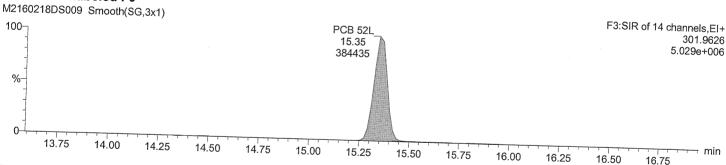
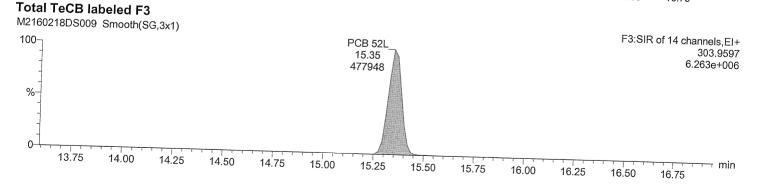
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16.75





¬ min

Quantify Sample Report MassLynx 4.0 SP1 Acquired Date Page 8 of 2 Dataset: C:\MassLynx\Default.pro\M2160218D\_\M2160218D\_samples\_1668A.qld Last Altered: February 20, 2016 01:21:44 PM Eastern Standard Time Printed: February 20, 2016 01:24:13 PM Eastern Standard Time ID: Anchor QEA, PG-WS-1-MUS-COC-160104, Ti Description: BRP510-01R Vial: 9 Date: 18-FEB-2016 Time: 01:09:02 **Total TeCB F4** M2160218DS009 Smooth(SG,3x1) 100 PCB 61/70/74/76 1. F4:SIR of 14 channels,EI+ 18.34 PCB 66 58857 289.9224 18.57 4.853e+005 24866 PĈB 63 PCB 56 PCB 60 PCB 72 18.13 17.20 19.22 17.75 2615 19.06 19.78 1115 2778 PCB 77 3642 2689 21.89 17.00 17.50 18.00 1311 18.50 19.00 19.50 20.00 20.50 ¬ min 21.00 21.50 Total TeCB F4 22.00 22.50 M2160218DS009 Smooth(SG,3x1) PCB 61/70/74/76 100 F4:SIR of 14 channels,EI+ 18.34 PCB 66 77654 291.9194 18.57 6.337e+005 32432 % PCB 56 PCB 60 PCB 67 17.95 19.06 3451 3886 19.78 PCB 77 4532 3407 21.87 17.00 17.50 18.00 18.50 1823 19.00 19.50 20.00 20.50 21.00 ¬ min 21.50 Total TeCB labeled F4 22.00 22.50 M2160218DS009 Smooth(SG,3x1) 100-F4:SIR of 14 channels,EI+ PCB 81L 301.9626 PCB 77L 21.41 1.228e+006 116831 21.85 % 109690 17.00 17.50 18.00 18.50 19.00 19.50 20.00 20.50 21.00 ¬ min Total TeCB labeled F4 21.50 22.00 22.50 M2160218DS009 Smooth(SG,3x1) 100-F4:SIR of 14 channels,EI+ PCB 81L PCB 77L 303.9597 21.41 21.85 1.519e+006 147420 143456 17.00 17.50 18.00 18.50 19.00 19.50

20.00

20.50

21.00

21.50

22.00

min

**Quantify Sample Report** MassLynx 4.0 SP1 Acquired Date Page 9 of 23 Dataset:  $C:\\ \label{lem:complex} C:\\ \label{lem:complex} M2160218D\_\\ \label{lem:complex} D_{\mbox{\sc mples}}_{\mbox{\sc mples}}_{\mbo$ February 20, 2016 01:21:44 PM Eastern Standard Time Last Altered: Printed: February 20, 2016 01:24:13 PM Eastern Standard Time ID: Anchor QEA, PG-WS-1-MUS-COC-160104, Ti Description: BRP510-01R Vial: 9 Date: 18-FEB-2016 Time: 01:09:02 **Total PeCB F3** M2160218DS009 Smooth(SG,3x1) 100 F3:SIR of 14 channels,EI+ PCB 96 325.8805 16.16 1.462e+004 1112 % 6 15.94 13.75 14.00 14.25 14.50 14.75 15.00 15.25 15.50 15.75 16.00 16.25 16.50 16.75 **Total PeCB F3** M2160218DS009 Smooth(SG,3x1) 100 F3:SIR of 14 channels,EI+ PCB 96 327.8775 16.16 8.512e+003 686 % 15.76 13.75 14.00 14.25 14.50 14.75 15.00 15.25 15.50 15.75 ¬ min 16.00 16.25 16.50 16.75 Total PeCB labeled F3 M2160218DS009 Smooth(SG,3x1) 100 F3:SIR of 14 channels,EI+ PCB 104L 337.9207 15.92 8.831e+005 70227 % 13.75 14.00 14.25 14.50 14.75 15.00 15.25 15.50 15.75 ⊤ min 16.00 16.25 16.50 16.75 Total PeCB labeled F3 M2160218DS009 Smooth(SG,3x1) 100-F3:SIR of 14 channels,EI+ PCB 104L 339.9178 15.91 5.475e+005 43565 %

13.75

16.75

14.00

14.25

14.50

14.75

15.00

15.25

15.50

15.75

16.00

16.25

Page 10 of 23

Dataset:

C:\MassLynx\Default.pro\M2160218D\_\M2160218D\_samples\_1668A.qld

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February 20, 2016 01:21:44 PM Eastern Standard Time February 20, 2016 01:24:13 PM Eastern Standard Time

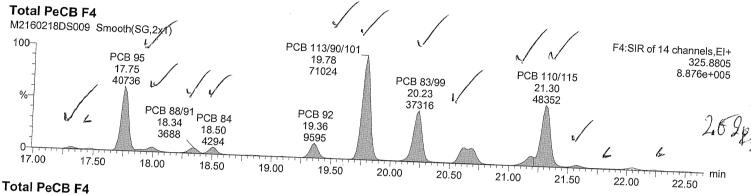
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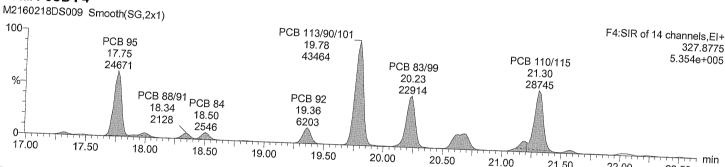
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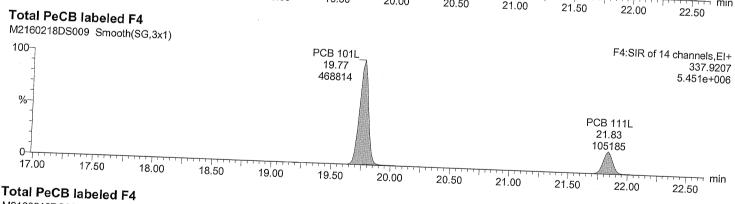
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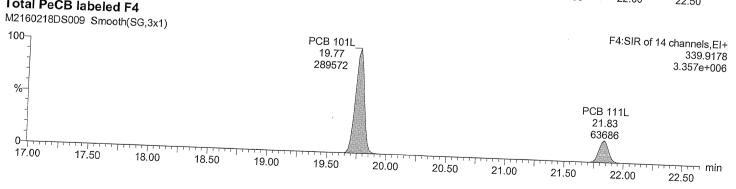
Vial: 9

Date: 18-FEB-2016 Time: 01:09:02











25.00

**Total PeCB labeled F5** M2160218DS009 Smooth(SG,3x1) PCB 105L F5:SIR of 14 channels,EI+ **PCB 123L** 24.81 100 **PCB 118L** 23.49 339.9178 92518 23.77 1.013e+006 99598 95388 PCB 126L 27.69 89611 % 23.00 23.50 ⊤⊤ min 24.00 24.50 25.00 25.50 26.00 26.50 27.00 27.50 28.00

25.50

26.00

26.50

27.00

27.50

23.00

23.50

24.00

24.50

开 min

Dataset:

