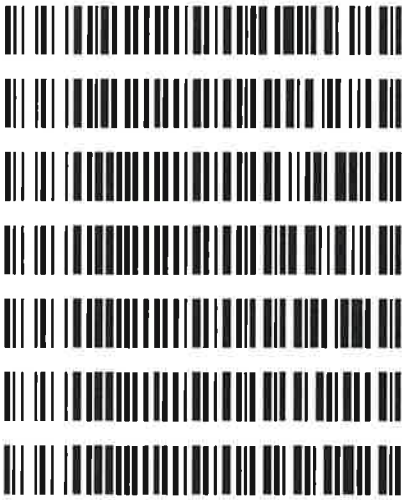
REVIEWED
By Anne Nord at 12:38 pm, Oct 26, 2018

10/22/2018

Worklist: 2749

LAB_CASE	ITEM	TASK_ID	DESCRIPTION
M2018-4837	1	129665	AM 27 Blood THC Quant by LC-QQQ
M2018-4940	1	129666	AM 27 Blood THC Quant by LC-QQQ
P2018-2841	1	129667	AM 27 Blood THC Quant by LC-QQQ
P2018-2950	1	129668	AM 27 Blood THC Quant by LC-QQQ
P2018-2954	1	129669	AM 27 Blood THC Quant by LC-QQQ
P2018-2955	1	129670	AM 27 Blood THC Quant by LC-QQQ
P2018-3004	1	129671	AM 27 Blood THC Quant by LC-QQQ



AM# 27: Quantitation of THC and Metabolites in Blood by LC-MS/MS

TS

Extraction Date: 10/24/18 Analyst: Sarah Pickle
Plate lot#: 0539904 Plate Expiration: 09/10/19

Mobile phase A: 0.1% Formic Acid in LCMS Water **Mobile phase B:** 0.1% Formic acid in Acetonitrile
MTBE LCMS Methanol Hexane
Blank Blood Lot: ~~361331-1~~ 18G207D7 P **Column**: UCT Selectra DA 100 x 2.1mm 3um
LCMS-QQQ ID: 59740

Pre-Analytic:

☒ 1. Check levels of mobile phases and needle wash refill as needed. Ensure waste is not full.
☒ 2. Ensure correct column is installed and begin mobile phase flow allow to equilibrate ~ 30 minutes.
☒ 3. Create worklist: Data Path: _____

Analytic:

☒ 1. Remove standards, plate, controls, and samples from cold storage. Allow to reach room temperature.
☒ 2. Pipette **1000µL blood (calibrated pipette) Pipette ID: 3382167** in wells of analytical (standards) plate.
☒ 3. Place on shaking incubator at ambient temp., 900rpm for 15 minutes. *Shaker ID: 067105*
☒ 4. Pipette **500µL 0.1% formic acid in water** in wells of analytical plate.
☒ 5. Place on shaking incubator at ambient temp., 900rpm for 15 minutes.
☒ 6. Transfer **800µL of blood+acid** mixture to corresponding wells of SLE+ plate.
☒ 7. Apply positive pressure for approx. 10-15 seconds (or until no liquid remains on top of sorbent). ***(Load at 85-100 PSI- Selector to the right)*** Manifold ID: 067104
☒ 8. Wait 5 minutes.
☒ 9. Add **2.25mL MTBE. (*Add in 3 increments of 750uL)***
☒ 10. Wait 5 minutes.
☒ 11. Apply positive pressure for approx. 15 seconds. ***(10-15 PSI- Selector to the left).***
☒ 12. Add **2.25mL Hexane. (*Add in 3 increments of 750uL)***
☒ 13. Wait 5 minutes.
☒ 14. Apply positive pressure for approx. 15 seconds. ***(10-15 PSI- Selector to the left).***
☒ 15. Remove plate containing eluate. Place on SPE Dry and evaporate to dryness at approx. 35°C. *SPE Dry ID: 067103*
☒ 16. Reconstitute in **100µL 100% MeOH** and heat seal plate with foil. Place in autosampler and run worklist.

Post-Analytic

☒ 1. Create batch and process data.
Worklist path: 102418 THCQ SP TS Batch Name: THCQ SP TS
☒ 2. Make any necessary integration changes, Curve weighting of Linear 1/x with r^2 values ≥0.98 for each analyte
☒ 3. RT +/- 3% or 0.100 min, whichever is greater, +/- 20% Accuracy for greater than (+/- 30% for 10ng/ml or less). Ion ratios must be within +/- 20% of the averaged calibrators
☒ 4. Case sample response for THC and OH-THC 3ng/mL (quantitative), Carboxy-THC: 10ng/mL (qualitative only) will be reported. Samples with a THC or OH-THC response over 50 ng/mL will be reported out as greater than 50 ng/mL.
☒ 5. Did all QCs pass for each analyte? Y / N
☒ 6 Enter QCs into control charting.
☒ 7 Central File Packet to include: LIMS Worklist, Method Checklist, Calibration and Control Reports

COMMENTS: Cases M2018-3955-1, M2018-4522-1, M2018-4572-1, M2018-4670-1, M2018-4887-4, P2018-2754-1, P2018-2800-1, P2018-2818-1 were also ran in this batch due to a possible interferant in carboxy-THC in the original run on 10/5/18. Curve range limited Carboxy-THC: 5-100

