

TS

**REVIEWED**  
By Sarah Pickle at 7:40 am, Apr 24, 2019

4/16/2019

**Worklist: 3283**

<u>LAB CASE</u>	<u>ITEM</u>	<u>TASK ID</u>	<u>DESCRIPTION</u>
P2019-0998	1	148467	AM 27 Blood THC Quant by LC-QQQ



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

Extraction Date: 04/22/19  
Plate lot#: 0539904

Analyst: Tamara Salazar  
Plate Expiration: 09/10/19

**Mobile phase A:** 0.1% Formic Acid in LCMS Water  
MTBE LCMS Methanol

**Mobile phase B:** 0.1% Formic acid in Acetonitrile  
Hexane

**Blank Blood Lot:** Hemostat 445283-1  
**LCMS-QQQ ID:** 59740

**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:

## Analytic:

- 1. Remove standards, plate, controls, and samples from cold storage. Allow to reach room temperature.
- 2. Pipette **1000µL blood/urine (calibrated pipette) Pipette ID: 27** 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 for blood samples.
- 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. C:\MassHunter\Data\2019\AM 27\042219 THCQ TS  
Worklist path: ~~G:\TOX\Pocatello\Abby\2019\AM 27\042219 THCQ TS~~  
Batch Name: THCQ wklst 3283 TS
- 2. Make any necessary integration changes, Curve weighting of Linear 1/x with r<sup>2</sup> 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: *Curves limited: THC-COOH 10-100,*

*Due to the original injections not injecting properly, calibrator 4 and 6, as well as the plate QC were reinjected on 04/23/19.*



# Idaho State Police Forensic Services

TS

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

### Methanol External Control Solution (Lot: WS041619)

10 ul of 1mg/mL THC, 100 ul of 100 ug/mL THC-OH, C-THC in 9790 ul MeOH  
Approximate concentration 1ug/mL.

<i>Component</i>	<i>Source</i>	<i>Source Lot Number</i>	<i>Expiration Date</i>
Methanol (LCMS)	Fisher	184782	
THC	Cerilliant	FE09101501	11/30/2020
C-THC	Cerilliant	FE07171501	09/30/2019
THC-OH	Cerilliant	FE01121503	01/31/2020
Prepared:	04/16/2019		
Prepared By:	Tamara Salazar		
Expires:	01/31/2020		

### Blood External Control Solution (Lot: 041619)

100 ul of methanol external control solution was added to 9900 ul of blood.  
Approximately 10ng/mL of each compound.

<i>Component</i>	<i>Source</i>	<i>Source Lot Number</i>
Negative Blood	Hemostat	445283-1
Methanol External Control Solution	-	WS041619
Prepared:	04/16/19	
Prepared by:	Tamara Salazar	
Expires:	01/31/2020	

TS

# ISP FORENSICS - Pocatello Instrument # 59740

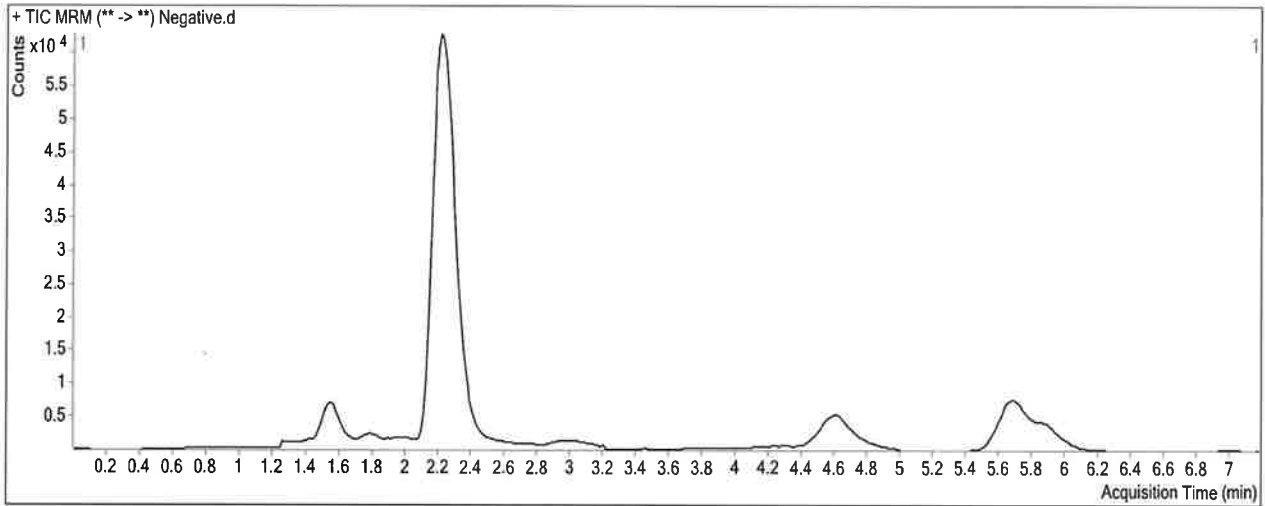
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 17:58 **Data File** Negative.d  
**Sample Type** Sample **Sample Name** Negative  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-H8 **Sample Info**  
**Inj Vol** -1 **Comment**

