BCCL Crime Lab Instrument Maintenance
SD GCMS 4
Addendum to Preventative Maintenance and Performance Check from May 2024

May 17, 2024

During the week of May 6 – 10, 2024, BCCL SD GCMS 4 was subjected to its annual preventative maintenance visit and performance check qualification. The performance check was tentatively checked by the Laboratory Director and approved before being passed to the Quality Manager for official review. During this hiatus, the Laboratory's LCMS system was being prepped for its annual preventative maintenance visit on May 13. On the afternoon of May 10, all system lines leading into the LCMS were checked for their integrity. The rough vacuum pump for SD GCMS 4, which sits adjacent to the rough vacuum pump for the LCMS, was accidently kicked by me. The kick to the vacuum pump of the SD GCMS 4 resulted in a protective rib of the fan guard being drawn into the pump mechanism. The pump immediately began to seize and make loud noises. I immediately shut the entire system down to include the GCMS. Upon inspecting the pump, I realized what had occurred. I was able to shake the fan rib piece from the pump. Upon restart of the system, the loud noise continued and the entire system went into a fault state. I once again shut the entire system down, let the system cool for approximately thirty minutes before attempting a restart. At this restart, the system was slightly quieter than before but remained in a fault state. The system was shut down once more and the instrument manufacturer was contacted to initiate a service call. The instrument remained out of service until May 16. On May 16, an Agilent technician arrived onsite to service the rough pump. Upon taking apart the rough pump, he noted that a fan blade had been severed. Speculation is that the fan guard rib entered the mechanism shearing the blade and causing the loud noise while prohibiting the pump fan from reaching the necessary speed which caused the pump to shut down due to overheating initiating the fault state of the instrument. After reassembling the pump and attaching back to the instrument, the pump was able to "spin up" and provide the necessary vacuum for the system to reengage. The system was allowed to pump down overnight and on the morning of May 17, an auto-tune was initiated. The system passed the auto-tune.

On May 13, the performance check pack was approved by the Quality Manager, but due to the vacuum pump failure on May 10, the system was not brought back online. The pump issue dictates that a check mix be run to confirm the system is capable of identifying commonly submitted substances before being returned to service. LOG-15-08 speaks to the performance verification check to be performed after instrument maintenance or repair. Section 3.5 reads:

> Maintenance work performed on an instrument shall be completed either by an instrument service technician or by an individual having knowledge pertinent to instrument repair. After the instrument is repaired, it shall be tested to verify that it is functioning properly by the satisfactory analysis of a positive control.

On the morning of May 17, after passing the auto-tune, a positive control (weekly check mix) was run on the instrument to verify its functioning. The instrument was able to separate key components of the mix and fragment the components into its correct mass fragment patterns. Based on the successful performance check verification after the preventative maintenance, the successful repair to the rough pump and subsequent ability to correctly identify the components of the check mix, SD GCMS 4 is recommended for the continued analysis of submitted samples to the Laboratory.

Derek Sanders

DS
OK

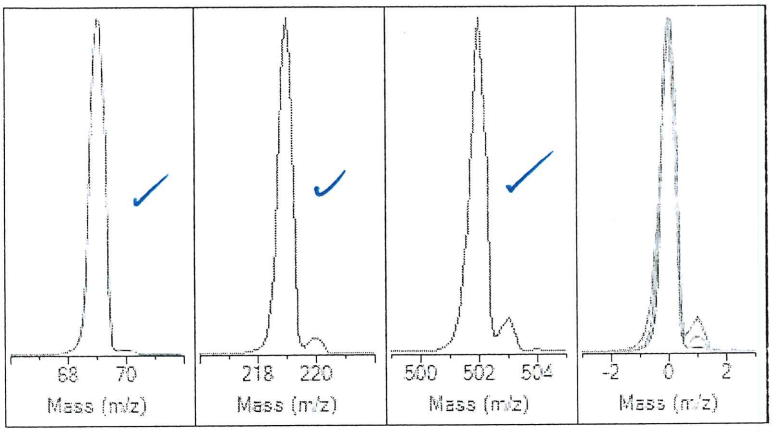
High Efficiency Source Autotune - 5977

Tune timestamp: 5/17/2024 8:16 AM (UTC-05:00)

GCMS #4

D:\MASSHUNTER\GCMS\1\5977\HES_Atune.u

US1837D002



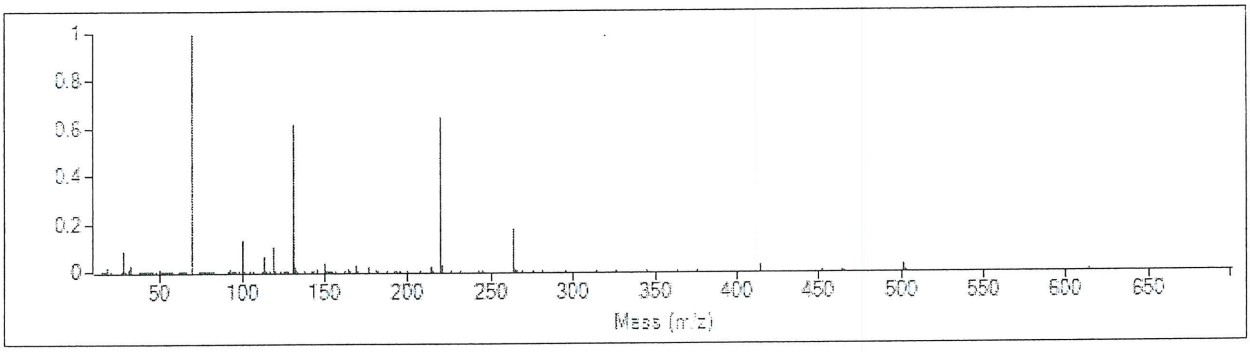
Ion Polarity	Pos	PFTBA	Open
Emission	100.0	Mass Gain	80
Electron Energy	70.0	Mass Offset	-27
Filament	2	Amu Gain	2450
Repeller	14.61	Amu Offset	135.06
Ion Focus	145.6	Width219	-0.032
Entrance Lens	5.0	DC Polarity	Pos
Ent Lens Offset	18.39	HED Enable	On
Ion Body	5.25	EM Volts	1928.4
Post Extractor 1	19	Extractor Lens	12.30
Post Extractor 2	22	Scan Speed	3
JetClean Flow Actual/[Setpoint]	0.00 [0.00]	Averages	3

Actual m/z	Abund	Rel Abund	Pw50
69.00	468,429	100.0%	0.61
219.00	306,659	65.5%	0.56
502.00	13,014	2.8%	0.63

Temperatures and Pressures

MS Source	230	Turbo Speed	100.0
MS Quad	150	Hi Vac	8.24e-06

Low	High	Step	Speed	Threshold	Peaks	Base	Abundance	Total Ion
10.00	701.00	0.10	3	100	123	69.00	438,464	1,428,496



Target m/z	Actual m/z	Abund	Rel Abund	Iso m/z	Iso Abund	Iso Ratio
69.00	69.00	438,464	100.0%	70.00	5,261	1.2%
219.00	219.00	283,584	64.7%	220.00	12,800	4.5%
502.00	502.00	12,128	2.8%	503.00	1,185	9.8%

Air/Water Check: H20 ~2.0% N2 ~9.0% O2 ~2.6% CO2 ~0.4% N2/H20 ~456.5%

Column(1) Flow: 0.80 Column(2): 0.00 ml/min Interface Temp: 280

Ramp Criteria:

Ion Focus maximum 128 volts using ion 502; Electron Multiplier Gain 24548.901

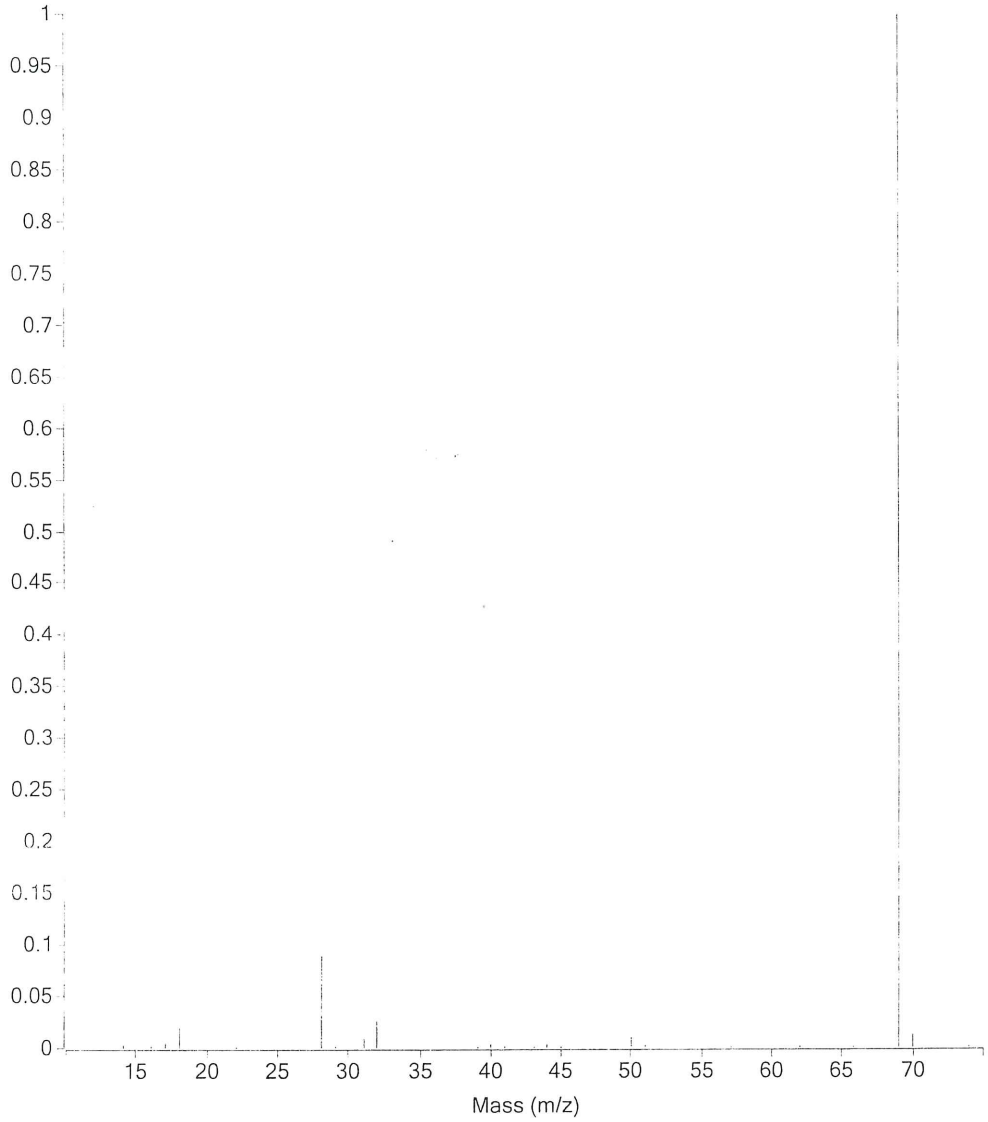
Repeller maximum 35 volts using ion 219; Gain Factor 0.2455

Mass Gain Values(Scan Speed): 84(3) 89(2) 93(1) 118(0) 170(FS1) 169(FS2) 125(FS3)

TARGET MASS:	50	69	131	219	414	502	1050
Amu Offset	135.1	135.1	135.1	135.1	135.1	135.1	135.1
Entrance Lens Offset	18.4	18.4	18.4	18.4	18.4	18.4	18.4

597x Air and Water Check

Instrument: GCMS #4
Fri May 17 08:19:05 2024 D:\MassHunter\GCMS\1\5977\



Current Params used: HES_Atune.u

Relative abundances:

18/69 =	1.91	Water%	(counts=8437)
28/69 =	8.90	Nitrogen%	(counts=39288)
32/69 =	2.57	Oxygen%	(counts=11359)
44/69 =	0.35	Carbon Dioxide%	(counts=1567)
28/18 =	465.66	Nitrogen/Water%	

Instrument Name : GCMS #4
DC Polarity : Positive
Filament 2
Current Vacuum status :High Vacuum: 6.61E-06 Torr Turbo:100%

BasePeak should be 69 or 219		OK
Position of mass 69	69.00	OK
Position of mass 219	219.00	OK
Position of mass 502	502.00	OK
Position of isotope mass 70	70.00	OK
Position of isotope mass 220	220.00	OK
Position of isotope mass 503	503.01	OK
Ratio of mass 70 to mass 69(0.5 - 1.6%)	1.20	OK
Ratio of mass 220 to mass 219(3.2 - 5.4%)	4.53	OK
Ratio of mass 503 to mass 502(7.9 - 12.3%)	10.25	OK
Ratio of 219 to 69 should be > 40% and is	64.00	OK
Ratio of 502 to 69 should be > 2.4% and is	2.70	OK
Mass 69 Precursor (<= 3%)	0.83	OK
Mass 219 Precursor (<= 6%)	3.06	OK
Mass 502 Precursor (<= 12%)	7.24	OK

597x Air and Water Check
Fri May 17 08:22:44 2024 Instrument: GCMS #4
D:\MassHunter\GCMS\1\5977\HES_Atune.u US1837D002

Testing for a leak in the system		
Ratio of 18 to 69 (<20%)	1.91	OK
Ratio of 28 to 69 (<10%)	8.84	OK
Electron Multiplier Voltage	1928	OK

Tune portion of System Verification passed.

Brazoria County Crime Lab Area Percent Report

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Data File: D:\MassHunter\GCMS\1\GCMS 4 data\Standards\Weekly Check Mix\2024 Data\051724\00201003.D
Method : D:\MassHunter\GCMS\1\methods\DrugTest35MS.M
Operator : AGILENT 4
Acq On : 17 May 2024 09:26
Sample : Cayman Mix (R-22-004)
Misc : Cayman Mix Standard Weekly Check
ALS Vial : 2
ExpBcode : 000002795
ActBcode : 000002795