Sarah Pickle acted as the primary analyst on this run. I witnessed and approved of all methods used. - TS

15 P

Idaho State Police Forensic Services

AM #27 Quantitative Analysis of THC and Metabolites in Blood by LCMS-QQQ

Analyst: Sarah Pickle and Tamara Salazar
Extraction Date: 10/24/18
Worklist Number: 2749

Reagent	*Lot Number*	*Expiration Date*	*Date in Service*	*Date Out of Service*	*Initials*
ToxBox THC/THC Metabolite Plate	0539904	09/10/19			
Negative Blood	18G207D7		10/24/18		
Methanol External Control Solution	WS102418	02/07/19	10/24/18		
Blood External Control Solution	102418	02/07/19	10/24/18		
Methyl Tert-Butyl Ether (MTBE) 99.9%	A0375555		6/26/17		
Hexanes (ACS)	101642		10/26/17		
Methanol (LCMS Grade)	177145		4/11/18		
0.1% Formic Acid in Water (Mobile Phase A)	100518		10/05/18		
0.1% Formic Acid in Acetonitrile (Mobile Phase B)	176190		2/6/18		
Needle Rinse--75% LCMS MeOH in LCMS Water	100918		10/09/18		

Methanol External Control Solution (Lot: WS102418)
10 ul of 1mg/mL THC, 100 ul of 100 ug/mL THC-OH, C-THC in 9790 ul MeOH

Component	*Source*	*Source Lot Number*	*Expiration Date*
Methanol (LCMS)	Fisher	177145	
THC	Cerilliant	FE04231406	04/30/2019
C-THC	Cayman	0497429	02/08/2019
THC-OH	Cerilliant	FE01121503	01/31/2020
Prepared:	10/24/18		
Prepared By:	Tamara Salazar		
Expires:	02/07/19		

Blood External Control Solution (Lot: 102418)
100 ul of methanol external control solution was added to 9900 ul of blood.

Component	*Source*	*Source Lot Number*
Negative Blood	Lampire	18G207D7
Methanol External Control Solution		WS102418
Prepared:	10/24/18	
Prepared by:	Sarah Pickle	
Expires:	02/07/19	

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0.1% Formic Acid in LCMS Water (Mobile Phase A) (Lot: 100518)

Component	*Source*	*Source Lot Number*
Formic Acid (LCMS Grade)	Fisher	095180B
Water (LCMS Grade)	Fisher	182702
Prepared:	10/05/18	
Prepared By:	Sarah Pickle	

Needle Rinse (75% LCMS MeOH in LCMS Water) (Lot: 100918)

Component	*Source*	*Source Lot Number*
MeOH (LCMS Grade)	Fisher	177145
Water (LCMS Grade)	Fisher	182702
Prepared:	10/09/18	
Prepared By:	Sarah Pickle	

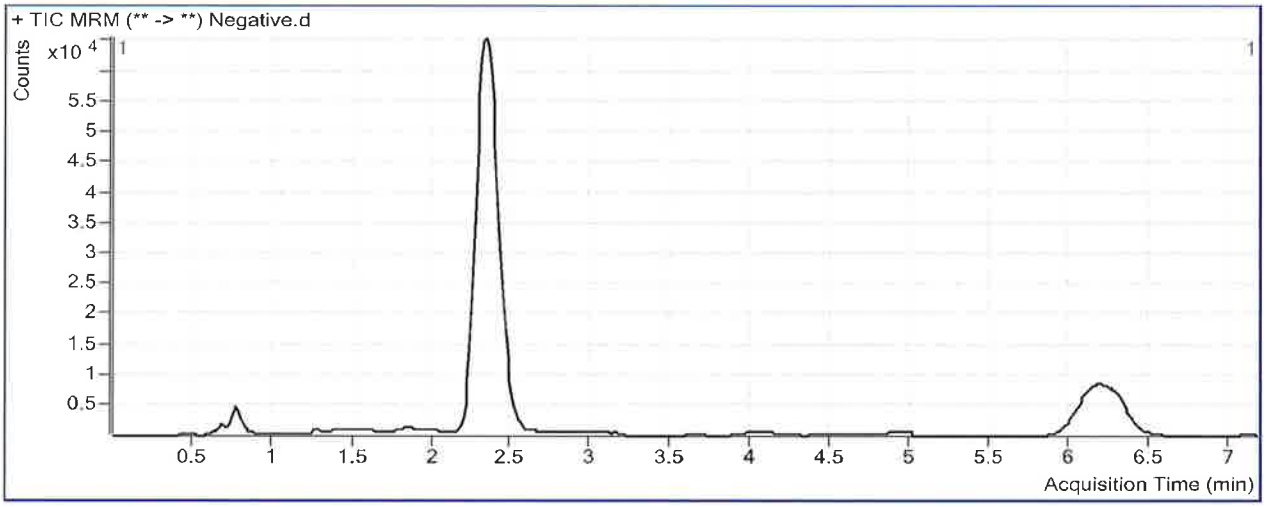
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 13:18	**Data File**	Negative.d
Sample Type	Sample	**Sample Name**	Negative
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-H6	**Sample Info**	
Inj Vol	-1	**Comment**	Hemostat 361331-1

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.586	1315	467951	0.0028	0.8656
THC-COOH	THC-COOH-D9	2.299	3925	180318	0.0218	1.5203

