reviewed 6/26/18 amn

TS

6/17/2018

Worklist: 2491

LAB_CASE	ITEM	TASK_ID	DESCRIPTION
M2018-2416	1	118314	AM 27 Blood THC Quant by LC-QQQ
M2018-2479	1	118315	AM 27 Blood THC Quant by LC-QQQ
M2018-2509	1	118316	AM 27 Blood THC Quant by LC-QQQ
M2018-2732	1	118317	AM 27 Blood THC Quant by LC-QQQ
M2018-2738	1	118318	AM 27 Blood THC Quant by LC-QQQ
M2018-2839	1	118319	AM 27 Blood THC Quant by LC-QQQ
M2018-2900	2	118320	AM 27 Blood THC Quant by LC-QQQ
P2018-1619	1	118321	AM 27 Blood THC Quant by LC-QQQ
P2018-1639	1	118322	AM 27 Blood THC Quant by LC-QQQ
P2018-1671	1	118323	AM 27 Blood THC Quant by LC-QQQ
P2018-1716	8	118324	AM 27 Blood THC Quant by LC-QQQ

TS

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

Extraction Date: 06/17/18
Plate lot#: 0515037

Analyst: Tamara Salazar
Plate Expiration: 09/28/18

Mobile phase A: 0.1% Formic Acid in LCMS Water
MTBE LCMS Methanol
Blank Blood Lot: 361331-1
LCMS-QQQ ID: 59740

Mobile phase B: 0.1% Formic acid in Acetonitrile
Hexane
Column: UCT Selectra DA 100 x 2.1mm 3um

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 *C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491*
Batch Name: *061718 THC Quant TS Worklist 2491*
☒ 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: *THC-COOH: 5-250*

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Idaho State Police Forensic Services

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

Analyst: Tamara Salazar
Extraction Date: 06/17/18
Worklist Number: 2491

Reagent	*Lot Number*	*Expiration Date*	*Date in Service*	*Date Out of Service*	*Initials*
ToxBox THC/THC Metabolite Plate	0515037	09/28/18			
Negative Blood	361331-1		05/25/18		
Methanol External Control Solution	WS020718	02/07/19	02/07/18		
Blood External Control Solution	061718	06/17/19	06/17/18		
Methyl Tert-Butyl Ether (MTBE) 99.9%	A0375555		06/26/17		
Hexanes (ACS)	101642		10/26/17		
Methanol (LCMS Grade)	177145		04/11/18		
0.1% Formic Acid in Water (Mobile Phase A)	166541		06/26/17		
0.1% Formic Acid in Acetonitrile (Mobile Phase B)	176190		02/06/18		
Needle Rinse--75% LCMS MeOH in LCMS Water	052918		05/29/18		

Methanol External Control Solution (Lot: WS020718)
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	172516	
THC	Cerilliant	FE04231406	04/30/2019
C-THC	Cayman	0497429	02/08/2019
THC-OH	Cerilliant	FE01121503	01/31/2020
Prepared:	02/07/18		
Prepared By:	Tamara Salazar		
Expires:	02/07/19		

Blood External Control Solution (Lot: ~~0261718~~) 061718-TS
100 ul of methanol external control solution was added to 9900 ul of blood.

Component	*Source*	*Source Lot Number*
Negative Blood	Hemostat	361331-1
Methanol External Control Solution		WS020718
Prepared:	06/17/18	
Prepared by:	Tamara Salazar	
Expires:	06/17/19	

Needle Rinse (75% LCMS MeOH in LCMS Water) (Lot: 052918)

Component	*Source*	*Source Lot Number*
MeOH (LCMS Grade)	Fisher	177145
Water (LCMS Grade)	Fisher	177528
Prepared:	05/29/18	
Prepared By:	Tamara Salazar	

