

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Aroclor extraction and analysis

An overview of key factors to be aware of for data users

- Soxhlet (method 3540)
- Sonication (method 3550)
- Waste Dilution (method 3580)
- Other (automated soxhlet, microwave, ASE)

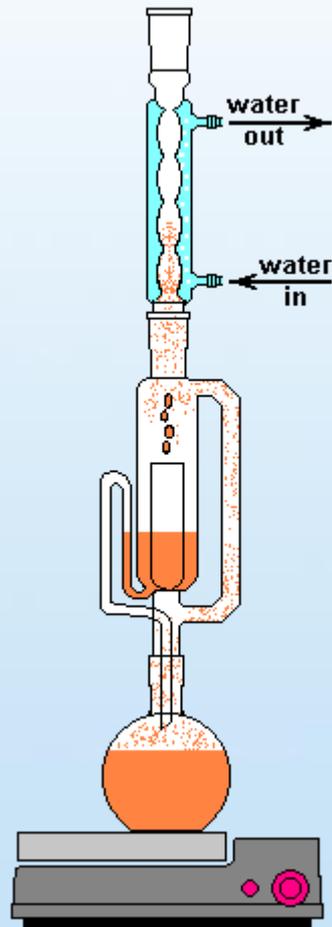
- Advantages
 - ~ Exhaustive extraction technique (18-24 hours)
 - ~ Demonstrated consistency and accuracy
 - ~ Very useful for difficult matrices (paint chips, caulk, concrete)
- Disadvantages
 - ~ Not ideal for data needed in less than 24 hours
 - ~ Not environmentally friendly due to amount of solvent required
 - ~ Proper cycling and setup can vary from one to the next (critical to monitor performance during extraction)

- Advantages
 - ~ Good for expedited analysis
 - ~ Can generally handle larger sample mass when needed
- Disadvantages
 - ~ Extraction not as exhaustive
 - ~ Has shown more data variability on duplicates
 - ~ Not effective for difficult matrices

- Prep technique is exclusive to a matrix that is 100% miscible in solvent used
- Many labs prep non (or partially) miscible wastes by this method
- When method is not used as directed significant bias can occur in the final result

- A polar co solvent is mandatory (this is extremely important in samples with: high moisture, caulk, and paint chips)
- Utilization of cleanup techniques is a must (sulfur removal, acid stripping, etc)