### Sample Chromatogram



TS

# ISP FORENSICS - Pocatello Instrument # 59740

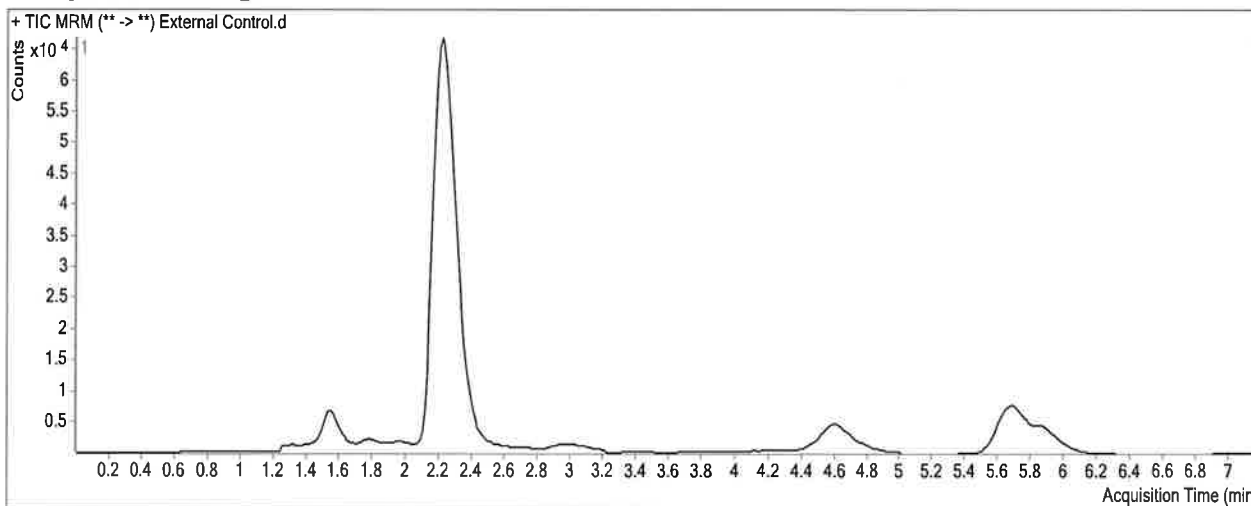
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM      **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM      **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM      **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 18:21      **Data File** External Control.d  
**Sample Type** Sample      **Sample Name** External Control  
**Dilution** 1      **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-G8      **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	2.225	41080	424022	0.0969	8.2666
THC-COOH	THC-COOH-D9	2.312	31303	151055	0.2072	8.4081
THC	THC-D3	5.678	9198	128433	0.0716	8.5257

TS

# ISP FORENSICS - Pocatello Instrument # 59740

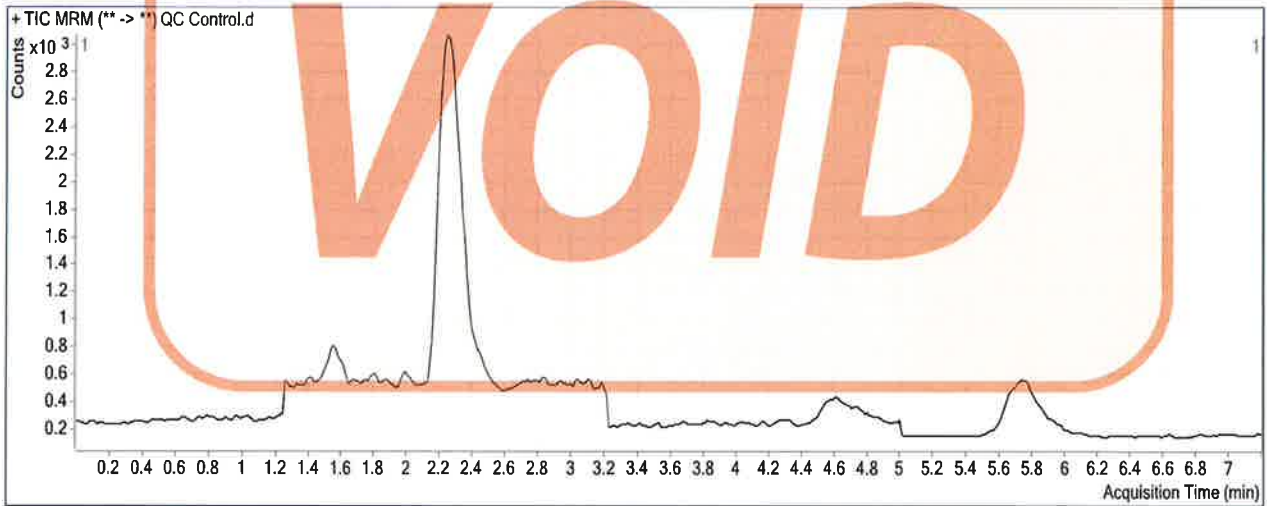
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wklst 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 17:34 **Data File** QC Control.d  
**Sample Type** QC **Sample Name** QC Control  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-A7 **Sample Info**  
**Inj Vol** -1 **Comment**

### Sample Chromatogram



Sample failed to inject properly. Sample was reinjected on 04/23/19.