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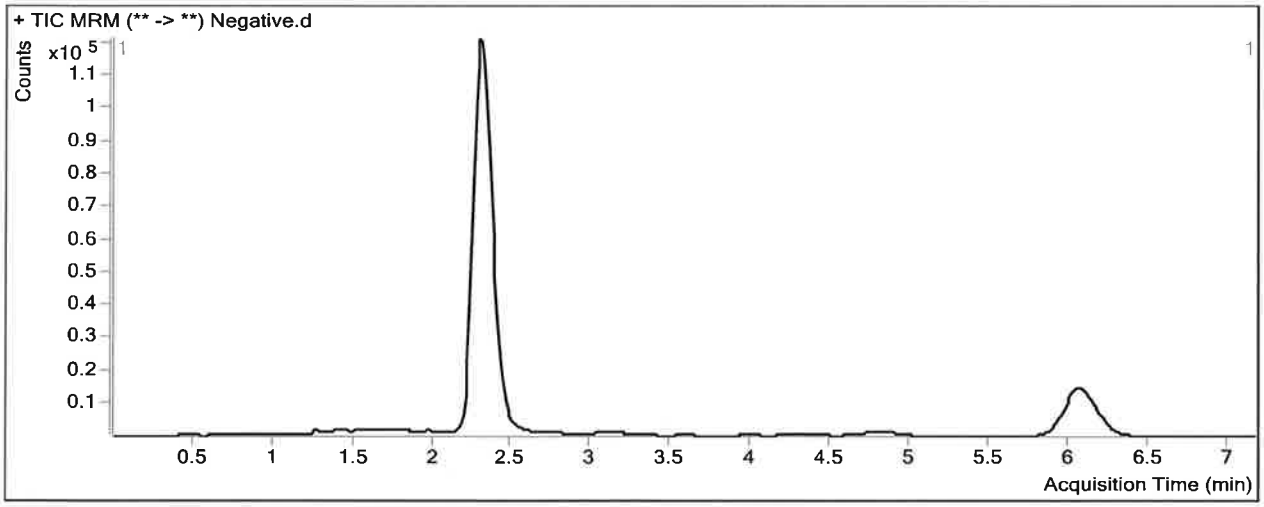
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 14:47	**Data File**	Negative.d
Sample Type	Sample	**Sample Name**	Negative
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-H8	**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	2.532	5880	814582	0.0072	1.4129
THC-COOH	THC-COOH-D9	2.379	7329	200349	0.0366	2.0849

TS

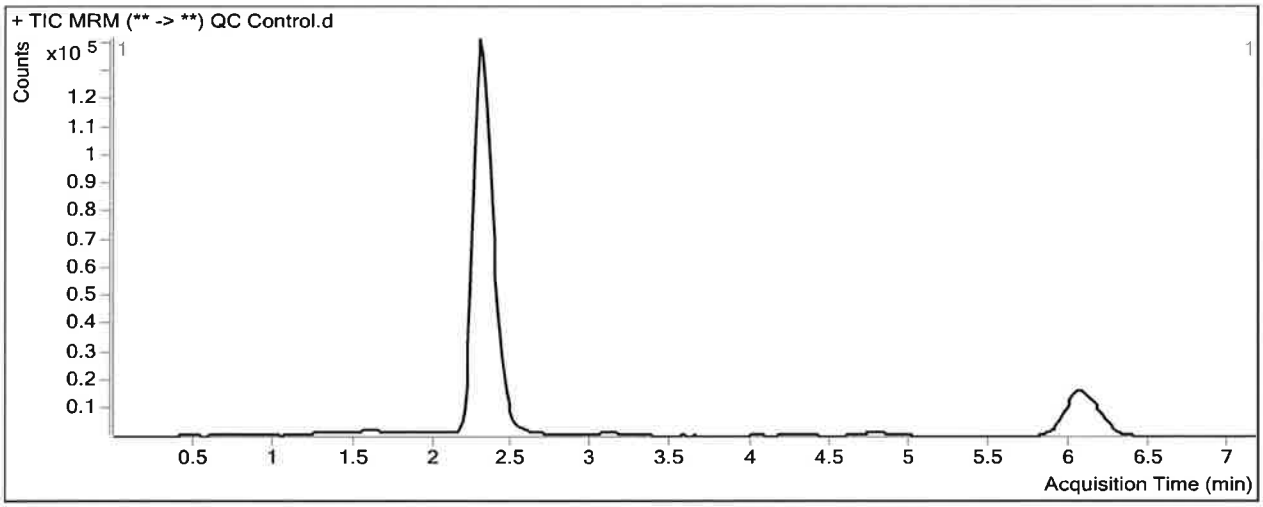
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 14:23	**Data File**	QC Control.d
Sample Type	Sample	**Sample Name**	QC Control
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-A9	**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	2.305	73589	887388	0.0829	8.6180
THC-COOH	THC-COOH-D9	2.406	41647	209034	0.1992	9.4672
THC	THC-D3	6.092	20195	210838	0.0958	9.6452