Soxhlet Extractor



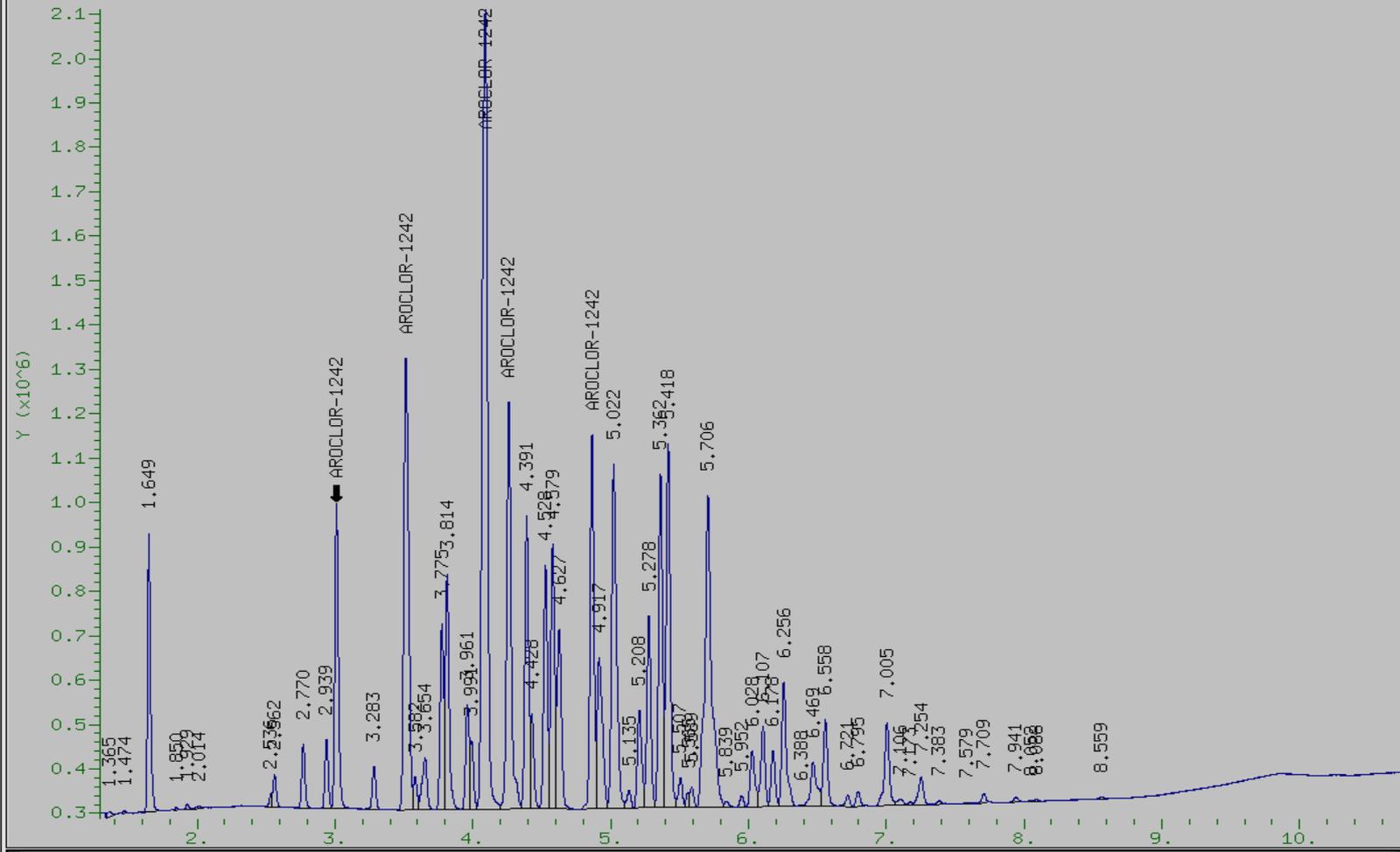


- Method is highly subjective to analyst judgment
 - ~ When degraded aroclors are present there is variability from lab to lab, and even analyst to analyst
- Lack of defined analytical guidance in method can lead to significant differences in data between labs
 - ~ Variability from lab to lab on peaks used for quantitation can affect end result
- Power of Chromatography software
 - ~ “Chrom” has the ability to assess every peak in relation to standard patterns

Sample: 1242 Type: CCALIB_4 Inj.Date: 04-DEC-2008 09:08 Col: 2 retek pest clpi

+v 5 AROCLOR-1242

002F0201.D
003F0301.D
004F0401.D
005F0501.D
006F0601.D



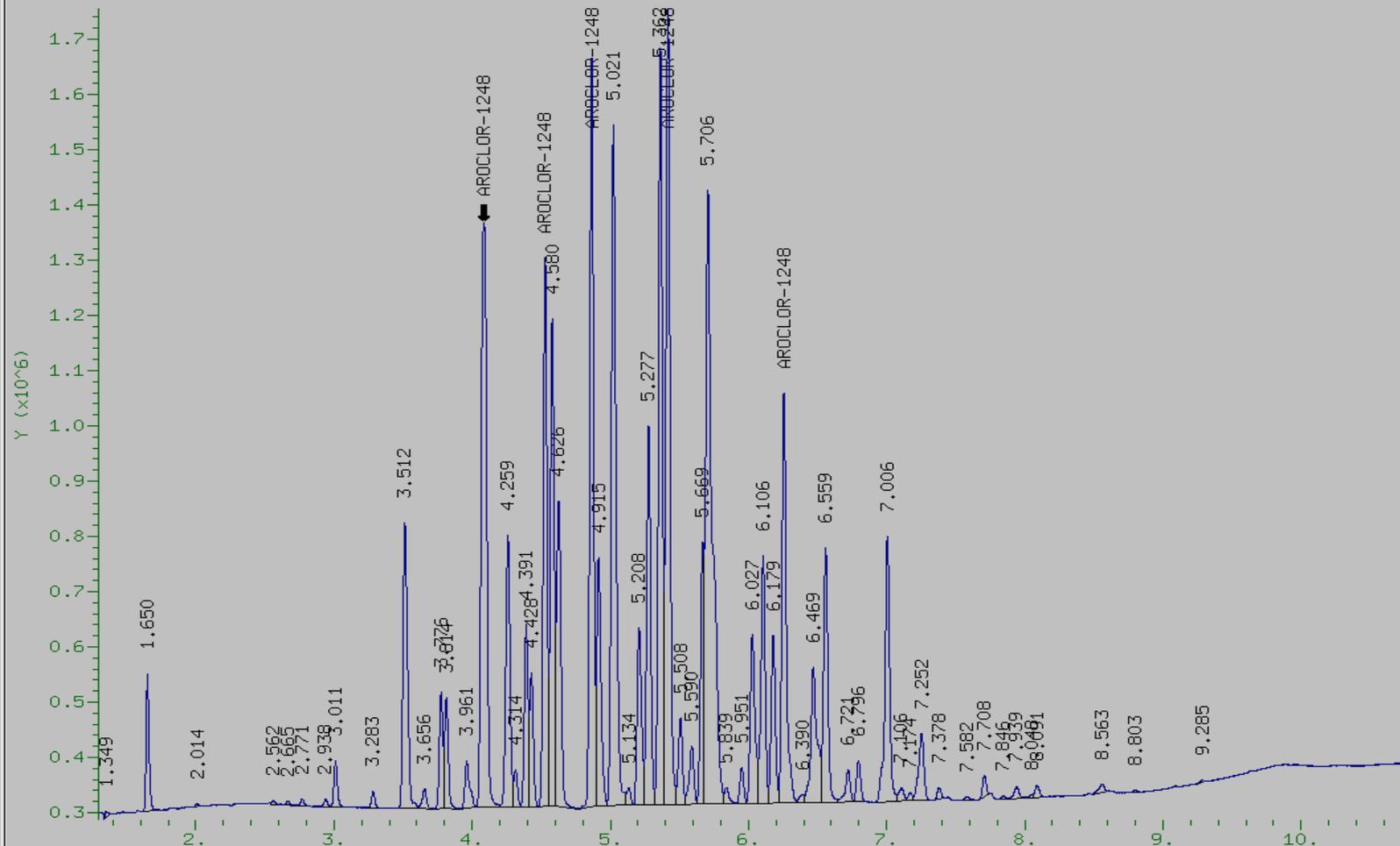
Hit# RT(min) ExpRT RRT Response Amount Conc Ratio Target Ratio Flags Report:

Hit#	RT(min)	ExpRT	RRT	Response	Amount	Conc	Ratio	Target Ratio	Flags	Report:
1	3.011	3.011	0.000	1222703	0.4760	0.4760	100	80.00- 120.00		
	3.514	3.514	0.000	2455656	0.4889	0.4889	201	150.63- 251.05		
	4.091	4.091	0.000	4860063	0.4764	0.4764	397	298.11- 496.86		
	4.261	4.261	0.000	2076691	0.4764	0.4764	170	127.38- 212.31		
	4.865	4.865	0.000	1628258	0.4685	0.4685	133	99.88- 166.46		

- Mark AROCLOR-1242 Undetected.

Sample: 1248 Type: CCALIB_4 Inj.Date: 04-DEC-2008 09:24 Col: 2 restek pest cli

+v 6 AROCLOR-1248

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003F0301.D
004F0401.D
005F0501.D
006F0601.D

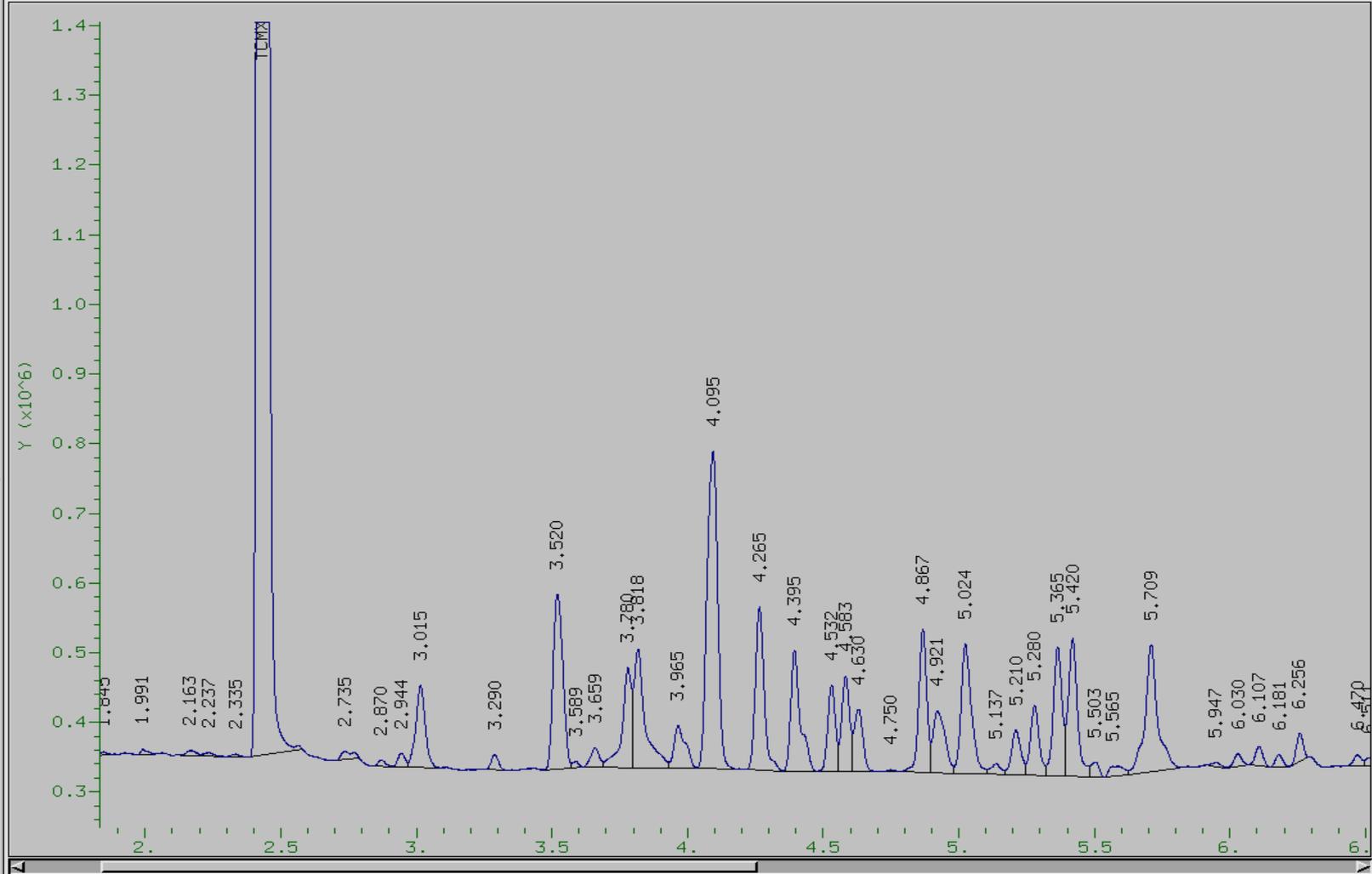
Hit#	RT(min)	ExpRT	RRT	Response	Amount	Conc	Ratio	Target Ratio	Flags	Report:
1	4.085	4.085	0.000	2948060	0.4504	0.4504	100	80.00- 120.00		
	4.527	4.527	0.000	1864362	0.4667	0.4666	63	47.43- 79.05		
	4.866	4.866	0.000	2567683	0.4651	0.4651	87	65.32- 108.87		
	5.417	5.417	0.000	3088696	0.4564	0.4564	105	78.58- 130.96		
	6.256	6.256	0.000	1648220	0.4480	0.4480	56	41.93- 69.89		