C:\MassLynx\Default.pro\M2160218D\_\M2160218D\_samples\_1668A.qld

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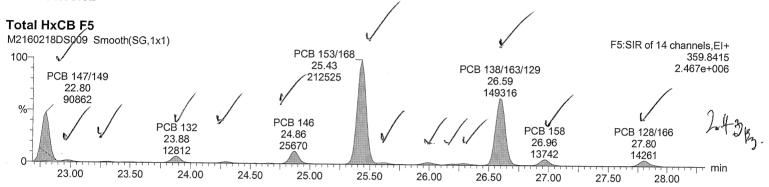
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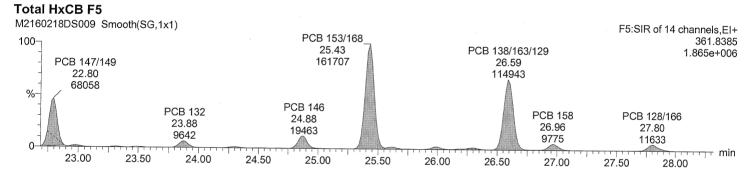
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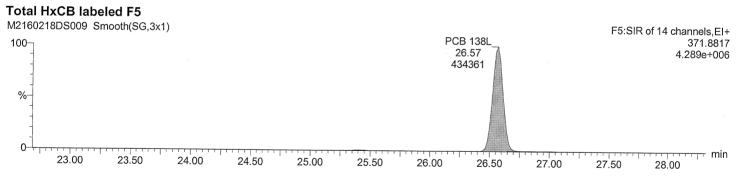
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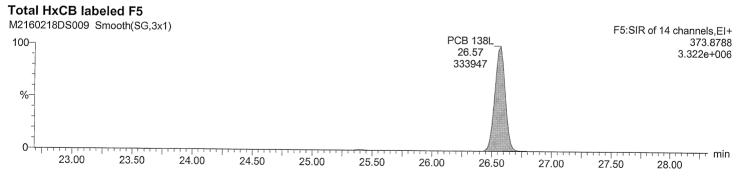
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**Quantify Sample Report** MassLynx 4.0 SP1 Acquired Date Page 14 of 23  $C:\\ \label{lem:complex} C:\\ \label{lem:complex} M2160218D\_\\ \label{lem:complex} D_{\mbox{\sc mples}} 1668A.\\ \mbox{\sc qld} D_{\mbox{\sc mples}} D_{\mbox{$ Dataset: February 20, 2016 01:21:44 PM Eastern Standard Time Last Altered: Printed: February 20, 2016 01:24:13 PM Eastern Standard Time ID: Anchor QEA, PG-WS-1-MUS-COC-160104, Ti Description: BRP510-01R Vial: 9 Date: 18-FEB-2016 Time: 01:09:02 **Total HxCB F6** M2160218DS009 Smooth(SG,3×1) 100 PCB 156/157 F6:SIR of 14 channels,EI+ 30.68 13331 PCB 167 1.113e+005 29.53 5964 %-32.13 28.48 29.16 2269 29.78 6 33.43 29.00 30.00 31.00 32.00 33.00 34.00 35.00 **Total HxCB F6** M2160218DS009 Smooth(SG,3x1) PCB 156/157 100 F6:SIR of 14 channels,EI+ 30.68 361.8385 PCB 167 10569 8.763e+004 29.53 5039 %-32.13 28.48 29.16 1597 29.78 33.45 29.00 30.00 31.00 32.00 33.00 34.00 35.00 Total HxCB labeled F6 M2160218DS009 Smooth(SG,3x1) PCB 156L/157L 100-F6:SIR of 14 channels,EI+ PCB 167L 30.66 371.8817 29.50 275092 2.113e+006 148674 PCB 169L % 34.08 95843 29.00 30.00 31.00 32,00 min 33.00 34.00 35.00 Total HxCB labeled F6 M2160218DS009 Smooth(SG,3x1) PCB 156L/157L 100-F6:SIR of 14 channels,EI+ PCB 167L 30.68 373.8788 29.50 215880 1.654e+006 116493 PCB 169L

AutoSpec - Ultima 3

29.00

35.00

→ min

34.08 76804

34.00

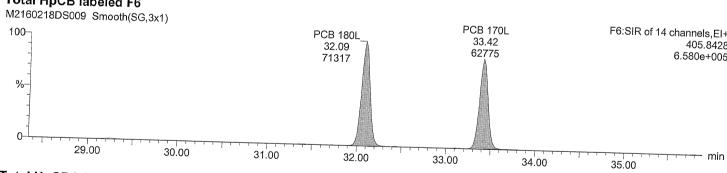
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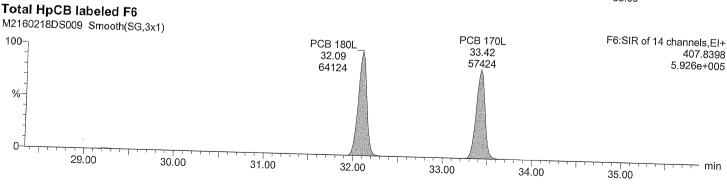
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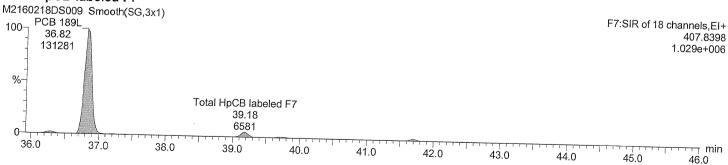
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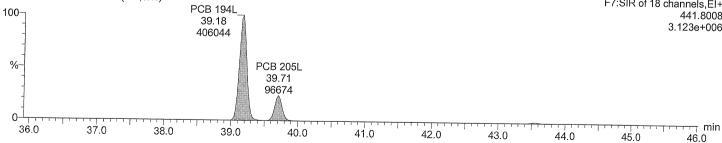
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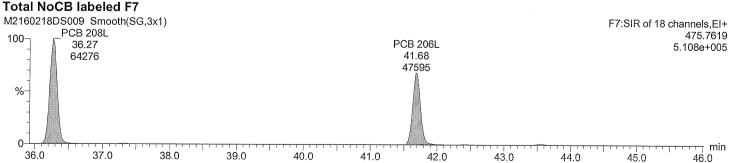


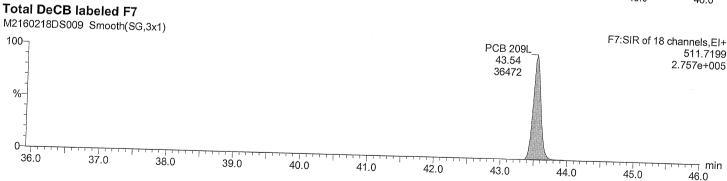


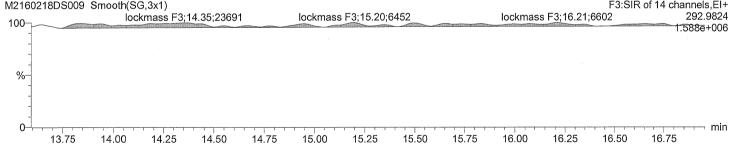


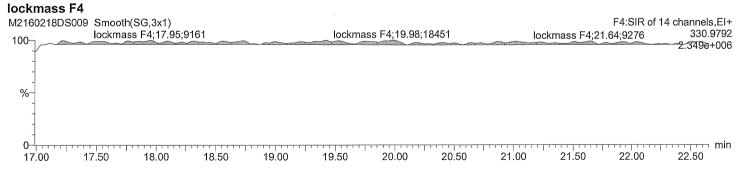
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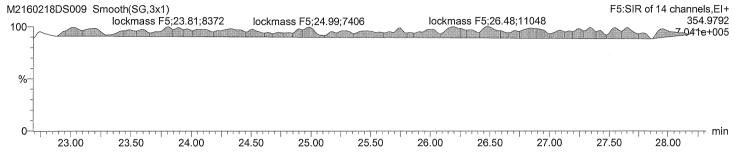
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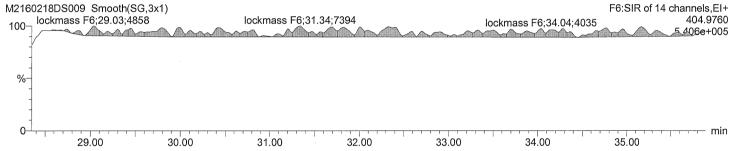
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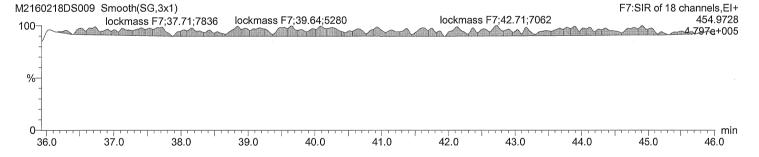