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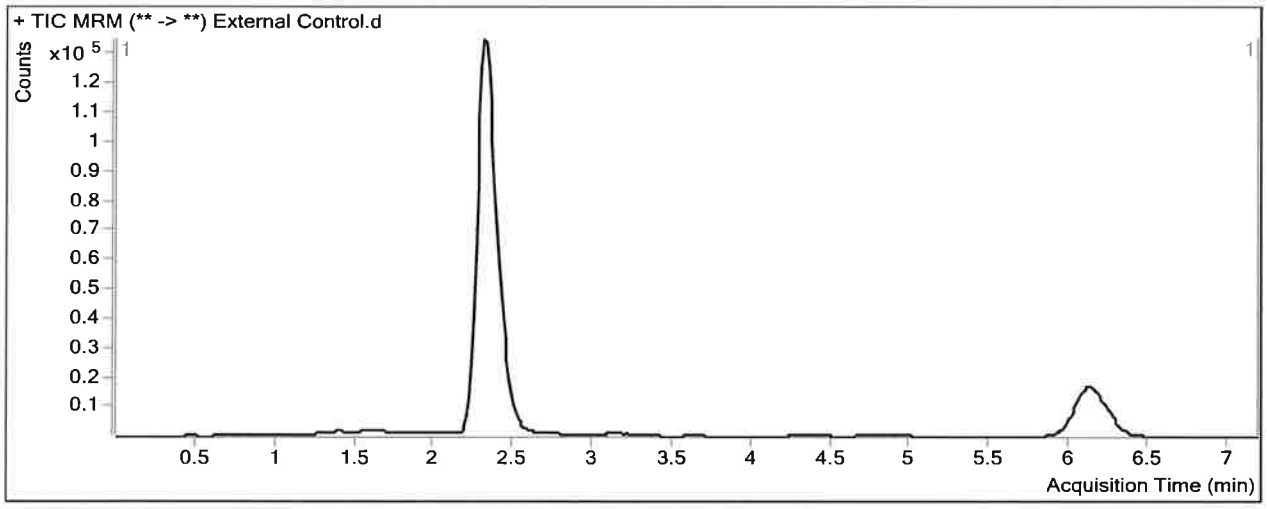
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 15:10	**Data File**	External Control.d
Sample Type	Sample	**Sample Name**	External Control
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-G8	**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	75547	831307	0.0909	9.3746
THC-COOH	THC-COOH-D9	2.432	46448	201652	0.2303	10.8788
THC	THC-D3	6.146	22931	212228	0.1080	10.8116

TS

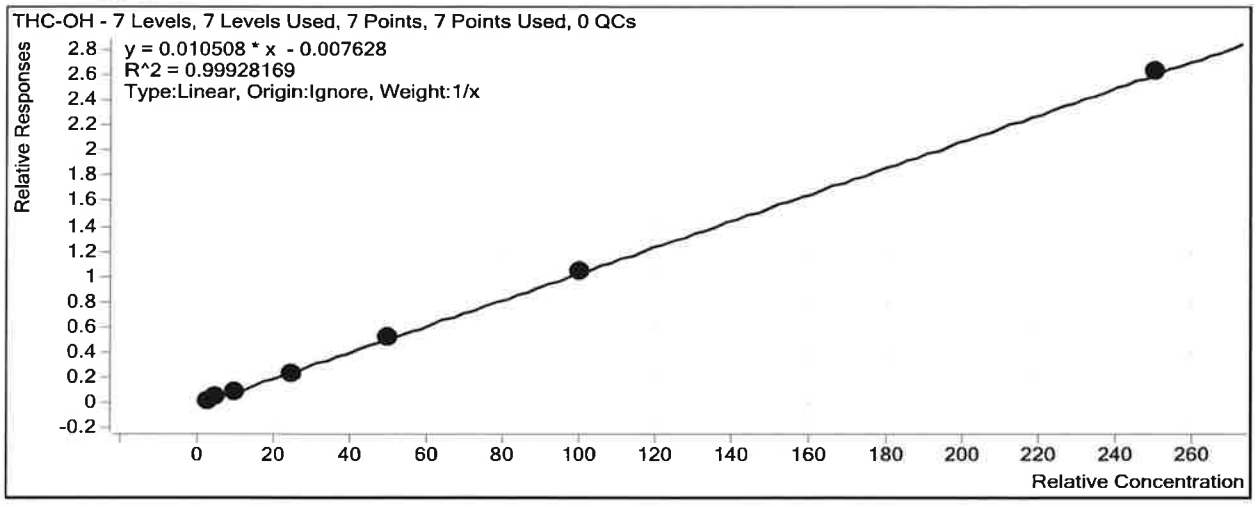
ISP Forensics
Calibration Curve Report

Batch Data Path C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant TS Worklist 2491.batch.bin

Last Calib Update 6/19/2018 12:21 PM **Analyst Name** ISP TOX

Target Compound *THC-OH*

Internal Standard *THC-OH-D3*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1	1	☑	3	3.1	103.0
Cal 2	2	☑	5	5.2	104.9
Cal 3	3	☑	10	10.0	100.1
Cal 4	4	☑	25	22.5	90.2
Cal 5	5	☑	50	50.5	100.9
Cal 6	6	☑	100	100.5	100.5
Cal 7	7	☑	250	251.2	100.5