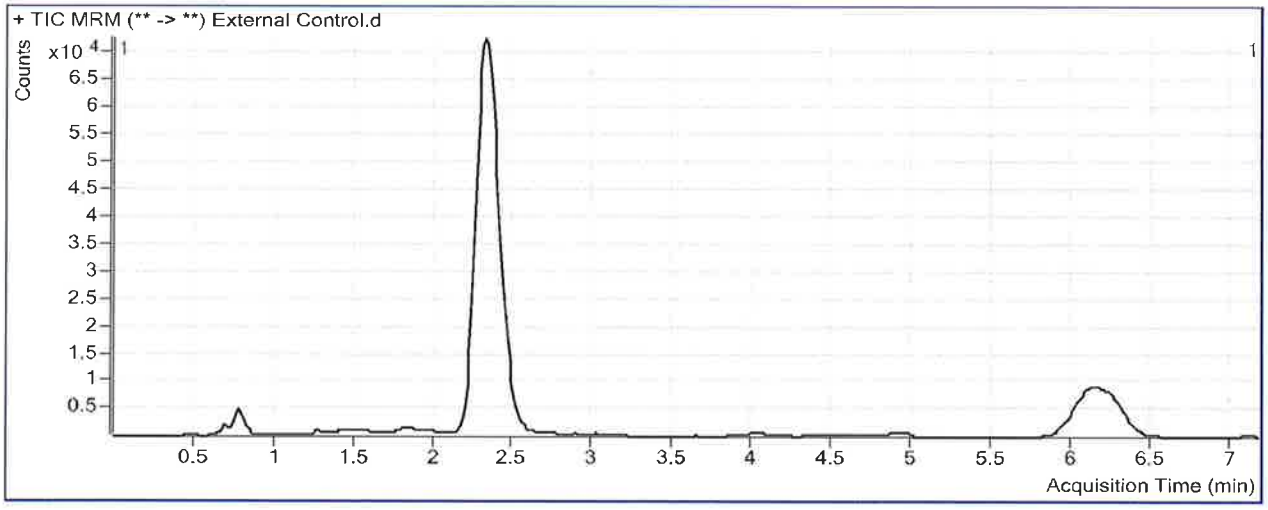
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 13:42	**Data File**	External Control.d
Sample Type	Sample	**Sample Name**	External Control
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-G6	**Sample Info**	
Inj Vol	-1	**Comment**	Hemostat 361331-1 + WS 020718

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.332	45393	465690	0.0975	8.6796
THC-COOH	THC-COOH-D9	2.432	31201	181566	0.1718	9.3820
THC	THC-D3	6.199	13404	165627	0.0809	9.8142

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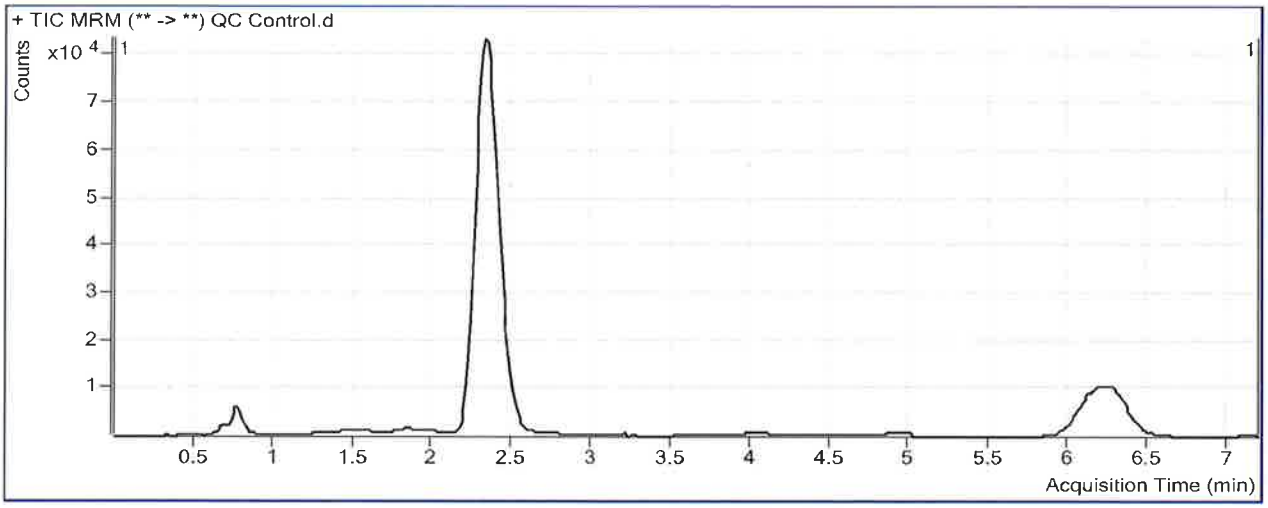
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 12:55	**Data File**	QC Control.d
Sample Type	Sample	**Sample Name**	QC Control
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-A7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.332	29892	565531	0.0529	4.9966
THC-COOH	THC-COOH-D9	2.432	38859	215452	0.1804	9.8280
THC	THC-D3	6.252	7837	203666	0.0385	4.7264