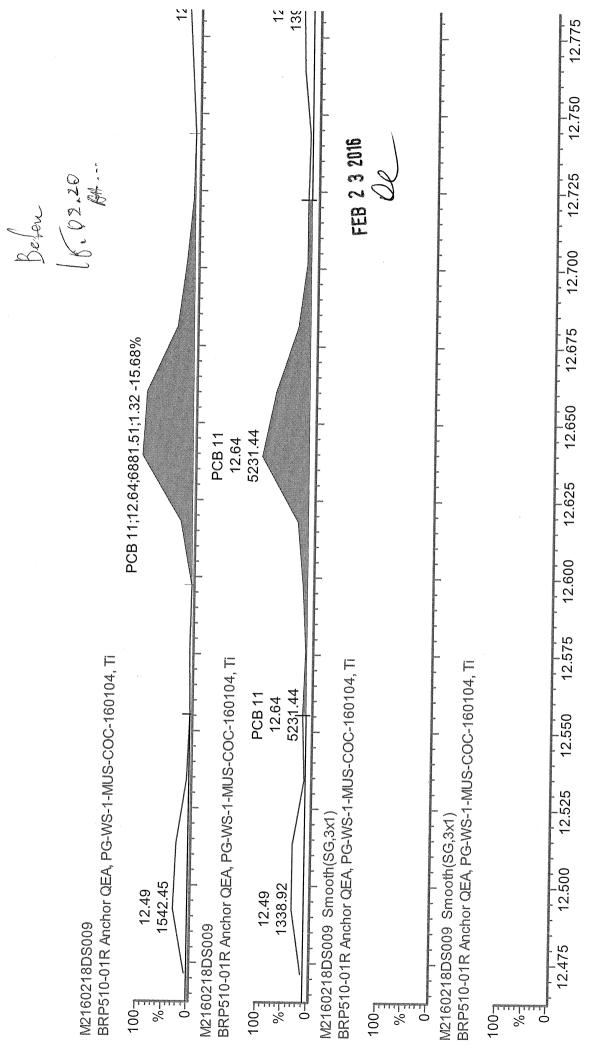


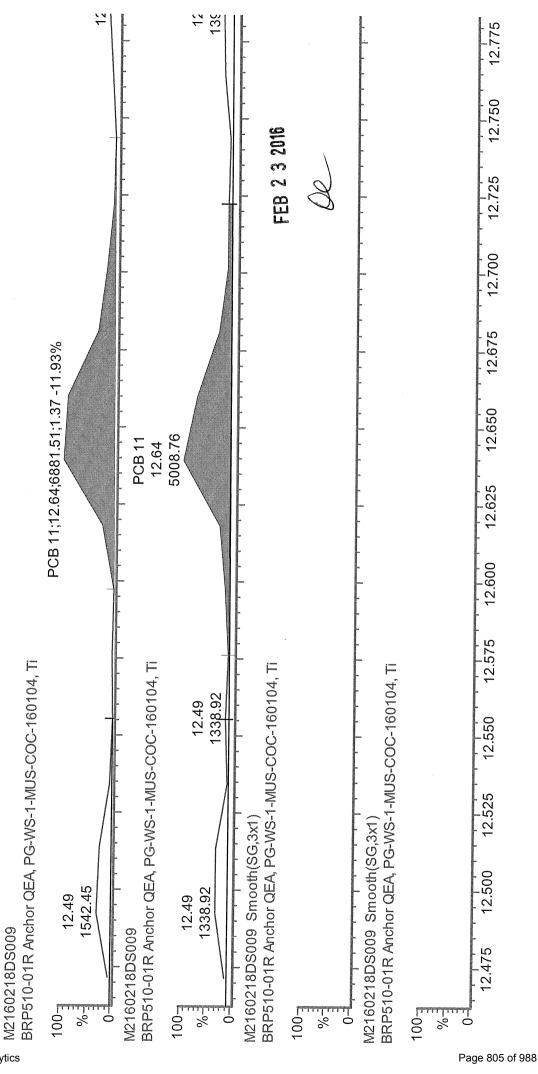
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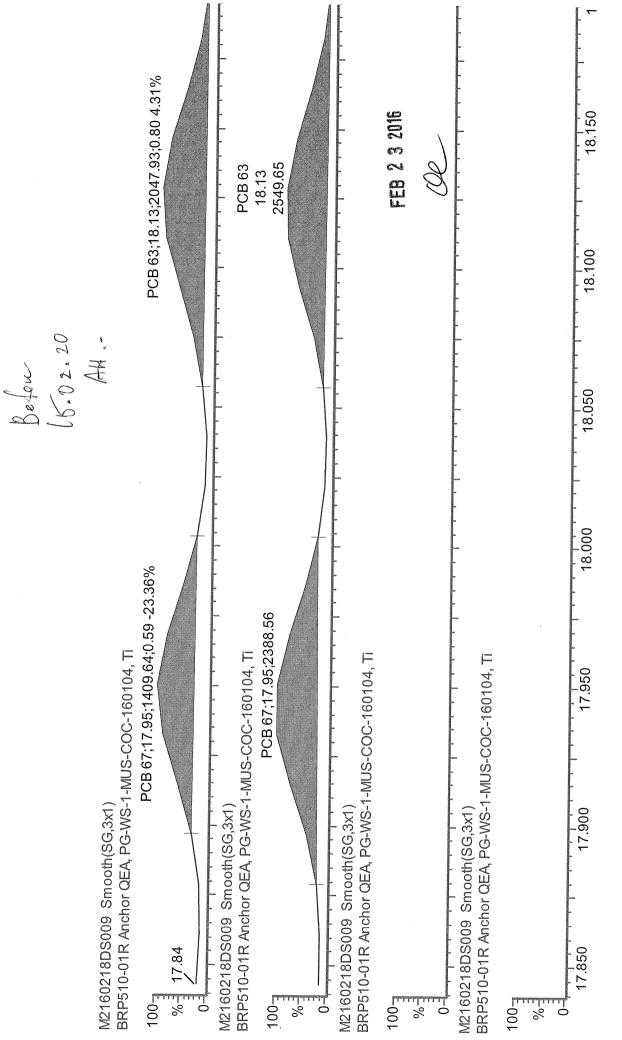


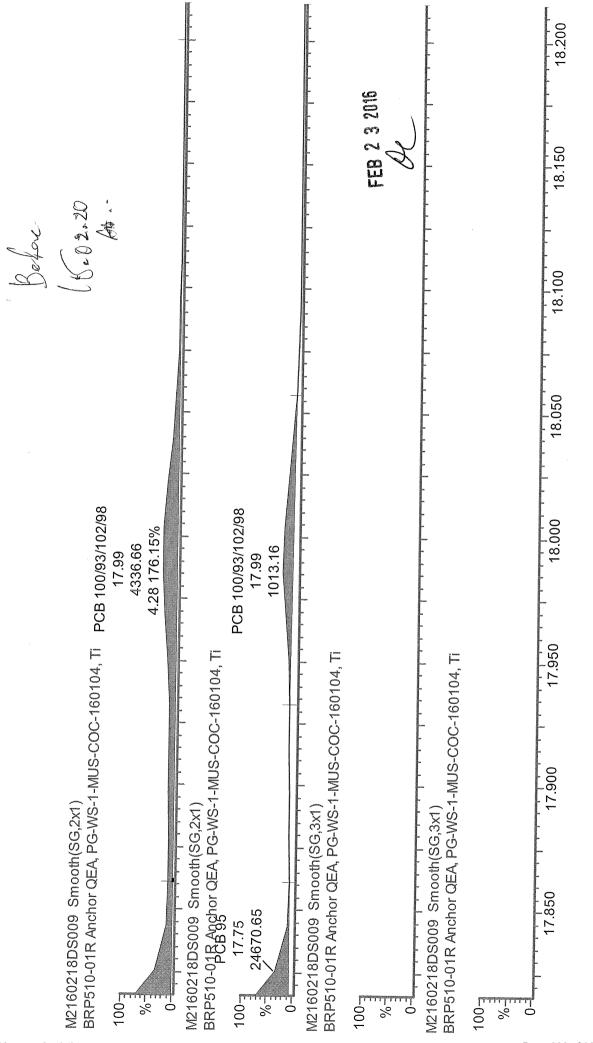
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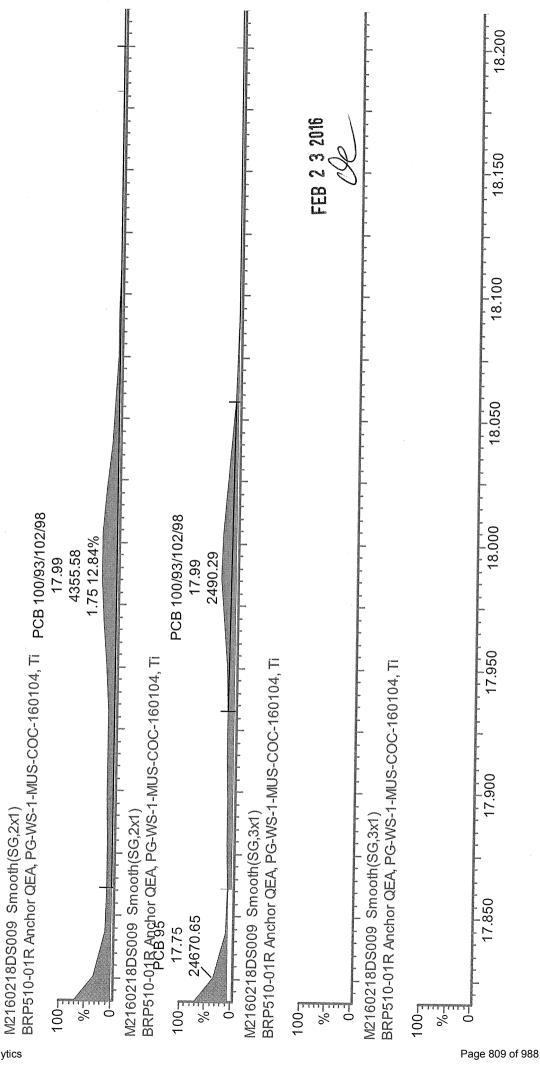