TS

TS

# ISP FORENSICS - Pocatello Instrument # 59740

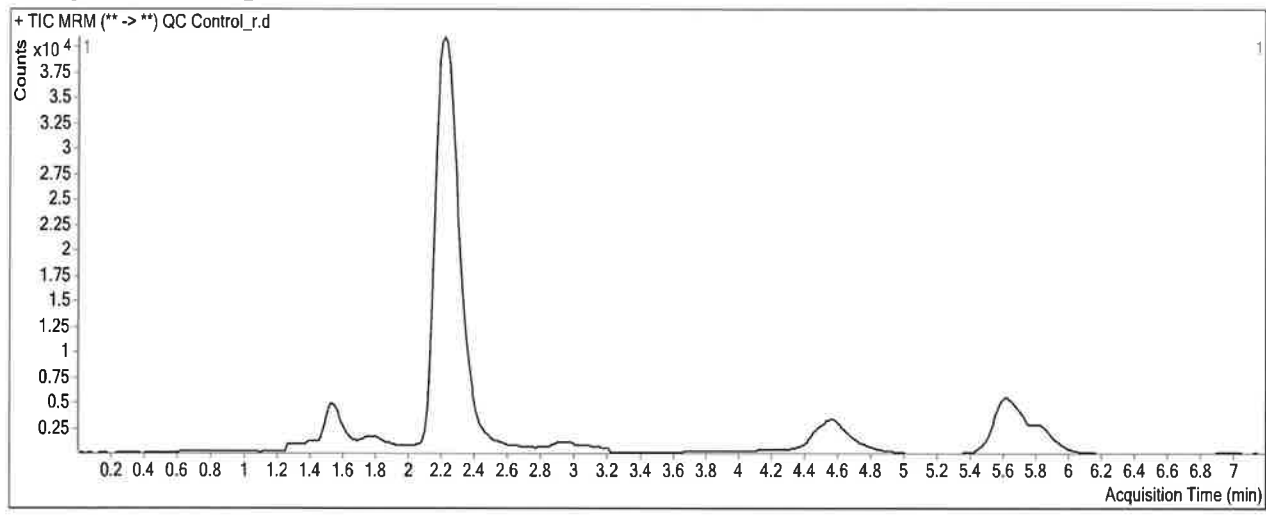
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wklst 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:13 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-23 09:20 **Data File** QC Control\_r.d  
**Sample Type** QC **Sample Name** QC Control\_r  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-A7 **Sample Info**  
**Inj Vol** -1 **Comment**

### Sample Chromatogram



### Results

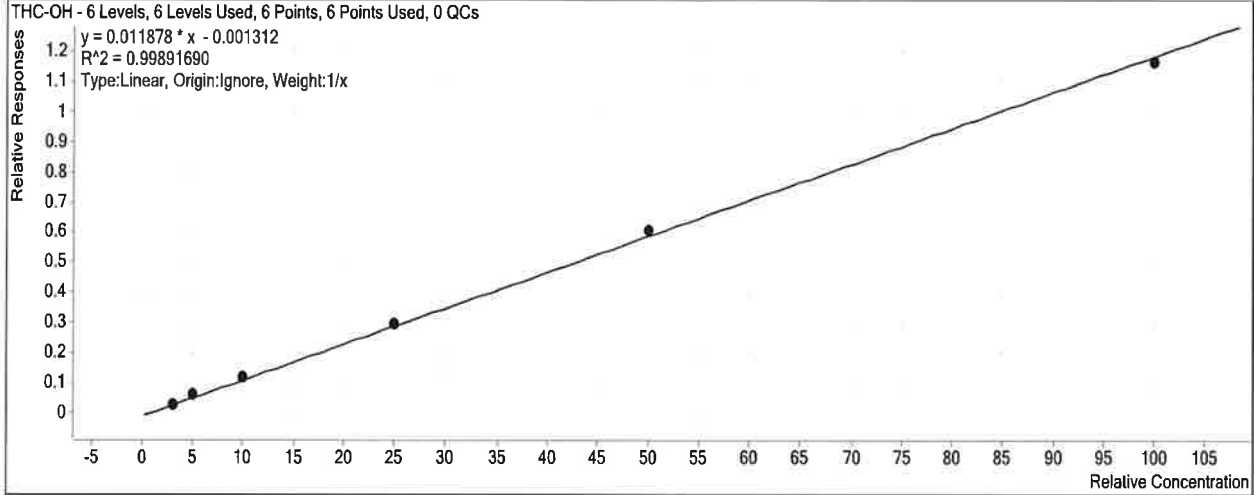
Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.212	13672	267104	0.0512	4.4197
THC-COOH	THC-COOH-D9	2.299	23128	97153	0.2381	10.2129
THC	THC-D3	5.652	3992	90415	0.0442	4.9861

TS

# ISP Forensics Calibration Curve Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283  
TS.batch.bin  
**Last Calib Update** 4/23/2019 9:57 AM **Analyst Name** ISP TOX

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



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-3ng	1	<input checked="" type="checkbox"/>	3	2.6	87.0
Cal 2-5ng	2	<input checked="" type="checkbox"/>	5	5.4	107.5
Cal 3-10ng	3	<input checked="" type="checkbox"/>	10	10.4	103.9
Cal 4-25ng_r	4	<input checked="" type="checkbox"/>	25	25.3	101.1
Cal 5-50ng	5	<input checked="" type="checkbox"/>	50	51.1	102.2
Cal 6-100ng_r2	6	<input checked="" type="checkbox"/>	100	98.2	98.2