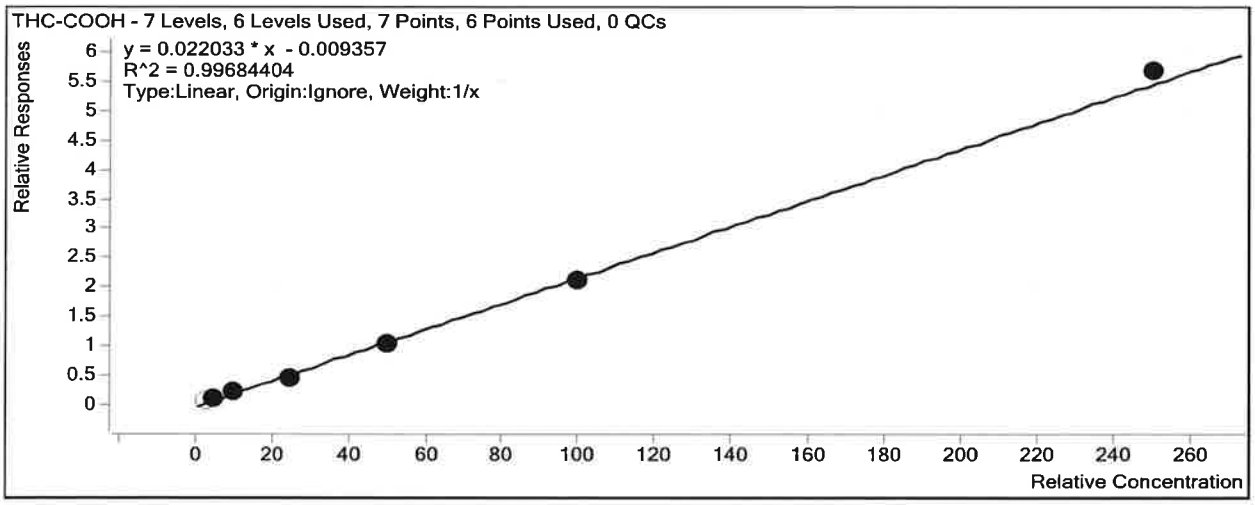
ISP Forensics
Calibration Curve Report

Batch Data Path C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant TS Worklist 2491.batch.bin

Last Calib Update 6/19/2018 12:21 PM **Analyst Name** ISP TOX

Target Compound *THC-COOH*

Internal Standard *THC-COOH-D9*



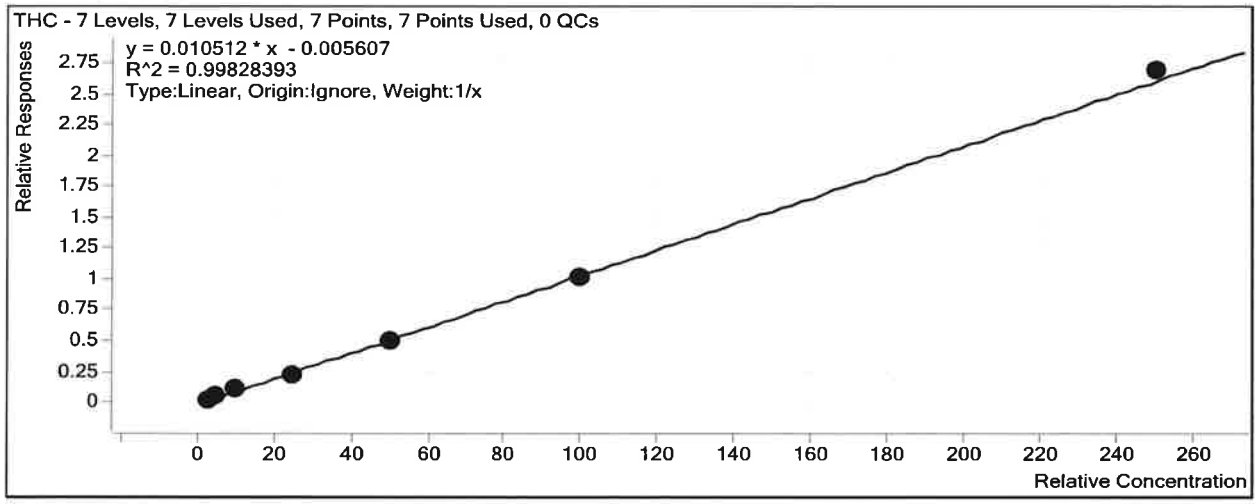
Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1	1	☐	3	4.1	138.3
Cal 2	2	☑	5	5.8	116.5
Cal 3	3	☑	10	10.2	101.7
Cal 4	4	☑	25	21.8	87.2
Cal 5	5	☑	50	47.3	94.7
Cal 6	6	☑	100	96.5	96.5
Cal 7	7	☑	250	258.3	103.3

ISP Forensics
Calibration Curve Report

Batch Data Path C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant TS Worklist 2491.batch.bin

