 Matrix: AQ - Surface Water Method: SW846 8260B Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3V30883.D	1	05/31/14	JL	n/a	n/a	V3V1806
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00025	mg/l	
108-88-3	Toluene	ND	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	ND	0.0020	0.00031	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		62-130%
2037-26-5	Toluene-D8	98%		70-130%
460-00-4	4-Bromofluorobenzene	97%		69-130%

(a) See BFB Note 2.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID: BOTTOM Lab Sample ID: D58260-2 Matrix: AQ - Surface Water Method: SW846 8015B Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA21983.D	1	05/30/14	EV	n/a	n/a	GGA1234
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.20	0.050	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	92%		60-140%		

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID: BOTTOM Lab Sample ID: D58260-2 Matrix: AQ - Surface Water Method: SW846-8015B SW846 3510C Project: MOC POND C	Date Sampled: 05/29/14 Date Received: 05/30/14 Percent Solids: n/a
--	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH021378.D	1	06/05/14	JS	06/03/14	OP10010	GFH997
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	42%		10-130%		

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID: BOTTOM	Date Sampled: 05/29/14
Lab Sample ID: D58260-2	Date Received: 05/30/14
Matrix: AQ - Surface Water	Percent Solids: n/a
Project: MOC POND C	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	215	5.0	mg/l	10	05/31/14 17:12	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	704	10	mg/l	1	06/03/14	RW	SM 2540C-2011
Solids, Total Suspended	< 5.0	5.0	mg/l	1	06/04/14	AK	SM 2540D-2011
Sulfate	72.0	5.0	mg/l	10	05/31/14 17:12	JB	EPA 300.0/SW846 9056
pH	9.98		su	1	06/02/14 11:15	AK	SM4500HB+ -2011/9040C

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: POND C_TRIP BLANK	Date Sampled: 05/29/14
Lab Sample ID: D58260-3	Date Received: 05/30/14
Matrix: AQ - Trip Blank Water	Percent Solids: n/a
Method: SW846 8260B	
Project: MOC POND C	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3V30884.D	1	05/31/14	JL	n/a	n/a	V3V1806
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00025	mg/l	
108-88-3	Toluene	ND	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	ND	0.0020	0.00031	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.0015	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		62-130%
2037-26-5	Toluene-D8	98%		70-130%
460-00-4	4-Bromofluorobenzene	95%		69-130%

(a) See BFB Note 2.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.3
4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D58260
Account: MOILCOGJ Marathon Oil
Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1806-MB ^a	3V30863.D	1	05/31/14	JL	n/a	n/a	V3V1806

The QC reported here applies to the following samples:

Method: SW846 8260B

D58260-1, D58260-2, D58260-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	100% 62-130%
2037-26-5	Toluene-D8	100% 70-130%
460-00-4	4-Bromofluorobenzene	99% 69-130%

(a) See BFB Note 2.

6.1.1
6

Blank Spike Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1806-BS ^a	3V30864.D	1	05/31/14	JL	n/a	n/a	V3V1806

The QC reported here applies to the following samples:

Method: SW846 8260B

D58260-1, D58260-2, D58260-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	51.8	104	70-130
100-41-4	Ethylbenzene	50	54.7	109	70-130
108-88-3	Toluene	50	52.4	105	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	62-130%
2037-26-5	Toluene-D8	100%	70-130%
460-00-4	4-Bromofluorobenzene	101%	69-130%

(a) See BFB Note 2.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D58268-3MS ^a	3V30874.D	1	05/31/14	JL	n/a	n/a	V3V1806
D58268-3MSD ^a	3V30875.D	1	05/31/14	JL	n/a	n/a	V3V1806
D58268-3 ^a	3V30873.D	1	05/31/14	JL	n/a	n/a	V3V1806

The QC reported here applies to the following samples:

Method: SW846 8260B

D58260-1, D58260-2, D58260-3

CAS No.	Compound	D58268-3 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	50	51.2	102	50	50.1	100	2	62-130/30
100-41-4	Ethylbenzene	ND	50	54.3	109	50	53.8	108	1	63-130/30
108-88-3	Toluene	ND	50	51.3	103	50	50.9	102	1	60-130/30
1330-20-7	Xylene (total)	ND	150	151	101	150	149	99	1	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D58268-3	Limits
17060-07-0	1,2-Dichloroethane-D4	96%	94%	99%	62-130%
2037-26-5	Toluene-D8	99%	100%	97%	70-130%
460-00-4	4-Bromofluorobenzene	99%	101%	97%	69-130%

(a) See BFB Note 2.

* = Outside of Control Limits.