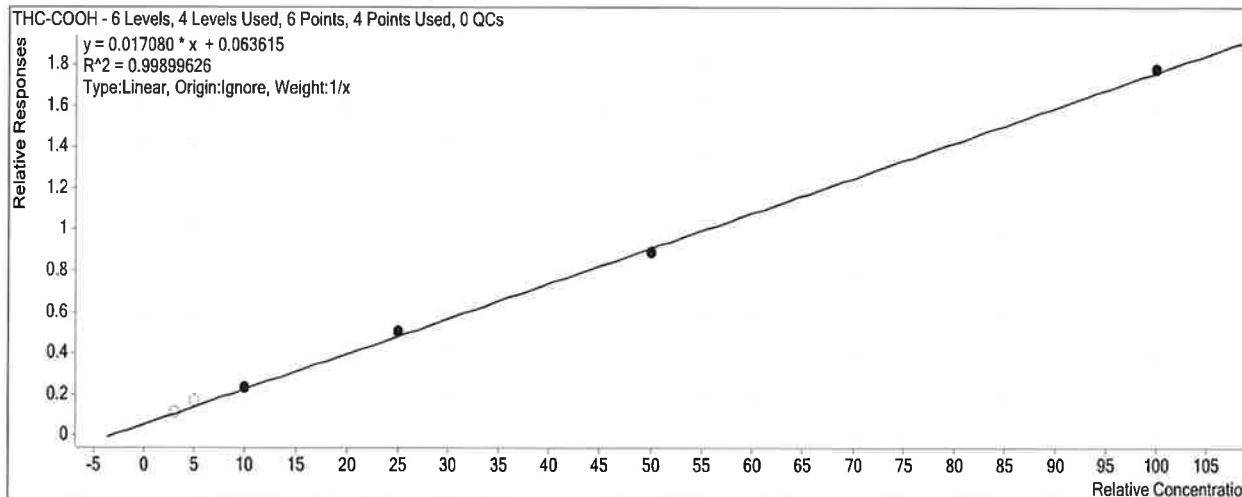


15

# ISP Forensics Calibration Curve Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wklst 3283  
TS.batch.bin  
**Last Calib Update** 4/23/2019 9:57 AM **Analyst Name** ISP TOX

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



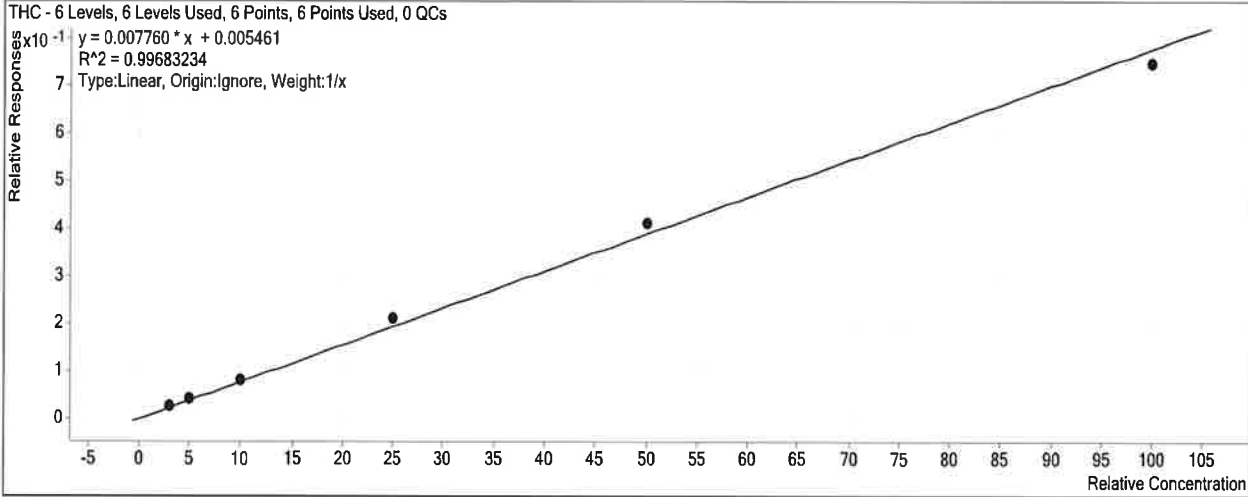
Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-3ng	1	<input type="checkbox"/>	3	2.8	94.2
Cal 2-5ng	2	<input type="checkbox"/>	5	6.3	126.0
Cal 3-10ng	3	<input checked="" type="checkbox"/>	10	9.8	98.3
Cal 4-25ng_r	4	<input checked="" type="checkbox"/>	25	26.0	104.0
Cal 5-50ng	5	<input checked="" type="checkbox"/>	50	48.5	97.0
Cal 6-100ng_r2	6	<input checked="" type="checkbox"/>	100	100.7	100.7

TS

# ISP Forensics Calibration Curve Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wklst 3283  
 TS.batch.bin  
**Last Calib Update** 4/23/2019 9:57 AM **Analyst Name** ISP TOX

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



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1-3ng	1	<input checked="" type="checkbox"/>	3	2.9	96.7
Cal 2-5ng	2	<input checked="" type="checkbox"/>	5	4.7	94.5
Cal 3-10ng	3	<input checked="" type="checkbox"/>	10	10.1	100.6
Cal 4-25ng_r	4	<input checked="" type="checkbox"/>	25	26.8	107.1
Cal 5-50ng	5	<input checked="" type="checkbox"/>	50	52.6	105.3
Cal 6-100ng_r2	6	<input checked="" type="checkbox"/>	100	95.9	95.9