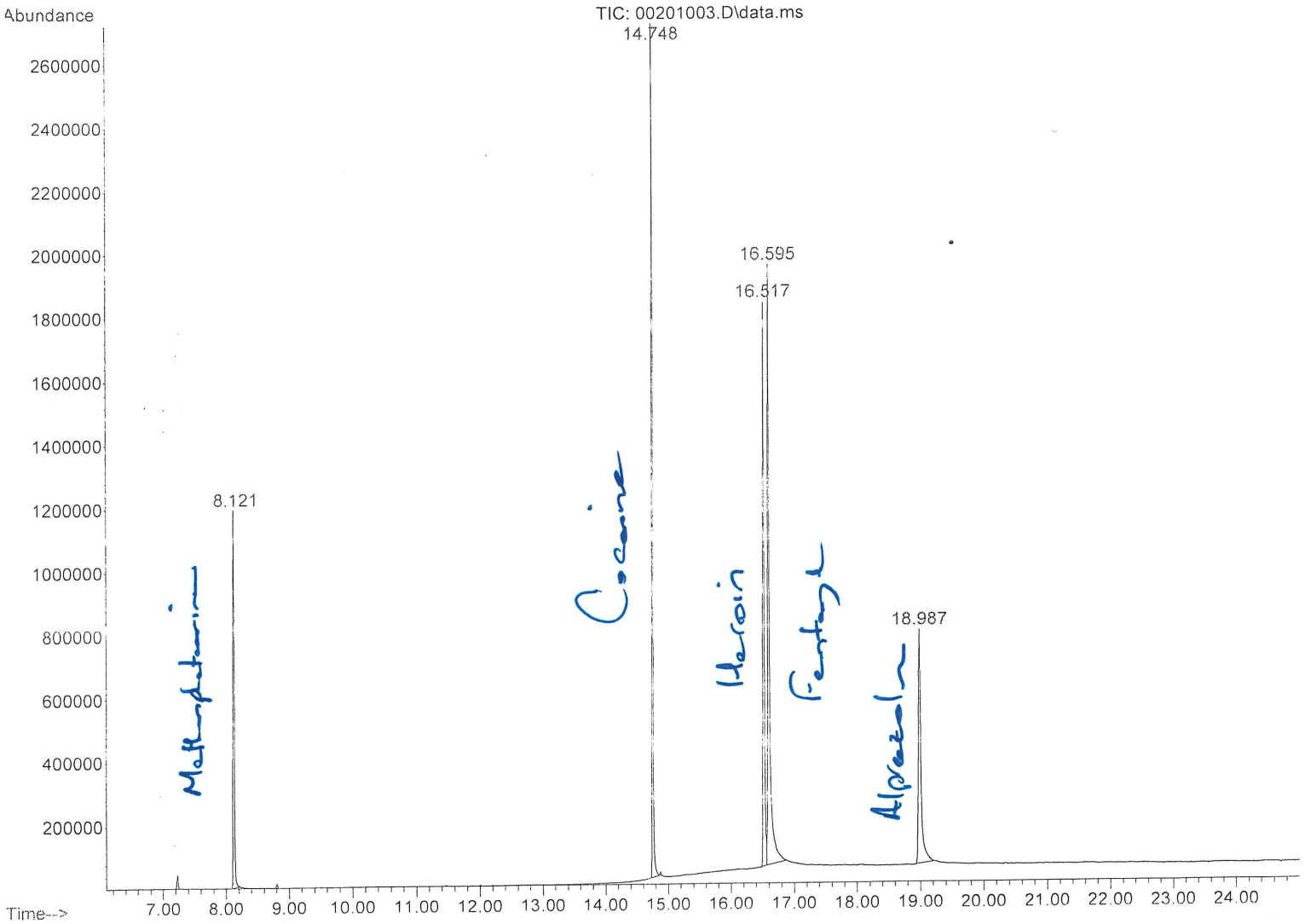
Signal : TIC: 00201003.D\data.ms

MAY 17 2024

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	8.121	342	349	365	BB	1198220	16174809	41.60%	12.367%
2	14.748	1474	1486	1505	BV	2695995	29106057	74.86%	22.255%
3	16.517	1774	1789	1797	BV	1727984	25789725	66.33%	19.719%
4	16.595	1797	1803	1852	VB	1892702	38880743	100.00%	29.729%
5	18.987	2191	2213	2252	BB 2	735461	20834217	53.58%	15.930%

Sum of corrected areas: 130785551

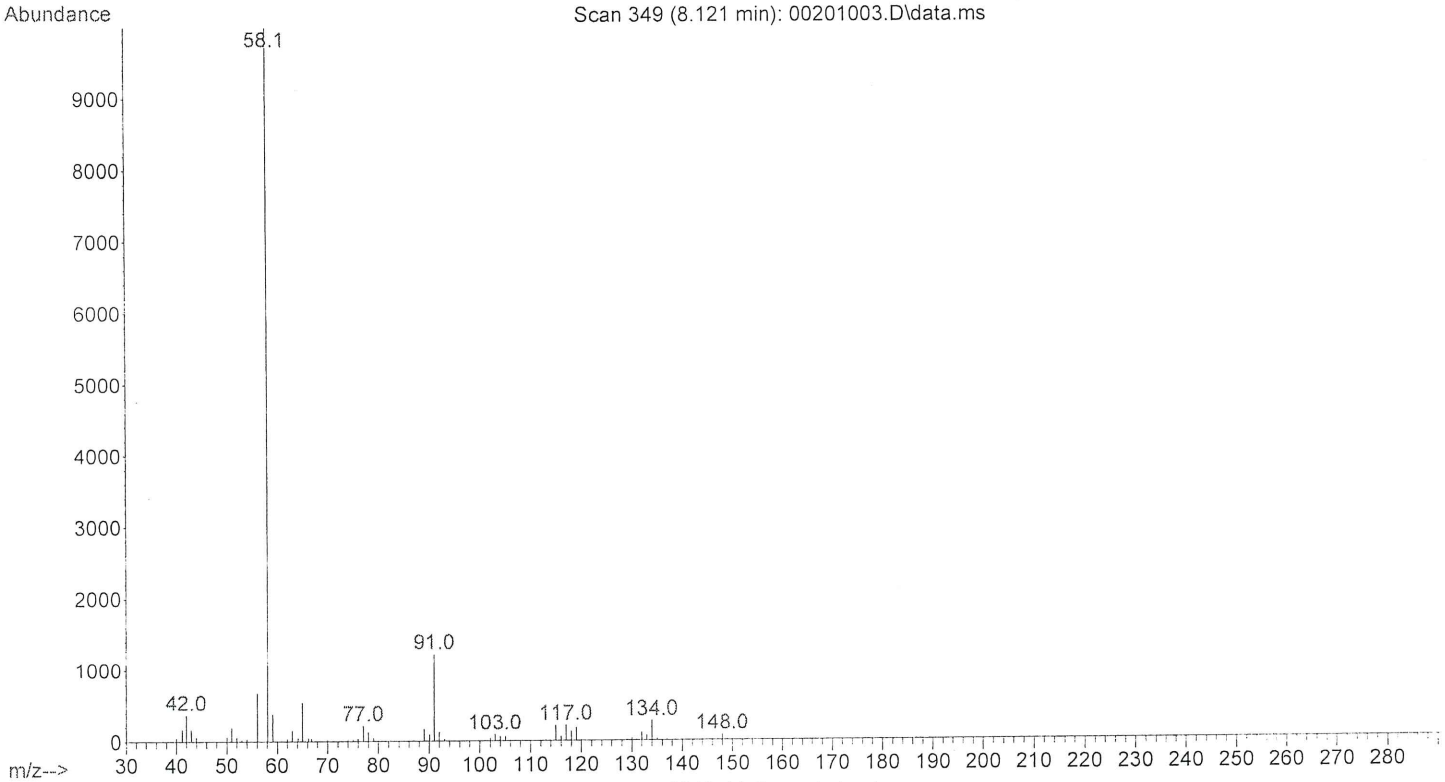
DrugTest35MS.M Fri May 17 09:51:34 2024 DRUGS

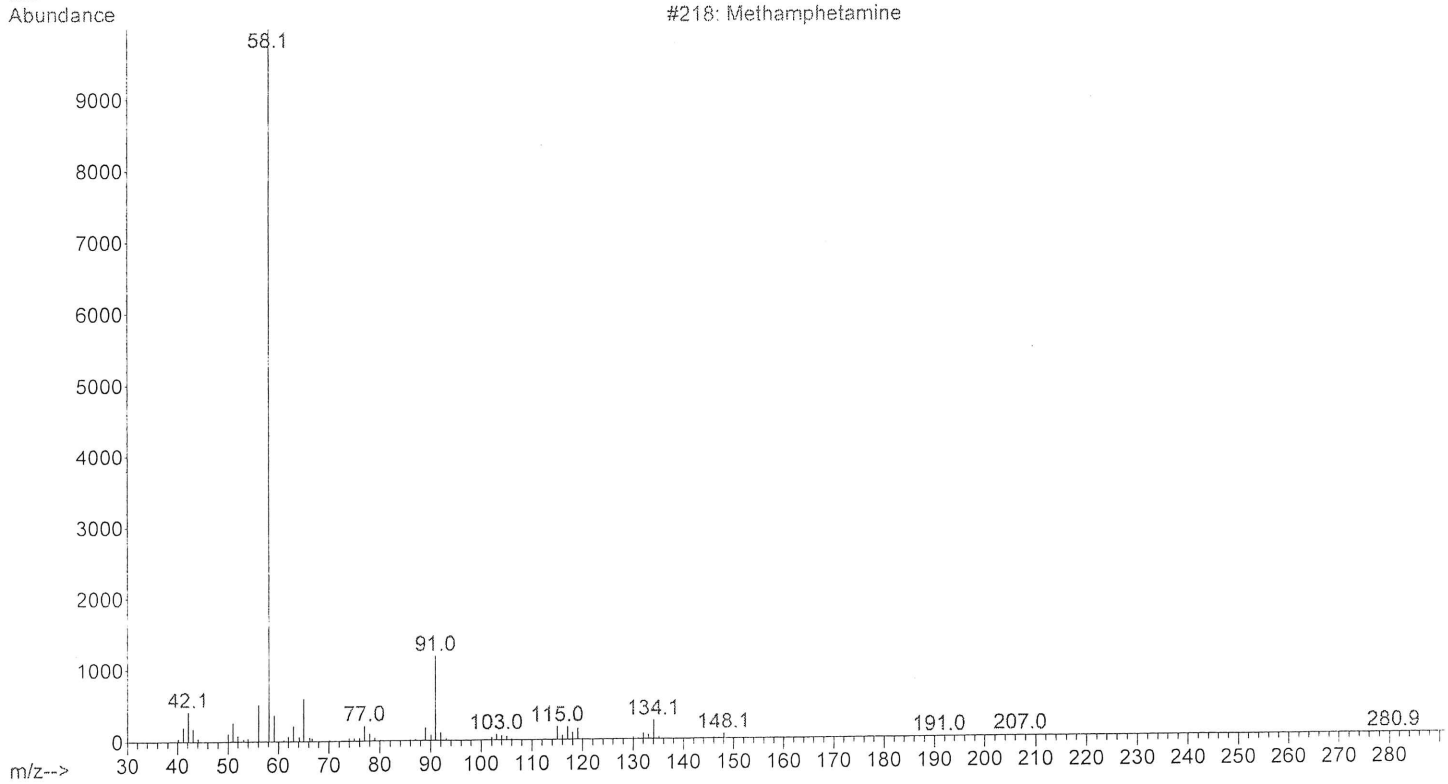


JS

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Acquired : 17 May 2024 09:26 using AcqMethod DrugTest35MS.M
Instrument : GCMS #4
Sample Name: Cayman Mix (R-22-004) 000002795
Misc Info : Cayman Mix Standard Weekly Check 000002795
Vial Number: 2