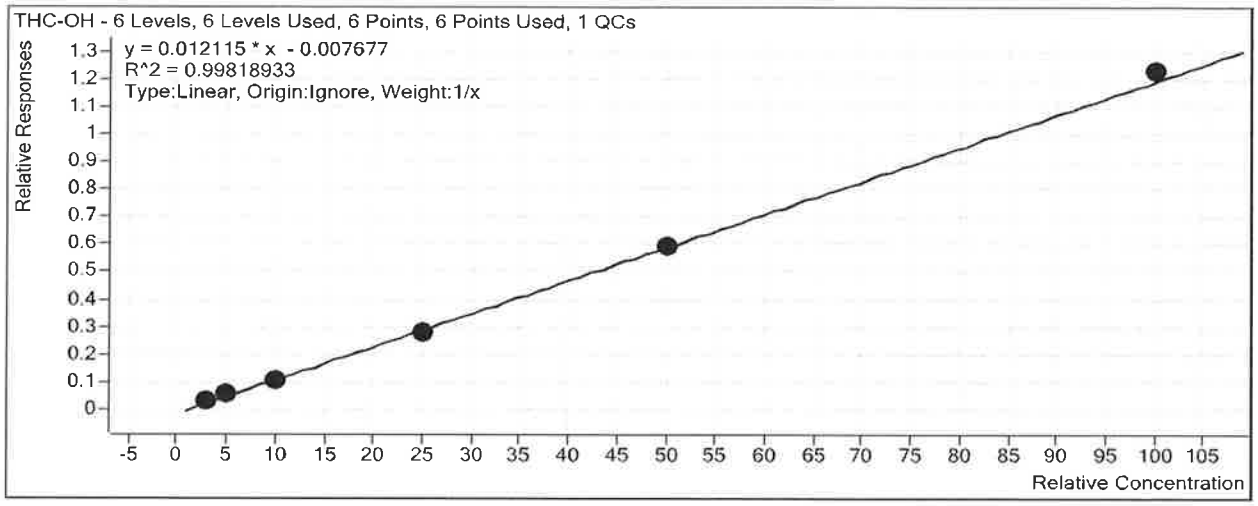
ISP Forensics
Calibration Curve Report

TS D

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Last Calib Update	10/26/2018 8:48 AM	**Analyst Name**	ISP TOX

Target Compound *THC-OH*

Internal Standard *THC-OH-D3*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-1ng	1	☐	1	2.2	216.9
Cal 2-3ng	2	☑	3	3.4	112.9
Cal 3-5ng	3	☑	5	4.9	98.5
Cal 4-10ng	4	☑	10	9.3	93.5
Cal 5-25ng	5	☑	25	23.4	93.5
Cal 6-50ng	6	☑	50	49.6	99.2
Cal 7-100ng	7	☑	100	102.4	102.4

ISP Forensics
Calibration Curve Report

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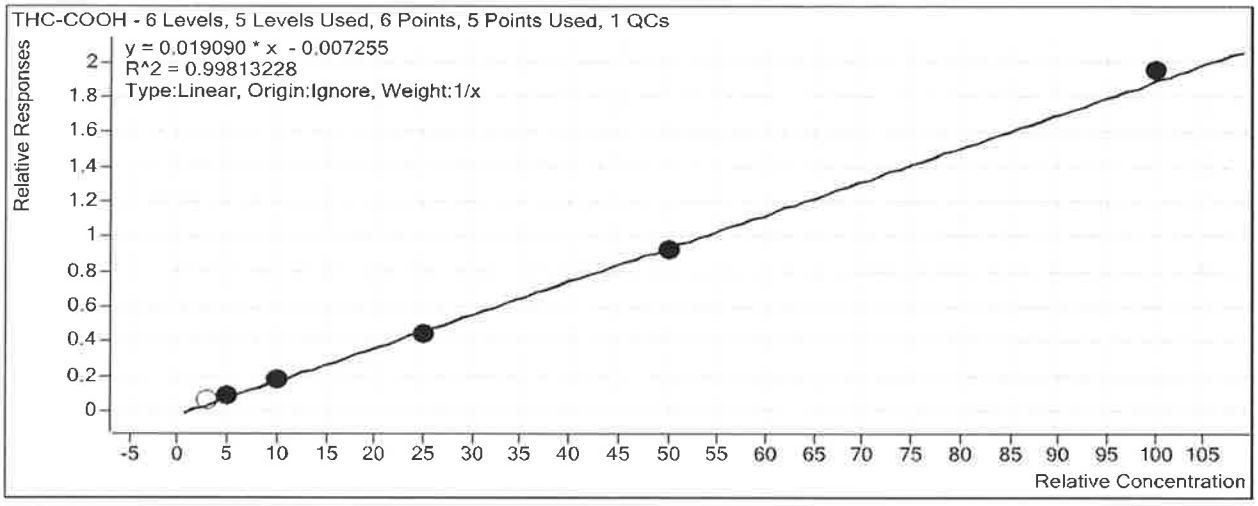
Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Last Calib Update	10/26/2018 8:48 AM	**Analyst Name**	ISP TOX

Target Compound *THC-COOH*
Internal Standard *THC-COOH-D9*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-1ng	1	☐	1	2.1	214.7
Cal 2-3ng	2	☐	3	4.0	133.6
Cal 3-5ng	3	☑	5	5.3	106.1
Cal 4-10ng	4	☑	10	10.0	100.5
Cal 5-25ng	5	☑	25	23.4	93.6
Cal 6-50ng	6	☑	50	48.6	97.2
Cal 7-100ng	7	☑	100	102.6	102.6