15

# ISP FORENSICS - Pocatello Instrument # 59740

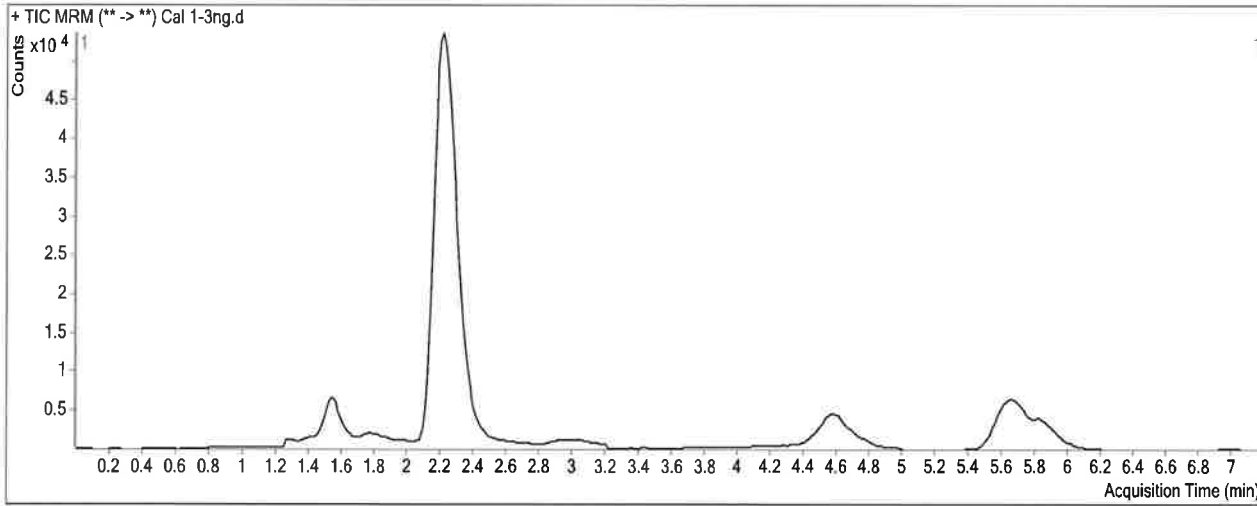
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:11 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 16:11 **Data File** Cal 1-3ng.d  
**Sample Type** Calibration **Sample Name** Cal 1-3ng  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.225	10639	358511	0.0297	2.6088
THC-COOH	THC-COOH-D9	2.312	14072	125794	0.1119	2.8249
THC	THC-D3	5.692	3270	116953	0.0280	2.8995

15

# ISP FORENSICS - Pocatello Instrument # 59740

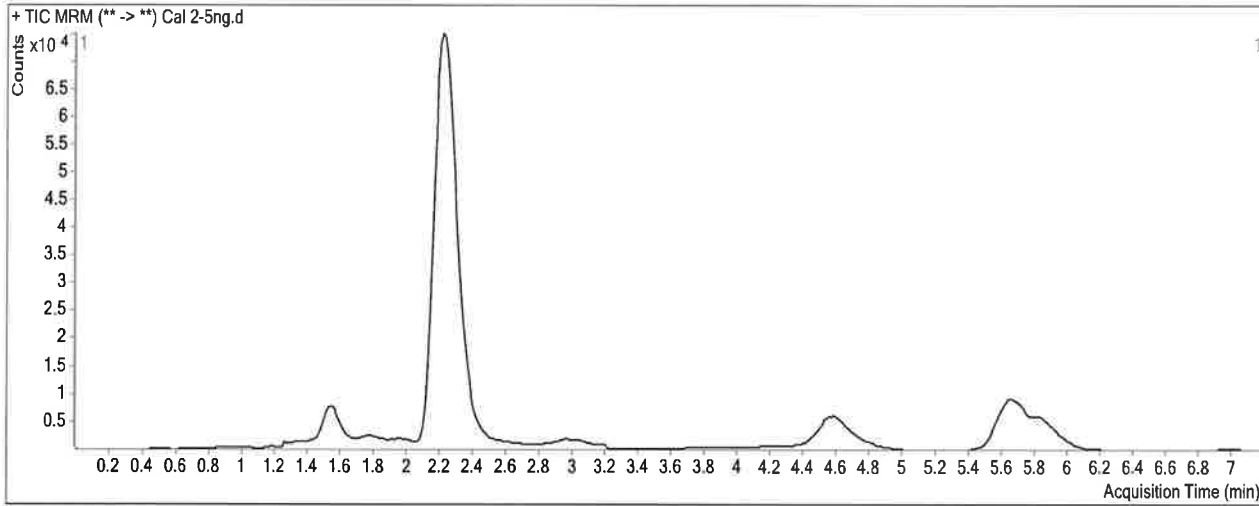
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 16:23 **Data File** Cal 2-5ng.d  
**Sample Type** Calibration **Sample Name** Cal 2-5ng  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.225	30876	493529	0.0626	5.3772
THC-COOH	THC-COOH-D9	2.312	30508	178222	0.1712	6.2977
THC	THC-D3	5.732	7087	168262	0.0421	4.7240