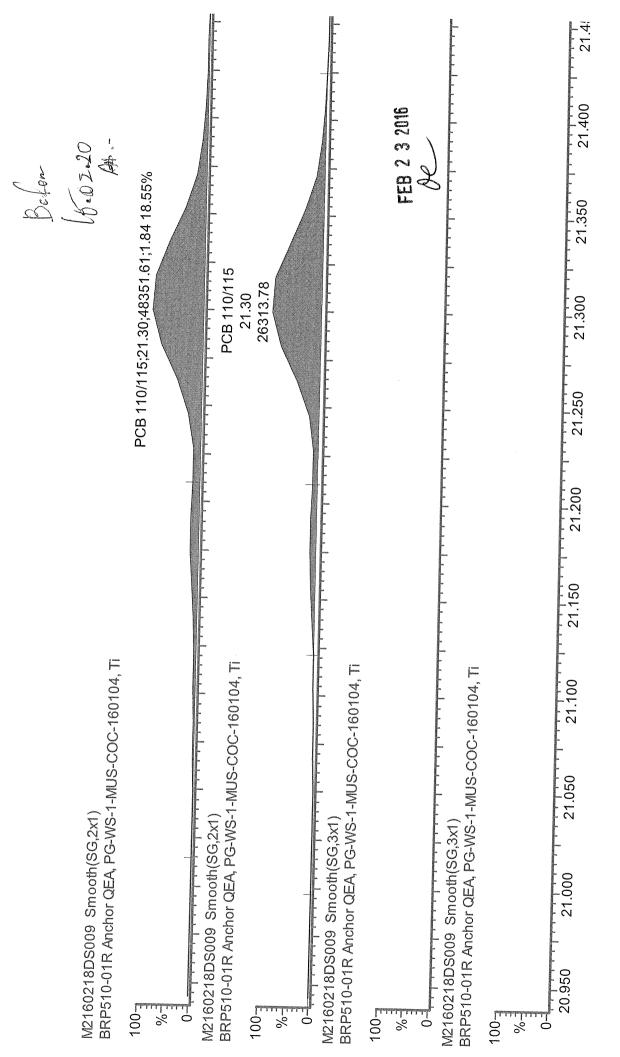


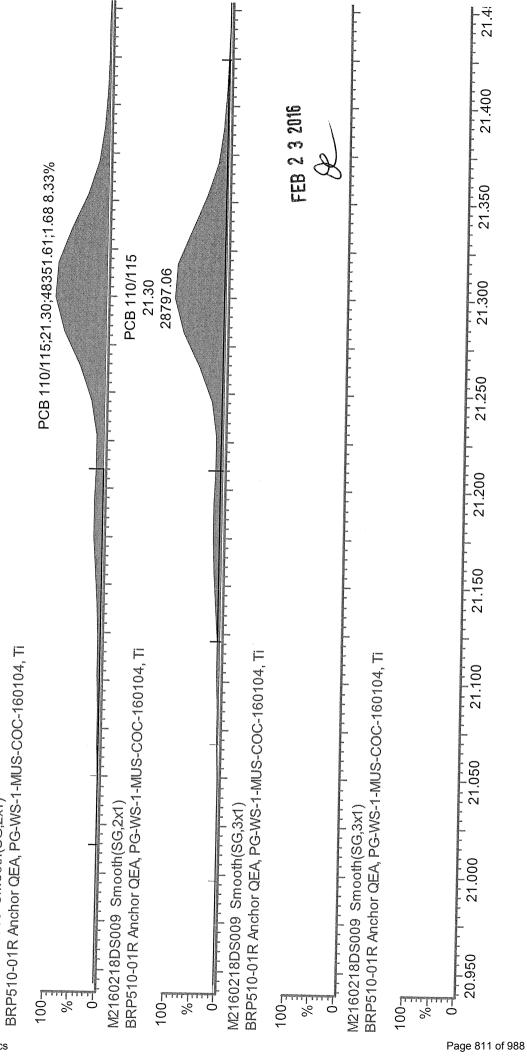






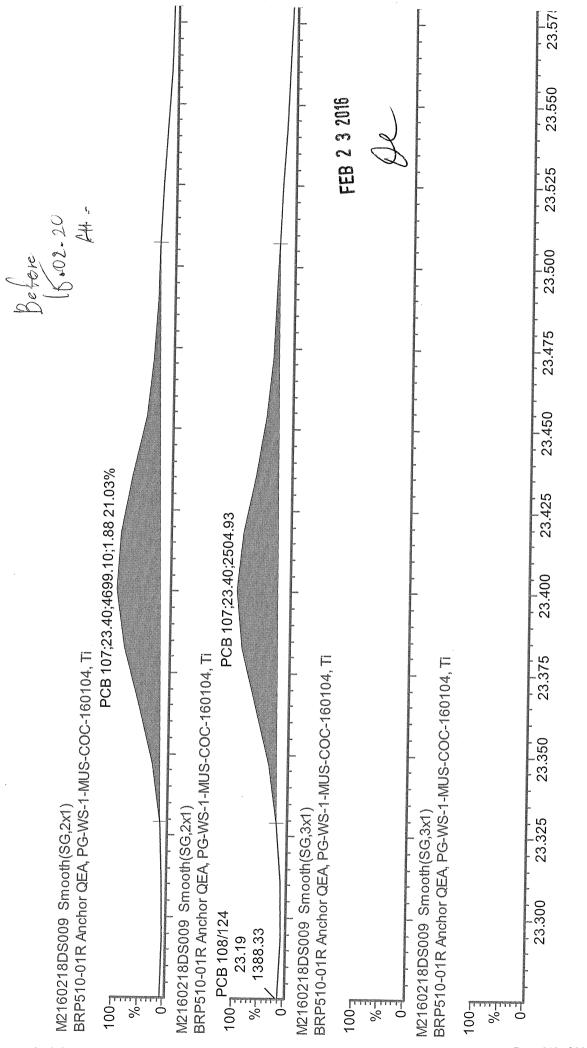
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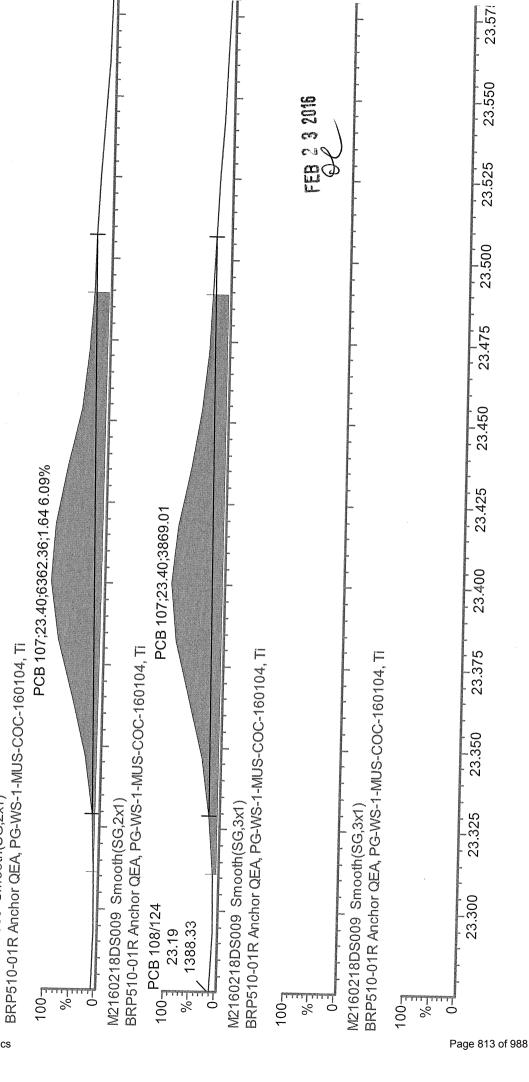




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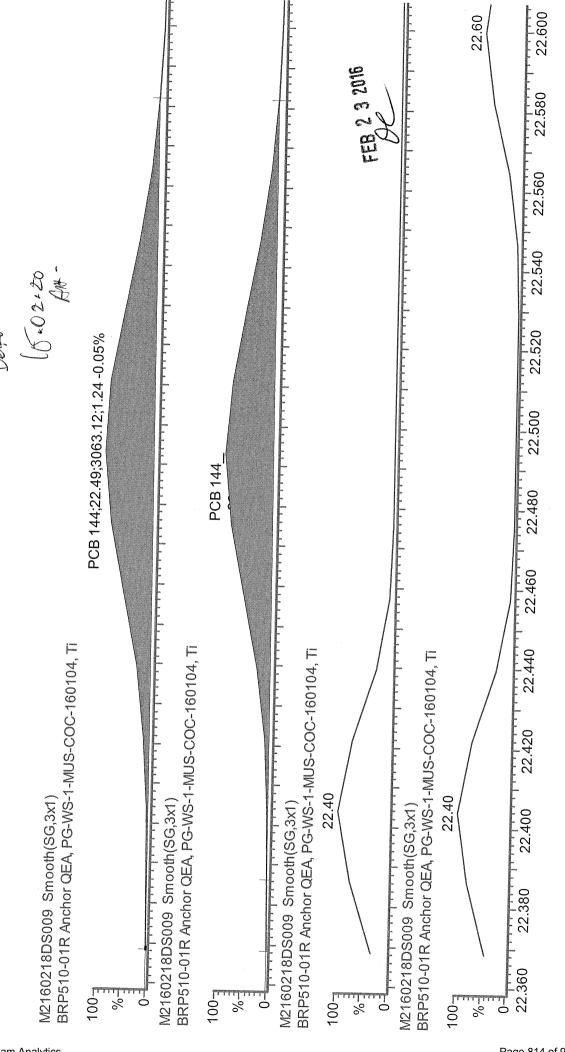
M2160218DS009 Smooth(SG,2x1)