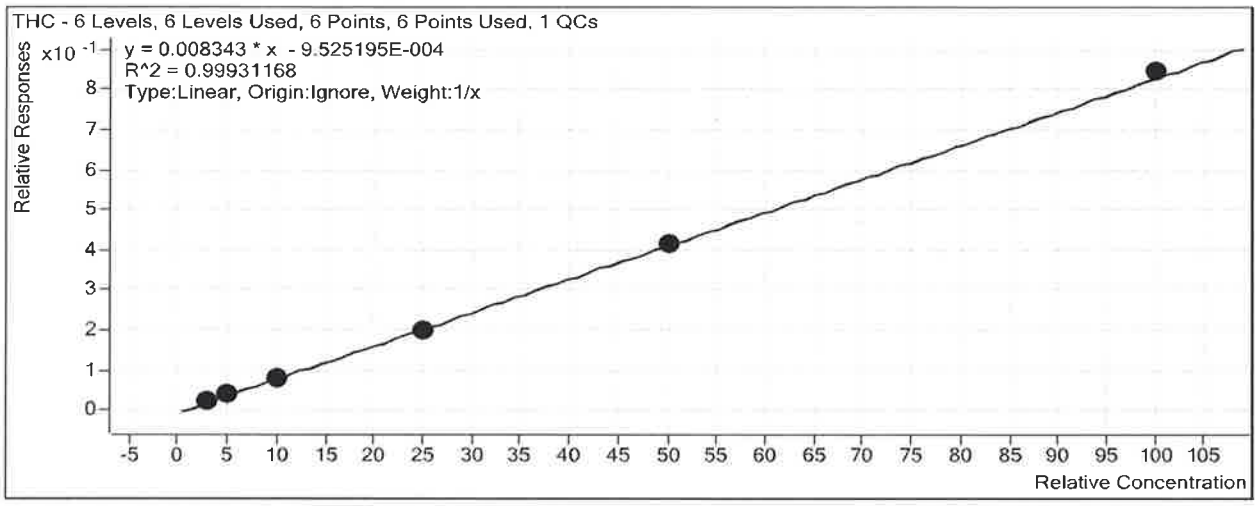
ISP Forensics
Calibration Curve Report

15 D

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Last Calib Update	10/26/2018 8:48 AM	**Analyst Name**	ISP TOX

Target Compound *THC*

Internal Standard *THC-D3*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-1ng	1	☐	1	1.2	122.0
Cal 2-3ng	2	☑	3	3.2	106.7
Cal 3-5ng	3	☑	5	4.9	97.8
Cal 4-10ng	4	☑	10	9.9	99.5
Cal 5-25ng	5	☑	25	23.8	95.1
Cal 6-50ng	6	☑	50	49.8	99.6
Cal 7-100ng	7	☑	100	101.4	101.4

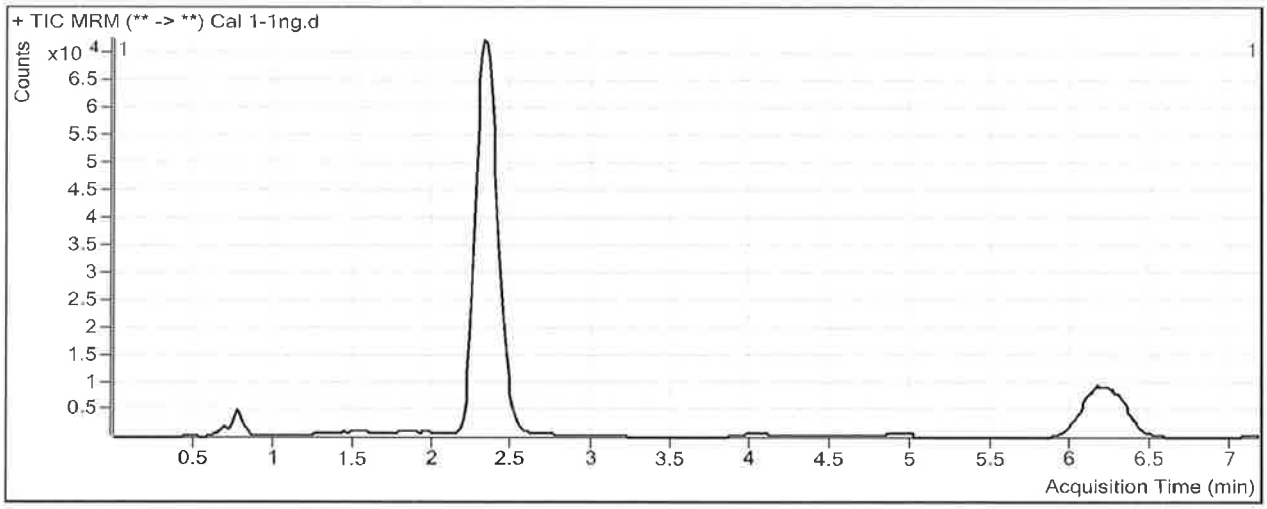
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:49 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 11:20	**Data File**	Cal 1-1ng.d
Sample Type	QC	**Sample Name**	Cal 1-1ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-H7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	9337	502107	0.0186	2.1686
THC-COOH	THC-COOH-D9	2.419	6496	192573	0.0337	2.1470
THC	THC-D3	6.239	1653	179163	0.0092	1.2201