- Mark AROCLOR-1248 Undetected.

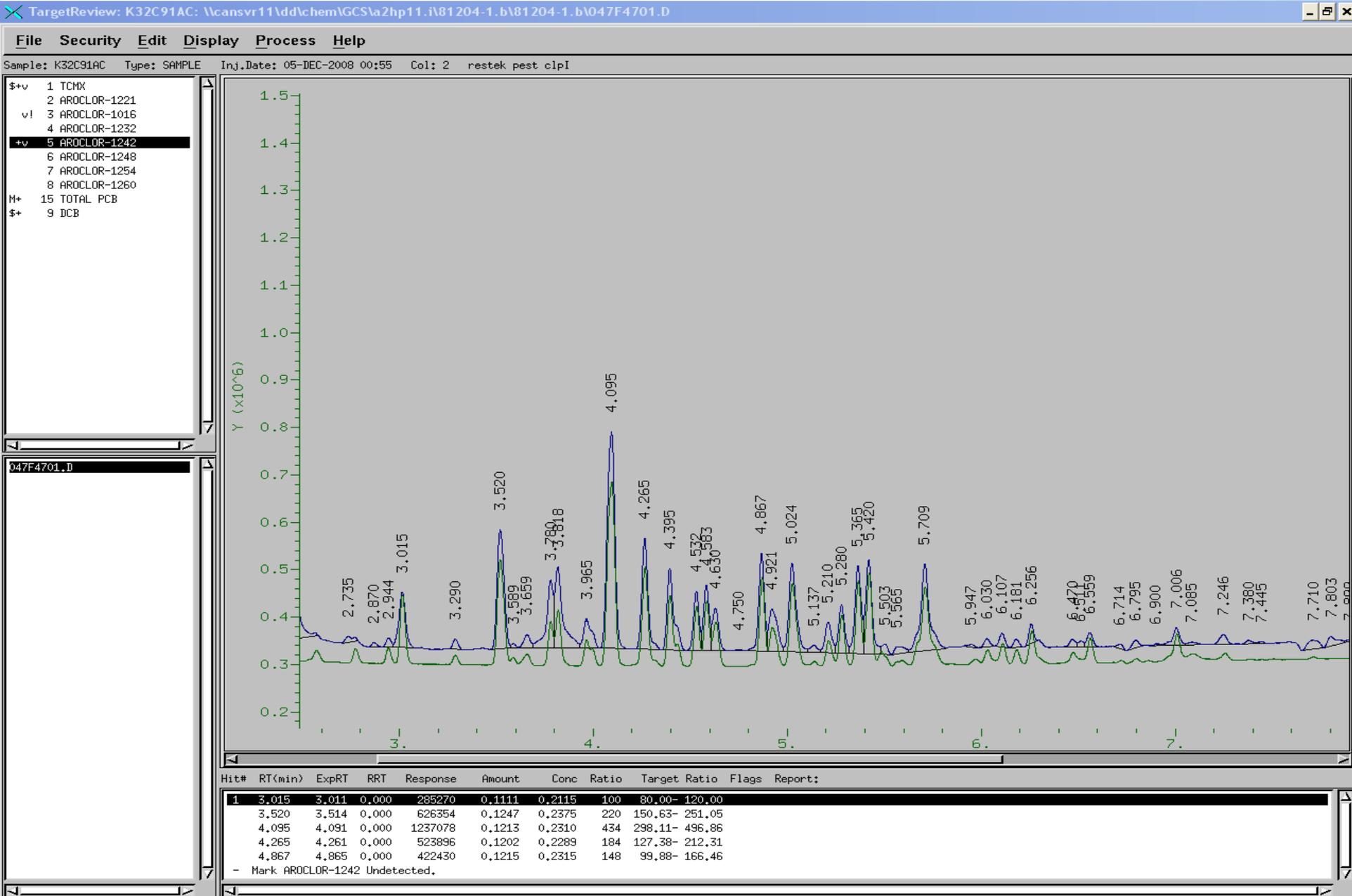
Sample: K32C91AC Type: SAMPLE Inj.Date: 05-DEC-2008 00:55 Col: 2 restek pest cli1