TS

# ISP FORENSICS - Pocatello Instrument # 59740

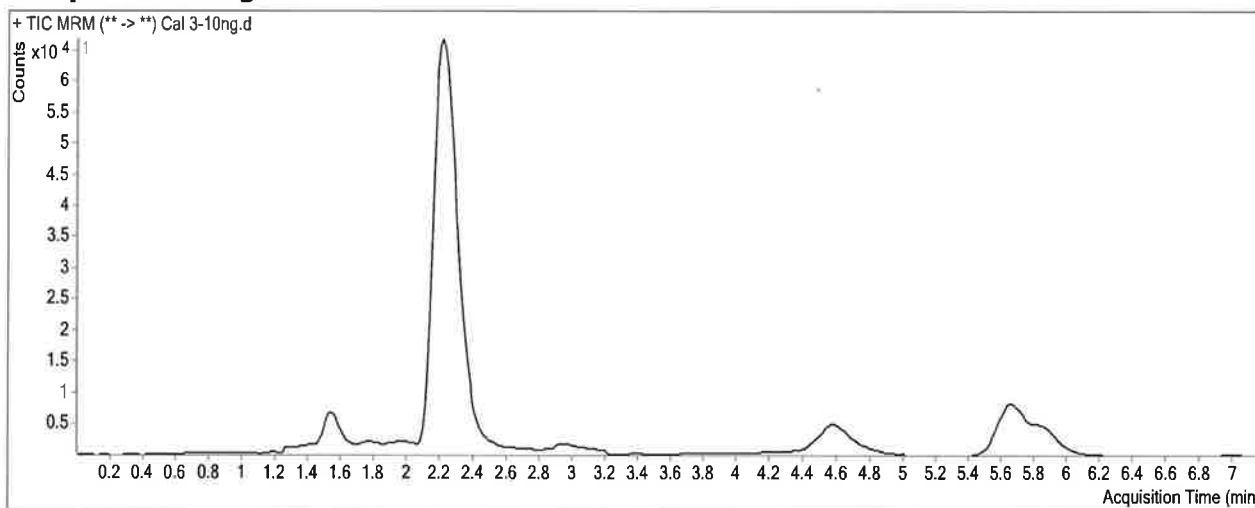
## Cannabinoids Analysis Report

<b>Batch Data Path</b>	C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin		
<b>Analysis Time</b>	4/23/2019 9:57 AM	<b>Analyst Name</b>	datastor
<b>Report Time</b>	4/23/2019 10:12 AM	<b>Reporter Name</b>	datastor
<b>Last Calib Update</b>	4/23/2019 9:57 AM	<b>Batch State</b>	Processed

### Analysis Info

<b>Acq Time</b>	2019-04-22 16:35	<b>Data File</b>	Cal 3-10ng.d
<b>Sample Type</b>	Calibration	<b>Sample Name</b>	Cal 3-10ng
<b>Dilution</b>	1	<b>Acq Method</b>	THC Quant 051517 workingmm.m
<b>Position</b>	P2-E7	<b>Sample Info</b>	
<b>Inj Vol</b>	-1	<b>Comment</b>	

### Sample Chromatogram



### Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-D3	2.212	51341	420394	0.1221	10.3918
THC-COOH	THC-COOH-D9	2.312	34583	149339	0.2316	9.8336
THC	THC-D3	5.678	11525	137982	0.0835	10.0607

TS

# ISP FORENSICS - Pocatello Instrument # 59740

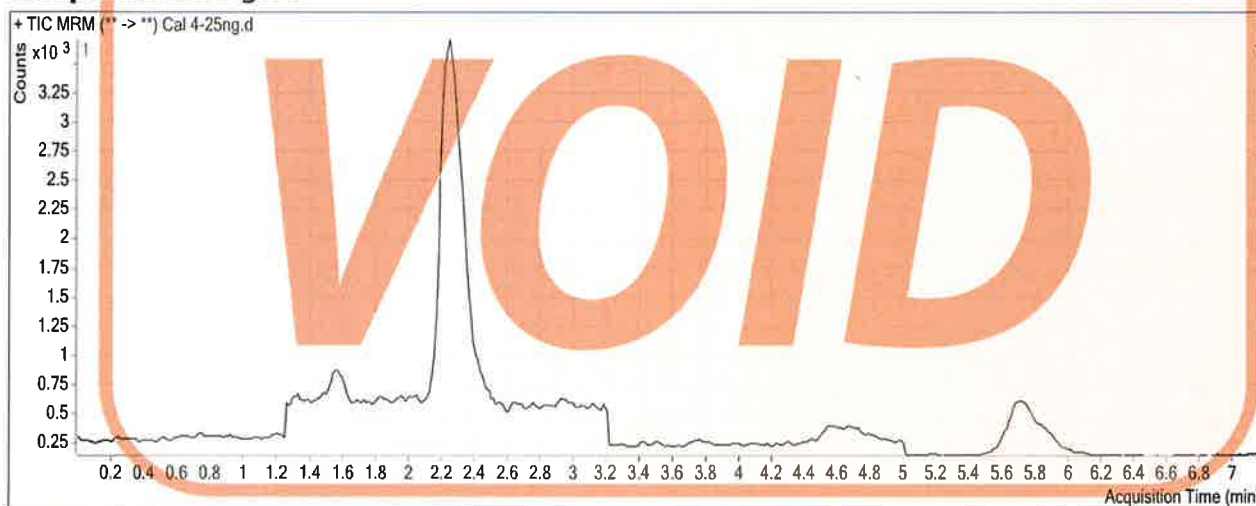
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS\_original ca  
**Analysis Time** 4/23/2019 10:32 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:32 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 10:32 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 16:46 **Data File** Cal 4-25ng.d  
**Sample Type** Calibration **Sample Name** Cal 4-25ng  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-D7 **Sample Info**  
**Inj Vol** -1 **Comment**

### Sample Chromatogram



Reinjected on 04/23/19 due to poor ITSD response. Please refer to reinjection data.