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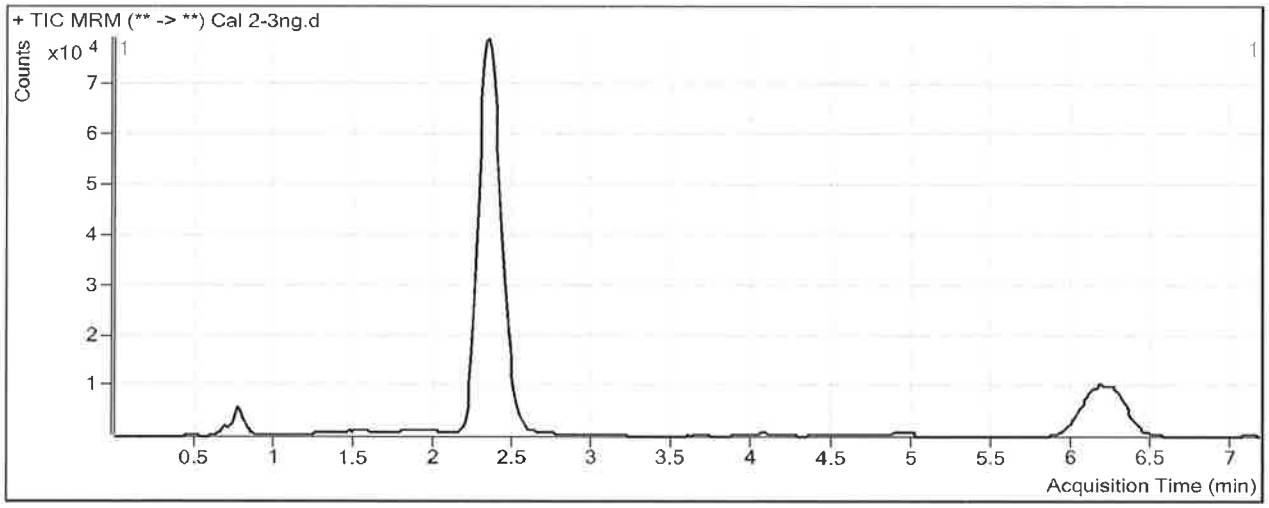
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:49 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 11:32	**Data File**	Cal 2-3ng.d
Sample Type	Calibration	**Sample Name**	Cal 2-3ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-G7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	18140	543733	0.0334	3.3874
THC-COOH	THC-COOH-D9	2.446	14281	206191	0.0693	4.0083
THC	THC-D3	6.252	5003	194247	0.0258	3.2016

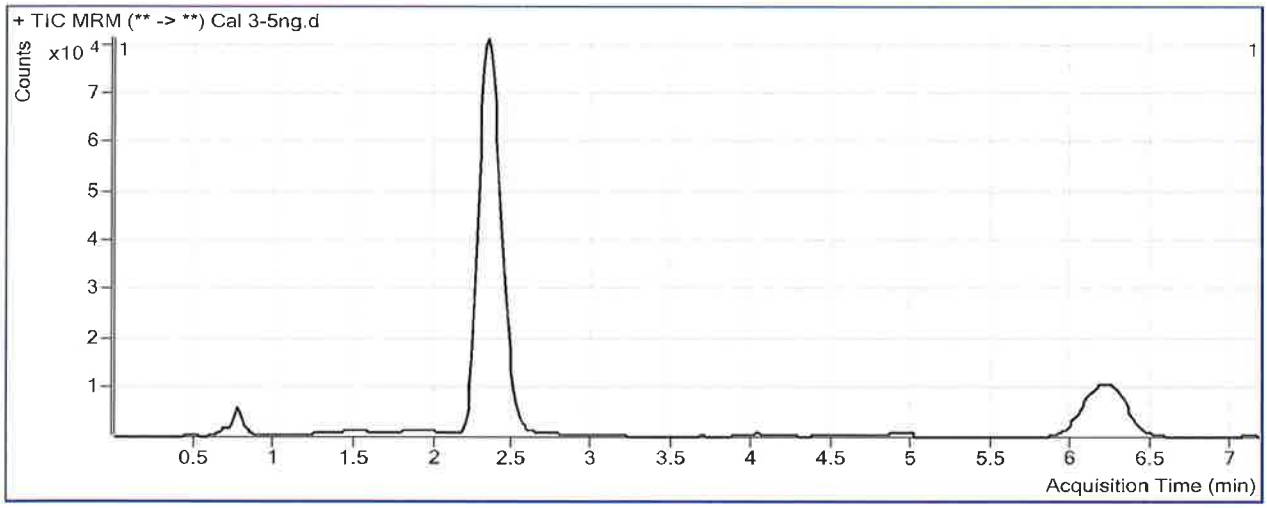
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:49 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 11:43	**Data File**	Cal 3-5ng.d
Sample Type	Calibration	**Sample Name**	Cal 3-5ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-F7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	28369	545466	0.0520	4.9266
THC-COOH	THC-COOH-D9	2.446	19902	211715	0.0940	5.3044
THC	THC-D3	6.239	7892	198171	0.0398	4.8879