- \$+v 1 TCMX
- 2 AROCLOR-1221
- v! 3 AROCLOR-1016
- 4 AROCLOR-1232
- +v 5 AROCLOR-1242**
- 6 AROCLOR-1248
- 7 AROCLOR-1254
- 8 AROCLOR-1260
- M+ 15 TOTAL PCB
- \$+ 9 DCB

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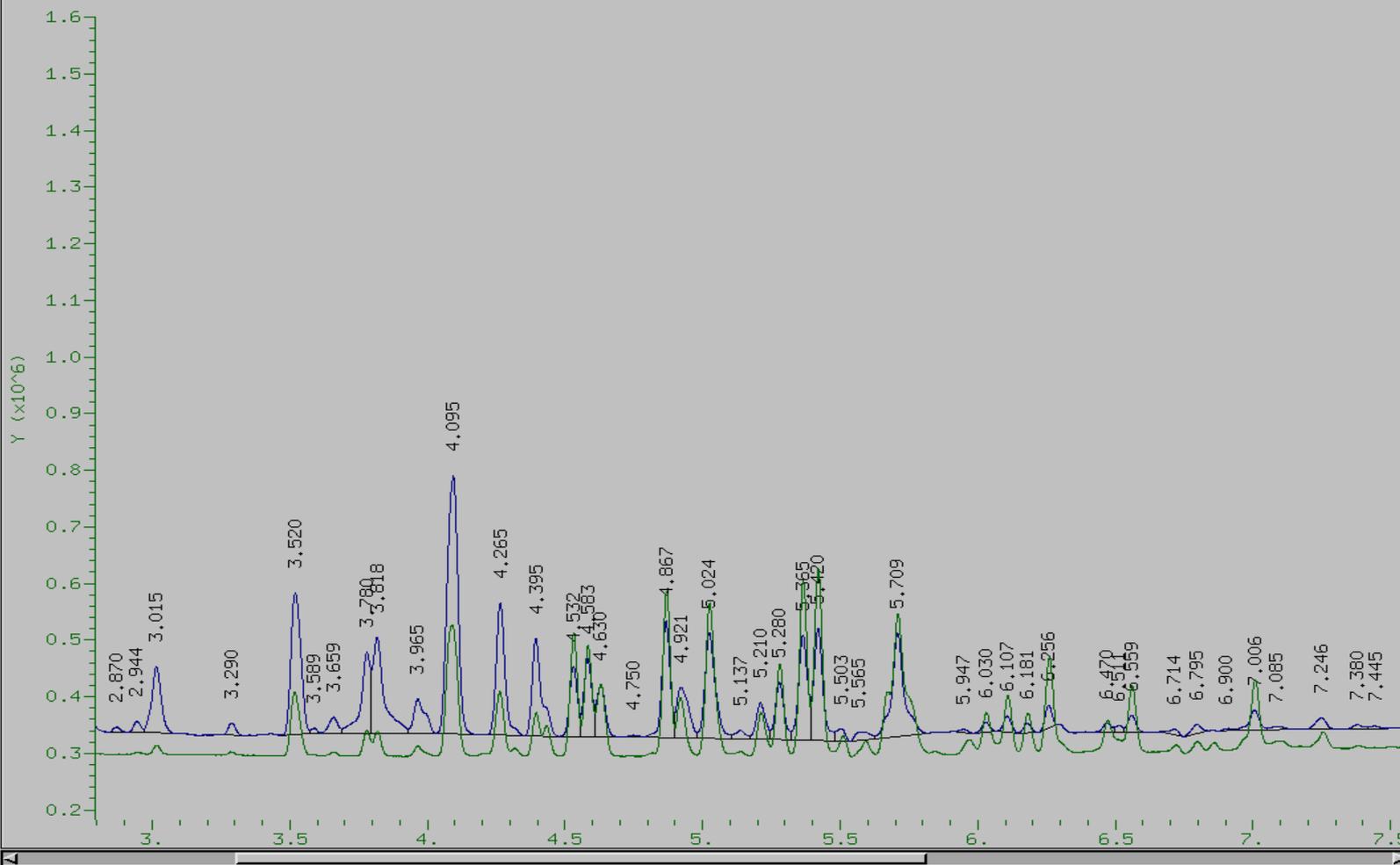


Hit#	RT(min)	ExpRT	RRT	Response	Amount	Conc	Ratio	Target Ratio	Flags	Report:
1	3.015	3.011	0.000	285270	0.1111	0.2115	100	80.00- 120.00		
	3.520	3.514	0.000	626354	0.1247	0.2375	220	150.63- 251.05		
	4.095	4.091	0.000	1237078	0.1213	0.2310	434	298.11- 496.86		
	4.265	4.261	0.000	523896	0.1202	0.2289	184	127.38- 212.31		
	4.867	4.865	0.000	422430	0.1215	0.2315	148	99.88- 166.46		
- Mark AROCLOR-1242 Undetected.										



Sample: K32C91AC Type: SAMPLE Inj.Date: 05-DEC-2008 00:55 Col: 2 restek pest clpI

- \$+v 1 TCMX
- 2 AROCLOR-1221
- v! 3 AROCLOR-1016
- 4 AROCLOR-1232
- +v 5 AROCLOR-1242**
- 6 AROCLOR-1248
- 7 AROCLOR-1254
- 8 AROCLOR-1260
- M+ 15 TOTAL PCB
- \$+ 9 DCB



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Hit# RT(min) ExpRT RRT Response Amount Conc Ratio Target Ratio Flags Report:

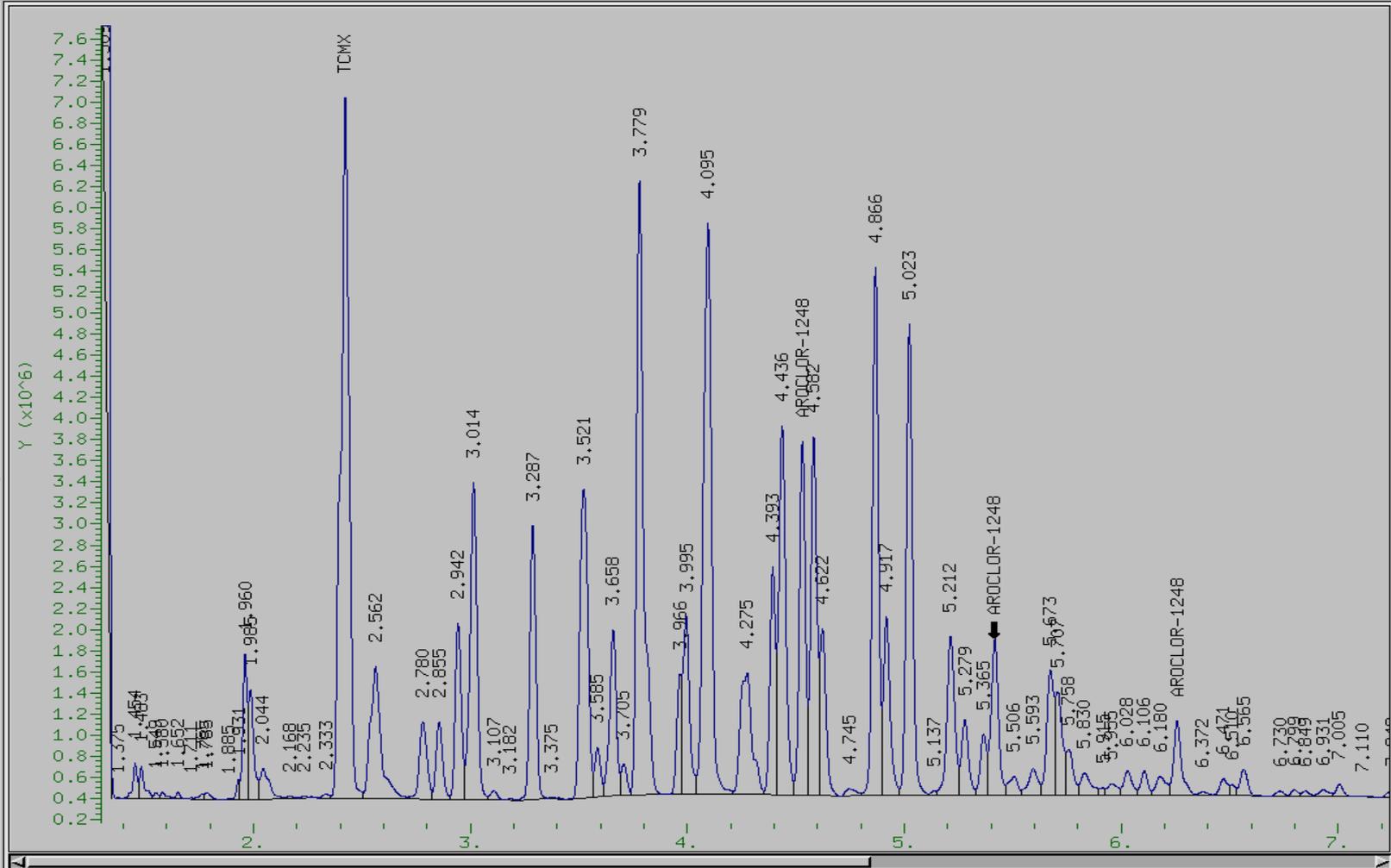
Hit#	RT(min)	ExpRT	RRT	Response	Amount	Conc	Ratio	Target Ratio	Flags	Report:
1	3.015	3.011	0.000	285270	0.1111	0.2115	100	80.00- 120.00		
	3.520	3.514	0.000	626354	0.1247	0.2375	220	150.63- 251.05		
	4.095	4.091	0.000	1237078	0.1213	0.2310	434	298.11- 496.86		
	4.265	4.261	0.000	523896	0.1202	0.2289	184	127.38- 212.31		
	4.867	4.865	0.000	422430	0.1215	0.2315	148	99.88- 166.46		

- Mark AROCLOR-1242 Undetected.

Sample: K32EQ1AA Type: SAMPLE Inj.Date: 05-DEC-2008 18:16 Col: 2 restek pest clpI

- \$+v 1 TCMX
- 2 AROCLOR-1221
- 3 AROCLOR-1016
- 4 AROCLOR-1232
- v! 5 AROCLOR-1242
- +v! 6 AROCLOR-1248**
- 7 AROCLOR-1254
- 8 AROCLOR-1260
- M+ 15 TOTAL PCB
- \$+ 9 DCB

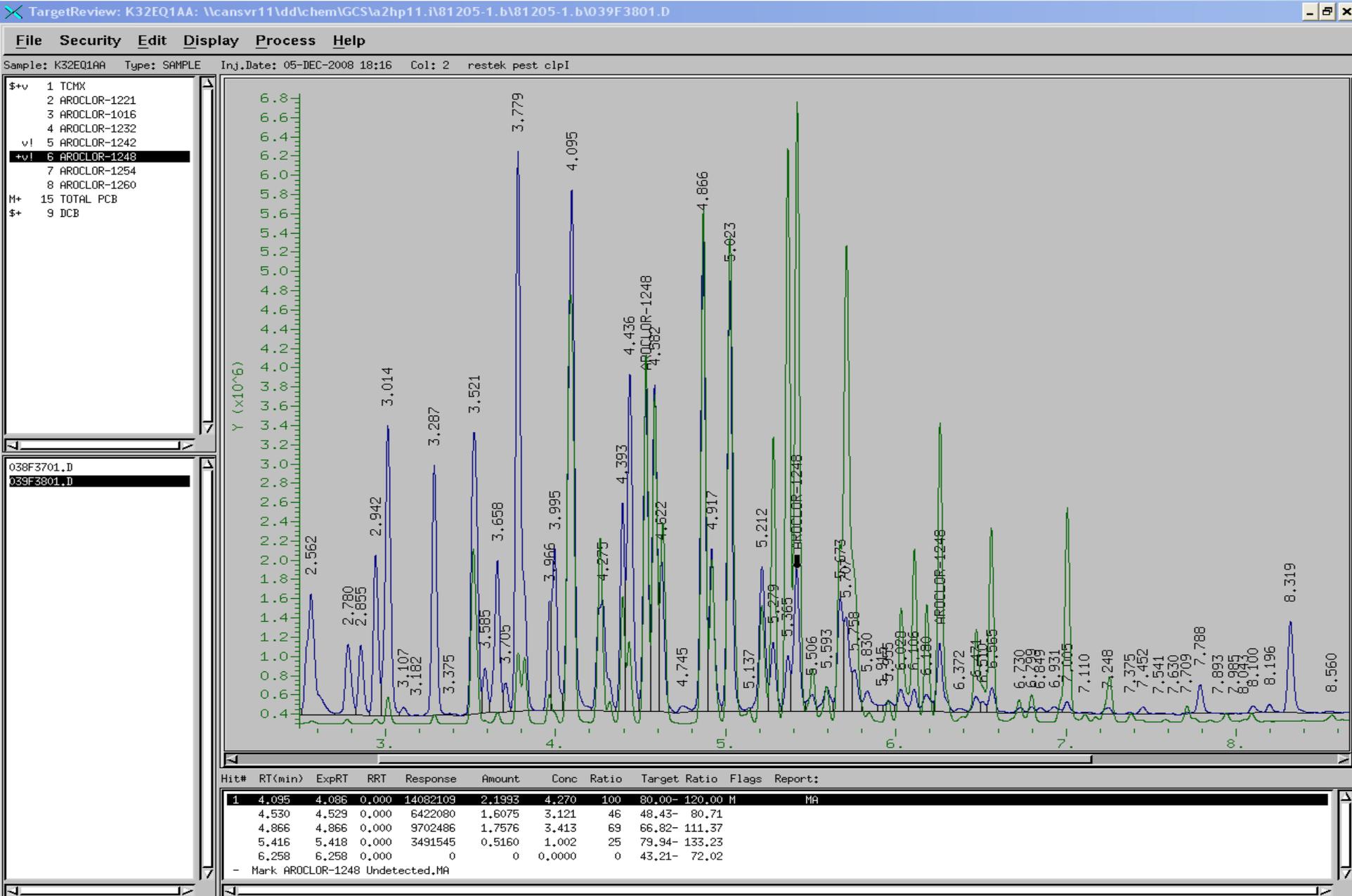
038F3701.D
039F3801.D

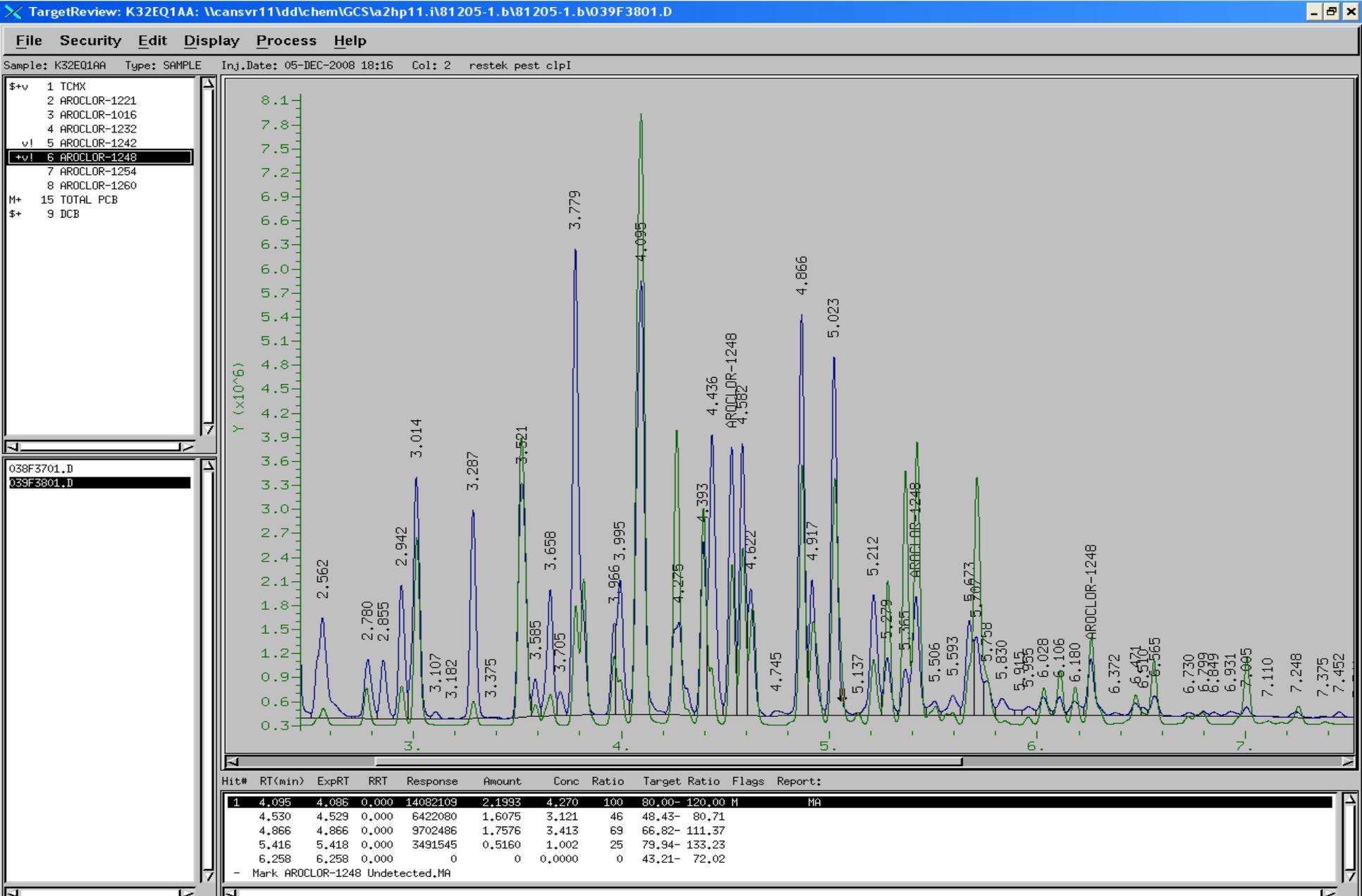


Hit# RT(min) ExpRT RRT Response Amount Conc Ratio Target Ratio Flags Report:

Hit#	RT(min)	ExpRT	RRT	Response	Amount	Conc	Ratio	Target Ratio	Flags	Report:
1	4.095	4.086	0.000	14082109	2.1993	4.270	100	80.00- 120.00	M	MA
	4.530	4.529	0.000	6422080	1.6075	3.121	46	48.43- 80.71		
	4.866	4.866	0.000	9702486	1.7576	3.413	69	66.82- 111.37		
	5.416	5.418	0.000	3491545	0.5160	1.002	25	79.94- 133.23		
	6.258	6.258	0.000	0	0	0.0000	0	43.21- 72.02		

- Mark AROCLOR-1248 Undetected,MA





- QUESTIONS?