COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1104527-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**2.20**		2.0	0.32	1	05/19/11	05/26/11	KWG1104527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	81	70-130	05/26/11	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\052611-521\0526006.D
Lab ID: KWG1104527-3
RunType: LCS
Matrix: DRINKING WATER

Date Acquired: 05/26/2011 15:40
Date Quantitated: 05/26/2011 16:57
Batch ID: KWG1104806
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 05/26/11

Secondary Review: _____

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	DRINKING WATE
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	05/19/2011

Analysis Lot:	KWG1104806	**Prep Lot:**	KWG1104527	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1020205	**Prep Date:**	05/19/2011		

Quant Method:	J:\MS16\METHODS\052411_D14.M	**Calibration ID:**	CAL10543
Title:			
Tune Ref:	J:\MS16\DATA\052611-521\0526003.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\051911-521\0519007.D	**Quant based on Method**	

Data File:	J:\MS16\DATA\052611-521\0526006.D			**Instrument:**	MS16
Acqu Date:	05/26/2011 15:40	**Quant Date:**	05/26/2011 16:57	**Vial:**	8
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1104527-3			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.11	0.00	97	35509	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.44	0.00	0.00	50	26664	8.05	81	70-130	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.56	0.01	0.00	47	900	0.8300	1.66	J	
1	N-Nitrosomethylethylamine	13.14	-0.01	0.00	61	4513	1.00	2.00		
1	N-Nitrosodiethylamine	15.24		0.00	75	819	1.02	2.04		
1	N-Nitrosodi-n-propylamine	20.42	0.01	0.00	89	1128	1.08	2.16		
1	N-Nitrosopyrrolidine	22.77		0.00	55	3352	0.6700	1.34	J	
1	N-Nitrosopiperidine	23.67		0.00	69	6201	0.7600	1.52	J	
1	N-Nitrosodi-n-butylamine	25.84	-0.01	0.00	57	3844	1.41	2.82		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052611-521\0526006.D Vial: 8
Acq On : 26 May 11 15:40 Operator: SVO-DW
Sample : 51911-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57:34 2011 Quant Results File: 052411_D14.RES

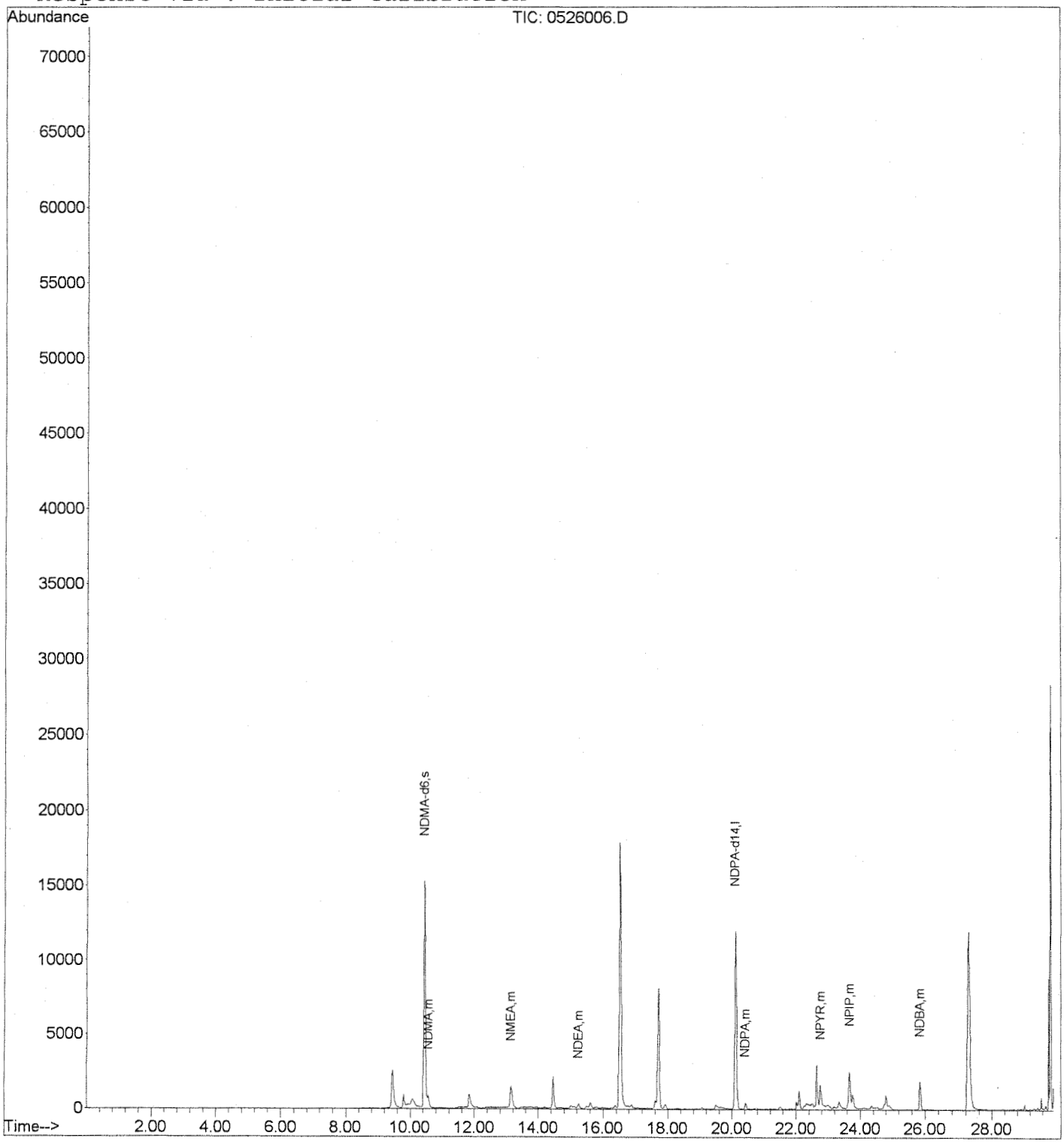
Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.11	97	35509	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.44	50	26664	8.05	ug/L	0.01
Target Compounds						Qvalue
4) NDMA	10.56	47	900	0.83	ug/L	81
5) NMEA	13.14	61	4513	1.00	ug/L	80
6) NDEA	15.24	75	819	1.02	ug/L	73
7) NDPA	20.42	89	1128	1.08	ug/L	97
8) NPYR	22.77	55	3352	0.67	ug/L	91
9) NPIP	23.67	69	6201	0.76	ug/L	90
10) NDBA	25.84	57	3844	1.41	ug/L	99

(#) = qualifier out of range (m) = manual integration
0526006.D 052411_D14.M Thu May 26 17:48:45 2011 Page 1

Data File : J:\MS16\DATA\052611-521\0526006.D Vial: 8
Acq On : 26 May 11 15:40 Operator: SVO-DW
Sample : 51911-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/12/2011

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL10502
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\051211-521\0512015.D
B	J:\MS16\DATA\051211-521\0512016.D
C	J:\MS16\DATA\051211-521\0512017.D
D	J:\MS16\DATA\051211-521\0512018.D
E	J:\MS16\DATA\051211-521\0512019.D
F	J:\MS16\DATA\051211-521\0512020.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6	A	1.0	3.06	B	2.0	3.45	C	5.0	4.25	D	10	4.54	E	20	5.21
	F	50	7.35												
N-Nitrosodimethylamine	A	1.0	1.11	B	2.0	1.01	C	5.0	1.35	D	10	1.24	E	20	1.38
	F	50	2.25												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/12/2011

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL10502
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	1.000		≥ 0.99	4.64		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.999		≥ 0.99	1.39		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/12/2011
Date Analyzed: 05/12/2011

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL10502
Units: ug/L

File ID: J:\MS16\DATA\051211-521\0512021.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.6	1.39	0.877	NA	-24	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

DATA ANALYSIS PARAMETERS

Method Name: J:\MS16\METHODS\051211_D14.M

Percent Report Settings

Sort By: Signal

Output Destination
    Screen: Yes
    Printer: No
    File: No

Integration Events: Meth Default

Generate Report During Run Method: No

Signal Correlation Window: 0.020

Qualitative Report Settings

Peak Location of Unknown: Apex

Library to Search	Minimum Quality
L:\DATABASE\NIST98.L	0

Integration Events: Meth Default

Report Type: Summary

Output Destination
    Screen: No
    Printer: Yes
    File: No

Generate Report During Run Method: No

Quantitative Report Settings

Report Type: Summary

Output Destination
    Screen: No
    Printer: Yes
    File: No

Generate Report During Run Method: Yes

051211_D14.m MJ808 CAL 10502
Calibration Last Updated: Fri May 13 09:55:14 2011

Reference Window: 0.60 Minutes
Non-Reference Window: 1.00 Minutes
Correlation Window: 0.05 minutes
Default Multiplier: 1.00
Default Sample Concentration: 0.00

Compound Information

---

1) NDPA-d14 (ISTD)

Ret. Time 20.11 min., Extract & Integrate from 19.81 to 20.41 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 97.00			*** METH DEFAULT ***
Q1 145.00	27.70	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		50.000	33124
2		50.000	32642
3		50.000	33027
4		50.000	34066
5		50.000	30941
6		50.000	30878

Qualifier Peak Analysis OFF ISTD conc: 50.000 ug/L
Curve Fit: Avg. RF

---

2) NDEA-d10 ( )

Ret. Time 14.98 min., Extract & Integrate from 14.68 to 15.28 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 81.00			*** METH DEFAULT ***
Q1 113.00	4.70	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		50.000	-1
2		50.000	-1
3		50.000	-1
4		50.000	-1
5		50.000	-1
6		50.000	-1

Qualifier Peak Analysis OFF
Curve Fit: Avg. RF

---

3) NDMA-d6 ( )

Ret. Time 10.43 min., Extract & Integrate from 10.13 to 10.73 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 50.00			*** METH DEFAULT ***

Q1	81.00	8.40	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	2027
2		2.000	4501
3		5.000	14037
4		10.000	30941
5		20.000	64495
6		50.000	226827

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

4) NDMA ( )

Ret. Time 10.55 min., Extract & Integrate from 10.25 to 10.85 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	47.00			*** METH DEFAULT ***
Q1	75.00	12.60	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	736
2		2.000	1325
3		5.000	4463
4		10.000	8429
5		20.000	17071
6		50.000	69326

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

5) NMEA ( )

Ret. Time 13.13 min., Extract & Integrate from 12.82 to 13.43 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	61.00			*** METH DEFAULT ***
Q1	89.00	9.40	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	4469
2		2.000	9214
3		5.000	29471
4		10.000	60836
5		20.000	126903
6		50.000	353142

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

6) NDEA ( )

Ret. Time 15.24 min., Extract & Integrate from 14.94 to 15.54 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	75.00			*** METH DEFAULT ***
Q1	103.00	13.00	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response

1	1.000	543
2	2.000	1201
3	5.000	3824
4	10.000	7990
5	20.000	15844
6	50.000	41484

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

7) NDPA ( )

Ret. Time 20.42 min., Extract & Integrate from 20.12 to 20.72 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 89.00			*** METH DEFAULT ***
Q1 131.00	9.80	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	565
2		2.000	1341
3		5.000	4167
4		10.000	8465
5		20.000	17439
6		50.000	45632

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

8) NPYR ( )

Ret. Time 22.75 min., Extract & Integrate from 22.45 to 23.05 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 55.00			*** METH DEFAULT ***
Q1 101.00	12.10	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	4102
2		2.000	9115
3		5.000	26752
4		10.000	59611
5		20.000	119028
6		50.000	303697

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

9) NPIP ( )

Ret. Time 23.66 min., Extract & Integrate from 23.36 to 23.96 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 69.00			*** METH DEFAULT ***
Q1 115.00	12.60	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	7526
2		2.000	15898
3		5.000	47284

4	10.000	102967
5	20.000	206391
6	50.000	519935

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

10) NDBA ( )

Ret. Time 25.83 min., Extract & Integrate from 25.53 to 26.13 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 57.00			*** METH DEFAULT ***
Q1 159.00	14.10	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	1432
2		2.000	4540
3		5.000	16066
4		10.000	34476
5		20.000	79619
6		50.000	192628

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

END OF DATA ANALYSIS PARAMETERS

Fri May 13 10:00:11 2011

Response Factor Report MS16

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 051211_D14.m MJ808 CAL 10502
Last Update : Fri May 13 09:55:14 2011
Response via : Initial Calibration

Calibration Files
1 =0512015.D 2 =0512016.D 3 =0512017.D
4 =0512018.D 5 =0512019.D 6 =0512020.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	I	NDPA-d14	ISTD								
2)		NDEA-d10							0.000#		-1.00
3)	s	NDMA-d6	3.060	3.447	4.250	4.541	5.211	7.346	4.643		32.99
4)	m	NDMA	1.111	1.015	1.351	1.237	1.379	2.245	1.390		31.77
5)	m	NMEA	0.675	0.706	0.892	0.893	1.025	1.144	0.889	E1	20.31
6)	m	NDEA	0.820	0.920	1.158	1.173	1.280	1.343	1.116		18.37
7)	m	NDPA	0.853	1.027	1.262	1.242	1.409	1.478	1.212		19.39
8)	m	NPYR	6.192	6.981	8.100	8.749	9.617	9.835	8.246		17.57
9)	m	NPIP	1.136	1.218	1.432	1.511	1.668	1.684	1.441	E1	15.77
10)	m	NDBA	2.162	3.477	4.865	5.060	6.433	6.238	4.706		34.87

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512015.D Vial: 1
Acq On : 12 May 11 18:58 Operator: SVO-DW
Sample : 5-11B 521 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:12 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:17:45 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.10	97	33124	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.43	50	2027	1.14	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.54	47	736	0.71	ug/L	82
5) NMEA	13.13	61	4469	1.11	ug/L	95
6) NDEA	15.22	75	543	0.73	ug/L	90
7) NDPA	20.39	89	565	0.69	ug/L	89
8) NPYR	22.73	55	4102	0.79	ug/L	99
9) NPIP	23.65	69	7526	0.83	ug/L	96
10) NDBA	25.83	57	1432	2.06	ug/L	87

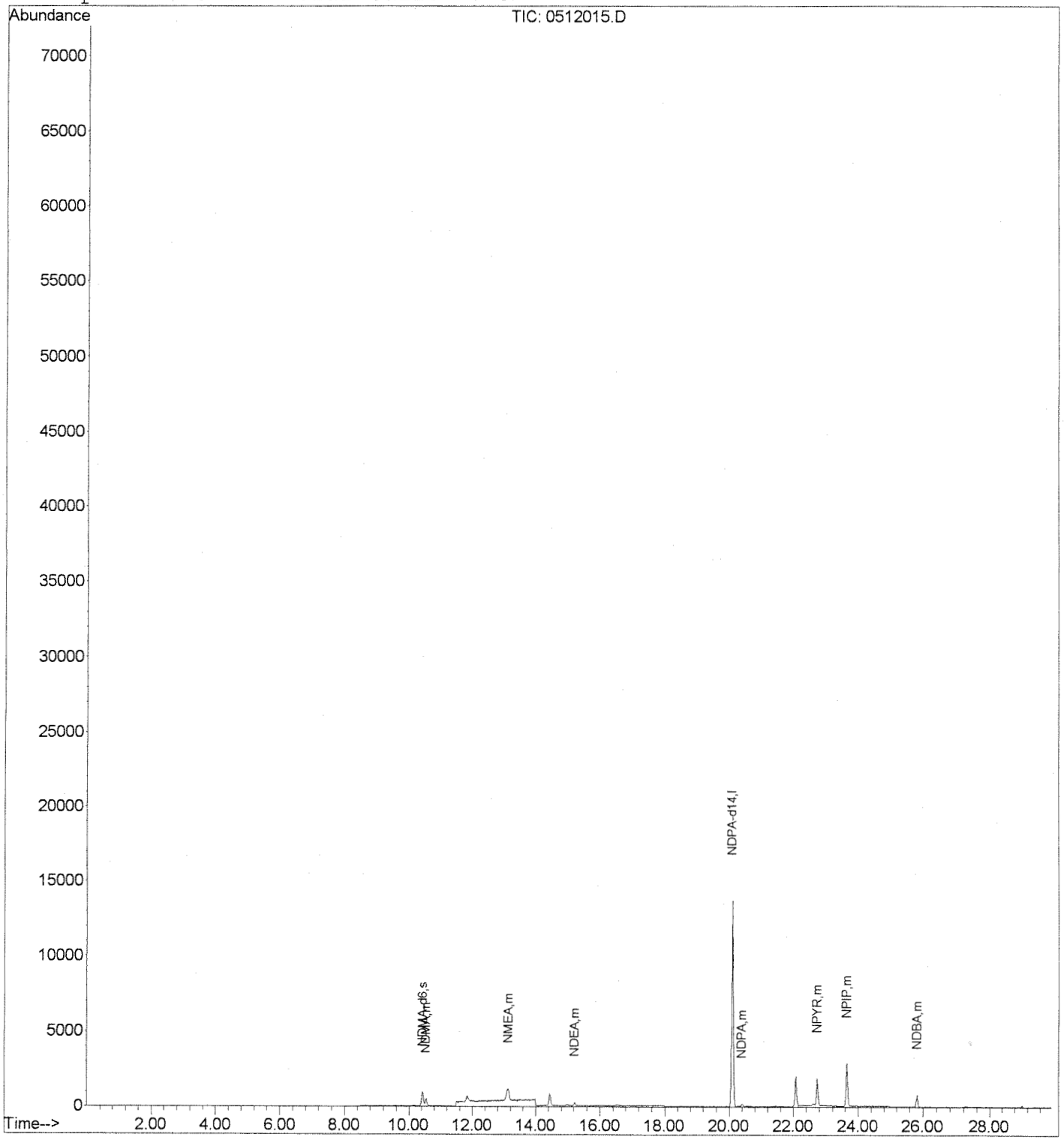
5/13/11

(#) = qualifier out of range (m) = manual integration
0512015.D 051211_D14.M Fri May 13 09:48:58 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512015.D Vial: 1
Acq On : 12 May 11 18:58 Operator: SVO-DW
Sample : 5-11B 521 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:15 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512016.D Vial: 2
Acq On : 12 May 11 19:37 Operator: SVO-DW
Sample : 5-11C 521 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:12 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:20:23 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

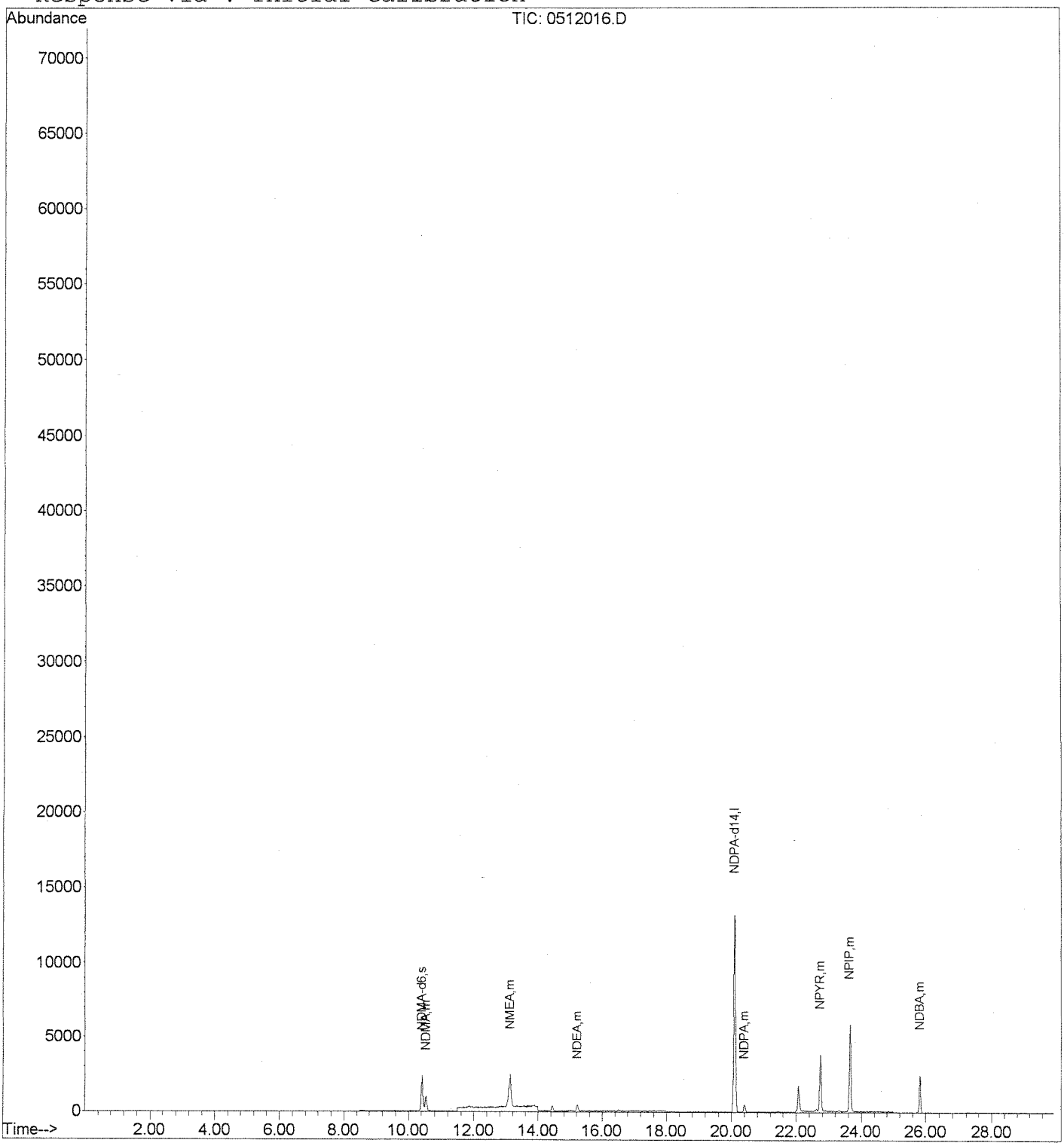
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.11	97	32642	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.41	50	4501	1.93	ug/L	-0.02
Target Compounds						Qvalue
4) NDMA	10.54	47	1325	1.30	ug/L	86
5) NMEA	13.12	61	9214	1.88	ug/L	90
6) NDEA	15.22	75	1201	1.64	ug/L	86
7) NDPA	20.39	89	1341	1.66	ug/L	98
8) NPYR	22.74	55	9115	1.77	ug/L	90
9) NPIP	23.64	69	15898	1.77	ug/L	97
10) NDBA	25.81	57	4540	2.57	ug/L	97

(#) = qualifier out of range (m) = manual integration
0512016.D 051211_D14.M Fri May 13 09:48:59 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512016.D Vial: 2
Acq On : 12 May 11 19:37 Operator: SVO-DW
Sample : 5-11C 521 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:15 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512017.D Vial: 3
Acq On : 12 May 11 20:16 Operator: SVO-DW
Sample : 5-11D 521 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:13 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:20:23 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

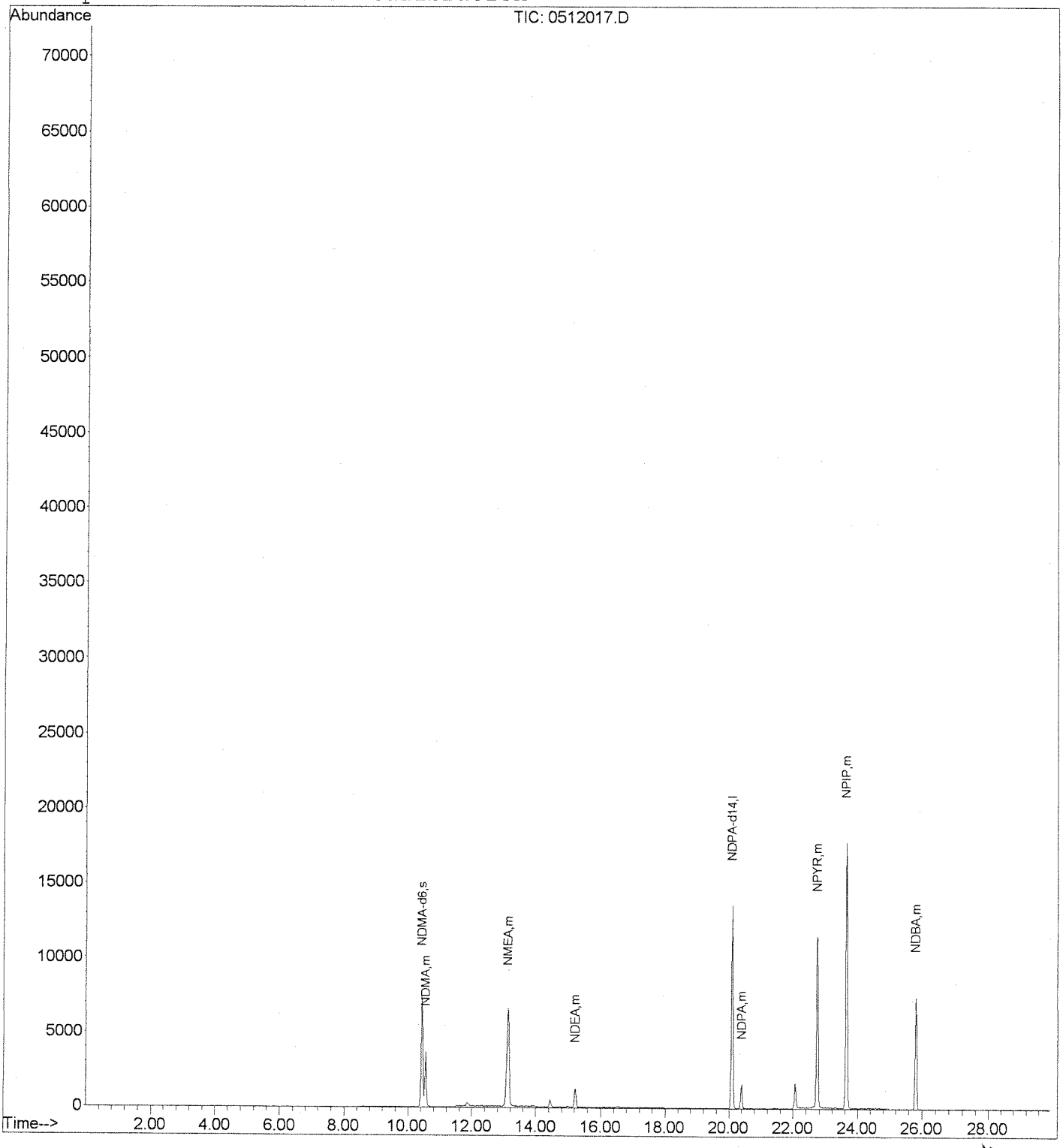
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.09	97	33027	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.43	50	14037	4.91	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.54	47	4463	4.38	ug/L	68
5) NMEA	13.12	61	29471	5.09	ug/L	93
6) NDEA	15.22	75	3824	5.15	ug/L	76
7) NDPA	20.41	89	4167	5.10	ug/L	73
8) NPYR	22.73	55	26752	5.15	ug/L	81
9) NPIP	23.64	69	47284	5.21	ug/L	94
10) NDBA	25.82	57	16066	4.47	ug/L	88

(#) = qualifier out of range (m) = manual integration
0512017.D 051211_D14.M Fri May 13 09:49:01 2011 5/13/11 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512017.D Vial: 3
Acq On : 12 May 11 20:16 Operator: SVO-DW
Sample : 5-11D 521 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:15 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512018.D Vial: 4
Acq On : 12 May 11 20:55 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:13 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:20:23 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

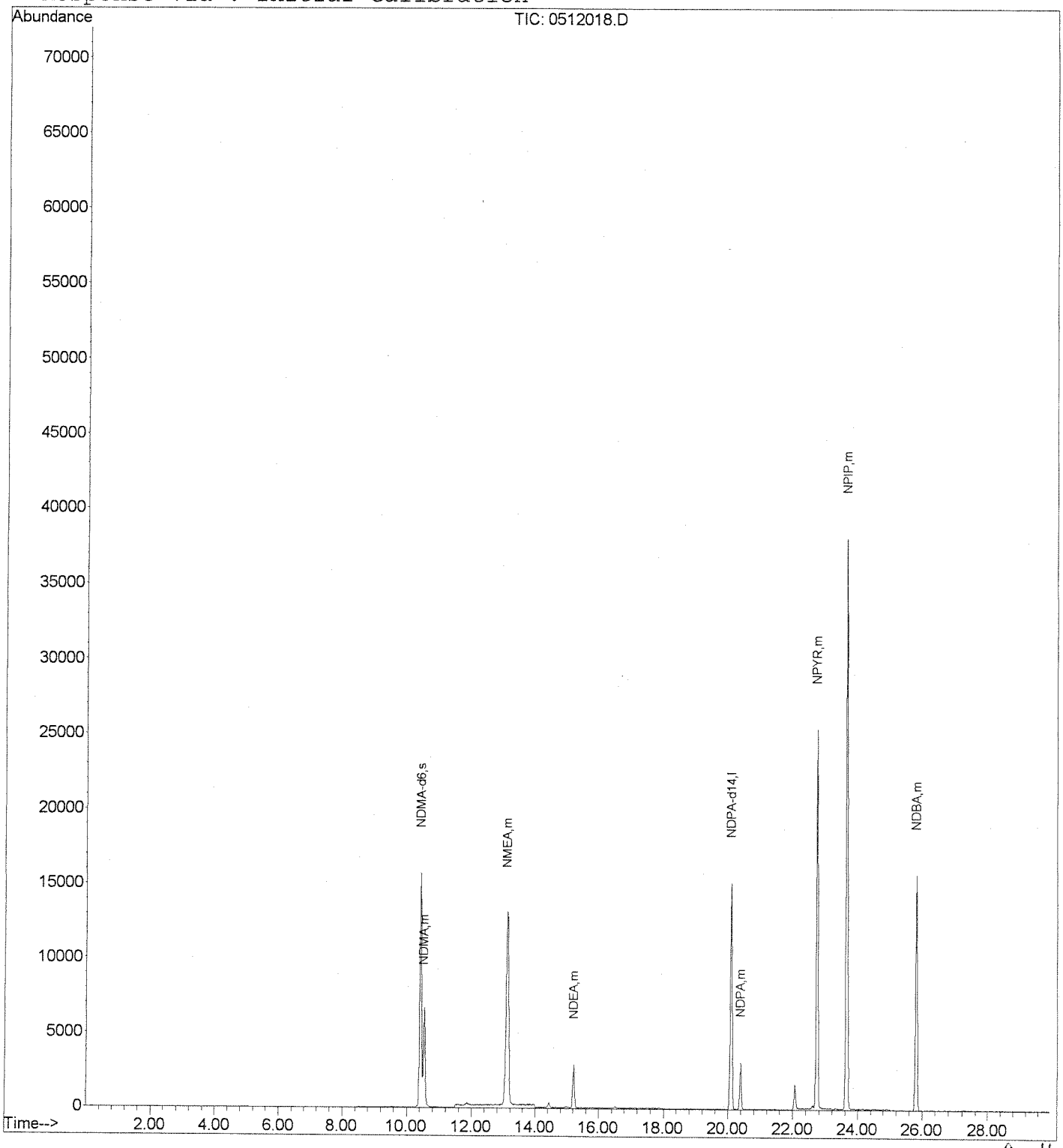
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.09	97	34066	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.43	50	30941	10.05	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.53	47	8429	8.17	ug/L	67
5) NMEA	13.11	61	60836	9.78	ug/L	87
6) NDEA	15.21	75	7990	10.43	ug/L	55
7) NDPA	20.39	89	8465	10.04	ug/L	87
8) NPYR	22.73	55	59611	11.12	ug/L	76
9) NPIP	23.64	69	102967	11.00	ug/L	90
10) NDBA	25.81	57	34476	7.48	ug/L	87

(#) = qualifier out of range (m) = manual integration
0512018.D 051211_D14.M Fri May 13 09:49:04 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512018.D Vial: 4
Acq On : 12 May 11 20:55 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:15 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



0512018.D 051211_D14.M Fri May 13 09:49:04 2011 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512019.D Vial: 5
Acq On : 12 May 11 21:34 Operator: SVO-DW
Sample : 5-11F 521 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:13 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:20:23 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

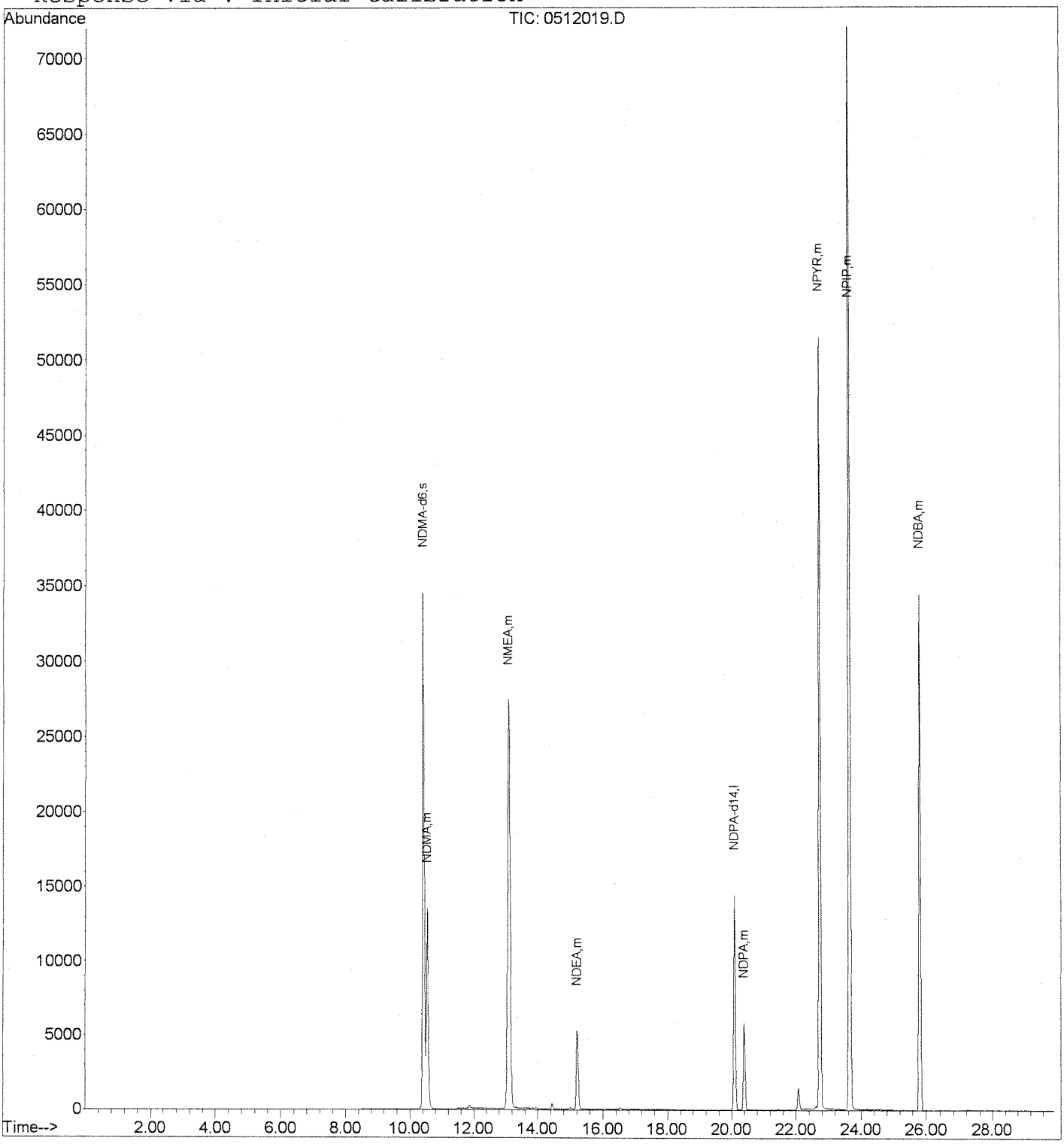
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.09	97	30941	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.43	50	64495	23.27	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.55	47	17071	19.26	ug/L	# 22
5) NMEA	13.13	61	126903	21.89	ug/L	88
6) NDEA	15.21	75	15844	22.76	ug/L	71
7) NDPA	20.39	89	17439	22.78	ug/L	95
8) NPYR	22.73	55	119028	24.45	ug/L	75
9) NPIP	23.64	69	206391	24.28	ug/L	90
10) NDBA	25.81	57	79619	17.80	ug/L	87

(#) = qualifier out of range (m) = manual integration
0512019.D 051211_D14.M Fri May 13 09:49:06 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512019.D Vial: 5
Acq On : 12 May 11 21:34 Operator: SVO-DW
Sample : 5-11F 521 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:18 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512020.D Vial: 6
Acq On : 12 May 11 22:13 Operator: SVO-DW
Sample : 5-11G 521 50 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 08:15:13 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 12 17:20:23 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

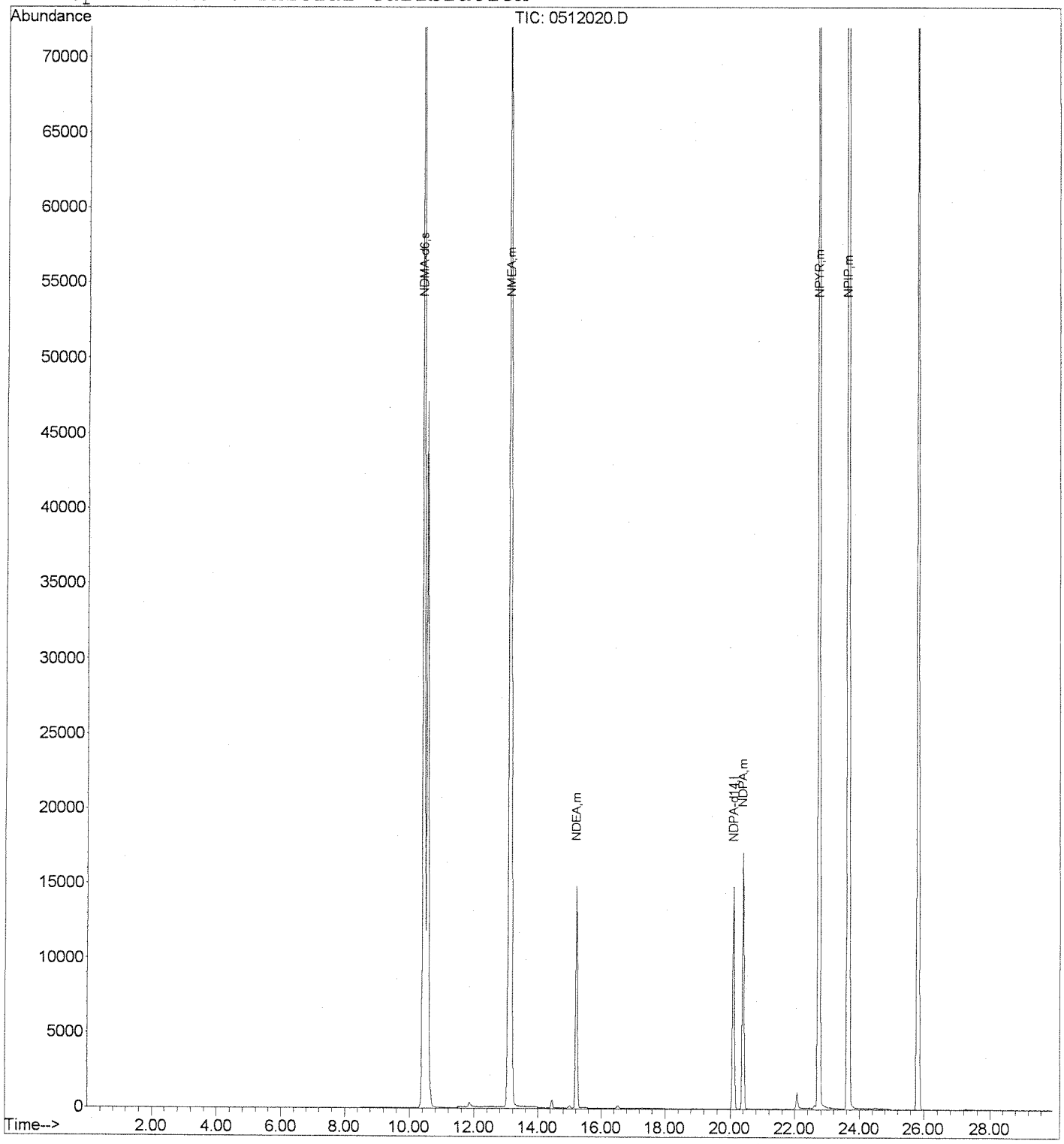
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) NDPA-d14	20.10	97	30878	50.00 ug/L	-0.02
System Monitoring Compounds					
3) NDMA-d6	10.42	50	226827	109.62 ug/L	-0.01
Target Compounds					Qvalue
4) NDMA	10.54	47	69326	Below Cal	59
5) NMEA	13.11	61	353142	59.78 ug/L	80
6) NDEA	15.21	75	41484	59.72 ug/L	51
7) NDPA	20.39	89	45632	59.73 ug/L	80
8) NPYR	22.74	55	303697	62.51 ug/L	55
9) NPIP	23.64	69	519935	61.28 ug/L	76
10) NDBA	25.82	57	192628	Below Cal	96

(#) = qualifier out of range (m) = manual integration
0512020.D 051211_D14.M Fri May 13 09:49:07 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512020.D Vial: 6
Acq On : 12 May 11 22:13 Operator: SVO-DW
Sample : 5-11G 521 50 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 8:18 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512021.D Vial: 7
Acq On : 12 May 11 22:52 Operator: SVO-DW
Sample : 5-11H 521 ICV10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 09:55:22 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 09:55:14 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

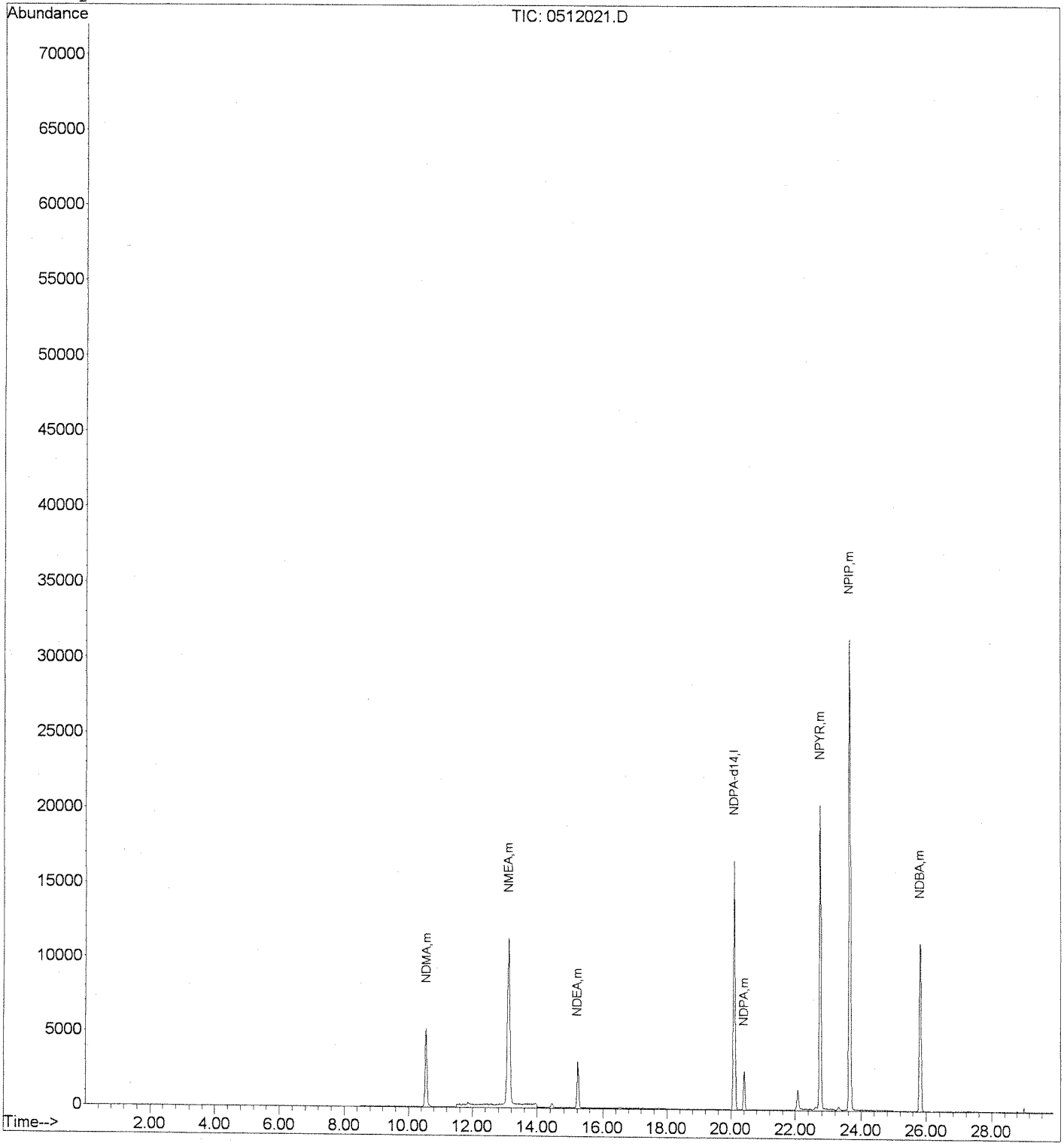
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) NDPA-d14	20.09	97	31927	50.00	ug/L		-0.02
System Monitoring Compounds							
3) NDMA-d6	0.00	50	0	0.00	ug/L		
Target Compounds							Qvalue
4) NDMA	10.56	47	5601	7.57	ug/L	#	1
5) NMEA	13.12	61	47068	7.97	ug/L		65
6) NDEA	15.21	75	6866	8.91	ug/L	#	21
7) NDPA	20.40	89	6440	7.77	ug/L		88
8) NPYR	22.74	55	48532	8.45	ug/L		85
9) NPIP	23.64	69	85018	8.49	ug/L		93
10) NDBA	25.81	57	27438	7.81	ug/L		86

(#) = qualifier out of range (m) = manual integration
0512021.D 051211_D14.M Fri May 13 09:55:51 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051211-521\0512021.D Vial: 7
Acq On : 12 May 11 22:52 Operator: SVO-DW
Sample : 5-11H 521 ICV10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 13 9:55 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 09:55:14 2011
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/24/2011

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL10543
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\052411-521\0524003.D
B	J:\MS16\DATA\052411-521\0524004.D
C	J:\MS16\DATA\052411-521\0524005.D
D	J:\MS16\DATA\052411-521\0524006.D
E	J:\MS16\DATA\052411-521\0524007.D
F	J:\MS16\DATA\052411-521\0524008.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6	A	1.0	3.37	B	2.0	3.58	C	5.0	4.05	D	10	4.75	E	20	4.93
	F	50	5.06												
N-Nitrosodimethylamine	A	1.0	2.11	B	2.0	1.47	C	5.0	1.73	D	10	2.06	E	20	2.09
	F	50	2.01												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/24/2011

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL10543
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	1.000		≥ 0.99	4.29		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.999		≥ 0.99	1.91		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/24/2011
Date Analyzed: 05/24/2011

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL10543
Units: ug/L

File ID: J:\MS16\DATA\052411-521\0524009.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.4	1.91	1.48	NA	-26	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

DATA ANALYSIS PARAMETERS

Method Name: J:\MS16\METHODS\052411_D14.M

Percent Report Settings

Sort By: Signal

Output Destination
Screen: Yes
Printer: No
File: No

Integration Events: Meth Default

Generate Report During Run Method: No

Signal Correlation Window: 0.020

Qualitative Report Settings

Peak Location of Unknown: Apex

Library to Search	Minimum Quality
L:\DATABASE\NIST98.L	0

Integration Events: Meth Default

Report Type: Summary

Output Destination
Screen: No
Printer: Yes
File: No

Generate Report During Run Method: No

Quantitative Report Settings

Report Type: Summary

Output Destination
Screen: Yes
Printer: No
File: No

Generate Report During Run Method: Yes

052411_D14.m MJ808 CAL 10
Calibration Last Updated: Thu May 26 08:29:59 2011

Reference Window: 0.60 Minutes
Non-Reference Window: 1.00 Minutes
Correlation Window: 0.05 minutes
Default Multiplier: 1.00
Default Sample Concentration: 0.00

Compound Information

---

1) NDPA-d14 (ISTD)

Ret. Time 20.11 min., Extract & Integrate from 19.81 to 20.41 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 97.00			*** METH DEFAULT ***
Q1 145.00	27.70	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		50.000	30655
2		50.000	35163
3		50.000	31143
4		50.000	32072
5		50.000	32310
6		50.000	32617

Qualifier Peak Analysis OFF ISTD conc: 50.000 ug/L
Curve Fit: Avg. RF

---

2) NDEA-d10 ( )

Ret. Time 14.98 min., Extract & Integrate from 14.68 to 15.28 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 81.00			*** METH DEFAULT ***
Q1 113.00	4.70	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		50.000	-1
2		50.000	-1
3		50.000	-1
4		50.000	-1
5		50.000	-1
6		50.000	-1

Qualifier Peak Analysis OFF
Curve Fit: Avg. RF

---

3) NDMA-d6 ( )

Ret. Time 10.43 min., Extract & Integrate from 10.13 to 10.73 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 50.00			*** METH DEFAULT ***

Q1	81.00	8.40	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	2065
2		2.000	5036
3		5.000	12599
4		10.000	30488
5		20.000	63727
6		50.000	164982

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

4) NDMA ( )

Ret. Time 10.55 min., Extract & Integrate from 10.25 to 10.85 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	47.00			*** METH DEFAULT ***
Q1	75.00	12.60	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	1292
2		2.000	2069
3		5.000	5391
4		10.000	13238
5		20.000	27075
6		50.000	65667

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

5) NMEA ( )

Ret. Time 13.13 min., Extract & Integrate from 12.82 to 13.43 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	61.00			*** METH DEFAULT ***
Q1	89.00	9.40	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	4154
2		2.000	10223
3		5.000	25973
4		10.000	60489
5		20.000	121154
6		50.000	338011

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

6) NDEA ( )

Ret. Time 15.24 min., Extract & Integrate from 14.94 to 15.54 min.

Signal		Rel Resp.	Pct. Unc.(abs)	Integration
Tgt	75.00			*** METH DEFAULT ***
Q1	103.00	13.00	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response

1	1.000	550
2	2.000	1405
3	5.000	3532
4	10.000	7956
5	20.000	15185
6	50.000	45050

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

7) NDPA ( )

Ret. Time 20.42 min., Extract & Integrate from 20.12 to 20.72 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 89.00			*** METH DEFAULT ***
Q1 131.00	9.80	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	584
2		2.000	1661
3		5.000	4481
4		10.000	10005
5		20.000	17697
6		50.000	50948

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

8) NPYR ( )

Ret. Time 22.75 min., Extract & Integrate from 22.45 to 23.05 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 55.00			*** METH DEFAULT ***
Q1 101.00	12.10	20.0	*** METH DEFAULT ***

Lvl	ID	Conc (ug/L)	Response
1		1.000	4111
2		2.000	13033
3		5.000	27665
4		10.000	61316
5		20.000	122208
6		50.000	319283

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

9) NPIP ( )

Ret. Time 23.66 min., Extract & Integrate from 23.36 to 23.96 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 69.00			*** METH DEFAULT ***
Q1 115.00	12.60	20.0	*** METH DEFAULT ***

l	ID	Conc (ug/L)	Response
		1.000	7767
		2.000	25650
		5.000	48522

4	10.000	107798
5	20.000	228182
6	50.000	587297

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

---

10) NDBA ( )

Ret. Time 25.83 min., Extract & Integrate from 25.53 to 26.13 min.