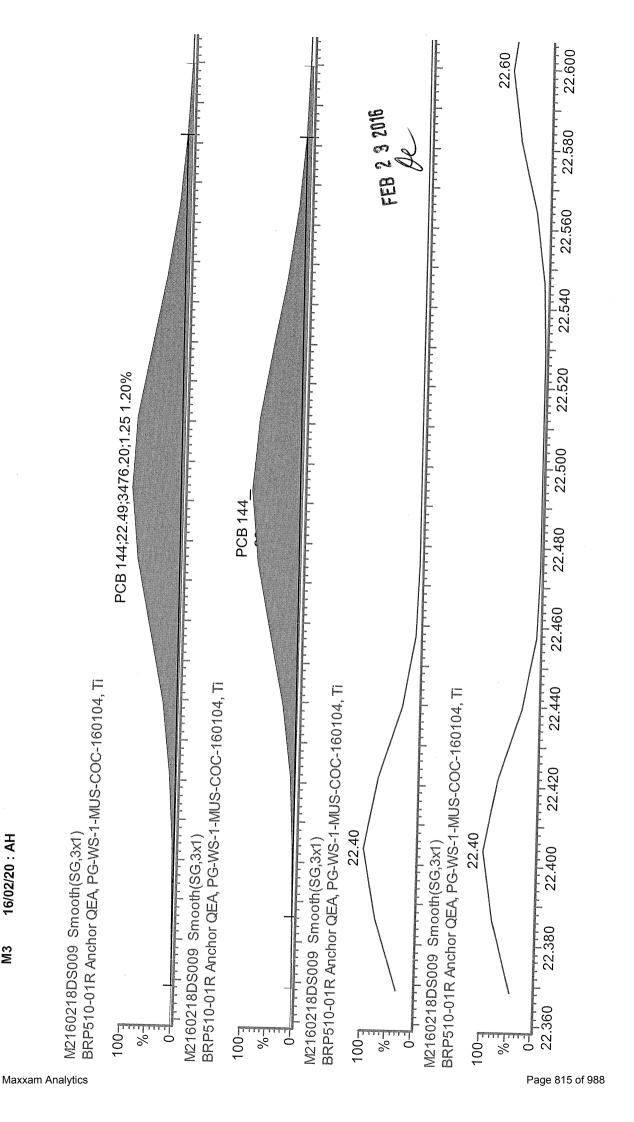


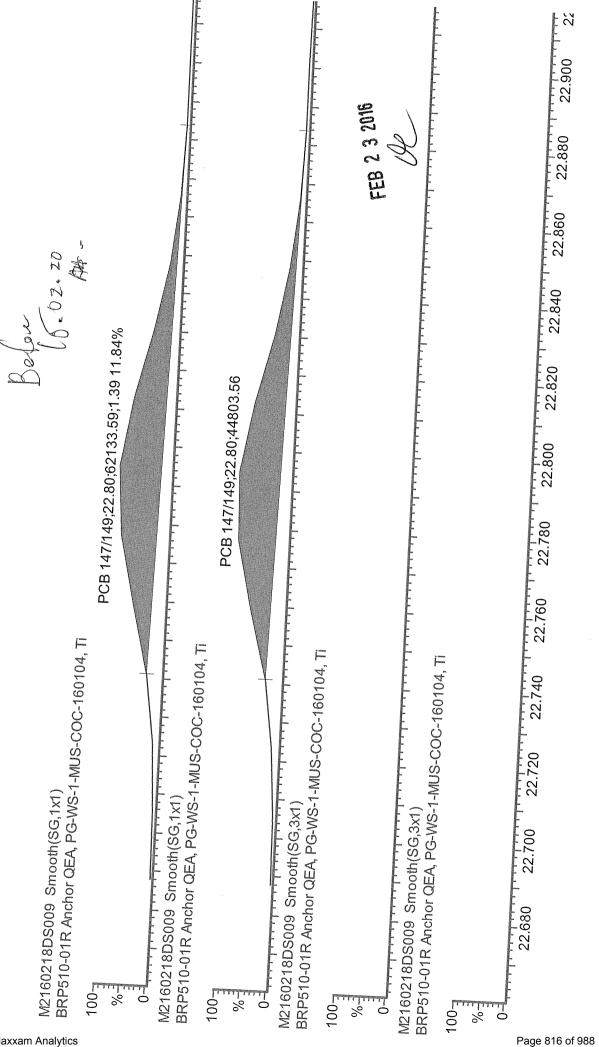


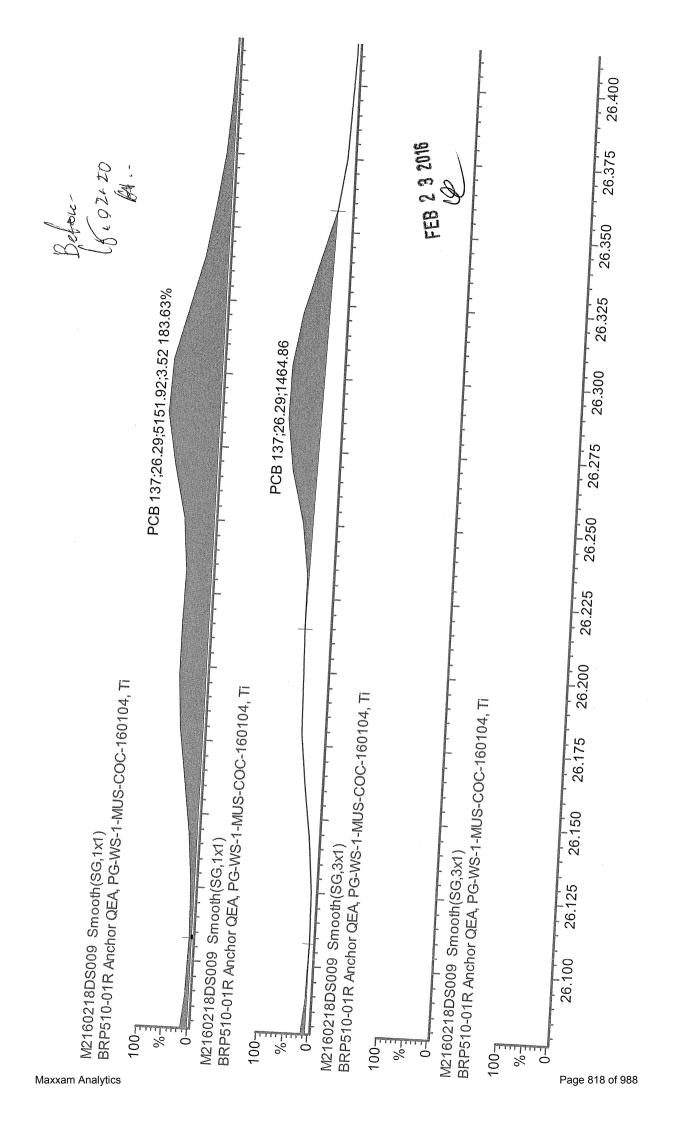
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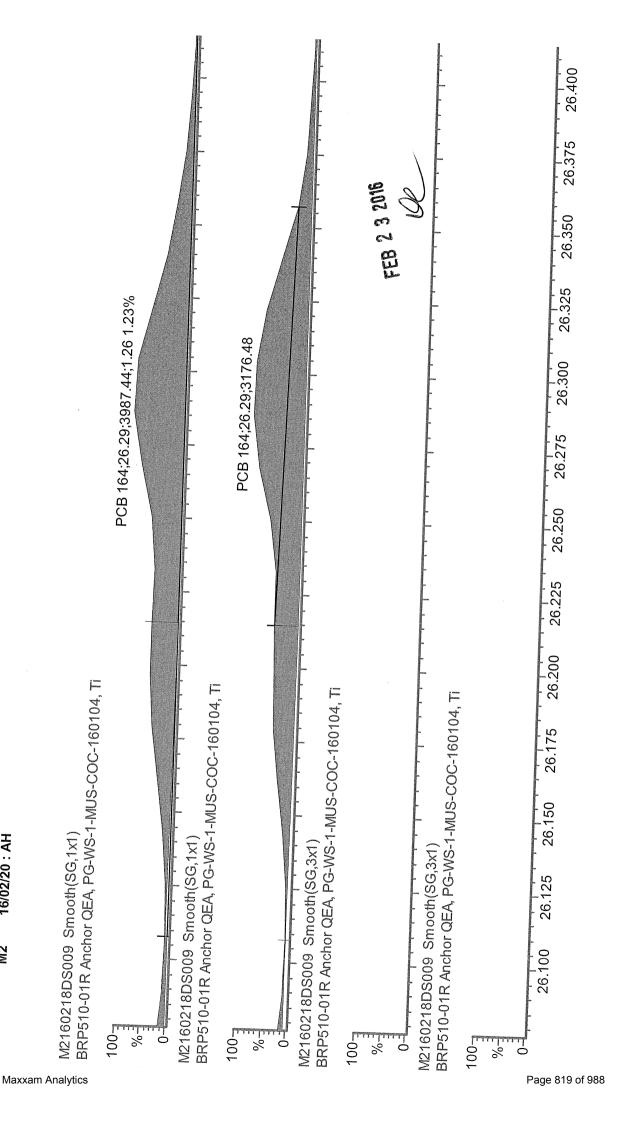
M2160218DS009 Smooth(SG,2x1)