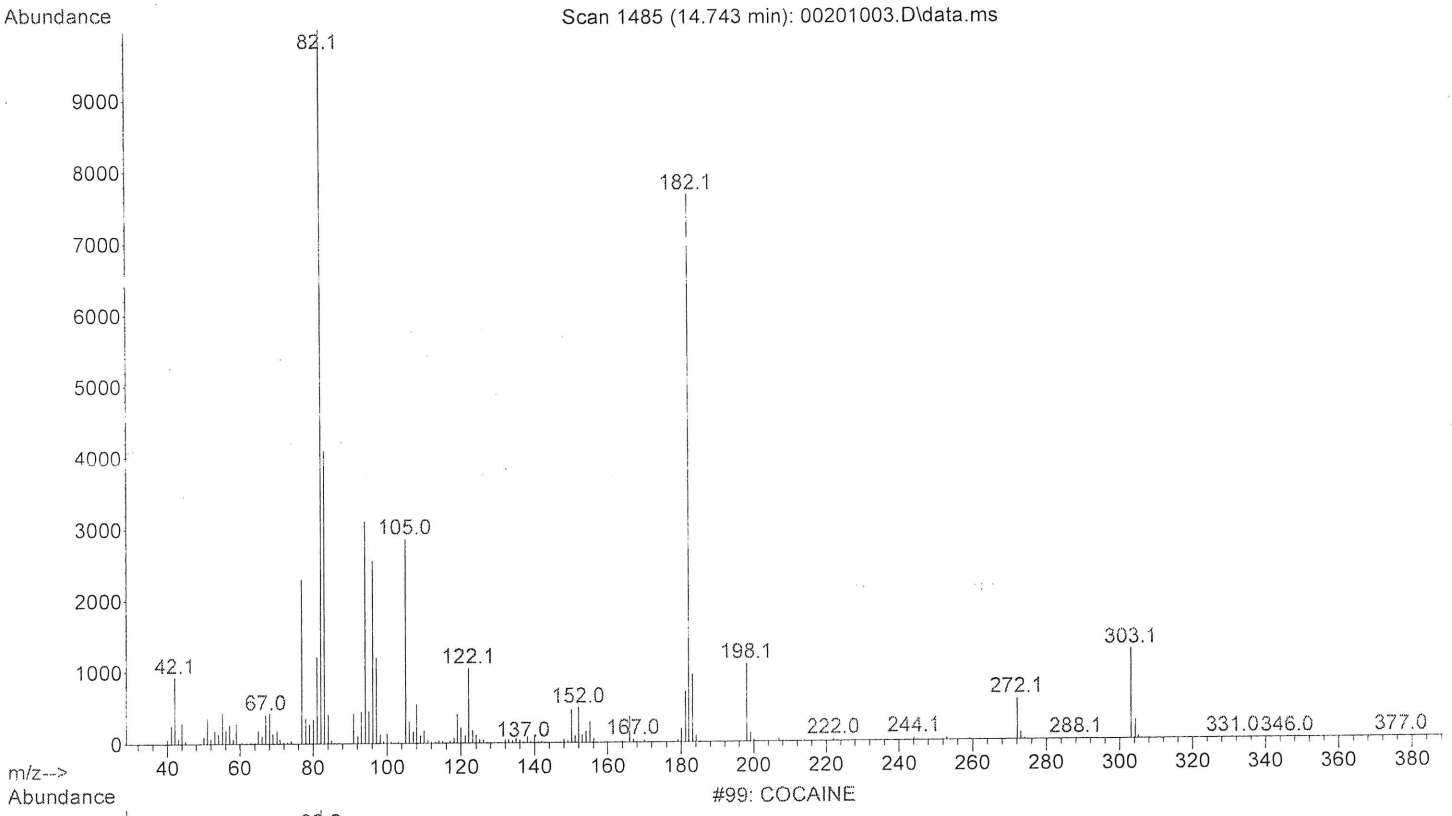
MAY 17 2024

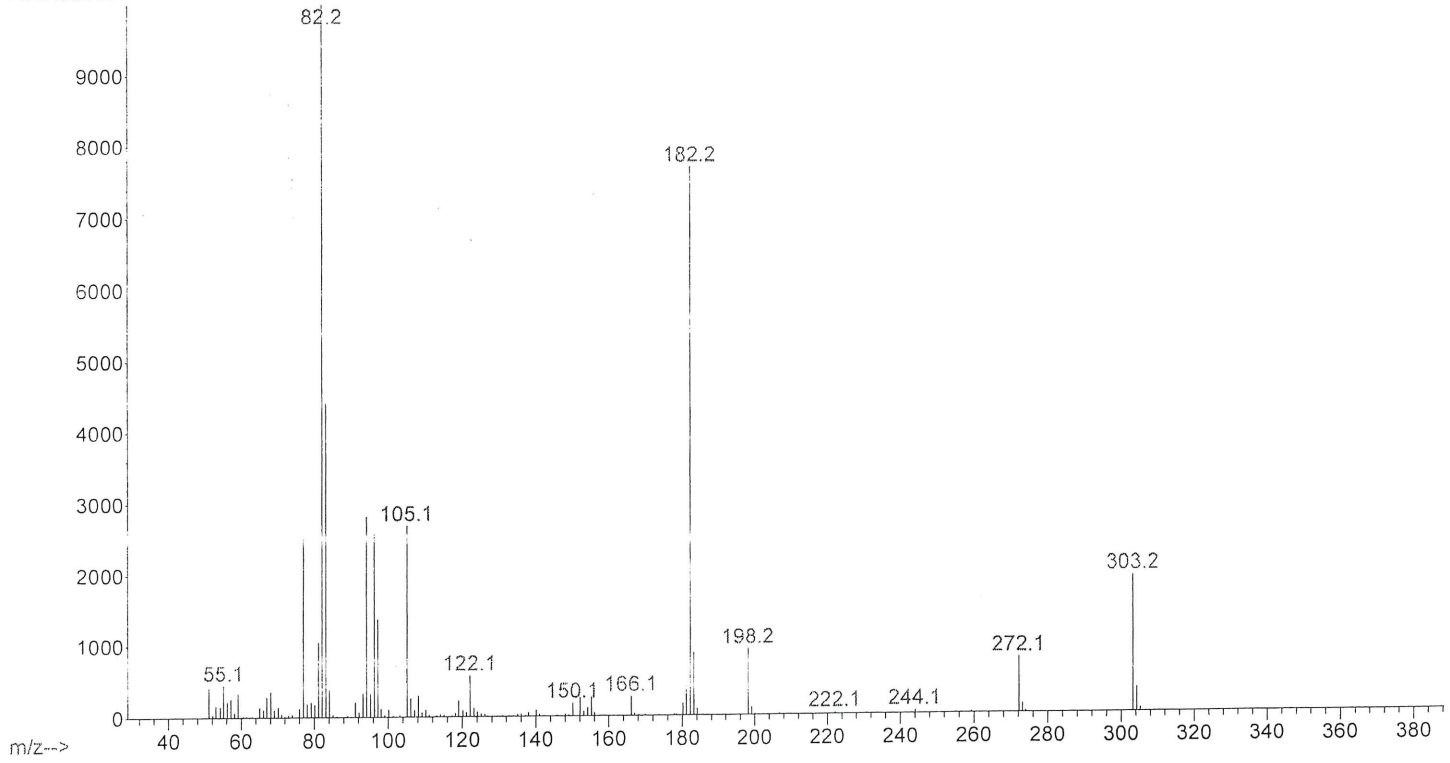




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Vial Number: 2

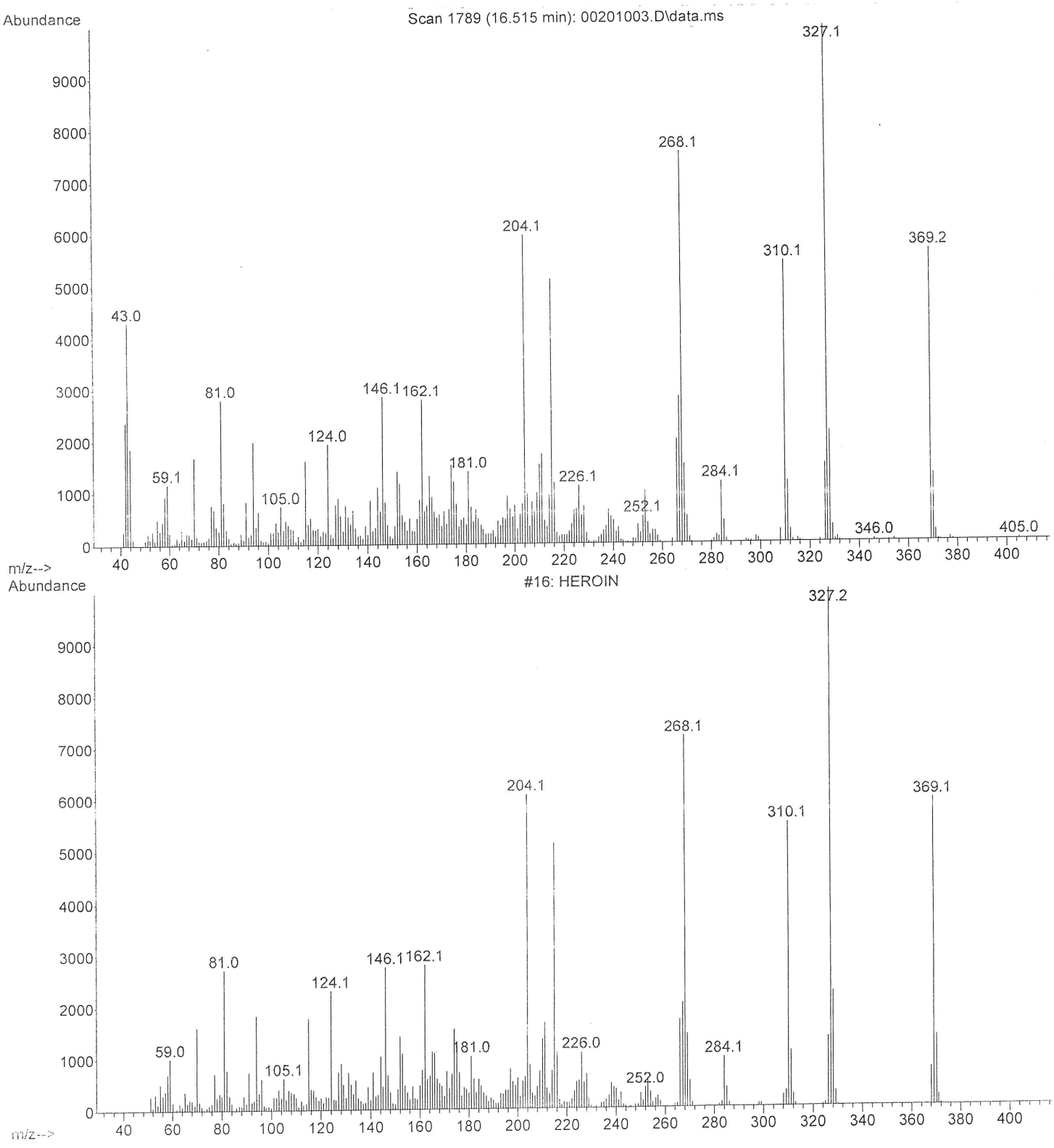
MAY 17 2024





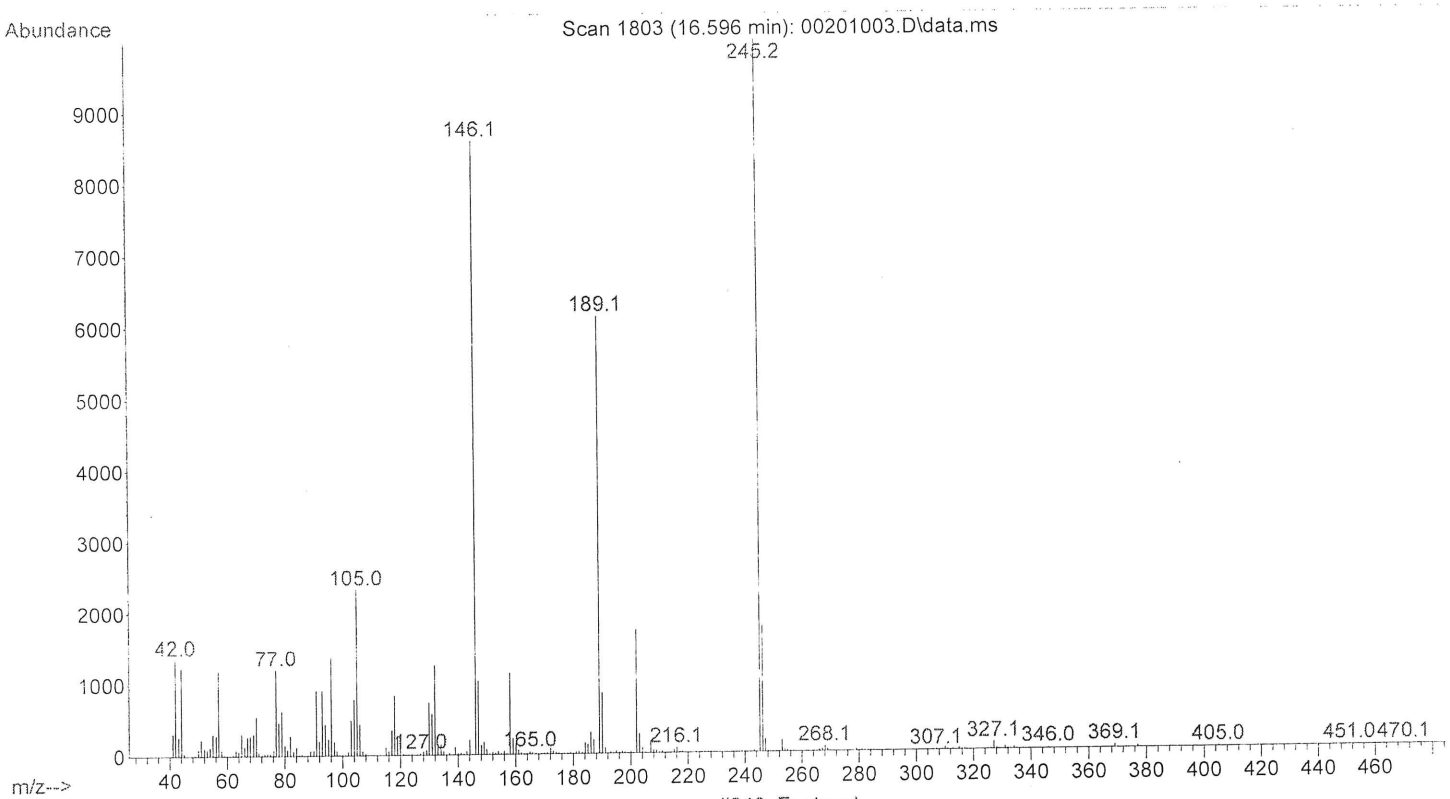
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Acquired : 17 May 2024 09:26 using AcqMethod DrugTest35MS.M
Instrument : GCMS #4
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Misc Info : Cayman Mix Standard Weekly Check 000002795
Vial Number: 2

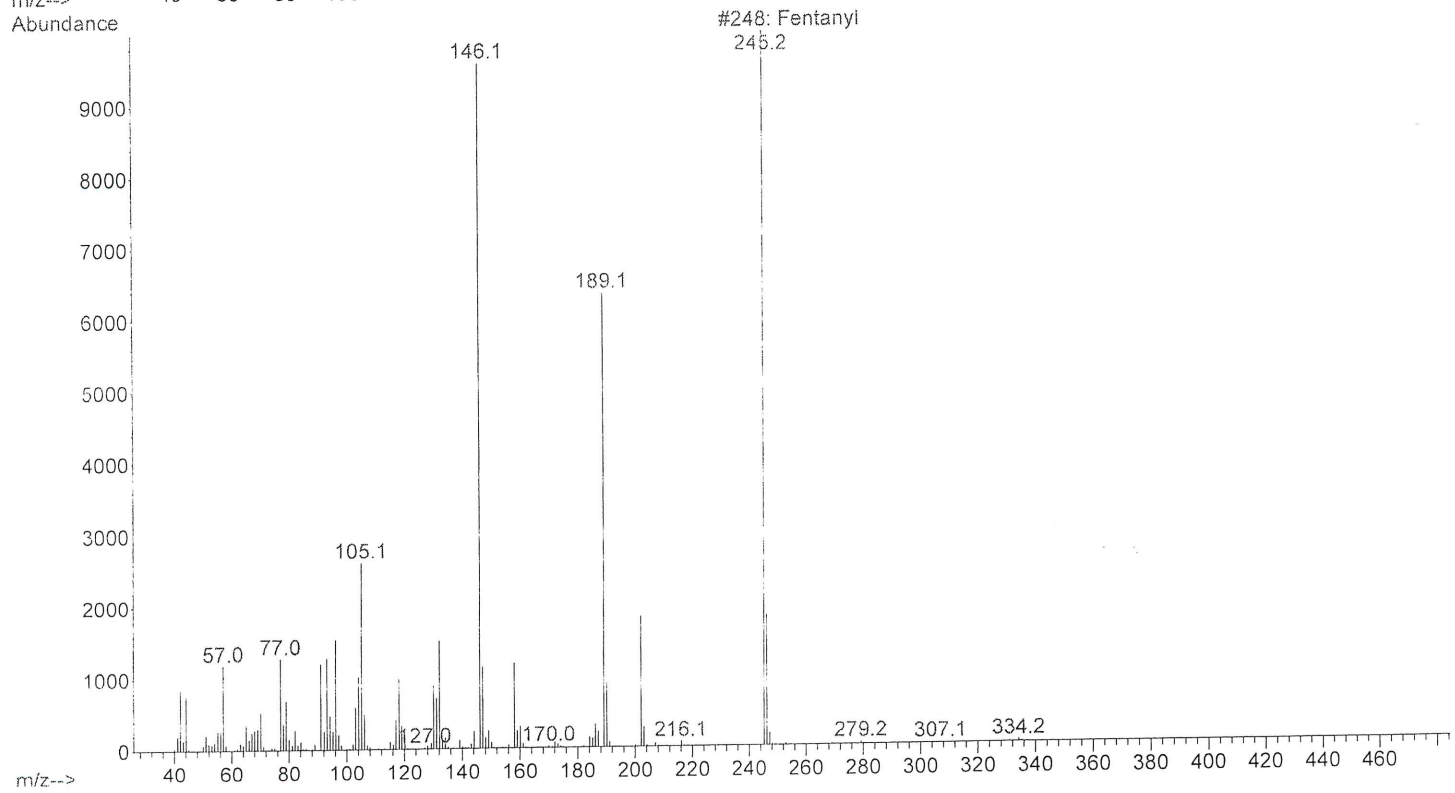
MAY 17 2024



File :D:\MassHunter\GCMS\1\GCMS 4 data\Standards\Weekly Check Mix\
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Instrument : GCMS #4
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MAY 17 2024