Signal	Rel Resp.	Pct. Unc.(abs)	Integration
Tgt 57.00			*** METH DEFAULT ***
Q1 159.00	14.10	20.0	*** METH DEFAULT ***

Lvl ID	Conc (ug/L)	Response
1	1.000	2038
2	2.000	6561
3	5.000	18761
4	10.000	36719
5	20.000	82803
6	50.000	208582

Qualifier Peak Analysis OFF
Curve Fit: Quadratic

END OF DATA ANALYSIS PARAMETERS

Thu May 26 18:36:02 2011

Response Factor Report MS16

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:29:59 2011
Response via : Initial Calibration

Calibration Files
1 =0524003.D 2 =0524004.D 3 =0524005.D
4 =0524006.D 5 =0524007.D 6 =0524008.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	I	NDPA-d14	ISTD								
2)		NDEA-d10							0.000#		-1.00
3)	s	NDMA-d6	3.368	3.580	4.046	4.753	4.931	5.058	4.289		16.90
4)	m	NDMA	2.107	1.471	1.731	2.064	2.095	2.013	1.914		13.47
5)	m	NMEA	0.678	0.727	0.834	0.943	0.937	1.036	0.859	E1	16.10
6)	m	NDEA	0.897	0.999	1.134	1.240	1.175	1.381	1.138		15.14
7)	m	NDPA	0.953	1.181	1.439	1.560	1.369	1.562	1.344		17.72
8)	m	NPYR	6.705	9.266	8.883	9.559	9.456	9.789	8.943		12.72
9)	m	NPIP	1.267	1.824	1.558	1.681	1.766	1.801	1.649	E1	12.79
10)	m	NDBA	3.324	4.665	6.024	5.724	6.407	6.395	5.423		22.35

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524003.D Vial: 1
Acq On : 24 May 11 15:19 Operator: SVO-DW
Sample : 5-11B 521 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:05 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.12	97	30655	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.44	50	2065	1.01	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.56	47	1292	1.46	ug/L	85
5) NMEA	13.16	61	4154	1.21	ug/L	76
6) NDEA	15.25	75	550	1.21	ug/L	79
7) NDPA	20.43	89	584	1.23	ug/L	88
8) NPYR	22.77	55	4111	1.31	ug/L	72
9) NPIP	23.67	69	7767	1.34	ug/L	77
10) NDBA	25.85	57	2038	1.64	ug/L	66

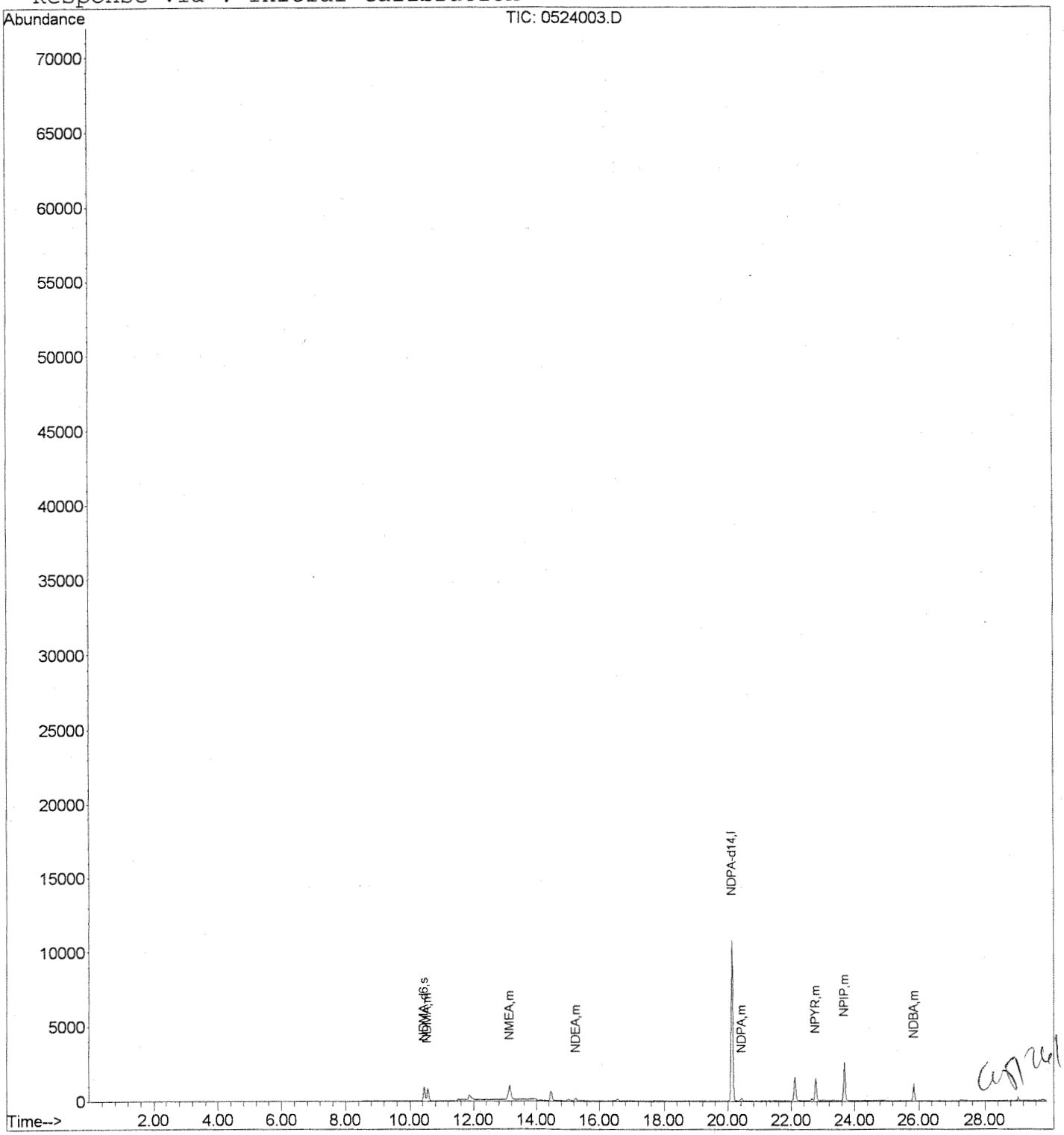
5/27/11

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524003.D Vial: 1
Acq On : 24 May 11 15:19 Operator: SVO-DW
Sample : 5-11B 521 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:26 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524004.D Vial: 2
Acq On : 24 May 11 15:58 Operator: SVO-DW
Sample : 5-13H 521 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:06 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

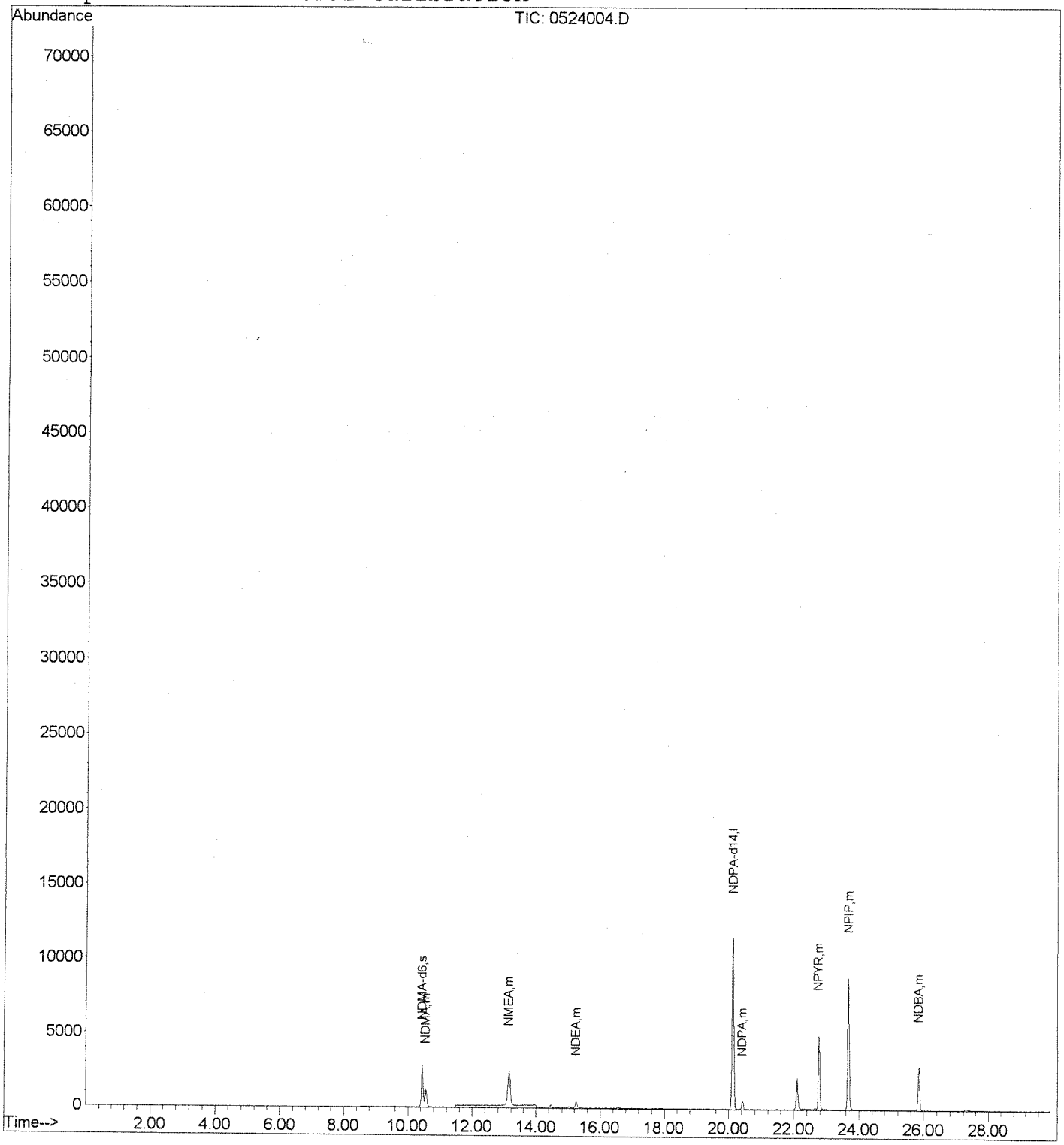
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.12	97	35163	50.00	ug/L	0.01
System Monitoring Compounds						
3) NDMA-d6	10.44	50	5036	1.94	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.56	47	2069	2.38	ug/L	86
5) NMEA	13.14	61	10223	2.01	ug/L	91
6) NDEA	15.24	75	1405	2.08	ug/L	75
7) NDPA	20.41	89	1661	2.25	ug/L	79
8) NPYR	22.76	55	13033	2.53	ug/L	74
9) NPIP	23.68	69	25650	2.76	ug/L	79
10) NDBA	25.85	57	6561	2.55	ug/L	66

(#) = qualifier out of range (m) = manual integration
0524004.D 052411_D14.M Thu May 26 16:45:34 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524004.D Vial: 2
Acq On : 24 May 11 15:58 Operator: SVO-DW
Sample : 5-13H 521 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:26 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524005.D Vial: 3
Acq On : 24 May 11 16:37 Operator: SVO-DW
Sample : 5-13G 521 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:06 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

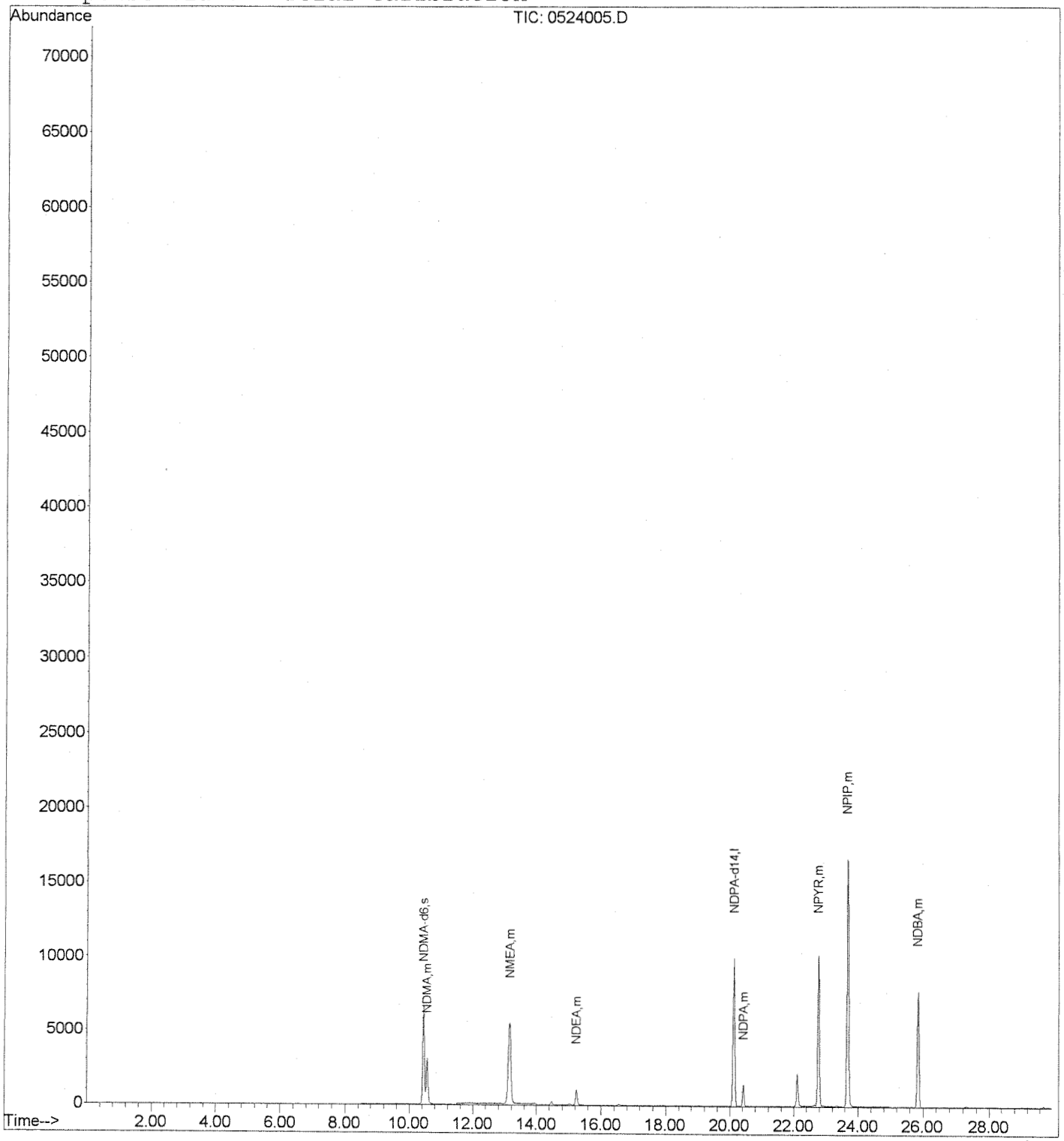
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.13	97	31143	50.00	ug/L	0.01
System Monitoring Compounds						
3) NDMA-d6	10.44	50	12599	4.95	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.55	47	5391	7.63	ug/L	79
5) NMEA	13.14	61	25973	4.78	ug/L	84
6) NDEA	15.25	75	3532	4.96	ug/L	73
7) NDPA	20.43	89	4481	5.72	ug/L	82
8) NPYR	22.76	55	27665	5.20	ug/L	74
9) NPIP	23.68	69	48522	5.22	ug/L	82
10) NDBA	25.85	57	18761	5.69	ug/L	66

(#) = qualifier out of range (m) = manual integration
0524005.D 052411_D14.M Thu May 26 16:45:36 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524005.D Vial: 3
Acq On : 24 May 11 16:37 Operator: SVO-DW
Sample : 5-13G 521 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:26 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524006.D Vial: 4
Acq On : 24 May 11 17:17 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:06 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

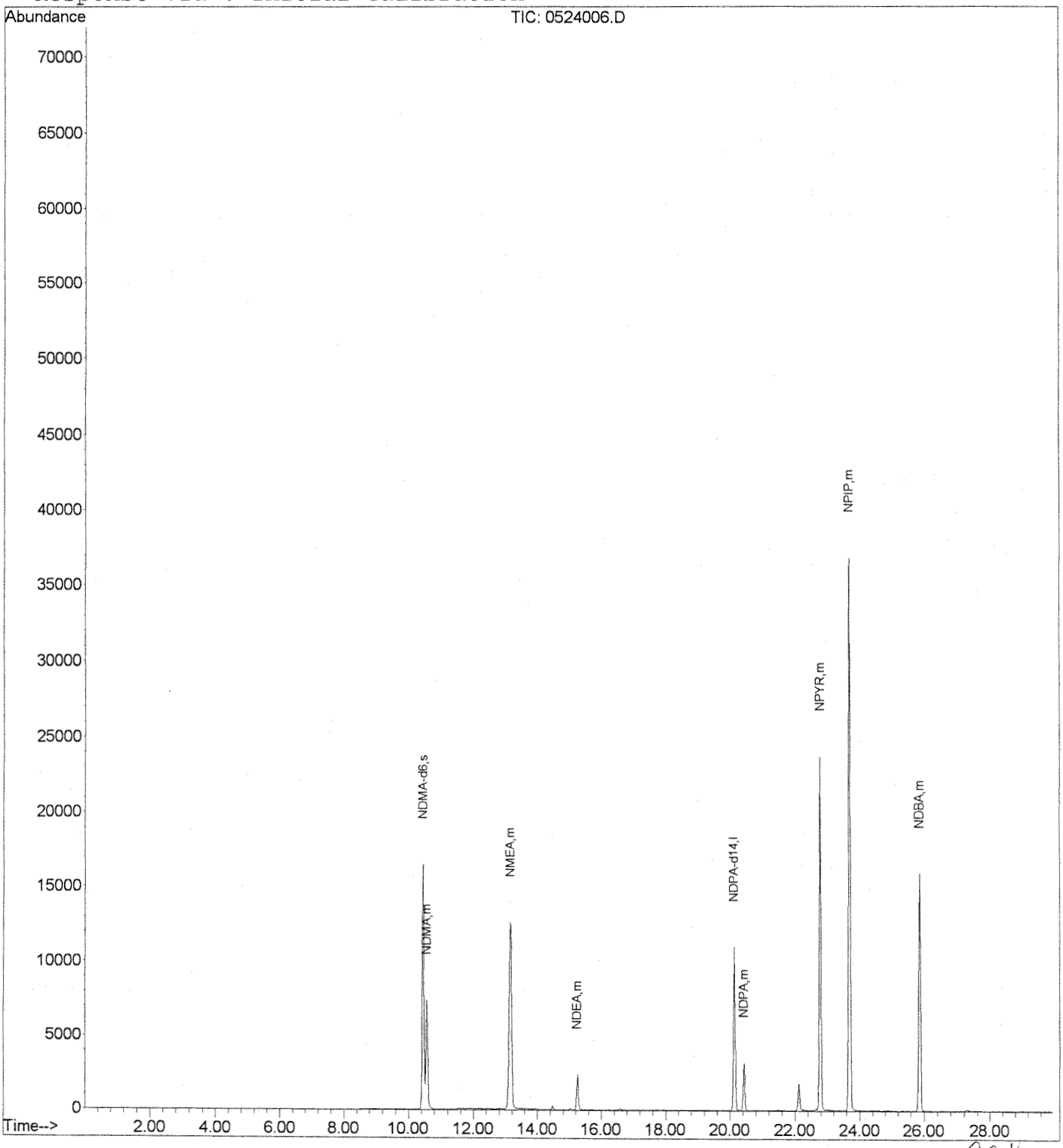
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.13	97	32072	50.00	ug/L	0.01
System Monitoring Compounds						
3) NDMA-d6	10.45	50	30488	10.47	ug/L	0.02
Target Compounds						Qvalue
4) NDMA	10.56	47	13238	15.79	ug/L	77
5) NMEA	13.15	61	60489	9.97	ug/L	86
6) NDEA	15.25	75	7956	10.18	ug/L	74
7) NDPA	20.43	89	10005	11.65	ug/L	76
8) NPYR	22.77	55	61316	10.46	ug/L	75
9) NPIP	23.68	69	107798	10.56	ug/L	82
10) NDBA	25.85	57	36719	9.82	ug/L	67

(#) = qualifier out of range (m) = manual integration
0524006.D 052411_D14.M Thu May 26 16:45:37 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524006.D Vial: 4
Acq On : 24 May 11 17:17 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:26 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524007.D Vial: 5
Acq On : 24 May 11 17:56 Operator: SVO-DW
Sample : 5-11F 521 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:06 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

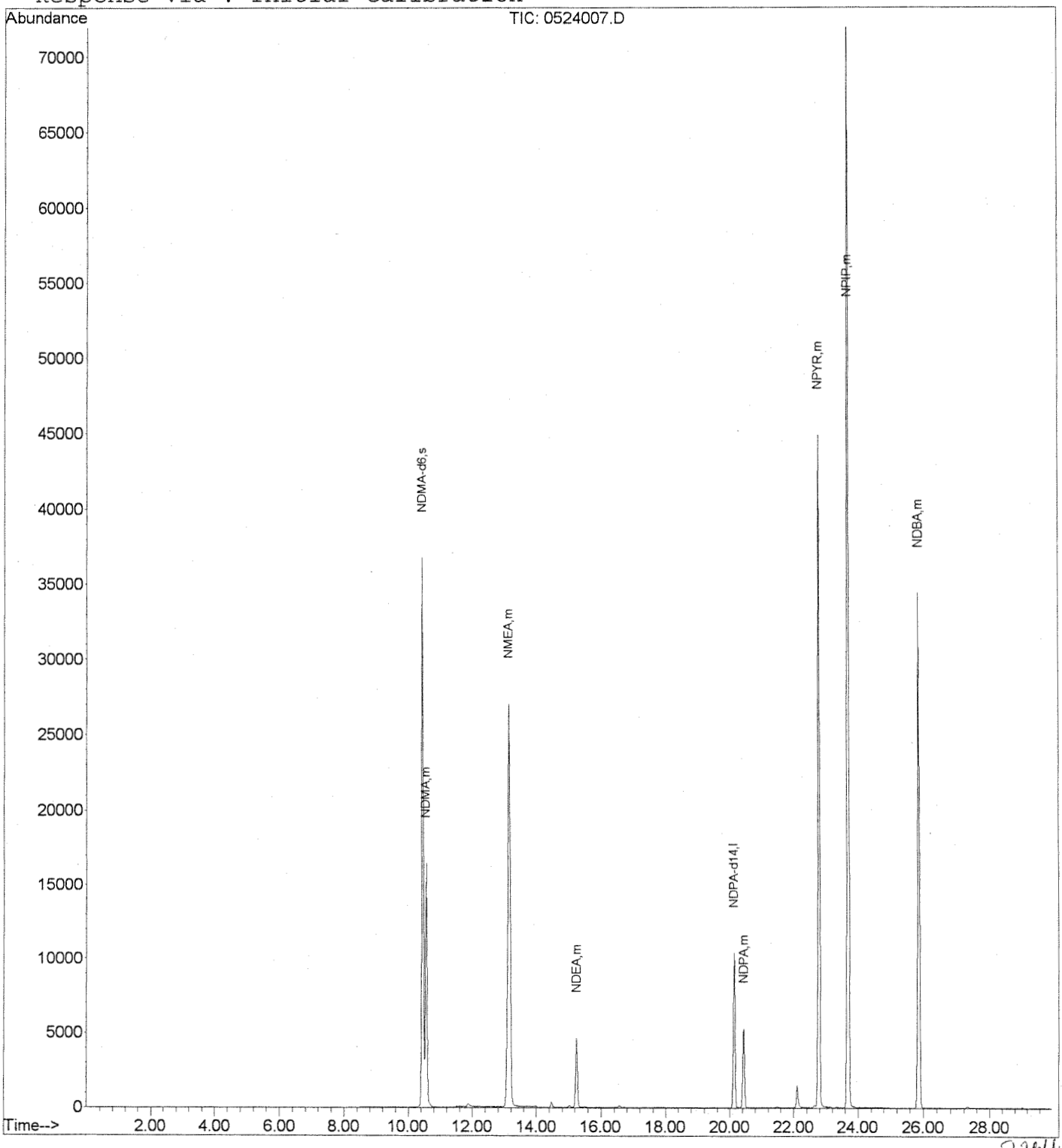
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.13	97	32310	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.44	50	63727	19.08	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.56	47	27075	26.40	ug/L	84
5) NMEA	13.14	61	121154	18.70	ug/L	90
6) NDEA	15.24	75	15185	18.62	ug/L	76
7) NDPA	20.44	89	17697	19.78	ug/L	80
8) NPYR	22.77	55	122208	19.96	ug/L	78
9) NPIP	23.68	69	228182	21.47	ug/L	81
10) NDBA	25.86	57	82803	20.73	ug/L	69

(#) = qualifier out of range (m) = manual integration
0524007.D 052411_D14.M Thu May 26 16:45:39 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524007.D Vial: 5
Acq On : 24 May 11 17:56 Operator: SVO-DW
Sample : 5-11F 521 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:27 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524008.D Vial: 6
Acq On : 24 May 11 18:35 Operator: SVO-DW
Sample : 5-11G 521 50 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 08:26:07 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

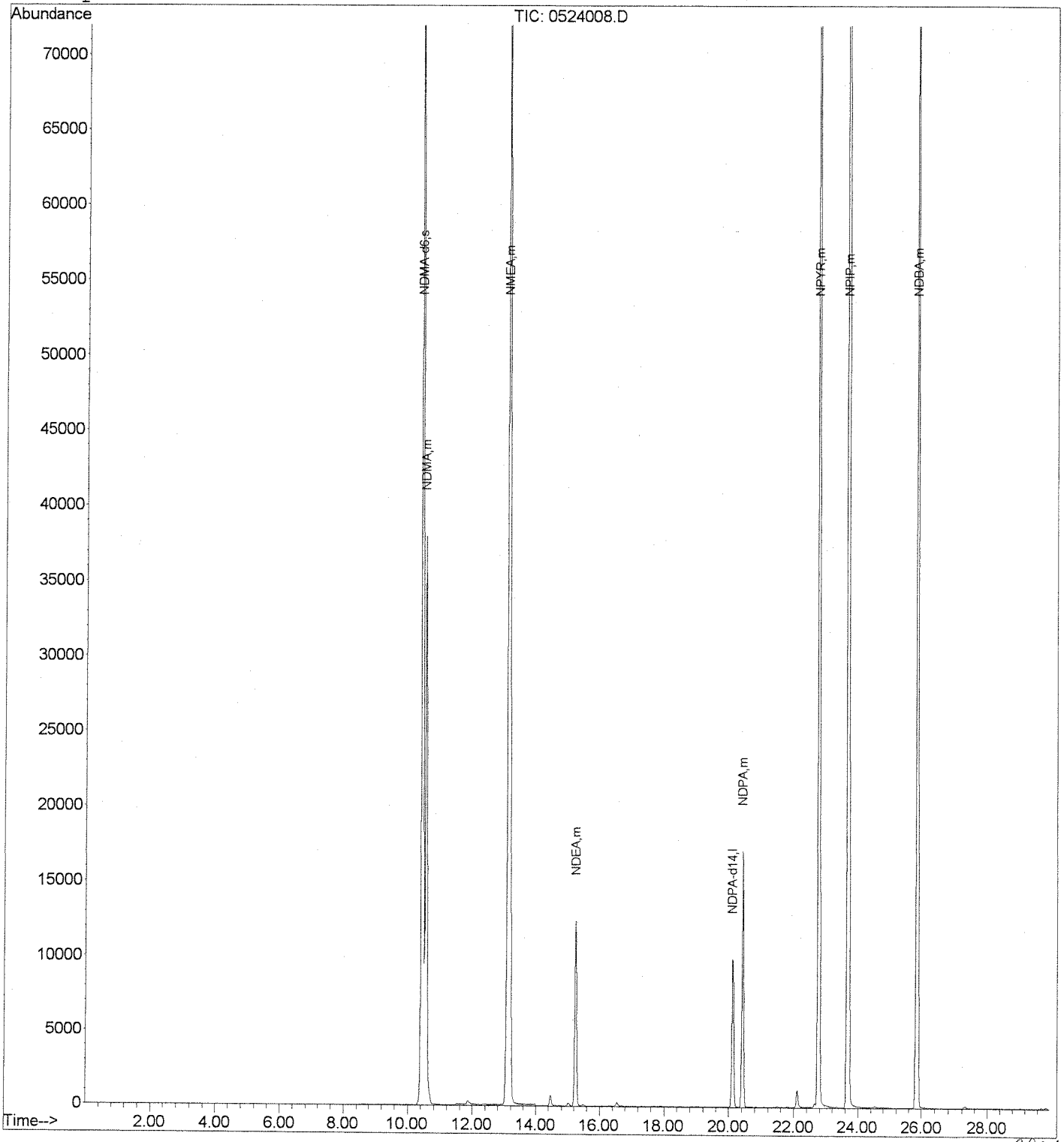
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.11	97	32617	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.44	50	164982	38.63	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.54	47	65667	46.76	ug/L	95
5) NMEA	13.13	61	338011	45.97	ug/L	74
6) NDEA	15.24	75	45050	51.28	ug/L	80
7) NDPA	20.42	89	50948	52.57	ug/L	79
8) NPYR	22.77	55	319283	49.74	ug/L	79
9) NPIP	23.68	69	587297	53.34	ug/L	83
10) NDBA	25.86	57	208582	51.19	ug/L	72

(#) = qualifier out of range (m) = manual integration
0524008.D 052411_D14.M Thu May 26 16:45:41 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052411-521\0524008.D Vial: 6
Acq On : 24 May 11 18:35 Operator: SVO-DW
Sample : 5-11G 521 50 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 8:27 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 08:33:12 2011
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\052411-521\0524009.D Vial: 7
Acq On : 24 May 11 19:13 Operator: SVO-DW
Sample : 5-11H 521ICV 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:51:59 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

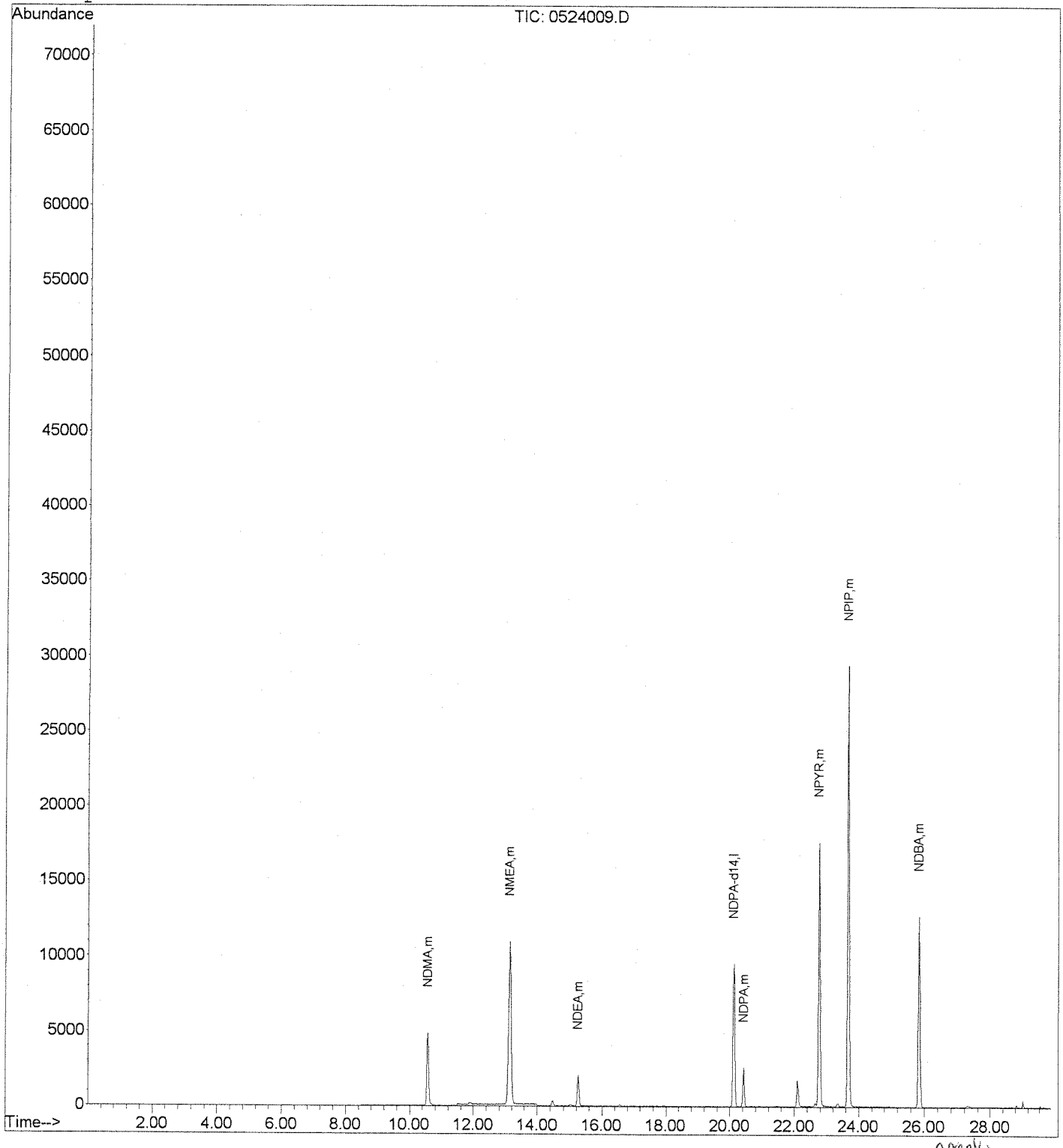
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.12	97	29863	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	10.57	47	8845	7.43	ug/L	88
5) NMEA	13.14	61	48069	8.95	ug/L	84
6) NDEA	15.25	75	6719	9.81	ug/L	94
7) NDPA	20.43	89	7327	8.86	ug/L	96
8) NPYR	22.77	55	47233	8.50	ug/L	100
9) NPIP	23.68	69	80981	7.98	ug/L	97
10) NDBA	25.85	57	28281	7.87	ug/L	99

(#) = qualifier out of range (m) = manual integration
0524009.D 052411_D14.M Thu May 26 16:52:13 2011 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\052411-521\0524009.D Vial: 7
Acq On : 24 May 11 19:13 Operator: SVO-DW
Sample : 5-11H 521ICV 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:52 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/19/2011

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 05/12/2011
Calibration ID: CAL10502
Analysis Lot: KWG1104805
Units: ug/L

File ID: J:\MS16\DATA\051911-521\0519006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	10	8.5		4.64	3.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	10	12		1.39	1.48	NA	18	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\051911-521\0519006.D
Lab ID: KWG1104805-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/19/2011 18:32
Date Quantitated: 05/26/2011 18:16
Batch ID: KWG1104805
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: _____

Secondary Review: _____

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/26/2011

Analysis Lot:	KWG1104805	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\051211_D14.M	**Calibration ID:**	CAL10502
Title:			
Tune Ref:	J:\MS16\DATA\051911-521\0519004.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Data File:	J:\MS16\DATA\051911-521\0519006.D			**Instrument:**	MS16
Acqu Date:	05/19/2011 18:32	**Quant Date:**	05/26/2011 18:16	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104805-2			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.11	0.02	97	39872	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0d		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.42			50	29884	8.53		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.54			47	11810	11.78			
1	N-Nitrosomethylethylamine	13.12			61	63305	8.52			
1	N-Nitrosodiethylamine	15.24			75	8039	8.39			
1	N-Nitrosodi-n-propylamine	20.40			89	10253	9.73			
1	N-Nitrosopyrrolidine	22.76			55	82647	11.28			
1	N-Nitrosopiperidine	23.67			69	136513	10.75			
1	N-Nitrosodi-n-butylamine	25.84			57	41860	9.35			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051911-521\0519006.D Vial: 2
Acq On : 19 May 11 18:32 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 18:16:15 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Fri May 13 08:21:18 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

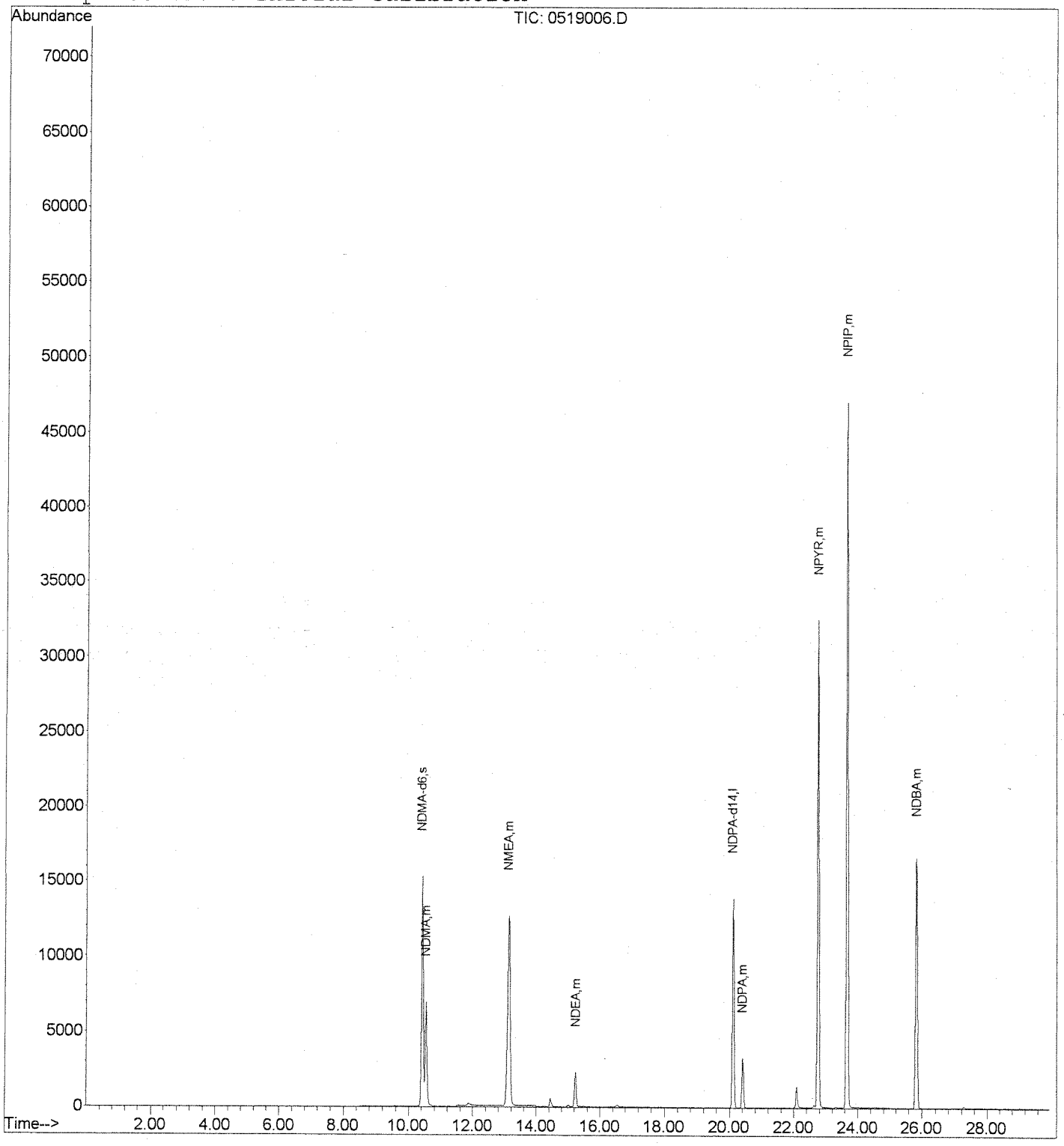
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.11	97	39872	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.42	50	29884	8.53	ug/L	-0.01
Target Compounds						Qvalue
4) NDMA	10.54	47	11810	11.78	ug/L	89
5) NMEA	13.12	61	63305	8.52	ug/L	89
6) NDEA	15.24	75	8039	8.39	ug/L	97
7) NDPA	20.40	89	10253	9.73	ug/L	80
8) NPYR	22.76	55	82647	11.28	ug/L	89
9) NPIP	23.67	69	136513	10.75	ug/L	81
10) NDBA	25.84	57	41860	9.35	ug/L	67

(#) = qualifier out of range (m) = manual integration
0519006.D 051211_D14.M Thu May 26 18:18:13 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051911-521\0519006.D Vial: 2
Acq On : 19 May 11 18:32 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 18:16 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 26 18:14:22 2011
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/19/2011

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 05/12/2011
Calibration ID: CAL10502
Analysis Lot: KWG1104805
Units: ug/L

File ID: J:\MS16\DATA\051911-521\0519013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	10	11		4.64	4.83	NA	6	± 50 %	Quadratic
N-Nitrosodimethylamine	10	9.3		1.39	1.12	NA	-7	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\051911-521\0519013.D
Lab ID: KWG1104805-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/19/2011 23:05
Date Quantitated: 05/26/2011 18:17
Batch ID: KWG1104805
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/5/2011

Secondary Review:

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/26/2011

Analysis Lot:	KWG1104805	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\051211_D14.M	**Calibration ID:**	CAL10502
Title:			
Tune Ref:	J:\MS16\DATA\051911-521\0519004.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Data File:	J:\MS16\DATA\051911-521\0519013.D			**Instrument:**	MS16
Acqu Date:	05/19/2011 23:05	**Quant Date:**	05/26/2011 18:17	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104805-3			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.11	0.02	97	36233	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0d		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.44			50	35023	10.62		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.54			47	8108	9.33			
1	N-Nitrosomethylethylamine	13.13			61	63516	9.33			
1	N-Nitrosodiethylamine	15.24			75	7878	9.00			
1	N-Nitrosodi-n-propylamine	20.40			89	9196	9.61			
1	N-Nitrosopyrrolidine	22.74			55	63236	9.60			
1	N-Nitrosopiperidine	23.65			69	106495	9.31			
1	N-Nitrosodi-n-butylamine	25.84			57	40111	9.82			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051911-521\0519013.D Vial: 2
Acq On : 19 May 11 23:05 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 18:16:16 2011 Quant Results File: 051211_D14.RES

Quant Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 26 18:14:22 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

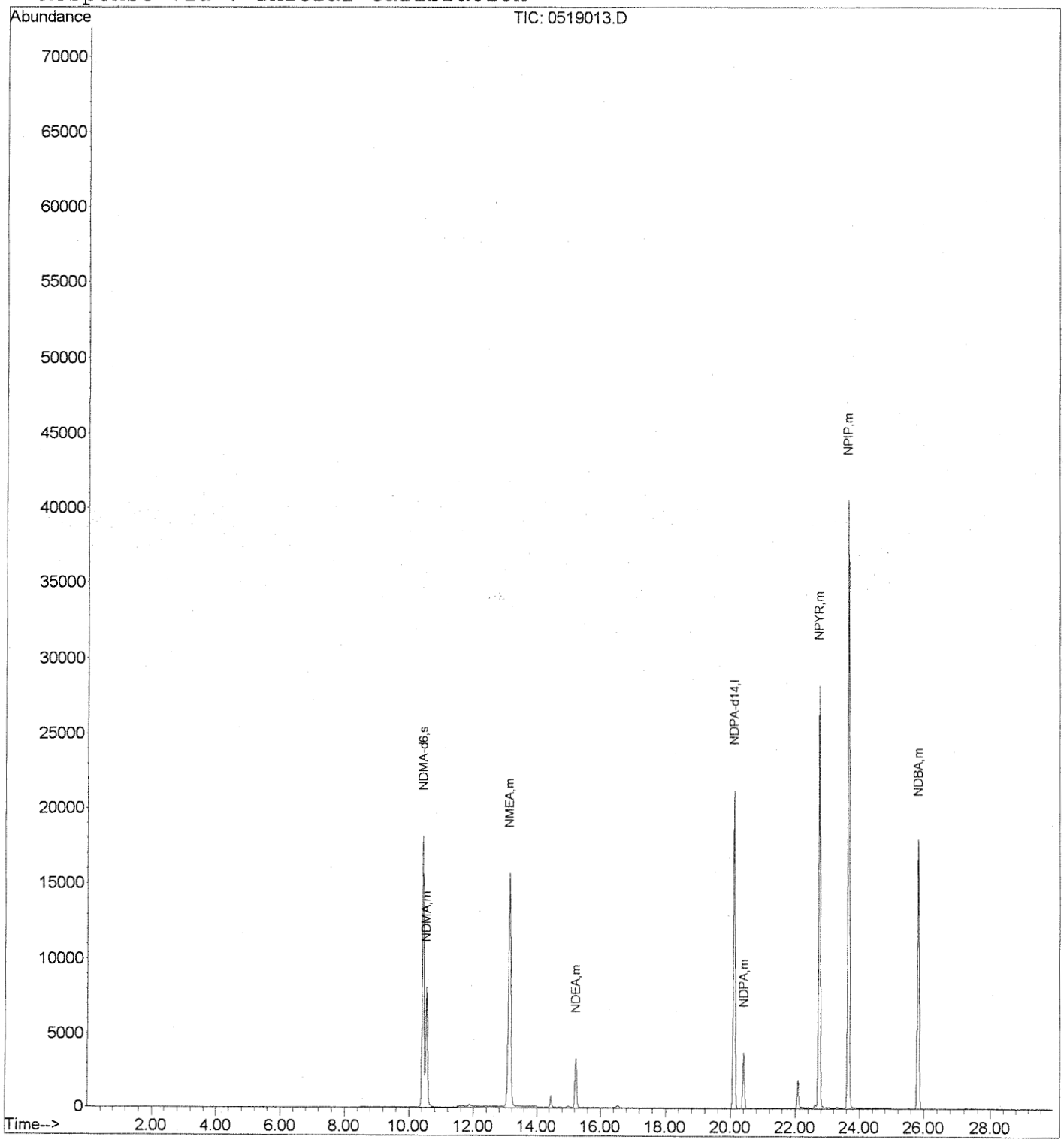
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) NDPA-d14	20.11	97	36233	50.00	ug/L		0.00
System Monitoring Compounds							
3) NDMA-d6	10.44	50	35023	10.62	ug/L		0.00
Target Compounds							Qvalue
4) NDMA	10.54	47	8108	9.33	ug/L	#	1
5) NMEA	13.13	61	63516	9.33	ug/L		51
6) NDEA	15.24	75	7878	9.00	ug/L	#	1
7) NDPA	20.40	89	9196	9.61	ug/L	#	40
8) NPYR	22.74	55	63236	9.60	ug/L		56
9) NPIP	23.65	69	106495	9.31	ug/L		68
10) NDBA	25.84	57	40111	9.82	ug/L		94

(#) = qualifier out of range (m) = manual integration
0519013.D 051211_D14.M Thu May 26 18:18:24 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\051911-521\0519013.D Vial: 2
Acq On : 19 May 11 23:05 Operator: SVO-DW
Sample : 5-11E 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 18:17 2011 Quant Results File: 051211_D14.R

Method : J:\MS16\METHODS\051211_D14.M (RTE Integrator)
Title : 050911_D14.m MJ808 CAL 10500
Last Update : Thu May 26 18:14:22 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/26/2011

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 05/24/2011
Calibration ID: CAL10543
Analysis Lot: KWG1104806
Units: ug/L

File ID: J:\MS16\DATA\052611-521\0526005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	10	9.7		4.29	4.58	NA	-3	± 50 %	Quadratic
N-Nitrosodimethylamine	10	8.4		1.91	1.67	NA	-16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Exception Report

Data File: J:\MS16\DATA\052611-521\0526005.D
Lab ID: KWG1104806-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/26/2011 15:01
Date Quantitated: 05/26/2011 16:57
Batch ID: KWG1104806
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/5/2011

Secondary Review:

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/26/2011

Analysis Lot:	KWG1104806	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\052411_D14.M	**Calibration ID:**	CAL10543
Title:			
Tune Ref:	J:\MS16\DATA\052611-521\0526003.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Data File:	J:\MS16\DATA\052611-521\0526005.D			**Instrument:**	MS16
Acqu Date:	05/26/2011 15:01	**Quant Date:**	05/26/2011 16:57	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104806-2			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.11	-0.02	97	37310	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.44			50	34188	9.69		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.55			47	12470	8.36			
1	N-Nitrosomethylethylamine	13.15			61	61657	9.17			
1	N-Nitrosodiethylamine	15.24			75	9475	11.01			
1	N-Nitrosodi-n-propylamine	20.41			89	9700	9.38			
1	N-Nitrosopyrrolidine	22.77			55	76431	10.93			
1	N-Nitrosopiperidine	23.67			69	131167	10.25			
1	N-Nitrosodi-n-butylamine	25.85			57	46664	10.20			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File : J:\MS16\DATA\052611-521\0526005.D Vial: 1
Acq On : 26 May 11 15:01 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57:33 2011 Quant Results File: 052411_D14.RES

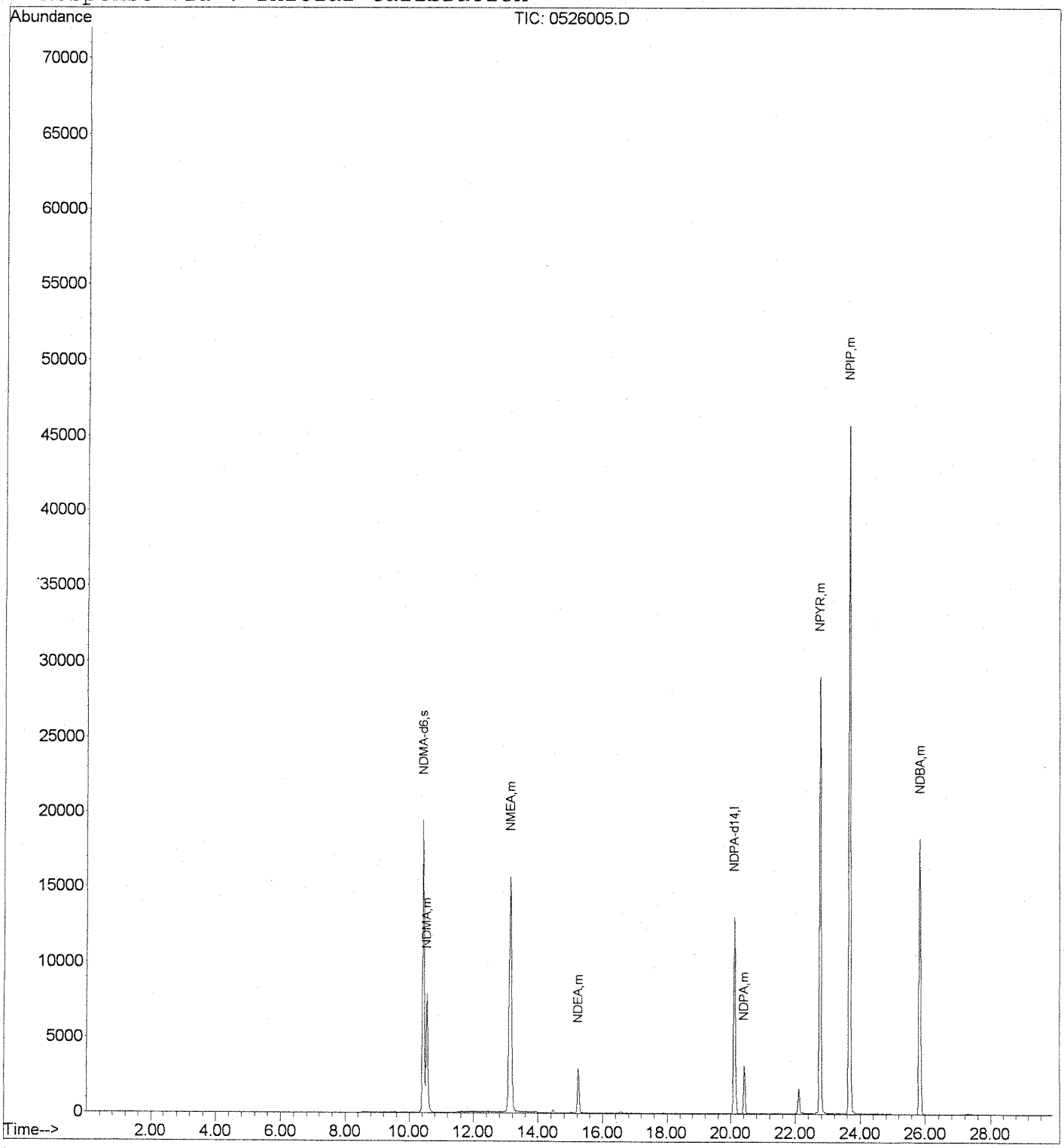
Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.11	97	37310	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.44	50	34188	9.69	ug/L	0.00
Target Compounds						Qvalue
4) NDMA	10.55	47	12470	8.36	ug/L	61
5) NMEA	13.15	61	61657	9.17	ug/L	78
6) NDEA	15.24	75	9475	11.01	ug/L	78
7) NDPA	20.41	89	9700	9.38	ug/L	91
8) NPYR	22.77	55	76431	10.93	ug/L	94
9) NPIP	23.67	69	131167	10.25	ug/L	90
10) NDBA	25.85	57	46664	10.20	ug/L	100

(#) = qualifier out of range (m) = manual integration
0526005.D 052411_D14.M Thu May 26 17:48:39 2011 Page 1

Data File : J:\MS16\DATA\052611-521\0526005.D Vial: 1
Acq On : 26 May 11 15:01 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/26/2011

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 05/24/2011
Calibration ID: CAL10543
Analysis Lot: KWG1104806
Units: ug/L

File ID: J:\MS16\DATA\052611-521\0526007.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	10	9.5		4.29	4.48	NA	-5	± 50 %	Quadratic
N-Nitrosodimethylamine	10	9.3		1.91	1.86	NA	-7	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\052611-521\0526007.D
Lab ID: KWG1104806-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/26/2011 16:19
Date Quantitated: 05/26/2011 16:57
Batch ID: KWG1104806
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: _____

Secondary Review: _____

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/26/2011

Analysis Lot:	KWG1104806	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\052411_D14.M	**Calibration ID:**	CAL10543
Title:			
Tune Ref:	J:\MS16\DATA\052611-521\0526003.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Data File:	J:\MS16\DATA\052611-521\0526007.D			**Instrument:**	MS16
Acqu Date:	05/26/2011 16:19	**Quant Date:**	05/26/2011 16:57	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104806-3			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.12	-0.01	97	38245	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.42			50	34242	9.48		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.54			47	14246	9.29			
1	N-Nitrosomethylethylamine	13.12			61	66507	9.62			
1	N-Nitrosodiethylamine	15.26			75	9596	10.89			
1	N-Nitrosodi-n-propylamine	20.42			89	11127	10.47			
1	N-Nitrosopyrrolidine	22.76			55	83366	11.61			
1	N-Nitrosopiperidine	23.68			69	139285	10.60			
1	N-Nitrosodi-n-butylamine	25.84			57	53328	11.31			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052611-521\0526007.D Vial: 1
Acq On : 26 May 11 16:19 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57:34 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