GC Volatiles**QC Data Summaries**

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**

Method Blank Summary

Job Number: D58260
Account: MOILCOGJ Marathon Oil
Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1234-MB	GA21969.D	1	05/30/14	EV	n/a	n/a	GGA1234

The QC reported here applies to the following samples:

Method: SW846 8015B

D58260-1, D58260-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.20	0.050	mg/l	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	92% 60-140%

7.1.1
7

Blank Spike Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1234-BS	GA21970.D	1	05/30/14	EV	n/a	n/a	GGA1234

The QC reported here applies to the following samples:

Method: SW846 8015B

D58260-1, D58260-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	2.05	93	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	98%	60-140%

7.2.1
7

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D57538-4MS	GA21972.D	1	05/30/14	EV	n/a	n/a	GGA1234
D57538-4MSD	GA21973.D	1	05/30/14	EV	n/a	n/a	GGA1234
D57538-4	GA21971.D	1	05/30/14	EV	n/a	n/a	GGA1234

The QC reported here applies to the following samples:

Method: SW846 8015B

D58260-1, D58260-2

CAS No.	Compound	D57538-4 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	2.2	2.06	94	2.2	2.03	92	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D57538-4	Limits
120-82-1	1,2,4-Trichlorobenzene	96%	96%	91%	60-140%

* = Outside of Control Limits.

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**

Method Blank Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10010-MB	FH021360.D	1	06/05/14	JS	06/03/14	OP10010	GFH997

The QC reported here applies to the following samples:

Method: SW846-8015B

D58260-1, D58260-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	15% 10-130%

8.1.1
8

Blank Spike Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10010-BS	FI12982.D	1	06/06/14	JS	06/03/14	OP10010	GF1805

The QC reported here applies to the following samples:

Method: SW846-8015B

D58260-1, D58260-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	1.87	37	33-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	54%	10-130%

8.2.1

8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D58260
 Account: MOILCOGJ Marathon Oil
 Project: MOC POND C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10010-MS	FH021364.D	1	06/05/14	JS	06/03/14	OP10010	GFH997
OP10010-MSD	FH021366.D	1	06/05/14	JS	06/03/14	OP10010	GFH997
D57538-5	FH021368.D	1	06/05/14	JS	06/03/14	OP10010	GFH997

The QC reported here applies to the following samples:

Method: SW846-8015B

D58260-1, D58260-2

CAS No.	Compound	D57538-5 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	1.84	37	5	1.87	37	2	33-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D57538-5	Limits
84-15-1	o-Terphenyl	48%	54%	64%	10-130%

8.3.1
8

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D58260
Account: MOILCOGJ - Marathon Oil
Project: MOC POND C

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP12703/GN24899	0.50	0.0	mg/l	5	4.87	97.4	90-110%
Nitrogen, Nitrate	GP12703/GN24899	0.010	0.0	mg/l	0.1	0.0982	98.2	90-110%
Nitrogen, Nitrite	GP12703/GN24899	0.0040	0.0	mg/l	0.05	0.0487	97.4	90-110%
Phosphate, Ortho	GP12703/GN24899	0.050	0.0	mg/l	0.5	0.521	104.2	90-110%
Solids, Total Dissolved	GN24929	10	0.0	mg/l	400	403	100.8	90-110%
Solids, Total Suspended	GN24951	5.0	0.0	mg/l	300	296	98.7	90-110%
Sulfate	GP12703/GN24899	0.50	0.0	mg/l	5	5.10	102.0	90-110%
pH	GN24906			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:

Batch GN24906: D58260-1, D58260-2

Batch GN24929: D58260-1, D58260-2

Batch GN24951: D58260-1, D58260-2

Batch GP12703: D58260-1, D58260-2

(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D58260
Account: MOILCOGJ - Marathon Oil
Project: MOC POND C

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN24929	D58242-1	mg/l	853	867	1.6	0-20%
Solids, Total Suspended	GN24951	D58210-2	mg/l	50.0	58.0	14.8	0-20%

Associated Samples:

Batch GN24929: D58260-1, D58260-2

Batch GN24951: D58260-1, D58260-2

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D58260
Account: MOILCOGJ - Marathon Oil
Project: MOC POND C

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP12703/GN24899	D58260-1	mg/l	204	50	250	92.0	80-120%
Nitrogen, Nitrate	GP12703/GN24899	D58260-1	mg/l	0.0	1	1.0	100.0	80-120%
Nitrogen, Nitrite	GP12703/GN24899	D58260-1	mg/l	0.0	0.5	0.45	90.0	80-120%
Phosphate, Ortho	GP12703/GN24899	D58260-1	mg/l	0.0	5	5.3	106.0	80-120%
Sulfate	GP12703/GN24899	D58260-1	mg/l	69.6	50	119	98.8	80-120%

Associated Samples:

Batch GP12703: D58260-1, D58260-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D58260
Account: MOILCOGJ - Marathon Oil
Project: MOC POND C

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GP12703/GN24899	D58260-1	mg/l	204	50	255	2.0	20%
Nitrogen, Nitrate	GP12703/GN24899	D58260-1	mg/l	0.0	1	1.0	0.0	20%
Nitrogen, Nitrite	GP12703/GN24899	D58260-1	mg/l	0.0	0.5	0.46	2.2	20%
Phosphate, Ortho	GP12703/GN24899	D58260-1	mg/l	0.0	5	5.5	3.7	20%
Sulfate	GP12703/GN24899	D58260-1	mg/l	69.6	50	121	1.7	20%

Associated Samples:

Batch GP12703: D58260-1, D58260-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits