N00174.AR.002010
NSWC INDIAN HEAD
5090.3a

VALIDATED DATA PACKAGE, 77792, NSWC INDIAN HEAD MD
11/18/2015
APPL LABS

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 74807

Summary Report

November 18, 2015

Tetra Tech
5700 Lake Wright Drive, Suite 309
Norfolk, Virginia 23502

Attn: Ed Corack

Title: Report of Data: Case 77792

Project: CTO JU11 112G02622 NSF Indian Head, MD

Contract #: Prime contract # for DoD: Navy CLEAN. N62467-08-D-1001
Subcontract # 1045497, Work Release # 08-JU11

Dear Mr. Corack:

Four water samples were received November 6, 2015, in good condition. Written results for the requested analysis are being provided on this November 18, 2015.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, cclark@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/rp
Enclosure
cc: File

Number of pages in this report: ____

Sample receipt information

ARF: 77792

Project: CTO JU11 112G02622 NSF Indian Head, MD

Sample Receipt Information:

The sample group was received on November 6, 2015, at 3.0°C. The samples were assigned Analytical Request Form (ARF) number 77792. The sample numbers and requested analysis were compared to the chain of custody. Labeling discrepancies were noted and reported to the client. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
S67-GW103-1620	AZ24176	WATER	11/05/15	11/06/15
S67-GW113-2327	AZ24177	WATER	11/05/15	11/06/15
S67-GW102-1115	AZ24178	WATER	11/05/15	11/06/15
S67-GW101-1115	AZ24179	WATER	11/05/15	11/06/15

The samples and blank were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

EPA Method 6850

Perchlorate by LC-Mass Spec

Sample Preparation and Analysis Information:

The water samples were prepared according to the method. The samples were analyzed according to EPA Method 6850 using an Agilent 6460 Triple Quad LC/MS. The samples were prepared and analyzed within acceptable hold time.

Manual integrations were performed in accordance to APPL's SOP. Perchlorate was manually integrated in calibration standards, the ICS and samples S67-GW103-1620 and S67-GW113-2327. Chromatograms of before and after manual integration are enclosed.

Quality Control/Assurance

Calibrations:

Calibrations were performed according to the method. All calibration acceptance criteria were met. The second source met acceptance criteria.

Blanks:

Perchlorate was not detected at or above one-half the limit of quantitation (LOQ) in the method blank.

Spikes:

A Laboratory Control Spike (LCS) was prepared using DI water. The LCS recovery met acceptance criteria.

An Interference Check Sample (I.C.S.) was prepared using a mixed anions solution.

No sample was designated by the client for MS/MSD analysis.

Internal Standards:

The area counts of the sample Internal Standards were compared to the average IS area counts of the initial calibration. All I.S. were within the 50%D acceptance criteria.

Summary:

All data were acceptable. No other analytical exception is noted.

77792 3.0

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611

Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 42669

Report to: PLEASE PRINT

Company Name: Tetra Tech Phone: 757-466-4908

Address: 5700 Lake Wright Dr Si309
Norfolk, VA 23502 Fax:

Attn: Ed Corack

Invoice to: PLEASE PRINT

Company Name: See Contract Phone:

Address: Fax:

Attn:

Project Name/Number: NSF-Indian Head Site 67 112G02622

Purchase Order Number:

Sampler (Print): Jacob Birkett

Sampler (Signature):

Date Shipped: 11-5-15
Carrier: FedEx
Waybill No.: ~~8744 3152 5564~~
Comments: 8744-3758-5575

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Matrix: Sed.	Matrix: Soil	Analysis Requested/Method Number: Perchlorate
S67-GW103-1620	TW103	11-5-15	0840	ET	1	1			1
S67-GW113-2327	TW113	11-5-15	0955	ET	1	1			1
S67-GW102-1115	TW102	11-5-15	1050	ET	1	1			1
S67-GW101-1115	TW101	11-5-15	1215	ET	1	1			1

11-5-15

Shuttle Temperature:

Turnaround Requested: Check one ☐ Standard 2-3 wk ☐ One week ☒ 24/48 Hrs. (48 HR) ☐ Other

Sample Disposal: ☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	11-5-15	1730	FedEx	FedEX			
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/6/15	10:15	Yang Zn

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

COOLER RECEIPT FORM **ARF: 77792**

1) Project: CTO JU11 112G02622 NSF Indian Head Date Received: 11/06/15

2) Coolers: Number of Coolers: 1

3) YES Were custody seals present and intact?
How many? 2 Name/Date on seal? see below

4) YES Was there a shipping slip? Carrier name: FED EX

5) Type of packing in cooler: __ bubble wrap __ popcorn __ foam X plastic ba
X wet ice __ dry ice __ no ice __ other

6) YES Were cooler temperatures acceptable?

7) Serial number of certified NIST thermometer use j5297

8) Cooler temp(s): In °C
1: 3.0 2: ____ 3: ____ 4: ____ 5: ____ 6: ____
7: ____ 8: ____ 9: ____ 10: ____ 11: ____ 12: ____

Chain of custody:

9) YES Was a chain of custody received?

10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) NA Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: ____
Smaller than a pea: ____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of sodium hydroxide preserved samples for Cyanide > 12 and Sulfide >9?

22) NO Were unpreserved VOA Vials received?

23) NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: ____
Lab notified if pH was not adequate: ____

Notes/Deficiencies:

Sample S67-GW113-2327 container has collection date 11/3/15 and coc has 11/5/15. Sample S67-GW103-1620 container has no collection date and coc has 11/5/15. Coc listed sample id as S67-GW102-1115 and S67-GW101-1115 and sample containers has id as S67-TW102-1115 and S67-TW101-1115. Date and collection time matches coc.

Personnel receiving samples: tx Second reviewer: ____
Personnel labeling samples: ____
Project manager notified: ____ Date/Time of notification ____
Name of client notified: ____ Date/Time of notification ____

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW103-1620
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24176
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.44 J	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

J = Estimated value.

Quant Method: QTLMFL2
Run #: TY07_061.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/18/15 4:28:47 PM
APPL-F1-SC-NoMC-REG MDLs-DOD

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW113-2327
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24177
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.400 U	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_062.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/18/15 4:28:47 PM
APPL-F1-SC-NoMC-REG MDLs-DOD

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW102-1115
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24178
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.45 J	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

J = Estimated value.

Quant Method: QTLMFL2
Run #: TY07_063.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/18/15 4:28:47 PM
APPL-F1-SC-NoMC-REG MDLs-DOD

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW101-1115
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24179
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	1.5	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_064.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/18/15 4:28:47 PM
APPL-F1-SC-NoMC-REG MDLs-DOD

Method Blank
Perchlorate

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **151106W-24176 - 202029**
Batch ID: #6850-151106A

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	PERCHLORATE	0.400 U	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_060.d
Instrument: AGIL_6460
Sequence: TQ110715
Initials: RP

GC SC-Blank-REG MDLs-DOD
Printed: 11/18/15 4:28:50 PM

Laboratory Control Spike Recovery
Perchlorate

APPL ID: **151106W-24176 LCS - 202029**
Batch ID: #6850-151106A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
PERCHLORATE	0.600	0.579	96.5	80-120

Comments: _____

Primary	SPK
Quant Method :	QTLMFL2
Extraction Date :	11/06/15
Analysis Date :	11/08/15
Instrument :	AGIL_6460
Run :	TY07_058.d
Initials :	RP

Printed: 11/18/15 4:28:53 PM
APPL Standard LCS

EPA 6850

Form 4

Blank Summary

Lab Name: APPL, Inc.
SDG No: 77792
Case No: 77792
Date Analyzed: 11/08/15
Matrix: WATER
Instrument: AGIL_6460
Blank ID: 151106A-BLK
Time Analyzed: 0756

APPL ID.	Client Sample No.	File ID.	Date Analyzed
151106A-LCS	Lab Control Spike	TY07_058.d	11/08/15 0719
151106A-BLK	Blank	TY07_060.d	11/08/15 0756
AZ24176	S67-GW103-1620	TY07_061.d	11/08/15 0815
AZ24177	S67-GW113-2327	TY07_062.d	11/08/15 0833
AZ24178	S67-GW102-1115	TY07_063.d	11/08/15 0852
AZ24179	S67-GW101-1115	TY07_064.d	11/08/15 0911

Comments: Batch: #6850-151106A

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 74807

Data Validatable Report

November 18, 2015

Tetra Tech
5700 Lake Wright Drive, Suite 309
Norfolk, Virginia 23502

Attn: Ed Corack

Title: Report of Data: Case 77792

Project: CTO JU11 112G02622 NSF Indian Head, MD

Contract #: Prime contract # for DoD: Navy CLEAN. N62467-08-D-1001
Subcontract # 1045497, Work Release # 08-JU11

Dear Mr. Corack:

Four water samples were received November 6, 2015, in good condition. Written results for the requested analysis are being provided on this November 18, 2015.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, cclark@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/rp
Enclosure
cc: File

Number of pages in this report: 109

T:\Case Narratives\Tetra Tech\77792 new NSF Indian Head.doc

Data Validation Package

for

CTO JU11 112G02622 NSF Indian Head

ARF 77792

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SAMPLE RECEIPT INFORMATION

Sample receipt information

ARF: 77792

Project: CTO JU11 112G02622 NSF Indian Head, MD

Sample Receipt Information:

The sample group was received on November 6, 2015, at 3.0°C. The samples were assigned Analytical Request Form (ARF) number 77792. The sample numbers and requested analysis were compared to the chain of custody. Labeling discrepancies were noted and reported to the client. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
S67-GW103-1620	AZ24176	WATER	11/05/15	11/06/15
S67-GW113-2327	AZ24177	WATER	11/05/15	11/06/15
S67-GW102-1115	AZ24178	WATER	11/05/15	11/06/15
S67-GW101-1115	AZ24179	WATER	11/05/15	11/06/15

The samples and blank were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

CASE NARRATIVE

EPA Method 6850

Perchlorate by LC-Mass Spec

Sample Preparation and Analysis Information:

The water samples were prepared according to the method. The samples were analyzed according to EPA Method 6850 using an Agilent 6460 Triple Quad LC/MS. The samples were prepared and analyzed within acceptable hold time.

Manual integrations were performed in accordance to APPL's SOP. Perchlorate was manually integrated in calibration standards, the ICS and samples S67-GW103-1620 and S67-GW113-2327. Chromatograms of before and after manual integration are enclosed.

Quality Control/Assurance

Calibrations:

Calibrations were performed according to the method. All calibration acceptance criteria were met. The second source met acceptance criteria.

Blanks:

Perchlorate was not detected at or above one-half the limit of quantitation (LOQ) in the method blank.

Spikes:

A Laboratory Control Spike (LCS) was prepared using DI water. The LCS recovery met acceptance criteria.

An Interference Check Sample (I.C.S.) was prepared using a mixed anions solution.

No sample was designated by the client for MS/MSD analysis.

Internal Standards:

The area counts of the sample Internal Standards were compared to the average IS area counts of the initial calibration. All I.S. were within the 50%D acceptance criteria.

Summary:

All data were acceptable. No other analytical exception is noted.

APPL Inc.
Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer.
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other – (See case narrative)
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel
U	Not detected
Y	Percent difference between primary and confirmation column > 40%

CHAIN OF CUSTODY,
ARF, CRF, AND
CLIENT COMMUNICATION

APPL - Analysis Request Form

77792

Client: Tetra Tech
Address: 5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502
Attn: Ed Corack
Phone: 757-466-4908 Fax: 757-461-4148
Job: CTO JU11 112G02622 NSF Indian Head
PO #: MSA #1045497 Release #08-CTO JU11
Chain of Custody (Y/N): Y # 42669
RAD Screen (Y/N): Y pH (Y/N): N
Turn Around Type: 24 HOURS

Received by: YL
Date Received: 11/06/15 Time: 10:15
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y Time Zone: -5
Chest Temp(s): 3.0°C
Color: F-Pink
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Cynthia Clark
QC Report Type: DVP4/LEDD/MD
Due Date: 11/09/15

Comments:
login to ed.corack@ amy.thomson@ & tobrena.sedlmyer@tetratech.com.
Rush results to Ed; 21 calendar day TAT for final report
1HC DVP4 and summary report & 2 BOOKMARKED CDs of DVP4 and
Summary report (sample & QC results w/surrogate & blank summaries) to Amy Thomson (Pittsburgh)
Include original COC with report. NOTHING to Ed in VA office
EDD: TTEC LEDD to http://isg.applications.tetratech.com/LEDDChecker2010/
EDD: email confirm to ed.corack@ amy.thomson@ & tobrena.sedlmyer@tetratech.com
Guidance: DOD QSM v4.2: DOD Forms, LOD Database
correct TAT to 24hours per email 11/6/15 chc

Sample Distribution:
Extractions: 4-_HPL6850
LCMS: 4-$6850

Charges:

Invoice To:
ACCOUNTS PAYABLE
661 Andersen Dr, Foster Plaza 7
Pittsburgh, PA 15220-2745
Invoice in triplicate per SOW

	Client ID	APPL ID	Sampled	Analyses Requested
1.	S67-GW103-1620	AZ24176W	11/05/15 08:40	$6850
2.	S67-GW113-2327	AZ24177W	11/05/15 09:55	$6850
3.	S67-GW102-1115	AZ24178W	11/05/15 10:50	$6850
4.	S67-GW101-1115	AZ24179W	11/05/15 12:15	$6850

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -5 UTC

APPL Sample Receipt Form

ARF# 77792

Sample	Container Type	Count	pH
AZ24176	4 PL 125mL	1	NA
AZ24177	4 PL 125mL	1	NA
AZ24178	4 PL 125mL	1	NA
AZ24179	4 PL 125mL	1	NA

Sample	Container Type	Count	pH

APPL - Receiving

From: Cynthia Clark [cclark@applinc.com]
Sent: Friday, November 06, 2015 8:32 AM
To: 'Paula Young'; 'Renee Patterson'; cmoua@applinc.com; 'Receiving at APPL Inc.'
Subject: RE: samples collected & shipped Thurs for receipt Fri -- RE: Indian Head Site 67 sampling startup again ("Phase 3") in October

the COC is incorrect and requests a 48hour TAT, but they need 24hour

Sincerely,

Cynthia Clark
Project Manager

Agriculture & Priority Pollutants Laboratories, Inc.
WOSB. NELAP Accredited.

t. 559.275-2175 f. 559.275-4422
a. 908 N. Temperance Ave., Clovis, CA 93611

Website • Email

DoD accredited for ISM, Dioxins and PCB congeners.

This is a PRIVATE and CONFIDENTIAL message. If you are not the intended recipient, please delete without copying and kindly advise us by e-mail of the mistake in delivery. NOTE: Regardless of content, this e-mail shall not operate to bind APPL, Inc. to any order or other contract unless pursuant to explicit written agreement or government initiative expressly permitting the use of e-mail for such purpose.

From: Cynthia Clark [mailto:cclark@applinc.com]
Sent: Friday, November 06, 2015 8:31 AM
To: 'Paula Young'; 'Renee Patterson'; 'cmoua@applinc.com'; 'Receiving at APPL Inc.'
Subject: FW: samples collected & shipped Thurs for receipt Fri -- RE: Indian Head Site 67 sampling startup again ("Phase 3") in October

here are the rush perchlorate samples arriving today

Sincerely,

Cynthia Clark
Project Manager

Agriculture & Priority Pollutants Laboratories, Inc.
WOSB. NELAP Accredited.

t. 559.275-2175 f. 559.275-4422
a. 908 N. Temperance Ave., Clovis, CA 93611

Website • Email

DoD accredited for ISM, Dioxins and PCB congeners.

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From: Corack, Ed [mailto:Ed.Corack@tetratech.com]
Sent: Thursday, November 05, 2015 10:16 PM
To: Cynthia Clark
Cc: Birkett, Jacob
Subject: samples collected & shipped Thurs for receipt Fri -- RE: Indian Head Site 67 sampling startup again ("Phase 3") in October

Cynthia, you'll receive the four 24-hr perchlorate groundwater samples we collected on Thursday this Friday morning via FedEx priority overnight. A copy of the CoC is attached.

- S67-GW101-1115
- S67-GW102-1115
- S67-GW103-1620
- S67-GW113-2327

I don't need these Thursday-samples-data by Saturday, but please email these results to me by noon on Monday, Nov 9th.

Next: We'll collect soil samples on Monday-Tuesday next week during well installations (normal TAT on all analyses).

V/R,
-Ed

Ed Corack
Tetra Tech

From: Corack, Ed
Sent: Thursday, November 05, 2015 9:11 AM
To: 'Cynthia Clark' <cclark@applinc.com>
Cc: Birkett, Jacob <Jacob.Birkett@tetratech.com>
Subject: samples collected & shipped Wed for receipt today, Thurs -- RE: Indian Head Site 67 sampling startup again ("Phase 3") in October

Site 67 RI Phase 3
Week 1 – Nov 2nd – DPT grab groundwater collection for perchlorate (24-hr TAT)
Week 2 – Nov 9th – installing new monitoring wells. Collecting soil samples during well install (normal TAT).
Week 3 – Nov 16th – sampling wells (normal TAT). Potentially can sample some of them at the end of Week 2.

Hi Cynthia,

77792 3.0

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611

Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 42669

Report to: PLEASE PRINT
Company Name: Tetra Tech Phone: 757-466-4908
Address: 5700 Lake Wright Dr Si309
Norfolk, VA 23502 Fax:
Attn: Ed Corack

Invoice to: PLEASE PRINT
Company Name: See Contract Phone:
Address: Fax:
Attn:

Project Name/Number: NSF-Indian Head Site 67 112G02622
Purchase Order Number
Sampler (Print): Jacob Birkett
Sampler (Signature):

Date Shipped: 11-5-15
Carrier: FedEx
Waybill No.: ~~8744 3752 5584~~
Comments: 8744-3758-5575

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Matrix: Sed.	Matrix: Soil	Analysis Requested/Method Number: Perchlorate
S67-GW103-1620	TW103	11-5-15	0840	ET	1	1			1
S67-GW113-2327	TW113	11-5-15	0955	ET	1	1			1
S67-GW102-1115	TW102	11-5-15	1050	ET	1	1			1
S67-GW101-1115	TW101	11-5-15	1215	ET	1	1			1

11-5-15

Shuttle Temperature:
Turnaround Requested: Check one ☐ Standard 2-3 wk ☐ One week ☒ 24/48 Hrs. ☐ Other (48 HR)
Sample Disposal: ☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date 11-5-15	Time 1730	Received by: FedEx	Relinquished by: FedEX	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date 11/6/15	Time 10:15	Received at lab by: Yang Zn

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

COOLER RECEIPT FORM **ARF: 77792**

1) Project: CTO JU11 112G02622 NSF Indian Head Date Received: 11/06/15

2) Coolers: Number of Coolers: 1

3) YES Were custody seals present and intact?
How many? 2 Name/Date on seal? see below

4) YES Was there a shipping slip? Carrier name: FED EX

5) Type of packing in cooler: __ bubble wrap __ popcorn __ foam X plastic ba
X wet ice __ dry ice __ no ice __ other

6) YES Were cooler temperatures acceptable?

7) Serial number of certified NIST thermometer use j5297

8) Cooler temp(s): In °C
1: 3.0 2: _____ 3: _____ 4: _____ 5: _____ 6: _____
7: _____ 8: _____ 9: _____ 10: _____ 11: _____ 12: _____

Chain of custody:

9) YES Was a chain of custody received?

10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) NA Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: _____
Smaller than a pea: _____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of sodium hydroxide preserved samples for Cyanide > 12 and Sulfide >9?

22) NO Were unpreserved VOA Vials received?

23) NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: _____
Lab notified if pH was not adequate: _____

Notes/Deficiencies:

Sample S67-GW113-2327 container has collection date 11/3/15 and coc has 11/5/15. Sample S67-GW103-1620 container has no collection date and coc has 11/5/15. Coc listed sample id as S67-GW102-1115 and S67-GW101-1115 and sample containers has id as S67-TW102-1115 and S67-TW101-1115. Date and collection time matches coc.

Personnel receiving samples: tx Second reviewer: YL
Personnel labeling samples: _____
Project manager notified: _____ Date/Time of notification _____
Name of client notified: _____ Date/Time of notification _____

EPA METHOD 6850
Perchlorate
LC/MS

APPL, INC.

EPA METHOD 6850
Perchlorate
LC/MS

QC Summary

APPL, INC.

Method Blank
Perchlorate

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **151106W-24176 - 202029**
Batch ID: #6850-151106A

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	PERCHLORATE	0.400 U	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_060.d
Instrument: AGIL_6460
Sequence: TQ110715
Initials: RP

GC SC-Blank-REG MDLs-DOD
Printed: 11/09/15 10:32:55 AM

Laboratory Control Spike Recovery
Perchlorate

APPL ID: **151106W-24176 LCS - 202029**
Batch ID: #6850-151106A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
PERCHLORATE	0.600	0.579	96.5	80-120

Comments: _____

Primary	SPK
Quant Method :	QTLMFL2
Extraction Date :	11/06/15
Analysis Date :	11/08/15
Instrument :	AGIL_6460
Run :	TY07_058.d
Initials :	RP

Printed: 11/09/15 10:32:50 AM
APPL Standard LCS

EPA 6850

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 77792

Case No: 77792 Date Analyzed: 11/08/15

Matrix: WATER Instrument: AGIL_6460

Blank ID: 151106A-BLK Time Analyzed: 0756

APPL ID.	Client Sample No.	File ID.	Date Analyzed
151106A-LCS	Lab Control Spike	TY07_058.d	11/08/15 0719
151106A-BLK	Blank	TY07_060.d	11/08/15 0756
AZ24176	S67-GW103-1620	TY07_061.d	11/08/15 0815
AZ24177	S67-GW113-2327	TY07_062.d	11/08/15 0833
AZ24178	S67-GW102-1115	TY07_063.d	11/08/15 0852
AZ24179	S67-GW101-1115	TY07_064.d	11/08/15 0911

Comments: Batch: #6850-151106A

Interferrence Check Sample

Perchlorate EPA 6850 Water

APPL ID: 151106W-24176 ICS-202029
Batch ID: #6850-151106A

APPL Inc.
908 N. Temperance Ave.
Clovis, CA 93711

Compound Name	Spike Level ug/L	Spk Result ug/L	SPK% Recovery	Recovery Limits
Perchlorate	0.600	0.574	95.7%	70-130

Comments:

Quant Method:	QTLMFL2
Extraction Date:	11/06/15
Analysis Date:	11/08/15
Instrument:	AGIL_6560
Run:	TY07_059.D
Initials:	RP

INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. **SDG No.** **77792**

Lab File ID (Standard): TY07_003 - 008.d

Instrument ID: Agilent 6460 Triple Quad LC/MS

	PER_IS			
	12_HOUR_STD AVERAGE	5285396		
	UPPER LIMIT RESPONSE	7928093		
	LOWER LIMIT RESPONSE	2642698		
Data File ID:	Sample ID:	Analysis Date and Time	IS AREA COUNT #	IS R.T. #
TY07_003.d	PERCHLORATE 0.0002 ug/ml 11/07/15	11/07/15 14:14	5402351	12.672
TY07_004.d	PERCHLORATE 0.0004 ug/ml 11/07/15	11/07/15 14:33	4108491	12.672
TY07_005.d	PERCHLORATE 0.001 ug/ml 11/07/15	11/07/15 14:51	5078523	12.641
TY07_006.d	PERCHLORATE 0.002 ug/ml 11/07/15	11/07/15 15:10	5944762	12.641
TY07_007.d	PERCHLORATE 0.005 ug/ml 11/07/15	11/07/15 15:29	5991866	12.641
TY07_008.d	PERCHLORATE 0.010 ug/ml 08/01/15	11/07/15 15:47	5186380	12.641
TY07_010.d	PER_SS 0.0004 ug/ml 11/06/15	11/07/15 16:25	5269548	12.753
TY07_011.d	PER_SS 0.002 ug/ml 11/06/15	11/07/15 16:43	5916199	12.784
TY07_013.d	PER_CCV_1 0.002 ug/ml 11/07/15	11/07/15 17:21	5064306	12.947
TY07_014.d	PER_CCV_1 0.0004 ug/ml 11/07/15	11/07/15 17:39	5052506	12.988
TY07_055.d	PER_CCV_2 0.0004 ug/ml 11/07/15	11/08/15 6:23	5267810	13.711
TY07_056.d	PER_CCV_2 0.002 ug/ml 11/07/15	11/08/15 6:42	5284326	13.711
TY07_058.d	151106WA_LCS-1 1052.6 DF 11/06/15	11/08/15 7:19	4578356	13.68
TY07_059.d	151106W_ICSA 1052.6 DF 11/06/15	11/08/15 7:37	4416921	12.875
TY07_060.d	151106WBLKA 1052.6 DF 11/06/15	11/08/15 7:56	4830075	13.548
TY07_061.d	AZ24176_W01 1052.6 DF 11/06/15	11/08/15 8:15	4521986	13.212
TY07_062.d	AZ24177_W01 1052.6 DF 11/06/15	11/08/15 8:33	5013671	13.344
TY07_063.d	AZ24178_W01 1052.6 DF 11/06/15	11/08/15 8:52	5349348	12.845
TY07_064.d	AZ24179_W01 1052.6 DF 11/06/15	11/08/15 9:11	5106850	12.723
TY07_066.d	PER_CCV_2 0.0004 ug/ml 11/07/15	11/08/15 9:48	5440338	13.079
TY07_067.d	PER_CCV_2 0.002 ug/ml 11/07/15	11/08/15 10:06	5454312	12.977

AREA UPPER LIMIT = +50% of internal standard average
AREA LOWER LIMIT = -50% of internal standard average
Column used to flag values outside QC limits
* Values outside of QC limits

Perchlorate LC/MS Ion Ratio Report

acceptable ratio is between 2.3 and 3.8 (DoD Perchlorate Handbook, 2006)

Data File Path : D:\masshunter\data\151107
Instrument Name : TQ (Agilent 6460 Triple Quad LC/MS)
Method File : 6460_ESI_PER_N_NEWER_K'_COLUMN.m
Operator : BA

Date Aquired: 11/07/15 13:37 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_001.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.811	5996	1.4
2)	Perchlorate_85	12.777	4136	

Date Aquired: 11/07/15 13:56 Vial Number: NA
Sample Name: PERCHLORATE 0.0001 ug/ml 11/07/15 Data File ID: TY07_002.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.536	149725	2.3
2)	Perchlorate_85	12.522	65419	

Date Aquired: 11/07/15 14:14 Vial Number: NA
Sample Name: PERCHLORATE 0.0002 ug/ml 11/07/15 Data File ID: TY07_003.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.699	268654	2.7
2)	Perchlorate_85	12.675	99052	

Date Aquired: 11/07/15 14:33 Vial Number: NA
Sample Name: PERCHLORATE 0.0004 ug/ml 11/07/15 Data File ID: TY07_004.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.678	552262	3.4
2)	Perchlorate_85	12.665	163598	

Date Aquired: 11/07/15 14:51 Vial Number: NA
Sample Name: PERCHLORATE 0.001 ug/ml 11/07/15 Data File ID: TY07_005.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.638	1362972	3.3
2)	Perchlorate_85	12.655	411129	

Date Aquired: 11/07/15 15:10 Vial Number: NA
Sample Name: PERCHLORATE 0.002 ug/ml 11/07/15 Data File ID: TY07_006.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.658	2837952	3.5
2)	Perchlorate_85	12.655	812314	

Date Aquired: 11/07/15 15:29 Vial Number: NA
Sample Name: PERCHLORATE 0.005 ug/ml 11/07/15 Data File ID: TY07_007.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.638	7583783	3.6
2)	Perchlorate_85	12.644	2106695	

Date Aquired: 11/07/15 15:47 Vial Number: NA
Sample Name: PERCHLORATE 0.010 ug/ml 08/01/15 Data File ID: TY07_008.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.658	15583461	3.6
2)	Perchlorate_85	12.644	4346083	

Date Aquired: 11/07/15 16:06 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_009.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.75	9195	1.4
2)	Perchlorate_85	12.777	6433	

Page 2 of 17

Date Aquired: 11/07/15 16:25 Vial Number: NA
Sample Name: PER_SS 0.0004 ug/ml 11/06/15 Data File ID: TY07_010.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.76	554749	3.1
2)	Perchlorate_85	12.757	178224	

Date Aquired: 11/07/15 16:43 Vial Number: NA
Sample Name: PER_SS 0.002 ug/ml 11/06/15 Data File ID: TY07_011.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.801	2886613	3.4
2)	Perchlorate_85	12.787	841454	

Date Aquired: 11/07/15 17:02 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_012.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.729	19169	1.2
2)	Perchlorate_85	12.838	15694	

Date Aquired: 11/07/15 17:21 Vial Number: NA
Sample Name: PER_CCV_1 0.002 ug/ml 11/07/15 Data File ID: TY07_013.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.943	2758115	3.4
2)	Perchlorate_85	12.96	813430	

Page 3 of 17

Date Aquired: 11/07/15 17:39 Vial Number: NA
Sample Name: PER_CCV_1 0.0004 ug/ml 11/07/15 Data File ID: TY07_014.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.984	506407	3.3
2)	Perchlorate_85	13.021	153984	

Date Aquired: 11/07/15 17:58 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_015.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.821	16537	2.9
2)	Perchlorate_85	12.746	5722	

Date Aquired: 11/07/15 18:16 Vial Number: NA
Sample Name: 151105WA_LCS-1 1052.6 DF 11/05/15 Data File ID: TY07_016.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.106	671146	3.3
2)	Perchlorate_85	13.134	204584	

Date Aquired: 11/07/15 18:35 Vial Number: NA
Sample Name: 151105W_ICSA 1052.6 DF 11/05/15 Data File ID: TY07_017.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.291	685901	3.0
2)	Perchlorate_85	12.257	230526	

Page 4 of 17

Date Aquired: 11/08/15 6:04 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_054.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.526	23536	7.7
2)	Perchlorate_85	12.716	3064	

Date Aquired: 11/08/15 6:23 Vial Number: NA
Sample Name: PER_CCV_2 0.0004 ug/ml 11/07/15 Data File ID: TY07_055.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.697	542537	3.3
2)	Perchlorate_85	13.735	162623	

Date Aquired: 11/08/15 6:42 Vial Number: NA
Sample Name: PER_CCV_2 0.002 ug/ml 11/07/15 Data File ID: TY07_056.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.748	2837702	3.5
2)	Perchlorate_85	13.724	821814	

Date Aquired: 11/08/15 7:00 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_057.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.801	5919	21.1
2)	Perchlorate_85	12.797	281	

Page 14 of 17

Date Aquired: 11/08/15 7:19 Vial Number: NA
Sample Name: 151106WA_LCS-1 1052.6 DF 11/06/15 Data File ID: TY07_058.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.708	690929	3.2
2)	Perchlorate_85	13.724	216055	

Date Aquired: 11/08/15 7:37 Vial Number: NA
Sample Name: 151106W_ICSA 1052.6 DF 11/06/15 Data File ID: TY07_059.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.862	660043	2.8
2)	Perchlorate_85	12.858	231773	

Date Aquired: 11/08/15 7:56 Vial Number: NA
Sample Name: 151106WBLKA 1052.6 DF 11/06/15 Data File ID: TY07_060.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.729	12228	3.7
2)	Perchlorate_85	12.736	3302	

Date Aquired: 11/08/15 8:15 Vial Number: NA
Sample Name: AZ24176_W01 1052.6 DF 11/06/15 Data File ID: TY07_061.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.269	517727	3.4
2)	Perchlorate_85	13.246	153689	

Page 15 of 17

Date Aquired: 11/08/15 8:33 Vial Number: NA
Sample Name: AZ24177_W01 1052.6 DF 11/06/15 Data File ID: TY07_062.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.361	186324	3.3
2)	Perchlorate_85	13.419	56263	

Date Aquired: 11/08/15 8:52 Vial Number: NA
Sample Name: AZ24178_W01 1052.6 DF 11/06/15 Data File ID: TY07_063.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.852	628398	3.0
2)	Perchlorate_85	12.848	210081	

Date Aquired: 11/08/15 9:11 Vial Number: NA
Sample Name: AZ24179_W01 1052.6 DF 11/06/15 Data File ID: TY07_064.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.719	2001767	3.3
2)	Perchlorate_85	12.726	599142	

Date Aquired: 11/08/15 9:29 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_065.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.811	563	0.5
2)	Perchlorate_85	13.348	1068	

Page 16 of 17

Date Aquired: 11/08/15 9:48 Vial Number: NA
Sample Name: PER_CCV_2 0.0004 ug/ml 11/07/15 Data File ID: TY07_066.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	13.076	559610	3.5
2)	Perchlorate_85	13.062	159846	

Date Aquired: 11/08/15 10:06 Vial Number: NA
Sample Name: PER_CCV_2 0.002 ug/ml 11/07/15 Data File ID: TY07_067.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.984	2999762	3.5
2)	Perchlorate_85	12.971	857666	

Date Aquired: 11/08/15 10:25 Vial Number: NA
Sample Name: PER_IS_50:50 0.005 ug/ml 11/07/15 Data File ID: TY07_068.d

#	NAME	Ret Time	Target Response	Ratio
1)	Perchlorate_83	12.76	12257	1.6
2)	Perchlorate_85	12.634	7822	

Page 17 of 17

EPA METHOD 6850
Perchlorate
LC/MS

Sample Data

APPL, INC.

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW103-1620
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24176
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.44 J	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

J = Estimated value.

Quant Method: QTLMFL2
Run #: TY07_061.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/09/15 10:32:52 AM
APPL-F1-SC-NoMC-REG MDLs-DOD

Data File ID: TY07_061.d

Date Injected : 11/08/15

Time Injected : 8:15

Sample ID : AZ24176_W01 1052.6 DF 11/06/15

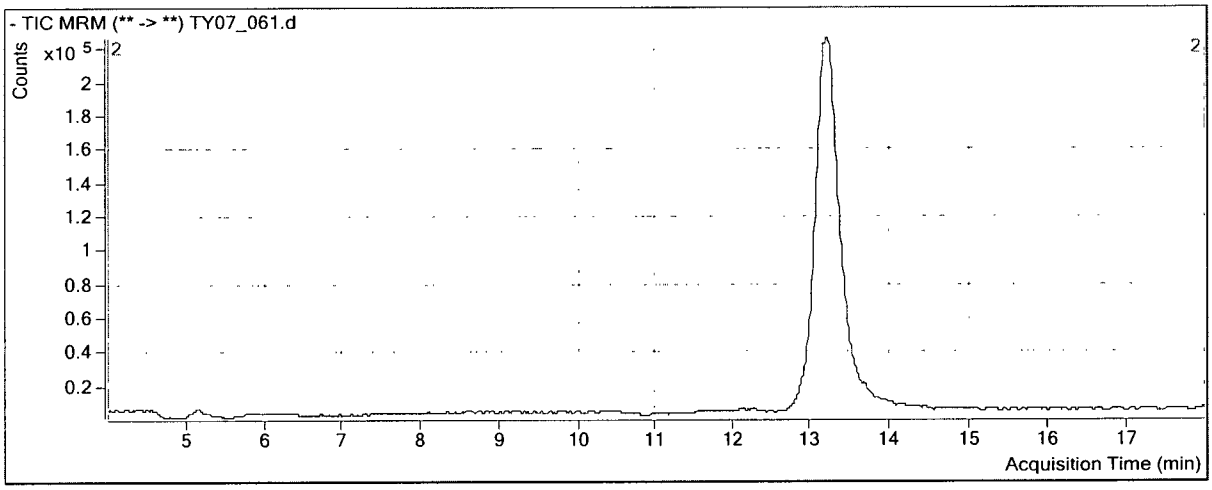
Client ID : S67-GW103-1620

Retention Time		Area Count Response	Compound_ID Product Ion	
13.212		4521986	PER_IS_89	
13.269		517727	Perchlorate_83	(517727 * 0.0050) / (1.37 * 4521986.00) * 1052.60 = 0.439463 ppb
13.246	*	153689	Perchlorate_85	(153689 * 0.0050) / (0.41 * 4521986.00) * 1052.60 = 0.433970 ppb

* MANUAL INTEGRAION

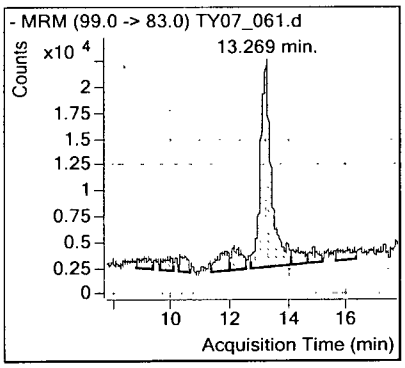
Quantitative Analysis Sample Report

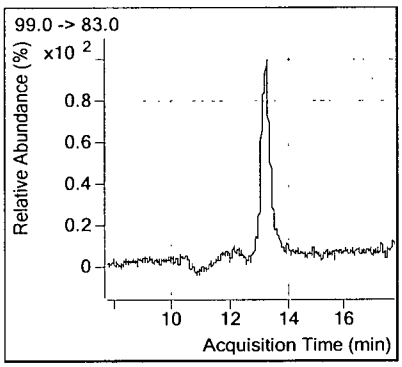
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_061.d	**Sample Name**	AZ24176_W01 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	8:15
ClientID	S67-GW103-1620	**Inj Vol**	20

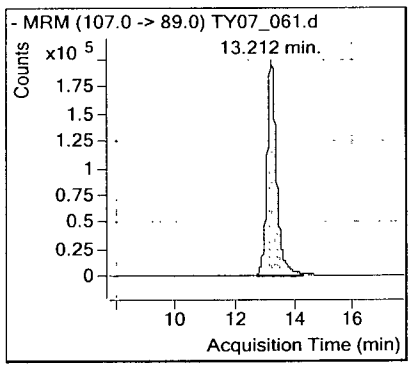


Compound	ISTD		RT	Resp	ISTD Resp	
Perchlorate_100	PER_IS_108		13.269	517727	4521986	
Perchlorate_102	PER_IS_108	*	13.246	153689	4521986	* MANUAL INT

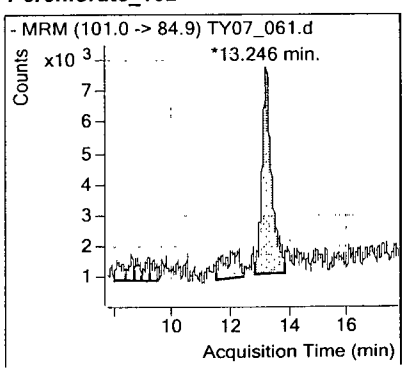
Perchlorate_100

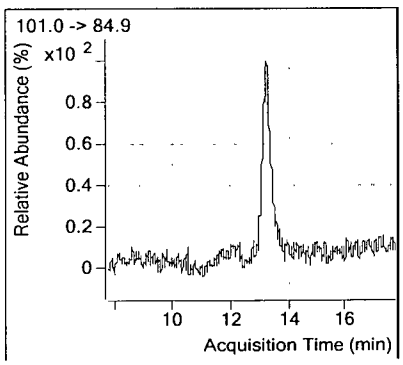


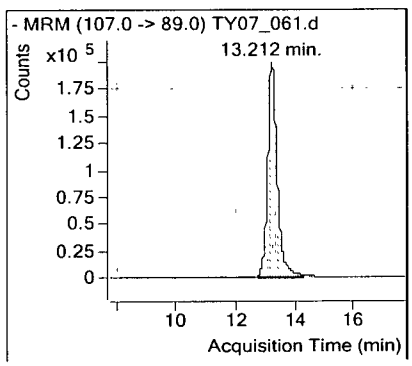


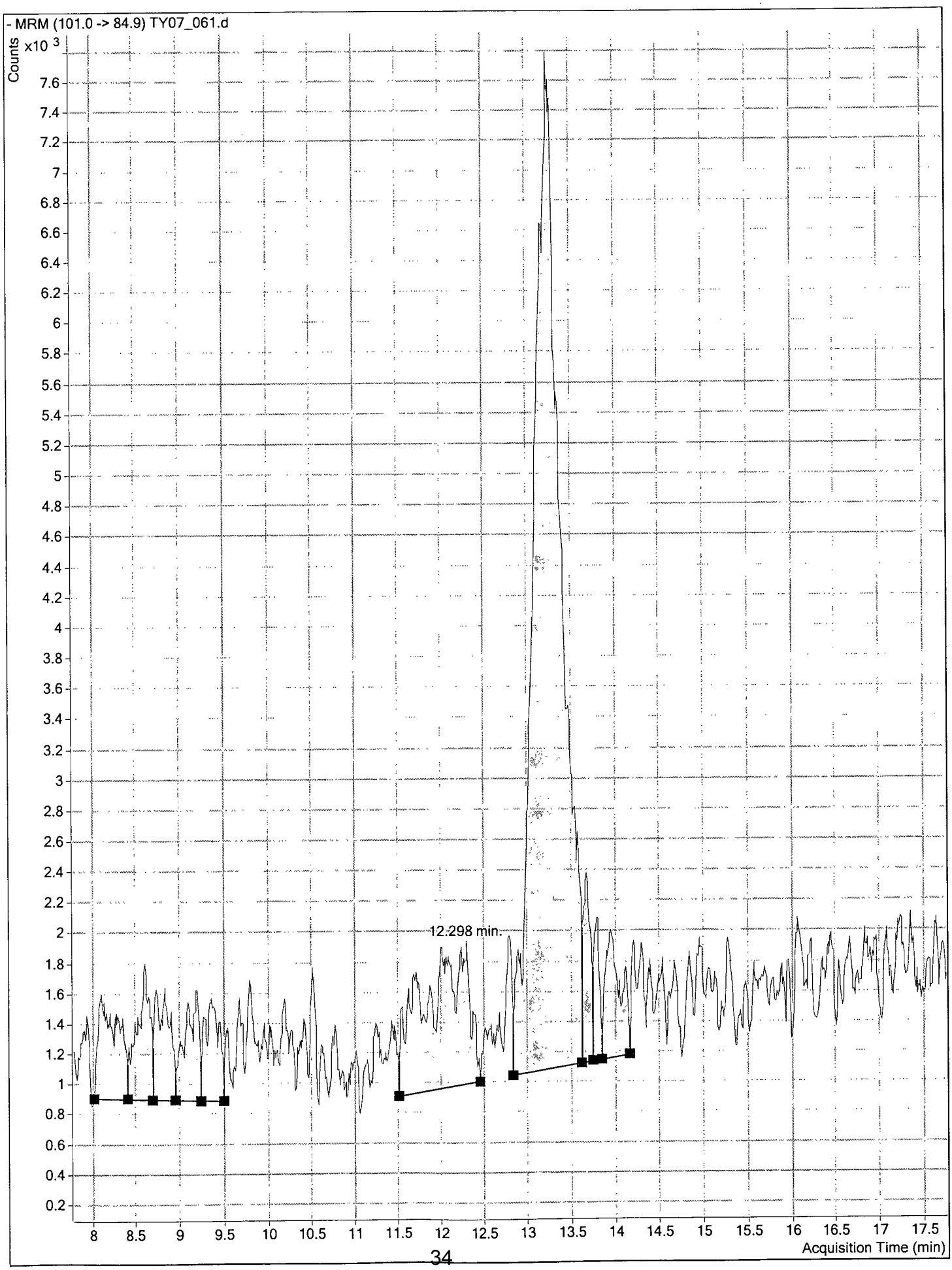


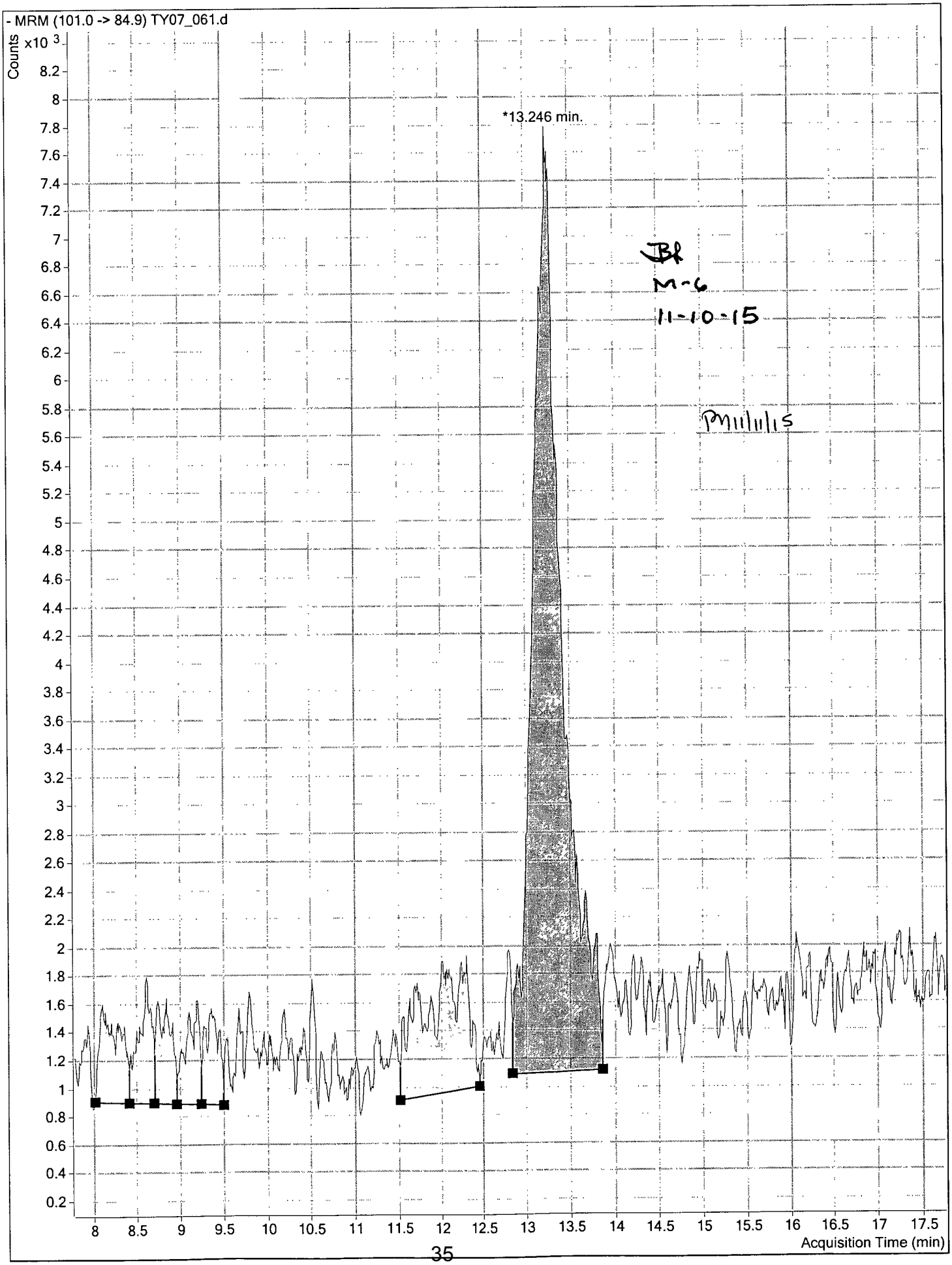
Perchlorate_102








- MRM (101.0 -> 84.9) TY07_061.d
Counts
x10 3
12.298 min.
Acquisition Time (min)


- MRM (101.0 -> 84.9) TY07_061.d
Counts
x10 3
*13.246 min.
JBR
M-6
11-10-15
Phillips
Acquisition Time (min)

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW113-2327
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24177
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.400 U	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_062.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/09/15 10:32:52 AM
APPL-F1-SC-NoMC-REG MDLs-DOD

Data File ID: TY07_062.d

Date Injected : 11/08/15

Time Injected : 8:33

Sample ID : AZ24177_W01 1052.6 DF 11/06/15

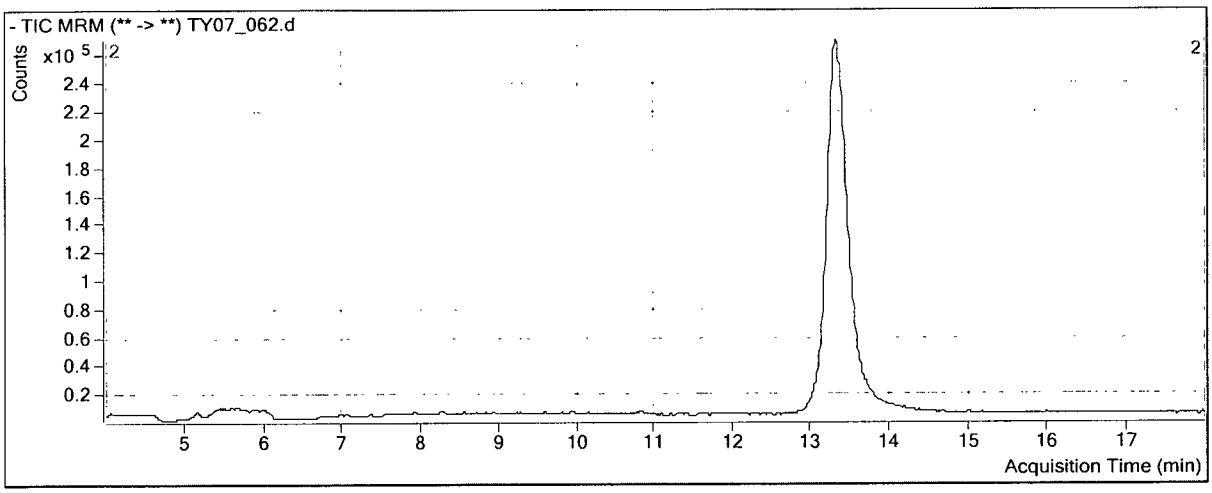
Client ID : S67-GW113-2327

Retention Time		Area Count Response	Compound_ID Product Ion	
13.344		5013671	PER_IS_89	
13.361	*	186324	Perchlorate_83	(186324 * 0.0050) / (1.37 * 5013671.00) * 1052.60 = 0.142647 ppb
13.419	*	56263	Perchlorate_85	(56263 * 0.0050) / (0.41 * 5013671.00) * 1052.60 = 0.143289 ppb

* MANUAL INTEGRAION

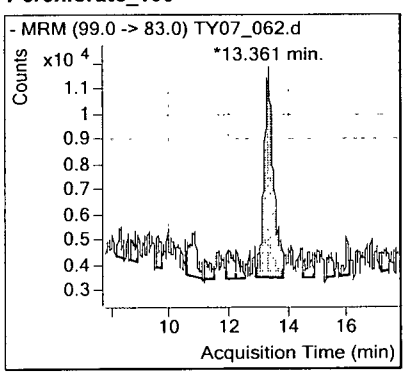
Quantitative Analysis Sample Report

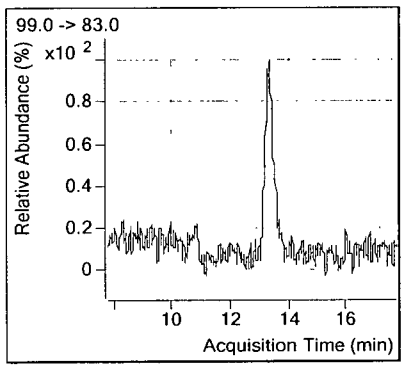
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_062.d	**Sample Name**	AZ24177_W01 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	8:33
ClientID	S67-GW113-2327	**Inj Vol**	20

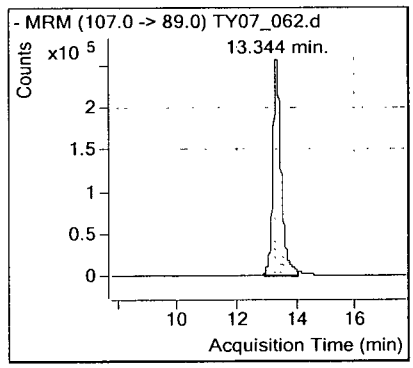


Compound	ISTD		RT	Resp	ISTD Resp	
Perchlorate_100	PER_IS_108	*	13.361	186324	5013671	* MANUAL INT
Perchlorate_102	PER_IS_108	*	13.419	56263	5013671	* MANUAL INT

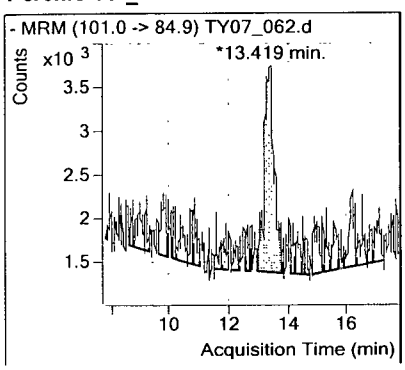
Perchlorate_100

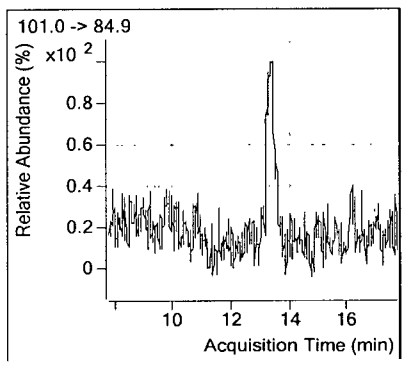


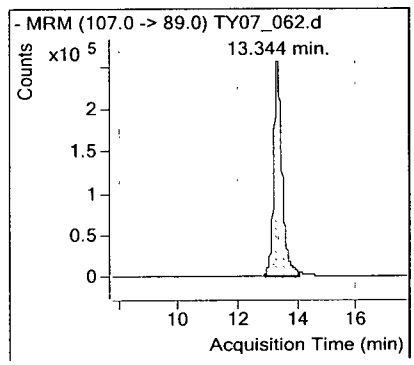


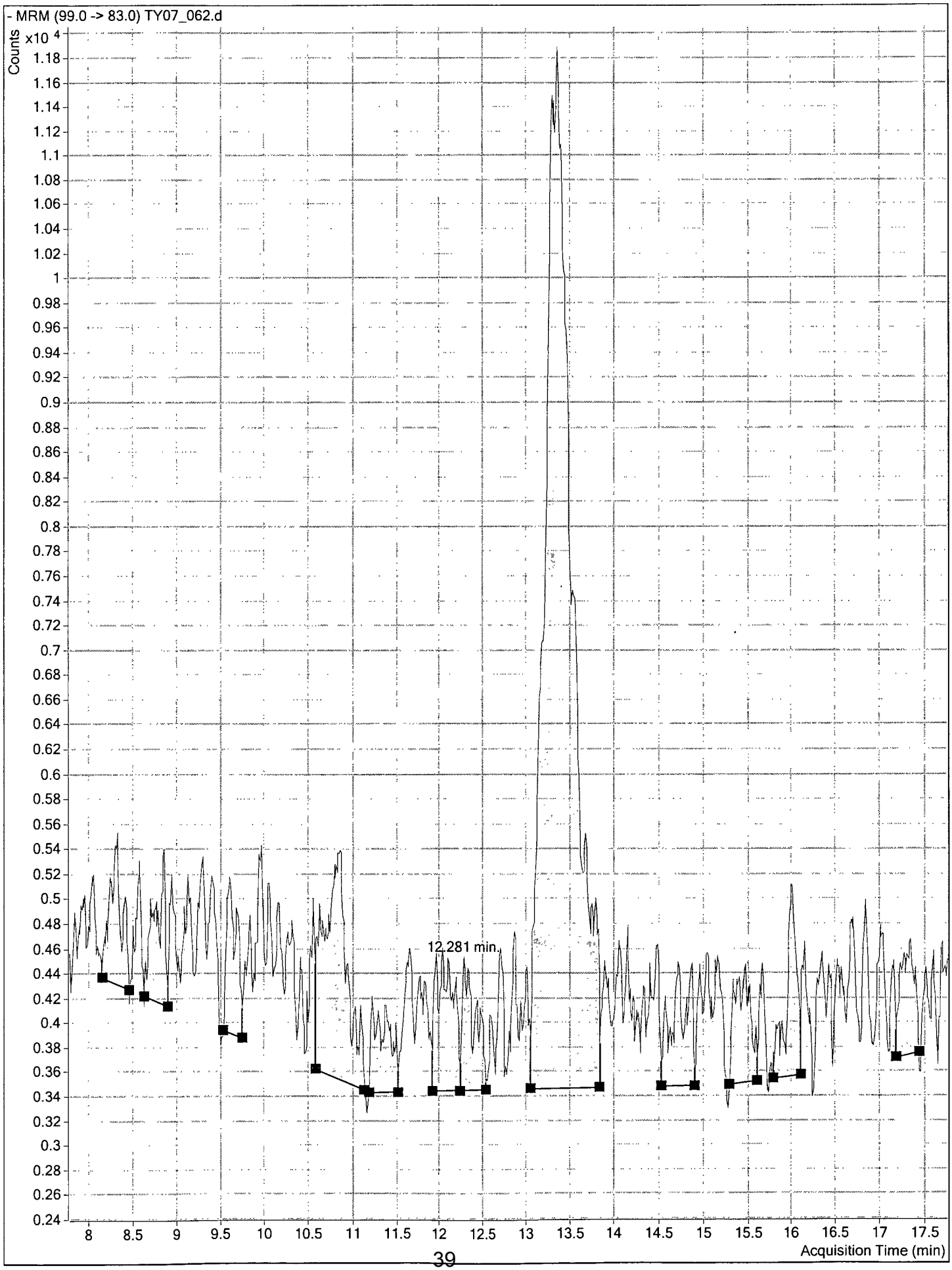


Perchlorate_102





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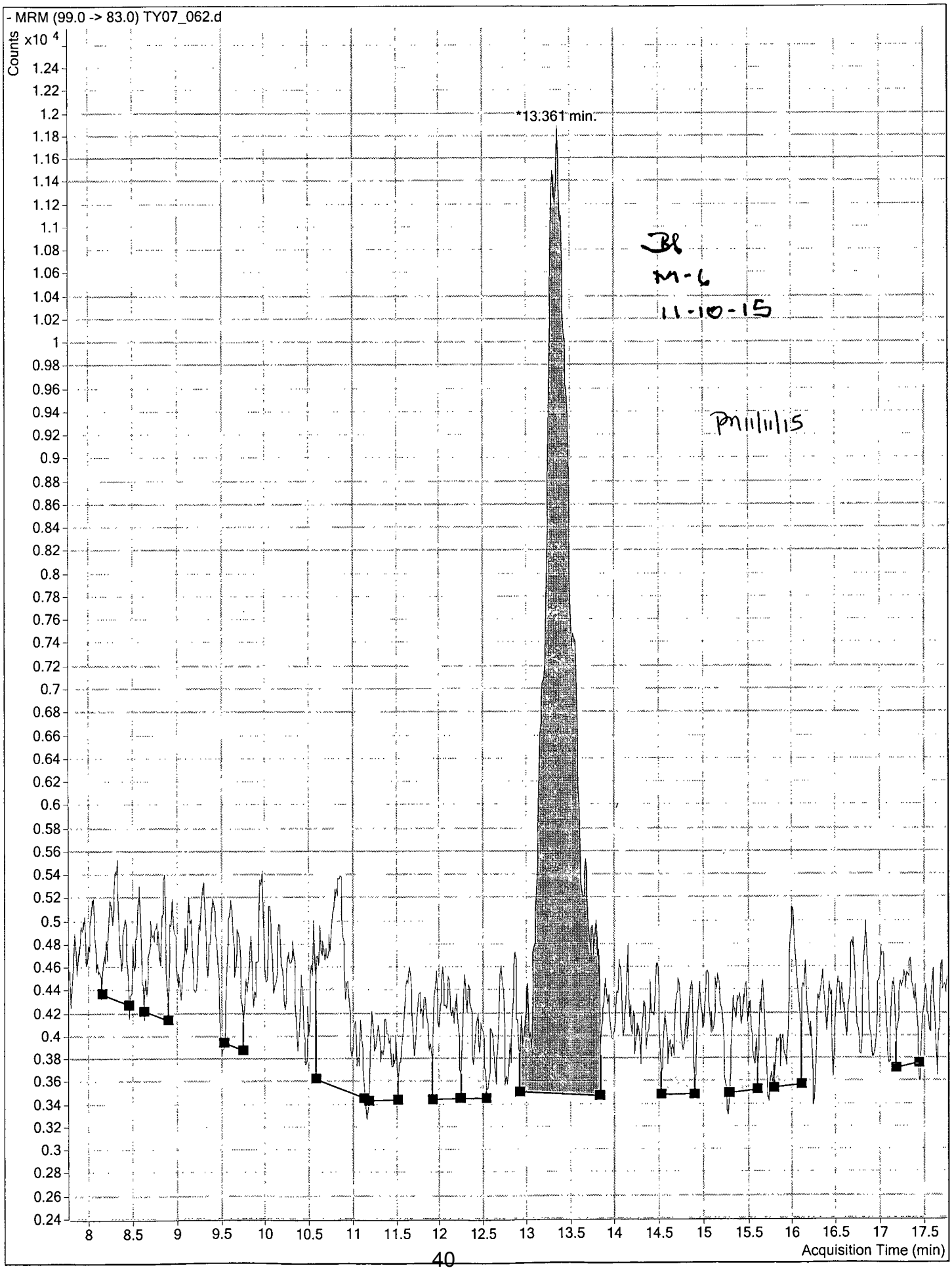
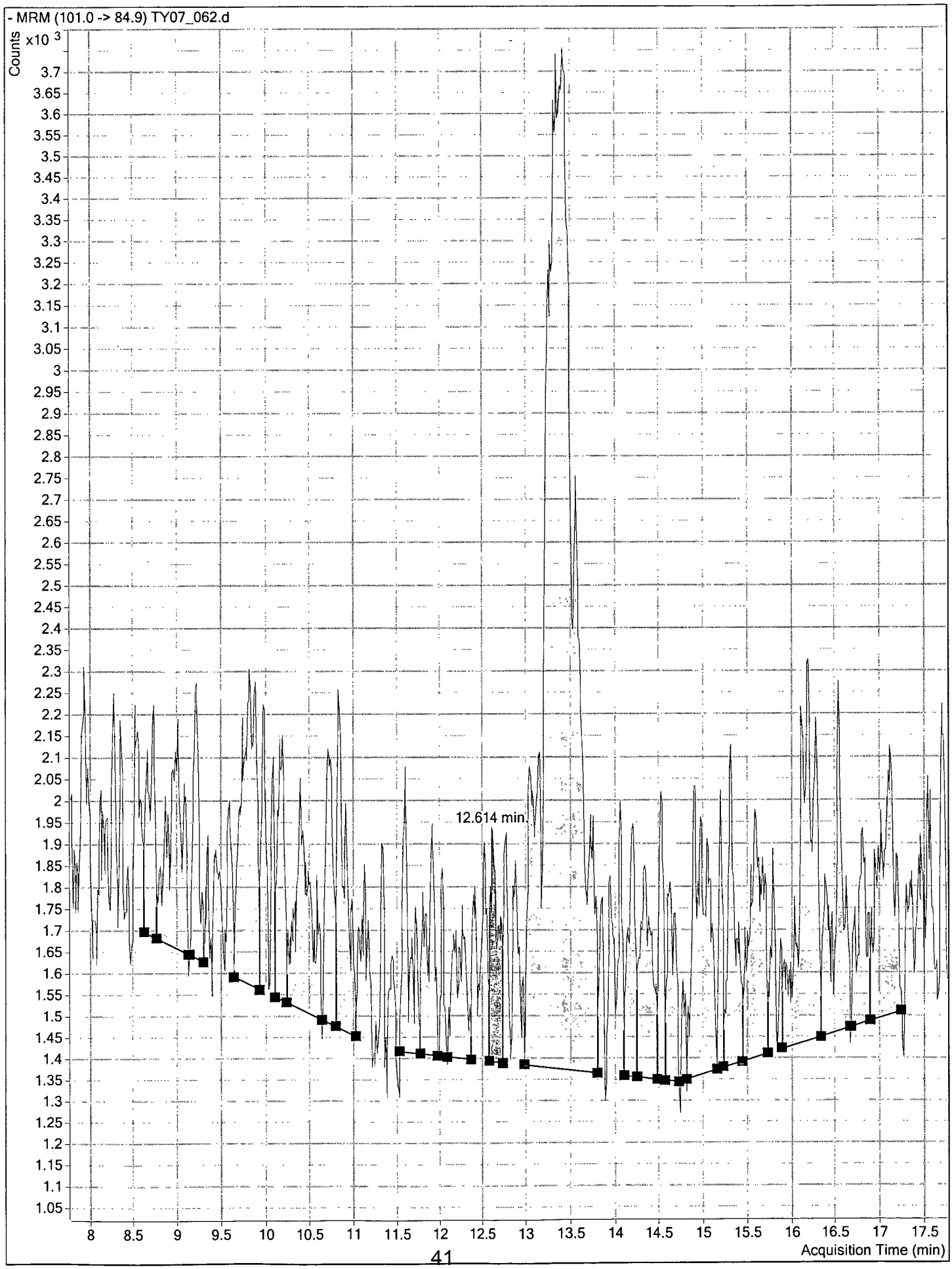
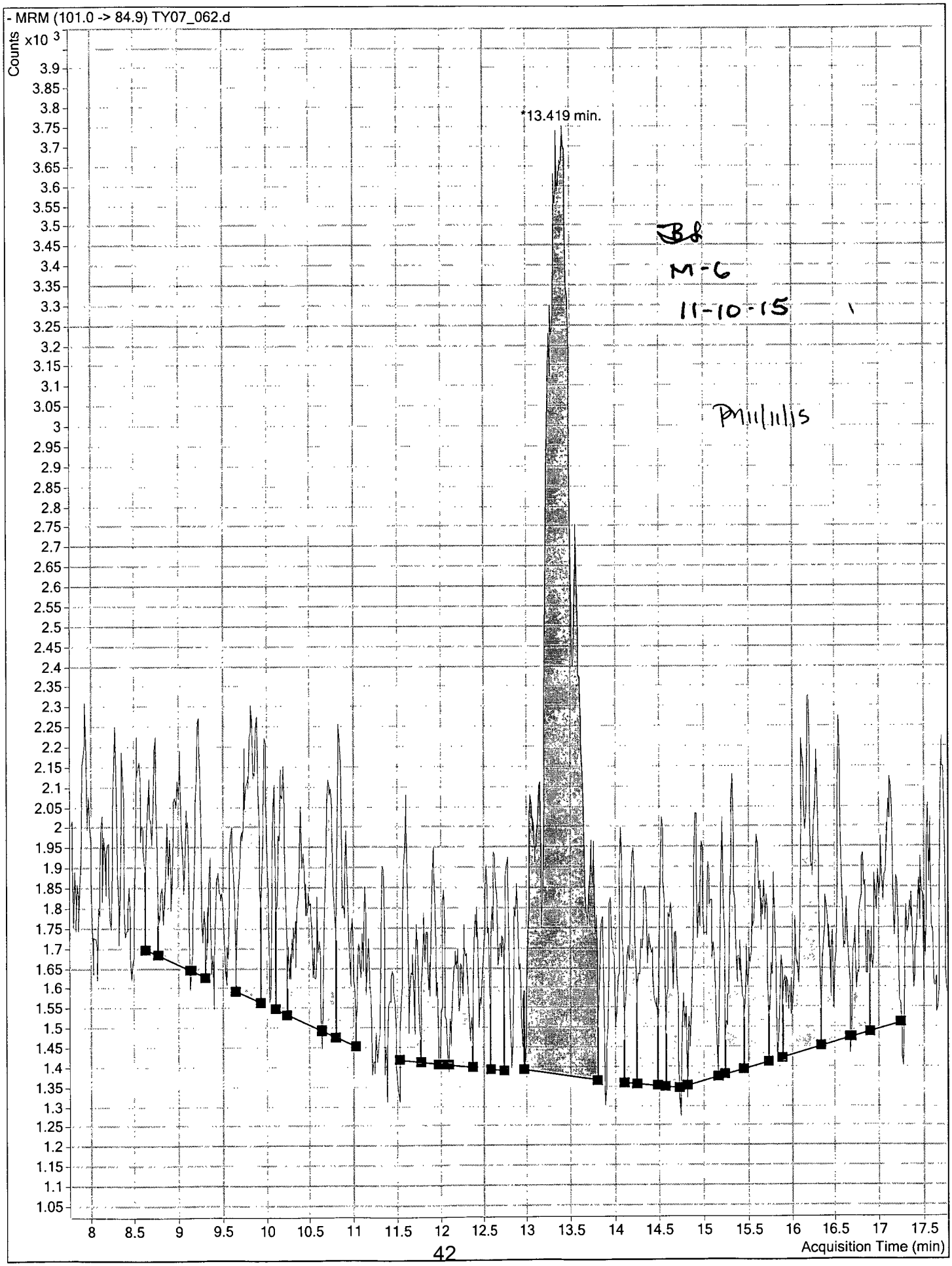
Counts
x10 4
12.281 min.
Acquisition Time (min)


- MRM (99.0 -> 83.0) TY07_062.d
Counts
x10 4
*13.361 min.
Acquisition Time (min)
JB
M-6
11-10-15
PM 11/11/15


- MRM (101.0 -> 84.9) TY07_062.d
Counts
x10 3
12.614 min
Acquisition Time (min)


- MRM (101.0 -> 84.9) TY07_062.d
Counts
x10 3
*13.419 min.
JB
M-6
11-10-15
PM 11/11/15
Acquisition Time (min)

Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW102-1115
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24178
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	0.45 J	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

J = Estimated value.

Quant Method:	QTLMFL2
Run #:	TY07_063.d
Instrument:	AGIL_6460
Sequence:	TQ110715
Dilution Factor:	1
Initials:	RP

Printed: 11/09/15 10:32:52 AM
APPL-F1-SC-NoMC-REG MDLs-DOD

Data File ID: TY07_063.d

Date Injected : 11/08/15

Time Injected : 8:52

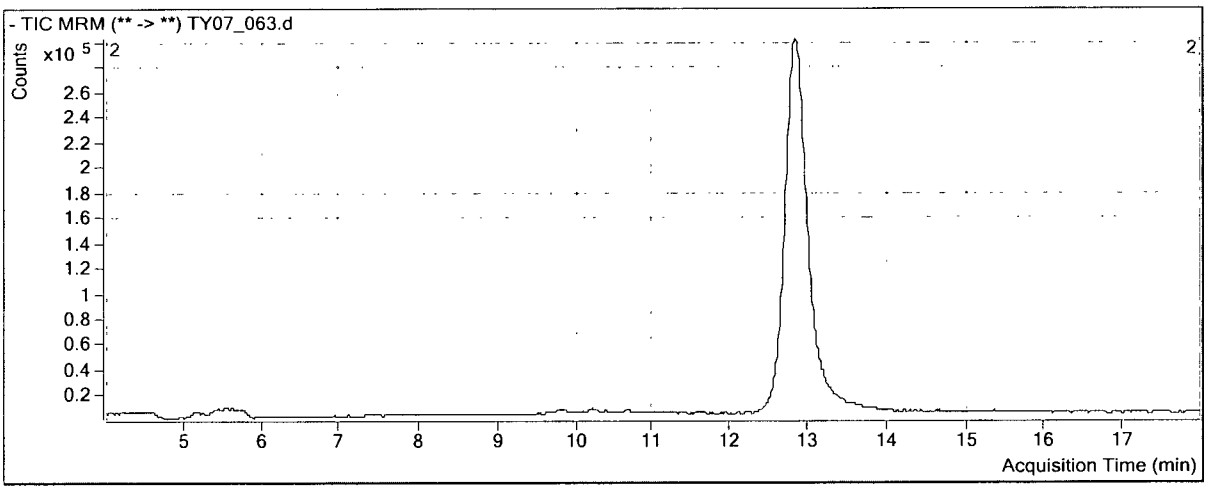
Sample ID : AZ24178_W01 1052.6 DF 11/06/15

Client ID : S67-GW102-1115

Retention Time	Area Count Response	Compound_ID Product Ion	
12.845	5349348	PER_IS_89	
12.852	628398	Perchlorate_83	(628398 * 0.0050) / (1.37 * 5349348.00) * 1052.60 = 0.450904 ppb
12.848	210081	Perchlorate_85	(210081 * 0.0050) / (0.41 * 5349348.00) * 1052.60 = 0.501455 ppb

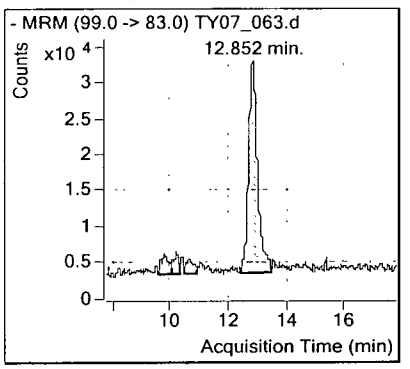
Quantitative Analysis Sample Report

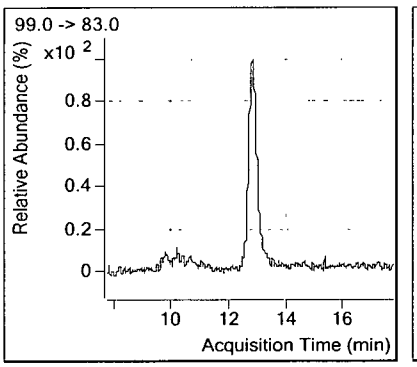
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_063.d	**Sample Name**	AZ24178_W01 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	8:52
ClientID	S67-GW102-1115	**Inj Vol**	20

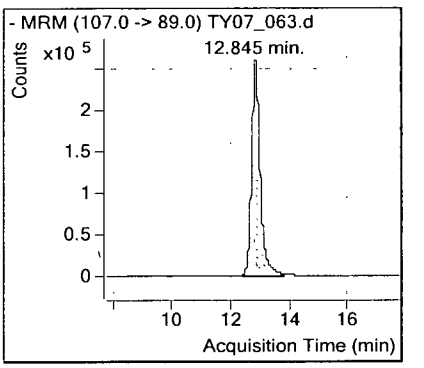


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.852	628398	5349348
Perchlorate_102	PER_IS_108	12.848	210081	5349348

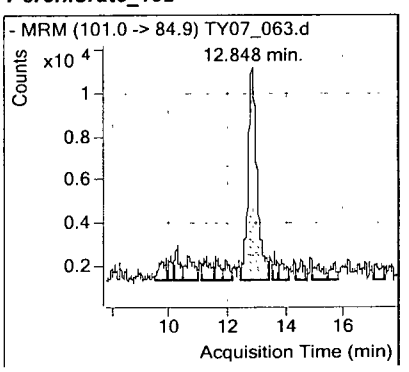
Perchlorate_100

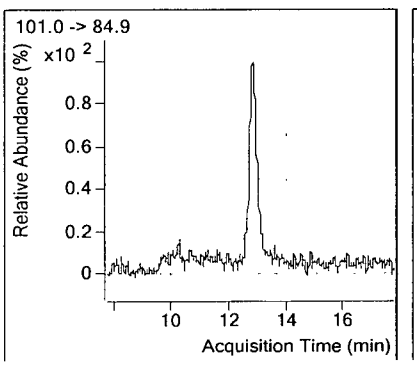


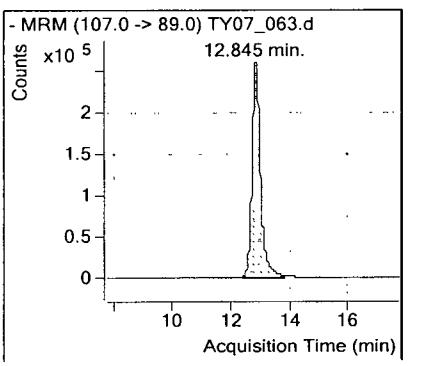




Perchlorate_102







Perchlorate

Tetra Tech
5700 Lake Wright Dr, Ste 309
Norfolk, VA 23502

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Ed Corack
Project: CTO JU11 112G02622 NSF Indian Head
Sample ID: S67-GW101-1115
Sample Collection Date: 11/05/15

ARF: 77792
APPL ID: AZ24179
QCG: #6850-151106A-202029

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 6850	PERCHLORATE	1.5	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_064.d
Instrument: AGIL_6460
Sequence: TQ110715
Dilution Factor: 1
Initials: RP

Printed: 11/09/15 10:32:52 AM
APPL-F1-SC-NoMC-REG MDLs-DOD

Data File ID: TY07_064.d

Date Injected : 11/08/15

Time Injected : 9:11

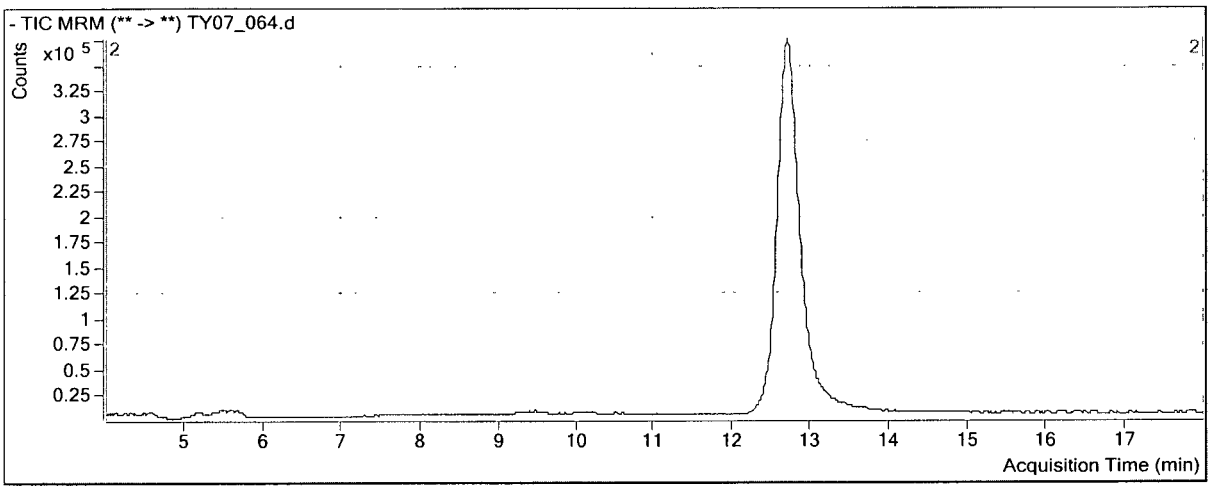
Sample ID : AZ24179_W01 1052.6 DF 11/06/15

Client ID : S67-GW101-1115

Retention Time	Area Count Response	Compound_ID Product Ion	
12.723	5106850	PER_IS_89	
12.719	2001767	Perchlorate_83	(2001767 * 0.0050) / (1.37 * 5106850.00) * 1052.60 = 1.504564 ppb
12.726	599142	Perchlorate_85	(599142 * 0.0050) / (0.41 * 5106850.00) * 1052.60 = 1.498039 ppb

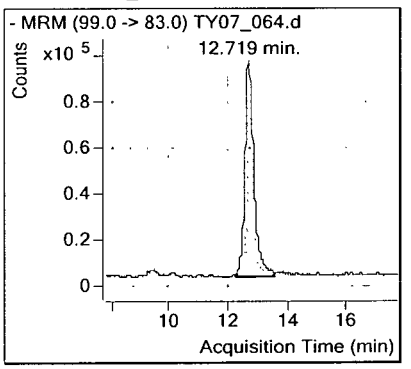
Quantitative Analysis Sample Report

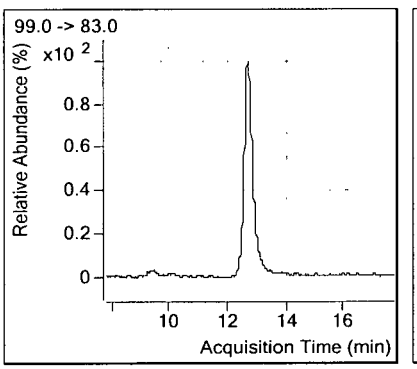
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_064.d	**Sample Name**	AZ24179_W01 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	9:11
ClientID	S67-GW101-1115	**Inj Vol**	20

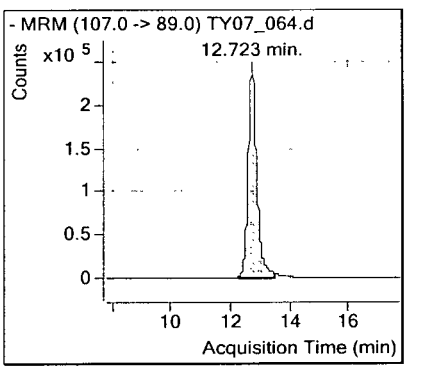


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.719	2001767	5106850
Perchlorate_102	PER_IS_108	12.726	599142	5106850

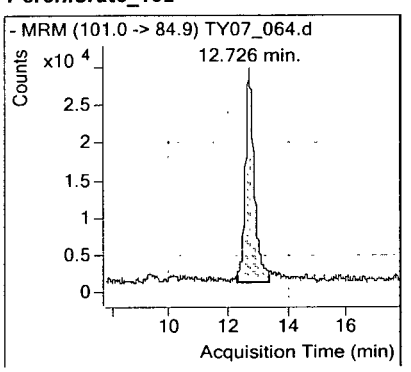
Perchlorate_100

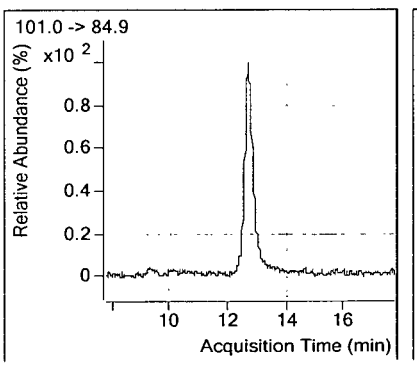


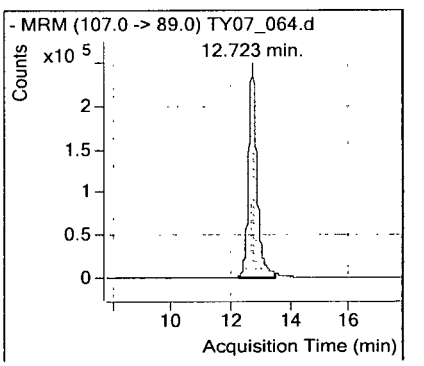




Perchlorate_102







EPA METHOD 6850
Perchlorate
LC/MS

Calibration Data

APPL, INC.

METHOD 6850 CALIBRATION SUMMARY

Lab Name: APPL Inc. **DETECTOR ID : Agilent 6460 Triple Quad LC/MS**

Average Relative Response Factor Summary

Analyte Id:	R.R.F.#1 PERCHLORATE 0.0002 PPM	R.R.F.#2 PERCHLORATE 0.0004 PPM	R.R.F.#3 PERCHLORATE 0.001 PPM	R.R.F.#4 PERCHLORATE 0.002 PPM	R.R.F.#5 PERCHLORATE 0.005 PPM	R.R.F.#6 PERCHLORATE 0.010 PPM	AVERAGE REL.RESP. FACTOR	%RSD RRF
Perchlorate_83	1.243227	1.680246	1.341898	1.193467	1.265680	1.502345	1.371144	13.55
Perchlorate_85	0.458375	0.497744	0.404772	0.341609	0.351592	0.418990	0.412180	14.64

FILE ID : TQ1107A.FRB

Perchlorate_83

RESPONSE FACTOR CALCULATIONS - AREA COUNTS

DATA FILES : TY07_003.d - TY07_008.d

The Data points that were Read Were

Standard Response	Standard Concentration µg/ml	Internal Standard Response	Internal Standard Concentration µg/ml	Response Factor	RPD	%RSD
268654.00	0.0002	5402351.00	0.0050	1.243227	9.33	13.55
552262.00	0.0004	4108491.00	0.0050	1.680246	22.54	
1362972.00	0.0010	5078523.00	0.0050	1.341898	2.13	
2837952.00	0.0020	5944762.00	0.0050	1.193467	12.96	
7583783.00	0.0050	5991866.00	0.0050	1.265680	7.69	
15583461.00	0.0100	5186380.00	0.0050	1.502345	9.57	

The Average Response Factor = 1.371144

Perchlorate_85

RESPONSE FACTOR CALCULATIONS - AREA COUNTS

DATA FILES : TY07_003.d - TY07_008.d

The Data points that were Read Were

Standard Response	Standard Concentration µg/ml	Internal Standard Response	Internal Standard Concentration µg/ml	Response Factor	RPD	%RSD
99052.00	0.0002	5402351.00	0.0050	0.458375	11.21	14.64
163598.00	0.0004	4108491.00	0.0050	0.497744	20.76	
411129.00	0.0010	5078523.00	0.0050	0.404772	1.80	
812314.00	0.0020	5944762.00	0.0050	0.341609	17.12	
2106695.00	0.0050	5991866.00	0.0050	0.351592	14.70	
4346083.00	0.0100	5186380.00	0.0050	0.418990	1.65	

The Average Response Factor = 0.412180

Data File ID: TY07_003.d

Date Injected : 11/07/15

Time Injected : 14:14

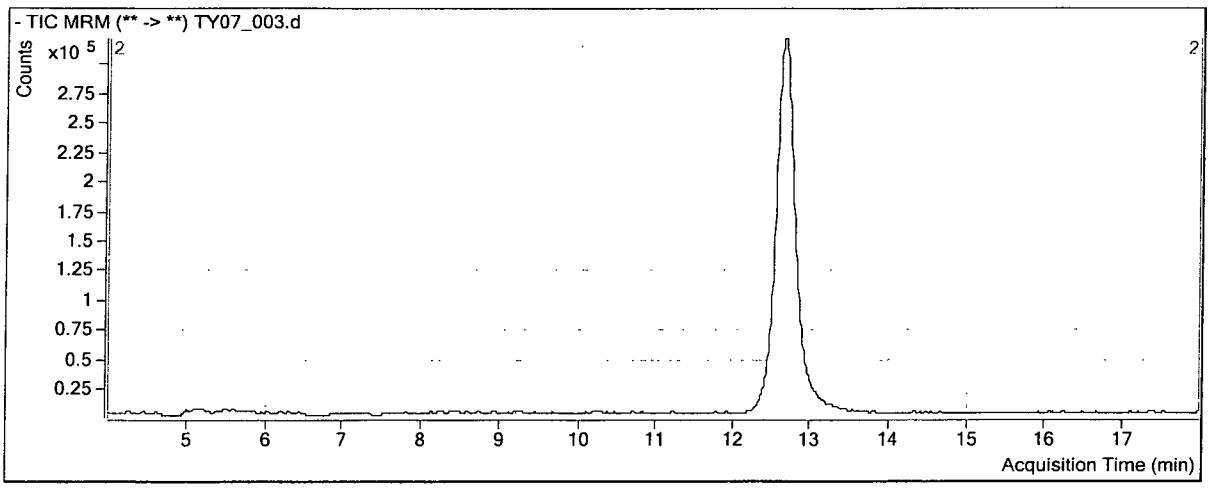
Sample ID : PERCHLORATE 0.0002 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.672	5402351	PER_IS_89
12.699	268654	Perchlorate_83
12.675	99052	Perchlorate_85

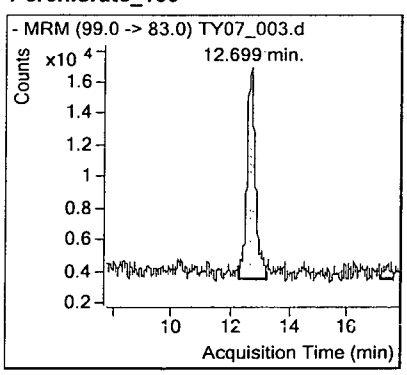
Quantitative Analysis Sample Report

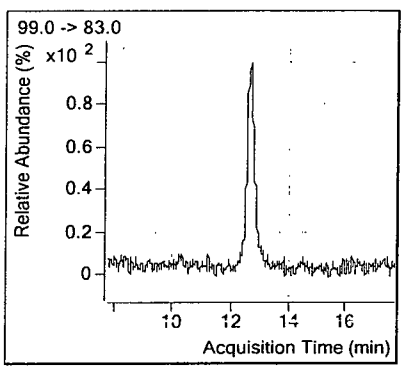
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_003.d	**Sample Name**	PERCHLORATE 0.0002 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	14:14
ClientID	NA	**Inj Vol**	20

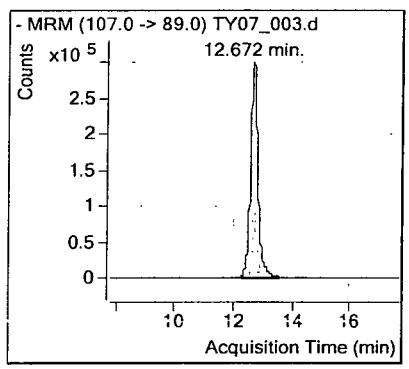


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.699	268654	5402351
Perchlorate_102	PER_IS_108	12.675	99052	5402351

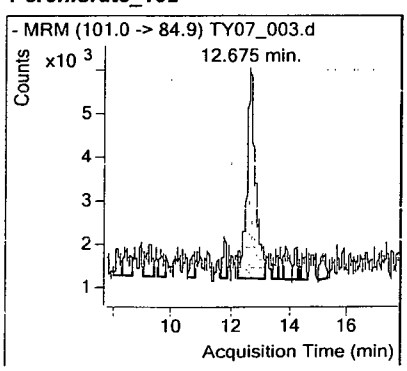
Perchlorate_100

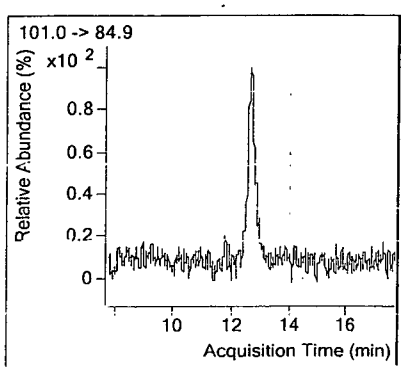


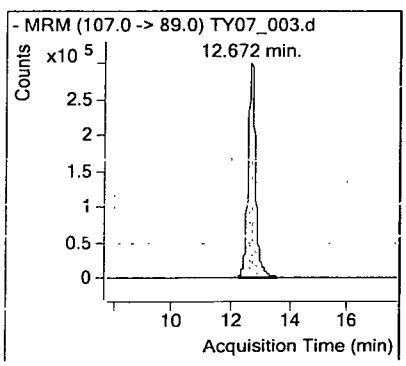




Perchlorate_102







Data File ID: TY07_004.d

Date Injected : 11/07/15

Time Injected : 14:33

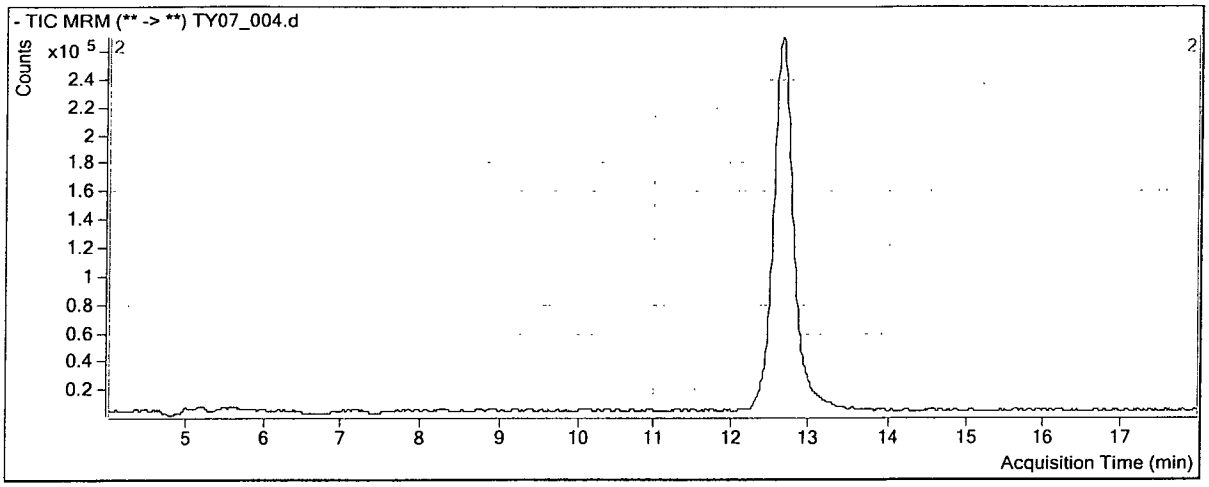
Sample ID : PERCHLORATE 0.0004 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.672	4108491	PER_IS_89
12.678	552262	Perchlorate_83
12.665	163598	Perchlorate_85

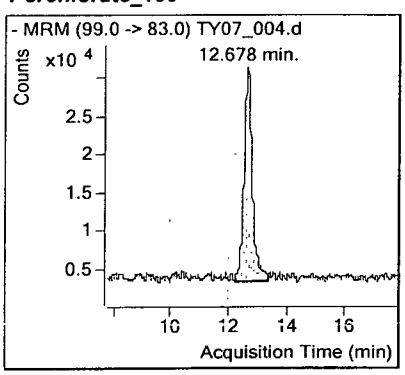
Quantitative Analysis Sample Report

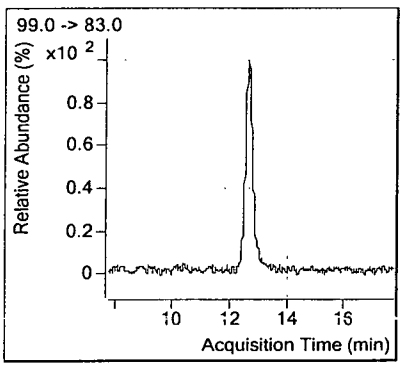
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_004.d	**Sample Name**	PERCHLORATE 0.0004 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	14:33
ClientID	NA	**Inj Vol**	20

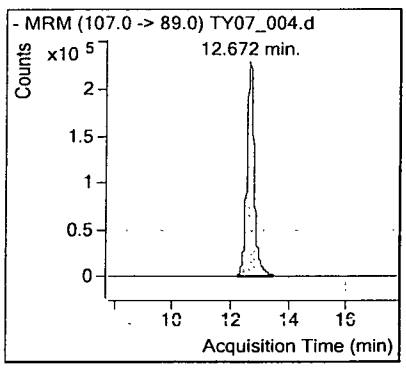


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.678	552262	4108491
Perchlorate_102	PER_IS_108	12.665	163598	4108491

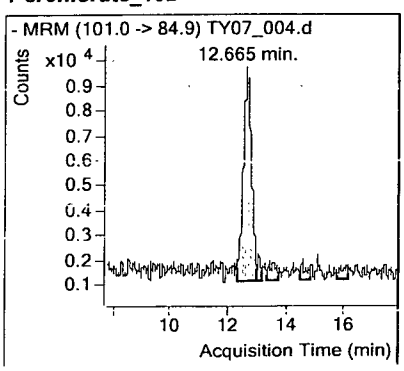
Perchlorate_100

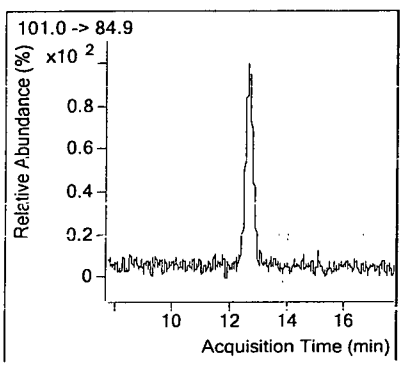


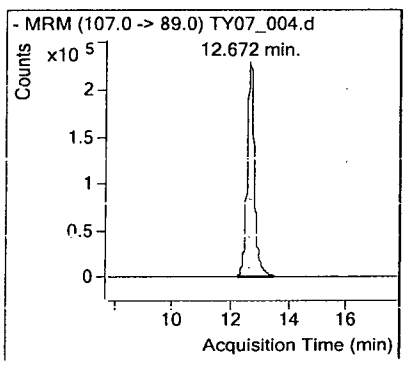




Perchlorate_102







Data File ID: TY07_005.d

Date Injected : 11/07/15

Time Injected : 14:51

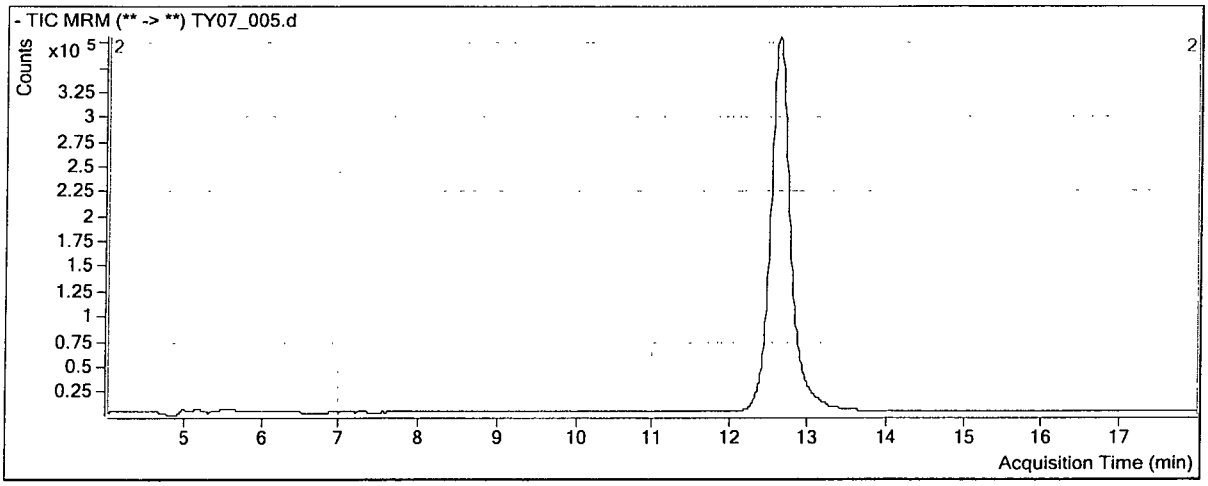
Sample ID : PERCHLORATE 0.001 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.641	5078523	PER_IS_89
12.638	1362972	Perchlorate_83
12.655	411129	Perchlorate_85

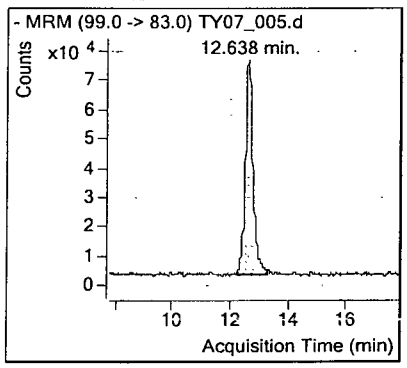
Quantitative Analysis Sample Report

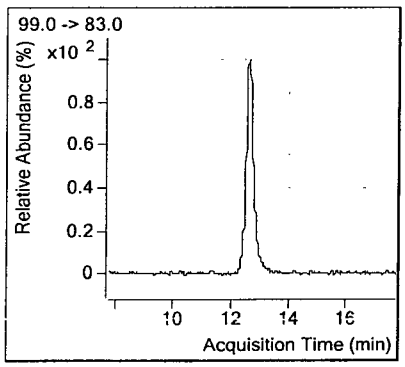
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_005.d	**Sample Name**	PERCHLORATE 0.001 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	14:51
ClientID	NA	**Inj Vol**	20

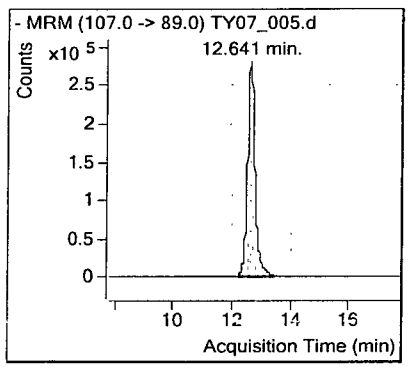


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.638	1362972	5078523
Perchlorate_102	PER_IS_108	12.655	411129	5078523

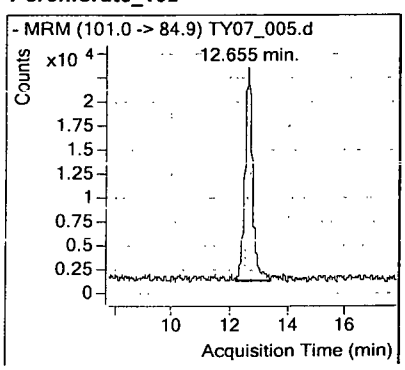
Perchlorate_100

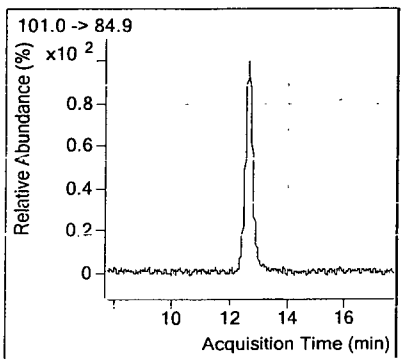


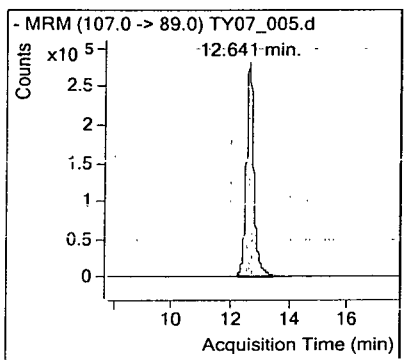




Perchlorate_102







Data File ID: TY07_006.d

Date Injected : 11/07/15

Time Injected : 15:10

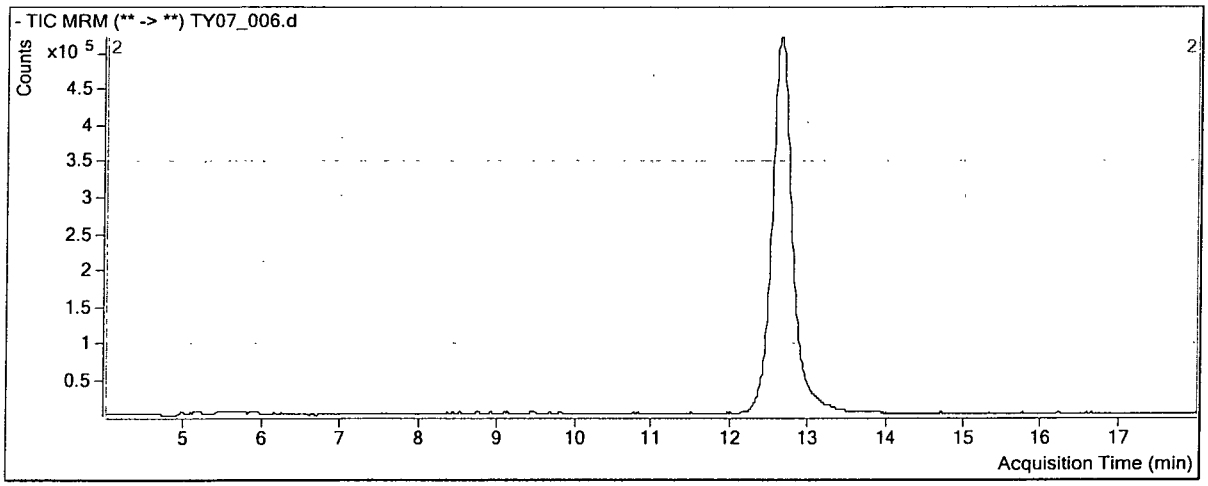
Sample ID : PERCHLORATE 0.002 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.641	5944762	PER_IS_89
12.658	2837952	Perchlorate_83
12.655	812314	Perchlorate_85

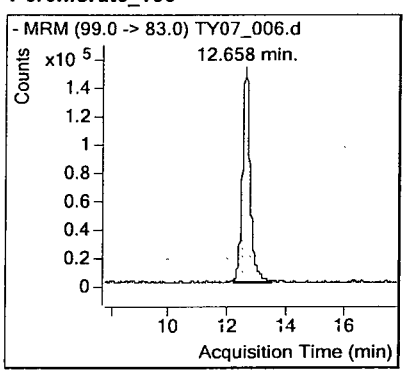
Quantitative Analysis Sample Report

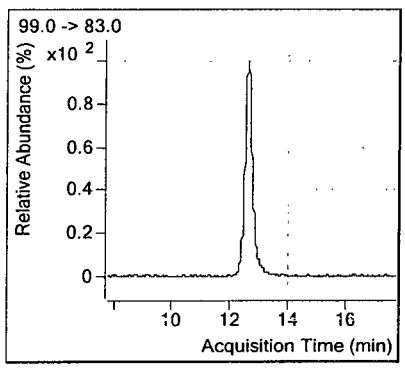
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_006.d	**Sample Name**	PERCHLORATE 0.002 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	15:10
ClientID	NA	**Inj Vol**	20

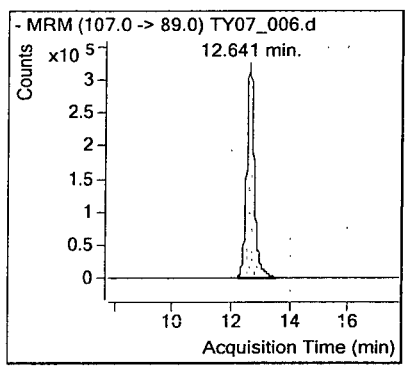


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.658	2837952	5944762
Perchlorate_102	PER_IS_108	12.655	812314	5944762

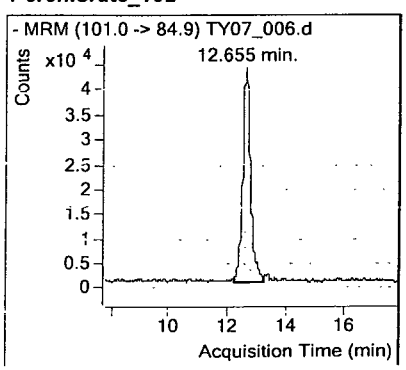
Perchlorate_100

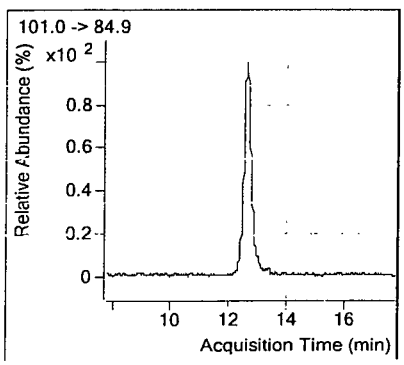


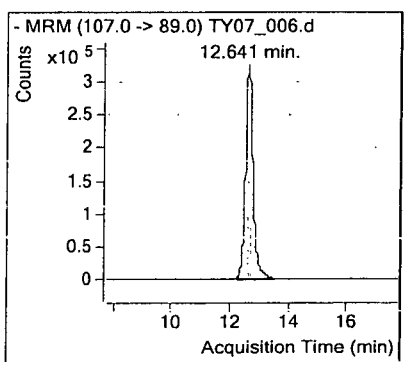




Perchlorate_102







Data File ID: TY07_007.d

Date Injected : 11/07/15

Time Injected : 15:29

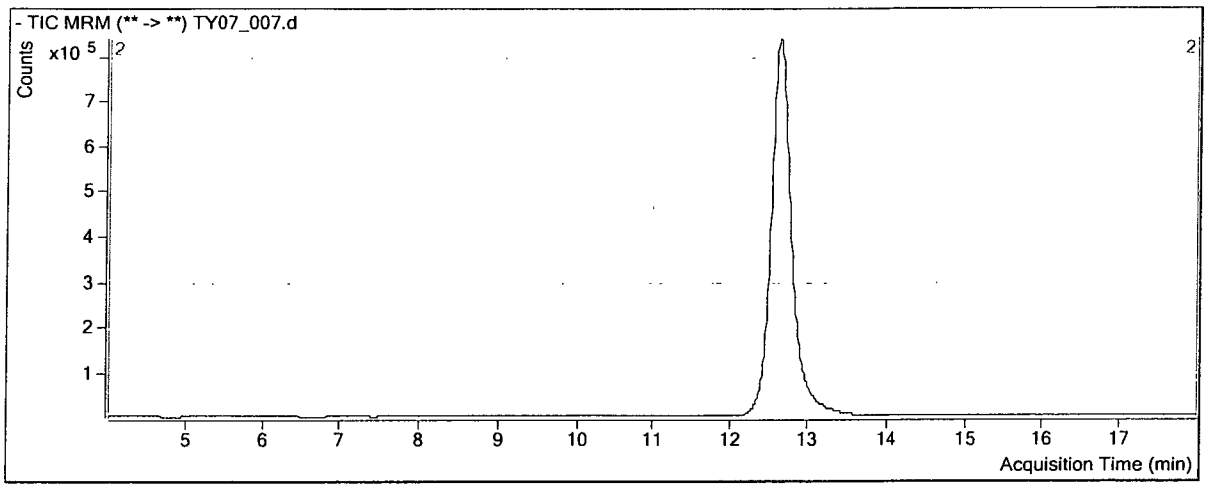
Sample ID : PERCHLORATE 0.005 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.641	5991866	PER_IS_89
12.638	7583783	Perchlorate_83
12.644	2106695	Perchlorate_85

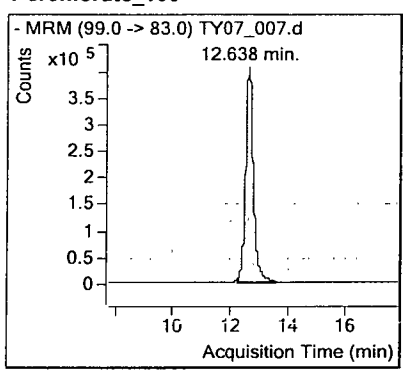
Quantitative Analysis Sample Report

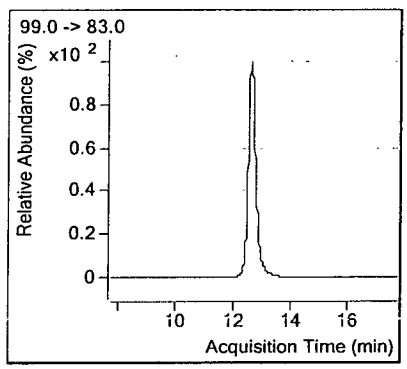
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_007.d	**Sample Name**	PERCHLORATE 0.005 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	15:29
ClientID	NA	**Inj Vol**	20

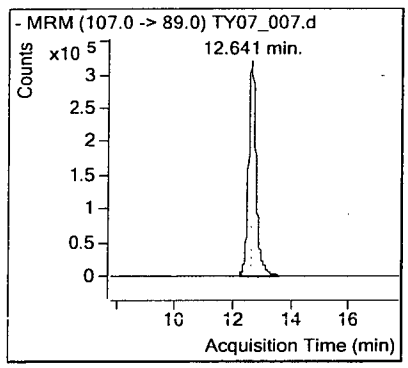


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.638	7583783	5991866
Perchlorate_102	PER_IS_108	12.644	2106695	5991866

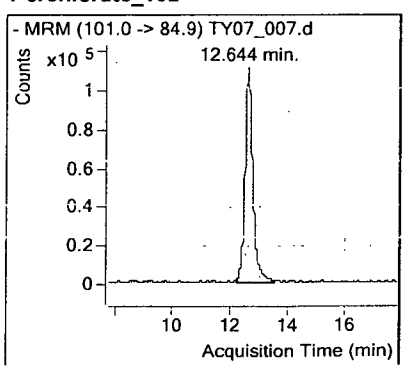
Perchlorate_100

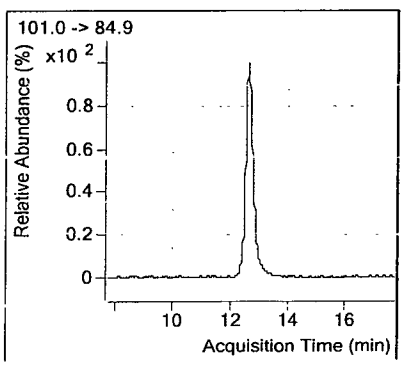


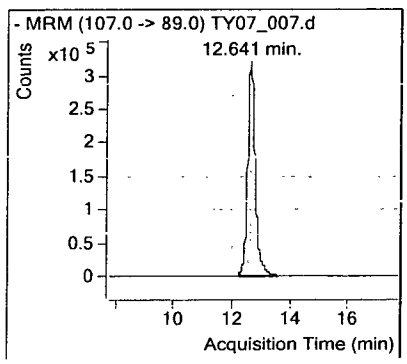




Perchlorate_102







Data File ID: TY07_008.d

Date Injected : 11/07/15

Time Injected : 15:47

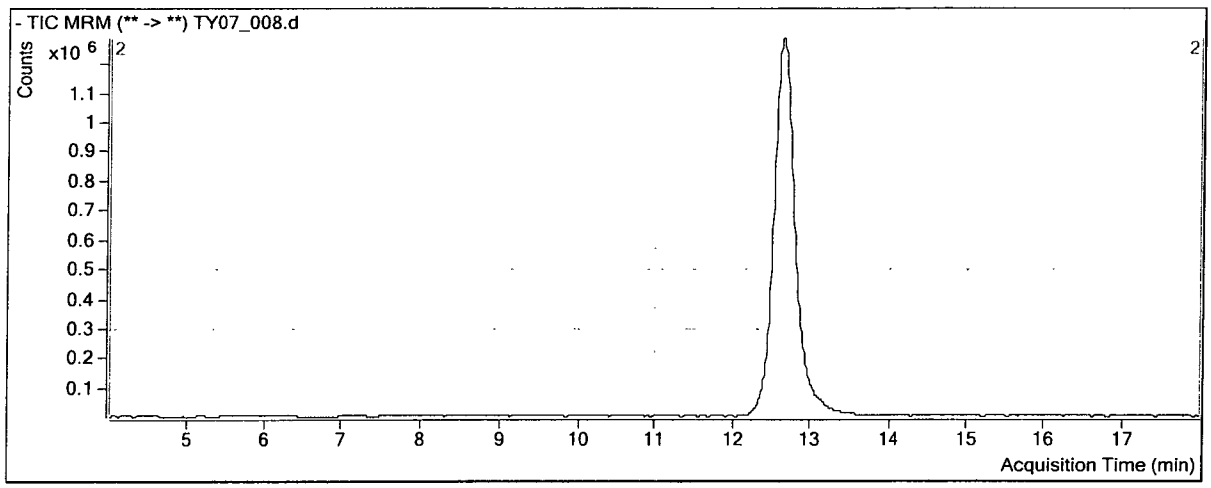
Sample ID : PERCHLORATE 0.010 ug/ml 08/01/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.641	5186380	PER_IS_89
12.658	15583461	Perchlorate_83
12.644	4346083	Perchlorate_85

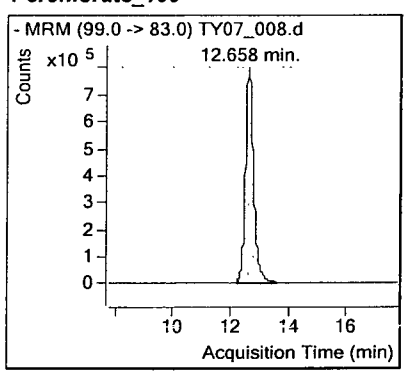
Quantitative Analysis Sample Report

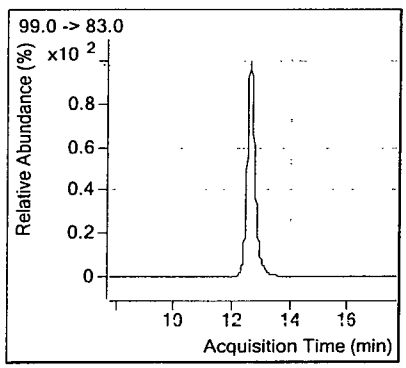
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_008.d	**Sample Name**	PERCHLORATE 0.010 ug/ml 08/01/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	15:47
ClientID	NA	**Inj Vol**	20

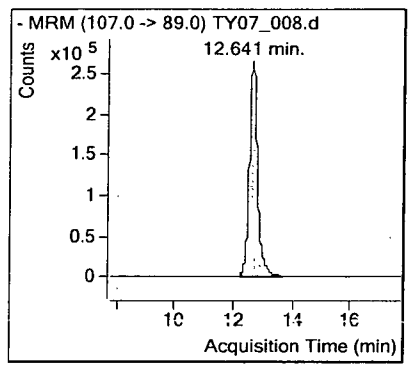


Compound	ISTD	RT	Resp	ISTD RESP
Perchlorate_100	PER_IS_108	12.658	15583461	5186380
Perchlorate_102	PER_IS_108	12.644	4346083	5186380

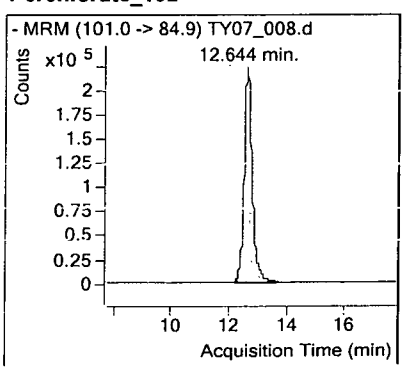
Perchlorate_100

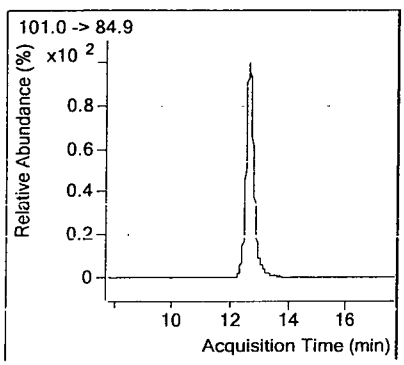


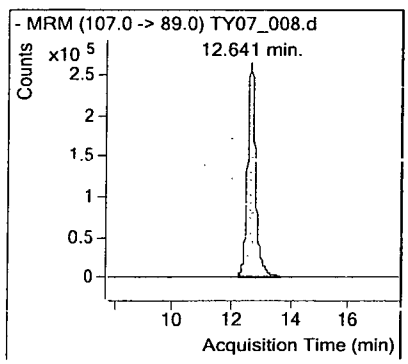




Perchlorate_102







SECOND SOURCE CALIBRATION VERIFICATION SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_010.d

	Date (s) of Analysis From:11/07/15 To:11/07/15 Time (s) of Analysis From:14:14 To:16:06				Date of Analysis: 11/07/15 Time of Analysis: 16:25 Standard Id: PER_SS (Standard) 0.0004ug/ml			
COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	12.76	1.315931	N	4.0
Perchlorate_85	12.67	12.57	12.78	0.412180	12.76	0.422769	N	2.6

FILE ID : TQCK0710.RFB

Data File ID: TY07_010.d

Date Injected : 11/07/15

Time Injected : 16:25

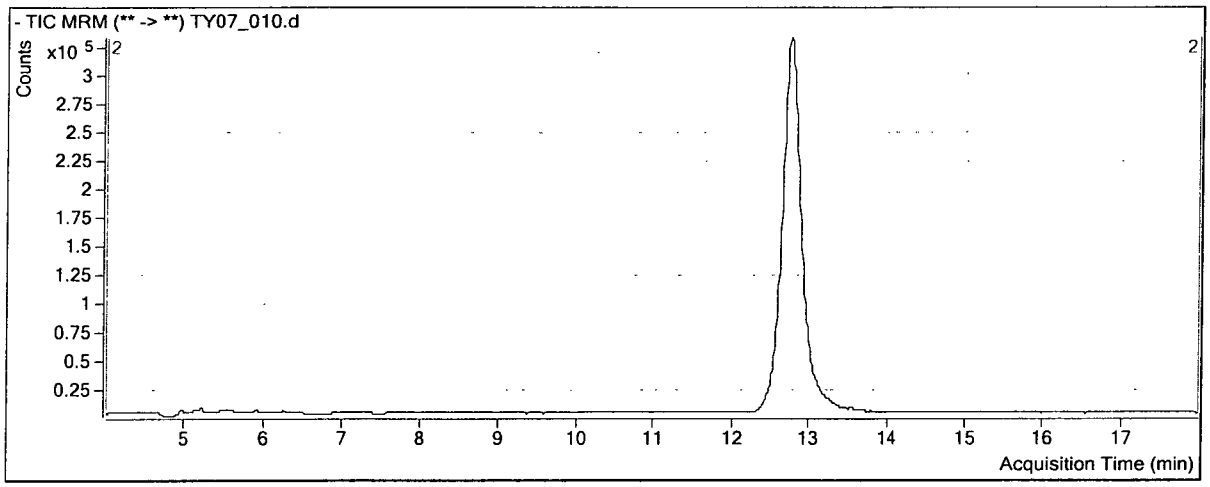
Sample ID : PER_SS 0.0004 ug/ml 11/06/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.753	5269548	PER_IS_89
12.700	554749	Perchlorate_83
12.757	178224	Perchlorate_85

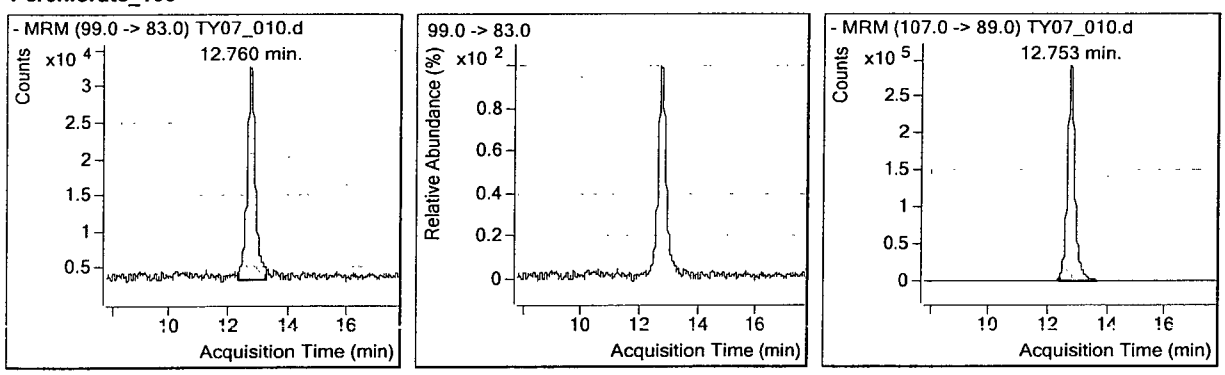
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_010.d	**Sample Name**	PER_SS 0.0004 ug/ml 11/06/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	16:25
ClientID	NA	**Inj Vol**	20

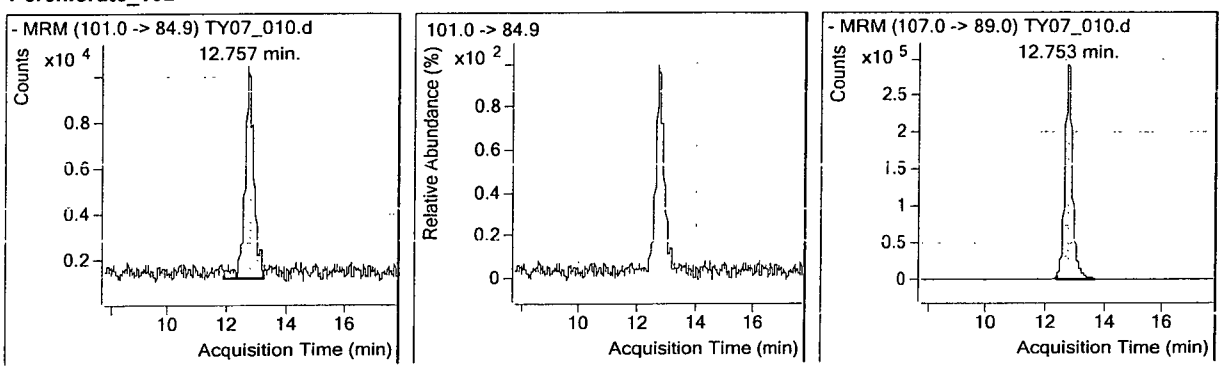


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.760	554749	5269548
Perchlorate_102	PER_IS_108	12.757	178224	5269548

Perchlorate_100



Perchlorate_102



SECOND SOURCE CALIBRATION VERIFICATION SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_011.d

	Date (s) of Analysis From:11/07/15 To:11/07/15 Time (s) of Analysis From:14:14 To:16:06				Date of Analysis: 11/07/15 Time of Analysis: 16:43 Standard Id: PER_SS (Standard) 0.002 ug/ml			
COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	12.80	1.219792	N	11.0
Perchlorate_85	12.67	12.57	12.78	0.412180	12.79	0.355572	N	13.7

FILE ID : TQCK0711.RFB

Data File ID: TY07_011.d

Date Injected : 11/07/15

Time Injected : 16:43

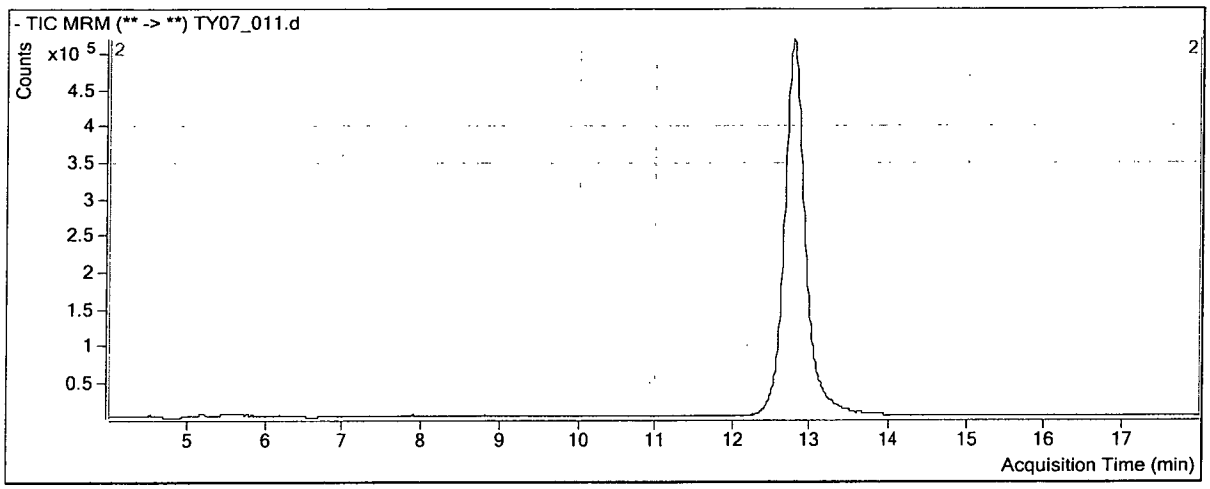
Sample ID : PER_SS 0.002 ug/ml 11/06/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.784	5916199	PER_IS_89
12.801	2886613	Perchlorate_83
12.787	841454	Perchlorate_85

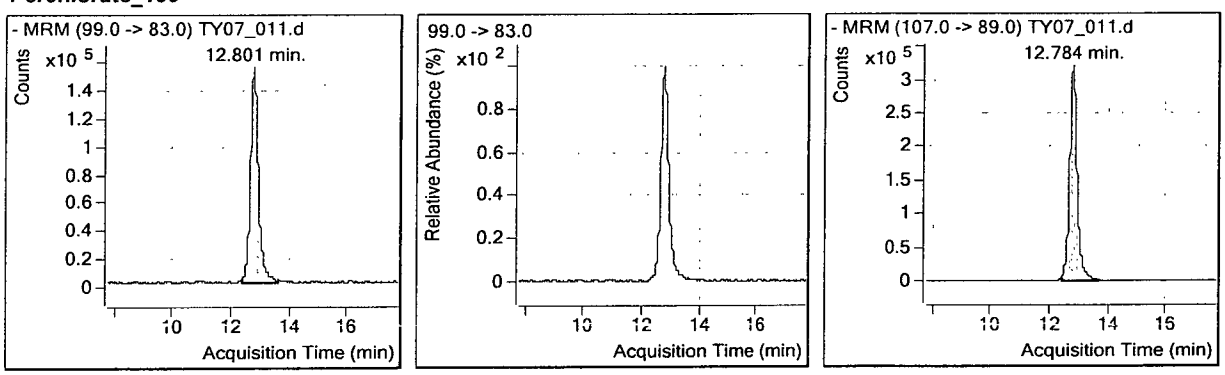
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_011.d	**Sample Name**	PER_SS 0.002 ug/ml 11/06/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	16:43
ClientID	NA	**Inj Vol**	20

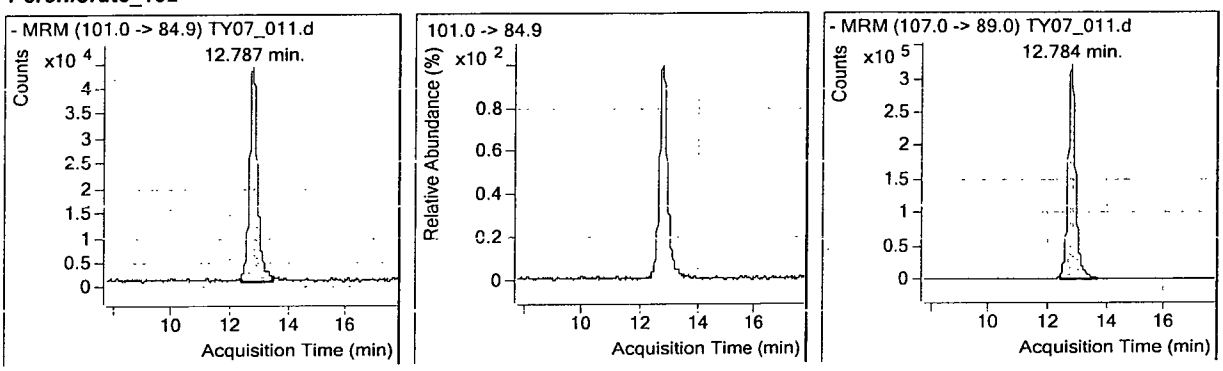


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.801	2886613	5916199
Perchlorate_102	PER_IS_108	12.787	841454	5916199

Perchlorate_100



Perchlorate_102



CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_013.d

	Date (s) of Analysis From:11/07/15 To:11/07/15 Time (s) of Analysis From:14:14 To:17:02				Date of Analysis: 11/07/15 Time of Analysis: 17:21 Standard Id: PER_CCV_1 (Standard) 0.002 ug/ml			
COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	12.94	1.361546	N	0.7
Perchlorate_85	12.67	12.57	12.78	0.412180	12.96	0.401551	N	2.6

FILE ID : TQCK0713.RFB

Data File ID: TY07_013.d

Date Injected : 11/07/15

Time Injected : 17:21

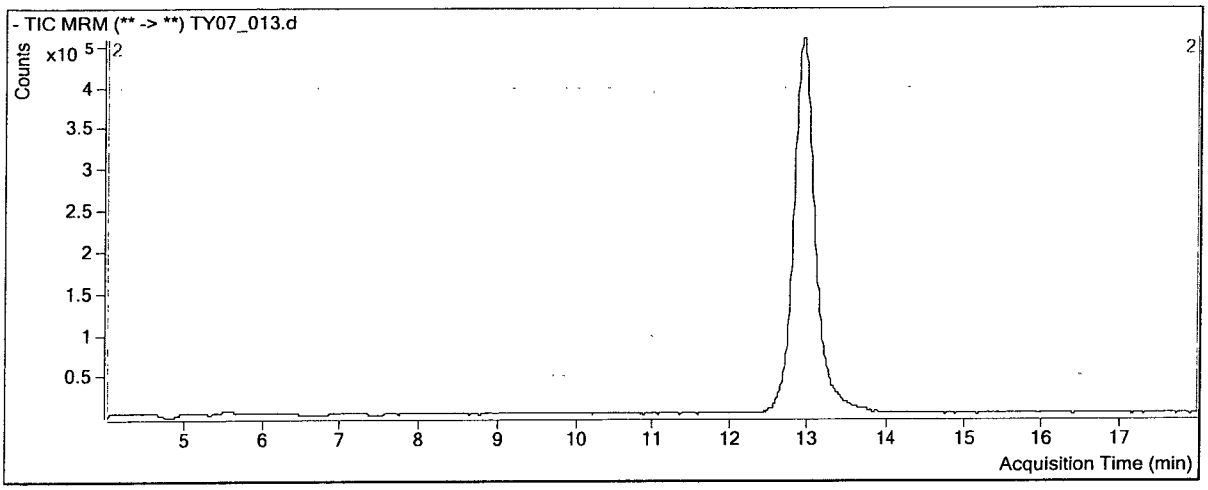
Sample ID : PER_CCV_1 0.002 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.947	5064306	PER_IS_89
12.943	2758115	Perchlorate_83
12.900	813430	Perchlorate_85

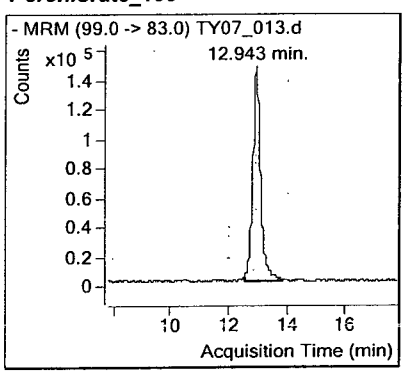
Quantitative Analysis Sample Report

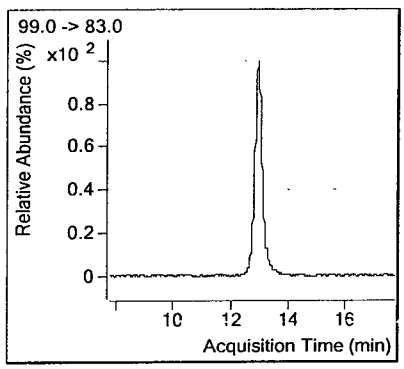
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_013.d	**Sample Name**	PER_CCV_1 0.002 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	17:21
ClientID	NA	**Inj Vol**	20

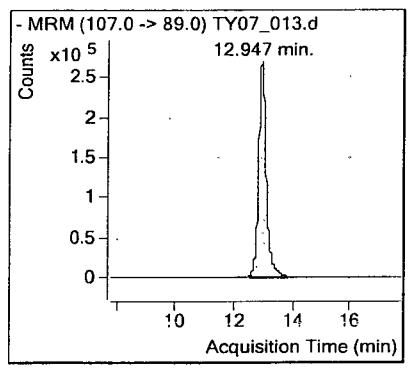


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.943	2758115	5064306
Perchlorate_102	PER_IS_108	12.960	813430	5064306

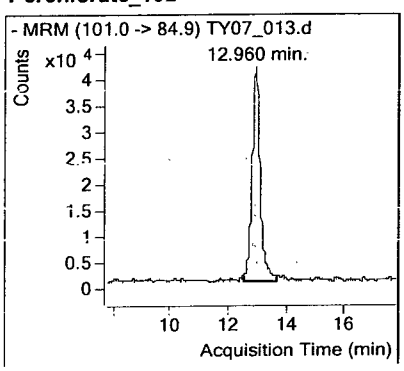
Perchlorate_100

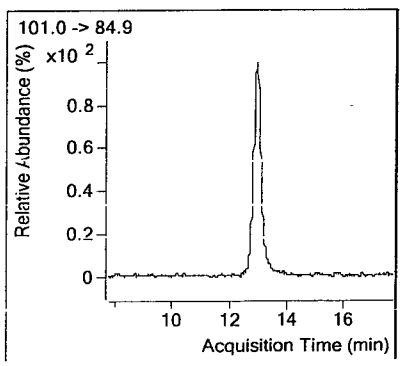


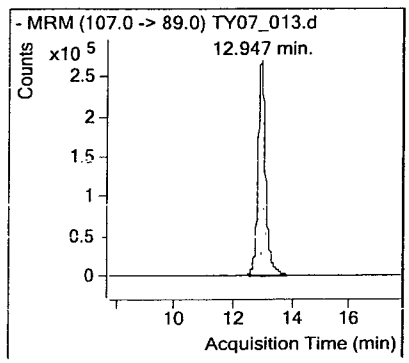




Perchlorate_102







CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_014.d

Date (s) of Analysis From:11/07/15 To:11/07/15 Time (s) of Analysis From:14:14 To:17:02	Date of Analysis: 11/07/15 Time of Analysis: 17:39 Standard Id: PER_CCV_1 (Standard) 0.0004ug/ml

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	12.98	1.252861	N	8.6
Perchlorate_85	12.67	12.57	12.78	0.412180	13.02	0.380959	N	7.6

FILE ID : TQCK0714.RFB

Data File ID: TY07_014.d

Date Injected : 11/07/15

Time Injected : 17:39

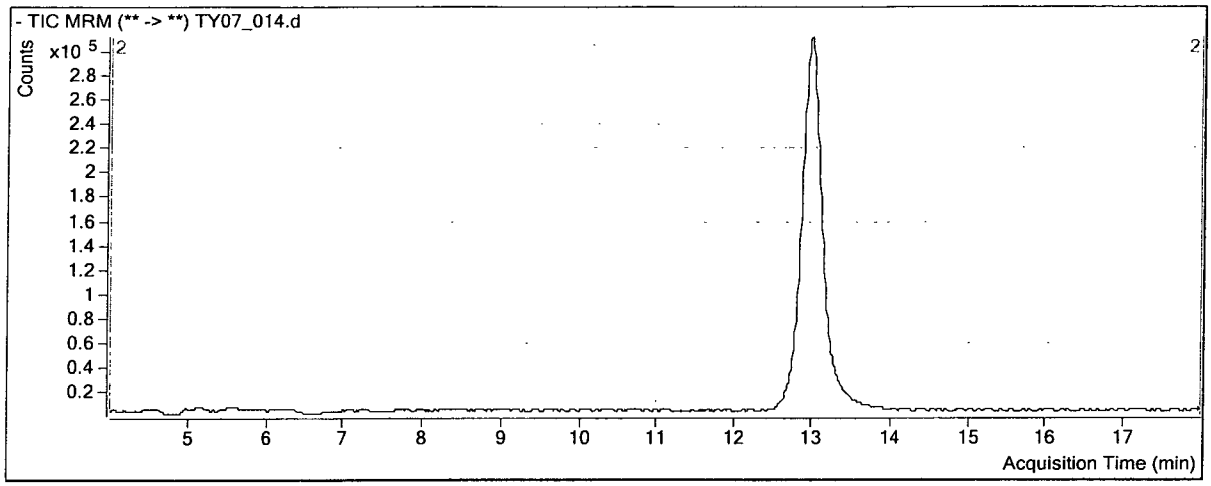
Sample ID : PER_CCV_1 0.0004 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.988	5052506	PER_IS_89
12.984	506407	Perchlorate_83
13.021	153984	Perchlorate_85

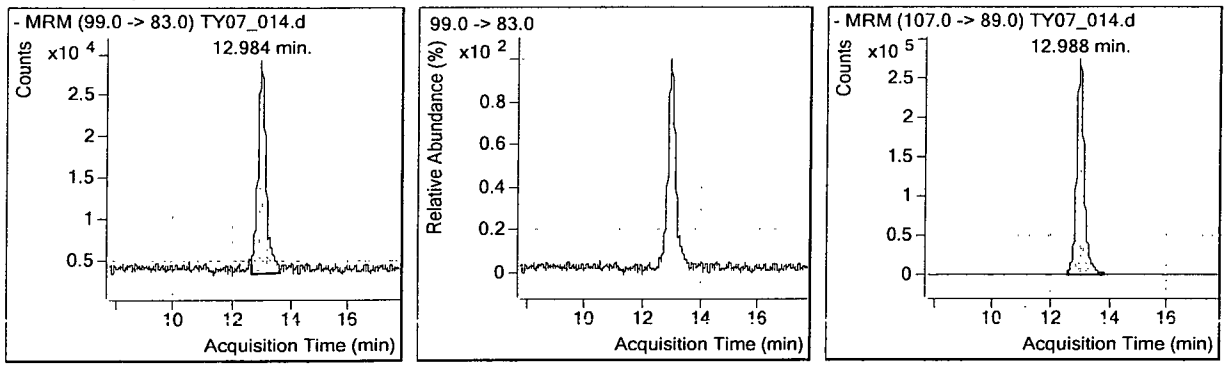
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_014.d	**Sample Name**	PER_CCV_1 0.0004 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/07/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	17:39
ClientID	NA	**Inj Vol**	20

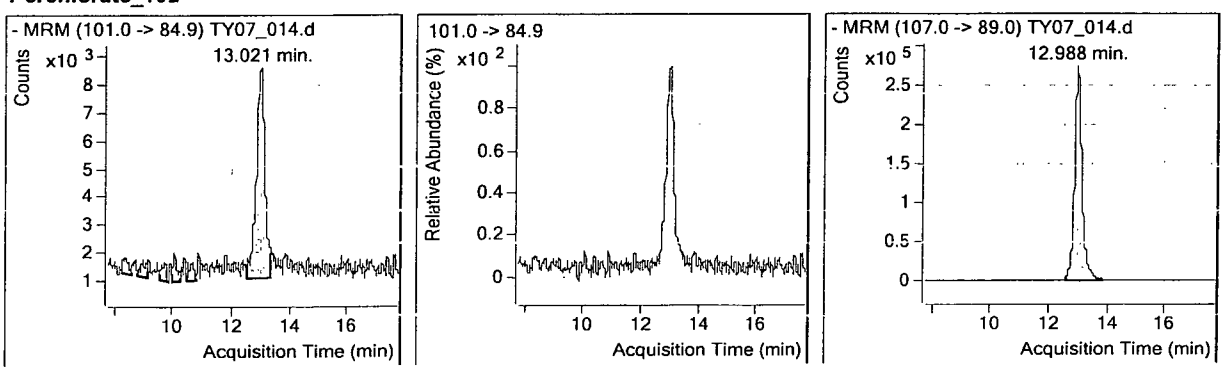


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.984	506407	5052506
Perchlorate_102	PER_IS_108	13.021	153984	5052506

Perchlorate_100



Perchlorate_102



CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_055.d

	Date (s) of Analysis From:11/07/15 To:11/08/15 Time (s) of Analysis From:14:14 To:5:46				Date of Analysis: 11/08/15 Time of Analysis: 6:23 Standard Id: PER_CCV_2 (Standard) 0.0004ug/ml			
COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	13.70	1.287387	N	6.1
Perchlorate_85	12.67	12.57	12.78	0.412180	13.73	0.385889	N	6.4

FILE ID : TQCK0755.RFB

Data File ID: TY07_055.d

Date Injected : 11/08/15

Time Injected : 6:23

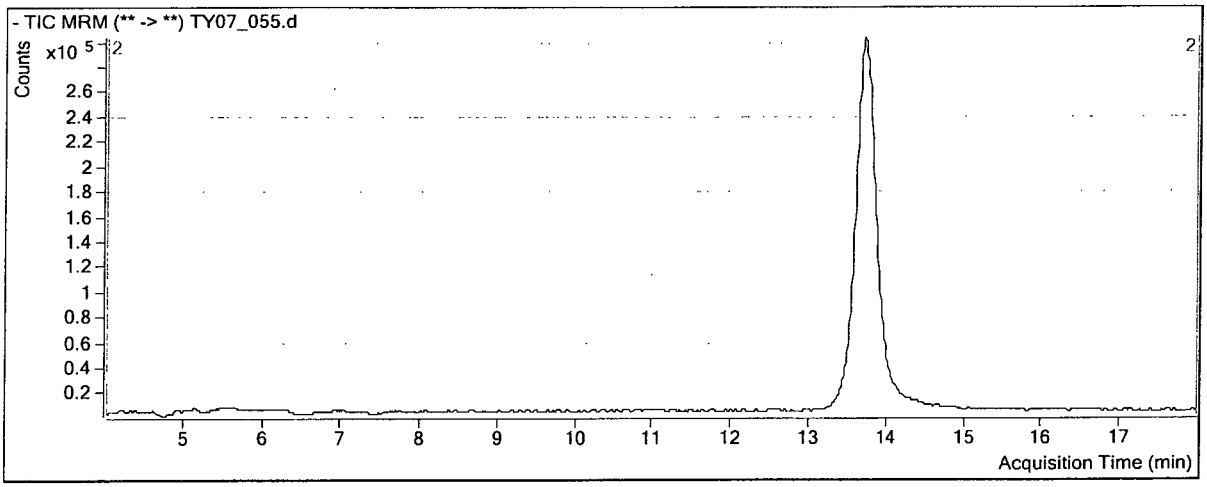
Sample ID : PER_CCV_2 0.0004 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
13.711	5267810	PER_IS_89
13.697	542537	Perchlorate_83
13.735	162623	Perchlorate_85

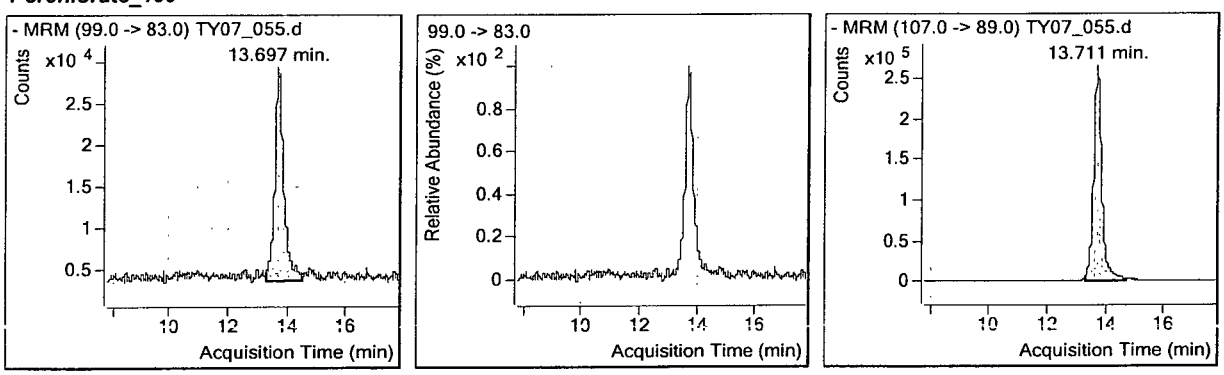
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_055.d	**Sample Name**	PER_CCV_2 0.0004 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	6:23
ClientID	NA	**Inj Vol**	20

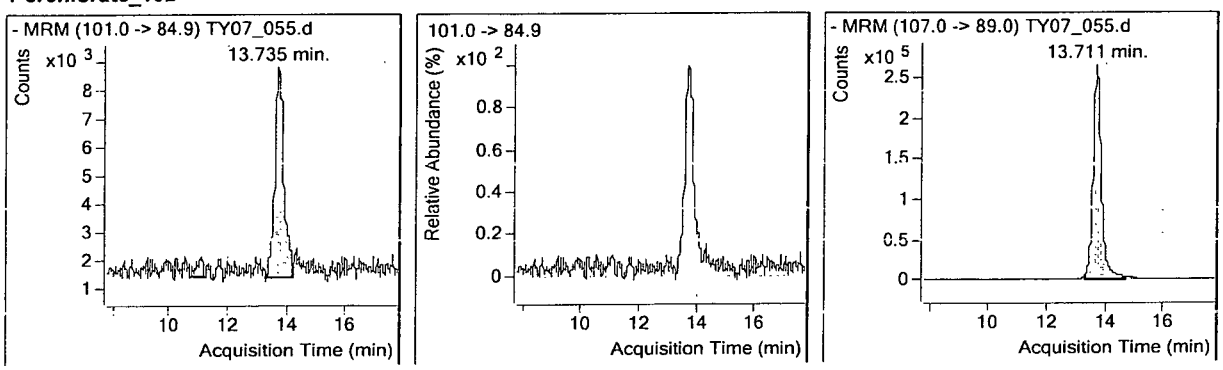


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	13.697	542537	5267810
Perchlorate_102	PER_IS_108	13.735	162623	5267810

Perchlorate_100



Perchlorate_102



CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_056.d

Date (s) of Analysis From:11/07/15 To:11/08/15 Time (s) of Analysis From:14:14 To:5:46	Date of Analysis: 11/08/15 Time of Analysis: 6:42 Standard Id: PER_CCV_2 (Standard) 0.002 ug/ml

COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	13.75	1.342509	N	2.1
Perchlorate_85	12.67	12.57	12.78	0.412180	13.72	0.388798	N	5.7

FILE ID : TQCK0756.RFB

Data File ID: TY07_056.d

Date Injected : 11/08/15

Time Injected : 6:42

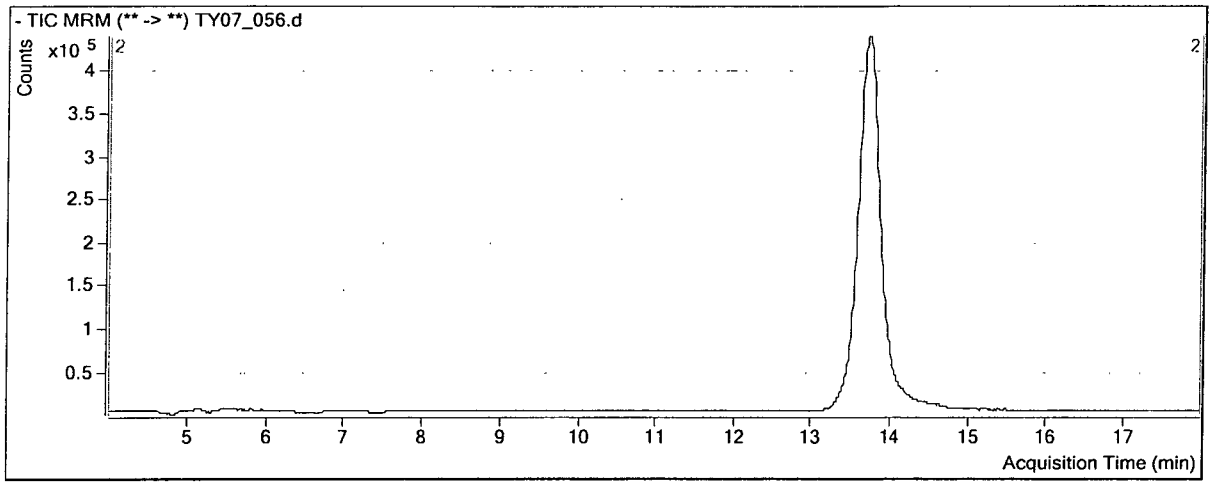
Sample ID : PER_CCV_2 0.002 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
13.711	5284326	PER_IS_89
13.748	2837702	Perchlorate_83
13.724	821814	Perchlorate_85

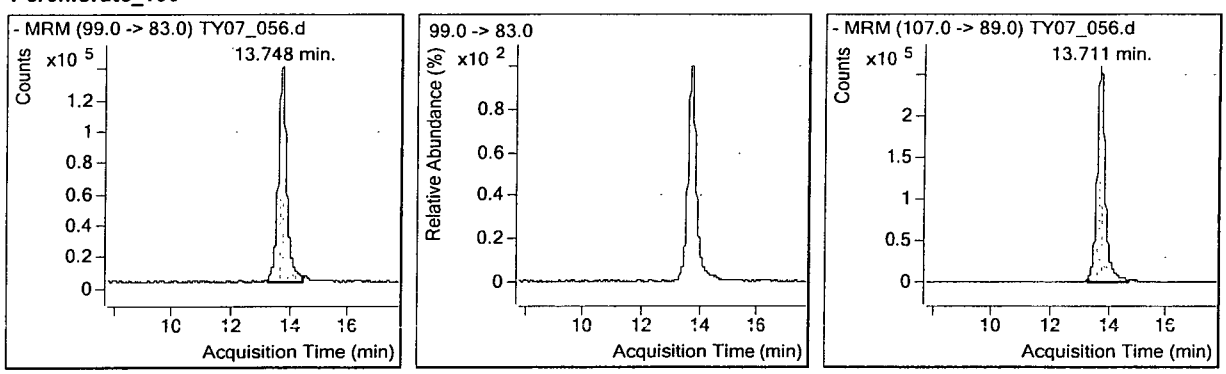
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_056.d	**Sample Name**	PER_CCV_2 0.002 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	6:42
ClientID	NA	**Inj Vol**	20

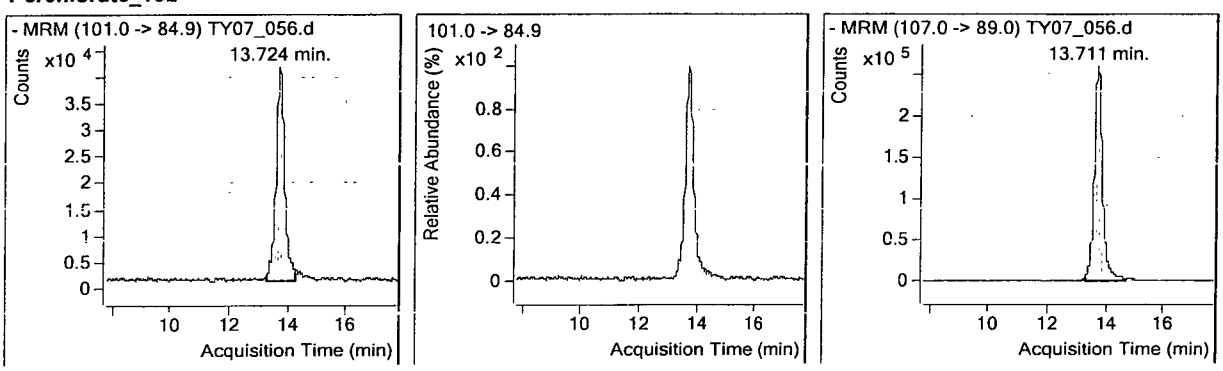


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	13.748	2837702	5284326
Perchlorate_102	PER_IS_108	13.724	821814	5284326

Perchlorate_100



Perchlorate_102



CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_066.d

	Date (s) of Analysis From:11/07/15 To:11/08/15 Time (s) of Analysis From:14:14 To:9:11				Date of Analysis: 11/08/15 Time of Analysis: 9:48 Standard Id: PER_CCV_2 (Standard) 0.0004ug/ml			
COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	13.08	1.285789	N	6.2
Perchlorate_85	12.67	12.57	12.78	0.412180	13.06	0.367270	N	10.9

FILE ID : TQCK0766.RFB

Data File ID: TY07_066.d

Date Injected : 11/08/15

Time Injected : 9:48

Sample ID : PER_CCV_2 0.0004 ug/ml 11/07/15

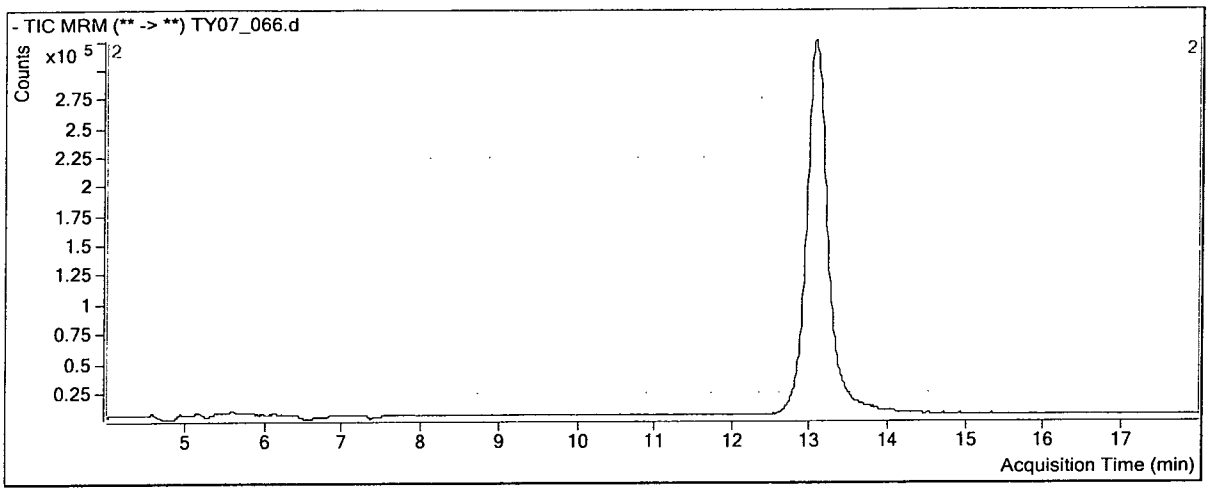
Client ID : NA

Retention Time		Area Count Response	Compound_ID Product Ion
13.079		5440338	PER_IS_89
13.076		559610	Perchlorate_83
13.062	*	159846	Perchlorate_85

* MANUAL INTEGRAION

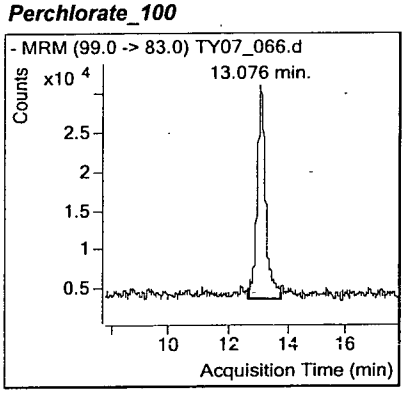
Quantitative Analysis Sample Report

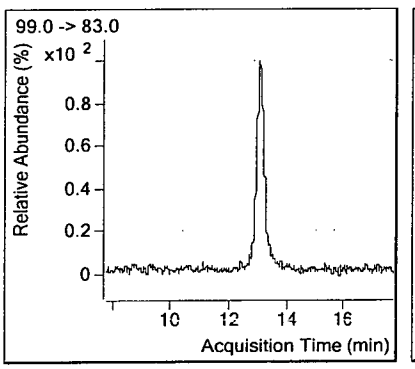
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_066.d	**Sample Name**	PER_CCV_2 0.0004 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	9:48
ClientID	NA	**Inj Vol**	20

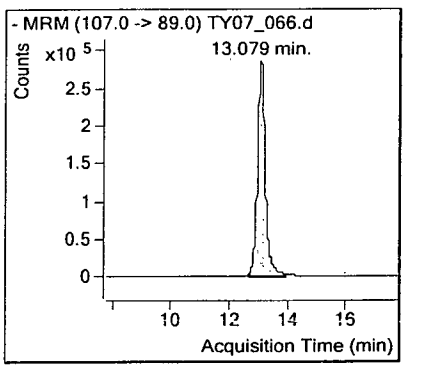


Compound	ISTD		RT	Resp	ISTD Resp	
Perchlorate_100	PER_IS_108		13.076	559610	5440338	
Perchlorate_102	PER_IS_108	*	13.062	159846	5440338	* MANUAL INT

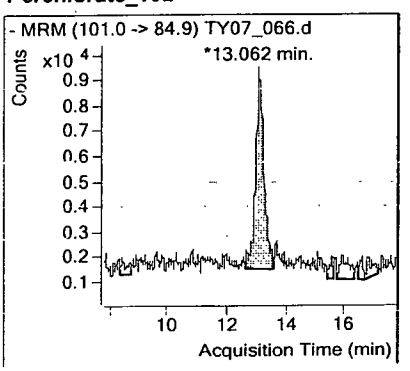
Perchlorate_100

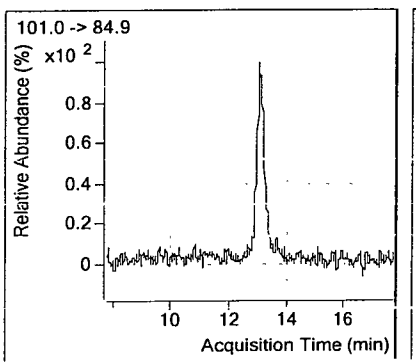


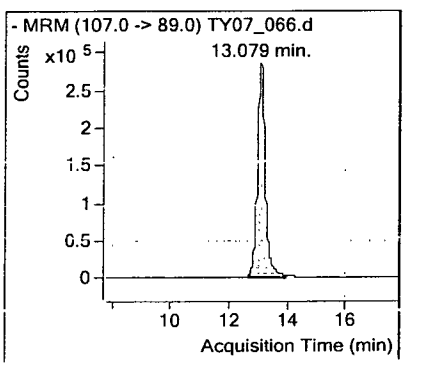


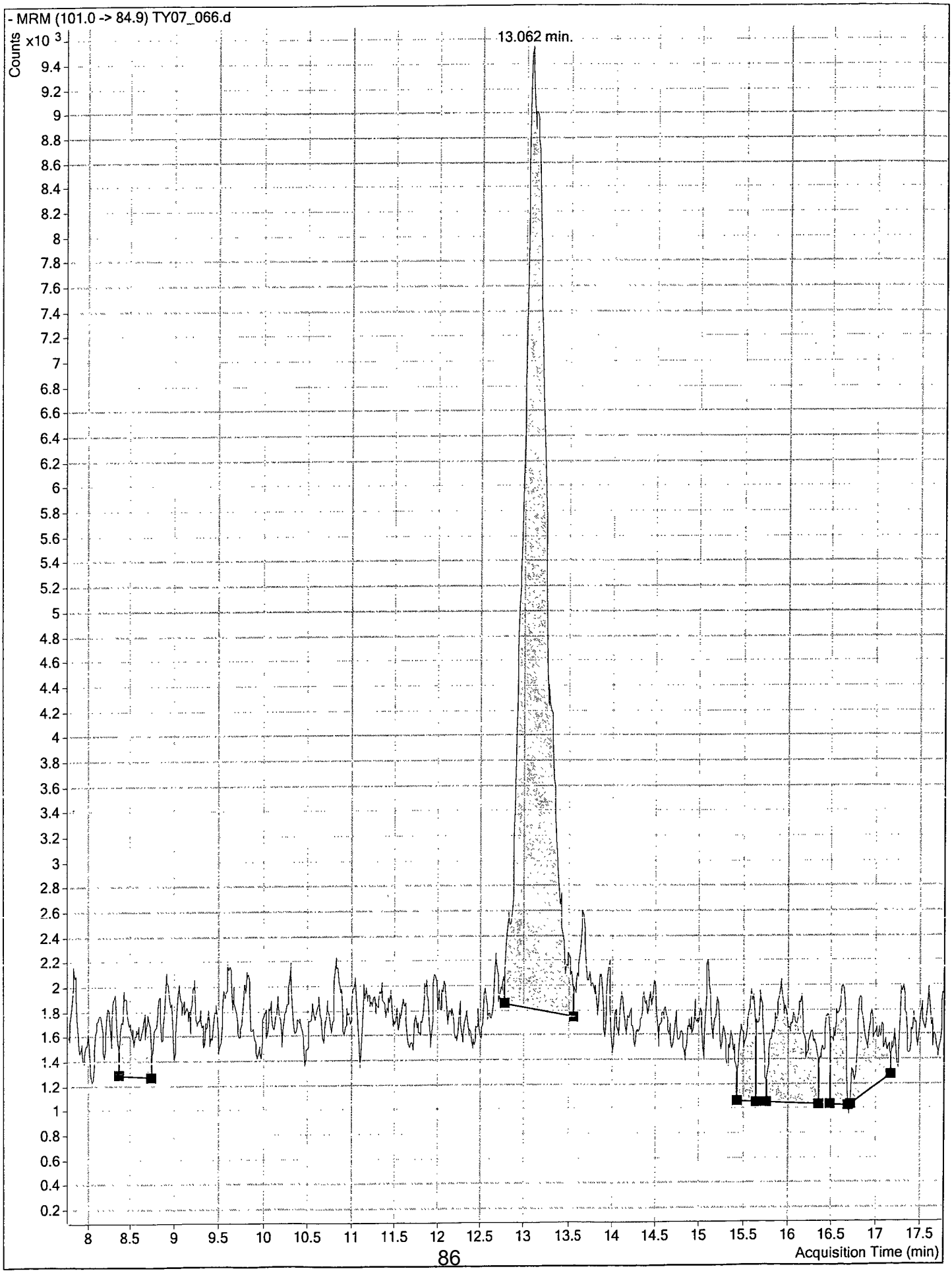


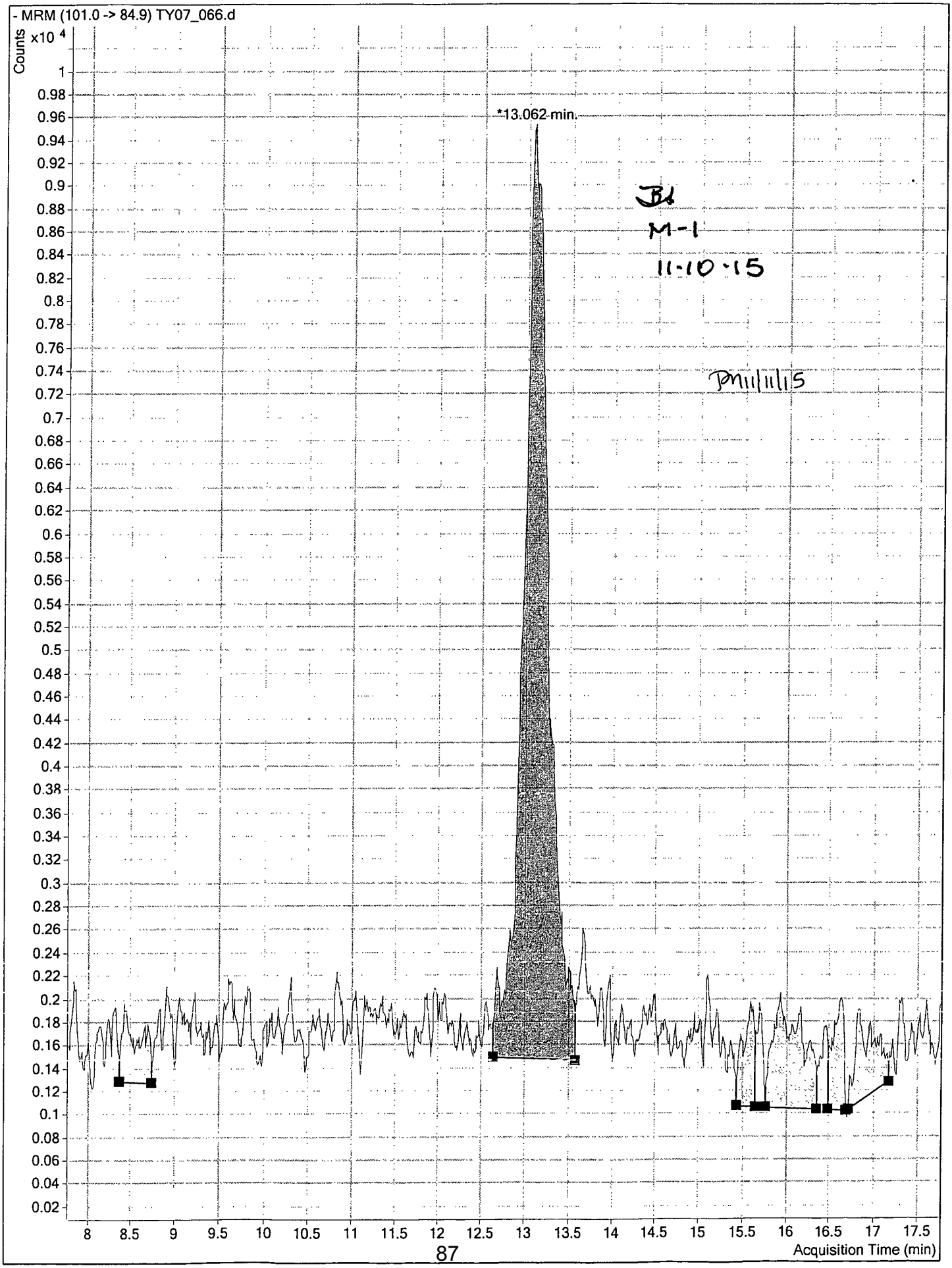
Perchlorate_102








- MRM (101.0 -> 84.9) TY07_066.d
Counts
x10 3
13.062 min.
Acquisition Time (min)


- MRM (101.0 -> 84.9) TY07_066.d
Counts
x10 4
*13.062 min.
JB
M-1
11-10-15
DM 11/11/15
Acquisition Time (min)

CONTINUING CALIBRATION CHECK SUMMARY FORM

Lab Name: APPL Inc.

Detector ID: Agilent 6460 Triple Quad LC/MS DATA FILE ID: TY07_067.d

Date (s) of Analysis From:11/07/15 To:11/08/15 Time (s) of Analysis From:14:14 To:9:11	Date of Analysis: 11/08/15 Time of Analysis: 10:06 Standard Id: PER_CCV_2 (Standard) 0.002 ug/ml

COMPOUND	RT	RT WINDOW FROM	TO	AVERAGE RELATIVE RESPONSE FACTOR	RT	CALCULATED RELATIVE RESPONSE FACTOR	QNT Y/N	%D
Perchlorate_83	12.70	12.60	12.80	1.371144	12.98	1.374950	N	0.3
Perchlorate_85	12.67	12.57	12.78	0.412180	12.97	0.393114	N	4.6

FILE ID : TQCK0767.RFB

Data File ID: TY07_067.d

Date Injected : 11/08/15

Time Injected : 10:06

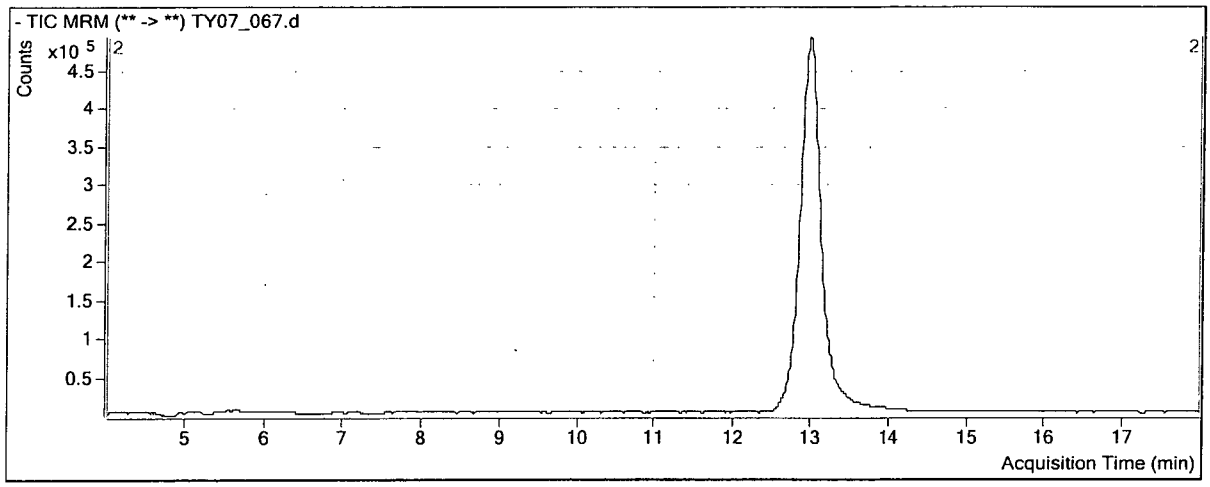
Sample ID : PER_CCV_2 0.002 ug/ml 11/07/15

Client ID : NA

Retention Time	Area Count Response	Compound_ID Product Ion
12.977	5454312	PER_IS_89
12.984	2999762	Perchlorate_83
12.971	857666	Perchlorate_85

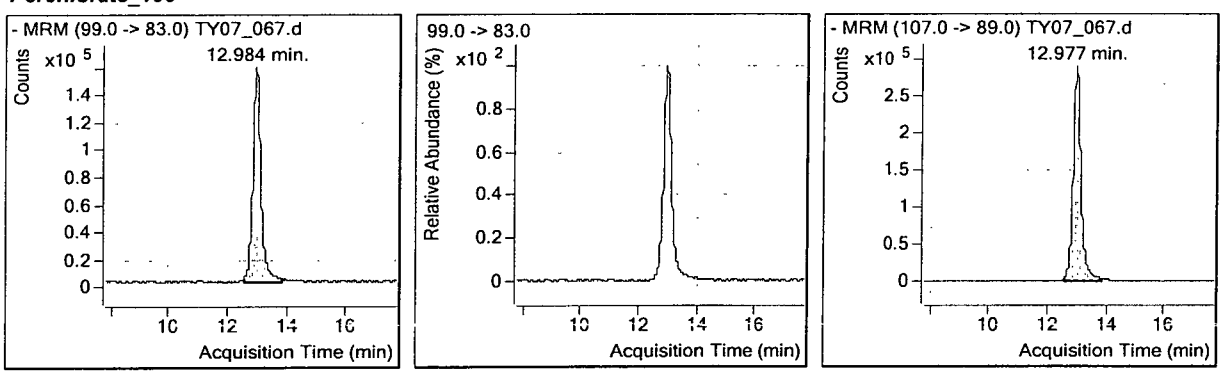
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_067.d	**Sample Name**	PER_CCV_2 0.002 ug/ml 11/07/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	10:06
ClientID	NA	**Inj Vol**	20

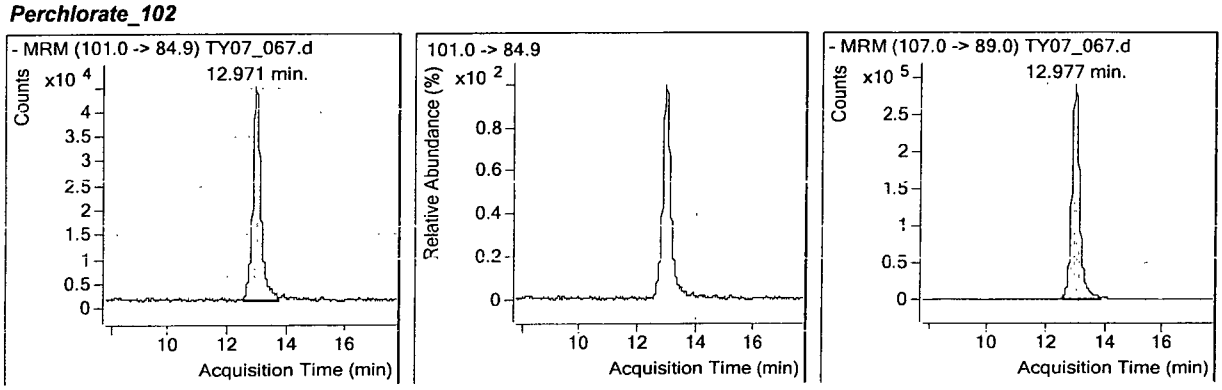


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.984	2999762	5454312
Perchlorate_102	PER_IS_108	12.971	857666	5454312

Perchlorate_100



Perchlorate_102



EPA METHOD 6850
Perchlorate
LC/MS

Raw Data

APPL, INC.