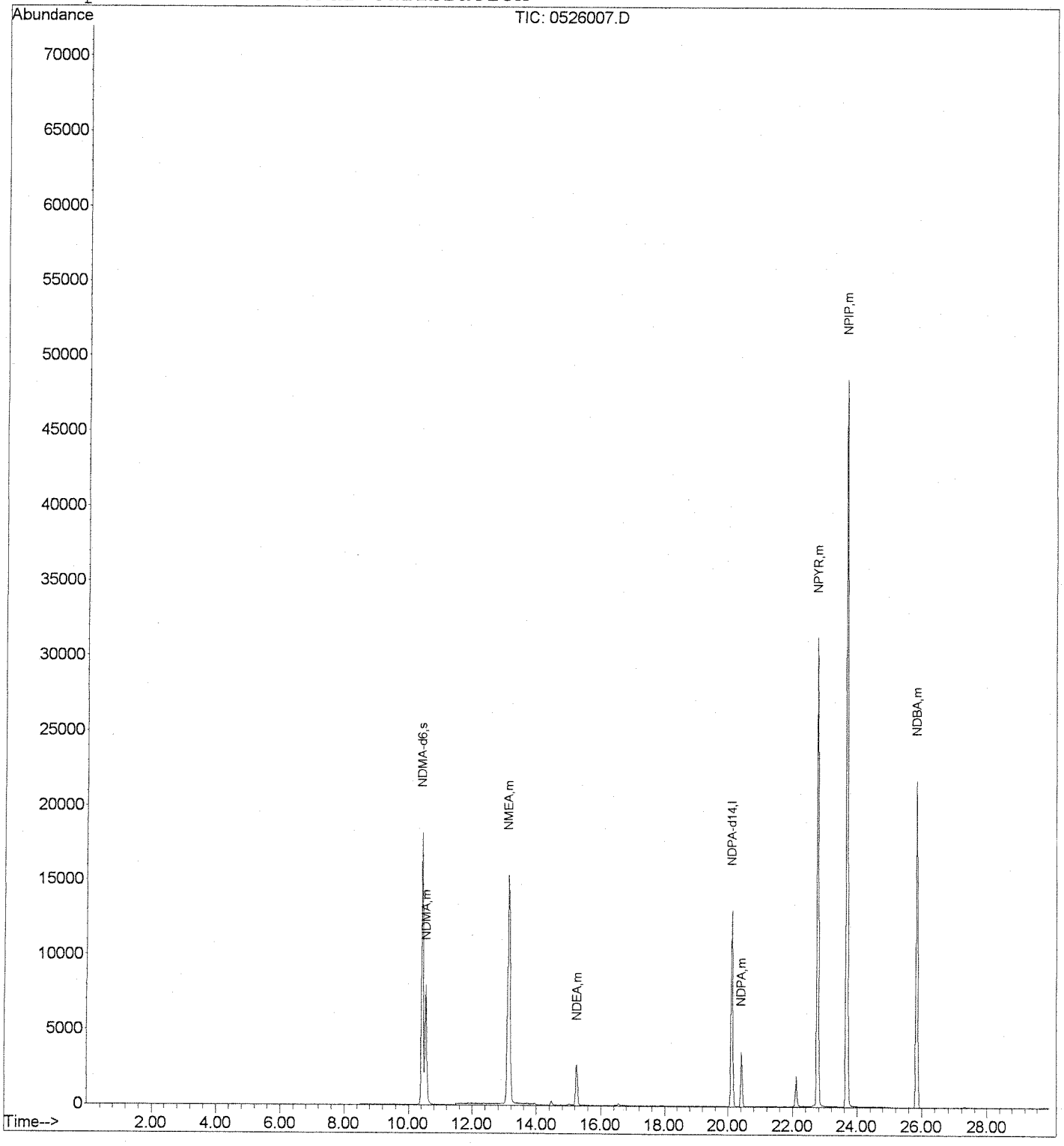
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.12	97	38245	50.00	ug/L	0.01
System Monitoring Compounds						
3) NDMA-d6	10.42	50	34242	9.48	ug/L	-0.01
Target Compounds						Qvalue
4) NDMA	10.54	47	14246	9.29	ug/L	83
5) NMEA	13.12	61	66507	9.62	ug/L	85
6) NDEA	15.26	75	9596	10.89	ug/L	92
7) NDPA	20.42	89	11127	10.47	ug/L	98
8) NPYR	22.76	55	83366	11.61	ug/L	94
9) NPIP	23.68	69	139285	10.60	ug/L	94
10) NDBA	25.84	57	53328	11.31	ug/L	98

(#) = qualifier out of range (m) = manual integration
0526007.D 052411_D14.M Thu May 26 17:48:45 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052611-521\0526007.D Vial: 1
Acq On : 26 May 11 16:19 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 26 16:57 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10543
Last Update : Thu May 26 16:51:41 2011
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/27/2011

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 05/24/2011
Calibration ID: CAL10543
Analysis Lot: KWG1104806
Units: ug/L

File ID: J:\MS16\DATA\052611-521\0526020.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	10	9.9		4.29	4.69	NA	-1	± 50 %	Quadratic
N-Nitrosodimethylamine	10	7.6		1.91	1.52	NA	-24	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\052611-521\0526020.D
Lab ID: KWG1104806-4
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/27/2011 00:47
Date Quantitated: 06/01/2011 09:25
Batch ID: KWG1104806
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: _____

Secondary Review: _____

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	06/01/2011

Analysis Lot:	KWG1104806	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\052411_D14.M	**Calibration ID:**	CAL10543
Title:			
Tune Ref:	J:\MS16\DATA\052611-521\0526003.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Data File:	J:\MS16\DATA\052611-521\0526020.D			**Instrument:**	MS16
Acqu Date:	05/27/2011 00:47	**Quant Date:**	06/01/2011 09:25	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104806-4			**Soln Conc. Units:**	ug/L

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.13	0.00	97	37303	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.46			50	34957	9.90		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.58			47	11327	7.61			
1	N-Nitrosomethylethylamine	13.15			61	57632	8.61			
1	N-Nitrosodiethylamine	15.26			75	7852	9.21			
1	N-Nitrosodi-n-propylamine	20.44			89	8372	8.12			
1	N-Nitrosopyrrolidine	22.78			55	81712	11.67			
1	N-Nitrosopiperidine	23.69			69	145220	11.31			
1	N-Nitrosodi-n-butylamine	25.85			57	47760	10.43			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052611-521\0526020.D Vial: 1
Acq On : 27 May 2011 00:47 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 01 09:25:20 2011 Quant Results File: 052411_D14.RES

Quant Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Wed Jun 01 09:25:00 2011
Response via : Initial Calibration
DataAcq Meth : 521.M

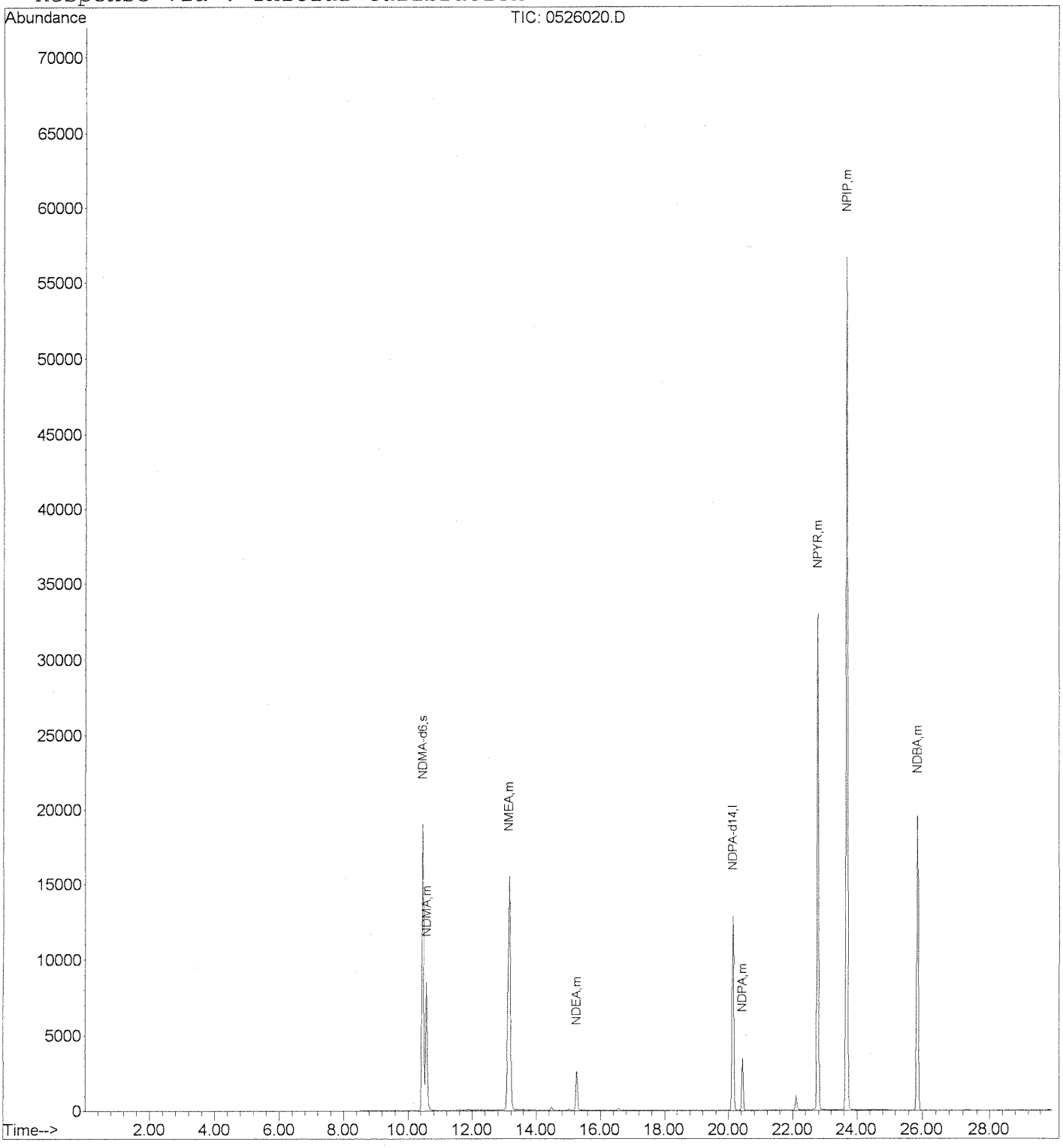
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) NDPA-d14	20.13	97	37303	50.00	ug/L		0.02
System Monitoring Compounds							
3) NDMA-d6	10.46	50	34957	9.90	ug/L		0.02
Target Compounds							Qvalue
4) NDMA	10.58	47	11327	7.61	ug/L	#	10
5) NMEA	13.15	61	57632	8.61	ug/L	#	39
6) NDEA	15.26	75	7852	9.21	ug/L		72
7) NDPA	20.44	89	8372	8.12	ug/L		75
8) NPYR	22.78	55	81712	11.67	ug/L		89
9) NPIP	23.69	69	145220	11.31	ug/L		94
10) NDBA	25.85	57	47760	10.43	ug/L		68

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052611-521\0526020.D Vial: 1
Acq On : 27 May 2011 00:47 Operator: SVO-DW
Sample : 5-13I 521 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 1 9:25 2011 Quant Results File: 052411_D14.R

Method : J:\MS16\METHODS\052411_D14.M (RTE Integrator)
Title : 052411_D14.m MJ808 CAL 10
Last Update : Wed Jun 01 09:25:00 2011
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1104527	**Prep Method:**	METHOD	**Prep Date:**	05/19/11 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
KWG1104527-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1104527-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1104527-3	Lab Control Sample	521 Nitrosamines	DRINKING WATER	500ml	1ml
KWG1104527-4	Method Blank	521 Nitrosamines	DRINKING WATER	500ml	1ml
P1101793-002	MW-17-4	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1104527-1	P1101793-002	
KWG1104527-2	P1101793-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
KWG1104527-1	1020203	DWSTD05-11A	10uL	DWSTD05-8 I	100uL	
KWG1104527-2	1020204	DWSTD05-11A	10uL	DWSTD05-8 I	100uL	
KWG1104527-3	1020205	DWSTD05-11A	10uL	DWSTD05-11L	10uL	
KWG1104527-4	1020206	DWSTD05-11A	10uL			
P1101793-002	1020202	DWSTD05-11A	10uL			

Comments:

Started By: RHayes Assisted By:

Completed By: RHayes Assisted By:

Training: Yes / No (No circled)

Yes / No (No circled)

Reviewed By: Date: 5/26/11 Storage: 215A-F-06

Chain of Custody

Relinquished By: Date: 5/19/11

Received By: Date: 5/19/11

Extracts Examined: Yes (circled) / No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As Listed **Date Extracted:** 5-19-11

Analyst: Rob Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID	Sample Volume	Surr	MS	Residual Chlorine	Final Volume
	ISTD: 10uL					
P1101793-002		500 mL	10 uL		<0.1	1 mL
MB						
LCS	①			10 uL		
P1101793-002	MS ②			100 uL		
P1101793-002	DMS ②			100 uL		

Comments:

DCM Lot # DD020 **MeOH Lot #** DD471 **Sulfate Lot #** 3/15/11-BF1002

SPE Cartridge Lot # 903180-EL

Surrogate ID: DWSTD05-11A 1ppm XP 11/11/11 ISTD: DWSTD04-970 5µm 10 uL XP: 8/7/11

Spike ID : ① DWSTD05-11L Various conc XP 10/18/11 / ② DWSTD05-8I 100ppb XP 10/15/11

Vial: Amber **Extract Storage:** 205A-F-06 **Extracts Received:** 5/19/11

Reviewed By:	**Date:** 5/26/11

Preparation Information Benchsheet

Prep Run#: 134222 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft
Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 5/19/11 09:41 AM
Number of Copies to make: 1

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	P1101793-002	MW-17-4	.01	/	521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-17-4	P1101793-002	05/12/2011	05/12/2011

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 in the case narrative. 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: _____ Name: Carl Degner

Date: 5/18/11 Title: Sum Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	05/12/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011

1,4-Dioxane by GC/MS

Sample Name:	MW-17-4	**Units:**	ug/L
Lab Code:	P1101793-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	84	42-112	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104333-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	78	42-112	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11/G486090
Sample Matrix: Water

Service Request: P1101793

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1104106-005	82
MW-17-4	P1101793-002	84
Method Blank	KWG1104333-4	78
Batch QCMS	KWG1104333-1	87
Batch QCDMS	KWG1104333-2	80
Lab Control Sample	KWG1104333-3	85

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	42-112

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Analyzed:**	05/17/2011
		Time Analyzed:	14:22

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID:	J:\MS26\DATA\051711\0517F010.D	**Lab Code:**	KWG1104446-2
Instrument ID:	MS26	**Analysis Lot:**	KWG1104446
Analysis Method:	8270C SIM		

		1,4-Dichlorobenzene-d4	
		Area	**RT**
	Results ==>	47,308	7.18
	Upper Limit ==>	94,616	7.68
	Lower Limit ==>	23,654	6.68
	ICAL Result ==>	84,266	7.17
Associated Analyses			
Method Blank	KWG1104333-4	46,900	7.18
Lab Control Sample	KWG1104333-3	40,590	7.19
Batch QC	K1104106-005	46,925	7.18
Batch QCMS	KWG1104333-1	35,991	7.19
Batch QCDMS	KWG1104333-2	44,482	7.19
MW-17-4	P1101793-002	46,014	7.18

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1104106-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

Analyte Name	Sample Result	Batch QCMS KWG1104333-1 Matrix Spike			Batch QCDMS KWG1104333-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	21.8	25.0	87	21.3	25.0	85	40-114	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	8270C SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104333

	Lab Control Sample KWG1104333-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,4-Dioxane	22.2	25.0	89	52-105

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	16:23

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**File ID:**	J:\MS26\DATA\051711\0517F016.D
Lab Code:	KWG1104333-4	**Instrument ID:**	MS26
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104333-3	J:\MS26\DATA\051711\0517F017.D	05/17/11	16:43
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/11	17:03
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/11	17:23
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/11	17:43
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/11	18:03

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	16:43

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**File ID:**	J:\MS26\DATA\051711\0517F017.D
Lab Code:	KWG1104333-3	**Instrument ID:**	MS26
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1104333-4	J:\MS26\DATA\051711\0517F016.D	05/17/11	16:23
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/11	17:03
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/11	17:23
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/11	17:43
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/11	18:03

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/17/2011
Time Analyzed: 14:01

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\051711\0517F009.D
Instrument ID: MS26
Column:

Analysis Method: 8270C SIM
Analysis Lot: KWG1104446

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.1	555869	PASS
68	69	0	2	1.4	10034	PASS
69	198	0	100	20.2	697373	PASS
70	69	0	2	0.5	3334	PASS
127	198	10	80	37.7	1302606	PASS
197	198	0	2	0.2	8535	PASS
198	442	30	100	54.0	3452650	PASS
199	198	5	9	6.5	224497	PASS
275	198	10	60	31.1	1072106	PASS
365	442	1	50	2.7	174669	PASS
441	443	0	100	72.3	1076074	PASS
442	442	100	100	100.0	6395904	PASS
443	442	15	24	23.3	1488341	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104446-2	J:\MS26\DATA\051711\0517F010.D	05/17/2011	14:22	
Method Blank	KWG1104333-4	J:\MS26\DATA\051711\0517F016.D	05/17/2011	16:23	
Lab Control Sample	KWG1104333-3	J:\MS26\DATA\051711\0517F017.D	05/17/2011	16:43	
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/2011	17:03	
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/2011	17:23	
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/2011	17:43	
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/2011	18:03	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL10487
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\050911\0509F007.D
B	J:\MS26\DATA\050911\0509F008.D
C	J:\MS26\DATA\050911\0509F009.D
D	J:\MS26\DATA\050911\0509F010.D
E	J:\MS26\DATA\050911\0509F011.D
F	J:\MS26\DATA\050911\0509F012.D
G	J:\MS26\DATA\050911\0509F013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.359	B	4.0	0.357	C	10	0.368	D	20	0.389	E	50	0.426
	F	100	0.432	G	200	0.450									
1,4-Dioxane-d8	A	2.0	0.369	B	4.0	0.357	C	10	0.368	D	20	0.403	E	50	0.403
	F	100	0.417	G	200	0.419									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL10487
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.6		≤ 15	0.397		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	6.6		≤ 15	0.391		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011
Date Analyzed: 05/09/2011

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C SIM

Calibration ID: CAL10487
Units: ng/ml

File ID: J:\MS26\DATA\050911\0509F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	22	0.397	0.445	12	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/17/2011

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C SIM

Calibration Date: 05/09/2011
Calibration ID: CAL10487
Analysis Lot: KWG1104446
Units: ng/ml

File ID: J:\MS26\DATA\051711\0517F010.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.01	0.397	0.418	5	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	19	0.01	0.391	0.373	-5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270C SIM

Analysis Lot: KWG1104446
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0517F009.D	GC/MS Tuning - Generic	KWG1104446-1	5/17/2011	14:01		5/17/2011	14:13
0517F010.D	Continuing Calibration Verification	KWG1104446-2	5/17/2011	14:22		5/17/2011	14:34
0517F011.D	ZZZZZZ	ZZZZZZ	5/17/2011	14:44		5/17/2011	14:56
0517F012.D	ZZZZZZ	ZZZZZZ	5/17/2011	15:04		5/17/2011	15:16
0517F013.D	ZZZZZZ	ZZZZZZ	5/17/2011	15:23		5/17/2011	15:35
0517F014.D	ZZZZZZ	ZZZZZZ	5/17/2011	15:43		5/17/2011	15:55
0517F015.D	ZZZZZZ	ZZZZZZ	5/17/2011	16:03		5/17/2011	16:15
0517F016.D	Method Blank	KWG1104333-4	5/17/2011	16:23		5/17/2011	16:35
0517F017.D	Lab Control Sample	KWG1104333-3	5/17/2011	16:43		5/17/2011	16:55
0517F018.D	Batch QC	K1104106-005	5/17/2011	17:03		5/17/2011	17:15
0517F019.D	Batch QCMS	KWG1104333-1	5/17/2011	17:23		5/17/2011	17:35
0517F020.D	Batch QCDMS	KWG1104333-2	5/17/2011	17:43		5/17/2011	17:55
0517F021.D	MW-17-4	P1101793-002	5/17/2011	18:03		5/17/2011	18:15
0517F022.D	ZZZZZZ	ZZZZZZ	5/17/2011	18:22		5/17/2011	18:34
0517F023.D	ZZZZZZ	ZZZZZZ	5/17/2011	18:42		5/17/2011	18:54
0517F024.D	ZZZZZZ	ZZZZZZ	5/17/2011	19:02		5/17/2011	19:14
0517F025.D	ZZZZZZ	ZZZZZZ	5/17/2011	19:22		5/17/2011	19:34
0517F026.D	ZZZZZZ	ZZZZZZ	5/17/2011	19:42		5/17/2011	19:54
0517F027.D	ZZZZZZ	ZZZZZZ	5/17/2011	20:02		5/17/2011	20:14
0517F028.D	ZZZZZZ	ZZZZZZ	5/17/2011	20:22		5/17/2011	20:34
0517F029.D	ZZZZZZ	ZZZZZZ	5/17/2011	20:42		5/17/2011	20:54
0517F030.D	ZZZZZZ	ZZZZZZ	5/17/2011	21:02		5/17/2011	21:14
0517F031.D	ZZZZZZ	ZZZZZZ	5/17/2011	21:22		5/17/2011	21:34

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090
Sample Matrix: Water

Service Request: P1101793
Date Extracted: 05/16/2011

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270C SIM

Extraction Lot: KWG1104333
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-17-4	P1101793-002	05/12/11	05/12/11	100ml	50ml	NA	
Method Blank	KWG1104333-4	NA	NA	100ml	50ml	NA	
Batch QC	K1104106-005	NA	NA	100ml	50ml	NA	
Batch QCMS	KWG1104333-1	NA	NA	100ml	50ml	NA	
Batch QCDMS	KWG1104333-2	NA	NA	100ml	50ml	NA	
Lab Control Sample	KWG1104333-3	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11/G486090
Sample Matrix: Water

Service Request: P1101793

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1104106-005	82
MW-17-4	P1101793-002	84
Method Blank	KWG1104333-4	78
Batch QCMS	KWG1104333-1	87
Batch QCDMS	KWG1104333-2	80
Lab Control Sample	KWG1104333-3	85

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	42-112

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/17/2011
Time Analyzed: 14:22

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\051711\0517F010.D
Instrument ID: MS26
Analysis Method: 8270C SIM

Lab Code: KWG1104446-2
Analysis Lot: KWG1104446

		1,4-Dichlorobenzene-d4	
		Area	**RT**
	Results ==>	47,308	7.18
	Upper Limit ==>	94,616	7.68
	Lower Limit ==>	23,654	6.68
	ICAL Result ==>	84,266	7.17
Associated Analyses			
Method Blank	KWG1104333-4	46,900	7.18
Lab Control Sample	KWG1104333-3	40,590	7.19
Batch QC	K1104106-005	46,925	7.18
Batch QCMS	KWG1104333-1	35,991	7.19
Batch QCDMS	KWG1104333-2	44,482	7.19
MW-17-4	P1101793-002	46,014	7.18

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1104106-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

Analyte Name	Sample Result	Batch QCMS KWG1104333-1 Matrix Spike			Batch QCDMS KWG1104333-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	21.8	25.0	87	21.3	25.0	85	40-114	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	8270C SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104333

	Lab Control Sample KWG1104333-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,4-Dioxane	22.2	25.0	89	52-105

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	16:23

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**File ID:**	J:\MS26\DATA\051711\0517F016.D
Lab Code:	KWG1104333-4	**Instrument ID:**	MS26
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104333-3	J:\MS26\DATA\051711\0517F017.D	05/17/11	16:43
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/11	17:03
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/11	17:23
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/11	17:43
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/11	18:03

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Extracted:**	05/16/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	16:43

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**File ID:**	J:\MS26\DATA\051711\0517F017.D
Lab Code:	KWG1104333-3	**Instrument ID:**	MS26
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG1104333

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1104333-4	J:\MS26\DATA\051711\0517F016.D	05/17/11	16:23
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/11	17:03
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/11	17:23
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/11	17:43
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/11	18:03

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	05/12/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011

1,4-Dioxane by GC/MS

Sample Name:	MW-17-4	**Units:**	ug/L
Lab Code:	P1101793-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	84	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F021.D
Lab ID: P1101793-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/17/2011 18:03
Date Quantitated: 05/18/2011 10:59
Batch ID: KWG1104446
Analysis Method: 8270C SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: LB 5/18/11

Secondary Review: CH 05·18·11

Quantitation Report

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**	05/12/2011	**Receive Date:**	05/12/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	kwg1104333	**Report Group:**	P1101793
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018607	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\051711\0517F016.D	**Quant based on Report List**	

Data File:	J:\MS26\DATA\051711\0517F021.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 18:03	**Quant Date:**	05/18/2011 10:59	**Vial:**	14
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1101793-002			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.18	0.00?	152	46014	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.97	-0.02	0.00	96	15155	42.14	84	42-112	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: *Result fails acceptance criteria*
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F021.D Vial: 14
Acq On : 17 May 2011 6:03 pm Operator: KBailey
Sample : P1101793-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:31 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

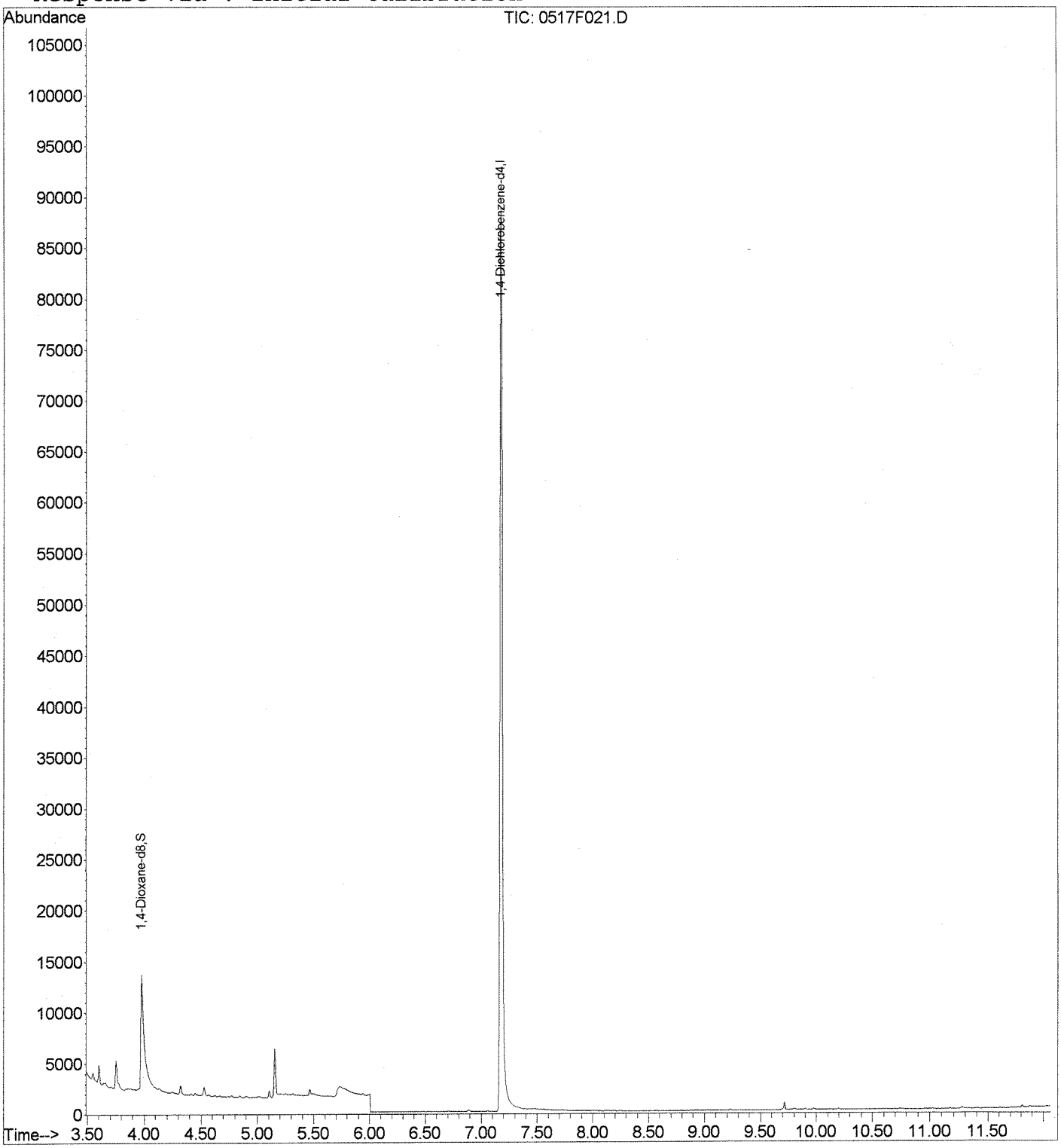
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.18	152	46014	50.00	ng/ml	0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.97	96	15155	42.14	ng/ml	0.04
Spiked Amount 50.000			Recovery =	84.28%		
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration
0517F021.D 050911_DX.M Wed May 18 11:04:08 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F021.D Vial: 14
Acq On : 17 May 2011 6:03 pm Operator: KBailey
Sample : P1101793-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104333-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	78	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F016.D
Lab ID: KWG1104333-4
RunType: MB
Matrix: WATER

Date Acquired: 05/17/2011 16:23
Date Quantitated: 05/18/2011 10:59
Batch ID: KWG1104446
Analysis Method: 8270C SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

P1793
KA10L

Primary Review: LB 5/18/11

Secondary Review: CH 05·18·11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/16/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	KWG1104333	**Report Group:**	
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018606	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:			
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Data File:	J:\MS26\DATA\051711\0517F016.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 16:23	**Quant Date:**	05/18/2011 10:59	**Vial:**	9
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1104333-4			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.18	0.00?	152	46900	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.98	-0.01	0.00	96	14206	38.76	78	42-112	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F016.D Vial: 9
Acq On : 17 May 2011 4:23 pm Operator: KBailey
Sample : KWG1104333-4 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:29 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.18	152	46900	50.00	ng/ml	0.02
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.98	96	14206	38.76	ng/ml	0.04
Spiked Amount 50.000			Recovery =	77.52%		

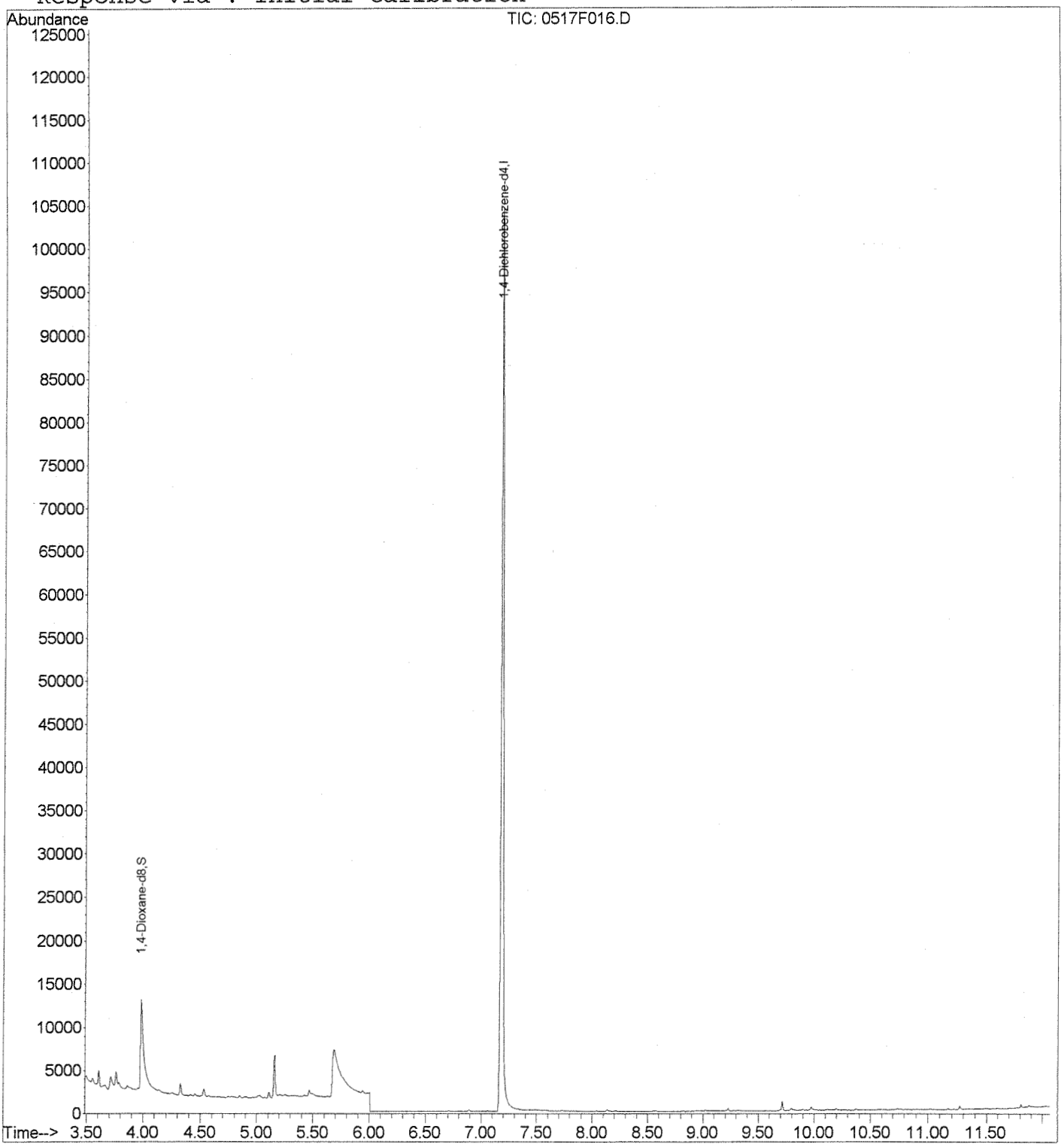
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0517F016.D 050911_DX.M Wed May 18 11:04:05 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F016.D Vial: 9
Acq On : 17 May 2011 4:23 pm Operator: KBailey
Sample : KWG1104333-4 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1104106-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	82	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F018.D
Lab ID: K1104106-005
RunType: SMPL
Matrix: WATER

Date Acquired: 05/17/2011 17:03
Date Quantitated: 05/18/2011 10:59
Batch ID: KWG1104446
Analysis Method: 8270C SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
P1793

Primary Review: LB 5/18/11

Secondary Review: CH 05.18.11

Quantitation Report

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**	05/09/2011	**Receive Date:**	05/10/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	KWG1104333	**Report Group:**	K1104106
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018594	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\051711\0517F016.D	**Quant based on Report List**	

Data File:	J:\MS26\DATA\051711\0517F018.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 17:03	**Quant Date:**	05/18/2011 10:59	**Vial:**	11
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1104106-005			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.18	0.00?	152	46925	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.98	-0.01	0.00	96	15051	41.04	82	42-112 OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F018.D Vial: 11
Acq On : 17 May 2011 5:03 pm Operator: KBailey
Sample : K1104106-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.18	152	46925	50.00	ng/ml	0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.98	96	15051	41.04	ng/ml	0.04
Spiked Amount 50.000			Recovery =	82.08%		

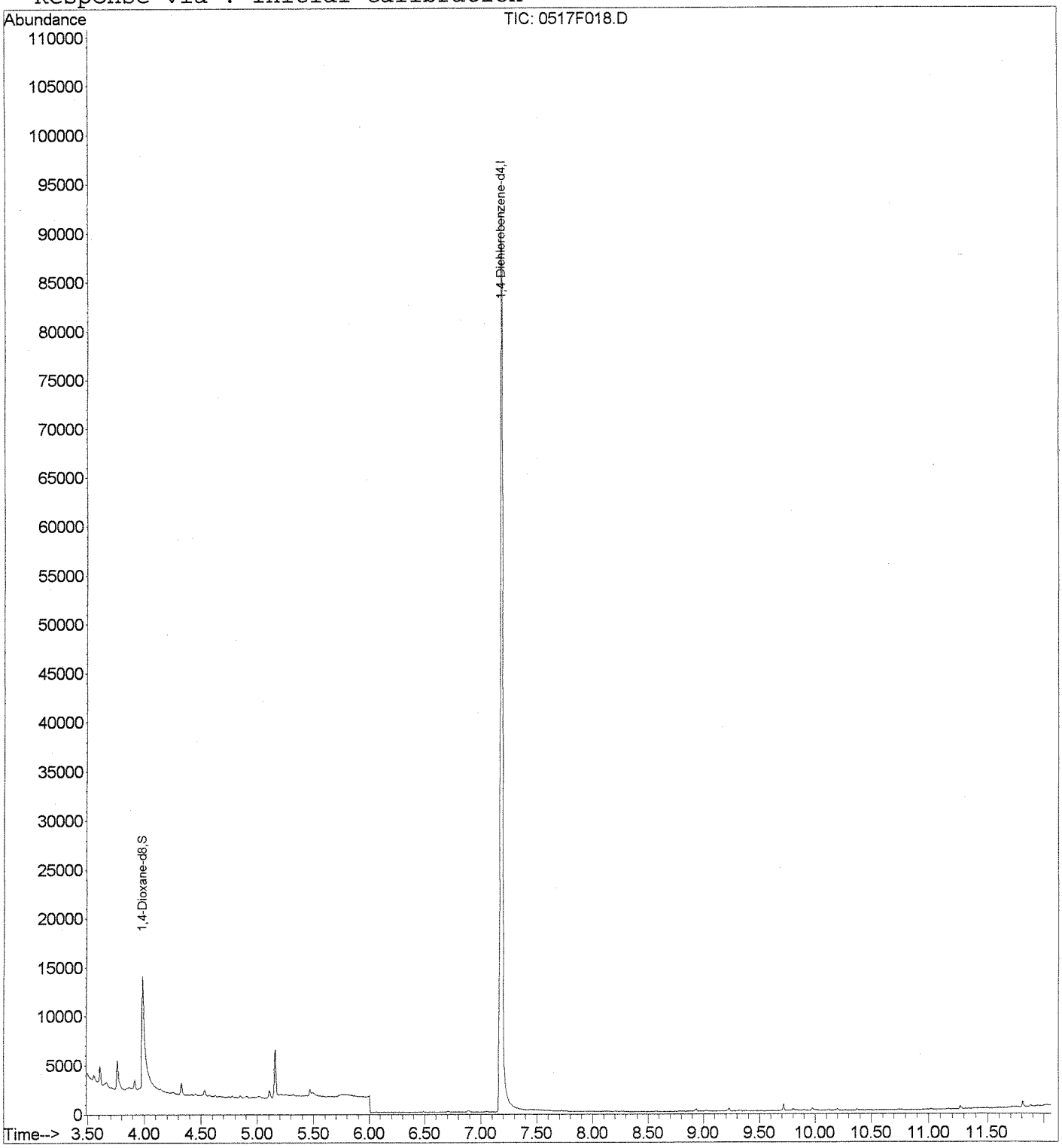
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0517F018.D 050911_DX.M Wed May 18 11:04:06 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F018.D Vial: 11
Acq On : 17 May 2011 5:03 pm Operator: KBailey
Sample : K1104106-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCMS	**Units:**	ug/L
Lab Code:	KWG1104333-1	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**21.8**		1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	87	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F019.D
Lab ID: KWG1104333-1 -- K1104106-005MS
RunType: MS
Matrix: WATER

Date Acquired: 05/17/2011 17:23
Date Quantitated: 05/18/2011 11:01
Batch ID: KWG1104446
Analysis Method: 8270C SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
P1793

Primary Review: LG 5/18/11

Secondary Review: CH 05·18·11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/16/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	KWG1104333	**Report Group:**	
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018603	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:			
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\051711\0517F016.D	**Quant based on Method**	

Data File:	J:\MS26\DATA\051711\0517F019.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 17:23	**Quant Date:**	05/18/2011 11:01	**Vial:**	12
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1104333-1 -- K1104106-005MS			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.19	0.01?	152	35991	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.97	-0.02	0.00	96	12166	43.25	87	42-112	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	4.00	-0.02	0.00	88	12455**m**	43.55	21.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F019.D Vial: 12
Acq On : 17 May 2011 5:23 pm Operator: KBailey
Sample : KWG1104333-1 | MS K1104106-005MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

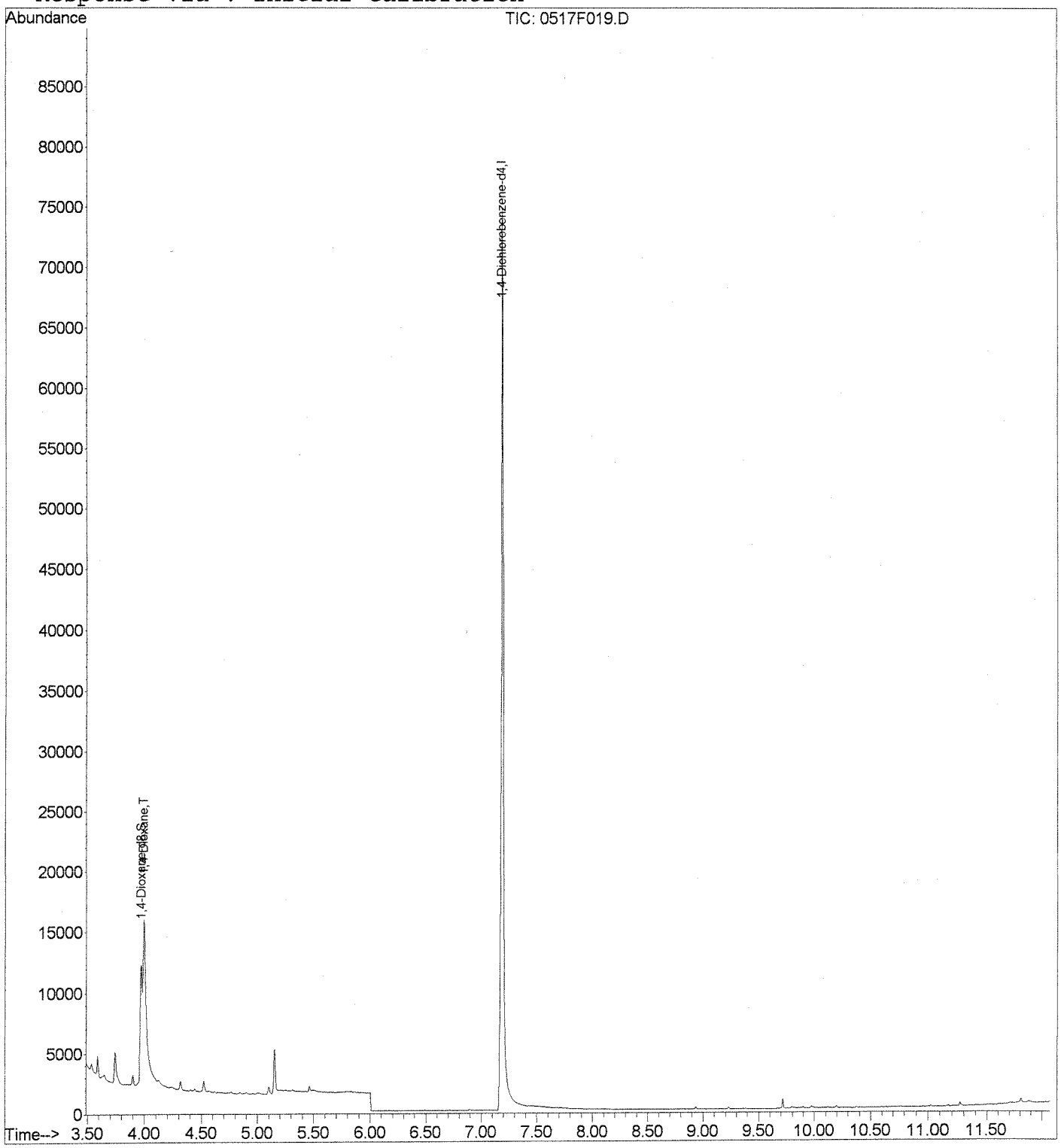
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.19	152	35991	50.00	ng/ml	0.02
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.97	96	12166	43.25	ng/ml	0.03
Spiked Amount 50.000			Recovery =	86.50%		
Target Compounds						Qvalue
3) 1,4-Dioxane	4.00	88	12455m	43.55	ng/ml	

(#) = qualifier out of range (m) = manual integration
0517F019.D 050911_DX.M Wed May 18 11:04:07 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F019.D Vial: 12
Acq On : 17 May 2011 5:23 pm Operator: KBailey
Sample : KWG1104333-1 | MS K1104106-005MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 11:01 2011 Quant Results File: 050911_DX.RE

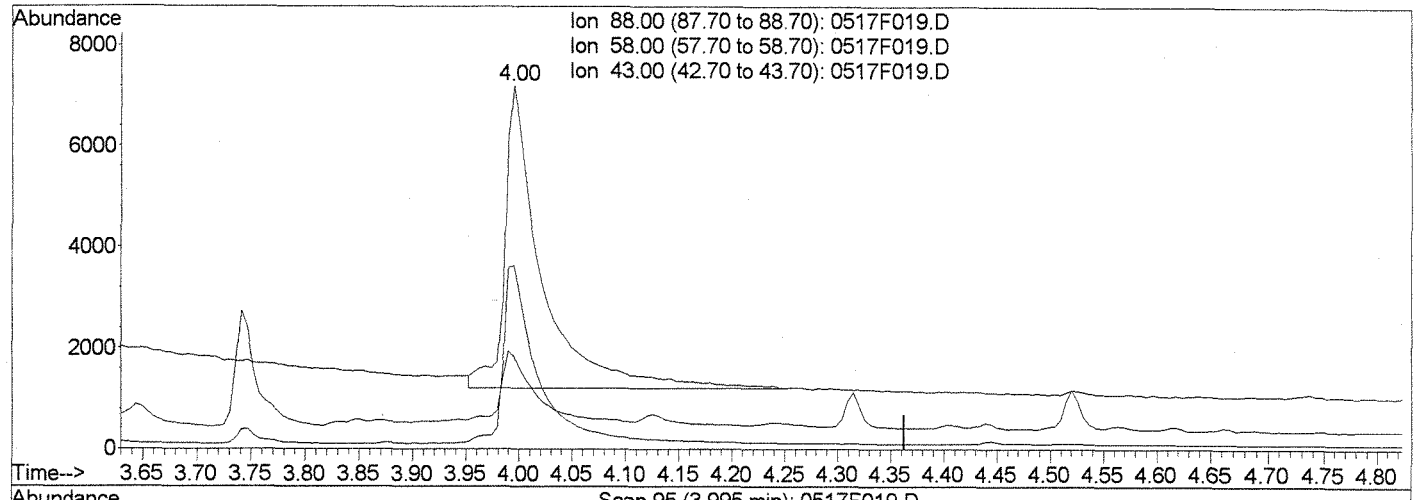
Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration

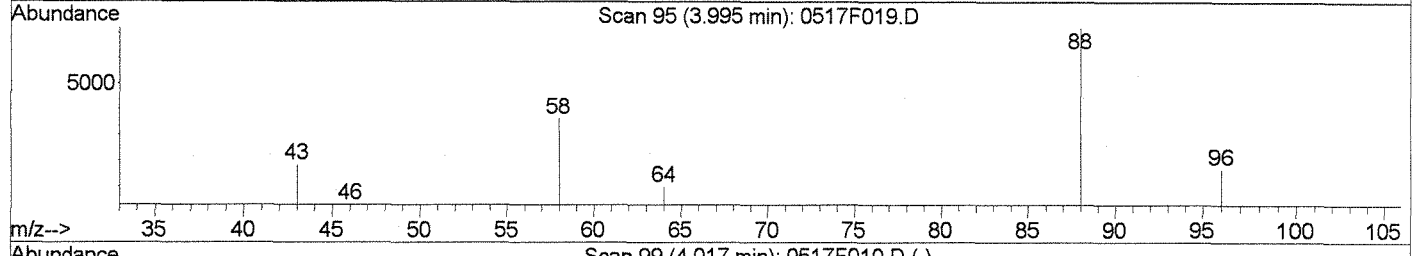


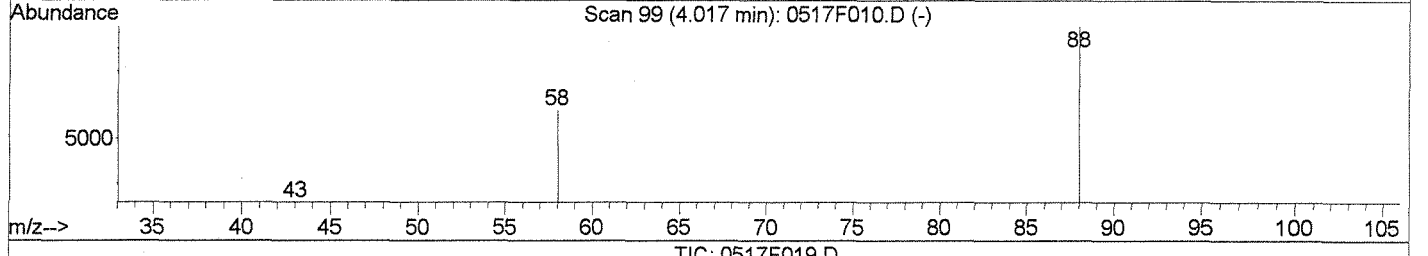
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\051711\0517F019.D Vial: 12
Acq On : 17 May 2011 5:23 pm Operator: KBailey
Sample : KWG1104333-1 | MS K1104106-005MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F019.D

(3) 1,4-Dioxane (T)

4.00min 51.03ng/ml

response 14593

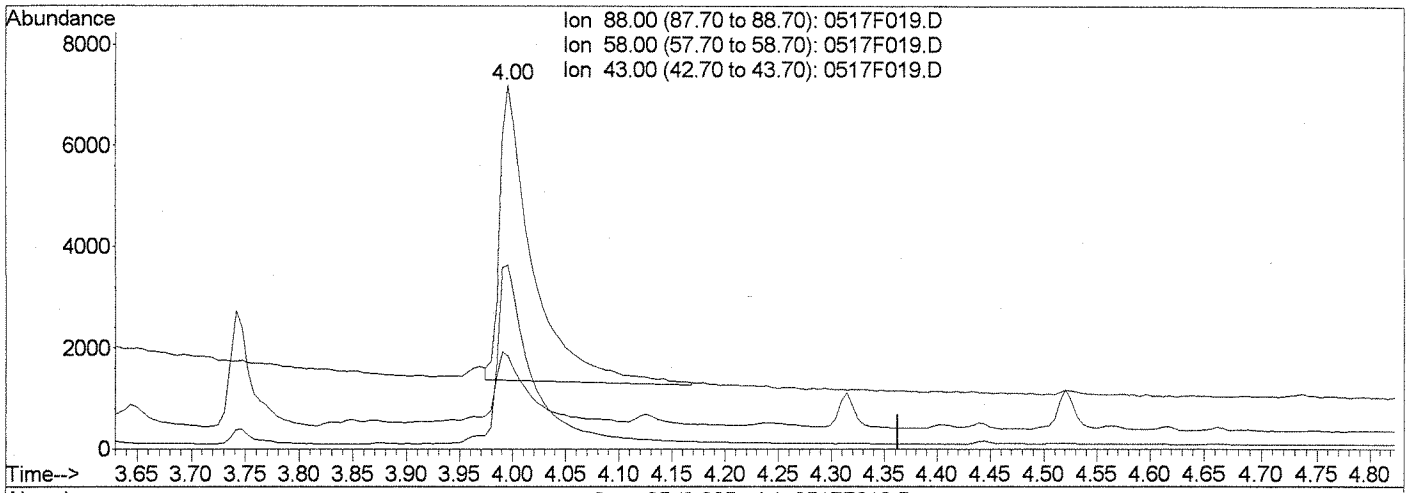
Ion	Exp%	Act%
88.00	100	100
58.00	39.30	58.57
43.00	14.10	22.16
0.00	0.00	0.00

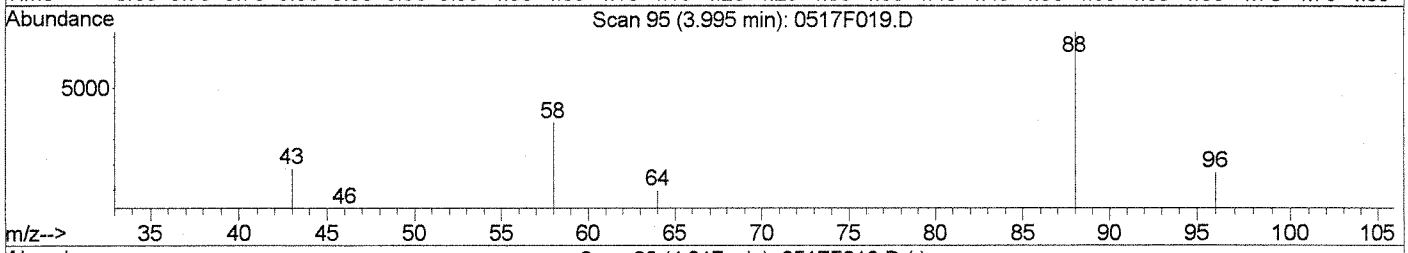
Quantitation Report (Qedit)

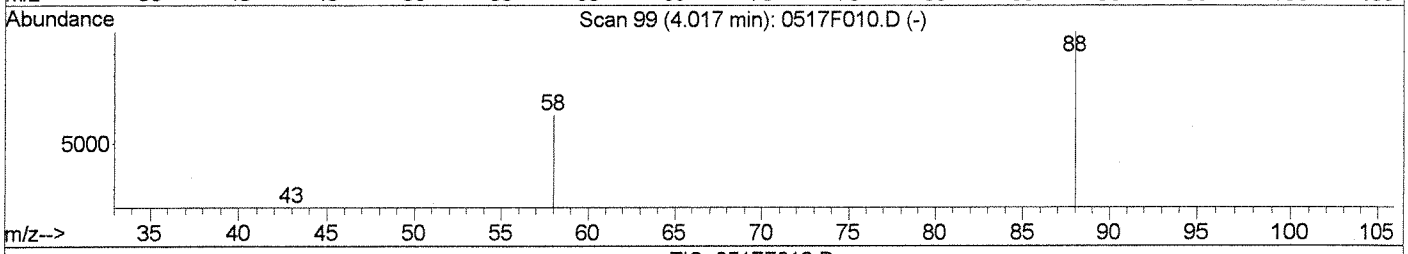
Data File : J:\MS26\DATA\051711\0517F019.D
Acq On : 17 May 2011 5:23 pm
Sample : KWG1104333-1 | MS K1104106-005MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 18 11:01 2011

Vial: 12
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F019.D

(3) 1,4-Dioxane (T)

4.00min 43.55ng/ml m

response 12455

Ion	Exp%	Act%
88.00	100	100
58.00	39.30	50.44
43.00	14.10	25.56
0.00	0.00	0.00

01
KB 5/18/11

CH 05·18·11

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCDMS	**Units:**	ug/L
Lab Code:	KWG1104333-2	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**21.3**		1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F020.D
Lab ID: KWG1104333-2 -- K1104106-005DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/17/2011 17:43
Date Quantitated: 05/18/2011 11:02
Batch ID: KWG1104446
Analysis Method: 8270C SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
P1793

Primary Review: LB 5/18/11

Secondary Review: CH 05·18·11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/16/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	KWG1104333	**Report Group:**	
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018604	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:			
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\051711\0517F016.D	**Quant based on Method**	

Data File:	J:\MS26\DATA\051711\0517F020.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 17:43	**Quant Date:**	05/18/2011 11:02	**Vial:**	13
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1104333-2 -- K1104106-005DMS			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.19	0.01?	152	44482	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.97	-0.02	0.00	96	13945	40.11	80	42-112	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	4.00	-0.02	0.00	88	15086m	42.68	21.3		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F020.D Vial: 13
Acq On : 17 May 2011 5:43 pm Operator: KBailey
Sample : KWG1104333-2 | DMS K1104106-005DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

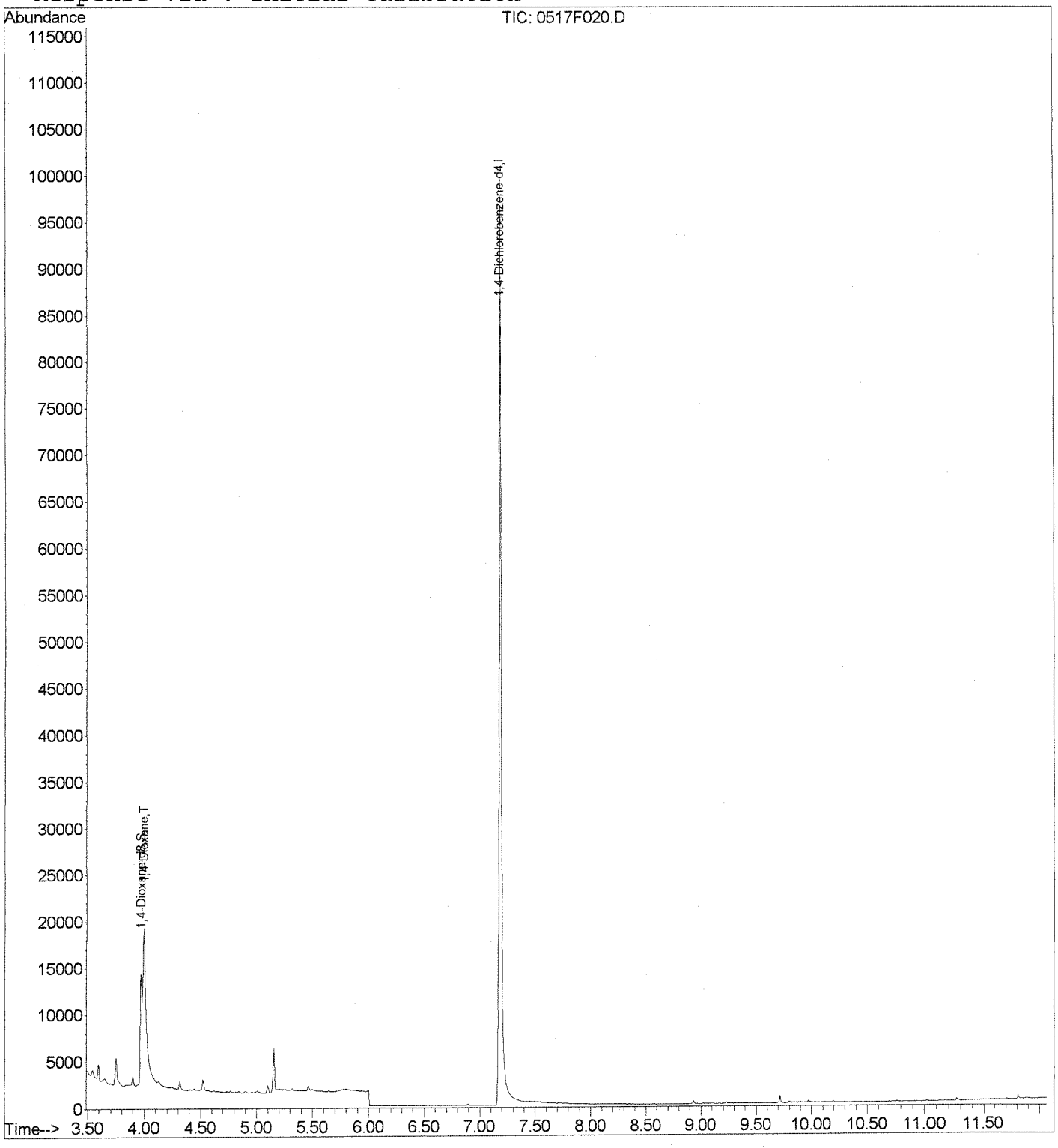
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.19	152	44482	50.00	ng/ml	0.02
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.97	96	13945	40.11	ng/ml	0.03
Spiked Amount 50.000			Recovery =	80.22%		
Target Compounds						Qvalue
3) 1,4-Dioxane	4.00	88	15086m	42.68	ng/ml	

(#) = qualifier out of range (m) = manual integration
0517F020.D 050911_DX.M Wed May 18 11:04:08 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F020.D Vial: 13
Acq On : 17 May 2011 5:43 pm Operator: KBailey
Sample : KWG1104333-2 | DMS K1104106-005DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 11:02 2011 Quant Results File: 050911_DX.RE

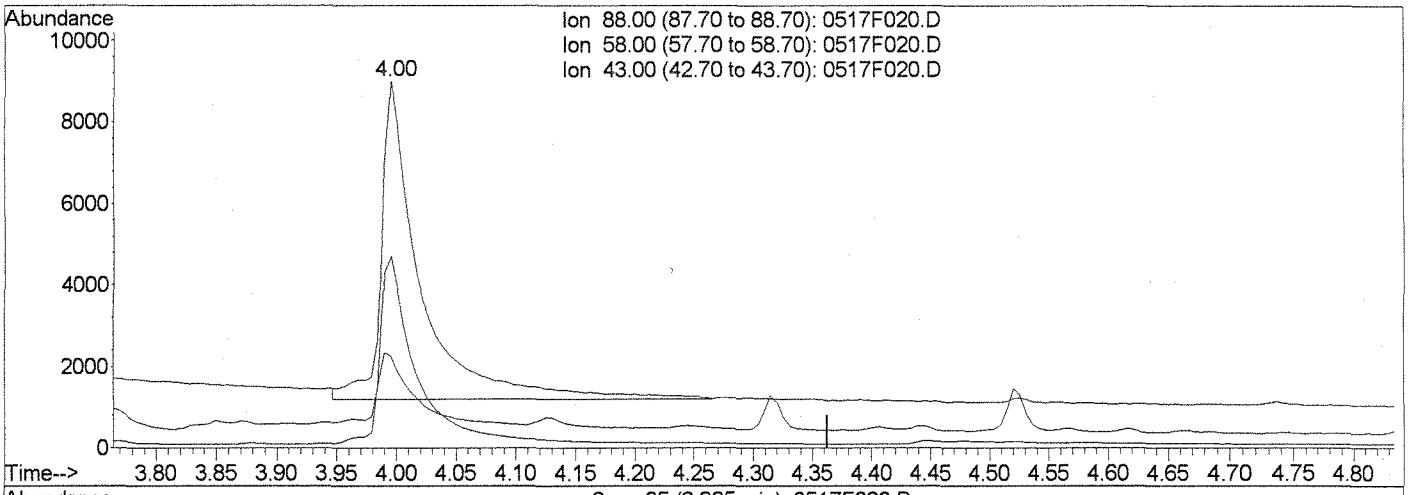
Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration

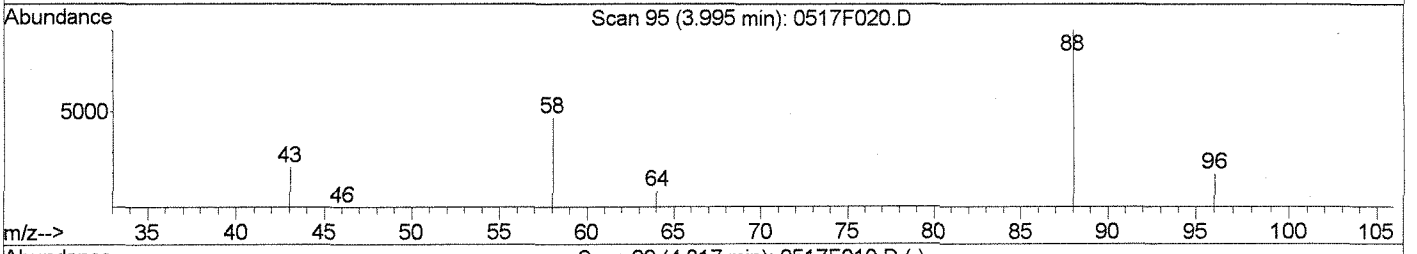


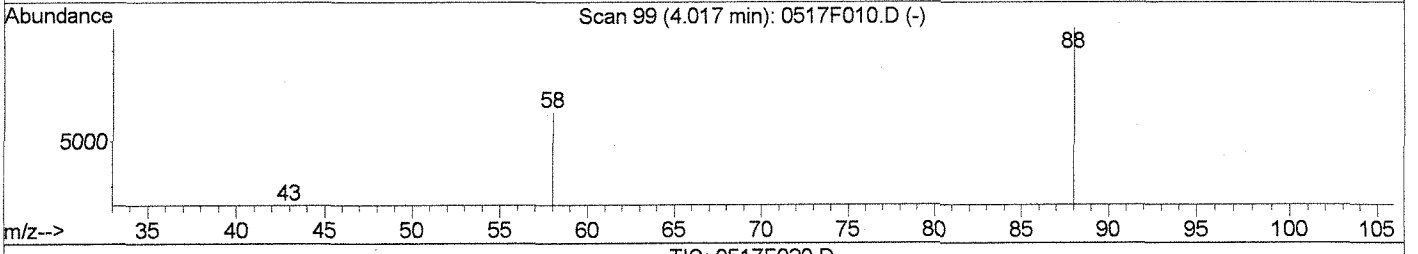
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\051711\0517F020.D Vial: 13
Acq On : 17 May 2011 5:43 pm Operator: KBailey
Sample : KWG1104333-2 | DMS K1104106-005DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F020.D

(3) 1,4-Dioxane (T)

4.00min 50.76ng/ml

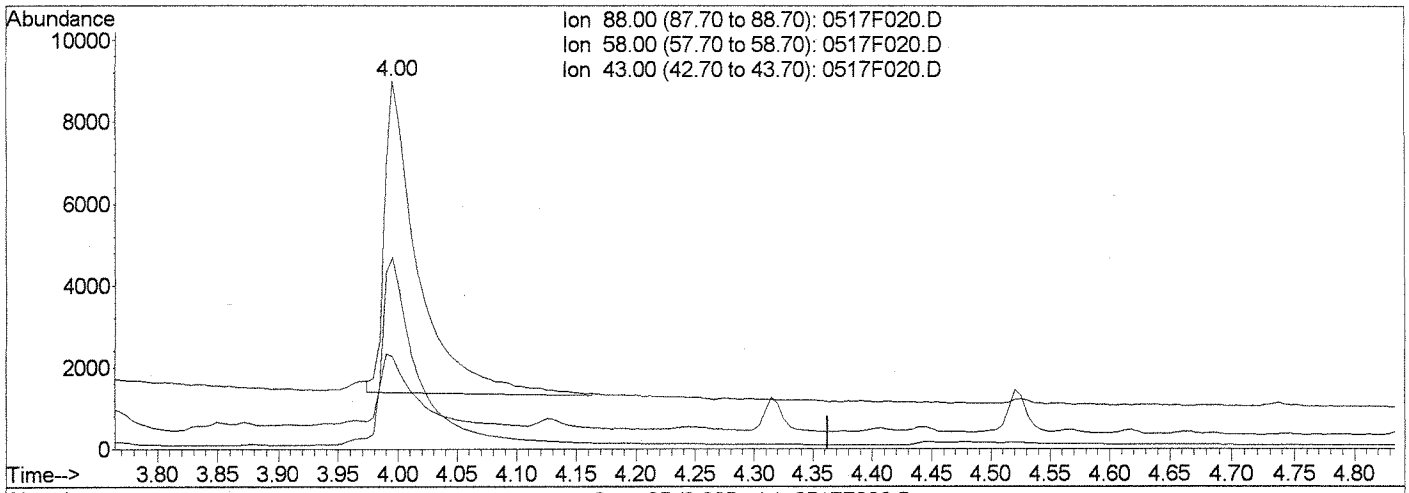
response 17942

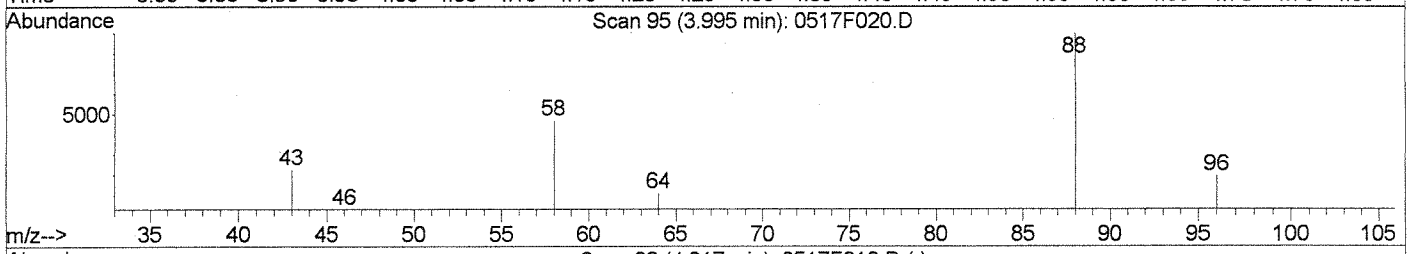
Ion	Exp%	Act%
88.00	100	100
58.00	39.30	58.78
43.00	14.10	22.75
0.00	0.00	0.00

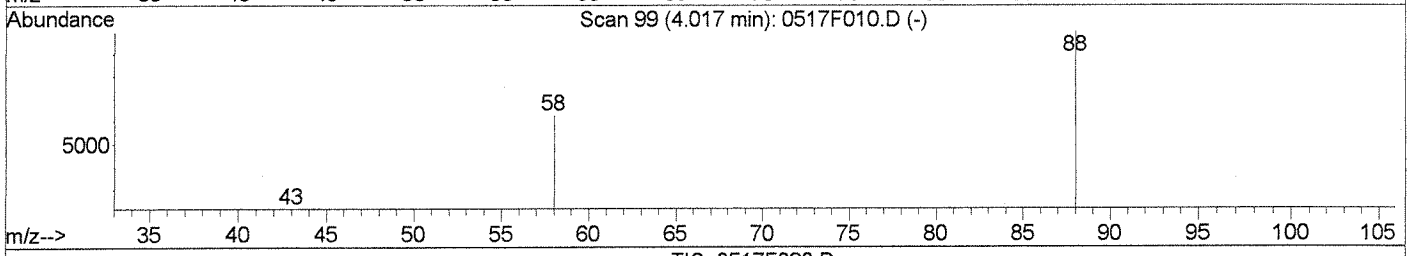
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\051711\0517F020.D Vial: 13
Acq On : 17 May 2011 5:43 pm Operator: KBailey
Sample : KWG1104333-2 | DMS K1104106-005DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 11:02 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F020.D

(3) 1,4-Dioxane (T)

4.00min 42.68ng/ml m

response 15086

Ion	Exp%	Act%
88.00	100	100
58.00	39.30	52.19
43.00	14.10	25.11
0.00	0.00	0.00

01
LB 5/18/11
CH 05.18.11

0517F020.D 050911_DX.M Wed May 18 11:02:16 2011

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle	**Service Request:**	P1101793
Project:	JPL GW Mon 2Q11/G486090	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1104333-3	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**22.2**		1.0	0.16	1	05/16/11	05/17/11	KWG1104333	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	85	42-112	05/17/11	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\051711\0517F017.D
Lab ID: KWG1104333-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/17/2011 16:43
Date Quantitated: 05/18/2011 11:01
Batch ID: KWG1104446
Analysis Method: 8270C SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

P1793
LA10L

Primary Review: LB 5/18/11

Secondary Review: CH 05.18.11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/16/2011

Analysis Lot:	KWG1104446	**Prep Lot:**	KWG1104333	**Report Group:**	
Analysis Method:	8270C SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1018605	**Prep Date:**	05/16/2011		

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:			
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\051711\0517F016.D	**Quant based on Method**	

Data File:	J:\MS26\DATA\051711\0517F017.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 16:43	**Quant Date:**	05/18/2011 11:01	**Vial:**	10
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1104333-3			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.19	0.01?	152	40590	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.97	-0.02	0.00	96	13543	42.69	85	42-112	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	4.00	-0.02	0.00	88	14287**m**	44.30	22.2		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F017.D Vial: 10
Acq On : 17 May 2011 4:43 pm Operator: KBailey
Sample : KWG1104333-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

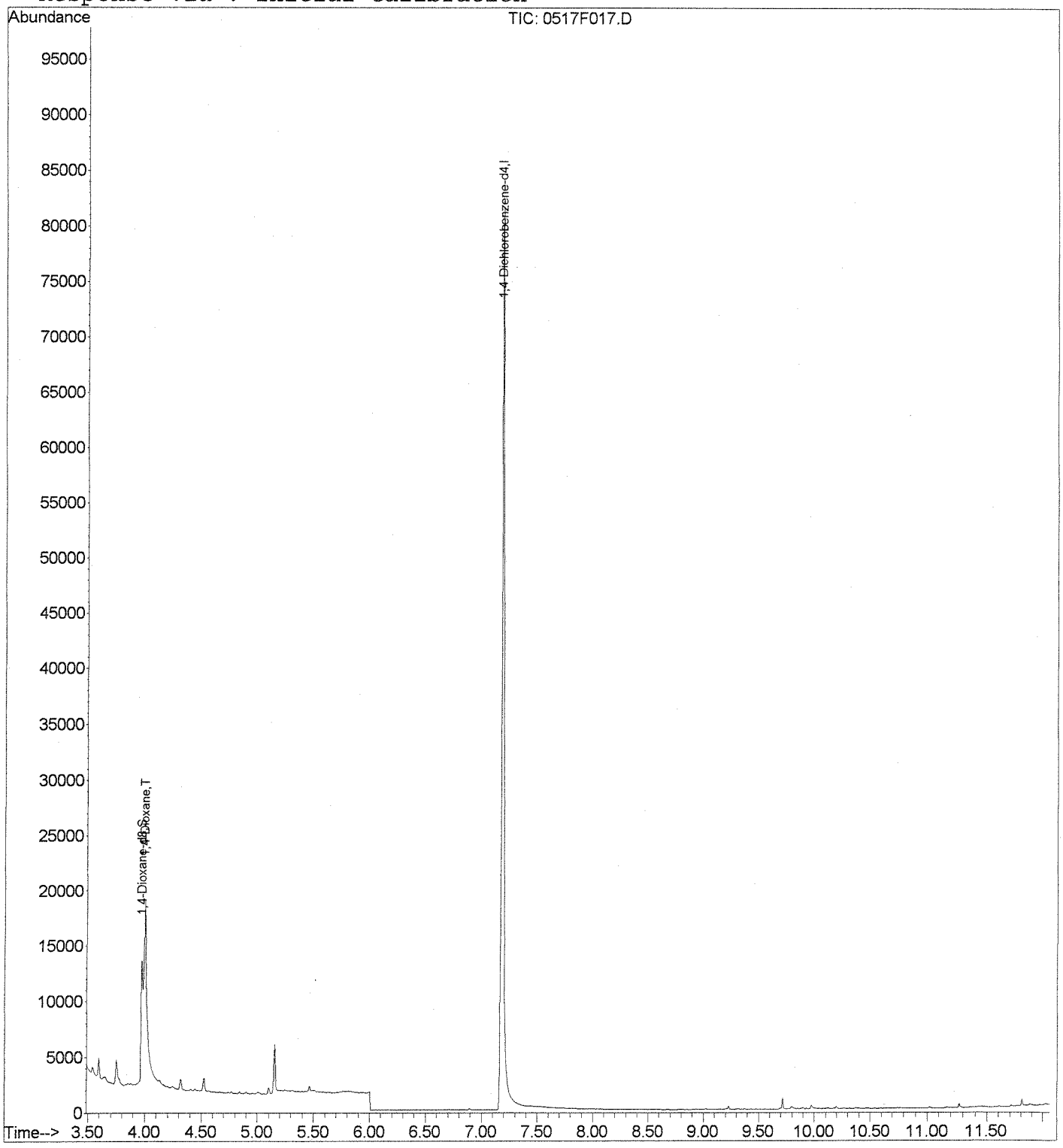
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.19	152	40590	50.00	ng/ml	0.02
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.97	96	13543	42.69	ng/ml	0.03
Spiked Amount 50.000			Recovery = 85.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	4.00	88	14287m	44.30	ng/ml	

(#) = qualifier out of range (m) = manual integration
0517F017.D 050911_DX.M Wed May 18 11:04:06 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F017.D Vial: 10
Acq On : 17 May 2011 4:43 pm Operator: KBailey
Sample : KWG1104333-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 11:01 2011 Quant Results File: 050911_DX.RE

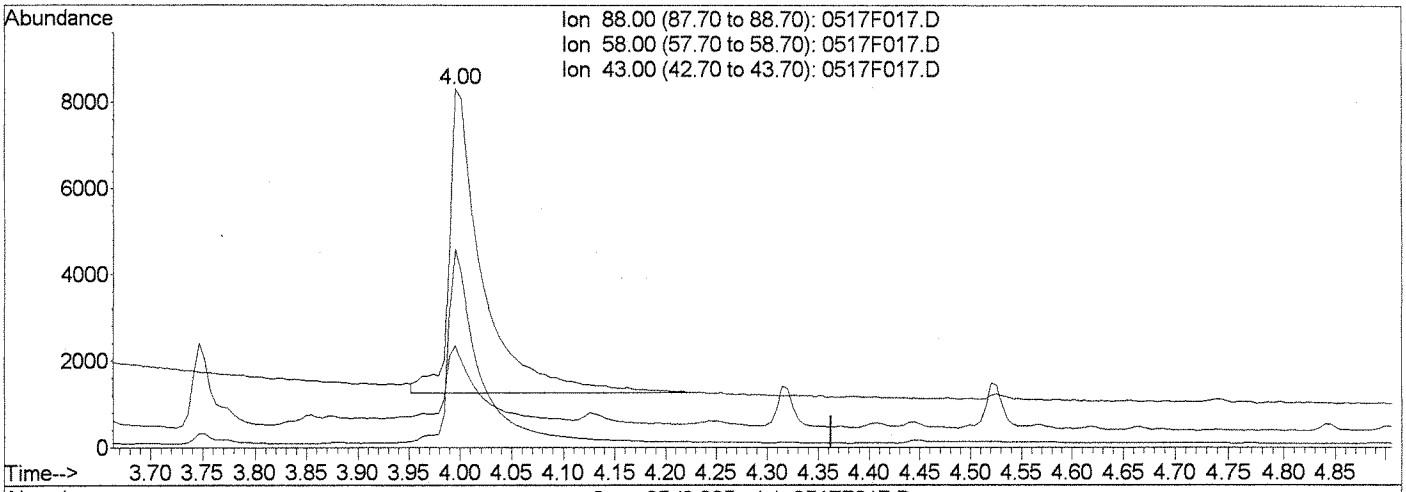
Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Initial Calibration

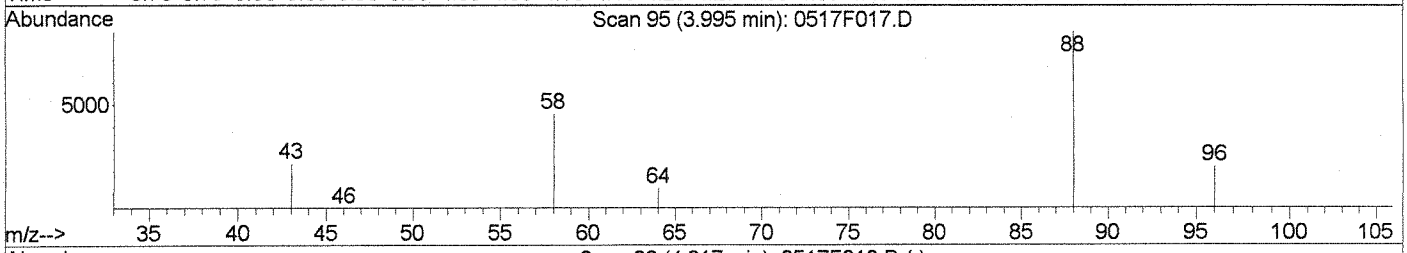


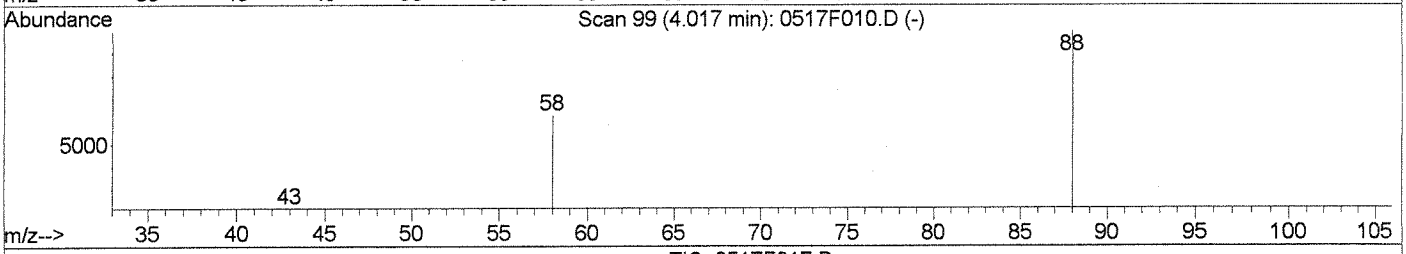
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\051711\0517F017.D Vial: 10
Acq On : 17 May 2011 4:43 pm Operator: KBailey
Sample : KWG1104333-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:59 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F017.D

(3) 1,4-Dioxane (T)

4.00min 49.71ng/ml

response 16034

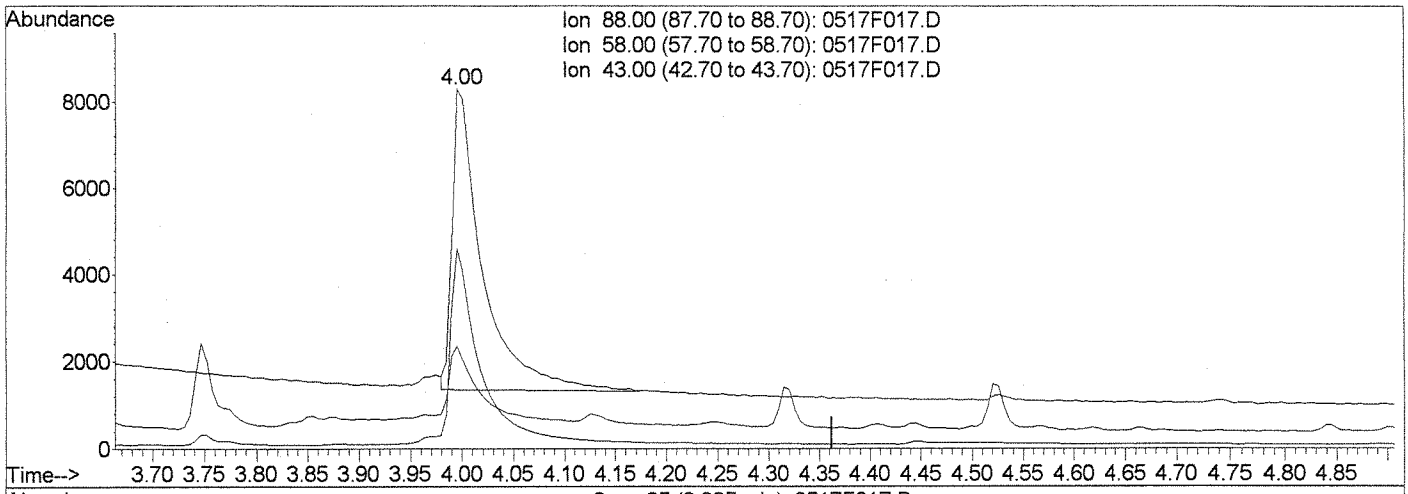
Ion	Exp%	Act%
88.00	100	100
58.00	39.30	63.41#
43.00	14.10	25.61
0.00	0.00	0.00

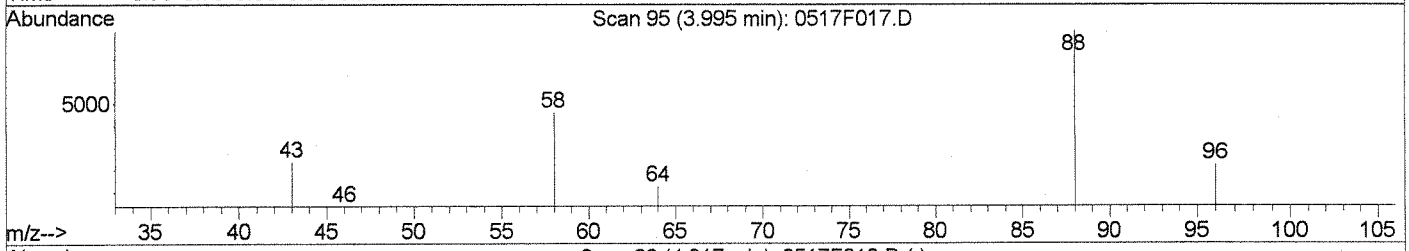
Quantitation Report (Qedit)

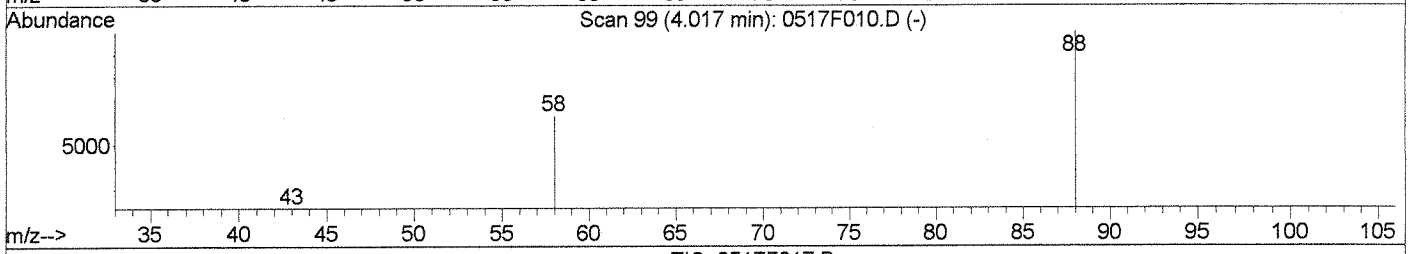
Data File : J:\MS26\DATA\051711\0517F017.D
Acq On : 17 May 2011 4:43 pm
Sample : KWG1104333-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 18 11:01 2011

Vial: 10
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Wed May 18 10:59:17 2011
Response via : Multiple Level Calibration







TIC: 0517F017.D

(3) 1,4-Dioxane (T)

4.00min 44.30ng/ml m

response 14287

Ion	Exp%	Act%
88.00	100	100
58.00	39.30	55.33
43.00	14.10	28.32
0.00	0.00	0.00

C1

LB 5/18/11

CH 05·18·11

0517F017.D 050911_DX.M Wed May 18 11:01:42 2011

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/17/2011
Time Analyzed: 14:01

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\051711\0517F009.D
Instrument ID: MS26
Column:

Analysis Method: 8270C SIM
Analysis Lot: KWG1104446

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.1	555869	PASS
68	69	0	2	1.4	10034	PASS
69	198	0	100	20.2	697373	PASS
70	69	0	2	0.5	3334	PASS
127	198	10	80	37.7	1302606	PASS
197	198	0	2	0.2	8535	PASS
198	442	30	100	54.0	3452650	PASS
199	198	5	9	6.5	224497	PASS
275	198	10	60	31.1	1072106	PASS
365	442	1	50	2.7	174669	PASS
441	443	0	100	72.3	1076074	PASS
442	442	100	100	100.0	6395904	PASS
443	442	15	24	23.3	1488341	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104446-2	J:\MS26\DATA\051711\0517F010.D	05/17/2011	14:22	
Method Blank	KWG1104333-4	J:\MS26\DATA\051711\0517F016.D	05/17/2011	16:23	
Lab Control Sample	KWG1104333-3	J:\MS26\DATA\051711\0517F017.D	05/17/2011	16:43	
Batch QC	K1104106-005	J:\MS26\DATA\051711\0517F018.D	05/17/2011	17:03	
Batch QCMS	KWG1104333-1	J:\MS26\DATA\051711\0517F019.D	05/17/2011	17:23	
Batch QCDMS	KWG1104333-2	J:\MS26\DATA\051711\0517F020.D	05/17/2011	17:43	
MW-17-4	P1101793-002	J:\MS26\DATA\051711\0517F021.D	05/17/2011	18:03	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File: J:\MS26\DATA\051711\0517F009.D
Lab ID: KWG1104446-1
RunType: TUNE
Matrix: WATER

Date Acquired: 05/17/2011 14:01
Date Quantitated:
Batch ID: KWG1104446
Analysis Method: DFTPP
ListJoinID: LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: LC 5/18/11

Secondary Review: CH 05.18.11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/18/2011

Analysis Lot:	KWG1104446	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M	**Calibration ID:**	CAL10487
Title:		**Report List ID:**	LJ1965
Tune Ref:		**Method ID:**	MJ190
MB Ref:		**Quant based on Report List**	

Data File:	J:\MS26\DATA\051711\0517F009.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 14:01	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1104446-1			**Soln Conc. Units:**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.1	555869	Pass
68	69	0	2	1.4	10034	Pass
69	198	0	100	20.2	697373	Pass
70	69	0	2	0.5	3334	Pass
127	198	10	80	37.7	1302606	Pass
197	198	0	2	0.2	8535	Pass
198	442	30	100	54.0	3452650	Pass
199	198	5	9	6.5	224497	Pass
275	198	10	60	31.1	1072106	Pass
365	442	1	50	2.7	174669	Pass
441	443	0.01	100	72.3	1076074	Pass
442	442	100	100	100.0	6395904	Pass
443	442	15	24	23.3	1488341	Pass

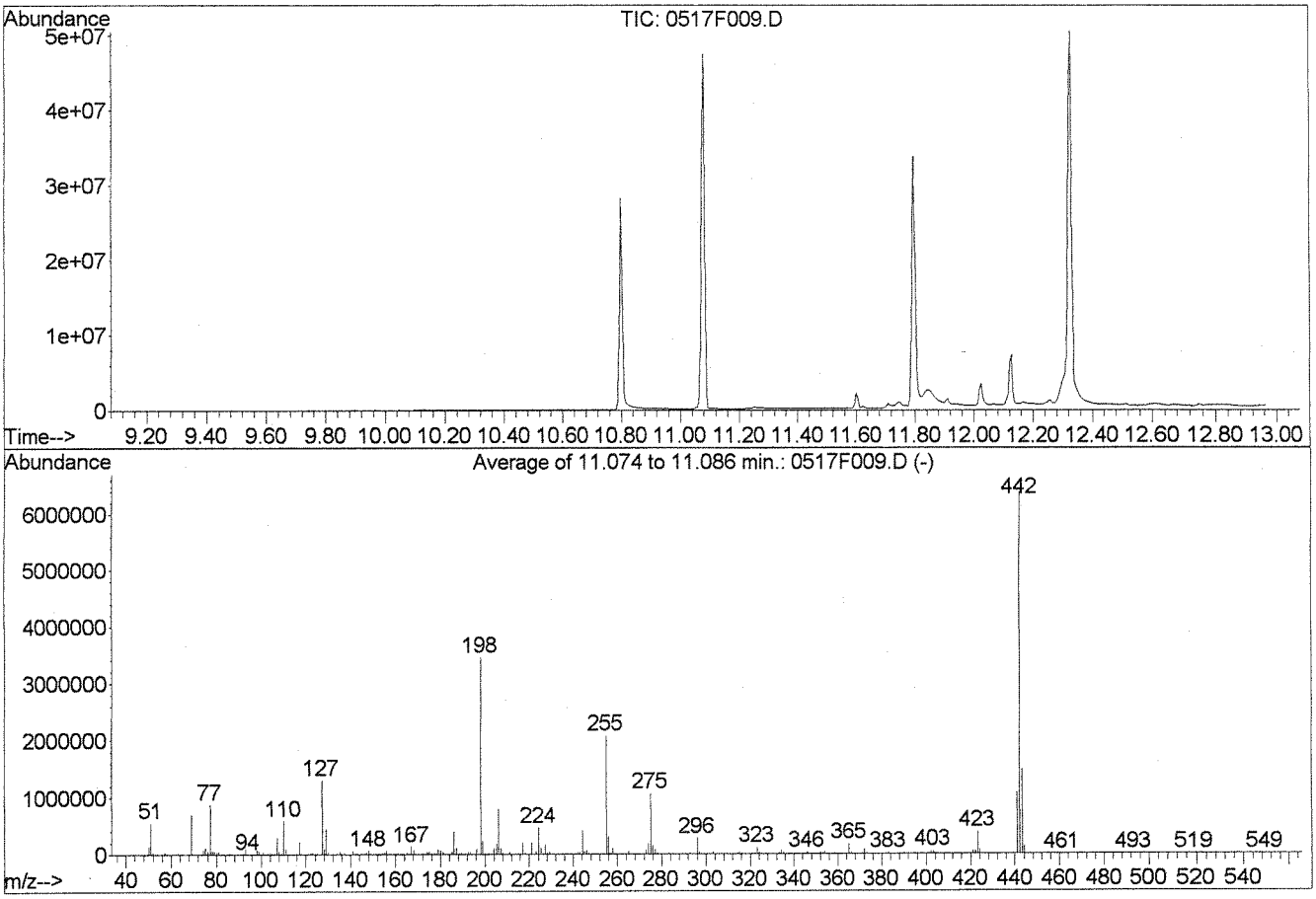
U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File : J:\MS26\DATA\051711\0517F009.D
Acq On : 17 May 2011 2:01 pm
Sample : 10ug/mL DFTPP | SVM34-95A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1326, 1327, 1328; Background Corrected with Scan 1314

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	16.1	555869	PASS
68	69	0.00	2	1.4	10034	PASS
69	198	0.00	100	20.2	697373	PASS
70	69	0.00	2	0.5	3334	PASS
127	198	10	80	37.7	1302606	PASS
197	198	0.00	2	0.2	8535	PASS
198	442	30	100	54.0	3452650	PASS
199	198	5	9	6.5	224497	PASS
275	198	10	60	31.1	1072106	PASS
365	442	1	50	2.7	174669	PASS
441	443	0.01	100	72.3	1076074	PASS
442	442	30	100	100.0	6395904	PASS
443	442	15	24	23.3	1488341	PASS

0517F009.D A_DFTPP.M Wed May 18 10:58:11 2011

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.10	137936	62.05	8097	74.05	67525	85.05	9915
51.05	555869	63.05	23549	75.05	111913	86.00	15957
52.05	28609	64.10	3568	76.10	40572	87.00	7093
53.05	941	65.05	12763	77.10	883419	88.05	3762
55.00	1467	66.00	626	78.05	60926	89.00	1208
56.05	14977	67.05	47	79.05	47707	89.95	193
57.05	38093	68.10	10034	80.00	38589	91.00	12510
58.00	1551	69.00	697373	81.05	55182	92.10	14074
59.05	318	70.05	3334	82.05	13855	93.00	89785
60.00	191	72.05	85	83.10	14314	93.95	6216
61.10	6644	73.05	4535	84.00	764	95.05	637

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
96.10	4376	107.05	301758	118.00	16405	129.05	457552
97.10	1160	108.05	48925	119.05	1930	130.00	37529
98.05	69820	109.10	7485	120.05	3950	131.05	6797
99.05	59722	110.00	592023	121.05	1339	132.05	3544
100.00	5278	111.10	85572	122.05	19513	132.90	401
101.00	37259	112.10	10947	123.05	29871	133.10	475
102.05	2010	113.05	3228	124.00	13871	134.00	12209
103.00	11841	114.30	850	125.10	13926	135.10	36405
104.00	21981	115.00	584	126.15	4581	136.05	14443
105.05	20945	116.05	15673	127.10	1302606	137.10	18727
106.05	6761	117.05	214421	128.05	93046	138.00	4148

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
139.10	2192	150.05	4417	159.10	8425	170.05	3657
140.10	5001	151.00	35	160.05	18175	171.05	4861
141.00	54832	151.25	7883	161.05	29860	172.05	11028
142.05	19475	151.90	2369	162.05	9137	173.05	15423
143.00	13618	152.10	403	163.05	2393	174.10	28299
144.05	3666	153.00	19075	164.00	3583	175.05	54454
145.05	3506	154.05	14798	165.00	20354	176.10	16251
146.10	10500	155.10	35804	166.10	18910	177.10	23336
147.10	29605	156.05	55110	167.05	132255	178.05	7471
148.05	65316	157.10	11042	168.10	65867	179.00	96754
149.10	13662	158.00	10780	169.05	11198	180.05	71287

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
181.05	34738	192.05	33611	204.05	104384	215.10	7472
182.10	5463	193.10	36558	205.05	184179	216.10	16429
183.00	2702	194.05	7897	206.05	794660	217.10	206365
184.10	7422	195.15	4489	207.10	101821	218.10	26608
185.10	48276	196.10	95466	208.10	22728	219.10	2595
186.10	403661	196.90	8535	209.10	7340	221.05	202625
187.10	115472	198.10	3452650	210.30	6839	223.10	47938
188.10	11223	199.05	224497	211.05	30735	224.10	465661
189.05	21365	200.10	17388	211.80	461	225.10	117992
190.05	3369	201.60	16135	213.10	2127	226.10	11826
191.10	10213	203.05	18433	214.05	801	227.10	171759

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
228.05	24283	239.10	6549	250.10	2612	261.10	4003
229.05	39565	240.10	5593	251.10	2867	262.15	726
230.05	5304	241.10	10566	252.10	3329	263.15	1142
231.05	17025	242.10	26031	253.05	7536	263.95	910
232.05	2597	243.10	27128	254.15	12115	265.05	42859
233.10	3324	244.10	414282	255.05	2087365	265.95	4342
234.10	10995	245.10	53845	256.10	303434	267.05	1158
235.10	13141	246.10	67456	257.10	22916	269.20	173
236.05	8323	247.10	13958	258.10	106973	269.95	1262
237.05	14969	248.10	3187	259.10	17231	271.05	3945
238.05	2187	249.10	14526	260.10	3411	272.05	5228

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
273.10	68613	284.10	6278	295.10	5346	306.20	416
274.10	185048	285.10	14865	296.10	278456	307.10	450
275.10	1072106	286.10	2818	297.10	38542	308.10	4606
276.10	143445	287.05	535	298.10	2739	309.10	2916
277.10	76904	288.05	901	299.10	817	310.10	4227
278.10	12806	289.05	3362	300.10	354	311.10	964
279.10	2816	290.15	2833	301.10	3763	312.05	957
280.05	588	291.10	1808	302.10	5320	313.10	3040
281.05	442	292.20	3991	303.15	34996	314.10	14932
282.10	2051	293.10	20388	304.15	9403	315.10	32158
283.10	8848	294.10	4867	305.10	1359	316.10	19040

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
317.10	3800	328.10	11227	340.10	1976	350.15	1010
318.10	436	329.10	2136	341.15	13606	351.10	1964
319.05	624	330.15	732	342.15	3672	352.10	38210
320.10	1162	331.10	499	343.15	624	353.15	25933
321.10	11105	332.10	8114	344.05	306	354.15	42256
322.10	5424	333.10	10934	344.90	68	355.10	7284
323.15	113778	334.10	72520	345.20	337	356.10	647
324.15	21033	335.10	19022	346.10	29708	356.50	75
325.20	2224	336.10	2600	347.05	5140	357.15	612
326.10	2037	337.20	197	348.05	738	358.00	378
327.10	20722	339.10	2031	349.15	181	358.20	412

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
359.10	3387	369.00	190	380.90	64	391.15	8045
360.15	615	370.10	4262	381.95	228	392.15	6065
361.10	741	371.10	11058	382.20	235	393.15	989
362.20	204	372.15	77909	383.10	21805	395.05	744
362.95	155	373.15	19166	384.10	6242	396.10	592
363.25	290	374.10	2408	385.15	1966	397.05	1177
364.15	1380	375.15	177	386.00	321	398.05	183
365.10	174669	377.10	2277	387.10	129	400.20	116
366.10	26625	378.00	253	388.20	72	401.15	5345
367.05	1791	378.20	260	389.00	695	402.10	35485
368.20	212	379.00	270	390.10	11831	403.10	52704

Average of 11.074 to 11.086 min.: 0517F009.D
10ug/mL DFTPP | SVM34-95A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
404.15	18938	416.30	244	435.50	70	445.20	7625
405.15	2545	419.10	222	437.20	101	446.15	384
406.05	151	420.10	889	437.90	245	461.25	145
407.30	52	421.10	49082	439.10	245	475.00	79
408.15	461	422.15	45976	439.30	781	493.20	100
408.95	403	423.15	385749	440.05	549	519.20	76
410.15	1590	424.15	76669	440.30	1904	549.25	145
411.15	379	425.15	7323	441.15	1076074		
414.30	60	426.15	546	442.20	6395904		
415.05	2724	427.05	252	443.20	1488341		
416.10	263	427.30	86	444.20	135378		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL10487
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\050911\0509F007.D
B	J:\MS26\DATA\050911\0509F008.D
C	J:\MS26\DATA\050911\0509F009.D
D	J:\MS26\DATA\050911\0509F010.D
E	J:\MS26\DATA\050911\0509F011.D
F	J:\MS26\DATA\050911\0509F012.D
G	J:\MS26\DATA\050911\0509F013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.359	B	4.0	0.357	C	10	0.368	D	20	0.389	E	50	0.426
	F	100	0.432	G	200	0.450									
1,4-Dioxane-d8	A	2.0	0.369	B	4.0	0.357	C	10	0.368	D	20	0.403	E	50	0.403
	F	100	0.417	G	200	0.419									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL10487
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.6		≤ 15	0.397		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	6.6		≤ 15	0.391		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Calibration Date: 05/09/2011
Date Analyzed: 05/09/2011

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C SIM

Calibration ID: CAL10487
Units: ng/ml

File ID: J:\MS26\DATA\050911\0509F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	22	0.397	0.445	12	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Injection Log

Directory: J:\MS26\DATA\050911

ine	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
	1	0509F001.d	1.	PR		9 May 2011 09:4
	1	0509F002.d	1.	PR	NR	9 May 2011 10:0
	1	0509F003.d	1.	10ug/mL DFTPP | SVM34-33F		9 May 2011 10:2
	1	0509F004.d	1.	10ug/mL DFTPP | SVM34-33F		9 May 2011 10:4
	1	0509F005.d	1.	10ug/mL DFTPP | SVM34-33F	OK - New Tune	9 May 2011 11:1
	2	0509F006.d	1.	IB		9 May 2011 11:4
	3	0509F007.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B		9 May 2011 12:0
	4	0509F008.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM34-56C		9 May 2011 12:2
	5	0509F009.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM34-56D		9 May 2011 12:4
0	6	0509F010.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM34-56E		9 May 2011 13:0
1	7	0509F011.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM34-56F		9 May 2011 13:2
2	8	0509F012.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM34-56G		9 May 2011 13:4
3	9	0509F013.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM34-56H		9 May 2011 14:0
4	10	0509F014.d	1.	20ng/mL ICV 1,4-Dioxane | SVM34-57L		9 May 2011 14:2
5	11	0509F015.d	1.	KWG1103961-4 | MB		9 May 2011 14:4
6	12	0509F016.d	1.	KWG1103961-3 | LCS		9 May 2011 15:0
7	13	0509F017.d	1.	KWG1103961-1 | MS P1101579-005MS		9 May 2011 15:2
8	14	0509F018.d	1.	KWG1103961-2 | DMS P1101579-005DMS		9 May 2011 15:4
9	15	0509F019.d	1.	P1101579-005		9 May 2011 16:0
0	16	0509F020.d	1.	P1101605-005		9 May 2011 16:2
1	17	0509F021.d	1.	P1101607-001		9 May 2011 16:4

Run # 245353
CAL10487
LB 5/10/11

CH 05.10.11

Exception Report

Data File: J:\MS26\DATA\050911\0509F005.D
Lab ID: KWG1104145-1
RunType: TUNE
Matrix: WATER

Date Acquired: 05/09/2011 11:15
Date Quantitated:
Batch ID: KWG1104145
Analysis Method: DFTPP
ListJoinID: LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: LB 5/10/11

Secondary Review: CH 05·10·11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/10/2011

Analysis Lot:	KWG1104145	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M	**Calibration ID:**	CAL10487
Title:		**Report List ID:**	LJ1965
Tune Ref:		**Method ID:**	MJ190
MB Ref:		**Quant based on Report List**	

Data File:	J:\MS26\DATA\050911\0509F005.D			**Instrument:**	MS26
Acqu Date:	05/09/2011 11:15	**Quant Date:**		**Vial:**	1
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1104145-1			**Soln Conc. Units:**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	12.7	700992	Pass
68	69	0	2	1.4	13150	Pass
69	198	0	100	17.7	972672	Pass
70	69	0	2	0.5	5066	Pass
127	198	10	80	36.3	1997824	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	69.9	5508096	Pass
199	198	5	9	6.8	373632	Pass
275	198	10	60	28.3	1558528	Pass
365	442	1	50	2.5	200064	Pass
441	443	0.01	100	70.8	1123328	Pass
442	442	100	100	100.0	7877632	Pass
443	442	15	24	20.1	1586688	Pass

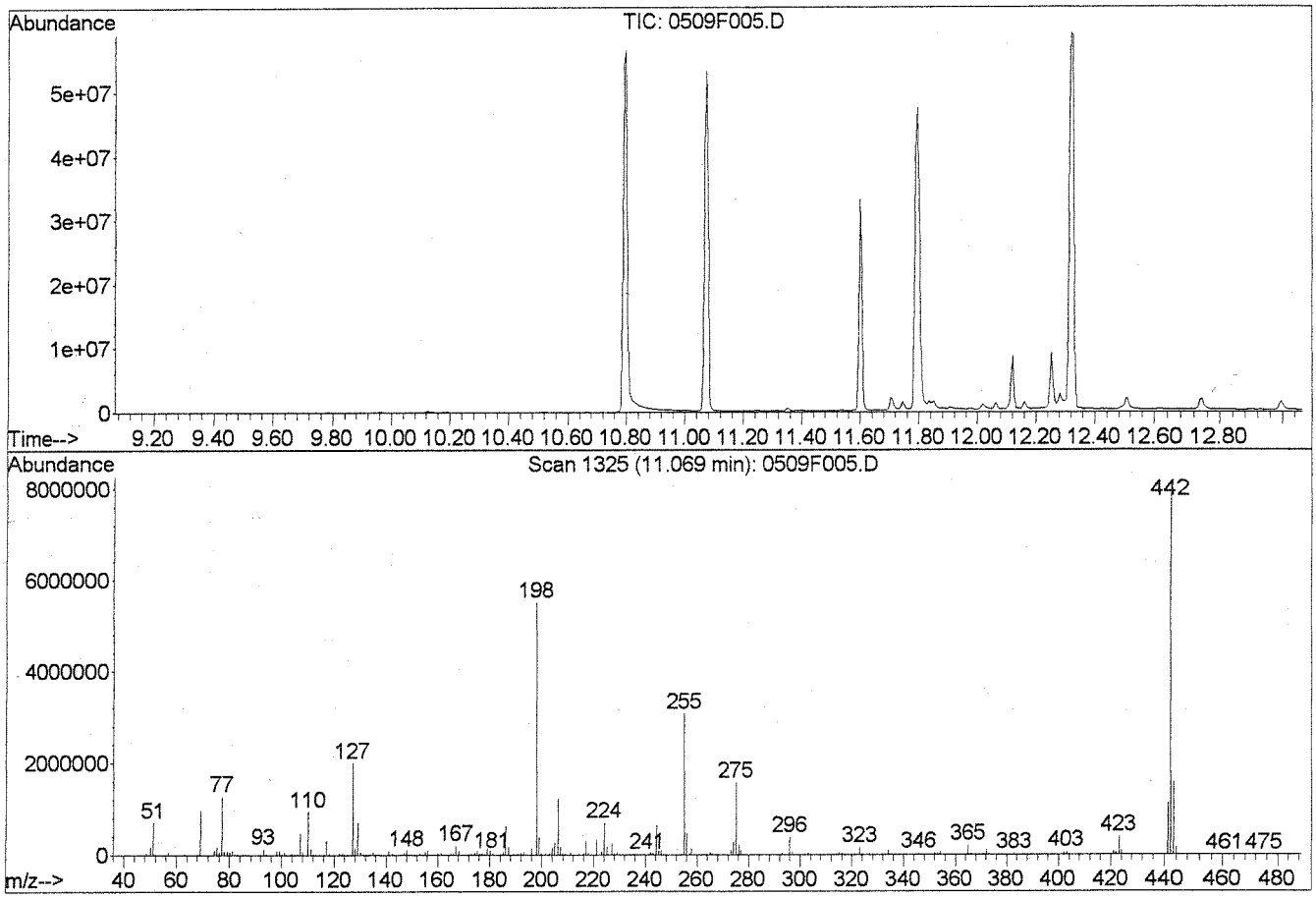
U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File : J:\MS26\DATA\050911\0509F005.D
Acq On : 9 May 2011 11:15 am
Sample : 10ug/mL DFTPP | SVM34-33F
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00



Spectrum Information: Scan 1325

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	12.7	700992	PASS
68	69	0.00	2	1.4	13150	PASS
69	198	0.00	100	17.7	972672	PASS
70	69	0.00	2	0.5	5066	PASS
127	198	10	80	36.3	1997824	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	69.9	5508096	PASS
199	198	5	9	6.8	373632	PASS
275	198	10	60	28.3	1558528	PASS
365	442	1	50	2.5	200064	PASS
441	443	0.01	100	70.8	1123328	PASS
442	442	30	100	100.0	7877632	PASS
443	442	15	24	20.1	1586688	PASS

0509F005.D A_DFTPP.M Mon May 09 14:55:59 2011

LB 5/10/11

CH 05.10.11

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.10	175744	61.10	9076	72.10	684	83.10	22992
51.10	700992	62.10	11282	73.00	6516	84.00	2283
52.10	35816	63.10	33064	74.10	92872	85.10	16584
53.20	1660	64.10	4802	75.10	158656	86.10	23512
54.00	206	65.10	19008	76.10	57568	87.10	11469
55.10	4620	66.00	1436	77.10	1275392	88.10	5655
56.10	20432	67.10	1532	78.10	85416	89.10	2049
57.10	52136	68.10	13150	79.10	69640	90.10	748
58.00	2316	69.00	972672	80.10	55336	91.10	20104
59.10	671	70.10	5066	81.10	82528	92.10	21040
60.00	1086	71.10	3191	82.10	21000	93.10	133760

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
94.10	9002	105.00	33480	116.10	23712	127.10	1997824
95.10	5186	106.10	10305	117.00	311872	128.10	145920
96.10	8648	107.10	464576	118.10	24432	129.10	695488
97.20	4742	108.10	73896	119.10	4496	130.10	60976
98.10	104632	109.10	12483	120.10	6355	131.10	12409
99.10	85880	110.00	935744	121.00	2248	132.10	8242
100.10	8736	111.10	135424	122.00	28304	132.90	3695
101.00	57824	112.10	17488	123.10	47232	134.10	19000
102.00	3428	113.10	5707	124.00	21672	135.10	58984
103.10	16928	114.10	1498	125.10	22248	136.10	21792
104.00	33208	115.00	2220	126.10	5253	137.10	28872

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
138.10	6356	149.10	21408	160.00	27552	171.00	8490
139.00	3889	150.10	6395	161.10	47376	172.00	17232
140.00	7545	151.10	11578	162.00	13040	173.10	22032
141.00	85744	151.90	8398	163.10	4006	174.10	42288
142.10	29288	153.00	28504	164.00	4599	175.10	81264
143.00	21792	154.10	22976	165.00	34784	176.10	25232
144.00	5918	155.10	54680	166.10	28944	177.00	34312
145.00	6165	156.10	83888	167.10	196224	178.00	10661
146.10	14761	157.10	18992	168.10	86648	179.00	143296
147.10	45120	158.00	16257	169.10	18456	180.10	105424
148.00	94488	159.00	13164	170.00	6344	181.10	51984

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
182.10	7779	193.10	54272	206.10	1212416	219.10	3402
183.10	5240	194.10	11832	207.10	163136	221.10	312576
184.10	11434	195.10	7602	208.10	36088	223.00	70152
185.10	71120	196.10	139840	209.00	11104	224.10	696768
186.10	621952	198.00	5508096	211.00	45936	225.10	175744
187.10	175616	199.00	373632	213.00	3013	226.00	17760
188.10	17128	200.00	29040	214.00	1209	227.00	241088
189.00	31152	201.60	24672	215.00	10591	228.00	37952
190.10	5072	203.00	28320	216.00	24008	229.00	58712
191.10	16100	204.10	156416	217.00	303872	230.00	10364
192.10	48024	205.10	274688	218.00	40896	231.10	25608

LB 5/10/11

CH 05.10.11

Scan 1325 (11.069 min): 0509F005.D
10ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
232.10	5831	243.10	41064	254.00	14230	265.00	59384
233.00	4850	244.10	636288	255.00	3073536	265.90	30712
234.00	15479	245.10	88480	256.00	457216	267.00	2334
235.00	20808	246.00	98752	257.10	34264	267.90	14490
236.00	13169	247.00	20184	258.00	150784	268.90	1366
237.00	21880	248.00	5311	259.00	24240	269.90	7072
238.00	3265	249.00	21888	260.00	4355	271.00	5192
239.00	10927	250.00	3815	261.10	5748	272.00	8114
240.00	7773	251.00	4575	262.00	1214	273.00	98288
241.00	15098	252.10	4798	263.10	1351	274.00	263936
242.00	38320	253.00	10498	263.90	16329	275.00	1558528

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
276.10	212416	287.10	382	298.10	4030	308.00	6187
277.00	107512	288.10	1444	299.00	1199	309.10	3898
278.00	18200	289.00	4600	299.90	452	310.10	6102
279.00	3914	290.00	4222	301.00	5986	311.00	1534
280.10	906	291.00	2804	302.10	6855	312.00	1665
281.00	948	292.10	5797	303.10	46608	313.10	4237
282.00	2769	293.00	29104	304.10	14524	314.10	20048
283.00	13477	294.00	7352	305.00	1752	315.00	42928
284.00	9076	295.00	6824	305.90	420	316.10	28368
285.10	21248	296.00	385152	306.90	697	317.10	5455
286.10	4317	297.10	53152	307.10	695	318.00	453

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
319.00	892	330.10	823	342.10	4747	354.10	51624
319.90	1534	331.00	562	343.00	709	355.10	9842
321.00	14730	332.00	10118	344.10	194	356.00	1059
322.00	6633	333.00	13546	345.10	275	357.10	559
323.10	155200	334.10	94632	346.00	36384	358.00	1167
324.10	30440	335.10	26248	347.00	6600	359.00	4007
325.10	2768	336.10	3662	348.00	968	360.00	872
326.00	3322	337.10	357	350.00	1134	361.10	877
327.00	27848	338.90	2300	351.00	2721	362.40	152
328.10	14191	340.10	2342	352.00	49672	363.10	465
329.00	2792	341.00	19096	353.10	33536	364.00	1713

Scan 1325 (11.069 min): 0509F005.D
.0ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
365.00	200064	377.00	2907	390.00	14038	403.10	56624
366.00	30624	378.00	476	391.00	9254	404.10	21000
367.00	2358	379.10	223	392.10	7346	405.00	3137
369.00	169	380.80	209	393.10	895	406.00	249
370.00	5178	382.00	422	395.00	927	408.00	544
371.00	13788	383.00	26472	395.90	504	409.00	407
372.10	94496	384.00	7987	396.90	1324	410.00	2120
373.10	24680	385.00	2088	397.90	177	411.00	422
374.10	2996	385.90	367	398.30	208	415.00	2812
375.00	290	387.80	285	401.00	5642	416.10	464
375.90	212	389.00	862	402.00	39496	419.00	373

CH 05·10·11

5/10/11

Scan 1325 (11.069 min): 0509f005.D
10ug/mL DFTPP | SVM34-33F

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
420.00	596	441.10	1123328				
421.00	52856	442.10	7877632				
422.00	44800	443.10	1586688				
423.00	397248	444.10	152320				
424.10	79880	445.10	9102				
425.10	7945	445.90	497				
426.00	625	460.90	163				
427.00	384	475.10	206				
438.10	158						
439.10	657						
439.90	755						

LB 5/10/11

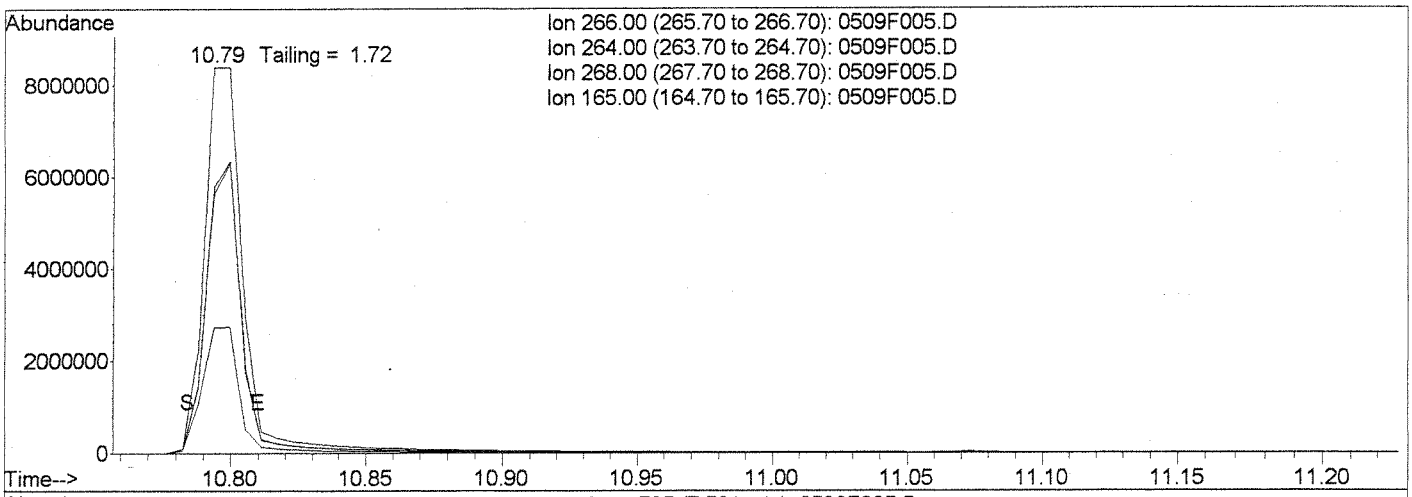
CH 05.10.11

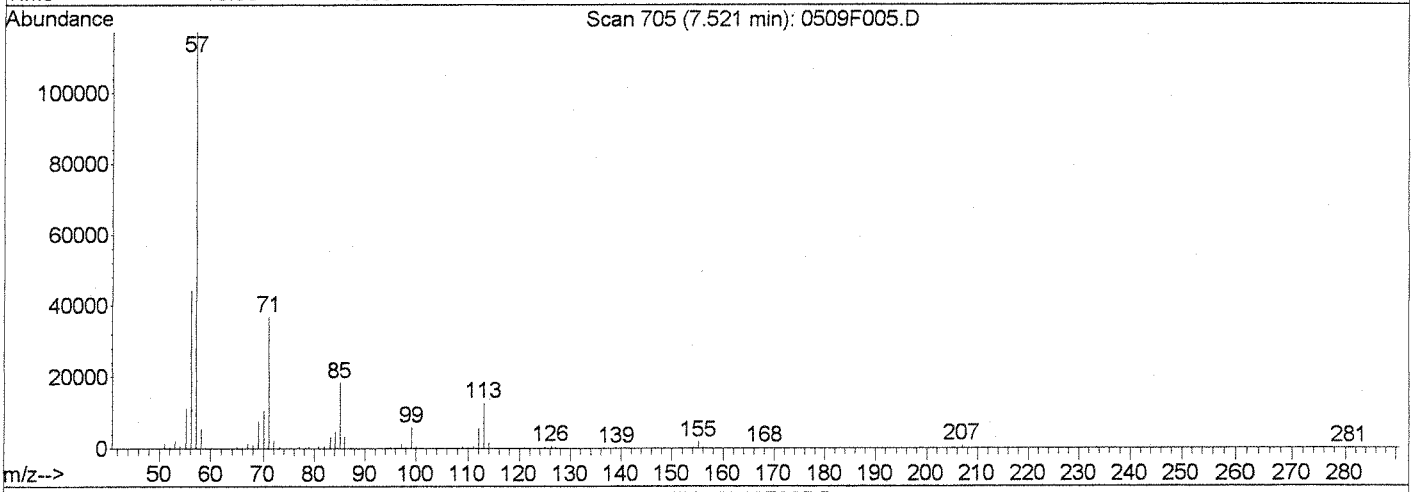
Quantitation Report

Data File : J:\MS26\DATA\050911\0509F005.D
Acq On : 9 May 2011 11:15 am
Sample : 10ug/mL DFTPP | SVM34-33F
Misc :
MS Integration Params: rteint.p

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 30 13:38:58 2010
Response via : Initial Calibration





TIC: 0509F005.D

(1) Pentachlorophenol

Exp R.T. 7.52min

response 0

Ion	Exp%	Act%
266.00	100	0
264.00	63.70	0.00
268.00	63.30	0.00
165.00	71.50	0.00

LB
5/10/11
CH 05·10·11

0509F005.D A_DFTPP.M Mon May 09 14:56:22 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F006.D Vial: 2
Acq On : 9 May 2011 11:43 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:56:54 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	76813	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

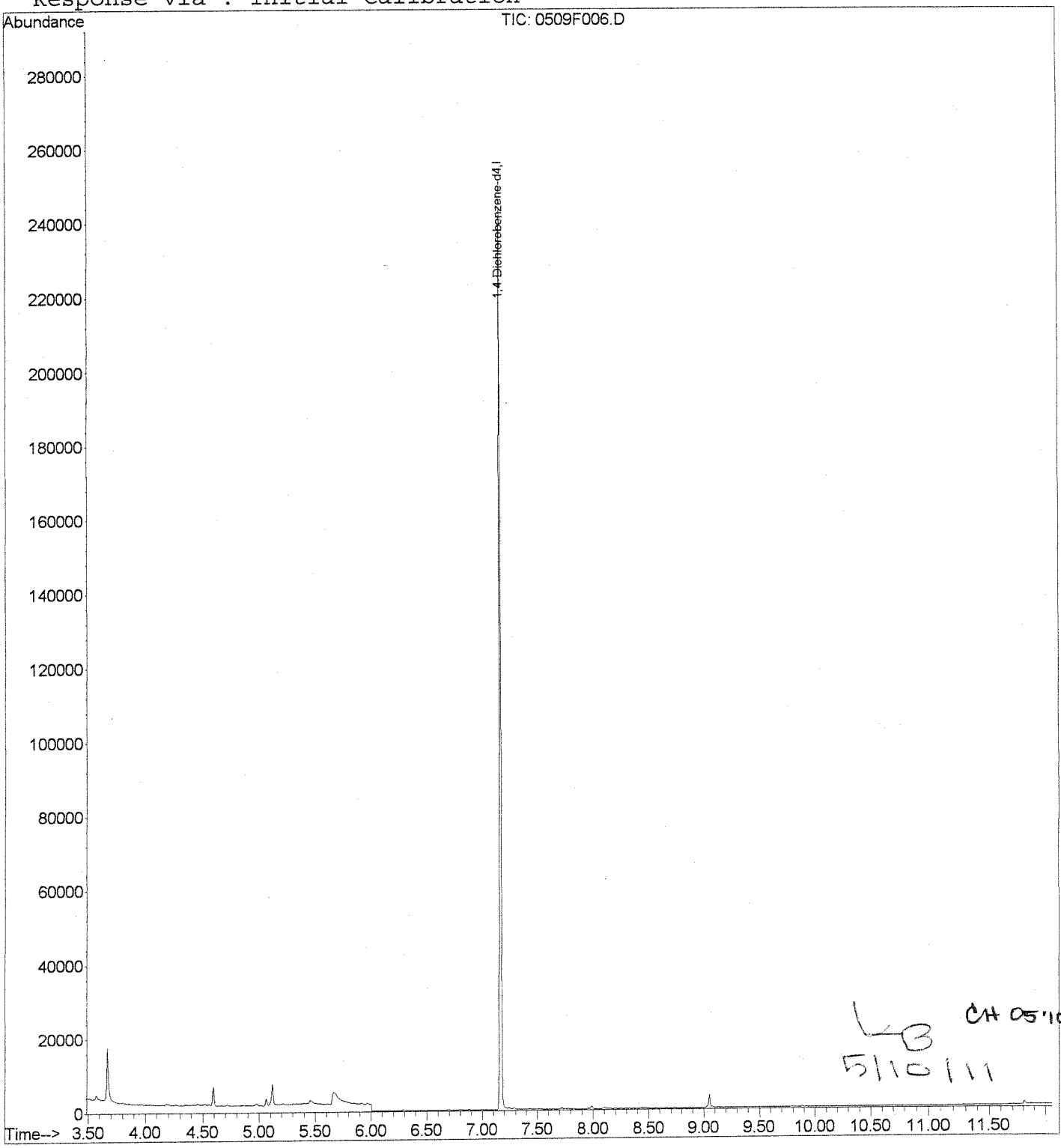
LB
5/10/11

CH 05.10.11

(#) = qualifier out of range (m) = manual integration
0509F006.D 050911_DX.M Mon May 09 17:10:18 2011 Page 1

Data File : J:\MS26\DATA\050911\0509F006.D Vial: 2
Acq On : 9 May 2011 11:43 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:56 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



LB CH 05-10-11
5/10/11

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F007.D Vial: 3
Acq On : 9 May 2011 12:03 pm Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.16	152	81459	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.98	96	1201m	1.98	ng/ml	0.04
Spiked Amount 50.000			Recovery =	3.96%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.99	88	1170m	1.88	ng/ml	

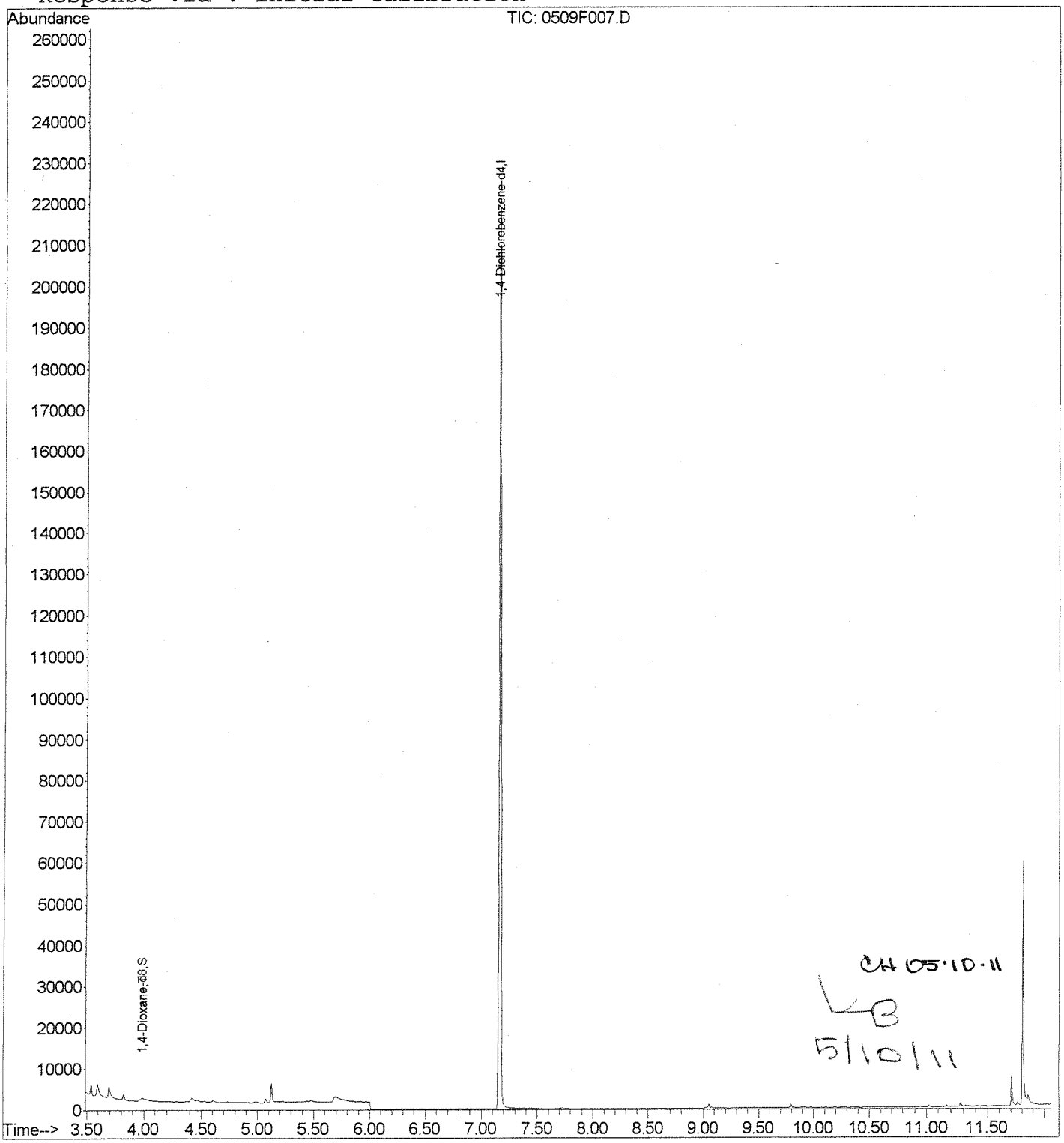
CH 05.10.11

5/10/11

(#) = qualifier out of range (m) = manual integration
0509F007.D 050911_DX.M Mon May 09 14:57:13 2011 Page 1

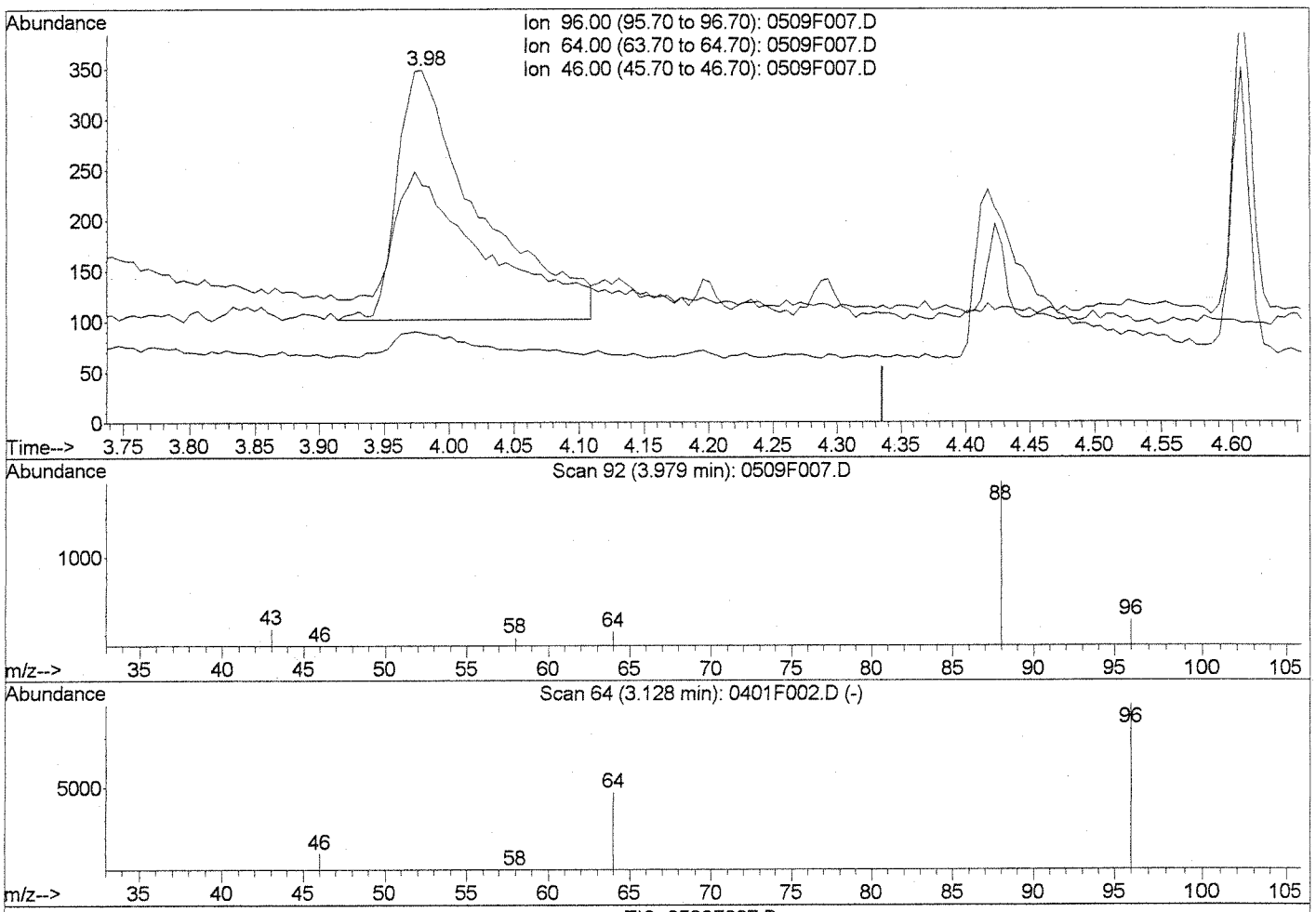
Data File : J:\MS26\DATA\050911\0509F007.D Vial: 3
Acq On : 9 May 2011 12:03 pm Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



Data File : J:\MS26\DATA\050911\0509F007.D Vial: 3
Acq On : 9 May 2011 12:03 pm Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration



TIC: 0509F007.D

(2) 1,4-Dioxane-d8 (S)

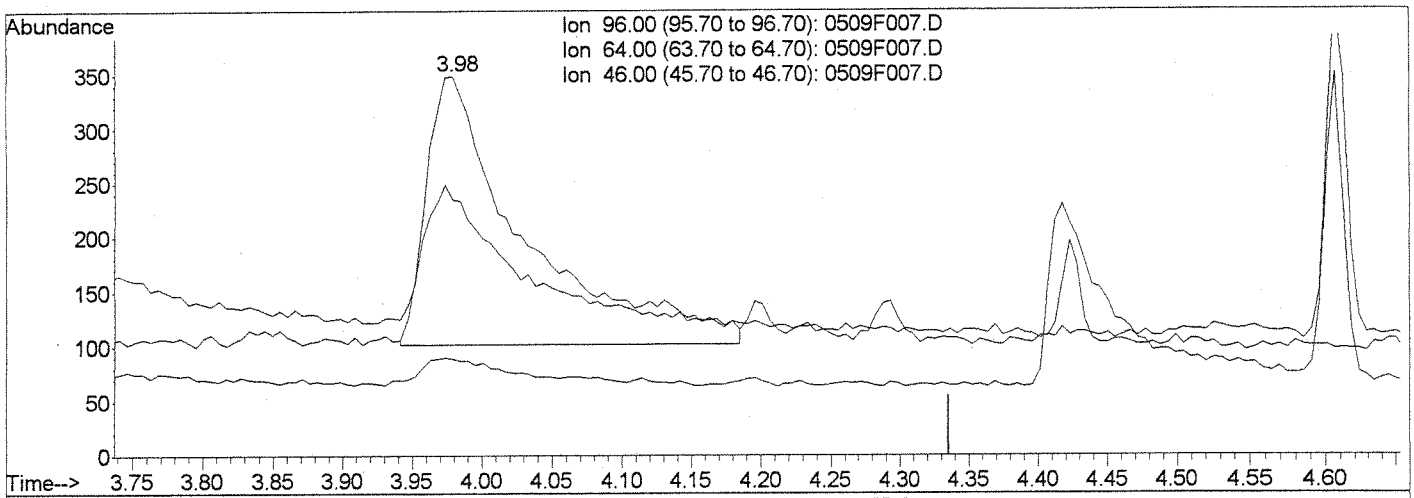
3.98min 1.80ng/ml

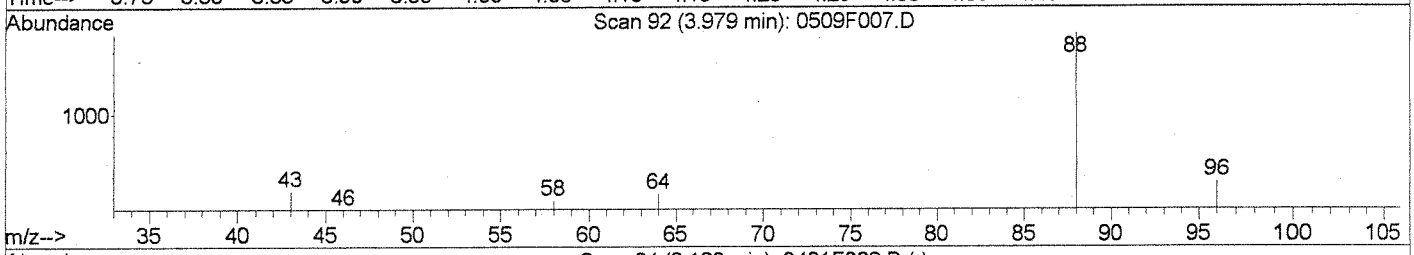
response 1087

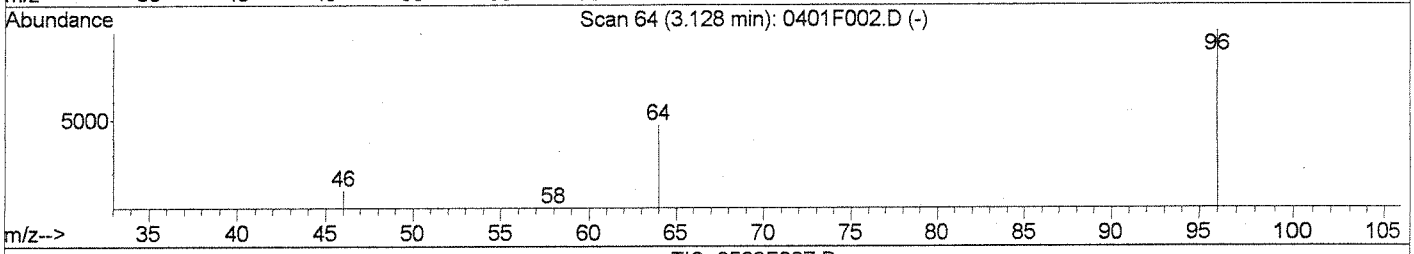
Ion	Exp%	Act%
96.00	100	100
64.00	55.60	45.75
46.00	11.70	8.91
0.00	0.00	0.00

Data File : J:\MS26\DATA\050911\0509F007.D Vial: 3
Acq On : 9 May 2011 12:03 pm Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F007.D

(2) 1,4-Dioxane-d8 (S)

3.98min 1.98ng/ml m

response 1201

Ion	Exp%	Act%
96.00	100	100
64.00	55.60	67.34
46.00	11.70	25.50
0.00	0.00	0.00

1C

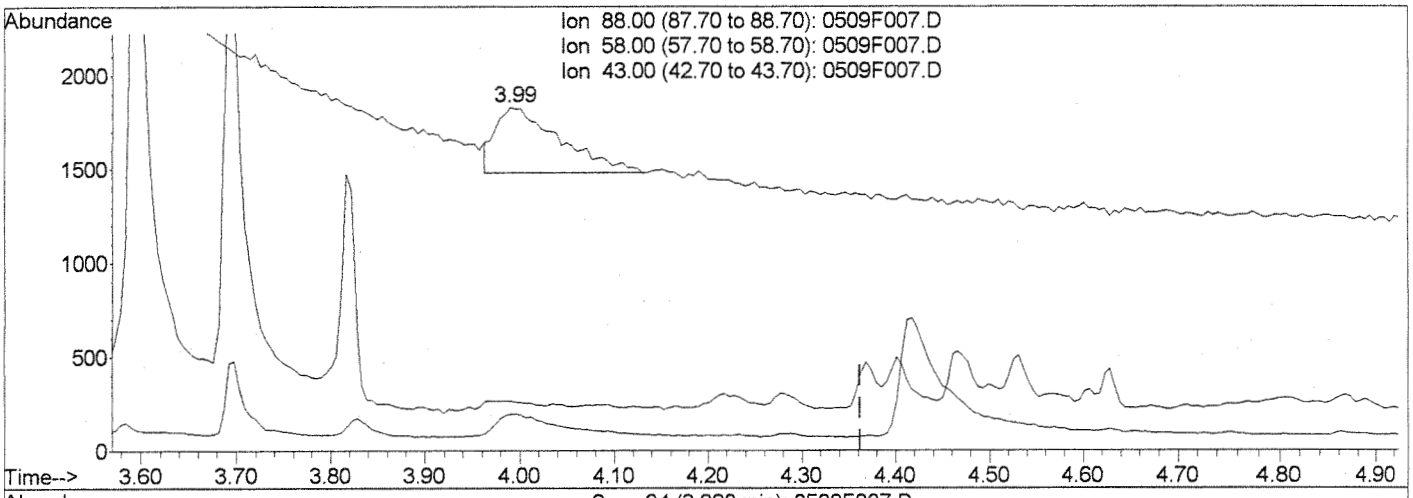
LB 5/10/11

CH 05.10.11

0509F007.D 050911_DX.M Mon May 09 14:21:55 2011

Data File : J:\MS26\DATA\050911\0509F007.D Vial: 3
Acq On : 9 May 2011 12:03 pm Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration



TIC: 0509F007.D

(3) 1,4-Dioxane (T)

3.99min 2.67ng/ml

response 1657

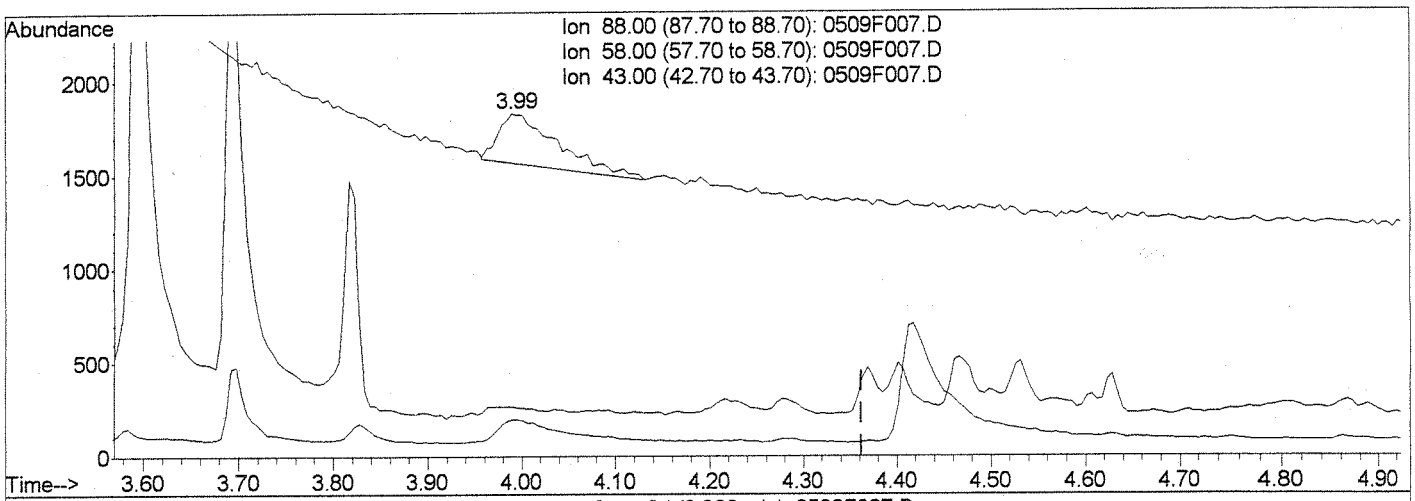
Ion	Exp%	Act%
88.00	100	100
58.00	44.20	31.43
43.00	15.30	9.43
0.00	0.00	0.00

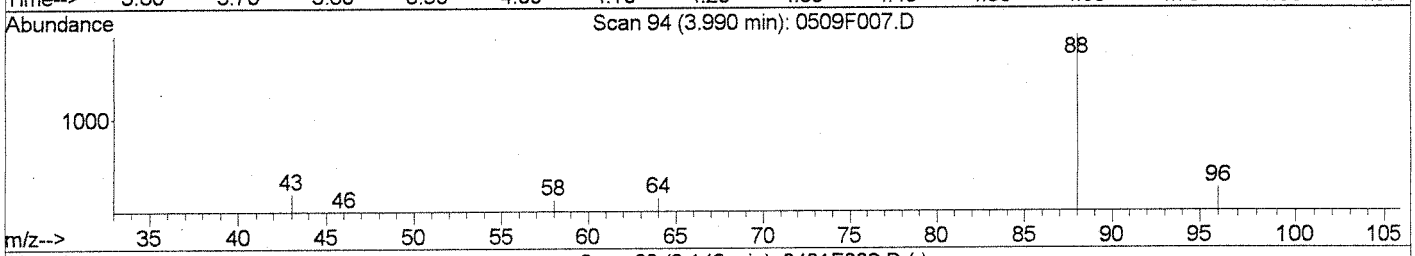
Quantitation Report (Quan)

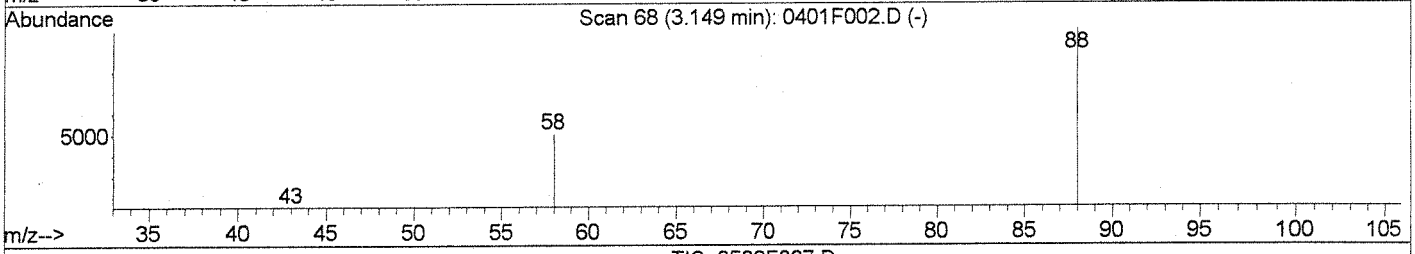
Data File : J:\MS26\DATA\050911\0509F007.D
Acq On : 9 May 2011 12:03 pm
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM34-56B
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011

Vial: 3
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F007.D

(3) 1,4-Dioxane (T)

3.99min 1.88ng/ml m

response 1170

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	10.71#
43.00	15.30	14.43
0.00	0.00	0.00

01

LB 5/10/11

CH 05.10.11

0509F007.D 050911_DX.M Mon May 09 14:22:08 2011

Data File : J:\MS26\DATA\050911\0509F008.D Vial: 4
Acq On : 9 May 2011 12:23 pm Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM34-56C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	80983	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.96	96	2312	3.84	ng/ml	0.02
Spiked Amount 50.000			Recovery =	7.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.97	88	2314m	3.75	ng/ml	

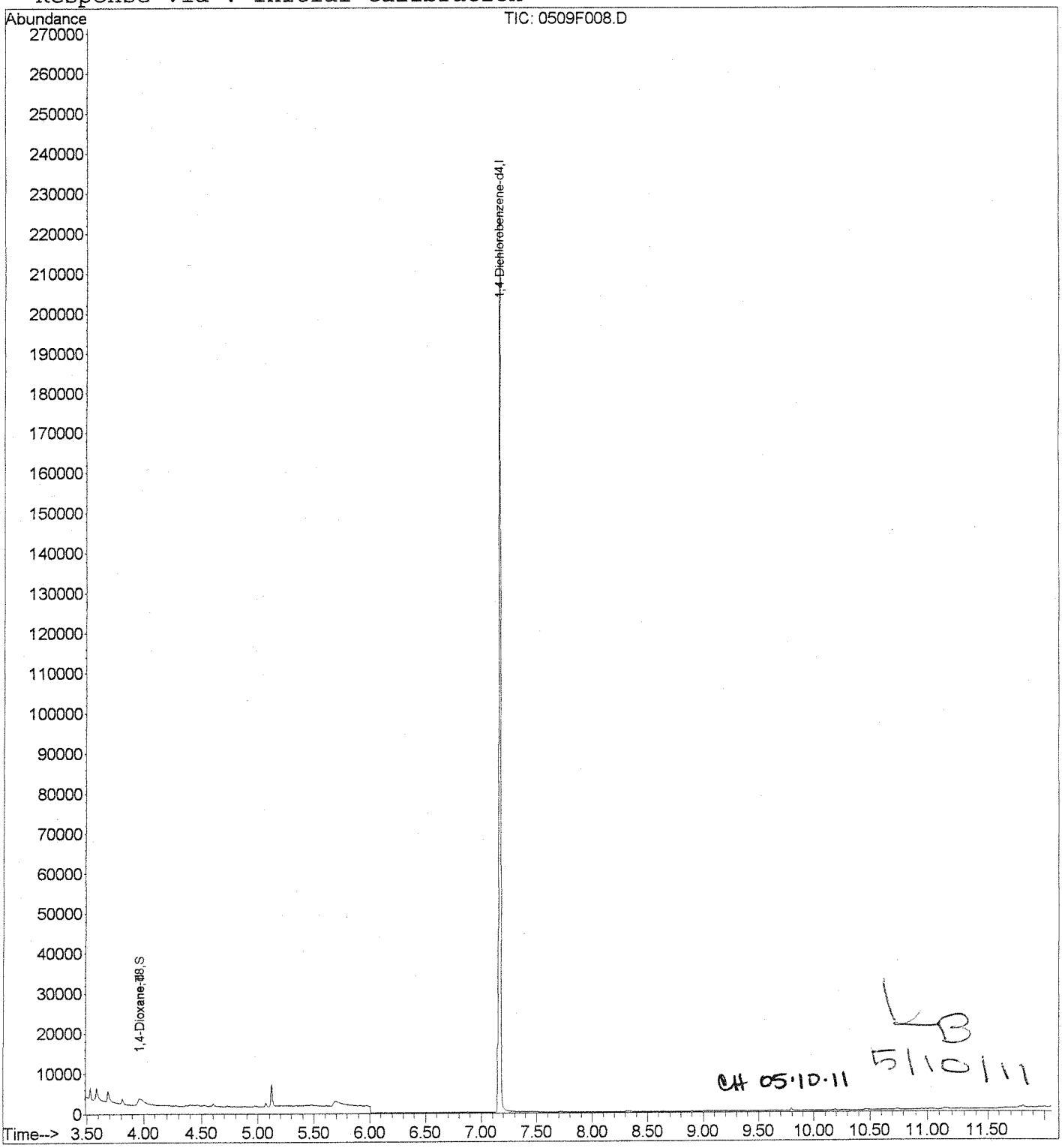
LB
5/10/11

CH 05-10-11

(#) = qualifier out of range (m) = manual integration
0509F008.D 050911_DX.M Mon May 09 14:57:14 2011 Page 1

Data File : J:\MS26\DATA\050911\0509F008.D Vial: 4
Acq On : 9 May 2011 12:23 pm Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM34-56C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration

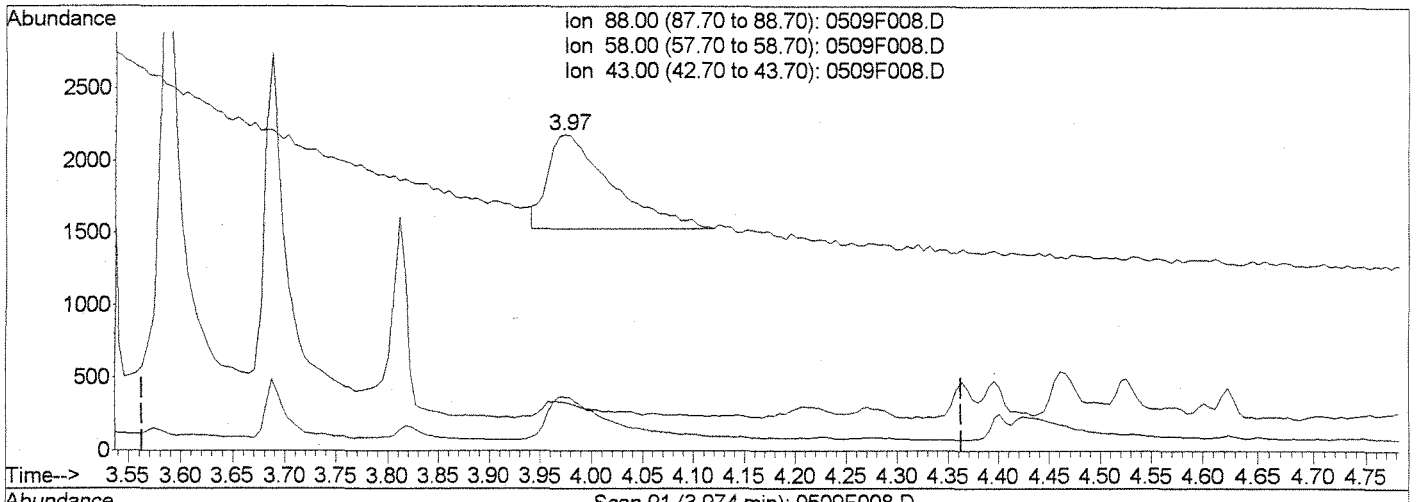


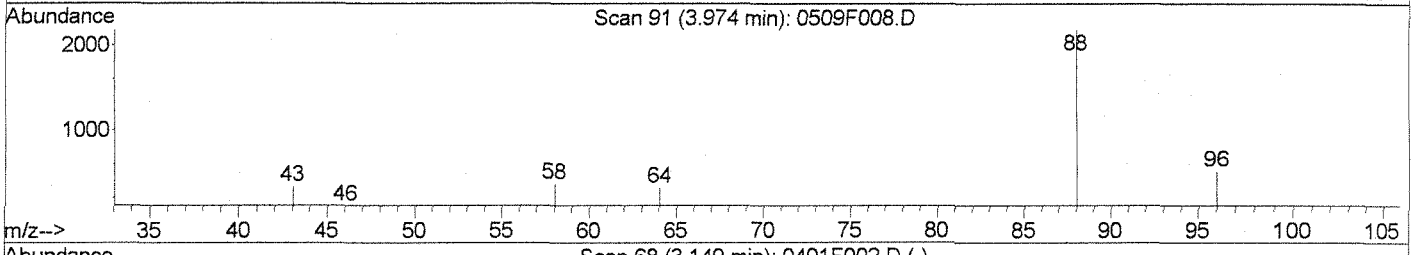
LB 5/10/11
CH 05.10.11

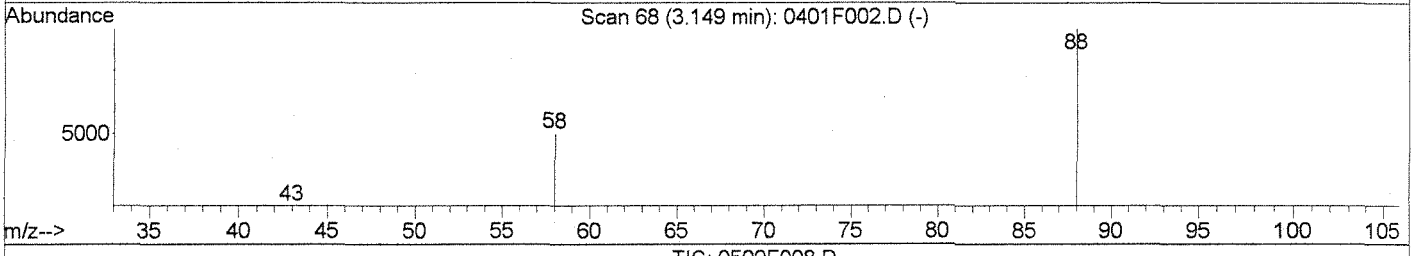
Data File : J:\MS26\DATA\050911\0509F008.D
Acq On : 9 May 2011 12:23 pm
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM34-56C
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011

Vial: 4
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F008.D

(3) 1,4-Dioxane (T)

3.97min 4.55ng/ml

response 2811

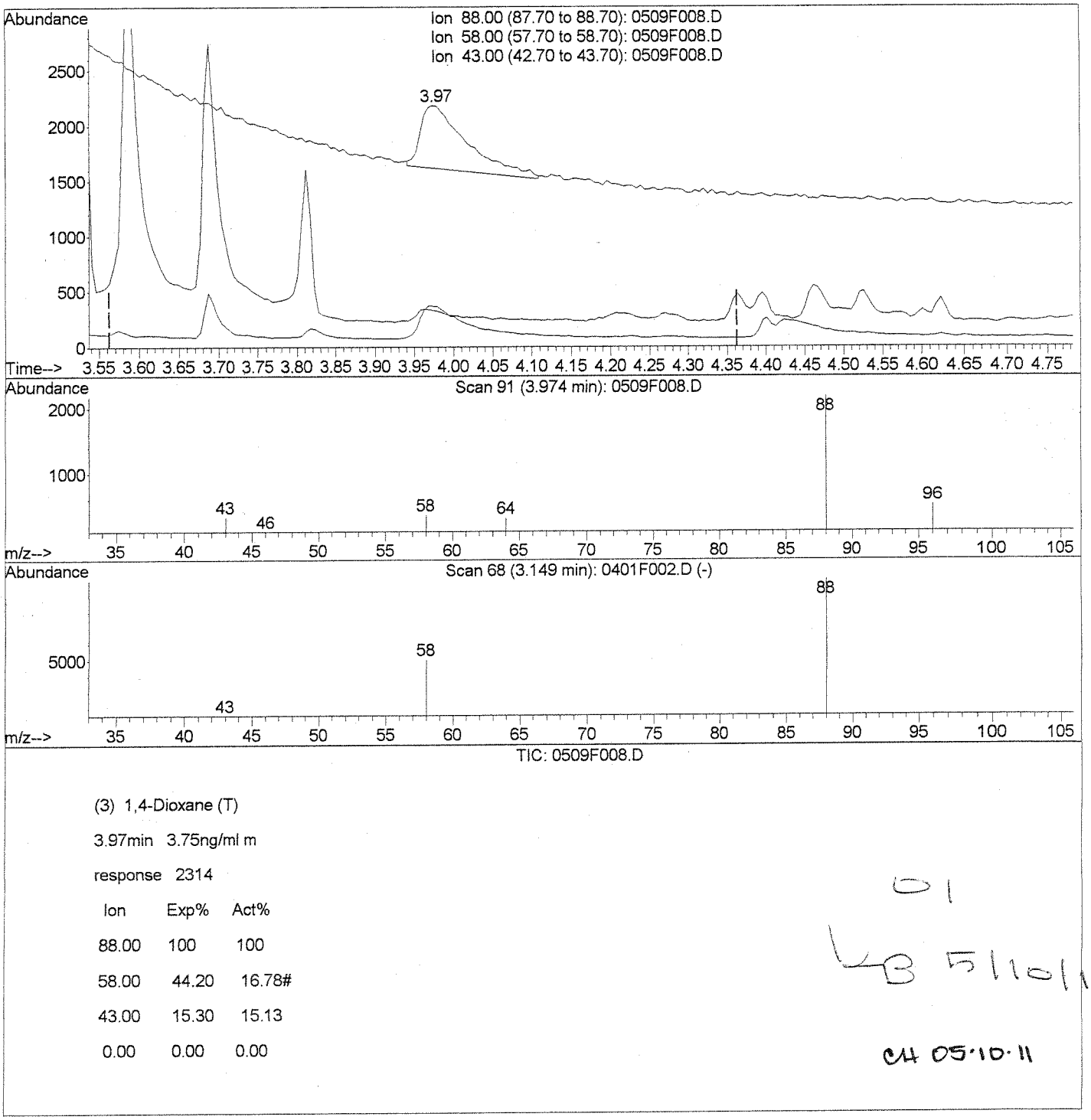
Ion	Exp%	Act%
88.00	100	100
58.00	44.20	42.09
43.00	15.30	14.90
0.00	0.00	0.00

0509F008.D 050911_DX.M Mon May 09 14:22:27 2011

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F008.D Vial: 4
Acq On : 9 May 2011 12:23 pm Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM34-56C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration



TIC: 0509F008.D

(3) 1,4-Dioxane (T)

3.97min 3.75ng/ml m

response 2314

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	16.78#
43.00	15.30	15.13
0.00	0.00	0.00

01

LB 5/10/11

CH 05.10.11

0509F008.D 050911_DX.M Mon May 09 14:22:32 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F009.D Vial: 5
Acq On : 9 May 2011 12:43 pm Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM34-56D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	82998	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.95	96	6105	9.90	ng/ml	0.01
Spiked Amount 50.000			Recovery =	19.80%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.97	88	6107m	9.64	ng/ml	

KB
5/10/11

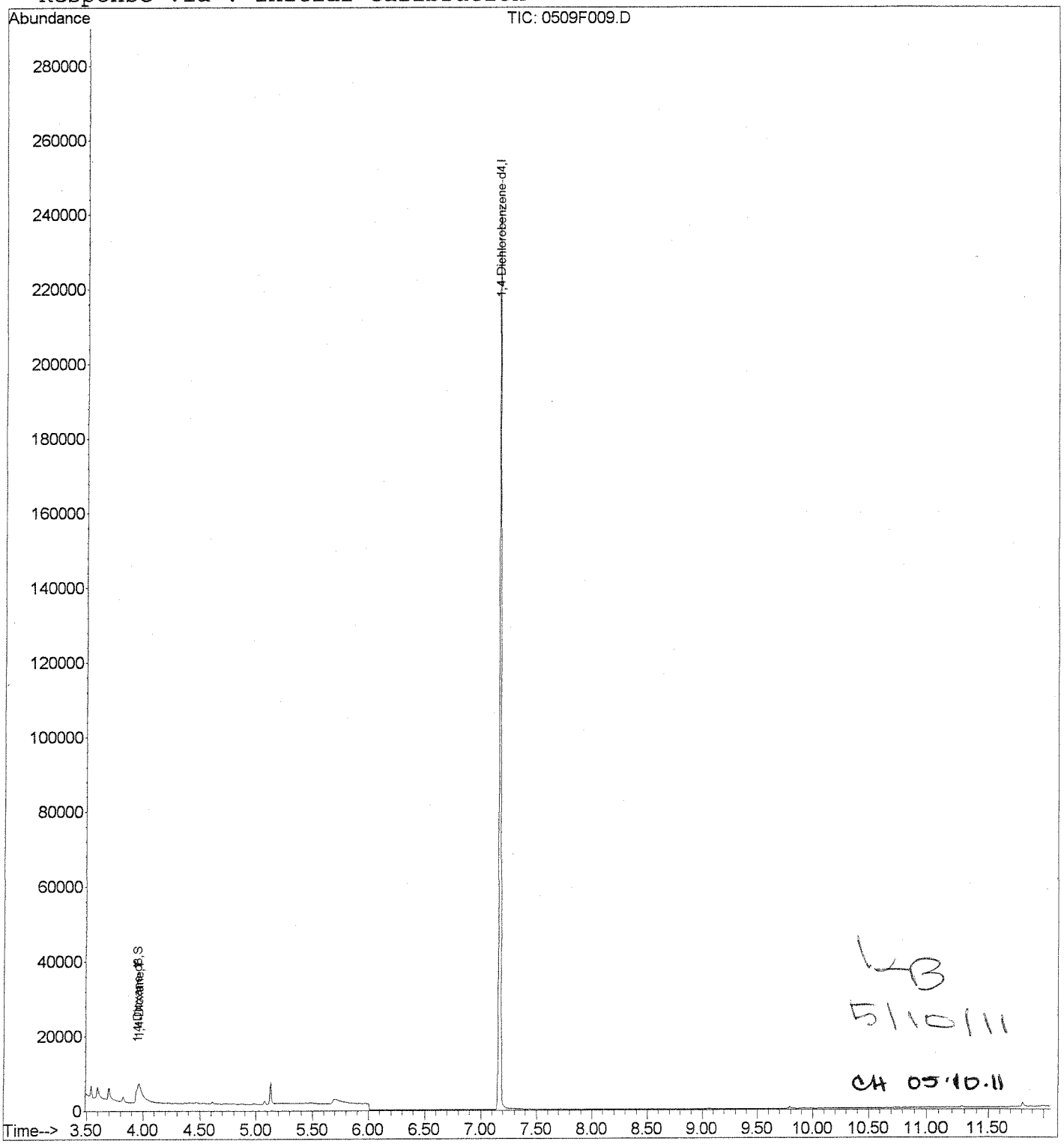
CH 05.10.11

(#) = qualifier out of range (m) = manual integration
0509F009.D 050911_DX.M Mon May 09 14:57:15 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F009.D Vial: 5
Acq On : 9 May 2011 12:43 pm Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM34-56D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



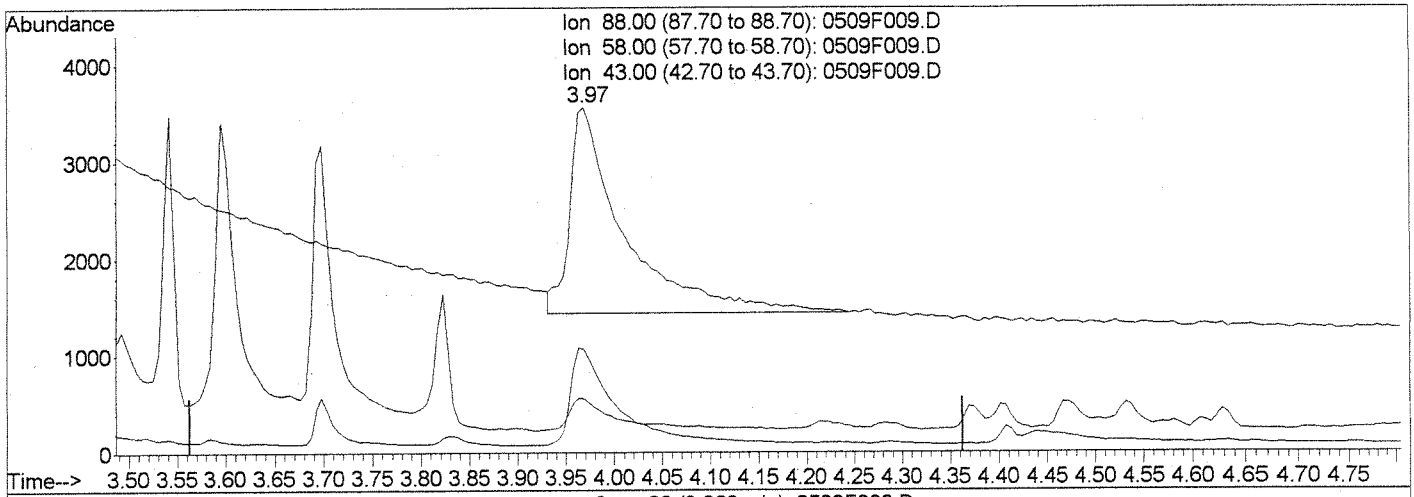
LB
5/10/11

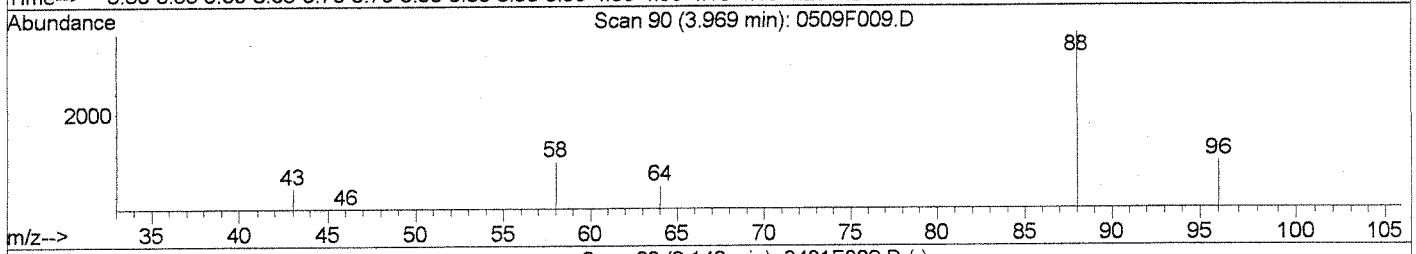
CH 05.10.11

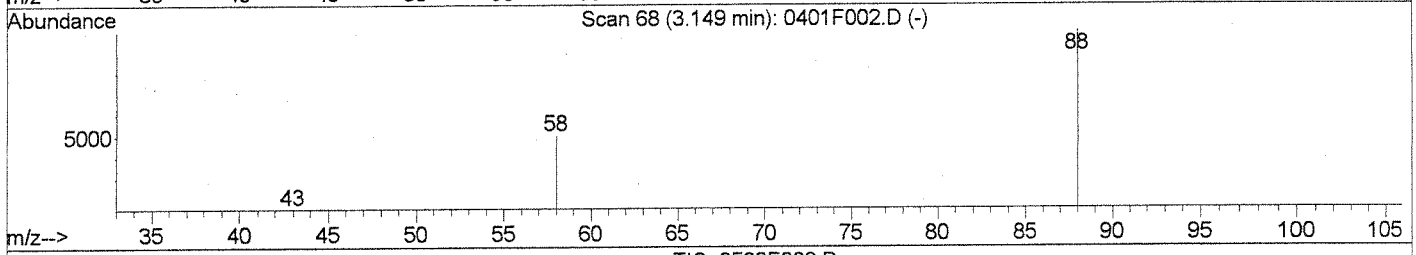
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F009.D Vial: 5
Acq On : 9 May 2011 12:43 pm Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM34-56D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F009.D

(3) 1,4-Dioxane (T)

3.97min 13.34ng/ml

response 8447

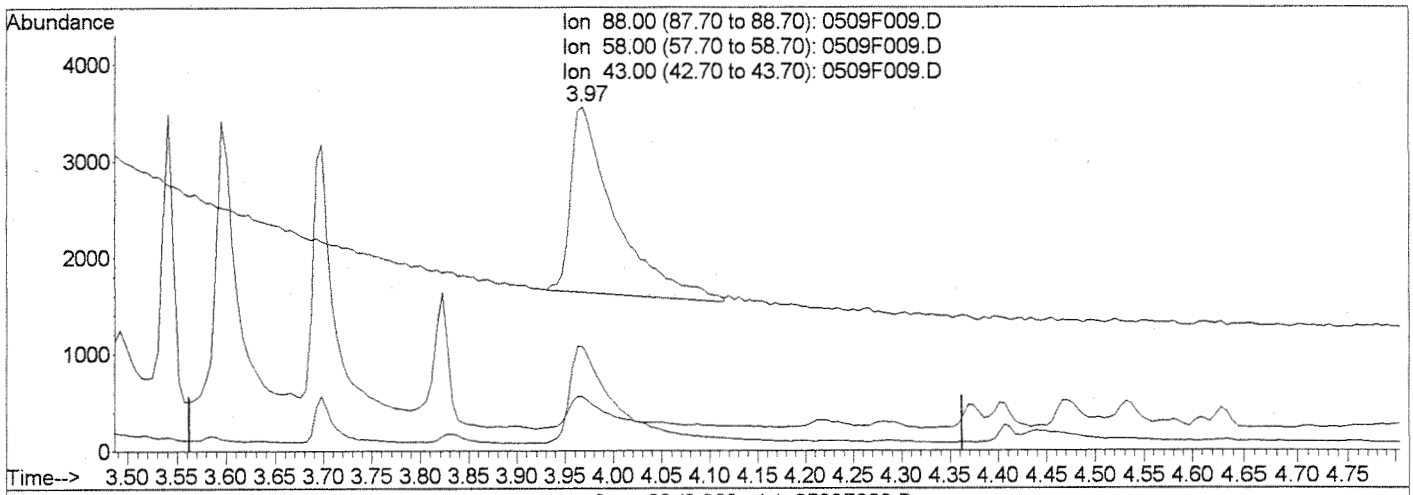
Ion	Exp%	Act%
88.00	100	100
58.00	44.20	46.26
43.00	15.30	14.95
0.00	0.00	0.00

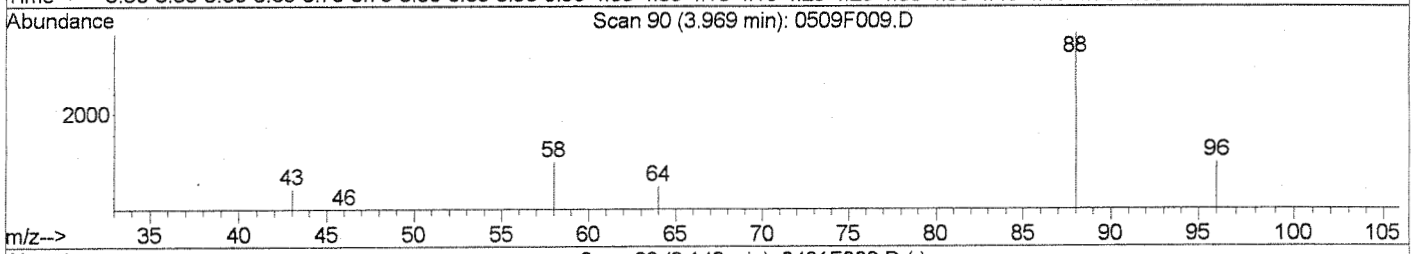
0509F009.D 050911_DX.M Mon May 09 14:22:43 2011

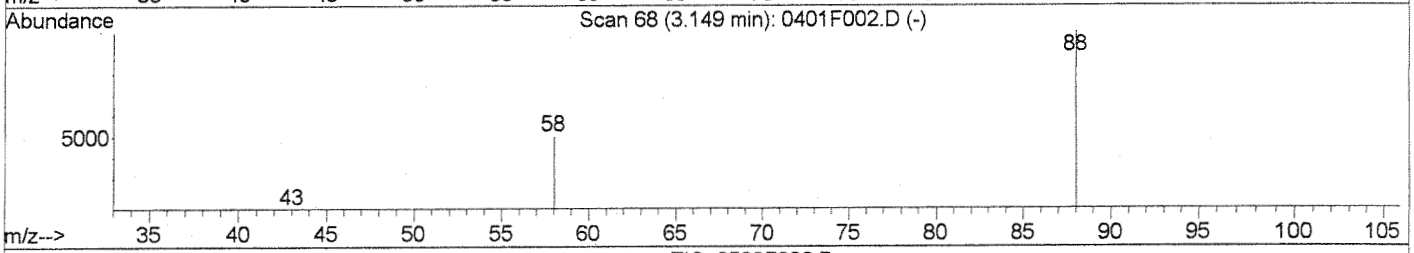
Quantitation Report (QedIt)

Data File : J:\MS26\DATA\050911\0509F009.D Vial: 5
Acq On : 9 May 2011 12:43 pm Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM34-56D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:22 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F009.D

(3) 1,4-Dioxane (T)

3.97min 9.64ng/ml m

response 6107

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	29.95
43.00	15.30	15.62
0.00	0.00	0.00

01
LB 5/10/11

CH 05·10·11

0509F009.D 050911_DX.M Mon May 09 14:22:52 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F010.D Vial: 6
Acq On : 9 May 2011 1:02 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM34-56E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	84266	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.94	96	13588	21.69	ng/ml	0.00
Spiked Amount 50.000			Recovery = 43.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.96	88	13117m	20.40	ng/ml	

LB
5/10/11

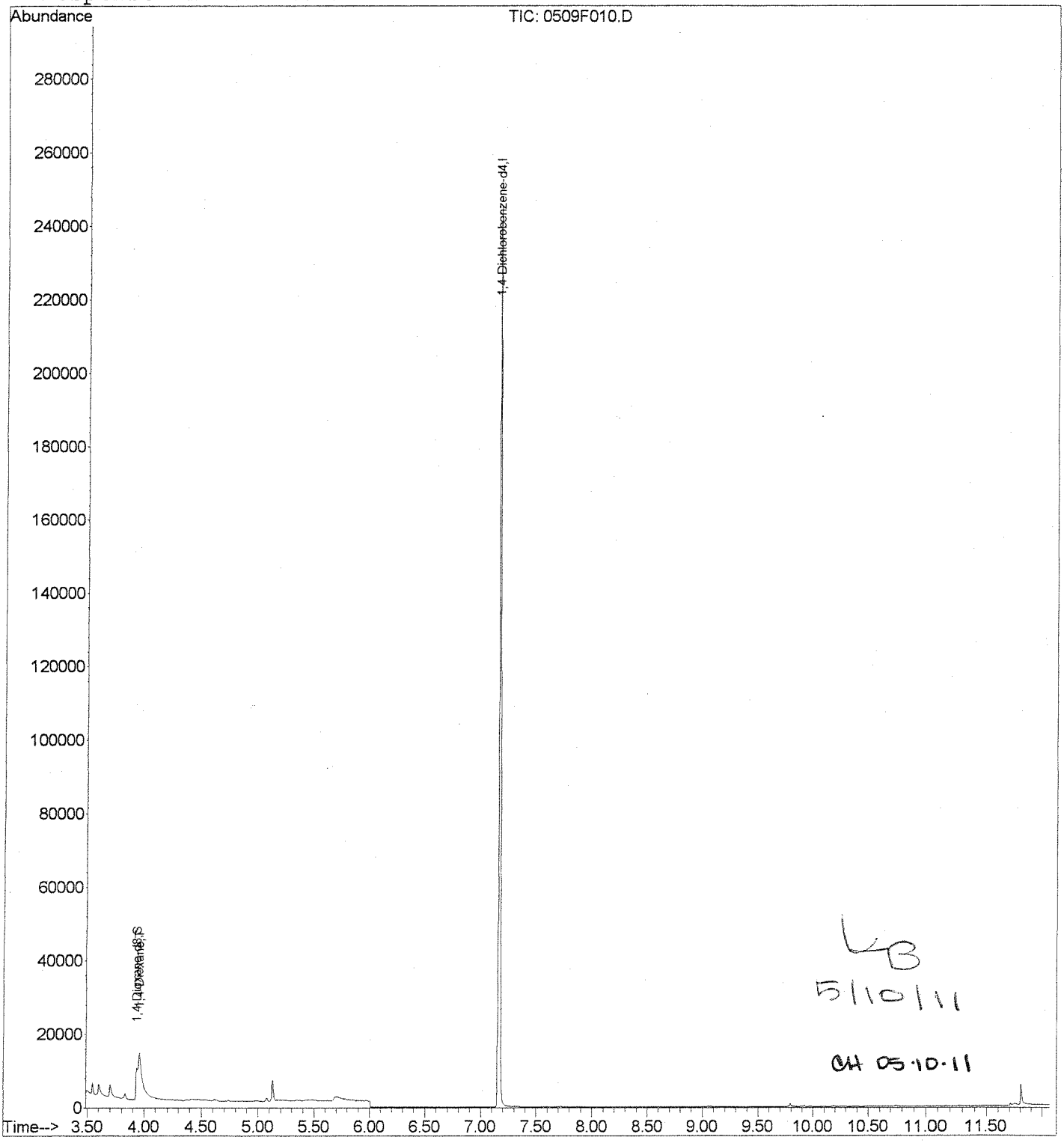
CH 05·10·11

(#) = qualifier out of range (m) = manual integration
0509F010.D 050911_DX.M Mon May 09 14:57:15 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F010.D Vial: 6
Acq On : 9 May 2011 1:02 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM34-56E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:23 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



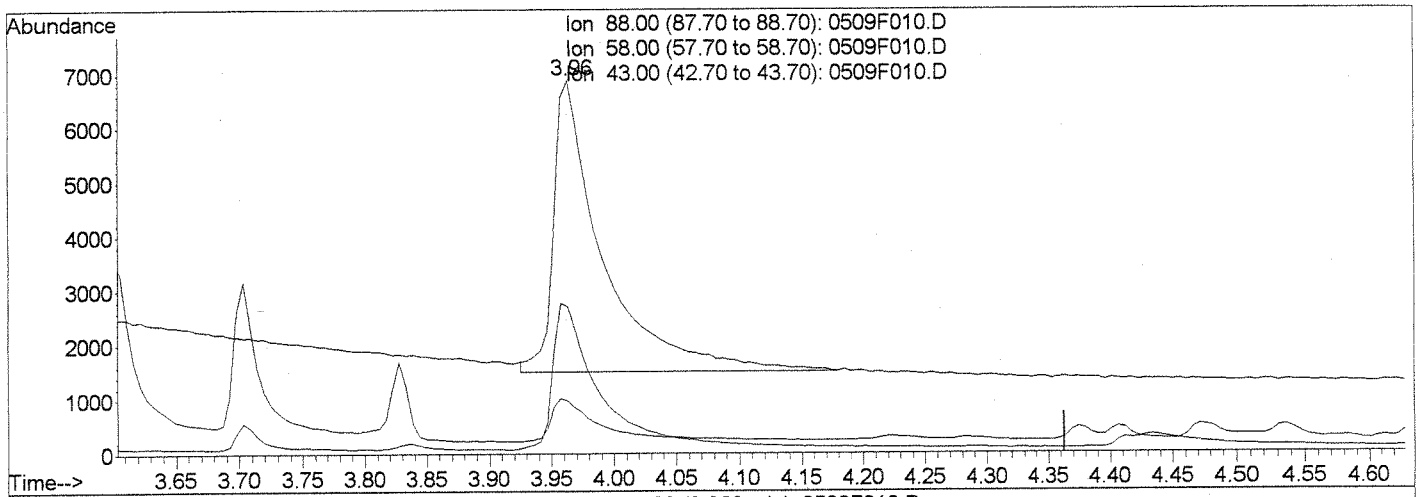
LB
5/10/11

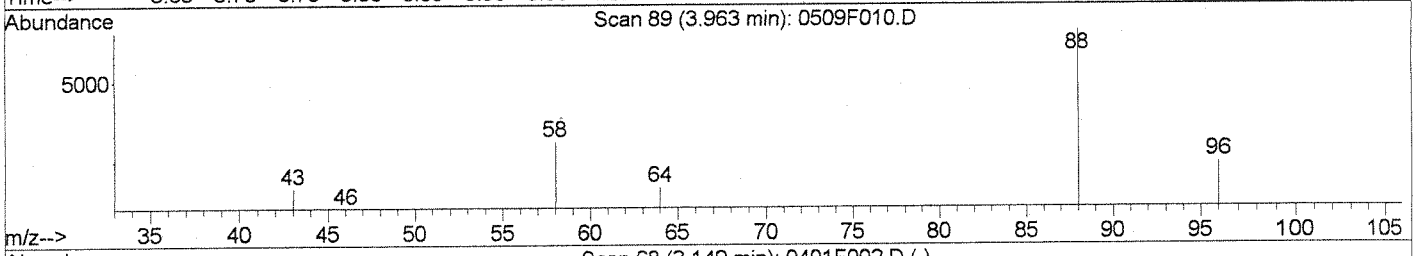
CH 05.10.11

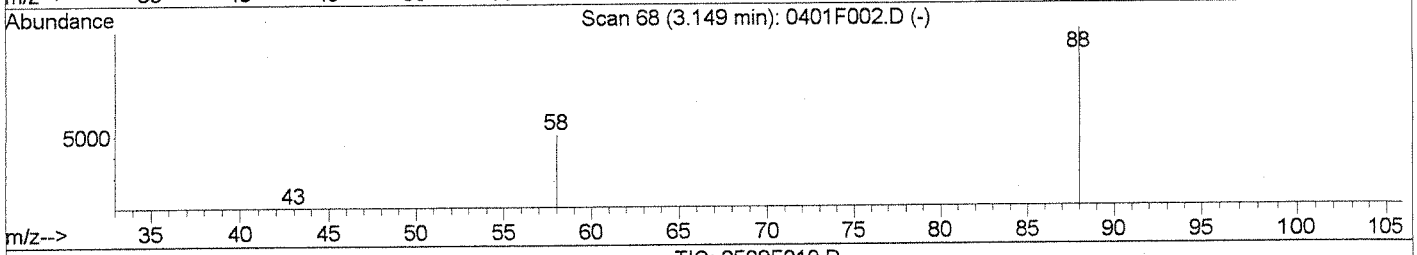
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F010.D Vial: 6
Acq On : 9 May 2011 1:02 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM34-56E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F010.D

(3) 1,4-Dioxane (T)

3.96min 22.91ng/ml

response 14729

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	48.60
43.00	15.30	13.88
0.00	0.00	0.00

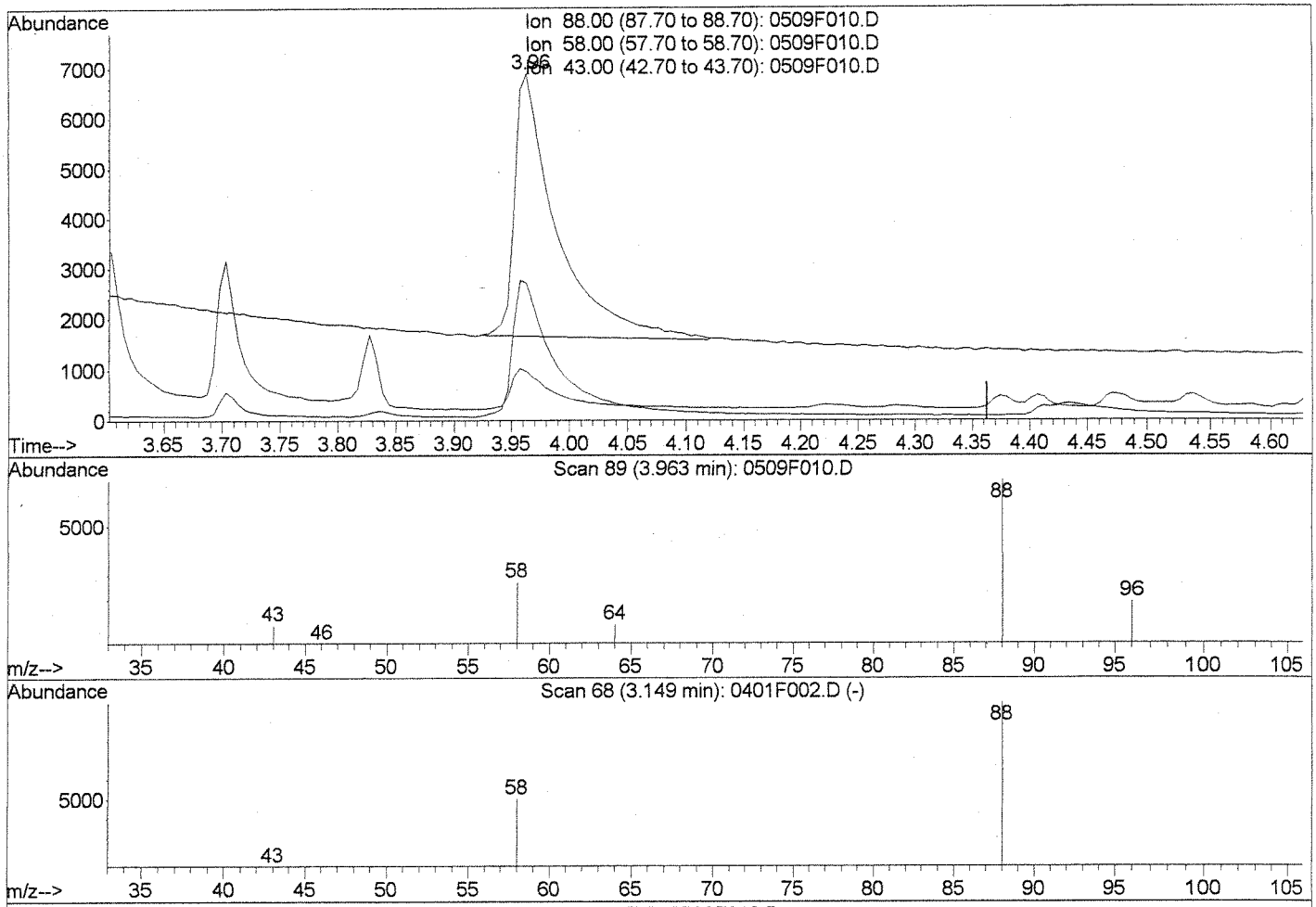
0509F010.D 050911_DX.M Mon May 09 14:23:01 2011

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F010.D
Acq On : 9 May 2011 1:02 pm
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM34-56E
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 14:23 2011

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration



TIC: 0509F010.D

(3) 1,4-Dioxane (T)

3.96min 20.40ng/ml m

response 13117

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	39.32
43.00	15.30	14.10
0.00	0.00	0.00

01
LB 5/10/11
CH 05.10.11

0509F010.D 050911_DX.M Mon May 09 14:23:07 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F011.D Vial: 7
Acq On : 9 May 2011 1:22 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM34-56F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:30 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	82310	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.90	96	33167	54.21	ng/ml	-0.04
Spiked Amount 50.000			Recovery =	108.42%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.93	88	35042	55.80	ng/ml	93

LB
5/10/11

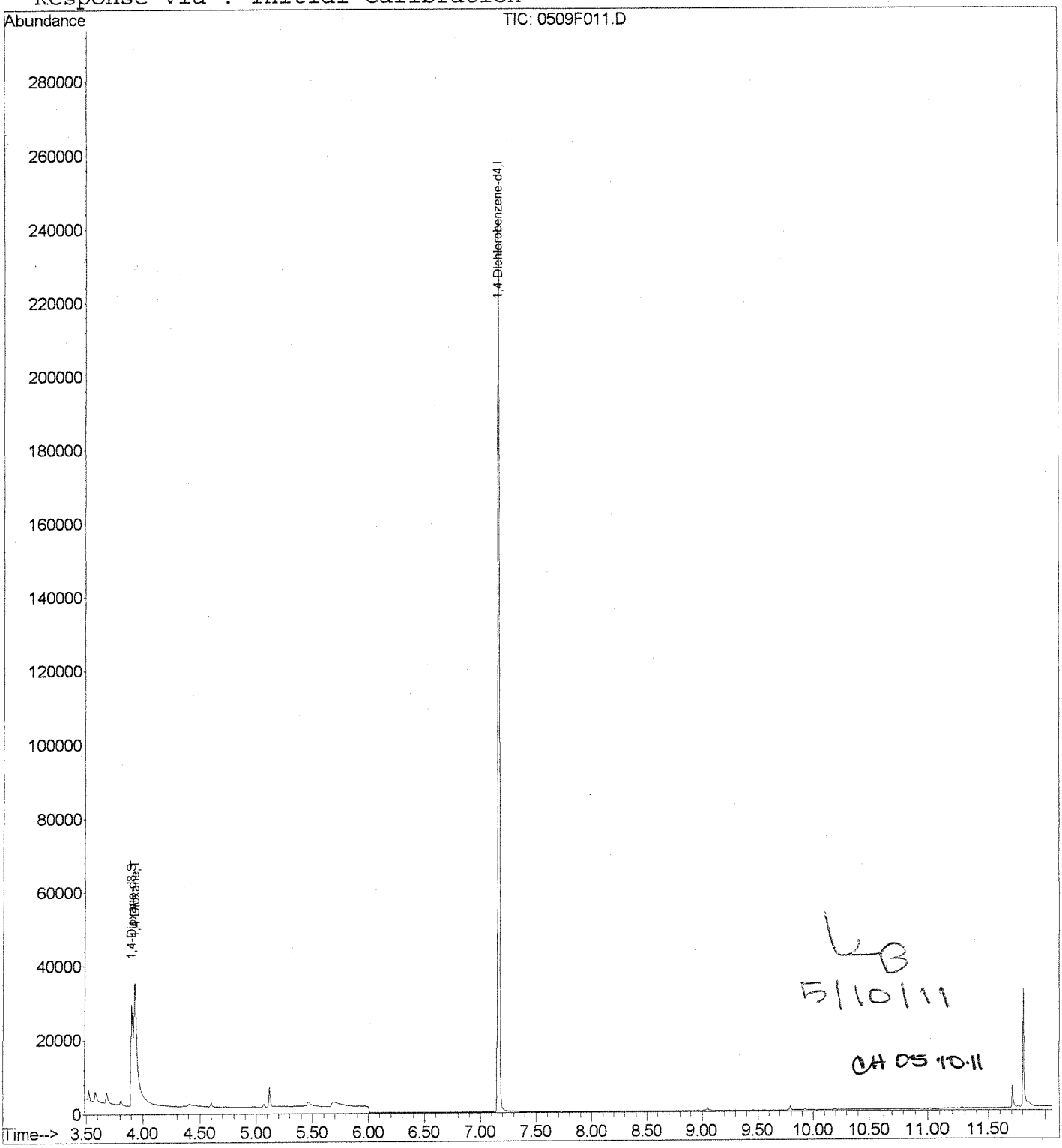
CH 05.10.11

(#) = qualifier out of range (m) = manual integration
0509F011.D 050911_DX.M Mon May 09 14:57:16 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F011.D Vial: 7
Acq On : 9 May 2011 1:22 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM34-56F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



5/10/11

0509F011.D 050911_DX.M Mon May 09 14:57:16 2011 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F012.D Vial: 8
Acq On : 9 May 2011 1:42 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM34-56G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:31 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	83941	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.90	96	70005	112.19	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 224.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.94	88	72508m	113.21	ng/ml	

LB
5/10/11

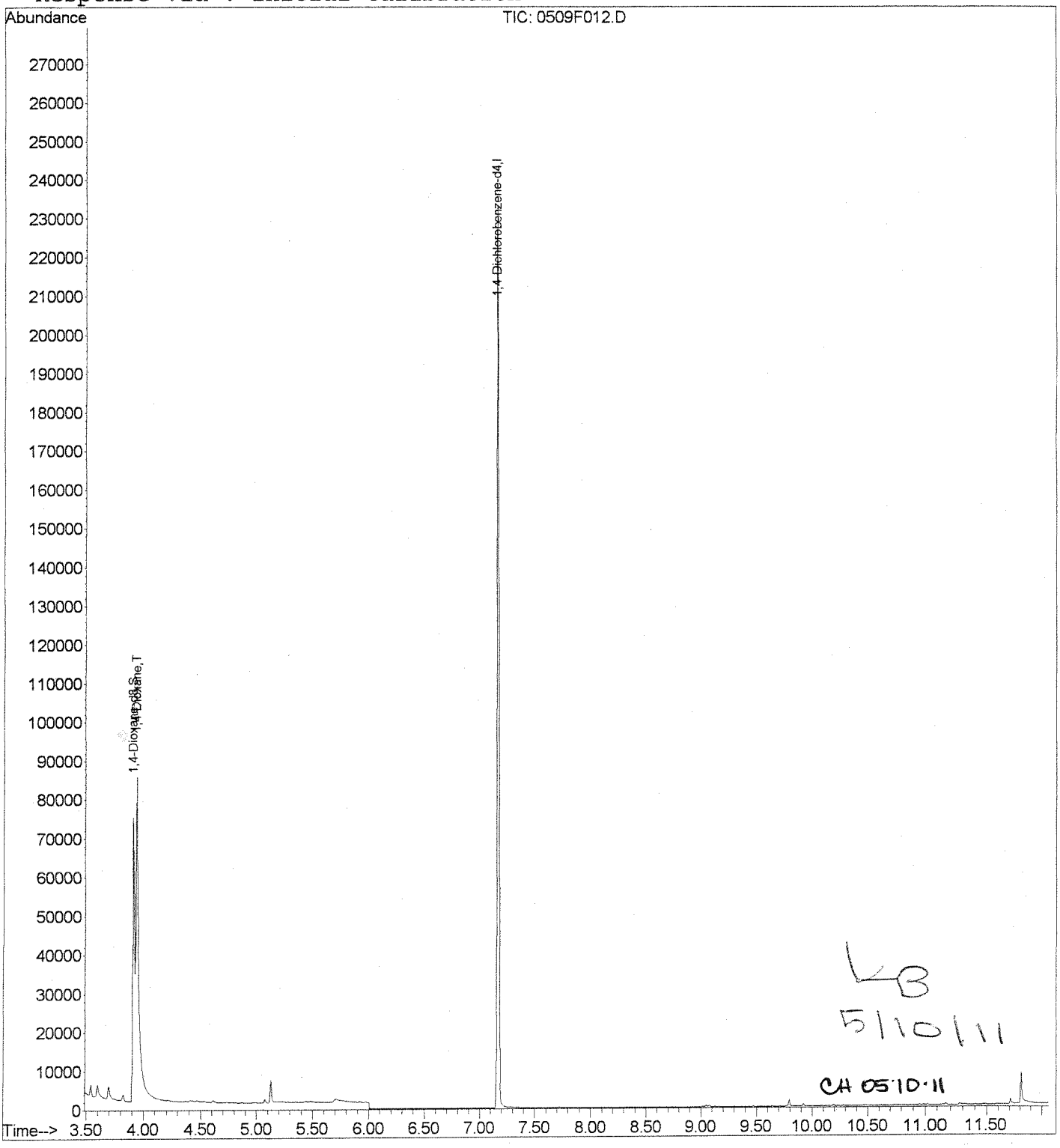
CH 05.10.11

(#) = qualifier out of range (m) = manual integration
0509F012.D 050911_DX.M Mon May 09 14:57:17 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F012.D Vial: 8
Acq On : 9 May 2011 1:42 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM34-56G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:23 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration

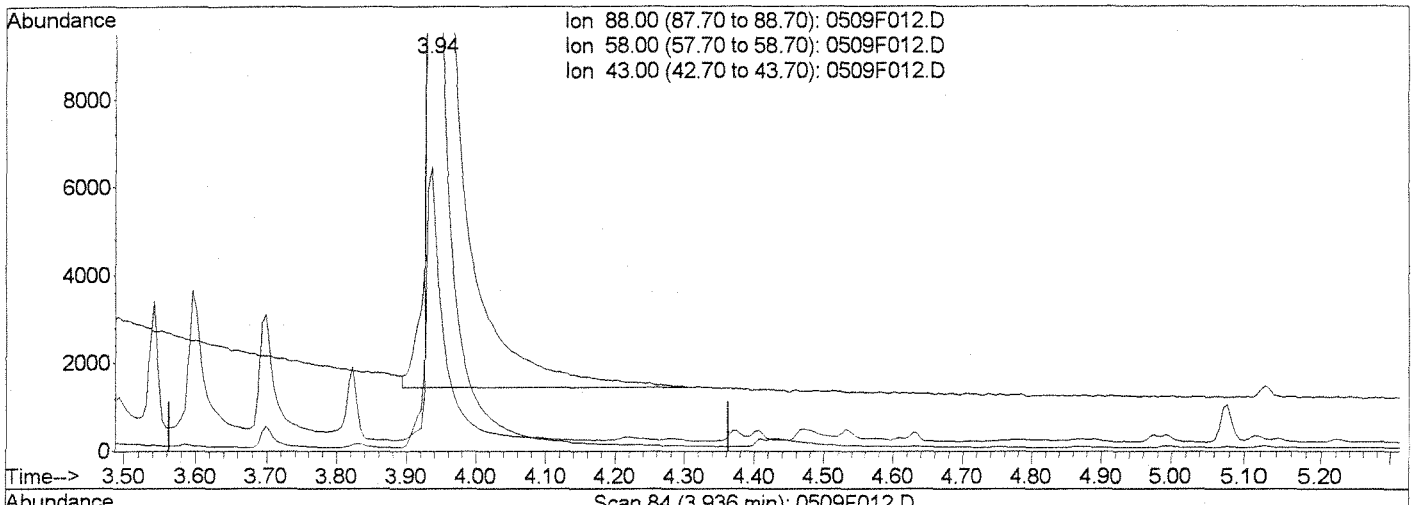


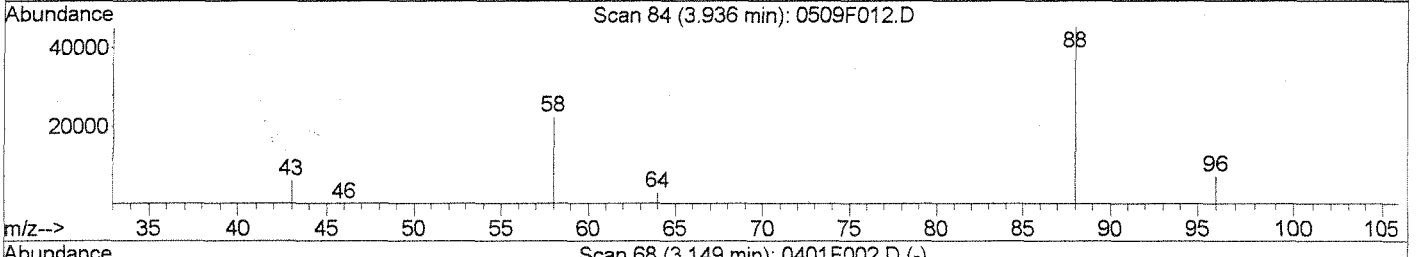
LB
5/10/11
CH 05.10.11

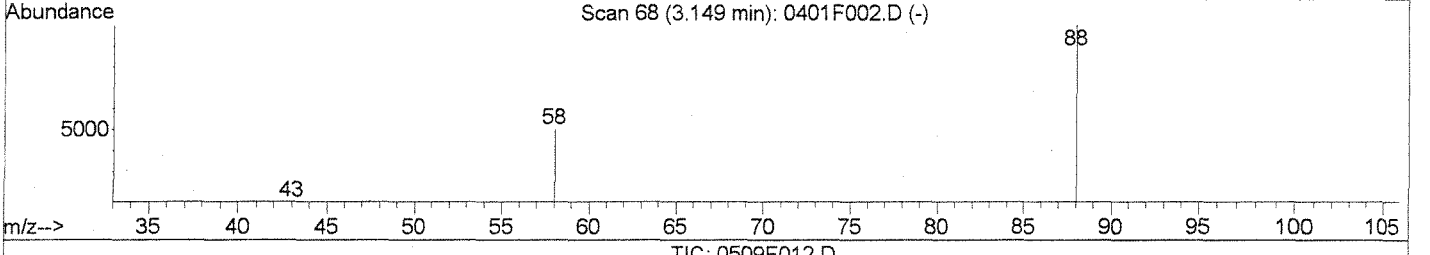
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F012.D Vial: 8
Acq On : 9 May 2011 1:42 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM34-56G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration







TIC: 0509F012.D

(3) 1,4-Dioxane (T)

3.94min 118.97ng/ml

response 76193

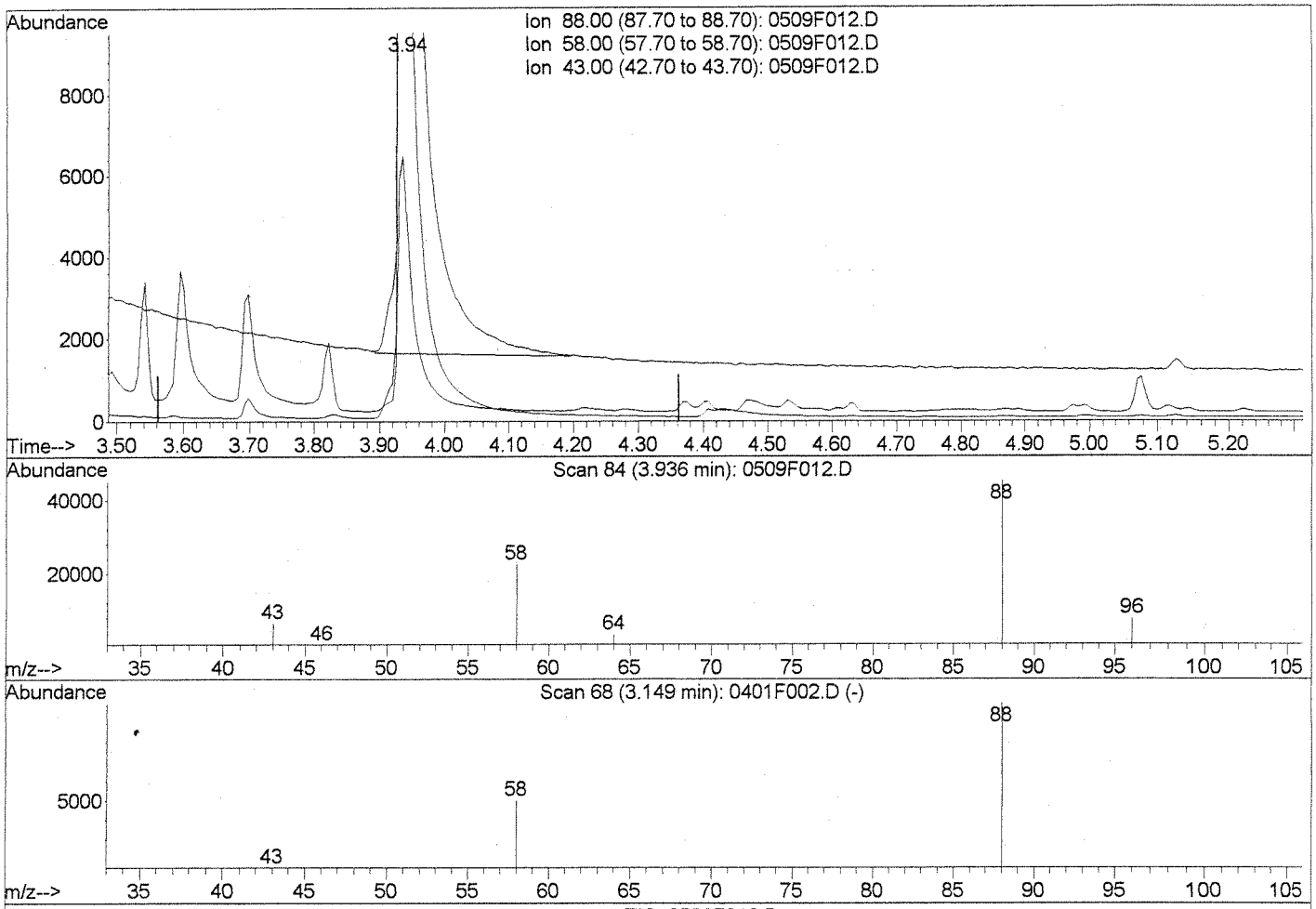
Ion	Exp%	Act%
88.00	100	100
58.00	44.20	51.28
43.00	15.30	14.29
0.00	0.00	0.00

0509F012.D 050911_DX.M Mon May 09 14:23:36 2011

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050911\0509F012.D Vial: 8
Acq On : 9 May 2011 1:42 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM34-56G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:23 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Multiple Level Calibration



TIC: 0509F012.D

(3) 1,4-Dioxane (T)

3.94min 113.21ng/ml m

response 72508

Ion	Exp%	Act%
88.00	100	100
58.00	44.20	49.81
43.00	15.30	14.36
0.00	0.00	0.00

01

LB 5/10/11

CH 05·10·11

0509F012.D 050911_DX.M Mon May 09 14:23:41 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F013.D Vial: 9
Acq On : 9 May 2011 2:02 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM34-56H Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:21:31 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:21:18 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	84919	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.90	96	142313	225.45	ng/ml	-0.04
Spiked Amount 50.000			Recovery =	450.90%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.93	88	152893	235.98	ng/ml	89

LB
5/10/11

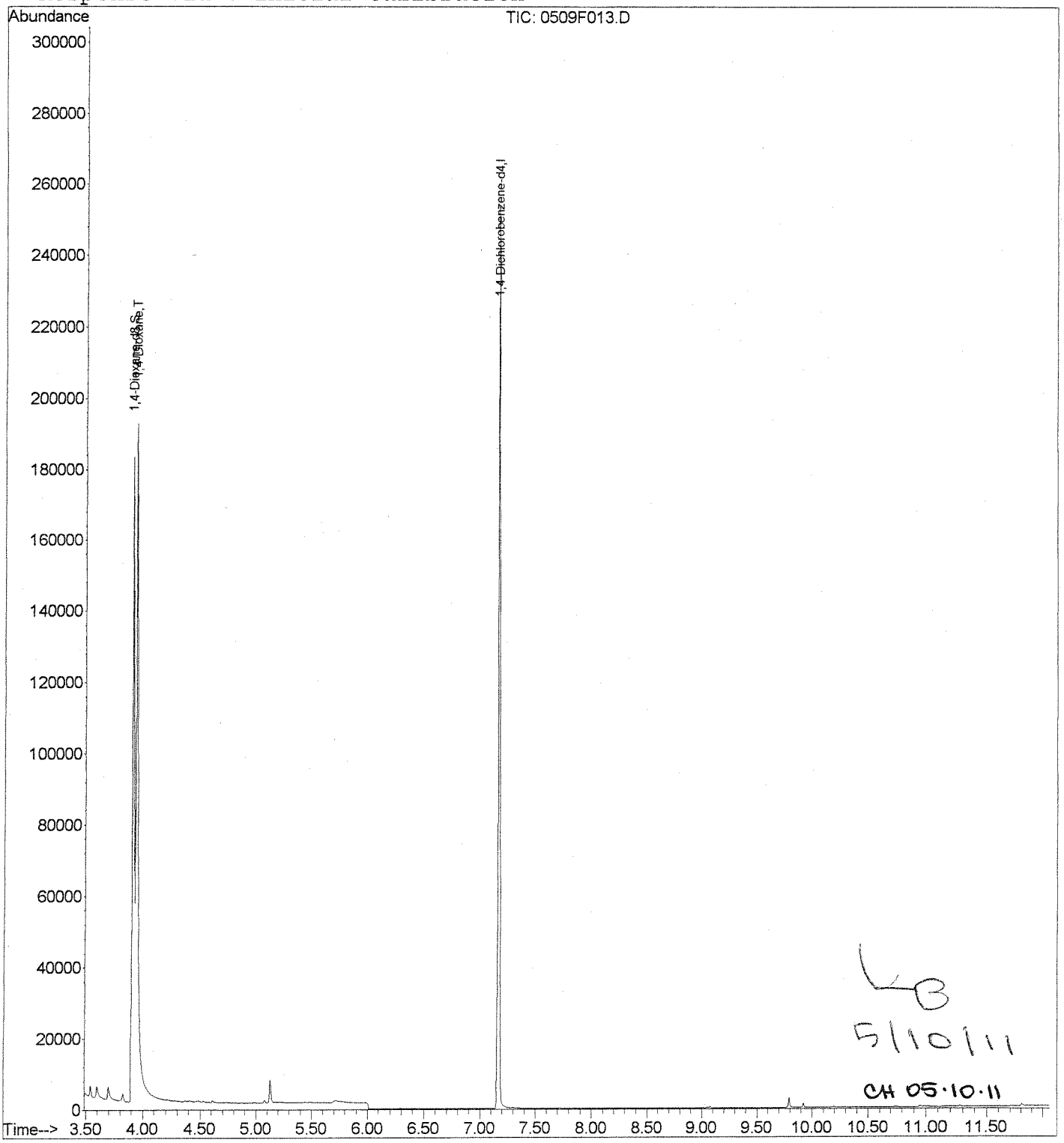
CH 05·10·11

(#) = qualifier out of range (m) = manual integration
0509F013.D 050911_DX.M Mon May 09 14:57:17 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F013.D Vial: 9
Acq On : 9 May 2011 2:02 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM34-56H Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 14:21 2011 Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



5/10/11

CH 05·10·11

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F014.D Vial: 10
Acq On : 9 May 2011 2:21 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM34-57L Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 14:38:54 2011 Quant Results File: 050911_DX.RES

Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.17	152	79096	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.92	96	14586	23.60	ng/ml	-0.02
Spiked Amount 50.000			Recovery = 47.20%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.94	88	14084	22.41	ng/ml	86

LB
5/10/11

CH 05.10.11

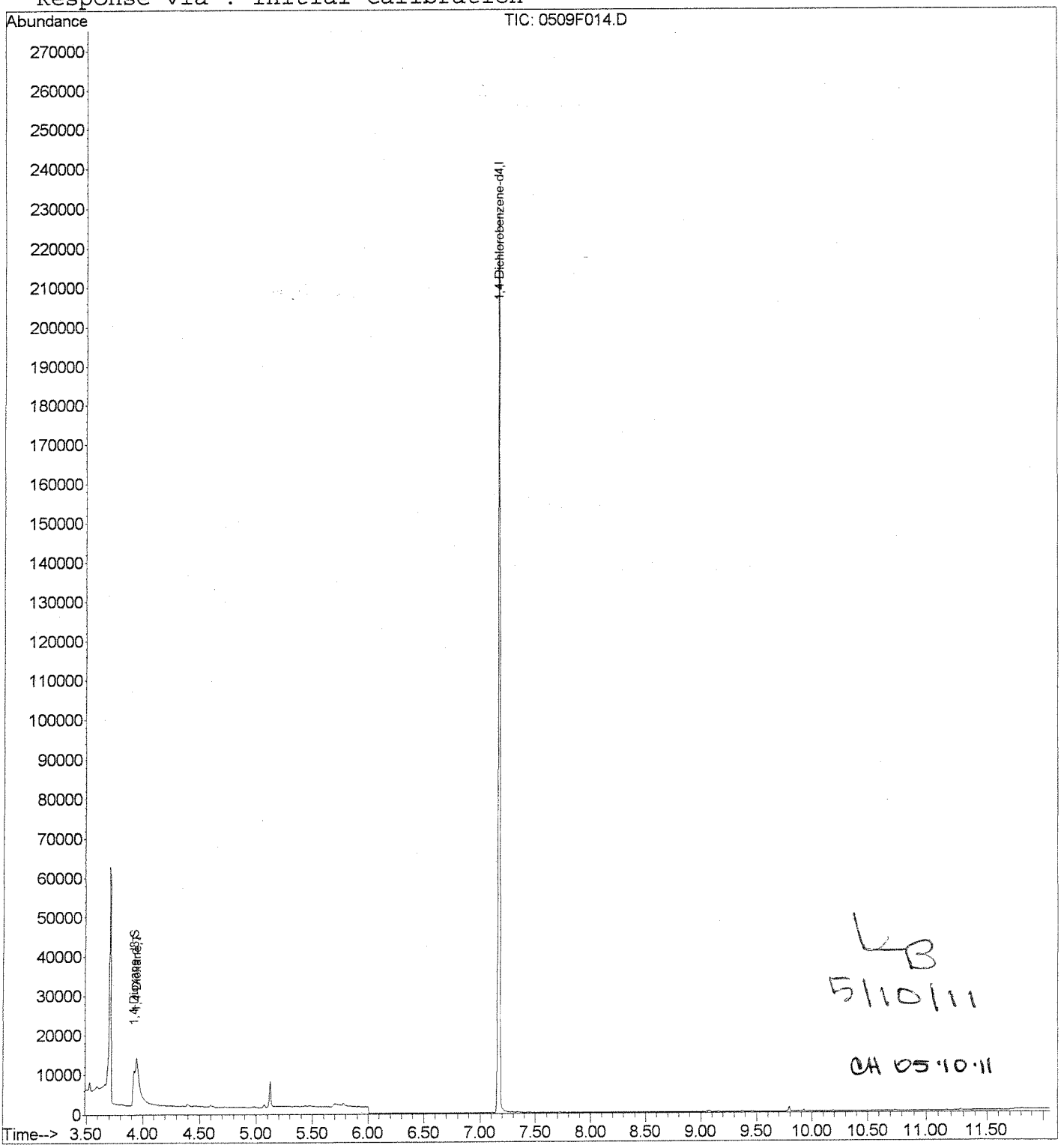
(#) = qualifier out of range (m) = manual integration
0509F014.D 050911_DX.M Mon May 09 14:57:18 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050911\0509F014.D
Acq On : 9 May 2011 2:21 pm
Sample : 20ng/mL ICV 1,4-Dioxane | SVM34-57L
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 14:38 2011

Vial: 10
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 050911_DX.RE

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration



LB
5/10/11

CH 05.10.11

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle
Project: JPL GW Mon 2Q11/G486090

Service Request: P1101793
Date Analyzed: 05/17/2011

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C SIM

Calibration Date: 05/09/2011
Calibration ID: CAL10487
Analysis Lot: KWG1104446
Units: ng/ml

File ID: J:\MS26\DATA\051711\0517F010.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.01	0.397	0.418	5	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	19	0.01	0.391	0.373	-5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS26\DATA\051711\0517F010.D
Lab ID: KWG1104446-2
RunType: CCV
Matrix: WATER

Date Acquired: 05/17/2011 14:22
Date Quantitated: 05/18/2011 10:58
Batch ID: KWG1104446
Analysis Method: 8270C SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: LQ 5/18/11

Secondary Review: CH 05·18·11

Quantitation Report

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270C SIM 14_DI	**Collect Date:**		**Receive Date:**	05/18/2011

Analysis Lot:	KWG1104446	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270C SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\050911_DX.M	**Calibration ID:**	CAL10487
Title:			
Tune Ref:	J:\MS26\DATA\051711\0517F009.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Data File:	J:\MS26\DATA\051711\0517F010.D			**Instrument:**	MS26
Acqu Date:	05/17/2011 14:22	**Quant Date:**	05/18/2011 10:58	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1104446-2			**Soln Conc. Units:**	ng/ml

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	7.18	0.01?	152	47308	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.99			96	7051**m**	19.07		42-112	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	4.02			88	7910**m**	21.04			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\051711\0517F010.D Vial: 3
Acq On : 17 May 2011 2:22 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58:35 2011 Quant Results File: 050911_DX.RES

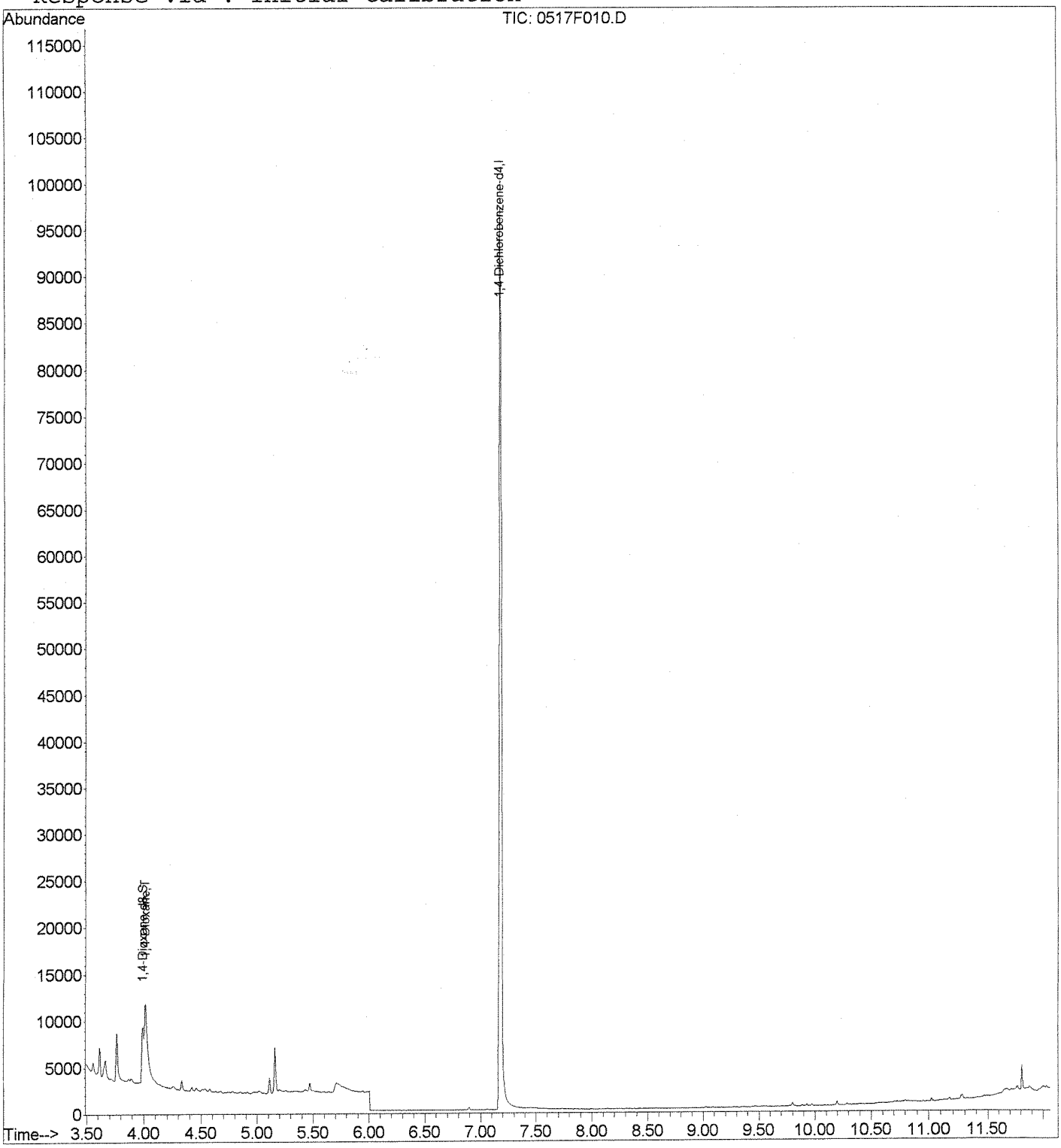
Quant Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	7.18	152	47308	50.00	ng/ml	0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.99	96	7051m	19.07	ng/ml	0.06
Spiked Amount 50.000			Recovery =	38.14%		
Target Compounds						Qvalue
3) 1,4-Dioxane	4.02	88	7910m	21.04	ng/ml	

(#) = qualifier out of range (m) = manual integration
0517F010.D 050911_DX.M Wed May 18 10:59:15 2011 Page 1

Data File : J:\MS26\DATA\051711\0517F010.D Vial: 3
Acq On : 17 May 2011 2:22 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58 2011 Quant Results File: 050911_DX.RE

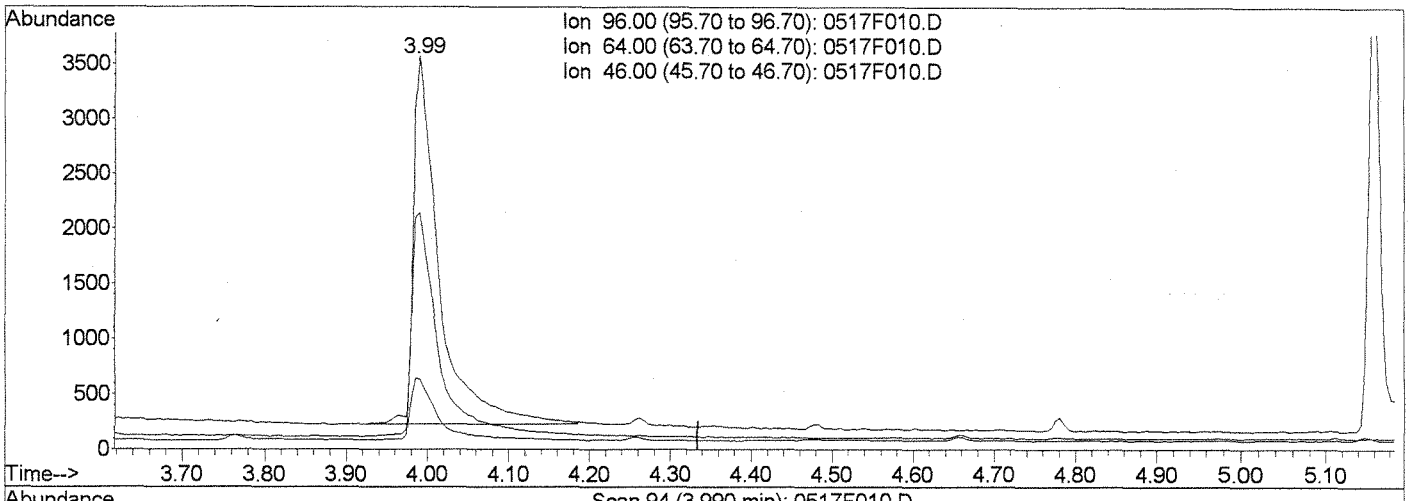
Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Initial Calibration

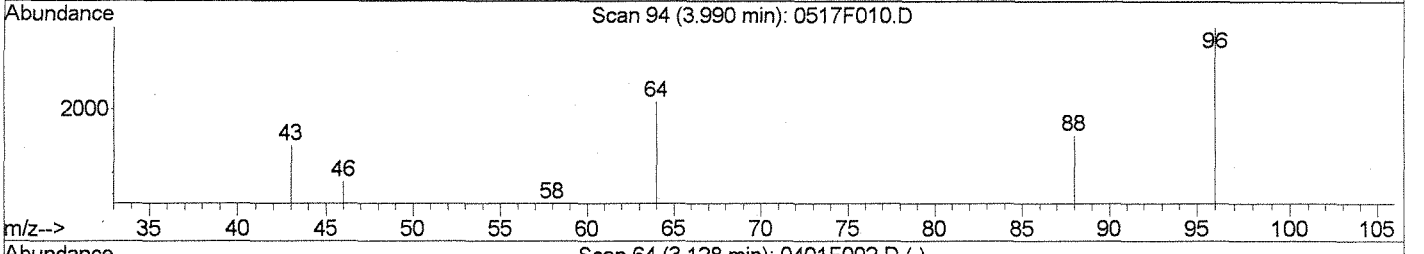


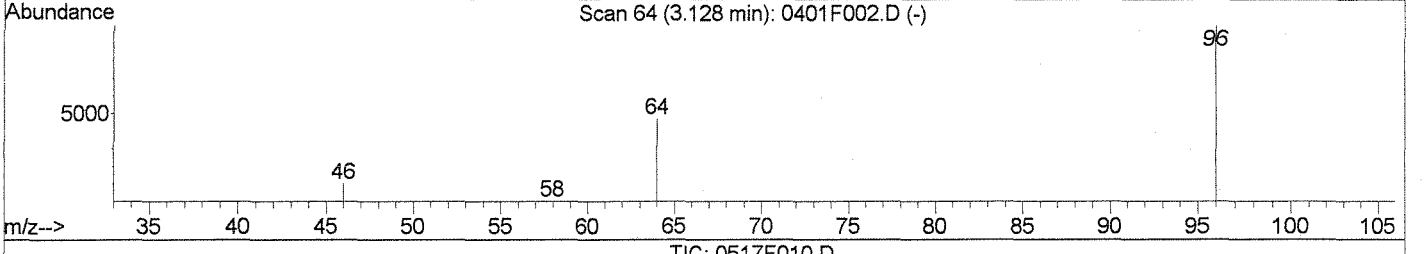
Data File : J:\MS26\DATA\051711\0517F010.D
Acq On : 17 May 2011 2:22 pm
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58 2011

Vial: 3
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Multiple Level Calibration







TIC: 0517F010.D

(2) 1,4-Dioxane-d8 (S)

3.99min 19.94ng/ml

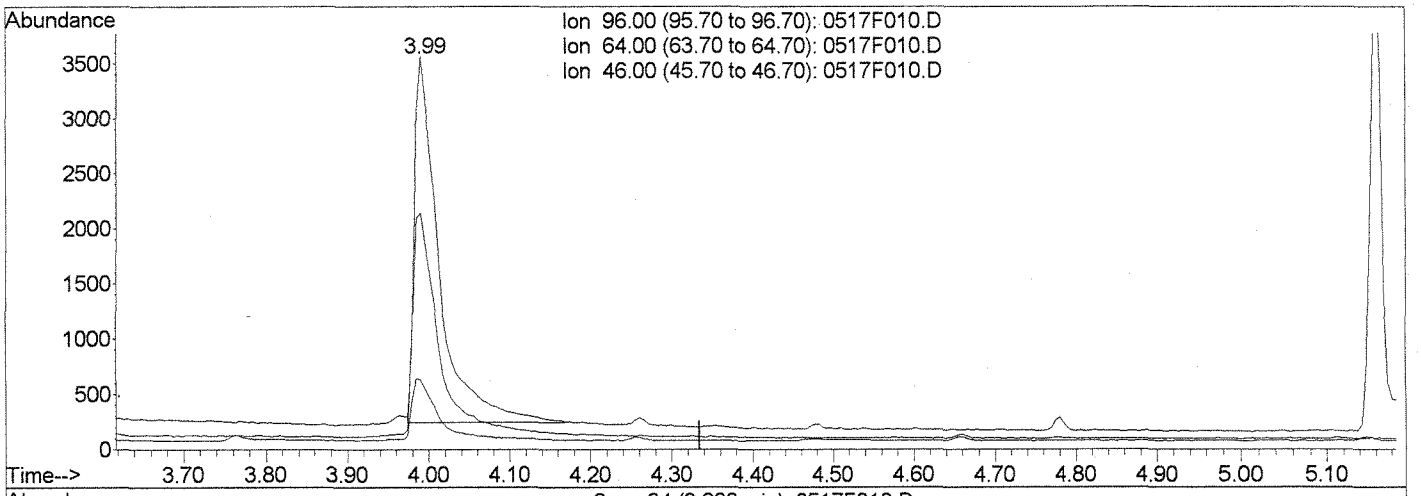
response 7372

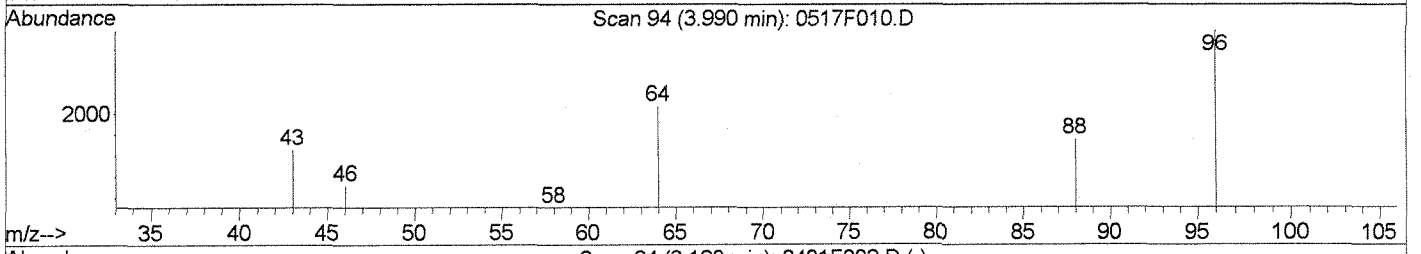
Ion	Exp%	Act%
96.00	100	100
64.00	52.90	60.56
46.00	10.90	16.39
0.00	0.00	0.00

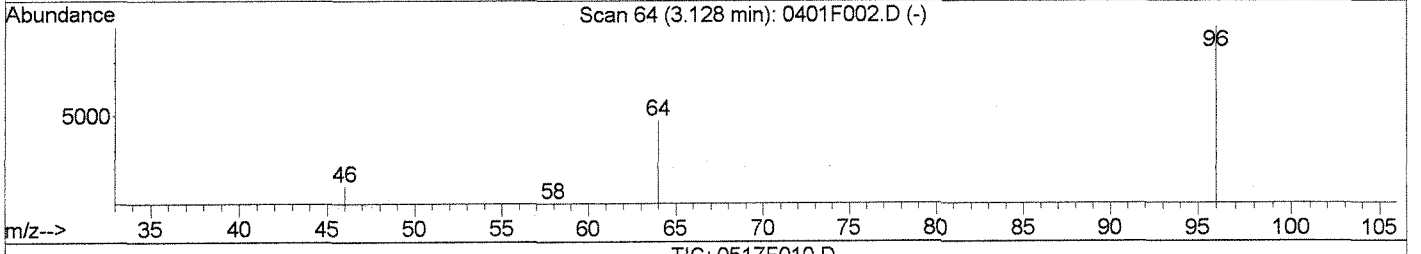
0517F010.D 050911_DX.M Wed May 18 10:58:47 2011

Data File : J:\MS26\DATA\051711\0517F010.D Vial: 3
Acq On : 17 May 2011 2:22 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Multiple Level Calibration







TIC: 0517F010.D

(2) 1,4-Dioxane-d8 (S)

3.99min 19.07ng/ml m

response 7051

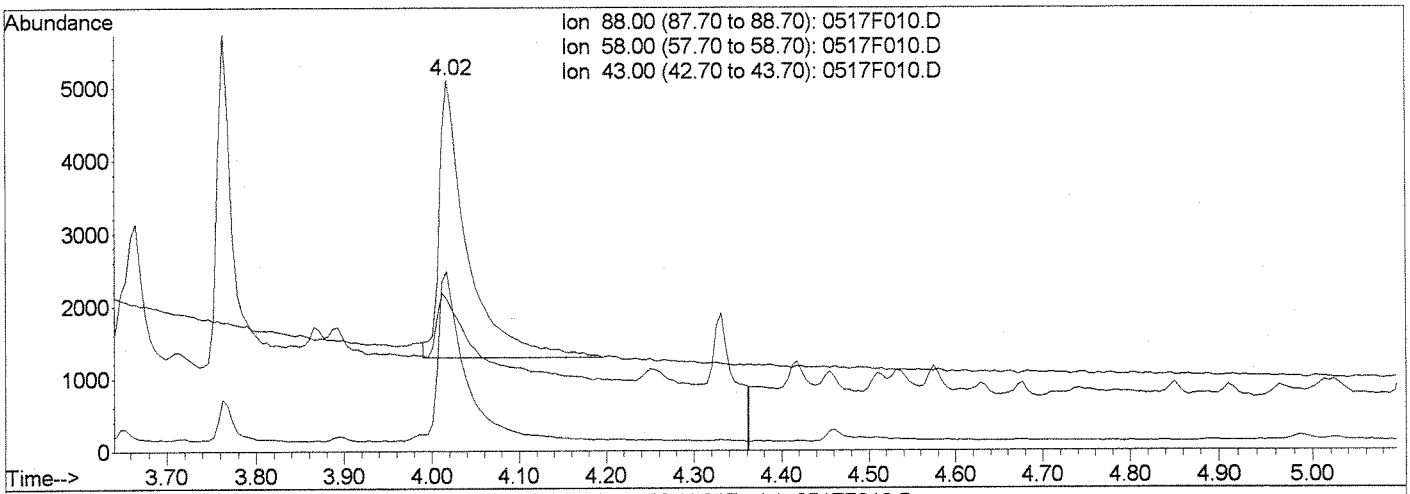
Ion	Exp%	Act%
96.00	100	100
64.00	52.90	59.97
46.00	10.90	17.73
0.00	0.00	0.00

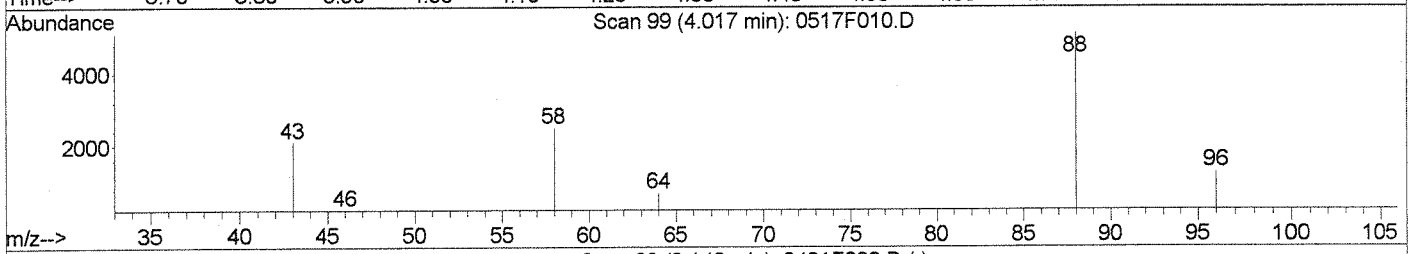
01
LB 5/18/11
CH 05.18.11

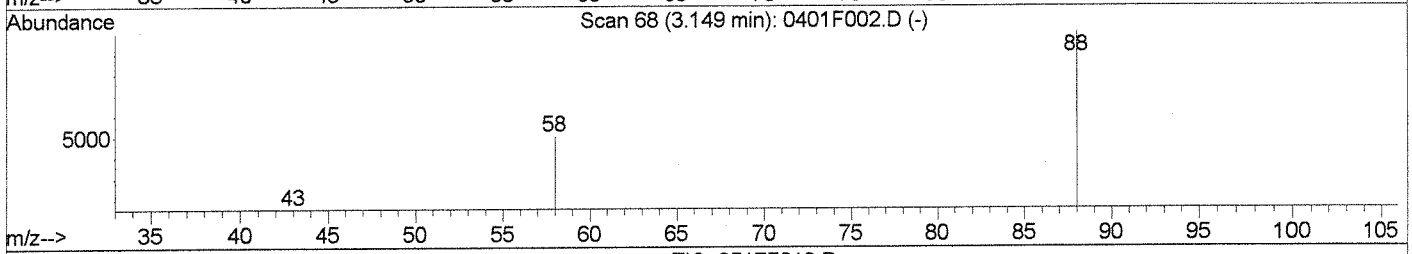
0517F010.D 050911_DX.M Wed May 18 10:58:53 2011

Data File : J:\MS26\DATA\051711\0517F010.D Vial: 3
Acq On : 17 May 2011 2:22 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Multiple Level Calibration







TIC: 0517F010.D

(3) 1,4-Dioxane (T)

4.02min 22.56ng/ml

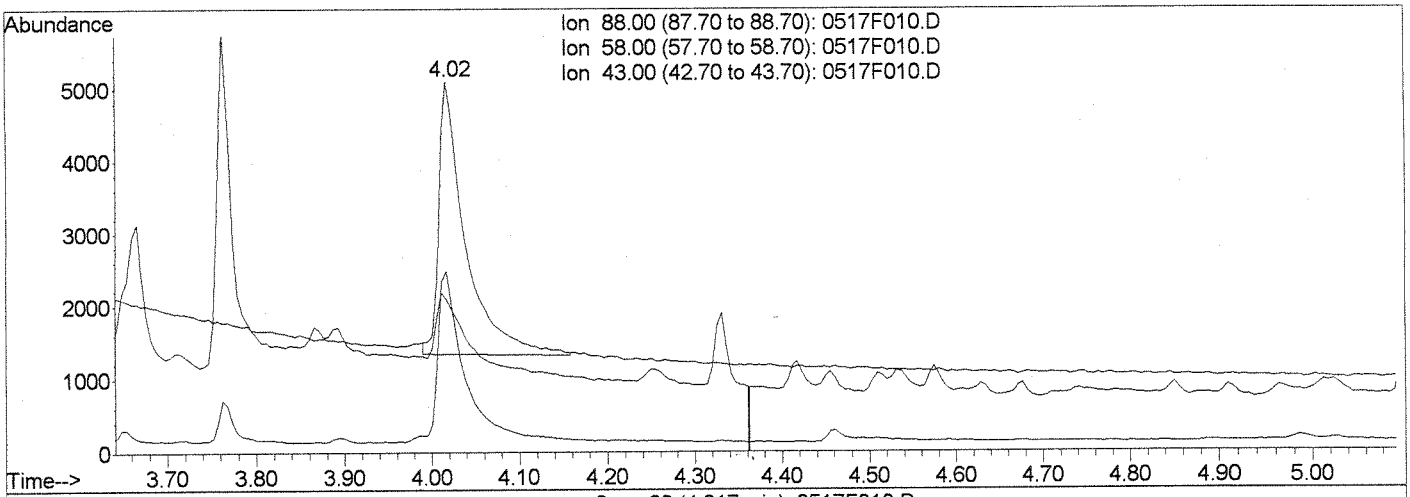
response 8482

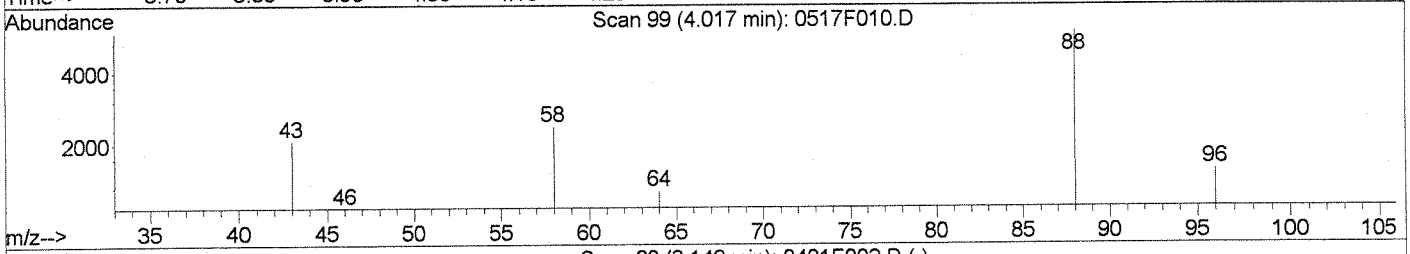
Ion	Exp%	Act%
88.00	100	100
58.00	39.30	60.81#
43.00	14.10	29.12
0.00	0.00	0.00

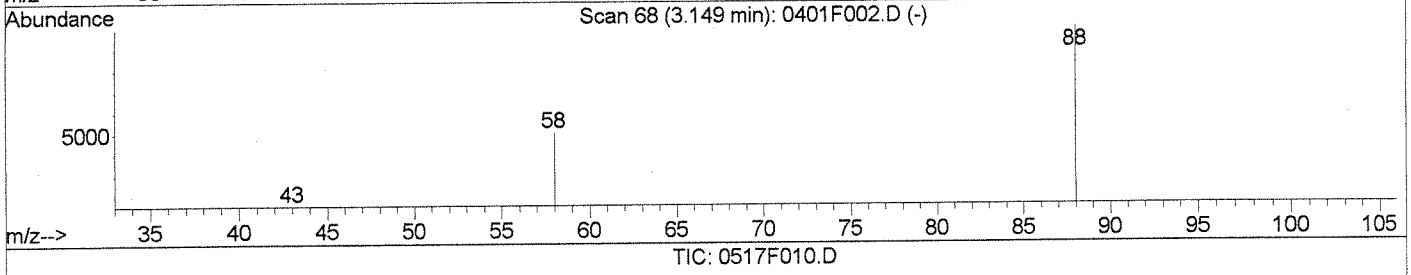
0517F010.D 050911_DX.M Wed May 18 10:58:58 2011

Data File : J:\MS26\DATA\051711\0517F010.D Vial: 3
Acq On : 17 May 2011 2:22 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM34-96F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 18 10:58 2011 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\050911_DX.M (RTE Integrator)
Title : 8270LL Calibration
Last Update : Mon May 09 14:26:14 2011
Response via : Multiple Level Calibration







TIC: 0517F010.D

(3) 1,4-Dioxane (T)

4.02min 21.04ng/ml m

response 7910

Ion	Exp%	Act%
88.00	100	100
58.00	39.30	48.50
43.00	14.10	40.96#
0.00	0.00	0.00

01
LB 5/18/11
CH 05.18.11

0517F010.D 050911_DX.M Wed May 18 10:59:06 2011

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	kwg1104333	**Prep Method:**	EPA 3510C	**Prep Date:**	05/16/11 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1104106-004	CG-157-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-005	CG-156-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-006	CG-9-156-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-008	CG-155-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-009	CG-158-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-010	CG-154-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-011	CG-147-WT-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-013	CG-147-57-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-014	CG-5-S1-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-015	CG-5-I-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
K1104106-023	CG-122-60-0511	8270C SIM 14_DIOXANE	WATER	100ml	50ml
KWG1104333-1	Matrix Spike	8270C SIM 14_DIOXANE	WATER	100ml	50ml
KWG1104333-2	Duplicate Matrix Spike	8270C SIM 14_DIOXANE	WATER	100ml	50ml
KWG1104333-3	Lab Control Sample	8270C SIM 14_DIOXANE	WATER	100ml	50ml
KWG1104333-4	Method Blank	8270C SIM 14_DIOXANE	WATER	100ml	50ml
P1101793-002	MW-17-4	8270C SIM 14_DIOXANE	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1104333-1	K1104106-005	
KWG1104333-2	K1104106-005	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1104106-004	1018593	SVM34-59G	50uL			LBerg
K1104106-005	1018594	SVM34-59G	50uL			LBerg
K1104106-006	1018595	SVM34-59G	50uL			LBerg
K1104106-008	1018596	SVM34-59G	50uL			LBerg
K1104106-009	1018597	SVM34-59G	50uL			LBerg

Comments:

IS: SVM34-5LA

Started By: RHolden Assisted By: ~~—~~ Training

Completed By: KKerriga Assisted By: ~~—~~ Yes / No

Reviewed By: [signature] Date: 5/17/11 Storage: SVM LAB / HS2L Yes / No

Chain of Custody

Relinquished By: [signature] Date: 5/16/11

Received By: [signature] Date: 5/17/11 Extracts Examined: Yes / No

Group ID:	kwg1104333	**Prep Method:**	EPA 3510C	**Prep Date:**	05/16/11 00:00
Department:	Semivoa GCMS				

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1104106-010	1018598	SVM34-59G	50uL			LBerg
K1104106-011	1018599	SVM34-59G	50uL			LBerg
K1104106-013	1018600	SVM34-59G	50uL			LBerg
K1104106-014	1018601	SVM34-59G	50uL			LBerg
K1104106-015	1018602	SVM34-59G	50uL			LBerg
K1104106-023	1018592	SVM34-59G	50uL			LBerg
KWG1104333-1	1018603	SVM34-59G	50uL	SVM33-87C	50uL	LBerg
KWG1104333-2	1018604	SVM34-59G	50uL	SVM33-87C	50uL	LBerg
KWG1104333-3	1018605	SVM34-59G	50uL	SVM33-87C	50uL	LBerg
KWG1104333-4	1018606	SVM34-59G	50uL			LBerg
P1101793-002	1018607	SVM34-59G	50uL			LBerg

Comments:

IS: SVM34-5LA

Started By: RHolden Assisted By: —

Completed By: KKerriga Assisted By: —

Training: Yes / No

Yes / No

Reviewed By: HBaily Date: 5/17/11 Storage: SVM LAB / MSOL

Chain of Custody

Relinquished By: [signature] Date: 5/16/11

Received By: LC Date: 5/17/11

Extracts Examined: Yes / No

Preparation Information

Due Date: 5-18-11

Group ID:	kwg1104333	**Prep Method:**	EPA 3510C	**Prep Date:**	05/16/11 00:00
Department:	Semivoa GCMS				

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext.	pH	Int. Vol.	Final Vol.	Surr. Added	Spike Added
1	K1104106-004	CG-157-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER	100ml	NA	N/A	50mL	50ul	NA
2	K1104106-005	CG-156-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
3	K1104106-006	CG-9-156-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
4	K1104106-008	CG-155-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
5	K1104106-009	CG-158-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
* 6	K1104106-010	CG-154-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
7	K1104106-011	CG-147-WT-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
* 8	K1104106-013	CG-147-57-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
9	K1104106-014	CG-5-S1-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
* 10	K1104106-015	CG-5-I-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
11	K1104106-023	CG-122-60-0511	.16	✓	8270C SIM 14_DIOXANE	WATER						
12	KWG1104333-1	Matrix Spike K4106-5MS	.60	✓	8270C SIM 14_DIOXANE	WATER						50ul
13	KWG1104333-2	Duplicate Matrix Spike K4106-5DMS	.61	✓	8270C SIM 14_DIOXANE	WATER						
14	KWG1104333-3	Lab Control Sample			8270C SIM 14_DIOXANE	WATER						
15	KWG1104333-4	Method Blank			8270C SIM 14_DIOXANE	WATER						✓

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext.	pH	Int. Vol.	Final Vol.	Surr. Added	Spike Added
16	P1101793-002	MW-17-4	.04	✓	8270C SIM 14_DIOXANE	WATER	100ml	NA	N/A	50mL	50ul	✓

Comments: * 4106-10, 4106-13 & 4106-15 contained a very large amount of emulsions. 10 and 15 were particularly bad. #133900

Surrogate ID: SVM31-59-C, 50 ul, 50 ug/ml, XP: 10-1-11

Spike ID: SVM33-87-C, 50 ul, 50 ug/ml XP: 6-21-11

Witness: Lindsay Berry 5/16/11

Started By: RHolden Assisted By:

Completed By: Assisted By:

Additional Prep Information For 1.4 Dioxane by EPA 3510

Service Request K4106, P1793 **Workgroup** KWG1104333

Pre-Prep Information:

DCM Lot DD483

Batch Start (Time/Date/Initial): 09:20 / 5-16-11 / RRH

Batch Stop (Time/Date/Initial): 12:10 / 5-16-11 / RRH

Sulfate Lot # BK1022 Salt Lot # G38343

Extract Storage: Glorious Rainbow

Date Completed: 6:25PM 5/16/11 RR

Comments/Observations:

Bench Sheet Review Check List	
☑	Hold Times Met (if no, Reason:)
☑	Prep date, dept, method, product code correct in stealth
☑	Spike Information correct
☑	Weights/Volumes and units correct on raw and final bench sheets
☑	Sample IDs have been checked—Bottle numbers appended if required
☑	Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑	Training has been circled
☑	Extract Storage recorded
☑	Additional Prep Sheet completely filled out (NA or line out Blanks)
☑	All clean-ups have been noted on additional prep sheet
☑	Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\051711

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0517F001.d	1.	PR		17 May 2011 10:3
2	1	0517F002.d	1.	PR		17 May 2011 10:5
3	2	0517F003.d	1.	10ug/mL DFTPP | SVM34-95A Fail		17 May 2011 11:1
4	3	0517F004.d	1.	20ng/mL CCV 1,4-Dioxane | SVM34-96F ok	NR	17 May 2011 11:3
5	2	0517F005.d	1.	10ug/mL DFTPP | SVM34-95A Fail		17 May 2011 11:5
6	2	0517F006.d	1.	10ug/mL DFTPP | SVM34-95A		17 May 2011 12:4
7	2	0517F007.d	1.	10ug/mL DFTPP | SVM34-95A		17 May 2011 13:1
8	2	0517F008.d	1.	10ug/mL DFTPP | SVM34-95A		17 May 2011 13:3
9	2	0517F009.d	1.	10ug/mL DFTPP | SVM34-95A ok - New Tune		17 May 2011 14:0
10	3	0517F010.d	1.	20ng/mL CCV 1,4-Dioxane | SVM34-96F		17 May 2011 14:2
11	4	0517F011.d	1.	KWG1104188-4 | MB		17 May 2011 14:4
12	5	0517F012.d	1.	KWG1104188-3 | LCS		17 May 2011 15:0
13	6	0517F013.d	1.	P1101681-001		17 May 2011 15:2
14	7	0517F014.d	1.	KWG1104188-1 | MS P1101681-001MS		17 May 2011 15:4
15	8	0517F015.d	1.	KWG1104188-2 | DMS P1101681-001DMS		17 May 2011 16:0
16	9	0517F016.d	1.	KWG1104333-4 | MB		17 May 2011 16:2
17	10	0517F017.d	1.	KWG1104333-3 | LCS		17 May 2011 16:4
18	11	0517F018.d	1.	K1104106-005		17 May 2011 17:0
19	12	0517F019.d	1.	KWG1104333-1 | MS K1104106-005MS		17 May 2011 17:2
20	13	0517F020.d	1.	KWG1104333-2 | DMS K1104106-005DMS		17 May 2011 17:4
21	14	0517F021.d	1.	P1101793-002		17 May 2011 18:0
22	15	0517F022.d	1.	K1104106-004		17 May 2011 18:2
23	16	0517F023.d	1.	K1104106-006		17 May 2011 18:4
24	17	0517F024.d	1.	K1104106-008		17 May 2011 19:0
25	18	0517F025.d	1.	K1104106-009		17 May 2011 19:2
26	19	0517F026.d	1.	K1104106-010		17 May 2011 19:4
27	20	0517F027.d	1.	K1104106-011		17 May 2011 20:0
28	21	0517F028.d	1.	K1104106-013		17 May 2011 20:2
29	22	0517F029.d	1.	K1104106-014		17 May 2011 20:4
30	23	0517F030.d	1.	K1104106-015		17 May 2011 21:0
31	24	0517F031.d	1.	K1104106-023		17 May 2011 21:2

Run # 241527

CAL 10487

KB 5/18/11

CH 05.18.11

LABORATORY REPORT

May 25, 2011

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q11 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 16, 2011. For your reference, these analyses have been assigned our service request number P1101835.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-10-1; Minnesota Department of Health, NELAP Certificate No. 219474; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Digitally Signed By Sue Anderson at 2:48 pm, May 25, 2011

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P1101835
Project: JPL GW Mon 2Q11 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on May 16, 2011 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q11 / G486090
Service Request: P1101835

Date Received: 5/16/2011
Time Received: 16:05

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-18-5	P1101835-001	Water	5/16/2011	08:15	X
MW-18-4	P1101835-002	Water	5/16/2011	09:20	X
MW-18-3	P1101835-003	Water	5/16/2011	12:56	X
MW-18-2	P1101835-004	Water	5/16/2011	13:33	X
MW-18-1	P1101835-005	Water	5/16/2011	14:06	X
EB-11-5/16/11	P1101835-006	Water	5/16/2011	13:53	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services, Inc.
An Employee - Owned Company
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No: 1109855

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE. C-205 SAN DIEGO CA 92110	JPL GW. MON. 2Q11 Project Number: G486090
Project Manager	**P.O. # / Billing Information**
DAVID CONNER	214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201
Phone (614) 726-7311	**Fax** (614) 458-6641
Email Address for Result Reporting	**Sampler (Print & Sign)**

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 CR VI (7196)	Remarks
MW-18-5	1	5/16/11	815	W	1							X	
MW-18-4	2		920		1							X	IV QC
MW-18-3	3		1256		1							X	
MW-18-2	4		1333		1							X	
MW-18-1	5		1406		1							X	
EB-12-5/16/11	6		1353	↓	1							X	EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	5/16/11	1511		5/16/11	1511
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	5/16/11	1805		5/16/11	1805
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Cooler (Blank / Ice) / No Ice
Temperature ____ °C

5 of 22

Client: Battelle **Service Request:** P1101835
Project: JPL GW Mon 2Q11/G486090

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1101835-001.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	
P1101835-002.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	
P1101835-003.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	
P1101835-004.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	
P1101835-005.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	
P1101835-006.01					
	7196A				
		5/16/11	1616	SMO / SSTAPLES	
		5/16/11	1619	In Lab / SANDERSON	
		5/16/11	1659	P-37 / SANDERSON	

Columbia Analytical Services™ 2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1101835

Project: JPL GW Mon 2Q11 / G486090

Sample(s) received on: 5/16/11 Date opened: 5/16/11 by: SSTAPLES

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☐	☒
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1101835-001.01	125mL Plastic NP					
P1101835-002.01	125mL Plastic NP					
P1101835-003.01	125mL Plastic NP					
P1101835-004.01	125mL Plastic NP					
P1101835-005.01	125mL Plastic NP					
P1101835-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q11
Project Number : G486090
Sample Matrix : WATER

Service Request : P1101835
Date Collected : 05/16/11
Date Received : 05/16/11

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-18-5	P1101835-001	0.010	0.003	1	NA	05/16/11 16:50	ND	
MW-18-4	P1101835-002	0.010	0.003	1	NA	05/16/11 16:50	ND	
MW-18-3	P1101835-003	0.010	0.003	1	NA	05/16/11 16:50	ND	
MW-18-2	P1101835-004	0.010	0.003	1	NA	05/16/11 16:50	ND	
MW-18-1	P1101835-005	0.010	0.003	1	NA	05/16/11 16:50	ND	
EB-11-5/16/11	P1101835-006	0.010	0.003	1	NA	05/16/11 16:50	ND	
Method Blank	P1101835-MB	0.010	0.003	1	NA	05/16/11 16:50	ND	

Approved By Karen Ryan Date : 5/17/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101835
Date Analyzed: 05/16/11

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/17/11

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101835
Date Analyzed: 05/16/11

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0482	96	90-110
CCV1	0.0500	0.0499	100	90-110
CCV2	0.0500	0.0499	100	90-110

Approved By: Karen Rya Date: 5/17/11

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101835
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/16/11

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1101835-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0413	103	90-110	

Approved By Karen Ryan Date : 5/17/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101835
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	05/16/11
Project Number :	G486090	**Date Received :**	05/16/11
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/16/11

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-18-5 Units : mg/L (ppm)
Lab Code : P1101835-001MS P1101835-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0413	0.0413	83	83	73-119	<1	

Approved By Karen Ryan Date : 5/17/11

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1101835

Time: 1250

Sample	VWR lot #	Exp.
pH 2 Buffer	524-1104/1002	1/2013
pH 4 Buffer	524-1104/1003	8/31/12
pH 7 Buffer	524-0427/1162A	3/2013
pH 10 Buffer	524-0426/1102	9/30/12

Slope	Prep.Run #
97.8%	—
	Run#
	—

pH in liquid: (1) 9040B, (2) 9040C **pH in soiid:** (3) 9045C, (4) 9045D (*Note method number in column labeled # below*)

pH adjustment:(5) 7196A,(6) 7199 (Note method # in column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	5	1.992	23.3°
pH 4.000		3.994	23.4°
pH 7.000		7.010	23.1°
pH 10.000		10.004	23.0°
Ref#: 519-1123/0903D		6.368	22.8°
DI		1.992	20.8°
pH 2.000		1.951	23.2°
TIME: 1625			
pH 2.000	5	1.980	23.0°
1835-1.01		2.132	7.9°
-2.01		1.840	9.4°
-3.01		1.969	10.0°
-4.01		2.032	10.1°
-5.01		1.960	10.5°
-6.01		1.788	11.3°
pH 2.000		1.988	22.9°

Sample	#	pH	Temp. °C

Hach not used

pH Adjustments: ~~7196A~~: Diluted/Conc H_2SO_4 EMC 49284 EXP: 11/30/14

7199A: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water; ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/16/11

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/16/11

Reviewer: _____ Date: 5/17/11

pH.XLS

Hexavalent Chromium (Liquids)

Columbia Analytical Services

Method EPA 7196A

Service Request#(s): P1101835 Run#: 246347

Stock#: 524-0228/103 IV=10ppm EXP: 2/28/12 Prep Run#:

ICV/CCV#: 524-1015/1001 IV=100ppm EXP: 3/2012 Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/30/14

Coloring Reagent Ref#: 524-0235/1101 EXP: 6/5/11

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.999999418
Absorbance @ 540 nm	0.000	0.012	0.058	0.116	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	–	✓	0.000	0.000	0.000	-0.000153	<0.003
2	ICV 0.05ppm	"	–	✓	0.000	0.056	0.056	0.0482	96%
3	MB		–	✓	0.000	0.000	0.000	-0.000153	<0.003
4	LCS 0.04ppm		–	✓	0.000	0.048	0.048	0.0413	103%
5	1835-1.01		–	✓	0.002	0.002	0.000	-0.000153	<0.003
6	-1.01 MS 0.05ppm		–	✓	0.002	0.050	0.048	0.0413	83%
7	-1.01 MSD		–	✓	0.002	0.050	0.048	0.0413	83% 0% RPD
8	-2.01		–	✓	0.001	0.001	0.000	-0.000153	<0.003
9	-2.01 LS 0.03ppm		–	✓	0.001	0.032	0.031	0.0266	89%
10	-3.01		–		0.004	0.005	0.001	0.000710	<0.003
11	-4.01		–	✓	0.003	0.004	0.001	0.000710	"
12	-5.01		–	✓	0.003	0.004	0.001	"	"
13	CCV1 0.05ppm		–	✓	0.000	0.058	0.058	0.0499	100%
14	CCB1		–	✓	0.000	0.000	0.000	-0.000153	<0.003
15	1835-6.01		–	✓	0.000	0.000	0.000	"	"
16	CCV2 0.05ppm		–	✓	0.000	0.058	0.058	0.0499	100%
17	CCB2		–	✓	0.000	0.000	0.000	-0.000153	<0.003

pH Requirement: Method 7196A (2 ± 0.5) ✓ Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-1015/1001 @ 10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0228/1103 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: Date/Time: 5/16/11 @ 1635

Analyzed By: Date/Time: 5/16/11 @ 1650

Reviewed By: MR Date: 5/17/11

Cr6LIQ.xls

11/23/09 SIG-1123090Z 1000 PPM SO_3 (ICV/CCV)
SV 0.1607g Na_2SO_3 (Mallinckrodt; H25469; EXP 8/11/14)
↑ 100ml w/ DI
EXP: 5/23/10

11/23/09 SIG-1123090 3 A, B, C, D pH REFERENCE
SV PURCHASED
ERA CAT # 977
LOT # 129934
EXP: 1/2012

11/24/09 SIG-1124090 1 1000 PPM SO_4 Standard
SV PURCHASED CAT # ICC-006
LOT # K007794
EXP: 9/30/13

SV 11/25/09
11/25/09 SIG-~~H25~~ 1125090 1 0.1N H_2SO_4
SV 5.6ml conc H_2SO_4 (EMD 4705D EXP: 9/13/10)
EXP: ~~H25~~ 9/13/10
SV 11/25/09

11/30/09 SIG-1130090 1 Cr^{+6} Coloring Reagent
SV 0.2500g Diphenylcarbohydrazide (EMD) 4710ED; EXP: 1/30/13) ↑ 50ml w/ Acetone (EMD 4715D; EXP: 5/24/12)
EXP: 12/30/09

11/30/09 SIG-1130090 2 25133 ppb Stock for O_3 in Air
SV 0.05ml Pyridine-4-Carboxaldehyde (Alfa Aesar LOT 10140598; EXP 8/11/12)
↑ 500ml deionized H_2O
EXP: 12/14/09

11/30/09 SIG-1130090 3 25133ppb ICV/CCV for O_3 in Air
SV 0.05ml Pyridine-4-carboxaldehyde (TCI LOT # IGIINC; EXP: 8/10/12)
↑ 500ml w/ DI H_2O
EXP: 12/14/09

Reviewed And Approved By:
Initial: ~~HL~~ Date: ~~12/22/09~~

40

10/6/10 524-1006/001 25/33 ppb Stock for O3

0.05 ml Pyridine-4-carboxaldehyde Alfa Aesar
10146598 :Exp: 8/11/12) up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 524-1006/002 25/33 ppb ICV/CCV for O3

0.05 ml Pyridine-4-carboxaldehyde TCI
(IC-INC :Exp: 8/10/12) up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 524-1006/003 MBTH SD/17

0.5000 g MBTH (Aldrich S46966K :Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4 EMD 4A284; EXP 11/20/

EXP: 10/7/10

10/15/10 524-10151001 Cr6+ ICV/CCV Stock
Purchased 100PPM Cr6+
RICCA Chemical Co Cat No 2095-16
500ml Plastic
LOT # 101077
EXP: 3/30/12

10/15/10 524-10157002 500PPM NO_2 Stock
Purchased Cat No: 5444.5-4
RICCA Chemical Co 120ml amber glass
LOT # 101071
EXP: 4/7/2011

10/28/10 SW 524-10781002 1000 ppm SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 11/11/10

11/1/10 SW 524-11011001 ICV/CCV Cr^{6+} T.V = 0.579 ppm

0.5 ml 519-04090604 (T.V = 115.8 mg/L ; EXP: 12/2010)

↑ 100 ml w/ DI

EXP: 11/15/10

11/1/10 SW 524-11011002 Cr^{6+} Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 47703721; EXP: 1/30/13) ↑ 50 ml w/ Acetone (EMD 47154D; EXP: 9/24/12)

EXP: 11/15/10

11/4/10 SW 524-11041001 A→E pH Filling Soln

PURCHASED (3M KCl) P/N 702613-A02

Thermo Scientific

LOT code: 0R1

EXP: 11/4/11

11/4/10 SW 524-11041002 pH 2.000 Buffer

Purchased

BDH CAT NO: 5010-500ml

LOT # 100219G

EXP: 1/2012

77

11/4/10 SK

524-1104003 pH 4.000 Buffer
Purchased
J.T. Baker Cat No: 5657-01 500 ml
Lot # J30507
Exp 8/31/12

11/4/10 SK

524-1104004 pH 7.000 Buffer
Purchased
J.T. Baker Cat No: 5656-01 500 ml
Lot # J35515
Exp: 9/30/12

11/5/10 SK

524-1105001 MBTH Sol'n

0.5000 g MBTH (Aldrich 52696EK ;Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4; EMD 49884 EXP: 11/20/14

Exp: 11/6/10

11/8/10 SK

524-1108001 1000 ppm NH_3
0.3141g NH_4Cl (EMD 49R8931; Exp: 10/19/14) to 100 ml
w/ 524-1221006 Exp: 10/22/11
Exp: 10/22/11

11/12/10 SK

524-1112001 1000 ppm SO_3 STOCK

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

Exp: 11/26/10

54

524-0221/1101 1:1 H_2SO_4

2/21/11 SC
250 mL H_2SO_4 (EMD 49284; EXP: 11/20/14) ADDED SLOWLY TO 250 mL DI. COOL COMPLETELY
EXP: 2/21/13

2/21/11 SC
524-0221/1102 Cr6+ Coloring Reagent
0.2500 g 1,5-diphenylcarbohydrazide (EMD LOT 47103721 EXP: 11/30/13) + 50 mL w/ Acetone (EMD LOT# 47154D, EXP: 9/24/12).
EXP: 3/21/11

2/28/11 SC
524-0228/1101 0.1 H_2SO_4
5.6 mL conc H_2SO_4 (EMD 49284 EXP: 11/20/14) + 2L w/ DI H_2O
EXP: 2/28/12

2/28/11 SC
524-0228/1102 1001 mg/L Cr6+ Purchased Inorganic Ventures CCCR(6)1-1
125 mL Clear Glass
LOT# D2-CR0304O
EXP: 3/1/2012

2/28/11 SL — 524-022811 03 — 100ppm Cr6+ Std/Lvl
1.0 mL 524-022811 02 (~~100ppm Cr6+~~ 100ppm Cr6+ Std/Lvl; Exp: 3/1/12) ↑
100mL w/ DI H2O
Exp: 2/28/12

3/7/11 SL — 524-030711 01 — Cr6+ Color Dev Reagent
0.2500g 1,5-Diphenylcarbohydrazide (EMD Lot 47103721, Exp: 1/30/13) ↑ 50mL w/ Acetone (EMD 47154, Exp: 9/24/12).
Exp: 4/7/11

3/7/11 SL — 524-030711 02 — 500ppm NO2
Purchased
Alfa Aesar Co — Cat No 54454
Lot # 11025 24
Exp: 8/30/11

3/17/11 SL — 524-031711 01 — Alkaline Digestion Sol'n
20.0g NaOH (EMD 47022713B; Exp: 10/11/12) + 30.0g Na2CO3 (EMD 46331715B; Exp: 10/11/12) ↑ 1L w/ DI H2O.
Exp: 4/17/11

Reviewed And Approved By:
Initial: KL Date: 3/18/11

7/14/11 SL — 524-041411 01 — IC02 Eluent
75ml 524-042911 02 (10X Conc Eluent, Exp 4/29/11) ↑ 750ml w/ DI H2O DEGAS
Exp: 4/28/11

30

524-042611102 pH 10.000 Buffer

4/26/11 Purchased
JT Baker Cat No: 5655-01 (500mL
LOT # J33524
EXP: 9/30/12

4/26/11 524-042611103 NH3 FILLING SOLN
Purchased
Thermo Orion Orion 95/20 (60mL
LOT # 0X1 P/N: 70263-A04
EXP: 4/26/12

4/26/11 524-042611104 ~~B4~~ 4/26/11 1:1 H2SO4
250mL conc H2SO4 (EMD 4928 4, EXP: 11/20/14)
ADDED SLOWLY TO 250ml DI H2O
LET COOL
EXP: 4/26/12

4/27/11 524-042711101 Amido Sulfuric Sol'n
6.25ml conc H2SO4 (EMD 4928 4; EXP: 11/20/14) Added to
2.5ml DI H2O. Let Cool.
Dissolve 1.6875g N,N-Dimethyl-p-phenylenediamine
oxalate (Fluka 1363386 1240820 4; EXP. 8/7/14)
in cooled Sulfuric Soln and dilute to 250ml w/
1:1 H2SO4 (524-042611104; EXP: 4/26/12)
EXP: 5/25/11

4/27/11 Sr S24-042711102 A&B pH 7.000 Buffer
Purchased
BDH Cat No.: BDH5046-500 mL
Lot # 1103379
Exp: 3/20/13

4/28/11 Sr S24-042811101 0.1N H_2SO_4
5.6 mL Conc H_2SO_4 (EMD 49284; Exp: 11/20/14)
↑ 2L w/ DI H_2O
Exp: 4/28/12

5/4/11 Sr S24-050411101 Alkaline Digestion Sol'n
20.0g NaOH (EMD 4702271B; Exp: 10/11/12) +
30.0g Na_2CO_3 (EMD 4633171SB; exp: 10/11/12)
↑ 1L w/ DI H_2O
Exp: 06/04/11

5/5/11 Sr S24-050511101 Cr(VI) Coloring reagent
0.2500g 1,5-Diphenylcarbohydrazide (JT Baker J0564);
Exp: 6/15/15 ↑ 50mL w/ Acetone (EMD 47154D;
Exp: 9/24/12).
Exp: 06/05/11

5/5/11 Sr S24-050511102 IC02 Eluent
100 mL S24-041911101 (11x conc eluent; Exp: 9/22/11)
↑ 1L w/ DI H_2O - Degassed
Exp: 5/19/11

LABORATORY REPORT

May 31, 2011

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q11 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 17, 2011. For your reference, these analyses have been assigned our service request number P1101846.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-10-1; Minnesota Department of Health, NELAP Certificate No. 219474; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Digitally Signed By Sue Anderson at 2:52 pm, May 31, 2011

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P1101846
Project: JPL GW Mon 2Q11 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on May 17, 2011 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon. 2Q11 / G486090
Service Request: P1101846

Date Received: 5/17/2011
Time Received: 13:15

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-25-5	P1101846-001	Water	5/17/2011	08:15	X
MW-25-4	P1101846-002	Water	5/17/2011	08:56	X
MW-25-3	P1101846-003	Water	5/17/2011	09:28	X
MW-25-2	P1101846-004	Water	5/17/2011	10:03	X
MW-25-1	P1101846-005	Water	5/17/2011	11:00	X
DUPE-4-2Q11	P1101846-006	Water	5/17/2011	00:00	X
EB-13-5/17-11	P1101846-007	Water	5/17/2011	10:47	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 9110 1846

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE. ~~C-205~~
SAN DIEGO, CA 92110

Project Name: JPL GW. MON. 2Q11

Project Number: G486090

Project Manager: DAVID CONNER

P.O. # / Billing Information: 214319/BATTELLE
ATTN - GERALD TOMPKINS
505 KING AVE.
COLUMBUS, OH 43201

Phone: (614) 726-7311 Fax: (614) 458-6614

Email Address for Result Reporting

Sampler (Print & Sign): CHASE BRADDON

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0												Remarks
												Cr VI (7196)												
MW-25-5	1	5/17/11	815	W	1							X												IV QC
MW-25-4	2		856		1							X												
MW-25-3	3		928		1							X												
MW-25-2	4		1003		1							X												
MW-25-1	6		1100		1							X												
DUPE-4-2Q11	6		—		1							X												DUPLICATE
EB-13-5/17/11	7		1047		1							X												EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/17/11	Time: 1753	Received by: (Signature)		Date: 5/17/11	Time: 1205
Relinquished by: (Signature)		Date: 5/17/11	Time: 1315	Received by: (Signature)		Date: 5/17/11	Time: 1315
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 2.0C °C

5 of 22

Client: Battelle **Service Request:** P1101846
Project: JPL GW Mon. 2Q11/G486090

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1101846-001.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-002.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-003.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-004.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-005.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-006.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	
P1101846-007.01					
	7196A				
		5/17/11	1321	SMO / MZAMORA	
		5/17/11	1321	P-37 / MZAMORA	
		5/17/11	1446	In Lab / SANDERSON	
		5/17/11	1659	P-37 / SANDERSON	

Columbia Analytical Services™ 2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1101846

Project: JPL GW. Mon. 2Q11 / G486090

Sample(s) received on: 5/17/11 Date opened: 5/17/11 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 2 °C			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1101846-001.01	125mL Plastic NP					
P1101846-002.01	125mL Plastic NP					
P1101846-003.01	125mL Plastic NP					
P1101846-004.01	125mL Plastic NP					
P1101846-005.01	125mL Plastic NP					
P1101846-006.01	125mL Plastic NP					
P1101846-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon. 2Q11
Project Number : G486090
Sample Matrix : WATER

Service Request : P1101846
Date Collected : 05/17/11
Date Received : 05/17/11

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-25-5	P1101846-001	0.010	0.003	1	NA	05/17/11 16:30	ND	
MW-25-4	P1101846-002	0.010	0.003	1	NA	05/17/11 16:30	ND	
MW-25-3	P1101846-003	0.010	0.003	1	NA	05/17/11 16:30	ND	
MW-25-2	P1101846-004	0.010	0.003	1	NA	05/17/11 16:30	ND	
MW-25-1	P1101846-005	0.010	0.003	1	NA	05/17/11 16:30	ND	
DUPE-4-2Q11	P1101846-006	0.010	0.003	1	NA	05/17/11 16:30	ND	
EB-13-5/17-11	P1101846-007	0.010	0.003	1	NA	05/17/11 16:30	ND	
Method Blank	P1101846-MB	0.010	0.003	1	NA	05/17/11 16:30	ND	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101846
Date Analyzed: 05/17/11

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 5/19/11

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101846
Date Analyzed: 05/17/11

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0507	101	90-110
CCV1	0.0500	0.0517	103	90-110
CCV2	0.0500	0.0517	103	90-110

Approved By: Karen Rya Date: 5/19/11

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101846
Project Name :	JPL GW Mon. 2Q11	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/17/11

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1101846-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0414	104	90-110	

Approved By Karen Rya Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon. 2Q11
Project Number : G486090
Sample Matrix : WATER

Service Request : P1101846
Date Collected : 05/17/11
Date Received : 05/17/11
Date Extracted : NA
Date Analyzed : 05/17/11

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-25-5
Lab Code : P1101846-001MS P1101846-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0433	0.0433	87	87	73-119	<1	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): R1101846

Time: 0820

Sample	VWR lot #	Exp.
pH 2 Buffer	524-11041002	1/2012
pH 4 Buffer	524-11041003	5/31/12
pH 7 Buffer	524-04271102A	3/2013
pH 10 Buffer	524-04261102	9/30/12

Slope	Prep.Run #
98.4%	—
	Run#
	—

pH in liquid: (1) 9040B, (2) 9040C pH in solid: (3) 9045C, (4) 9045D (Note method number in column labeled # below)

pH adjustment:(5) 7196A,(6) 7199 (Note method # in column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	5	1.998	22.6°
pH 4.000		4.004	23.1°
pH 7.000		7.009	23.2°
pH 10.000		9.993	22.9°
Ref#:		6.369	23.3°
DI		1.977	22.4°
pH 2.000		1.998	23.0°
TIME: 1550 - SC			
pH 2.000	5	2.002	23.0°
1846-1.01		1.979	18.9°
-2.01		1.855	19.6°
-3.01		1.940	19.6°
-4.01		2.012	19.8°
-5.01		1.889	19.7°
-6.01		1.860	20.0°
-7.01		2.000	19.9°
pH 2.000		2.004	23.0°

Sample	#	pH	Temp. °C

pH Adjustments: ☒ 7196A: Diluted/Conc H_2SO_4 OM49284 EXP: 11/20/14

☐ 7199A: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water; ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/16/11

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/17/11

Reviewer: KL Date: 5/18/11

pH.XLS

Hexavalent Chromium (Liquids)

Columbia Analytical Services

Method EPA 7196A

Service Request#(s): P1101846 Run#: 246590

Stock#: 524-0228/103 TV=10ppm EXP: 2/28/12 Prep Run#:

ICV/CCV#: 524-1015/1001 TV=100ppm EXP: 3/20/12 Conc. H_2SO_4 Lot#: ONS 49384 EXP 11/20/14

Coloring Reagent Ref#: 524-0515/1101 EXP: 6/5/11

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.:
Concentration mg/L	0.00	0.01	0.05	0.1	0.9999/0.9997
Absorbance @ 540 nm	0.000	0.010	0.053	0.107	

	Sample #	Sample Vol.(mL)	Dilution	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	0.000	0.000	0.000	0.000376	<0.003
2	ICV 0.05ppm		—	0.000	0.054	0.054	0.0507	101%
3	MB		—	0.000	0.000	0.000	0.000376	<0.003
4	LCS 0.04ppm		—	0.000	0.044	0.044	0.0414	104%
5	1846-1.01		—	0.000	0.000	0.000	0.000376	<0.003
6	-1.01 MS 0.05ppm		—	0.000	0.046	0.046	0.0433	87% 74%
7	-1.01 MSD		—	0.000	0.046	0.046	0.0433	87% 0% RPD
8	-2.01		—	0.000	0.001	0.001	0.00131	<0.003
9	-2.01 LS 0.03ppm		—	0.000	0.028	0.028	0.0265	88%
10	-3.01		—	0.003	0.003	0.001	0.00131	<0.003
11	-4.01		—	0.000	0.000	0.000	0.000376	
12	-5.01		—	0.002	0.003	0.001	0.00131	
13	CCV 0.05ppm		—	0.000	0.055	0.055	0.0517	103%
14	CCB1		—	0.000	0.000	0.000	0.000376	<0.003
15	1846-6.01		—	0.000	0.000	0.000		
16	-7.01		—	0.000	0.000	0.000		
17	CCV2 0.05ppm		—	0.000	0.055	0.055	0.0517	103%
18	CCB2		—	0.000	0.000	0.000	0.000376	<0.003

pH Requirement: Method 7196A (2 ± 0.5) * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-1015/1001 @ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0228/103 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ____ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 70 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: _____ Date/Time: 5/17/11 @ 1615

Analyzed By: _____ Date/Time: 5/17/11 @ 1630

Reviewed By: _____ Date: 5/19/11

CróLIQ.xls

FOV

11/23/09 SIG-1123090Z 1000 ppm SO_3 (ICV/CCV)
SV 0.1607g Na_2SO_3 (Mallinckrodt; H25469; EXP 8/11/14)
↑ 100ml w/ DI
EXP: 5/23/10

11/23/09 SIG-1123090 3 A,B,C,D pH REFERENCE
SV PURCHASED
ERA CAT # 977
LOT # 129934
EXP: 1/2012

11/24/09 SIG-1124090 1 1000 ppm SO_4 Standard
SV PURCHASED CAT # ICC-006
LOT # K007794
EXP: 9/30/13

SV 11/25/09
11/25/09 SIG-~~H25~~ 1125090 1 0.1N H_2SO_4
SV ~~50~~ml conc H_2SO_4 (EMD 47050 EXP: 9/13/10)
EXP: ~~H25~~ 9/13/10
SV 11/25/09

11/30/09 SIG-1130090 1 Cr^{6+} Coloring Reagent
SV 0.2500g diphenylcarbohydrazide (EMD) 47103ED; EXP: 1/30/13) ↑ 50ml w/ Acetone (EMD 47152D; EXP: 5/24/12)
EXP: 12/30/09

11/30/09 SIG-1130090 2 25133 ppb Stock for O_3 in Air
SV 0.05ml Pyridine-4-Carboxaldehyde (Alfa Aesar LOT 10140598; EXP 8/11/12)
↑ 500ml deionized H_2O
EXP: 12/14/09

11/30/09 SIG-1130090 3 25733 ppb ICV/CCV for O_3 in Air
SV 0.05ml Pyridine-4-carboxaldehyde (TCI LOT # IGINC; EXP: 8/10/12)
↑ 500ml w/ DI H_2O
EXP: 12/14/09

Reviewed And Approved By:
Initial: VL Date: 12/22/09

40

10/6/10 SL

524-1006/1001 25/33 ppb Stock for O3

0.05 ml Pyridine-4-carboxaldehyde Aldrich Aesar
10140598 Exp: 8/11/12 up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL

524-1006/1002 25/33 ppb ICV/CCV for O3

0.05 ml Pyridine-4-carboxaldehyde TCI
(IGJNC Exp: 8/10/12 up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL

524-1006/1003 MBTH 10/17

0.5000 g MBTH (Aldrich 54646CK Exp: 8/7/14 up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H2SO4 EMD 4298; EXP 11/20/

EXP: 10/7/10

10/15/10 SL

524-1015/1001 Cr6+ ICV/CCV Stock

Purchased
Ricca Chemical Co
500ml Plastic
LOT # 101077
EXP: 3/30/13

1000ppm Cr6+
Cat No 2795-16

10/15/10 SL

524-1015/1002 5000ppm NO2 Stock

Purchased
Ricca Chemical Co
LOT # 101071
EXP: 4/2011

Cat No: 5444.5-4
120ml amber glass

10/28/10 S24-10281002 1000 ppm SO3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11[illegible]) up to 100 ml w. DI Water.

EXP: 11/11/10

11/1/10 S24-11011001 ICV/CCV Cr^{6+} T.V = 0.579ppm

0.5ml SIG-04090604 (T.V=115.8mg/L ; EXP: 12/2010)

↑ 100ml w/ DI

EXP: 11/15/10

11/1/10 S24-11011002 Cr^{6+} Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 47703731, EXP 1/30/13) ↑ 50ml w/ Acetone (EMD 47154D, EXP. 9/24/12)

EXP: 11/15/10

11/4/10 S24-11041001 A→E pH Filling Sol'n

PURCHASED (3M KCl) P/N 702613-A02

Thermo Scientific

LOT Code: 0R1

EXP: 11/4/11

11/4/10 S24-11041002 pH 2.000 Buffer

purchased

BDH CAT NO: 5010-500ml

LOT # 10C2196

EXP. 1/2012

77

11/4/10 524-1104C003 pH 4.000 Buffer
Purchased
J.T. Baker Cat No: 5657-01 500 ml
LOT # J30507
Exp 8/31/12

11/4/10 524-1104C004 pH 7.000 Buffer
Purchased
J.T. Baker Cat No: 5656-01 500 ml
LOT # J35515
Exp: 9/30/12

11/5/10 524-1105001 MBTH Std

0.5000 g MBTH (Aldrich 521696EK Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4 EMD 4198431 Exp: 11/20/14

Exp: 11/6/10

11/8/10 524-1108100 1000 ppm NH_3
0.3141 g NH_4Cl (EMD 4198431; Exp: 10/19/14) up to 100 ml w/ 524-1021006 Exp: 10/22/11
Exp: 10/22/11

11/12/10 524-1112-1001 1000 ppm SO_3 STOCK

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

Exp: 11/26/10

534-02211101 1:1 H_2SO_4

2/21/11 JSC — 250 ml H_2SO_4 (EMD 49284; EXP: 11/20/14) ADDED SLOWLY TO 250 ml DI. Cool COMPLETELY
EXP: 2/21/12

2/21/11 JSC — 534-02211102 Cr6+ Coloring Reagent
0.2500 g 1,5-Diphenylcarbohydrazide (EMD LOT 47103721 EXP: 1/30/13) ↑ 50 ml w/ Acetone (EMD LOT# 47154D, EXP: 9/24/12).
EXP: 3/21/11

2/28/11 JSC — 534-02281101 0.1 H_2SO_4
5.6 ml conc H_2SO_4 (EMD 49284 EXP: 11/20/14) ↑ 2L w/ DI H_2O
EXP: 2/28/12

2/28/11 JSC — 534-02281102 1001 mg/L Cr6+
Purchased
Inorganic Ventures CGCR(6)1-1
125 mL Clear Glass
LOT# D2-CR03040
EXP: 3/1/2012

2/28/11 SL — 524-022811 03 — 100ppm Cal Std Soln
1.0mL 524-022811 02 (~~100ppm Conc~~ 1000ppm Conc; Exp: 3/1/12) ↑ 100mL w/ DI H2O
Exp: 2/28/12

3/7/11 SL — 524-030711 01 — Cal Std Solution Reagent
0.2500g 1,5-Diphenylcarbohydrazide (EMD Lot 47103721, Exp: 1/30/13) ↑ 50mL w/ Acetone (EMD 47154, Exp: 9/24/12).
Exp: 4/7/11

3/7/11 SL — 524-030711 02 — 500ppm NO2
Purchased
Alfa Aesar Co — Cat No 54444-54
Lot # 1103524
Exp: 8/30/11

3/13/11 SL — 524-031311 01 — Alkaline Digestion Soln
20.0g NaOH (EMD 47102713B; Exp: 10/11/12) + 30.0g Na2CO3 (EMD 46231715B; Exp: 10/11/12) ↑ 1L w/ DI H2O.
Exp: 4/17/11

Reviewed And Approved By:
Initial: KL Date: 3/14/11

4/14/11 SL — 524-041411 01 — ICO2 Effluent
75mL 524-042911 02 (10X Conc Effluent, Exp 4/29/11) ↑ 750mL w/ DI H2O. DEGAS
Exp: 4/28/11

4/27/11 SR — 524-042711C2 Aq pH 7.000 Buffer
Purchased
BDH Cat No. BDH5046-500ML
Lot # 11023379
Exp: 3/2013

4/28/11 SR — 524-042811C1 0.1N H_2SO_4
5.0 mL Conc H_2SO_4 (EMD 49254; Exp: 11/20/14)
↑ 2L w/ DI H_2O
Exp: 4/28/12

5/4/11 SR — 524-050411C1 Alkaline Digestion Sol'n
20.0g NaOH (EMD 4702271B, Exp: 10/11/12) +
30.0g Na_2CO_3 (EMD 4633171B, Exp 10/11/12)
↑ 1L w/ DI H_2O
Exp: 06/04/11

5/6/11 SR — 524-050511C1 Cr(VI) Coloring reagent
0.2500g 1,5-Diphenylcarbohydrazide (JT Baker J0564),
Exp: 6/15/15 ↑ 50mL w/ Acetone (EMD 47154D;
Exp: 9/24/12)
Exp: 06/05/11

5/5/11 SR — 524-050511C2 ICO2 Eluent
100 mL 524-041911C1 (10x conc eluent; Exp: 9/23/11)
↑ 1L w/ DI H_2O Degassed
Exp: 5/19/11

LABORATORY REPORT

May 31, 2011

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q11 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 18, 2011. For your reference, these analyses have been assigned our service request number P1101873.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-10-1; Minnesota Department of Health, NELAP Certificate No. 219474; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Digitally Signed By Sue Anderson at 2:57 pm, May 31, 2011

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P1101873
Project: JPL GW Mon 2Q11 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on May 18, 2011 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Service Request: P1101873
Project ID: JPL GW Mon 2Q11 / G486090

Date Received: 5/18/2011
Time Received: 13:46

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-26-2	P1101873-001	Water	5/18/2011	08:10	X
MW-26-1	P1101873-002	Water	5/18/2011	08:53	X
EB-14-5/18/11	P1101873-003	Water	5/18/2011	08:41	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P110873

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Manager	Phone	Fax
BATTELLE 3990 OLD TOWN AVE. C-205 SAN DIEGO CA 92110	JPL GW. MON. 2011 Project Number G-486090	DAVID CONNER	(619) 726-7311	(614) 458-6641

P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS OH 43201

Email Address for Result Reporting:

Sampler (Print & Sign):

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 CR VI (7196)	Remarks
MW-26-2	1	5/18/11	810	W	1						X	
MW-26-1	2	"	853	"	1						X	
EB-14-5/18/11	3	"	841	"	1						X	EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/18/11	1225		5/18/11	1227
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/18/11	13:46		5/18/11	1346
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3.0 °C

5 of 22

Client: Battelle **Service Request:** P1101873
Project: JPL GW Mon 2Q11/G486090

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1101873-001.01					
	7196A				
		5/18/11	1400	SMO / MZAMORA	
		5/18/11	1400	P-37 / MZAMORA	
		5/18/11	1445	In Lab / SANDERSON	
		5/18/11	1558	P-37 / SANDERSON	
P1101873-002.01					
	7196A				
		5/18/11	1400	SMO / MZAMORA	
		5/18/11	1400	P-37 / MZAMORA	
		5/18/11	1445	In Lab / SANDERSON	
		5/18/11	1558	P-37 / SANDERSON	
P1101873-003.01					
	7196A				
		5/18/11	1400	SMO / MZAMORA	
		5/18/11	1400	P-37 / MZAMORA	
		5/18/11	1445	In Lab / SANDERSON	
		5/18/11	1558	P-37 / SANDERSON	

Columbia Analytical Services | 2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1101873

Project: JPL GW Mon 2Q11 / G486090

Sample(s) received on: 5/18/11 Date opened: 5/18/11 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1101873-001.01	125mL Plastic NP					
P1101873-002.01	125mL Plastic NP					
P1101873-003.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q11
Project Number : G486090
Sample Matrix : WATER

Service Request : P1101873
Date Collected : 05/18/11
Date Received : 05/18/11

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-26-2	P1101873-001	0.01	0.003	1	NA	05/18/11 15:35	ND	
MW-26-1	P1101873-002	0.01	0.003	1	NA	05/18/11 15:35	ND	
EB-14-5/18/11	P1101873-003	0.01	0.003	1	NA	05/18/11 15:35	ND	
Method Blank	P1101873-MB	0.01	0.003	1	NA	05/18/11 15:35	ND	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101873
Project:	JPL GW Mon 2Q11 / G486090	**Date Analyzed:**	05/18/11

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/19/11

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101873
Date Analyzed: 05/18/11

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0497	99	90-110
CCV1	0.0500	0.0497	99	90-110

Approved By: Karen Ryan Date: 5/19/11

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101873
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/18/11

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1101873-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0391	98	90-110	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101873
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	05/18/11
Project Number :	G486090	**Date Received :**	05/18/11
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/18/11

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-26-2 Units : mg/L (ppm)
Lab Code : P1101873-001MS P1101873-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.01	0.0500	0.0500	ND	0.0400	0.0409	80	82	73-119	2	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): 1110873

Time: 0730

Sample	VWR lot #	Exp.
pH 2 Buffer	524-1104/1002	1/30/12
pH 4 Buffer	524-1104/1003	5/31/12
pH 7 Buffer	524-0427/1107A	5/20/13
pH 10 Buffer	524-0426/1102	9/30/12

Slope	Prep.Run #
98.5%	—
	Run#
	—

pH in liquid: (1) 9040B, (2) 9040C **pH in solid:** (3) 9045C, (4) 9045D (*Note method number in column labeled # below*)

pH adjustment:(5) 7196A,(6) 7199 (Note method # in column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	5	2.000	22.7°
pH 4.000		4.009	22.7°
pH 7.000		7.008	22.7°
pH 10.000		9.998	22.9°
Ref#:		6.373	22.9°
DI		1.963	19.8°
pH 2.000		2.002	22.5°
TIME:	1455		
pH 2.000	5	1.990	22.1°
1873-1.01		1.922	14.8°
J -2.01		2.024	13.6°
J -3.01		1.979	14.3°
pH 2.000		1.990	22.0°

Sample	#	pH	Temp. °C

pH Adjustments: X **7196A**: Diluted/Conc H_2SO_4 2M 4978W EXP: 6/11/2014

7199A: Diluted NaOH _____ EXP: 5/18/11

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/16/11

Note: ATC probe used: therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/18/11

Reviewer: KL Date: 5/19/11

pH.XLS

Hexavalent Chromium (Liquids)

Columbia Analytical Services

Method EPA 7196A

Service Request#(s): 1106187

Run#: 246722

Stock#: 524-022S/103 T.V=10ppm EXP: 2/28/12

Prep Run#:

ICV/CCV#: 524-1015/001 T.V=10ppm EXP: 3/30/12

Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/30/14

Coloring Reagent Ref#: 524-0505/101 EXP: 6/5/11

Working Curve:

Prep Dilution	N4	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.999955864
Absorbance @ 540 nm	0.000	0.012	0.058	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10 ml	—	✓	0.000	0.000	0.000	-0.000397	<0.003
2	ICV 0.05 ppm		—	✓	0.000	0.057	0.057	0.0497	99%
3	MB		—	✓	0.000	0.000	0.000	-0.000397	<0.003
4	LCS 0.040ppm		—	✓	0.000	0.045	0.045	0.0391	98%
5	873-1.01		—	✓	0.002	0.004	0.002	0.00136	<0.003
6	-1.01 MS 0.05ppm		—	✓	0.002	0.048	0.046	0.0400	80% 2%
7	-1.01 MSD		—	✓	0.003	0.049	0.047	0.0409	82% 3 RPD
8	-2.01		—	✓	0.000	0.000	0.000	-0.000397	<0.003
9	-2.01 LCS 0.03ppm		—	✓	0.000	0.030	0.030	0.0259	86%
10	-3.01		—	✓	0.000	0.000	0.000	-0.000397	<0.003
11	CCV 0.05ppm		—	✓	0.000	0.057	0.057	0.0497	99%
12	CCB		—	✓	0.000	0.000	0.000	-0.000397	<0.003
13									
14									
15									
16	Space not used								
17									

pH Requirement: Method 7196A (2 ± 0.5) @ 70° * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-1015/001 * 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-022S/103 * 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ * 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 70 * 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: _____ Date/Time: 5/18/11 @ 1520

Analyzed By: _____ Date/Time: 5/18/11 @ 1535

Reviewed By: _____ Date: 5/19/11

Cr6LIQ.xls

HOV

11/23/09 SIG-1123090D 1000 PPM SO_3 (ICV/CCV)
SV 0.1607g Na_2SO_3 (Mallinckrodt; H25469; EXP 8/11/14)
↑ 100ml w/ DI
Exp: 5/23/10

11/23/09 SIG-1123090 3 A, B, C, D PH REFERENCE
SV PURCHASED
ERA CAT # 977
LOT # 129934
EXP: 1/2012

11/24/09 SIG-1124090 1 1000 PPM SO_4 Standard
SV PURCHASED CAT # ICC-006
LOT # K007794
EXP: 9/30/13

SV 11/25/09
11/25/09 SIG-~~H25~~ 1125090 1 0.1N H_2SO_4
~~5~~ml conc H_2SO_4 (EMD 4705D EXP: 9/13/10)
EXP: ~~11/25~~ 9/13/10
SV 11/25/09

11/30/09 SIG-1130090 1 Cr^{6+} Coloring Reagent
SV 0.250g diphenylcarbohydrazide (EMD) 4710ED; EXP: 1/30/13) ↑ 50ml w/ Acetone (EMD 4715D; EXP 5/24/12)
EXP: 12/20/09

11/30/09 SIG-1130090 2 25133 ppb Stock for O_3 in Air
SV 0.05ml pyridine-4-carboxaldehyde (Alfa Aesar LOT 10144 0598; EXP 5/11/12)
↑ 500ml deionized H_2O
EXP: 12/14/09

11/30/09 SIG-1130090 3 25133ppb ICV/CCV for O_3 in Air
SV 0.05ml pyridine-4-carboxaldehyde (TCI LOT # IGINC; EXP 5/10/12)
↑ 500ml w/ DI H_2O
EXP: 12/14/09

Reviewed And Approved By:
Initial: LL Date: 12/22/09

40

10/6/10 SL — 524-1006/001 — 25/33 ppb Stock for O3

0.05 ml Pyridine-4-carboxaldehyde Alfa Aesar
10140598 :Exp: 8/11/12 up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL — 524-1006/002 — 25/33 ppb ICV/CCV for O3

0.05 ml Pyridine-4-carboxaldehyde TCI
(IGTNC :Exp: 8/10/12 up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL — 524-1006/003 — MBTH 8/17

0.5000 g MBTH (Aldrich 546666 :Exp: 8/7/14 up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H2SO4 EMD 4A284; EXP 11/20

EXP: 10/7/10

10/15/10 SL — 524-1015/001 — Cr6+ ICV/CCV Stock 100ppm Cr6+

Purchased
RICCA Chemical Co
500ml Plastic
LOT # 101077
EXP: 3/30/12
Cat No 2795-16

10/15/10 SL — 524-1015/002 — 500ppm NO2 Stock

Purchased
RICCA Chemical Co
LOT# 101071
EXP: 4/2011
Cat No: 5444.54
120ml amber glass

10/28/10 S24-10281002 1000 ppm SO3 ICV/CCV

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11) up to 100 ml w/ DI Water.

EXP: 11/11/10

11/1/10 S24-11011001 ICV/CCV Cr^{6+} T.V = 0.579 ppm

0.5ml SIG-04090904 (T.V = 115.8 mg/L ; EXP: 12/2010)

↑ 100ml w/ DI

EXP: 11/15/10

11/1/10 S24-11011002 Cr^{6+} Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 47103731, EXP. 1/30/13) ↑ 50ml w/ Acetone (EMD 47154D, EXP. 9/24/12)

EXP: 11/15/10

11/4/10 S24-11041001 A→E pH Filling Sol'n

PURCHASED (3M KCl) P/N 7026-13-A02

Thermo Scientific

LOT Code: ORI

EXP: 11/4/11

11/4/10 S24-11041002 pH 2.000 Buffer

Purchased

BDH CAT NO: 5010-500ml

LOT # 10021SG

EXP: 1/2012

77

11/4/10 S24-110400S pH 4.000 Buffer
Laboratised
J.T. Baker Cat No: 5667-01 500 ml
LOT # J30507
EXP 8/31/12

11/4/10 S24-110700S pH 7.000 Buffer
Laboratised
J.T. Baker Cat No: 5656-01 500 ml
LOT # J35515
EXP: 9/30/12

11/5/10 S24-110510001 MBTH Soln

0.5000 g MBTH (Aldrich 52666CK Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4 (EMD 49858 Exp: 11/20/14)

EXP: 11/6/10

11/8/10 S24-110810001 1000 ppm NH_3
0.3141g NH_4Cl (EMD 4498931; EXP: 10/19/14) up to 100 ml w/ S24-10221006 EXP: 10/22/11
EXP: 10/22/11

11/12/10 S24-11121001 1000 ppm SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP: 11/26/10

54

2/21/11 Sc

534-02211101 1:1 H_2SO_4

250ml H_2SO_4 (EMD 49284; EXP: 11/20/14) ADDED SLOWLY TO 250ml DI. COOL COMPLETELY

EXP: 2/21/12

2/21/11 Sc

534-02211102 Cr^{6+} Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide (EMD LOT 4710372L EXP: 1/30/13) ↑ 50 ml w/ Acetone (EMD LOT# 47154D, EXP: 9/24/12).

EXP: 3/21/11

2/28/11 Sc

534-02281101 0.1 H_2SO_4

5.6 ml conc H_2SO_4 (EMD 49284 EXP: 11/20/14) ↑ 2L w/ DI H_2O

EXP: 2/28/12

2/28/11 Sc

534-02281102 1001 mg/l Cr^{6+}

Purchased

Inorganic Ventures CGCR(6)1-1

125 mL Clear Glass

LOT# D2-CR03040

EXP: 3/11/2012

2/28/11 SL — 524-022811 03 — 100ppm Cr6+ Std
1.0mL 524-022811 02 (~~100ppm Cr6+ Std~~ 100ppm Cr6+ Std, Exp: 3/11/12) ↑
100mL w/ DI H2O
Exp: 2/28/12

3/7/11 SL — 524-030711 01 — Cr6+ Colorimetric Reagent
0.2500g 1,5-Diphenylcarbohydrazide (EMD Lot 47103721, Exp: 1/30/13) ↑ 50mL w/ Acetone (EMD 47154, Exp: 9/24/12).
Exp: 4/7/11

3/7/11 SL — 524-030711 02 — 500ppm NO2
Purchased
Alfa Aesar Co — Cat No 54454
Lot # 11035244
Exp: 8/30/11

3/13/11 SL — 524-031711 01 — Alkaline Digestion Sol'n
20.0g NaOH (EMD 47220713B; Exp: 10/11/12) + 30.0g Na2CO3 (EMD 46227156; Exp: 10/11/12) ↑ 1L D/DI H2O.
Exp: 4/17/11

Reviewed And Approved By:
Initial: [illegible] Date: 3/[illegible]

4/14/11 SL — 524-041411 01 — ICP Effluent
75mL 524-042911 03 (Ion Conc Check, Exp 4/29/11) ↑ 750mL w/ DI H2O DEGAS
Exp 4/28/11

4/26/11 Sn

534-04261102 pH 10.000 Buffer
Purchased
JT Baker Cat No: 5655-01 (500mL)
LOT # J33524
EXP: 9/30/12

4/26/11 Sn

534-04261103 NHS Filling Soln
Purchased
Thermo Orion Orion 951202 (60mL)
LOT # OX1 P/N: 70263-A04
EXP: 4/26/12

4/26/11 Sn

534-04261104 (Sn 4/26/11) 1:1 H_2SO_4
250 mL Conc H_2SO_4 (EMD 49284, exp: 11/20/14)
ADDED SLOWLY TO 250 ml DI H_2O
LET COOL
EXP: 4/26/12

4/27/11 Sn

534-04271101 Amino Sulfuric Soln
6.25 ml conc H_2SO_4 (EMD 49284; exp: 11/20/14) Added to
2.5 ml DI H_2O. Let Cool.
Dissolve 1.6875g N,N-Dimethyl-p-phenylenediamine
oxalate (Fluka 1363386 54082 04; exp: 8/7/14)
in cooled Sulfuric Soln and dilute to 25 ml w/
1:1 H_2SO_4 (534-04261104; exp: 4/26/12)
EXP: 5/25/11

4/27/11 SR — S24-04271102 Aq pH 7.000 Buffer
Purchased
BDH Cat No. BDH5046-500 mL
Lot # 1103379
Exp: 3/2013

4/28/11 SR — S24-04281101 0.1N H_2SO_4
5.6 mL Conc H_2SO_4 (EMD 49254; Exp: 11/28/14)
↑ 2L w/ DI H_2O
Exp: 4/28/12

5/4/11 SR — S24-05041101 Alkaline Digestion Sol'n
20.0g NaOH (EMD 4702271B; Exp: 10/11/12) +
30.0g Na_2CO_3 (EMD 4633171B; Exp 10/11/12)
↑ 1L w/ DI H_2O
Exp: 06/04/11

5/6/11 SR — S24-05051101 Cr Hex Coloring reagent
0.250g 1,5-Diphenylcarbohydrazide (JT Baker J0564);
Exp: 6/15/15 ↑ 50mL w/ Acetone (EMD 47154D;
Exp: 9/24/12)
Exp: 06/05/11

5/5/11 SR — S24-05051102 ICO2 Eluent
100 mL S24-04191101 (1% Urea Eluent; Exp: 9/23/11)
↑ 1L w/ DI H_2O. Degassed
Exp: 5/19/11

LABORATORY REPORT

May 31, 2011

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q11 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 19, 2011. For your reference, these analyses have been assigned our service request number P1101890.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-10-1; Minnesota Department of Health, NELAP Certificate No. 219474; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Digitally Signed By Sue Anderson at 3:05 pm, May 31, 2011

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

CAS Project No: P1101890

CASE NARRATIVE

The samples were received intact under chain of custody on May 19, 2011 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q11 / G486090
Service Request: P1101890

Date Received: 5/19/2011
Time Received: 11:47

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-21-5	P1101890-001	Water	5/19/2011	07:48	X
MW-21-4	P1101890-002	Water	5/19/2011	08:29	X
MW-21-3	P1101890-003	Water	5/19/2011	08:57	X
MW-21-2	P1101890-004	Water	5/19/2011	09:29	X
MW-21-1	P1101890-005	Water	5/19/2011	10:05	X
EB-15-5/19/11	P1101890-006	Water	5/19/2011	09:47	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1101890

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE. C-205
SAN DIEGO, CA 92110

Project Name: JPL GW. MON. 2011

Project Number: G486090

Project Manager: DAVID CONNER

P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone: (614) 726-7311 Fax: (614) 458 6641

Email Address for Result Reporting

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0	Remarks
MW-21-5	1	5/19/11	748	W	1							X	
MW-21-4	2		829		1							X	
MW-21-3	3		857		1							X	
MW-21-2	4		929		1							X	
MW-21-1	5		1005		1							X	
EB-15-5/19/11	6		947		1							X	EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/19/11	Time: 1100	Received by: (Signature)		Date: 5/19/11	Time: 1105
Relinquished by: (Signature)		Date: 5/19/11	Time: 1147	Received by: (Signature)		Date: 5/19/11	Time: 1147
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3.0C °C

5 of 22

Client: Battelle **Service Request:** P1101890
Project: JPL GW Mon 2Q11/G486090

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1101890-001.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	
P1101890-002.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	
P1101890-003.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	
P1101890-004.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	
P1101890-005.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	
P1101890-006.01					
	7196A				
		5/19/11	1255	SMO / MZAMORA	
		5/19/11	1255	P-37 / MZAMORA	
		5/19/11	1317	In Lab / SANDERSON	
		5/19/11	1601	P-37 / SANDERSON	

Columbia Analytical Services | 2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1101890

Project: JPL GW Mon 2Q11 / G486090

Sample(s) received on: 5/19/11 Date opened: 5/19/11 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1101890-001.01	125mL Plastic NP					
P1101890-002.01	125mL Plastic NP					
P1101890-003.01	125mL Plastic NP					
P1101890-004.01	125mL Plastic NP					
P1101890-005.01	125mL Plastic NP					
P1101890-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q11
Project Number : G486090
Sample Matrix : WATER

Service Request : P1101890
Date Collected : 05/19/11
Date Received : 05/19/11

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-21-5	P1101890-001	0.010	0.003	1	NA	05/19/11 15:10	ND	
MW-21-4	P1101890-002	0.010	0.003	1	NA	05/19/11 15:10	ND	
MW-21-3	P1101890-003	0.010	0.003	1	NA	05/19/11 15:10	ND	
MW-21-2	P1101890-004	0.010	0.003	1	NA	05/19/11 15:10	ND	
MW-21-1	P1101890-005	0.010	0.003	1	NA	05/19/11 15:10	ND	
EB-15-5/19/11	P1101890-006	0.010	0.003	1	NA	05/19/11 15:10	ND	
Method Blank	P1101890-MB	0.010	0.003	1	NA	05/19/11 15:10	ND	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1101890
Project:	JPL GW Mon 2Q11 / G486090	**Date Analyzed:**	05/19/11

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 5/19/11

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q11 / G486090

Service Request: P1101890
Date Analyzed: 05/19/11

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0504	101	90-110
CCV1	0.0500	0.0504	101	90-110
CCV2	0.0500	0.0504	101	90-110

Approved By: Karen Rya Date: 5/19/11

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101890
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/19/11

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1101890-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0414	104	90-110	

Approved By Karen Rya Date : 5/19/11

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1101890
Project Name :	JPL GW Mon 2Q11	**Date Collected :**	05/19/11
Project Number :	G486090	**Date Received :**	05/19/11
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/19/11

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-21-5
Lab Code : P1101890-001MS P1101890-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0423	0.0423	85	85	73-119	<1	

Approved By Karen Ryan Date : 5/19/11

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): 1101890

Time: 0725

Sample	VWR lot #	Exp.
pH 2 Buffer	524-1104/1003	1/2012
pH 4 Buffer	524-1104/1003	8/31/12
pH 7 Buffer	524-0427/1102A	3/2013
pH 10 Buffer	524-0426/1102	9/30/12

Slope	Prep.Run #
98.5 %	✓
	Run#
	✓

pH in liquid: (1) 9040B, (2) 9040C **pH in solid:** (3) 9045C, (4) 9045D (*Note method number in column labeled # below*)

pH adjustment:(5) 7196A,(6) 7199 (Note method # in column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	5	2.000	22.3°
pH 4.000	↓	4.006	21.9°
pH 7.000		6.998	22.1°
pH 10.000		9.989	22.4°
Ref#: 519-1123CP103D 7.00±0.06 EXP 1/2012		6.356	22.4°
DI		2.022	18.5°
pH 2.000	↓	1.996	22.0°
TIME	1430		
pH 2.000	5	2.007	22.9°
1890-1.01	↓	1.811	19.6°
-2.01		2.079	19.4°
-3.01		2.127	19.3°
-4.01		2.048	19.5°
-5.01		1.770	19.5°
-6.01		2.002	19.5°
pH 2.000	↓	1.998	22.8°

Sample	#	pH	Temp. °C

Slope not used

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 DMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/16/11

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/19/11

Reviewer: KR Date: 5/19/11

pH.XLS

Hexavalent Chromium (Liquids)

Columbia Analytical Services™

Method EPA 7196A

Service Request#(s): P1101890 Run#: 246923

Stock#: S24-0228/103 T.V=10.0ppm EXP. 2/28/12 Prep Run#: —

ICV/CCV#: S24-1015/001 T.V=100ppm EXP. 3/30/12 Conc. H_2SO_4 Lot#: EMD 49384 EXP: 11/20/14

Coloring Reagent Ref#: S24-0505/101 EXP: 6/5/11

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.9993802
Absorbance @ 540 nm	0.000	0.010	0.054	0.110	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	0.000570	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.055	0.055	0.0504	101%
3	MB		—	✓	0.000	0.000	0.000	0.000570	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.045	0.045	0.0414	104%
5	1890-1.01		—	✓	0.006	0.006	0.000	0.000570	<0.003
6	-1.01MS 0.05PPM		—	✓	0.006	0.052	0.046	0.0423	85%
7	-1.01MSD	↓	—	✓	0.006	0.052	0.046	0.0423	85% RPD
8	-2.01		—	✓	0.000	0.000	0.000	0.000570	<0.003
9	-2.01 VS 0.03PPM		—	✓	0.000	0.028	0.028	0.0260	87%
10	-3.01		—	✓	0.000	0.000	0.000	0.000570	<0.003
11	-4.01		—	✓	0.008	0.009	0.001	0.00148	<0.003
12	-5.01		—	✓	0.003	0.003	0.001	0.00148	<0.003
13	CCV1 0.05PPM		—	✓	0.000	0.055	0.055	0.0504	101%
14	CCB1		—	✓	0.000	0.000	0.000	0.000570	<0.003
15	1890-6.01		—	✓	0.000	0.000	0.000	I	<0.003
16	CCV2 0.05PPM		—	✓	0.000	0.055	0.055	0.0504	101%
17	CCB2	↓	—	✓	0.000	0.000	0.000	0.000570	<0.003

pH Requirement: Method 7196A (2 ± 0.5) * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of S24-1015/001 @ 1/10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0228/103 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of — ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of — @ 1/10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: [signature] Date/Time: 5/19/11 @ 1455

Analyzed By: [signature] Date/Time: 5/19/11 @ 1510

Reviewed By: [signature] Date: 5/19/11

Cr6LIQ.xls

LBV

11/23/09 SIG-1123090-2 1000 PPM SO_3 (ICV/CCV)
SV 0.1607g Na_2SO_3 (Mallinckrodt; H25469; EXP 8/11/14)
↑ 100ml w/ DI
EXP: 5/23/10

11/23/09 SIG-1123090-3 A,B,C,D PH REFERENCE
SV PURCHASED
ERA CAT # 977
LOT # 129934
EXP: 1/2012

11/24/09 SIG-1124090-1 1000 PPM SO_4 Standard
SV PURCHASED CAT # ICC-006
LOT # K007794
EXP: 9/30/13

SV 11/25/09
11/25/09 SIG-~~H25~~ 1125090-1 0.1N H_2SO_4
SV ~~5.6~~ml Conc H_2SO_4 (EMD 4705D EXP: 9/13/10)
EXP: ~~H25~~ 9/13/10
SV 11/25/09

11/30/09 SIG-1130090-1 Cr^{6+} Coloring Reagent
SV 0.2500g Diphenylcarbohydrazide (EMD) 4710-3ED; EXP: 1/30/13) ↑ 50ml w/ Acetone (EMD 4715-4D; EXP: 5/24/12)
EXP: 12/30/09

11/30/09 SIG-1130090-2 25133ppb Stock for O_3 in Air
SV 0.05ml Pyridine-4-Carboxaldehyde (Alfa Aesar LOT 10140598; EXP 8/11/12)
↑ 500ml deionized H_2O
EXP: 12/14/09

11/30/09 SIG-1130090-3 25133ppb ICV/CCV for O_3 in Air
SV 0.05ml Pyridine-4-carboxaldehyde (TCI LOT # IGIINC; EXP: 8/10/12)
↑ 500ml w/ DI H_2O
EXP: 12/14/09

Reviewed And Approved By:
Initial: VL Date: 12/22/09

40

10/6/10 SL — 524-10061001 — 25133 ppb Stock for O3

0.05 ml Pyridine-4-carboxaldehyde Alfa Aesar
10140598 ;Exp: 3/11/12) up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL — 524-10061002 — 25133 ppb ICV/CCV for O3

0.05 ml Pyridine-4-carboxaldehyde T&I
(IC-INC ;Exp: 8/10/12) up to 500 ml w/ DI Water.

EXP: 10/20/10

10/6/10 SL — 524-10061003 — MBTH SD/17

0.5000 g MBTH (Aldrich 546966 K ;Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4 EMD 44,784; EXP 11/20/

EXP: 10/7/10

10/15/10 SL — 524-10151001 — Cr6+ ICV/CCV Stock 100 PPM Cr6+

Purchased
RICCA Chemical Co
500ml Plastic
LOT # 101077
EXP: 3/30/12

Cat No 2995-16

10/15/10 SL — 524-10157002 — 500PPM NO2 Stock

Purchased
RICCA Chemical Co
LOT# 101071
EXP: 4/7/2011

Cat No: 5444.54
120 ml amber glass

10/28/10 S24-10281002 1000 PPM SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 11/11/10

11/1/10 S24-11011001 ICV/CCV Cr^{6+} T.V = 0.579 PPM

0.5ml S19-04090604 (T.V = 115.8 mg/L ; EXP: 12/2010)

↑ 100ml W/ DI

EXP: 11/15/10

11/1/10 S24-11011002 Cr^{6+} Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide (EMD 47703721, EXP. 1/30/13) ↑ 50ml W/ Acetone (EMD 47154D, EXP. 9/24/12).

EXP: 11/15/10

11/4/10 S24-11041001 A→E PH Filling Soln

PURCHASED (3M KCl) P/N 702613-A02

Thermo Scientific

LOT Code: 0R1

EXP: 11/4/11

11/4/10 S24-11041002 pH 2.000 Buffer

Purchased

BDH CAT NO: 5010-500ml

LOT # 100219G

EXP: 1/2012

77

11/4/10 524-1104100 3 pH 4.000 Buffer
purchased
JT Baker Cat No: 5657-01 500 ml
LOT # J30507
EXP: 8/31/12

11/4/10 524-1104100 4 pH 7.000 Buffer
purchased
J.T. Baker Cat No: 5656-01 500 ml
LOT # J35515
EXP: 9/30/12

11/5/10 524-1105100 1 MBTH Std

0.5000 g MBTH (Aldrich 54666EK ;Exp: 8/7/14) up to 100 ml w/ DI Water. Plus 0.5 ml Conc. H_2SO_4, EMD 4988 EXP: 11/20/14

EXP: 11/6/10

11/8/10 524-1108100 1 1000 ppm NH_3
0.3141 g NH_4Cl (EMD 4998931; EXP: 10/19/14) to 100 ml
w/ 524-1021006 EXP: 10/22/11
EXP: 10/22/11

11/12/10 524-1112100 1 1000 ppm SO_3 STOCK

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP: 11/26/10

54

524-022111101 1:1 H_2SO_4

2/21/11 SC

250 mL H_2SO_4 (EMD 49284; EXP: 11/20/14 ADDED SLOWLY TO 250 mL DI. COOL COMPLETELY
EXP: 2/21/12

2/21/11 SC

524-022111102 Cr6+ Coloring Reagent
0.2500 g 1,5-diphenylcarbohydrazide (EMD LOT 4710372L EXP: 1/30/13) ↑ 50 mL w/ Acetone (EMD LOT# 471540, EXP: 9/24/12).
EXP: 3/21/11

2/28/11 SC

524-022811101 0.1 H_2SO_4
5.6 mL Conc H_2SO_4 (EMD 49284 EXP: 11/20/14) ↑ 2L w/ DI H_2O
EXP: 2/28/12

2/28/11 SC

524-022811102 1001 mg/L Cr6+ Purchased Inorganic Ventures CGCR(6)1-1
125 mL Clear Glass
LOT# D2-CR03040
EXP: 3/1/2012

2/28/11 SR — 524-022811 03 — 100ppm Cr6+ Std
1.0 mL 524-022811 02 (~~100ppm Cr6+ Std~~ 100ppm Cr6+ Std 2/28/11; Exp: 3/1/12) ↑ 100mL w/ DI H2O
Exp: 2/28/12

3/7/11 SR — 524-030711 01 — Cr6+ Coloring Reagent
0.2500g 1,5-Diphenylcarbohydrazide (EMD Lot 47103721, Exp: 1/30/13) ↑ 50mL w/ Acetone (EMD 4714, Exp: 9/24/12).
Exp: 4/7/11

3/7/11 SR — 524-030711 02 — 500ppm NO2
Purchased
Alfa Aesar Co — Cat No 54445-4
Lot # 11025Z4
Exp: 8/2011

3/17/11 SR (SR 3/18/11) — 524-031711 01 — Alkaline Digestion Sol'n
20.0g NaOH (EMD 47022713B; Exp: 10/11/12) + 30.0g Na2CO3 (EMD 46231715B; Exp: 10/11/12) ↑ 1L w/ DI H2O.
Exp: 4/17/11

Reviewed And Approved By:
Initial: KL Date: 3/18/11

7/14/11 SR — 524-041411 01 — IC02 Eluent
75mL 524-042911 02 (10X Conc Eluent; Exp 4/29/11) ↑ 750mL w/ DI H2O. DEGAS
Exp: 4/28/11

S24-04261102 pH 10.000 Buffer

4/26/11 Purchased
JT Baker Cat No: 5655-01 (500mL
LOT # J33524
EXP. 9/30/12

4/26/11 S24-04261103 NH3 FILLING SOLN
Purchased
Thermo Orion Orion 951203 (60mL
LOT # 0X1 P/N: 702643-A04
EXP. 4/26/12

4/26/11 S24-04261104 S24 4/26/11 1:1 H2SO4
250mL Conc H2SO4 (EMD 49284, EXP: 11/20/14)
ADDED SLOWLY TO 250ml DEH2O
LET COOL
EXP: 4/26/12

4/27/11 S24-04271101 Amido Sulfuric Sol'n
6.25ml Conc H2SO4 (EMD 49284; EXP: 11/20/14) Added to
2.5ml DI H2O. Let Cool.
Dissolve 1.6875g N,N-Dimethyl-p-phenylenediamine
oxalate (Fluka 1363386 1340820; EXP: 8/7/14)
in cooled Sulfuric Soln and dilute to 250ml w/
1:1 H2SO4 (S24-04261104; EXP: 4/26/12)
EXP: 5/25/11

4/27/11 S24-04271102 A&B pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1103379
EXP: 3/2013

4/28/11 S24-04281101 0.1N H_2SO_4
5.6 ml Conc H_2SO_4 (EMD 49284; EXP: 11/20/14)
↑ 2L w/ DI H_2O
EXP: 4/28/12

5/4/11 S24-05041101 Alkaline Digestion Sol'n
20.0g NaOH (EMD 47022715C; EXP: 10/11/12) +
30.0g Na_2CO_3 (EMD 46321715B; EXP: 10/11/12)
↑ 1L w/ DI H_2O
EXP: 06/04/11

5/5/11 S24-05051101 Cr(VI) Coloring reagent
0.2500g 1,5-Diphenylcarbohydrazide (JT Baker J05641; EXP: 06/15/15 ↑ 50ml w/ Acetone (EMD 47154D; EXP: 9/24/12).
EXP: 06/05/11

5/5/11 S24-05051102 IC02 Eluent
100 ml S24-04191101 (10x conc [illegible]; EXP: 9/22/11)
↑ 1L w/ DI H_2O - Degassed
EXP: 5/19/11