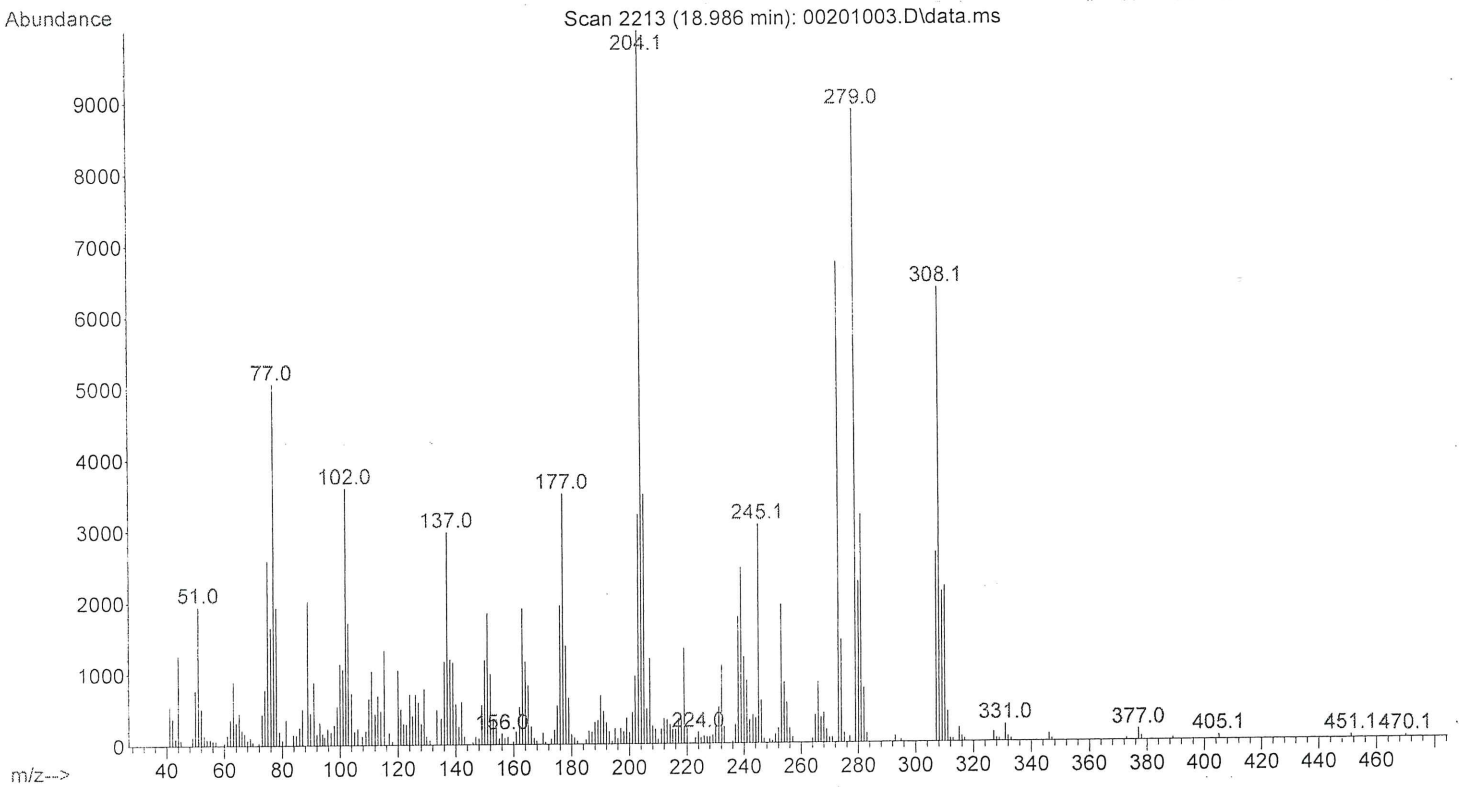


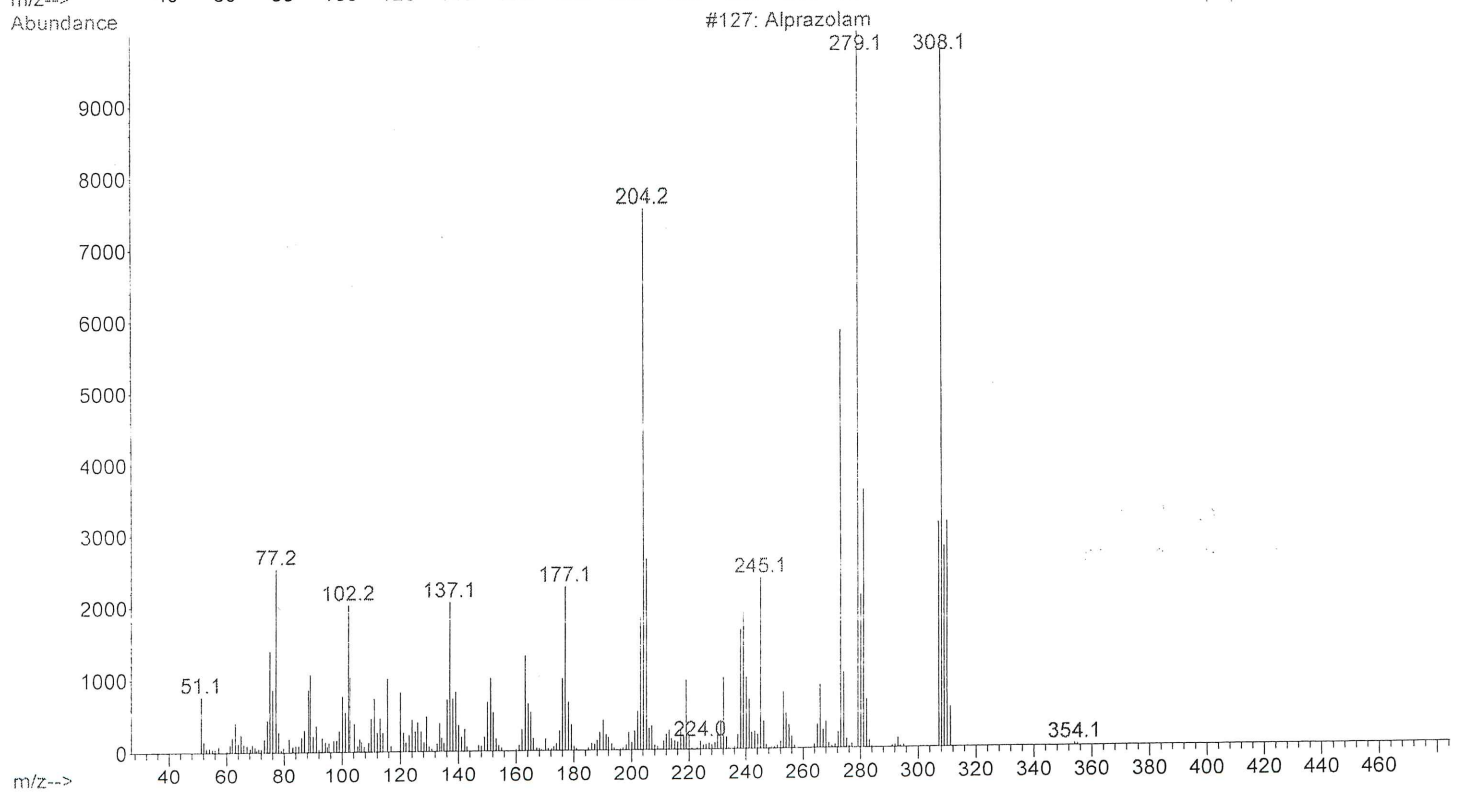


DS

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File       :D:\MassHunter\GCMS\1\GCMS 4 data\Standards\Weekly Check Mix\
...         2024 Data\051724\00201003.D
Acquired   : 17 May 2024  09:26     using AcqMethod DrugTest35MS.M
Instrument :   GCMS #4
Sample Name: Cayman Mix (R-22-004)                          000002795
Misc Info  : Cayman Mix Standard Weekly Check               000002795
Vial Number: 2
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MAY 17 2024





Brazoria County Crime Lab Area Percent Report

DS

Data File: D:\MassHunter\GCMS\1\GCMS 4 data\Standards\Weekly Check Mix\2024 Data\051724\00102002.D
Method : D:\MassHunter\GCMS\1\methods\DrugTest35MS.M
Operator : AGILENT 4
Acq On : 17 May 2024 08:57
Sample : Blank (C-19-0068) prior to Cayman Mix (R-22-004)
Misc : ACN
ALS Vial : 1
ExpBcode : 000002794
ActBcode : 000002794