Method Blank
Perchlorate

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **151106W-24176 - 202029**
Batch ID: #6850-151106A

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	PERCHLORATE	0.400 U	0.60	0.400	0.200	ug/L	11/06/15	11/08/15

Quant Method: QTLMFL2
Run #: TY07_060.d
Instrument: AGIL_6460
Sequence: TQ110715
Initials: RP

GC SC-Blank-REG MDLs-DOD
Printed: 11/09/15 10:32:55 AM

Data File ID: TY07_060.d

Date Injected : 11/08/15

Time Injected : 7:56

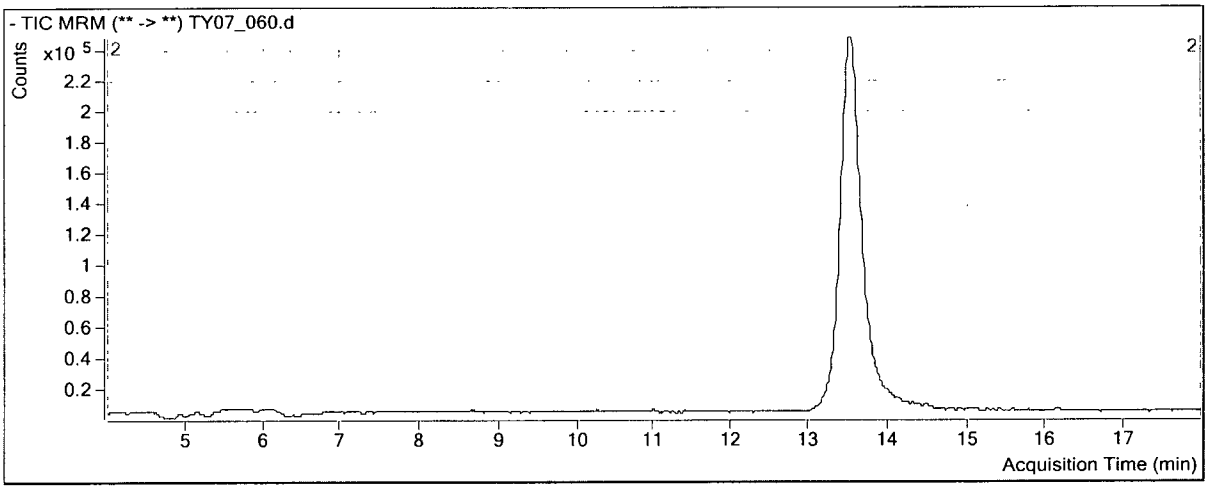
Sample ID : 151106WBLKA 1052.6 DF 11/06/15

Client ID : LAB_CNTL_W_BLKA

Retention Time	Area Count Response	Compound_ID Product Ion	
13.548	4830075	PER_IS_89	
12.729	12228	Perchlorate_83	(12228 * 0.0050) / (1.37 * 4830075.00) * 1052.60 = 0.009717 ppb
12.736	3302	Perchlorate_85	(3302 * 0.0050) / (0.41 * 4830075.00) * 1052.60 = 0.008729 ppb

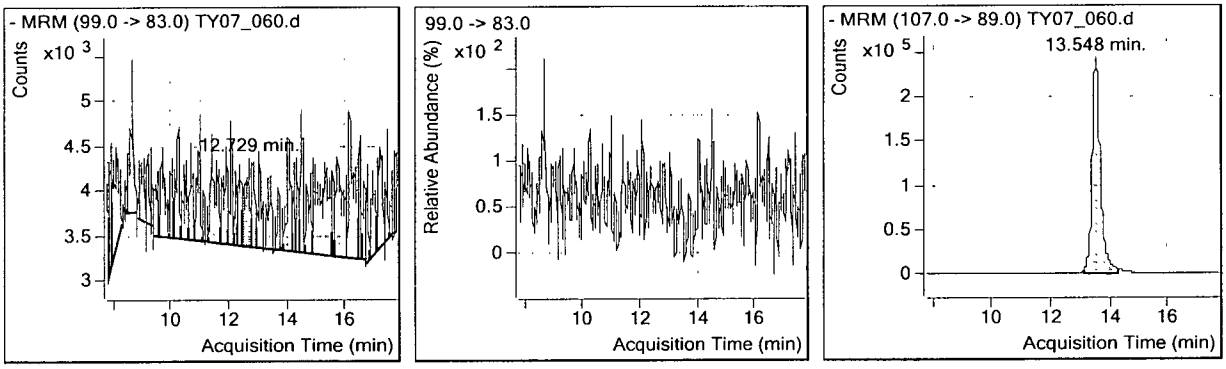
Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_060.d	**Sample Name**	151106WBLKA 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	7:56
ClientID	LAB_CNTL_W_BLKA	**Inj Vol**	20

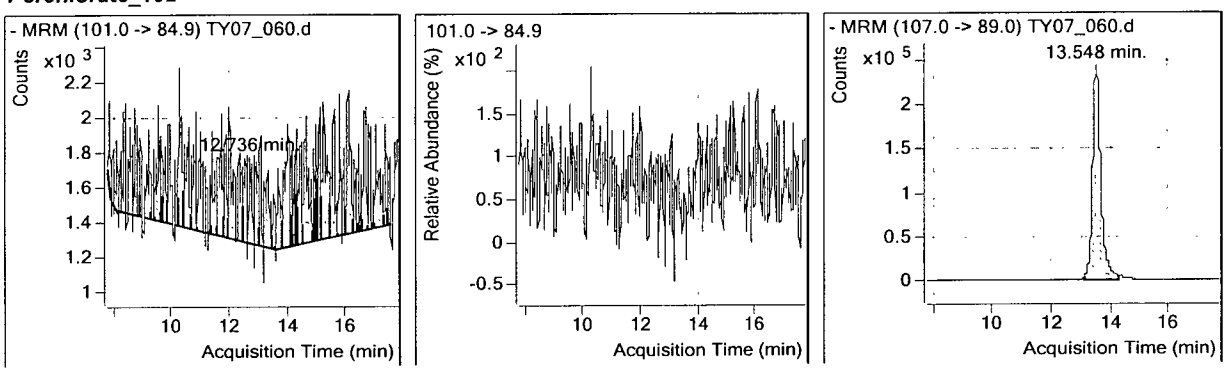


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.729	12228	4830075
Perchlorate_102	PER_IS_108	12.736	3302	4830075

Perchlorate_100



Perchlorate_102



Laboratory Control Spike Recovery
Perchlorate

APPL ID: **151106W-24176 LCS - 202029**
Batch ID: #6850-151106A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
PERCHLORATE	0.600	0.579	96.5	80-120

Comments: _____

Primary	SPK
Quant Method :	QTLMFL2
Extraction Date :	11/06/15
Analysis Date :	11/08/15
Instrument :	AGIL_6460
Run :	TY07_058.d
Initials :	RP

Printed: 11/09/15 10:32:50 AM
APPL Standard LCS

Data File ID: TY07_058.d

Date Injected : 11/08/15

Time Injected : 7:19

Sample ID : 151106WA_LCS-1 1052.6 DF 11/06/15

Client ID : LAB_CNTL_W_SPKA

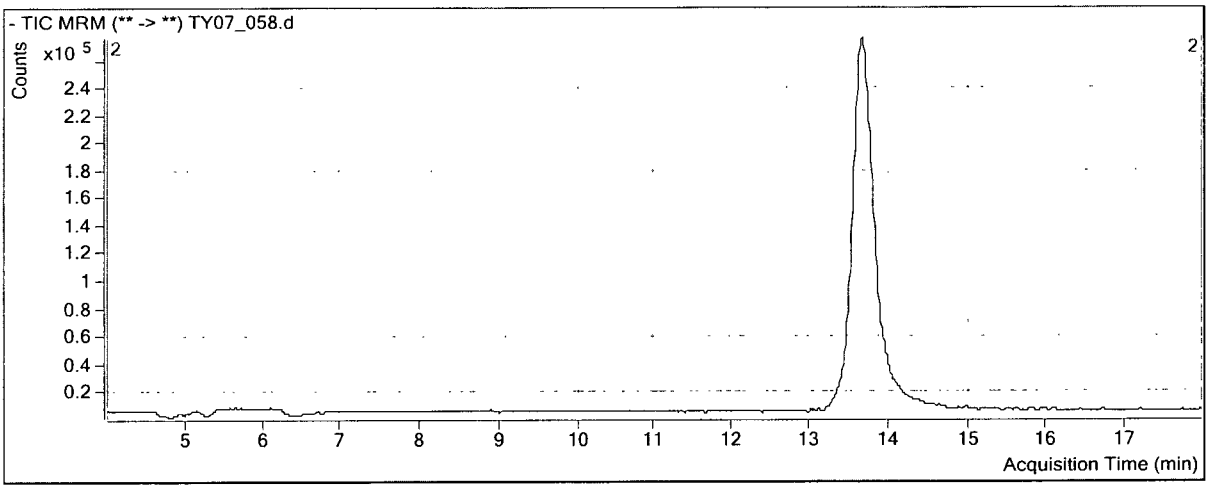
Retention Time	Area Count Response	Compound_ID Product Ion	
13.600	4578356	PER_IS_89	
13.708	690929	Perchlorate_83	(690929 * 0.0050) / (1.37 * 4578356.00) * 1052.60 = 0.579261 ppb
13.724	216055	Perchlorate_85	(216055 * 0.0050) / (0.41 * 4578356.00) * 1052.60 = 0.602561 ppb

$$\frac{(1052.6)(690929)(0.005)}{(1.37\ 1144)(4578356)} = 0.579261$$

11/17/15
PM

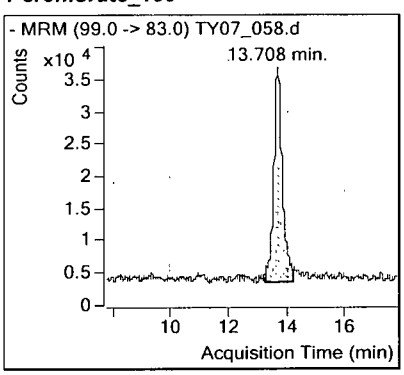
Quantitative Analysis Sample Report

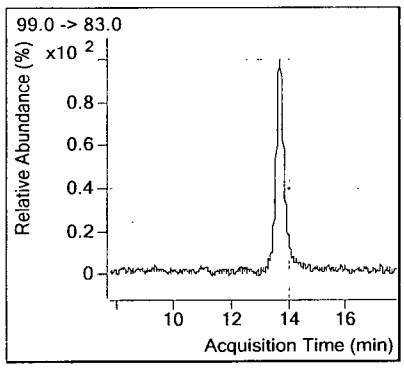
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_058.d	**Sample Name**	151106WA_LCS-1 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	7:19
ClientID	LAB_CNTL_W_SPKA	**Inj Vol**	20

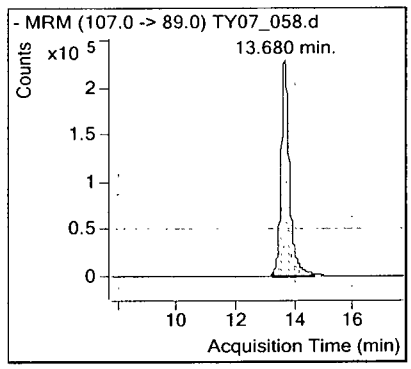


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	13.708	690929	4578356
Perchlorate_102	PER_IS_108	13.724	216055	4578356

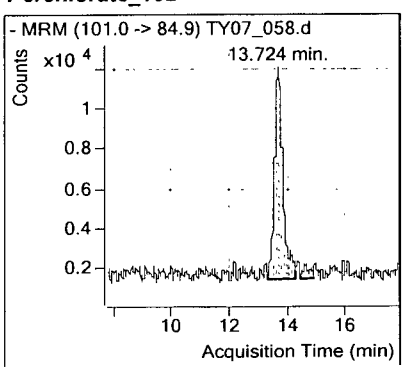
Perchlorate_100

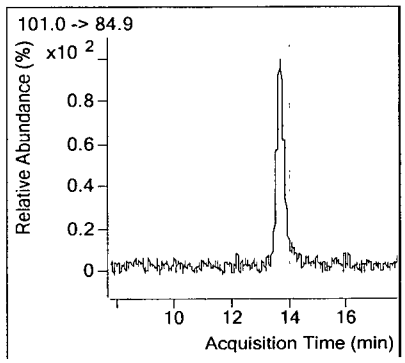


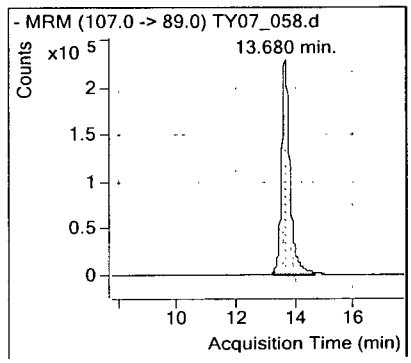




Perchlorate_102







Interferrence Check Sample

Perchlorate EPA 6850 Water

APPL ID: 151106W-24176 ICS-202029
Batch ID: #6850-151106A

APPL Inc.
908 N. Temperance Ave.
Clovis, CA 93711

Compound Name	Spike Level ug/L	Spk Result ug/L	SPK% Recovery	Recovery Limits
Perchlorate	0.600	0.574	95.7%	70-130

Comments:

Quant Method:	QTLMFL2
Extraction Date:	11/06/15
Analysis Date:	11/08/15
Instrument:	AGIL_6560
Run:	TY07_059.D
Initials:	RP

Data File ID: TY07_059.d

Date Injected : 11/08/15

Time Injected : 7:37

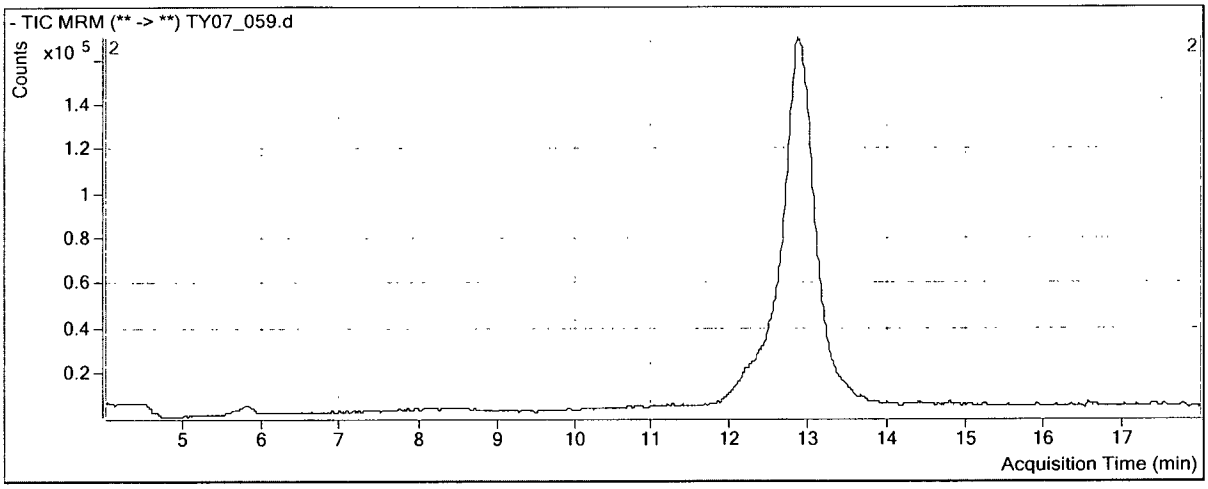
Sample ID : 151106W_ICSA 1052.6 DF 11/06/15

Client ID : LAB_CNTL_W_ICSA

Retention Time	Area Count Response	Compound_ID Product Ion	
12.875	4416921	PER_IS_89	
12.862	660043	Perchlorate_83	(660043 * 0.0050) / (1.37 * 4416921.00) * 1052.60 = 0.573592 ppb
12.858	231773	Perchlorate_85	(231773 * 0.0050) / (0.41 * 4416921.00) * 1052.60 = 0.670023 ppb

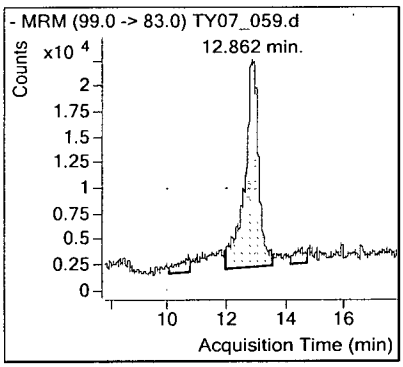
Quantitative Analysis Sample Report

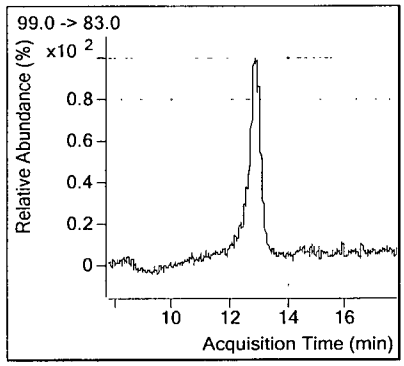
Batch Data Path	D:\MassHunter\Data\151107\QuantResults\151107_A_MI.batch.bin		
Instrument	LCMS QQQ	**Operator**	ba
Data File	TY07_059.d	**Sample Name**	151106W_ICSA 1052.6 DF 11/06/15
Sample Type	Sample	**Acq_Date**	11/08/15
Acq Method	6460_ESI_PER_N_NEWER_K'_COLUMN.m	**Acq Time**	7:37
ClientID	LAB_CNTL_W_ICSA	**Inj Vol**	20

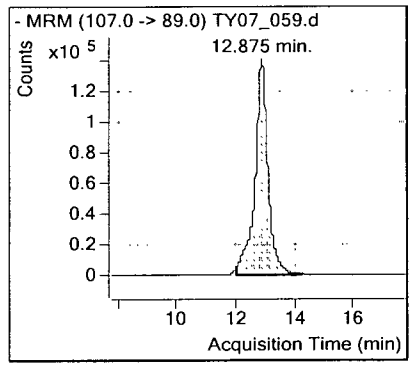


Compound	ISTD	RT	Resp	ISTD Resp
Perchlorate_100	PER_IS_108	12.862	660043	4416921
Perchlorate_102	PER_IS_108	12.858	231773	4416921

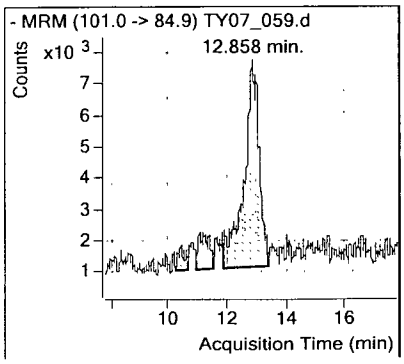
Perchlorate_100

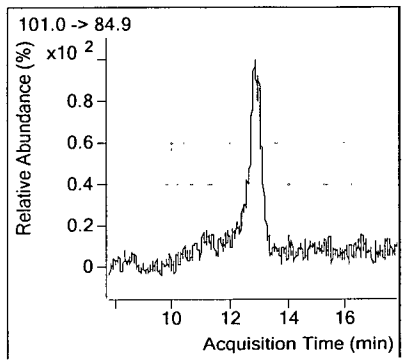


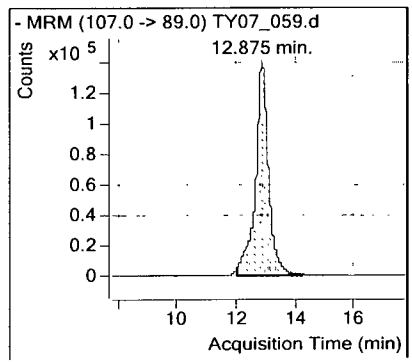




Perchlorate_102







LCMS STANDARD PREP LOG# 105 PAGE 118

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N LOT #	INITIALS
NOTE: THE FOLLOWING DOCUMENTATION WAS PERFORMED AS DATED:							JH 08-06-15 08-06-15

ACN_H20_50:50 1 DF 08/01/15:

Burdick & Jackson Acetonitrile Lot DM931 took 10.000 ml and added to 10.000 ml Laboratory Source DI_H20

Note : Above solution was prepared as needed.

JH 08-01-15

PER_IS_50:50 0.005 ug/ml 08/01/15:

Took 19.000 ml ACN_H20_50:50 and added 1.000 ml O2SI 18_O_4 Perchlorate 100 ug/L lot 1074176-35164

Note: Solution prepared as needed.

PERCHLORATE 1.0 ug/ml 08/01/15:

PERCHLORATE 10 ug/ml O2SI LOT 1074374-35165 took 0.100 ml and added to 0.900 ml Laboratory Source DI_H20.

PERCHLORATE 0.010 ug/ml 08/01/15

PERCHLORATE 1.0 ug/ml 08/01/15 took 0.100 ml and added to 9.400 ml ACN_H20 50:50 1 DF 08/01/15 that had received 0.500 ml O2SI 18_O_4 Perchlorate 100 ug/L lot 1074176-35164.

PERCHLORATE 0.005 ug/ml 08/01/15:

PERCHLORATE 0.010 ug/ml 08/01/14 took 0.500 ml and added to 0.500 ml PER_IS_50:50 0.005 ug/ml 08/01/15.

	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N. LOT #	DATE INITIALS
STANDARD							
NOTE: THE FOLLOWING DOCUMENTATION WAS PERFORMED AS DATED: JR 08-06-15							JR 08-06-15
PERCHLORATE 0.002 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							JR 08-01-15
PERCHLORATE 0.001 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.100 ml and added to 0.900 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PERCHLORATE 0.0004 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PERCHLORATE 0.0002 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.020 ml and added to 0.980 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PERCHLORATE 0.0001 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.010 ml and added to 0.990 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PER_SS 1.0 ug/ml 08/01/15 PERCHLORATE_SS O2SI 10 ug/ml lot 1074375-35166 took 0.100 ml and added to 0.900 ml Laboratory Source Di_H2O.							

LC/MS STANDARD PREP LOG# 105 PAGES 120

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N. LOT #	DATE / INITIALS
NOTE: THE FOLLOWING DOCUMENTATION WAS PERFORMED AS DATED: JA 08-06-15							JA 08-06-15
PER_CCV_1 0.0004 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							JA 08-01-15
PER_CCV_1 0.002 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PER_CCV_2 0.0004 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PER_CCV_2 0.002 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PER_CCV_3 0.0004 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							
PER_CCV_3 0.002 ug/ml 08/01/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.							

NOTE: THE FOLLOWING DOCUMENTATION JR
WAS PERFORMED AS DATED: JR 08-06-15 08-06-15

PER_SS 0.010 ug/ml 08/01/15:

PER_SS 1.0 ug/ml 08/01/15 took 0.100 ml and added to 9.400 ml ACN_H20 50:50 1 DF 08/01/15 that had received 0.500 ml O2SI 18_O_4 Perchlorate 100 ug/L lot 1074176-35164.

PER_SS 0.0004 ug/ml 08/01/15:

PER_SS 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.

PER_SS 0.002 ug/ml 08/01/15:

PER_SS 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.

PER_SS 0.0004 ug/ml 09/09/15: PER_SS 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15.
PER_SS 0.002 ug/ml 09/09/15: PER_SS 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15.
PER_SS 0.0004 ug/ml 11/06/15: PER_SS 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 08/01/15. NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PER_SS 0.002 ug/ml 11/06/15: PER_SS 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 08/01/15. NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
ACN_H20_50:50 1 DF 11/07/15: Laboratory Source DI_H2O took 10.000 ml and combined with 10.000 ml Burdick & Jackson Acetonitrile Lot DM931 NOTE : Solution prepared as needed.
PER_IS_50:50 0.005 ug/ml 11/07/15: ACN_H20_50:50 1 DF 11/07/15 from a volume of 20.000 ml removed 1.000 ml and then delivered 1.000 ML O2SI 18_O4 PERCHLORATE 100 ug/L Lot 1074176-35164 NOTE : Solution prepared as needed.

PERCHLORATE 0.005 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.500 ml and added to 0.500 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PERCHLORATE 0.002 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PERCHLORATE 0.001 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.100 ml and added to 0.900 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PERCHLORATE 0.0004 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PERCHLORATE 0.0002 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.020 ml and added to 0.980 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PERCHLORATE 0.0001 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.010 ml and added to 0.990 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.

PER_CCV_1 0.0004 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PER_CCV_1 0.002 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PER_CCV_2 0.0004 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.040 ml and added to 0.960 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.
PER_CCV_2 0.002 ug/ml 11/07/15: PERCHLORATE 0.010 ug/ml 08/01/15 took 0.200 ml and added to 0.800 ml PER_IS_50:50 0.005 ug/ml 11/07/15 NOTE: Performed the above process two times and combined the aliquotes into one injection vial.

_HPL6850

Organic Extraction Worksheet

Method	EPA 6850 HPLC Perchlorate Extraction	Extraction Set	151106A	Extraction Method	HPL6850	Units	mL

Spiked ID 1	Perchlorate Spike Mix 0.1ppm 7/31/15 EXP 12/01/15		Surrogate ID 1		
Spiked ID 2	Mix Anions 25,000ppm 2-10-15 EXP 2-10-16		Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NA	
Spiked ID 7			Ext. Start Time:	11/06/15 12:14	
Spiked ID 8			Ext. End Time:	11/06/15 12:20	
			GC Requires Extract By:		
			pH1		Water Bath Temp Criteria
			pH2		
			pH3		

Spiked By: CFM **Date** 11/06/15 12:10:00 PM **Witnessed By:** DL **Date** 11/06/15 12:10:00 PM

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	151106A Blk				NA	NA equip	5ML	5ML	NA	11/06/15 12:14	
2	151106A LCS-1		0.030	1	NA	NA equip	5ML	5ML	NA	11/06/15 12:14	
3	151106A ICS		0.030/0.060	1/2	NA	NA equip	5ML	5ML	NA	11/06/15 12:14	
4	AZ24176	AZ24176W01			NA	NA equip	5ML	5ML	NA	11/06/15 12:14	77792 - 24 HOURS RUSH
5	AZ24177	AZ24177W01			NA	NA equip	5ML	5ML	NA	11/06/15 12:14	77792 - 24 HOURS RUSH
6	AZ24178	AZ24178W01			NA	NA equip	5ML	5ML	NA	11/06/15 12:14	77792 - 24 HOURS RUSH
7	AZ24179	AZ24179W01			NA	NA equip	5ML	5ML	NA	11/06/15 12:14	77792 - 24 HOURS RUSH

PM 11/6/15

Solvent and Lot#	
DI WATER	11-06-15

Extraction COC Transfer	
Extraction lab employee Initials	CFM
GC analyst's initials	PM
Date	11/6/15
Time	1:15
Refrigerator	NA

	Technician's Initials
Scanned By	CFM
Sample Preparation	CFM
Extraction	CFM
Concentration	----------

Modified	11/06/15 12:22:41 PM

Reviewed By: PM **Date** 11/6/15

METHOD 6850 INJECTION LOG: 11/07/15

DETECTOR ID: Agilent 6460 Triple Quad LC/MS

SAMPLE INJECTION ID:	DATA FILE ID:	INJECTION DATE/TIME
PERCHLORATE 0.0002 ug/ml 11/07/15	TY07_003.d	11/07/15 14:14
PERCHLORATE 0.0004 ug/ml 11/07/15	TY07_004.d	11/07/15 14:33
PERCHLORATE 0.001 ug/ml 11/07/15	TY07_005.d	11/07/15 14:51
PERCHLORATE 0.002 ug/ml 11/07/15	TY07_006.d	11/07/15 15:10
PERCHLORATE 0.005 ug/ml 11/07/15	TY07_007.d	11/07/15 15:29
PERCHLORATE 0.010 ug/ml 08/01/15	TY07_008.d	11/07/15 15:47
PER_SS 0.0004 ug/ml 11/06/15	TY07_010.d	11/07/15 16:25
PER_SS 0.002 ug/ml 11/06/15	TY07_011.d	11/07/15 16:43
PER_CCV_1 0.002 ug/ml 11/07/15	TY07_013.d	11/07/15 17:21
PER_CCV_1 0.0004 ug/ml 11/07/15	TY07_014.d	11/07/15 17:39
PER_CCV_2 0.0004 ug/ml 11/07/15	TY07_055.d	11/08/15 6:23
PER_CCV_2 0.002 ug/ml 11/07/15	TY07_056.d	11/08/15 6:42
151106WA_LCS-1 1052.6 DF 11/06/15	TY07_058.d	11/08/15 7:19
151106W_ICSA 1052.6 DF 11/06/15	TY07_059.d	11/08/15 7:37
151106WBLKA 1052.6 DF 11/06/15	TY07_060.d	11/08/15 7:56
AZ24176_W01 1052.6 DF 11/06/15	TY07_061.d	11/08/15 8:15
AZ24177_W01 1052.6 DF 11/06/15	TY07_062.d	11/08/15 8:33
AZ24178_W01 1052.6 DF 11/06/15	TY07_063.d	11/08/15 8:52
AZ24179_W01 1052.6 DF 11/06/15	TY07_064.d	11/08/15 9:11
PER_CCV_2 0.0004 ug/ml 11/07/15	TY07_066.d	11/08/15 9:48
PER_CCV_2 0.002 ug/ml 11/07/15	TY07_067.d	11/08/15 10:06