Filename M2160218DS010 Acquired 18/02/2016 1:59

Cali File M2160218D\_209

Sample ID BRP510-01R:D1 Comments Instrument File Ultima 3 Sample Size 10.173

Dil Fac 1.00

•								Isomers					
Name 1 PCB 1	mass 188	RT NotFnd	Area *	ratio *	Tot Area	ng -0.00063	Code	isomers	DL -0.00063	S/N *	Mod no	rrf 1.082	Rec -
2 PCB 2	MoCB 190 188 MoCB 190	8.98 NotFnd 10.10	*	no *	*	-0.00057			-0.00057	*	no	1.2	-
3 PCB 3	188	NotFnd	*	no *	*	-0.00063			-0.00063	*	no	1.079	-
4 PCB 4	MoCB 190 222	10.19 <b>10.30</b>	* 1208	no <b>1.68</b>	1925	0.003436			-0.00204	* 38	yes	0.954	_
5 DCP 10	DiCB 224	10.30	717	yes *	*	-0.00158			0.00450	3		4 220	
5 PCB 10	222 DiCB 224	NotFnd 10.37	*	no *	*				-0.00158	*	no	1.229	-
6 PCB 9	222 DICB 224	NotFnd 11.18	*	no	-	-0.00219			-0.00219	*	no	1.311	-
7 PCB 7	222 DiCB 224	NotFnd 11.26	*	* no	*	-0.00246			-0.00246	*	no	1.165	-
8 PCB 6	222 DiCB 224	<b>11.36</b> 11.34	<b>2399</b> 1612	1.49 yes	4011	0.002575			-0.00217	37 3	no	1.319	-
9 PCB 5	222 DICB 224	NotFnd 11.50	*	no	*	-0.00292			-0.00292	*	no	0.983	-
10 PCB 8	222 DiCB 224	<b>11.55</b> 11.55	<b>9248</b> 6294	1.47	15542	0.009037			-0.00197	141 10	no	1.456	-
11 PCB 14	222	NotFnd	*	yes *	*	-0.00215			-0.00215	*	no	1.332	-
12 PCB 11	DICB 224 222	12.26 <b>12.64</b>	7118	no 1.36	12351	0.00814			-0.00223	73	no	1.285	-
13 PCB 13/12	DICB 224 222	12.66 NotFnd	5233 *	yes *	*	-0.00237			-0.00237	6	no	1.21	- ,
14 PCB 15	DICB 224 222	12.82 12.95	25592	no 1.59	41721	0.027007			-0.00329	261	no	0.871	-
15 PCB 19	DICB 224 256	12.96 11.68	16129 <b>1560</b>	yes 0.93	3239	0.005257			-0.00257	19 10	no	0.899	-
16 PCB 30/18	TriCB 258 256	11.70 <b>12.49</b>	1678 <b>23070</b>	yes 1.06	44861	0.04289			-0.00284	13 152	no	0.813	-
17 PCB 17	TriCB 258 <b>256</b>	12.48 <b>12.68</b>	21791 <b>4166</b>	yes 0.99	8357	0.009516			-0.00338	152 27	no	0.683	-
18 PCB 27	TriCB 258 <b>256</b>	12.69 <b>12.79</b>	4191 <b>4665</b>	yes 1.07	9029	0.007007			-0.0023	28 27	no	1.002	-
19 PCB 24	TriCB 258 256	12.79 NotFnd	4364 *	yes *	*	-0.0027			-0.0027	25	no	0.855	-
20 PCB 16	TriCB 258 <b>256</b>	12.87 <b>12.91</b>	* 7937	no <b>1.05</b>	15520	0.024108			-0.00461	* 41	no	0.501	-
21 PCB 32	TriCB 258 <b>256</b>	12.90 <b>13.14</b>	7583 <b>7581</b>	yes 1.04	14877	0.010585			-0.00211	37 46	no	1.093	-
22 PCB 34	TriCB 258 256	13.14 NotFnd	7296 *	yes *	*	-0.00086			-0.00086	47	no	1.235	-
23 PCB 23	TriCB 258 256	13.74 NotFnd	*	no *	*	-0.00103			-0.00103	*	no	1.033	_
24 PCB 26/29	TriCB 258 <b>256</b>	13.83 <b>13.97</b>	* 19325	no <b>1.04</b>	37890	0.024129			-0.00087	* 98	no	1.221	-
25 PCB 25	TriCB 258 <b>256</b>	13.99 <b>14.10</b>	18565 <b>9549</b>	yes 1.09	18344	0.010692			-0.0008	96 47	no	1.334	-
26 PCB 31	TriCB 258 <b>256</b>	14.10 <b>14.26</b>	8795 <b>102856</b>	yes 1.03	203142	0.118311			~0.0008	45 516	no	1.335	_
27 PCB 28/20	TriCB 258 <b>256</b>	14.27 <b>14.41</b>	100286 <b>266289</b>	yes 1.04	521393	0.340584			-0.0009	505 1278	no	1.191	-
28 PCB 21/33	TriCB 258 <b>256</b>	14.43 <b>14.53</b>	255104 <b>47456</b>	yes 0.95	97131	0.060178			-0.00085	1323 216	no	1.255	_
29 PCB 22	TriCB 258 <b>256</b>	14.53 <b>14.75</b>	49675 <b>41209</b>	yes 1	82634	0.057022			-0.00095	225 196	no	1.127	-
30 PCB 36	TriCB 258 256	14.77 NotFnd	41425 *	yes *	*	-0.00068			-0.00068	203	no	1.57	_
31 PCB 39	TriCB 258 256	15.60 <b>15.84</b>	* 1645	no <b>0.92</b>	3428	0.002019			-0.00081	*	no	1.32	_
32 PCB 38	TriCB 258 256	15.83 NotFnd	1783 *	yes *	*	-0.00074			-0.00074	9	no	1.438	_
33 PCB 35	TriCB 258 <b>256</b>	16.18 <b>16.45</b>	* 2215	no <b>1.07</b>	4287	0.002088			-0.00067	*	no	1.597	_
34 PCB 37	TriCB 258 <b>256</b>	16.45 <b>16.70</b>	2072 <b>37828</b>	yes 1.07	73136	0.042822			-0.00118	9 160	no	0.906	_
35 PCB 54	TriCB 258 290	16.70 NotFnd	35308 *	yes *	*	-0.00142			-0.00142	152	no .	0.911	·
36 PCB 53/50	TCB 292 290	13.08 <b>14.10</b>	* 15069	no <b>0.82</b>	33510	0.040064			-0.00282	* 58	no	0.654	_
37 PCB 45/51	TCB 292 290	14.12 14.46	18441 <b>8765</b>	yes 0.79	19863	0.024552			-0.00292	56 31	no	0.633	_
38 PCB 46	TCB 292 290	14.49 14.64	11098 <b>4562</b>	yes 0.8	10285	0.014531			-0.00232	31 17	no	0.554	_
39 PCB 52	TCB 292 290	14.64 15.36	5723 111120	yes 0.81	248582	0.233146			-0.00333	16 418	no	0.834	_
	TCB 292	15.38	137462	yes	2-10002					405			
40 PCB 73	290 TCB 292	NotFnd 15.46	*	* no	*	-0.00227			-0.00227	*	no	0.813	-
41 PCB 43	<b>290</b> TCB 292	<b>15.53</b> 15.53	<b>4812</b> 6405	<b>0.75</b> yes	11217	0.01699			-0.00358	17 16	no	0.516	-
42 PCB 69/49	<b>290</b> TCB 292	<b>15.65</b> 15.64	<b>48058</b> 60646	0.79 yes	108704	0.099901			-0.00217	181 178	no	0.851	-