TS

TS

# ISP FORENSICS - Pocatello Instrument # 59740

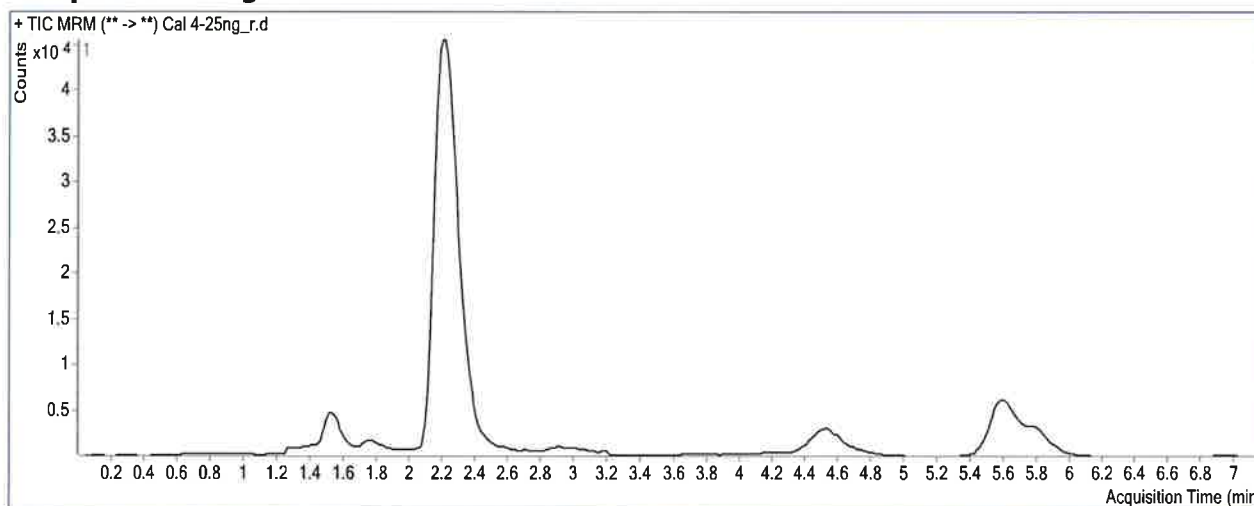
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

**Analysis Info**

**Acq Time** 2019-04-23 08:44 **Data File** Cal 4-25ng\_r.d  
**Sample Type** Calibration **Sample Name** Cal 4-25ng\_r  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.212	71111	237822	0.2990	25.2829
THC-COOH	THC-COOH-D9	2.285	44101	86874	0.5076	25.9962
THC	THC-D3	5.638	17336	81318	0.2132	26.7696

\* Calibrator failed to inject properly on critical injection. The calibrator was re-injected on 04/23/19. TS

TS

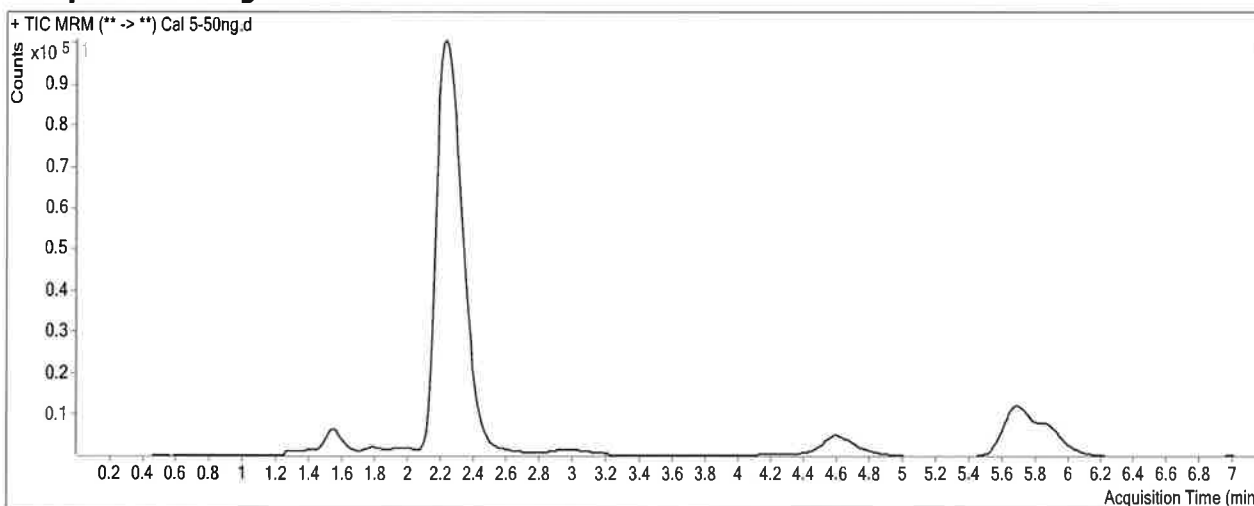
## ISP FORENSICS - Pocatello Instrument # 59740 Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:12 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

**Analysis Info**

**Acq Time** 2019-04-22 16:58 **Data File** Cal 5-50ng.d  
**Sample Type** Calibration **Sample Name** Cal 5-50ng  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.225	266957	440701	0.6058	51.1068
THC-COOH	THC-COOH-D9	2.325	135973	152408	0.8922	48.5088
THC	THC-D3	5.718	59182	142984	0.4139	52.6370