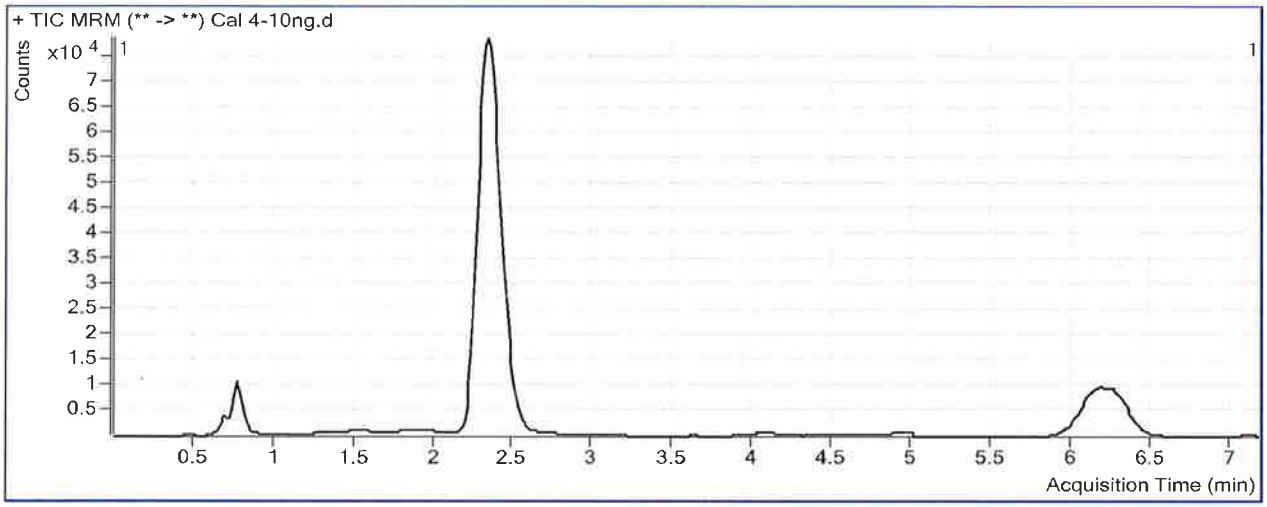
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:49 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 11:55	**Data File**	Cal 4-10ng.d
Sample Type	Calibration	**Sample Name**	Cal 4-10ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-E7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	52147	494029	0.1056	9.3465
THC-COOH	THC-COOH-D9	2.446	35332	191493	0.1845	10.0452
THC	THC-D3	6.279	14086	171720	0.0820	9.9464

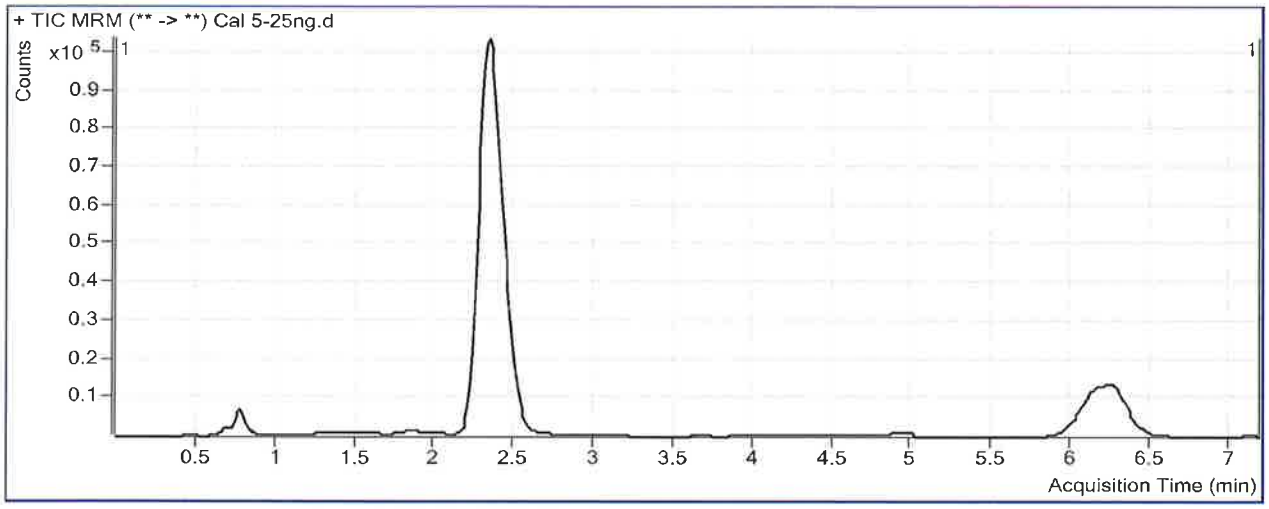
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 12:07	**Data File**	Cal 5-25ng.d
Sample Type	Calibration	**Sample Name**	Cal 5-25ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-D7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.332	156465	567649	0.2756	23.3855
THC-COOH	THC-COOH-D9	2.446	93432	212649	0.4394	23.3962
THC	THC-D3	6.252	40685	206135	0.1974	23.7713