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43 PCB 48		290	15.84	27259	0.77	62770	0.072932		-0.00274	98	no	0.673	-
44 PCB 44/47/65	TCB	292	15.84	35511	yes	007054	0.000700			95			
44 PCB 44/4//05	TCB	<b>290</b> 292	<b>15.96</b> 15.98	<b>105163</b> 131891	0.8 yes	237054	0.236792		-0.00236	325 311	no	0.783	-
45 PCB 59/62/75		290	16.16	13707	0.79	31028	0.02388		-0.00182	44	no	1.017	_
	TCB	292	16.17	17321	yes					42			
46 PCB 42	<b>T0</b> 0	290	16.27	21371	0.79	48281	0.055418		-0.00271	72	no	0.682	-
47 PCB 40/41/71	TCB	292 <b>290</b>	16.30 <b>16.58</b>	26910 <b>48044</b>	yes 0.78	109897	0.118822		0.00055	71		0.704	
47 1 00 40/41/11	TCB	292	16.58	61853	yes	109097	0.110022		-0.00255	139 138	no	0.724	-
48 PCB 64		290	16.72	30557	0.81	68358	0.058009		-0.002	103	no	0.922	_
40 000 70	TCB	292	16.71	37801	yes					98			
49 PCB 72	TCB	<b>290</b> 292	<b>17.20</b> 17.19	<b>1577</b> 1918	0.82	3495	0.002096		-0.00071	9	no	1.304	-
50 PCB 68	100	290	17.19	1203	yes 0.82	2667	0.00171		-0.00076	8 6	no	1.22	
	TCB	292	17.40	1464	yes				3,334,3	6			
51 PCB 57		290	17.70	674	0.72	1611	0.001032		-0.00076	5	yes	1.221	-
52 PCB 58	ICB	292 290	17.68 NotFnd	938 *	yes *	*	-0.0009		-0.0009	6		4.005	
02 T OD 00	тсв	292	17.83	*	no		-0.0008		-0.0009	*	no	1.035	-
53 PCB 67		290	17.95	3032	0.77	6988	0.00406		-0.00069	16	yes	1.347	-
54 DOD 40	TCB	292	17.94	3955	yes					17			
54 PCB 63	TCB	<b>290</b> 292	<b>18.13</b> 18.13	<b>2843</b> 3738	0.76	6581	0.00411		-0.00074	16	yes	1.253	-
55 PCB 61/70/74/7		290	18.34	68571	yes 0.76	158729	0.112007		-0.00084	16 253	no	1.109	_
	TCB	292	18.35	90158	yes					254			
56 PCB 66		290	18.57	30751	0.79	69804	0.043987		-0.00075	160	no	1.241	-
57 PCB 55	TCB	292 290	18.58 NotFnd	39053	yes *	*	-0.00093		-0.00093	155	20	0.000	
07 1 00 00	TCB	292	18.71	*	no		-0.00033		-0.00093	*	no	0.998	-
58 PCB 56		290	19.06	4233	0.79	9616	0.007558		-0.00093	24	no	0.995	-
non	TCB	292	19.05	5384	yes					22			
59 PCB 60	TCB	<b>290</b> 292	<b>19.22</b> 19.22	<b>3385</b> 4430	0.76	7816	0.006191		-0.00094	19	no	0.988	-
60 PCB 80	ICB	290	NotFnd	*	yes *	*	-0.00076		-0.00076	20	no	1.224	
	TCB	292	19.48	*	no				0.00010	*			
61 PCB 79	<b>T</b> 00	290	20.62	705	0.74	1652	0.000884		-0.00063	4	yes	1.462	-
62 PCB 78	TCB	292	20.61 NotFnd	947	yes *	*	-0.00072		0.00070	5		1 207	
02 1 05 70	TCB		21.06	*	no		-0.00072		-0.00072	*	no	1.287	-
63 PCB 81		290	NotFnd	*	*	*	-0.0009		-0.0009	*	no	1.027	-
44 BOD 77	TCB		21.43	*	no					*			
64 PCB 77	TCB	290	<b>21.87</b> 21.87	<b>1535</b> 1936	0.79	3471	0.002137		-0.00086	8	no	1.077	-
65 PCB 104	100	326	NotFnd	*	yes *	*	-0.00021		-0.00021	7	no	1.094	_
	PeCB	328	15.94	*	no				0.000	*	110	1.001	
66 PCB 96		326	16.16	-1035.4	1.55	-1703.4	-0.00147	PCB 96 NDR	-0.00026	33	хL	0.874	-
67 PCB 103	PeCB	328 <b>326</b>	16.16 <b>17.31</b>	-668 <b>1444</b>	OK 4.67	2306	0.000040		0.00000	26		0.700	
07 FGB 103	PeCB		17.31	862	1.67 yes	2306	0.002348		-0.00062	13 12	no	0.739	-
68 PCB 94		326	NotFnd	*	*	*	-0.00085		-0.00085	*	no	0.54	_
	PeCB		17.47	*	no					*			
69 PCB 95	PeCB	326	17.75	48679 29298	1.66	77977	0.085931		-0.00067	426	no	0.683	-
70 PCB 100/93/102		326	17.77 18.00	4637	yes 1.59	7547	0.009172		-0.00074	408 24	no	0.619	_
	PeCB		17.93	2910	yes				5.000.	24	110	0.010	
71 PCB 88/91		326	18.34	4320	1.65	6934	0.008346		-0.00073	37	yes	0.625	-
72 PCB 84	PeCB	328 <b>326</b>	18.31 <b>18.50</b>	2614 <b>5268</b>	yes	0.450	0.044044		0.00000	33		0.504	
72 FOD 04	PeCB		18.50	3187	1.65 yes	8456	0.011911		-0.00086	44 39	no	0.534	-
73 PCB 89		326	NotFnd	*	*	*	-0.00079		-0.00079	*	no	0.582	_
	PeCB		18.84	*	no					*			
74 PCB 121	PeCB	326	NotFnd 19.08	*	*	*	-0.0006		-0.0006	*	no	0.761	-
75 PCB 92	FECD	326	19.36	11253	no 1.5	18747	0.023593		-0.00077	90	. no	0.598	_
	PeCB	328	19.35	7494	yes					95			
76 PCB 113/90/101	D - OD	326	19.79	84618	1.66	135537	0.143553		-0.00065	681	no	0.71	-
77 PCB 83/99	PeCB	328 326	19.76 <b>20.23</b>	50918 <b>43946</b>	yes 1.65	70615	0.085249		-0.00074	644 329	no	0.623	_
	PeCB		20.23	26669	yes	70010	0.000240		-0.00074	308	110	0.023	-
78 PCB 112		326	NotFnd	*	*	*	-0.00056		-0.00056	*	no	0.819	-
70 000 400/440/00	PeCB		20.34	*	no					*			
79 PCB 109/119/86	97/125/ PeCB		<b>20.68</b> 20.62	<b>25148</b> 15053	1.67 yes	40201	0.041637		-0.00063	103 103	no	0.726	-
80 PCB 117/116/85	1 000	326	21.19	10349	1.69	16485	0.015589		-0.00058	72	no	0.796	_
	PeCB	328	21.23	6136	yes					66			
81 PCB 110/115		326	21.30	54663	1.65	87816	0.088127		-0.00061	400	no	0.75	-
82 PCB 82	PeCB	328 326	21.32 <b>21.58</b>	33153	yes	2701	0.005043		0.00004	377		0.504	
02 1 0D 02	PeCB		21.50	<b>2307</b> 1476	1.56 yes	3784	0.005043		-0.00081	16 17	no	0.564	-
83 PCB 111		326	NotFnd	*	*	*	-0.00057		-0.00057	*	no	0.809	-
04 000 100	PeCB		21.85	*	no					*			
84 PCB 120		326	NotFnd	*	*	*	-0.00048		-0.00048	*	no	0.951	-
85 PCB 108/124	PeCB	328 <b>326</b>	22.25 23.20	* 2558	no 1.52	4236	0.002839		-0.00096	9	yes	1.122	
	PeCB		23.21	1677	yes	-12.00	J.002030		-0.00000	8	yes	1.144	-
86 PCB 107		326	23.40	6726	1.58	10977	0.007198		-0.00093	21	yes	1.147	-
97 DOD 400	PeCB		23.40	4251	yes *	*	0.001-			19			
87 PCB 123	PeCB	326 328	NotFnd 23.51	*		*	-0.0012		-0.0012	*	no	0.894	-
88 PCB 106		326 326	NotFnd	*	no *	*	-0.00088		-0.00088	*	no	1.218	-
	PeCB	328	23.63	*	no				2.00000	*	5		
89 PCB 118		326	23.79	82808	1.59	134987	0.091663		~0.00109	248	no	0.981	-
	PeCB	328	23.80	52180	yes					241			