TS

# ISP FORENSICS - Pocatello Instrument # 59740

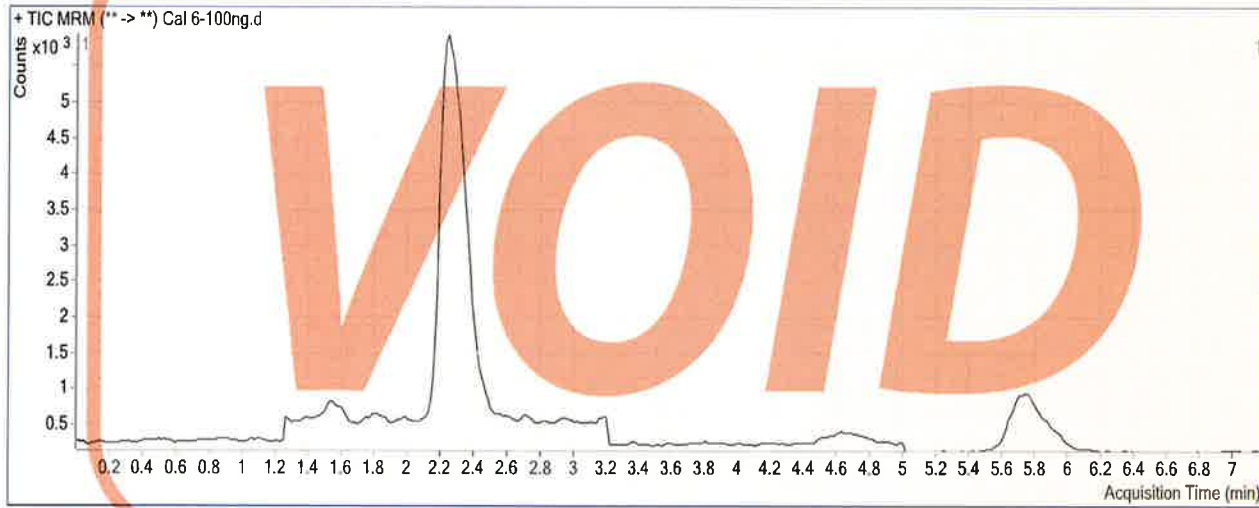
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS\_original cals.batch.bin  
**Analysis Time** 4/23/2019 10:32 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:32 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 10:32 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-22 17:10 **Data File** Cal 6-100ng.d  
**Sample Type** Calibration **Sample Name** Cal 6-100ng  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.239	20670	16552	1.2488	100.6622
THC-COOH	THC-COOH-D9	2.339	8880	5799	1.5313	96.6120
THC	THC-D3	5.758	4422	5533	0.7992	99.0250

Reinjected on 04/23/19 due to poor ITSD response. Please refer to reinjection data.

TS

TS

# ISP FORENSICS - Pocatello Instrument # 59740

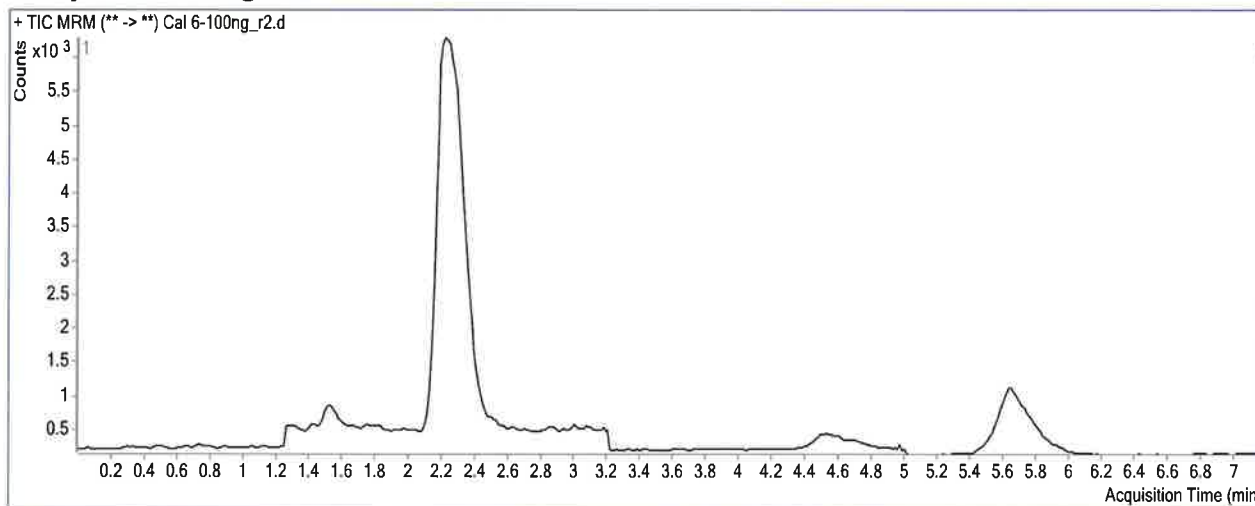
## Cannabinoids Analysis Report

**Batch Data Path** C:\MassHunter\Data\2019\AM 27\042219 THCQ TS\QuantResults\THCQ wk1st 3283 TS.batch.bin  
**Analysis Time** 4/23/2019 9:57 AM **Analyst Name** datastor  
**Report Time** 4/23/2019 10:13 AM **Reporter Name** datastor  
**Last Calib Update** 4/23/2019 9:57 AM **Batch State** Processed

### Analysis Info

**Acq Time** 2019-04-23 09:45 **Data File** Cal 6-100ng\_r2.d  
**Sample Type** Calibration **Sample Name** Cal 6-100ng\_r2  
**Dilution** 1 **Acq Method** THC Quant 051517 workingmm.m  
**Position** P2-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	2.212	21034	18046	1.1655	98.2325
THC-COOH	THC-COOH-D9	2.299	11888	6668	1.7829	100.6613
THC	THC-D3	5.652	5036	6718	0.7497	95.9091

\*Calibrator was re-injected on 04/23/19, due to low internal standard response in the initial injection. -TS