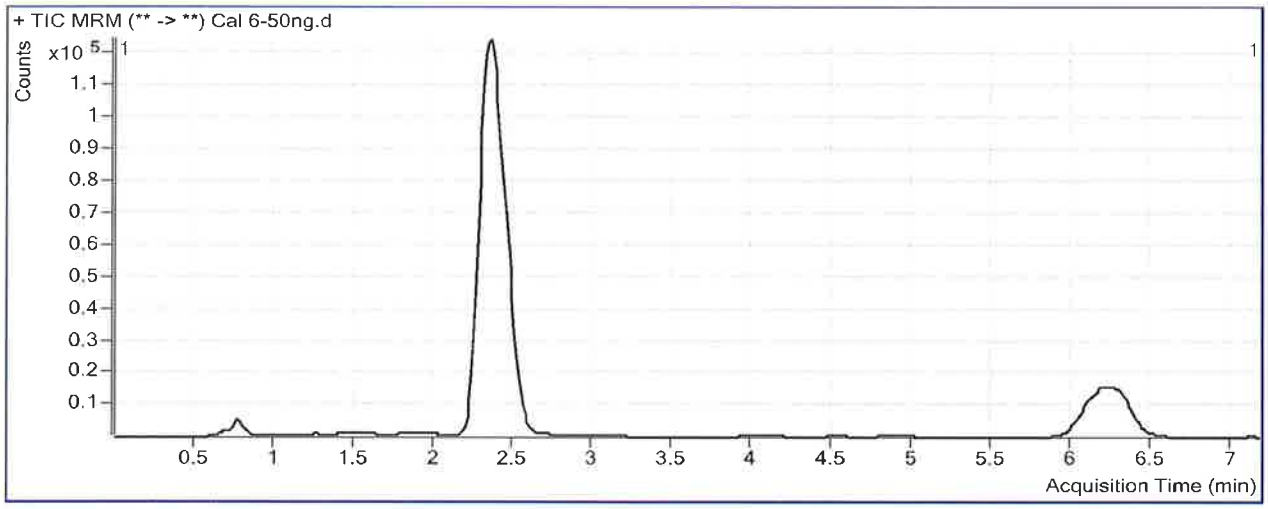
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 12:19	**Data File**	Cal 6-50ng.d
Sample Type	Calibration	**Sample Name**	Cal 6-50ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-C7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	324380	546910	0.5931	49.5911
THC-COOH	THC-COOH-D9	2.446	188818	205038	0.9209	48.6200
THC	THC-D3	6.266	80519	194325	0.4144	49.7798

TS S

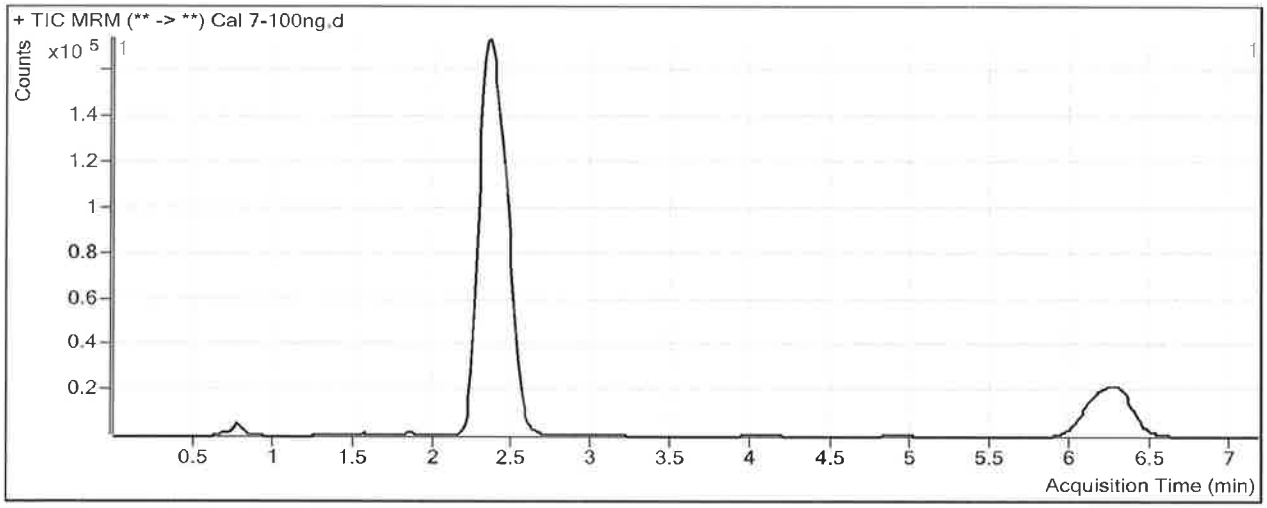
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\102418 THCQ SP TS\QuantResults\THCQ SP TS.batch.bin		
Analysis Time	10/26/2018 8:48 AM	**Analyst Name**	ISPUser
Report Time	10/26/2018 8:50 AM	**Reporter Name**	ISPUser
Last Calib Update	10/26/2018 8:48 AM	**Batch State**	Processed

Analysis Info

Acq Time	2018-10-24 12:31	**Data File**	Cal 7-100ng.d
Sample Type	Calibration	**Sample Name**	Cal 7-100ng
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-B7	**Sample Info**	
Inj Vol	-1	**Comment**	

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.345	673072	546132	1.2324	102.3627
THC-COOH	THC-COOH-D9	2.446	388415	198982	1.9520	102.6341
THC	THC-D3	6.279	165126	195387	0.8451	101.4131