Last Calib Update 6/19/2018 12:21 PM **Analyst Name** ISP TOX

Target Compound *THC*
Internal Standard *THC-D3*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1	1	☑	3	3.1	104.1
Cal 2	2	☑	5	5.3	106.2
Cal 3	3	☑	10	10.4	104.3
Cal 4	4	☑	25	22.3	89.0
Cal 5	5	☑	50	48.4	96.7
Cal 6	6	☑	100	97.1	97.1
Cal 7	7	☑	250	256.4	102.6

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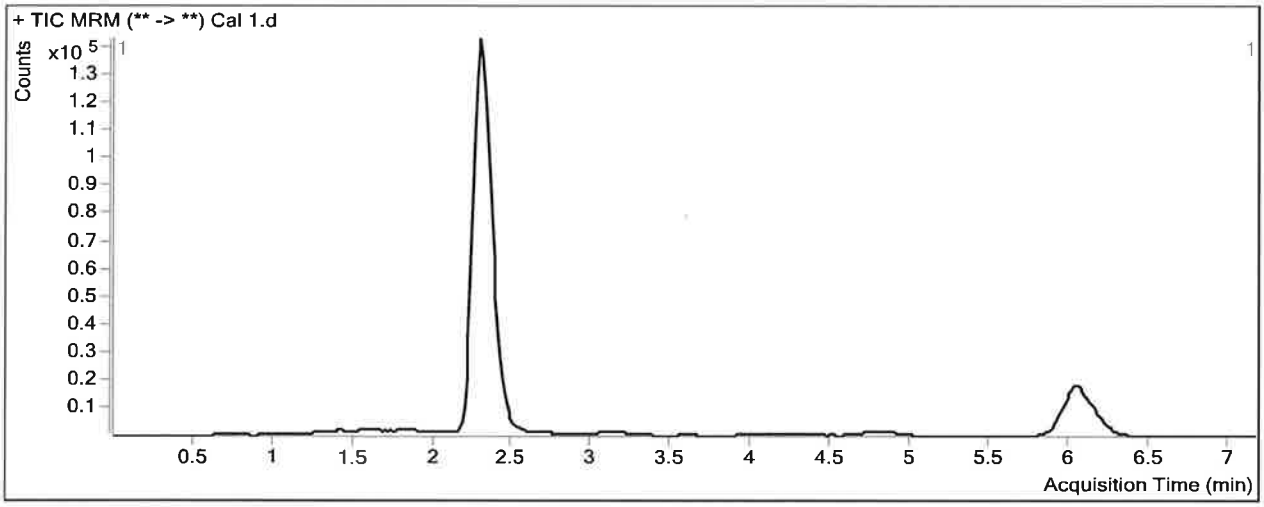
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:29 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 12:48	**Data File**	Cal 1.d
Sample Type	Calibration	**Sample Name**	Cal 1
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-H9	**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	2.305	23083	929718	0.0248	3.0887
THC-COOH	THC-COOH-D9	2.406	18847	229683	0.0821	4.1489
THC	THC-D3	6.079	6387	234718	0.0272	3.1219

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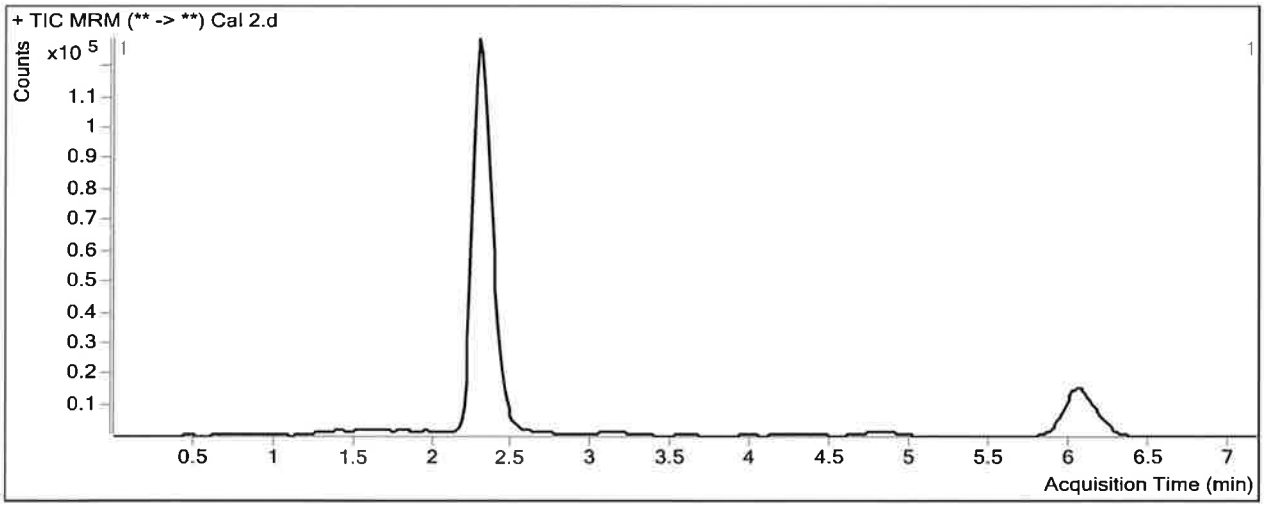
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:29 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:00	**Data File**	Cal 2.d
Sample Type	Calibration	**Sample Name**	Cal 2
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-G9	**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	2.305	39314	827981	0.0475	5.2447
THC-COOH	THC-COOH-D9	2.406	24038	201967	0.1190	5.8264
THC	THC-D3	6.106	10148	202117	0.0502	5.3097