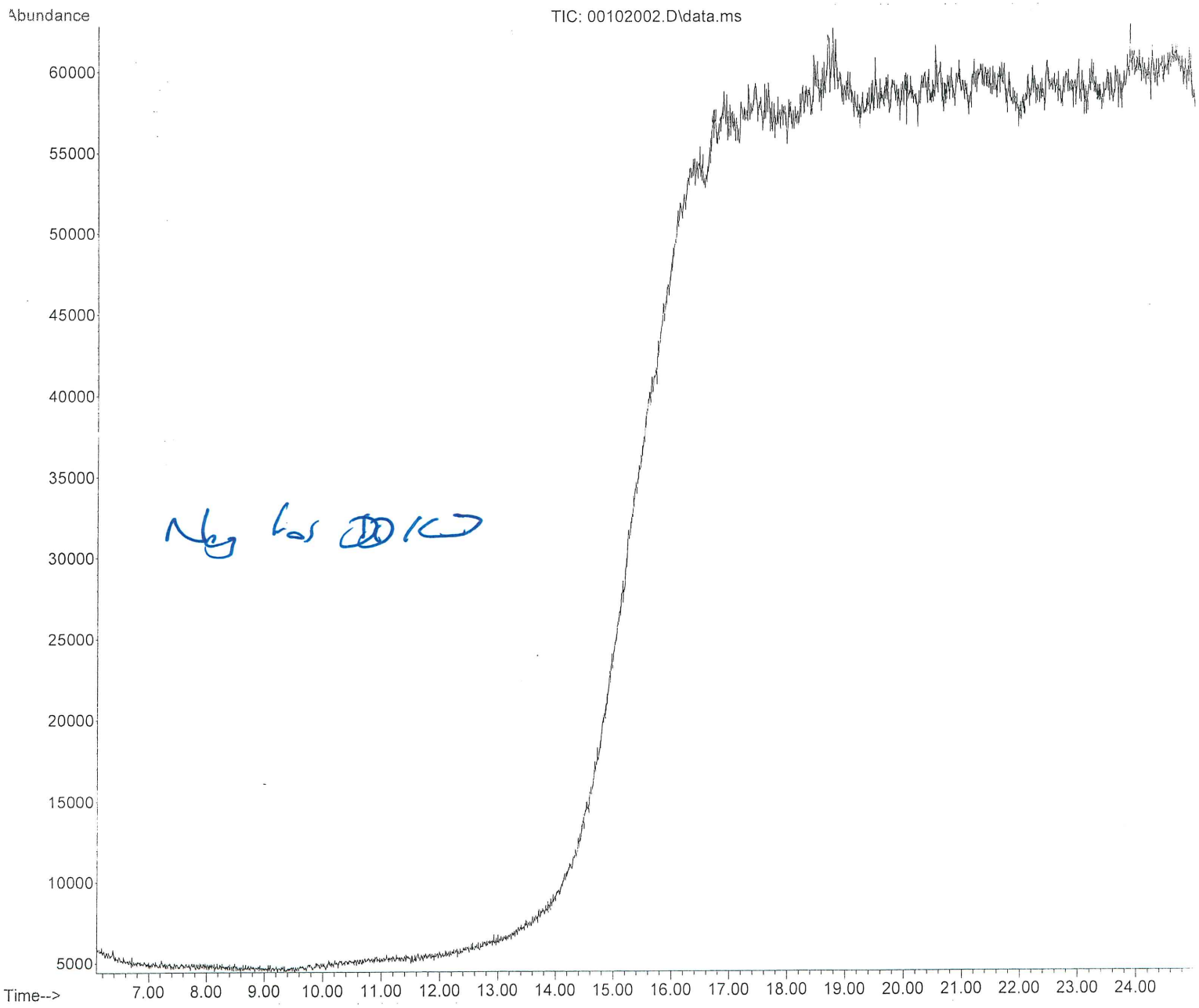
MAY 17 2024

Signal : TIC: 00102002.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total

No peaks were detected using the method integration parameters!

DrugTest35MS.M Fri May 17 09:22:55 2024 DRUGS



No Cayman DDK

Brazoria County Crime Lab Area Percent Report

Data File: D:\MassHunter\GCMS\1\GCMS 4 data\Standards\Weekly Check Mix\2024 Data\051724\00101004.D
Method : D:\MassHunter\GCMS\1\methods\DrugTest35MS.M
Operator : AGILENT 4
Acq On : 17 May 2024 09:55
Sample : Blank (C-19-0068) - Instrument Ready
Misc : ACN
ALS Vial : 1
ExpBcode : 000002794
ActBcode : 000002794

DS

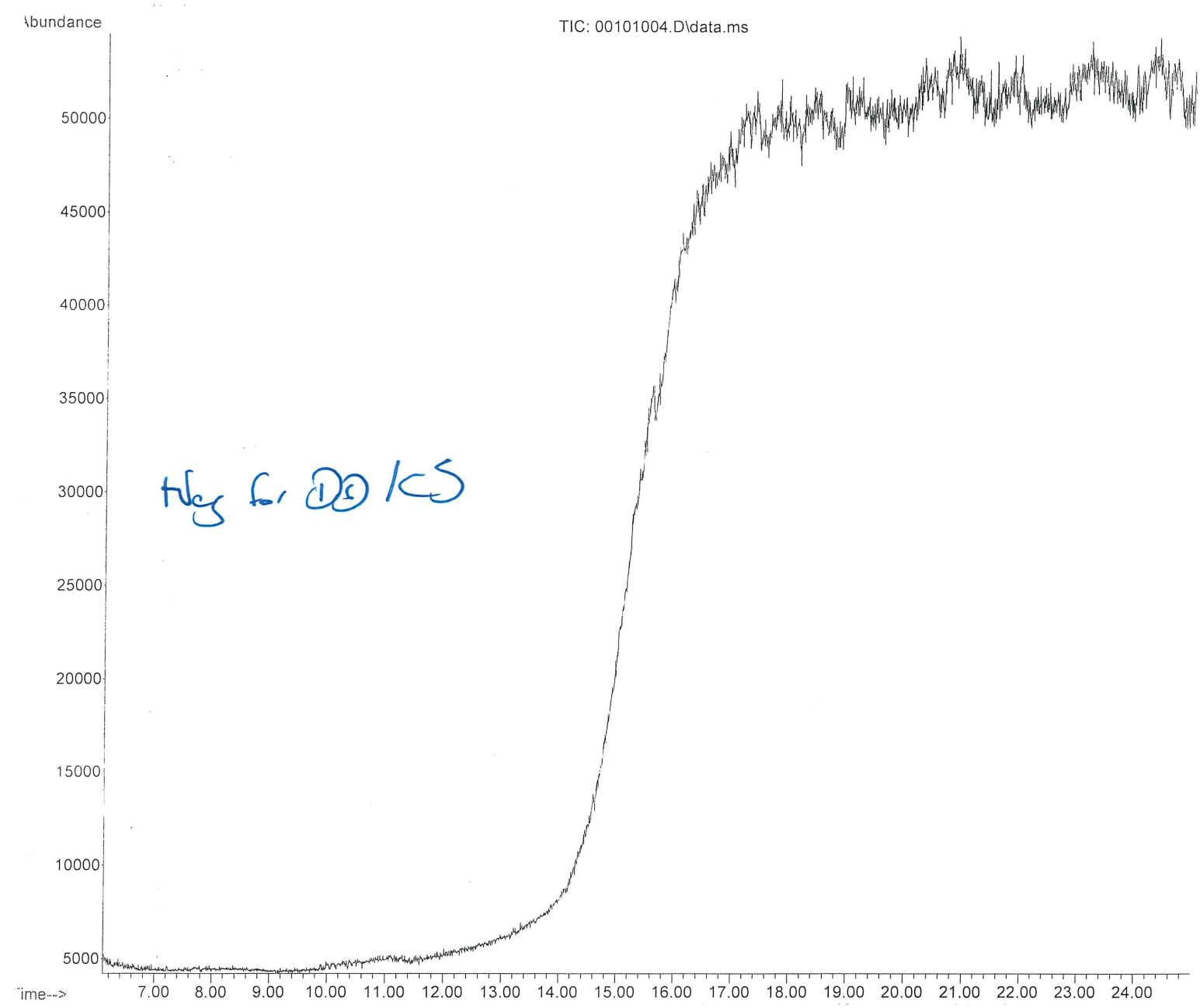
MAY 17 2024

Signal : TIC: 00101004.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total

No peaks were detected using the method integration parameters!

)rugTest35MS.M Fri May 17 10:20:23 2024 DRUGS



Hdg for DS ICS