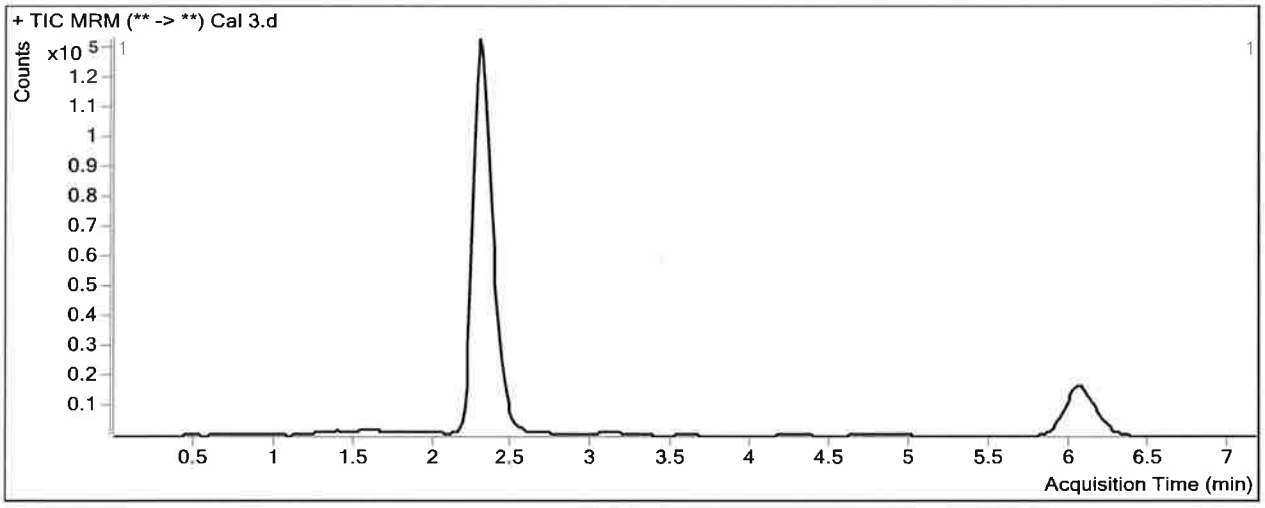
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:29 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:12	**Data File**	Cal 3.d
Sample Type	Calibration	**Sample Name**	Cal 3
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-F9	**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	2.305	78244	801888	0.0976	10.0120
THC-COOH	THC-COOH-D9	2.406	42802	199257	0.2148	10.1740
THC	THC-D3	6.065	20705	199016	0.1040	10.4298

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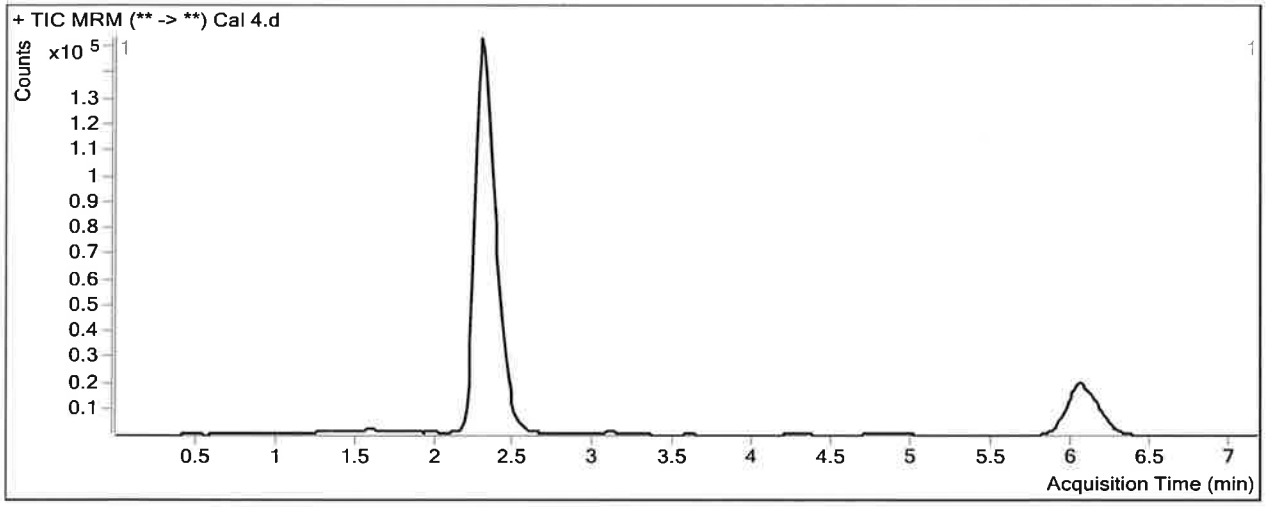
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:29 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:24	**Data File**	Cal 4.d
Sample Type	Calibration	**Sample Name**	Cal 4
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-E9	**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	2.305	191583	835811	0.2292	22.5403
THC-COOH	THC-COOH-D9	2.406	95858	203605	0.4708	21.7925
THC	THC-D3	6.079	47059	206079	0.2284	22.2557

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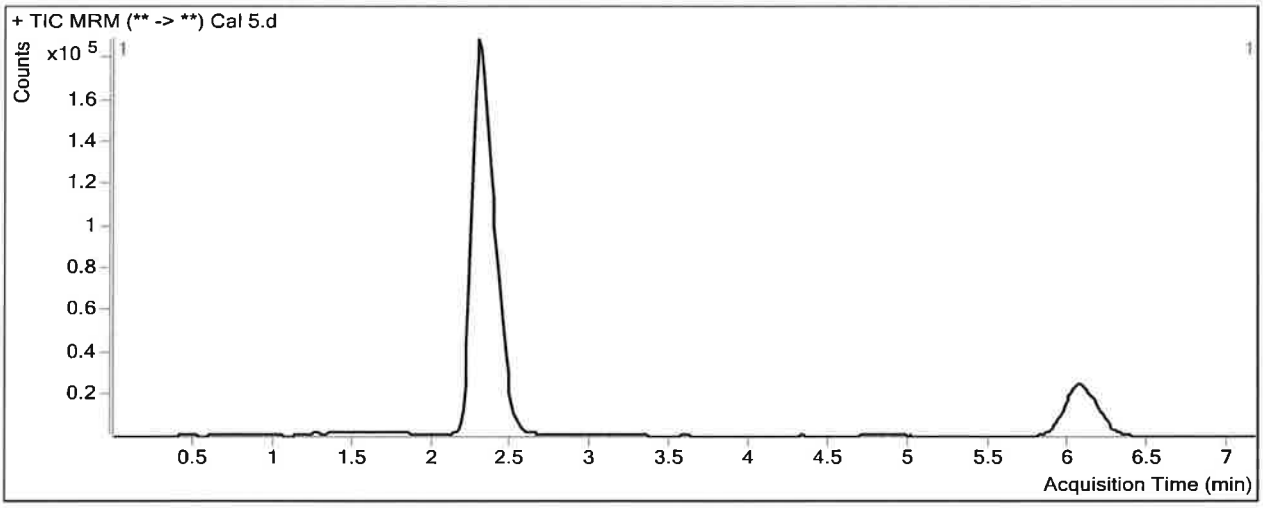
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:36	**Data File**	Cal 5.d
Sample Type	Calibration	**Sample Name**	Cal 5
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-D9	**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	2.305	432876	828390	0.5226	50.4565
THC-COOH	THC-COOH-D9	2.406	209831	202972	1.0338	47.3443
THC	THC-D3	6.092	101480	201800	0.5029	48.3699

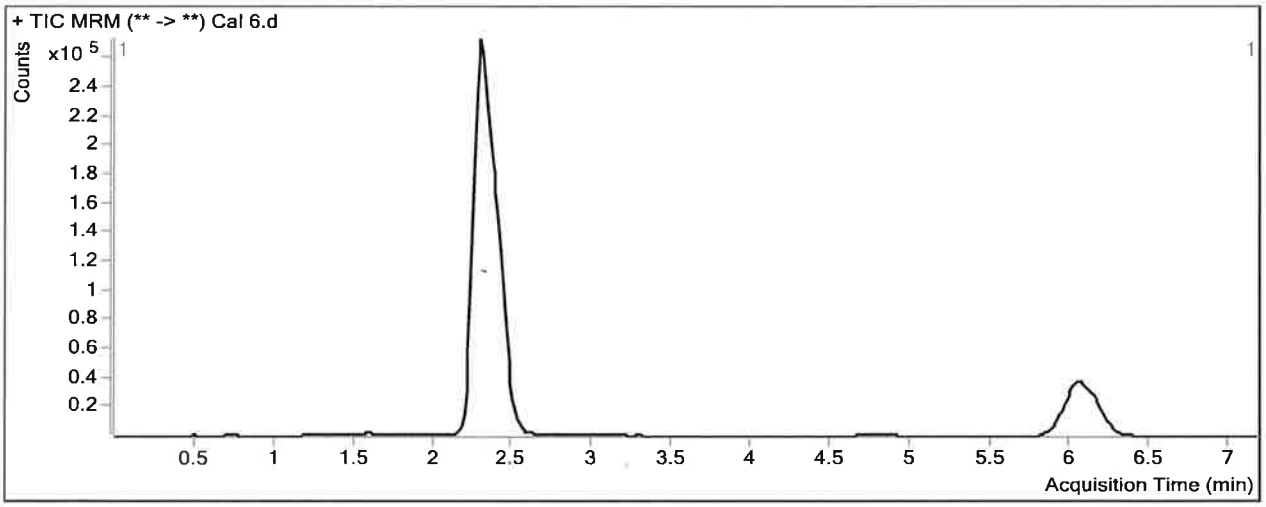
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:47	**Data File**	Cal 6.d
Sample Type	Calibration	**Sample Name**	Cal 6
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-C9	**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	2.305	908699	866869	1.0483	100.4868
THC-COOH	THC-COOH-D9	2.406	439300	207427	2.1179	96.5452
THC	THC-D3	6.079	215703	212422	1.0154	97.1291

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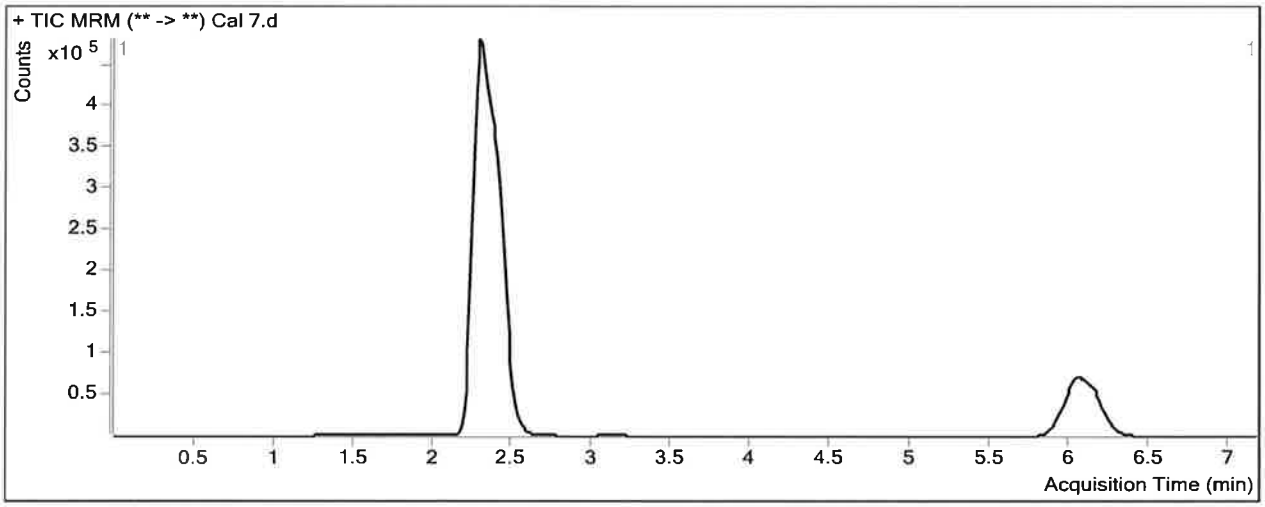
ISP FORENSICS - Pocatello Instrument # 59740
Cannabinoids Analysis Report

Batch Data Path	C:\MassHunter\Data\2018\THC Quant\061718 THC Quant TS Worklist 2491\QuantResults\061718 THC Quant		
Analysis Time	6/19/2018 12:21 PM	**Analyst Name**	ISPUser
Report Time	6/19/2018 12:30 PM	**Reporter Name**	ISPUser
Last Calib Update	6/19/2018 12:21 PM	**Batch State**	Processed

Analysis Info

Acq Time	2018-06-17 13:59	**Data File**	Cal 7.d
Sample Type	Calibration	**Sample Name**	Cal 7
Dilution	1	**Acq Method**	THC Quant 051517 workingmm.m
Position	P1-B9	**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	2.305	2307556	876867	2.6316	251.1711
THC-COOH	THC-COOH-D9	2.406	1114423	196124	5.6822	258.3175
THC	THC-D3	6.065	564437	209860	2.6896	256.3840