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90	PCB 122		326	NotFnd	*	*	*	-0.00099	-0.00099	*	no	1.079	-
91	PCB 114	PeCE	3 328 <b>326</b>	24.08 <b>24.27</b>	* 1278	no 1.53	2112	0.001474	-0.00106	4	yes	1.01	_
		PeCE	3 328	24.28	834	yes				4	y03		
92	PCB 105	PeCE	<b>326</b> 3 328	<b>24.84</b> 24.85	<b>27084</b> 17072	1.59 yes	44156	0.030596	-0.0011	77 75	no	0.977	-
93	PCB 127		326	NotFnd	*	*	*	-0.00087	-0.00087	*	no	1.23	-
94	PCB 126	PeCE	3 328 326	26.20 NotFnd	*	no *	*	-0.0011	-0.0011	*	no	0.977	_
0.5	DOD 455	PeCE	328	27.72	*	no				*			
95	PCB 155	HxCE	360 3 362	NotFnd 19.63	*	no	*	-0.00151	-0.00151	*	no	0.997	-
96	PCB 152		360	NotFnd	*	*	*	-0.00186	~0.00186	*	no	0.813	-
97	PCB 150	HxCE	360	19.78 NotFnd	*	no *	*	-0.00232	-0.00232	*	no	0.65	_
00	DCD 426	HxCE		19.88	*	no	40405			*			
90	PCB 136	HxCE	<b>360</b> 362	<b>20.18</b> 20.18	<b>10688</b> 8798	1.22 yes	19485	0.020979	-0.00198	40 40	no	0.761	-
99	PCB 145	HxCE	360	NotFnd 20.41	*	*	*	-0.00228	-0.00228	*	no	0.662	-
100	PCB 148		360	NotFnd	*	no *	*	~0.00274	-0.00274	*	no	0.551	_
101	PCB 151/135	HxCE	362 360	21.55 <b>22.03</b>	* 30075	no <b>1.28</b>	53479	0.094427	0.00004	*		0.510	
		HxCE		22.04	23405	yes	55479	0.084427	-0.00291	88 85	no	0.519	-
102	PCB 154	HxCE	360	<b>22.23</b> 22.22	<b>2105</b> 1662	1.27 yes	3767	0.004996	-0.00244	7 8	no	0.618	-
103	PCB 144		360	22.49	4117	1.31	7252	0.01057	-0.00269	14	yes	0.562	-
104	PCB 147/149	HxCE	362 360	22.51 <b>22.80</b>	3135 <b>107086</b>	yes 1.31	188804	0.233631	-0.00127	14 660	yes	0.662	
		HxCE	362	22.80	81718	yes			-0.00127	616	yes	0.002	-
105	PCB 134/143	HxCE	<b>360</b> 362	<b>22.97</b> 23.06	<b>2604</b> 1995	1.3 yes	4599	0.006433	-0.00144	20 18	no	0.586	-
106	PCB 139/140		360	23.29	1317	1.28	2343	0.002825	-0.00124	7	no	0.68	-
107	PCB 131	HxCE	362 360	23.31 NotFnd	1026 *	yes *	*	-0.00157	-0.00157	7	no	0.537	
		HxCB	362	23.49	*	no *				*			
108	PCB 142	HxCB	360 362	NotFnd 23.65	*	no	*	-0.00135	-0.00135	*	no	0.626	-
109	PCB 132	Uvon	360	23.88	14794	1.22	26971	0.039446	-0.0015	81	no	0.561	-
110	PCB 133	HxCB	360	23.88 <b>24.29</b>	12177 <b>2657</b>	yes 1.35	4623	0.005768	-0.00128	86 15	no	0.657	_
111	PCB 165	HxCB	362 360	24.31	1966	yes *	*			15 *			
111	FCB 105	HxCB		NotFnd 24.66	*	no		-0.0011	-0.0011	*	no	0.765	-
112	PCB 146	HxCB	360	<b>24.88</b> 24.87	<b>29589</b> 23651	1.25	53240	0.061918	-0.0012	169	no	0.705	-
113	PCB 161		360	NotFnd	*	yes *	*	-0.00087	-0.00087	164	no	0.97	-
114	PCB 153/168	HxCB	362 <b>360</b>	25.01 <b>25.43</b>	* 251274	no <b>1.31</b>	442721	0.425881	-0.00099	* 1432	20	0.852	
		HxCB	362	25.46	191447	yes		0.423001	-0.000099	1342	no	0.002	-
115	PCB 141	HxCB	360 362	<b>25.61</b> 25.60	<b>5202</b> 4085	1.27 yes	9287	0.011173	-0.00124	29 26	no	0.681	-
116	PCB 130		360	26.00	5393	1.23	9775	0.012988	-0.00137	29	no	0.617	-
117	PCB 137	HxCB	362 <b>360</b>	25.99 <b>26.23</b>	4382 <b>1622</b>	yes 1.25	2916	0.003936	-0.00139	27 10	yes	0.607	_
		HxCB	362	26.19	1294	yes				12			
118	PCB 164	HxCB	<b>360</b> 362	<b>26.29</b> 26.28	<b>4460</b> 3508	1.27 yes	7968	0.007154	-0.00092	24 21	yes	0.913	-
119	PCB 138/163/129	9	360	26.59	175425	1.3	310417	0.361162	-0.0012	945	no	0.705	-
120	PCB 160	HxCB	362	26.61 NotFnd	134992	yes *	*	-0.00102	-0.00102	894 *	no	0.822	_
121	PCB 158	HxCB		26.78	* 45360	no 1.22	270.40			*			
121	PCB 156	HxCB	<b>360</b> 362	<b>26.96</b> 26.96	<b>15360</b> 12489	1.23 yes	27849	0.022729	-0.00084	77 79	no	1.004	-
122	PCB 128/166	HxCB	360	<b>27.80</b> 27.79	<b>16645</b> 13136	1.27	29781	0.031546	-0.00109	73	no	0.774	-
123	PCB 159		360	NotFnd	*	yes *	*	-0.00119	-0.00119	72 *	no	1.179	-
124	PCB 162	HxCB	362 360	28.76 29.05	* 332	no 1.18	615	-0.00127	-0.00127	*	yes	1.101	
		HxCB	362	29.06	283	no				*	yes		-
125	PCB 167	HxCB	<b>360</b> 362	<b>29.51</b> 29.53	<b>6749</b> 6053	1.12 yes	12802	0.008454	-0.00148	19 21	no	0.946	-
126	PCB 156/157		360	30.68	14739	1.19	27156	0.018083	-0.00137	35	no	1.017	-
127	PCB 169	HxCB	362	30.71 NotFnd	12416 *	yes *	*	-0.00146	-0.00146	35 *	no	0.954	_
400	DOD 400	HxCB	362	34.11	*	no	*			*			
128	PCB 188	НрСВ	394 396	NotFnd 24.23	*	* no	•	-0.00114	-0.00114	*	no	1.012	-
129	PCB 179	Un CD	394	24.52	13808	1.1	26399	0.025684	-0.0011	69	no	1.047	-
130	PCB 184	HpCB	396	24.52 NotFnd	12591	yes *	*	-0.0012	-0.0012	68 *	no	0.961	_
121	PCB 176	HpCB		25.00 <b>25.33</b>	* 4288	no 1 17	7027			*			
		НрСВ	396	25.32	3649	1.17 yes	7937	0.007873	-0.00113	21 19	no	1.027	-
132	PCB 186	НрСВ	394 396	NotFnd 25.75	*	*	*	-0.00129	-0.00129	*	no	0.899	-
133	PCB 178		394	27.00	6399	no <b>0.99</b>	12866	0.018153	-0.0016	30	no	0.722	-
134	PCB 175	НрСВ	396 <b>394</b>	27.01 <b>27.60</b>	6468 <b>1116</b>	yes 1.07	2161	0.002926	-0.00154	33 5	no.		_
		НрСВ	396	27.62	1045	yes				5	no	0.753	-
135	PCB 187	НрСВ	<b>394</b> 396	<b>27.87</b> 27.88	<b>44121</b> 42442	1.04 yes	86563	0.121953	-0.0016	211 213	no	0.723	-
136	PCB 182		394	NotFnd	*	*	*	-0.00155	-0.00155	*	no	0.747	-
		НрСВ	396	28.10	*	no				*			

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137 PCB 18		<b>394</b> HpCB 396	28.48 28.50	<b>30437</b> 28102	1.08	58539	0,051356		-0.00114	138 132	yes	1.162	-
138 PCB 18	35	394	NotFnd	*	yes *	*	-0.00155		-0.00155	*	no	0.851	-
139 PCB 17		HpCB 396 394	28.56 NotFnd	*	no *	*	-0.00136		-0.00136	*	no	0.97	_
140 PCB 17		HpCB 396 <b>394</b>	28.72 <b>29.16</b>	* 19923	no <b>1.06</b>	38715	0.041838		-0.0014	* 85	no	0.943	_
	H	HpCB 396	29.14	18792	yes *	*				82			
141 PCB 18		394 HpCB 396	NotFnd 29.56	*	no	•	-0.00148		-0.00148	*	no	0.892	-
142 PCB 17		394 HpCB 396	<b>29.78</b> 29.78	<b>10851</b> 9748	1.11 yes	20599	0.022136		-0.0014	47 48	no	0.948	-
143 PCB 17	72	<b>394</b> HpCB 396	<b>31.43</b> 31.42	1224	1.07	2371	0.002544		-0.00139	6	no	0.95	-
144 PCB 19	92	394	NotFnd	1147	yes *	*	-0.00122		-0.00122	6 *	no	1.085	-
145 PCB 19		4pCB 396 <b>394</b>	31.74 <b>32.13</b>	* 65034	no <b>1.08</b>	125244	0.111374		-0.00096	* 259	no	1.383	_
146 PCB 19		HpCB 396 <b>394</b>	32.06 <b>32.50</b>	60210 <b>1498</b>	yes 0.95	3076	0.002318		-0.00098	253 6	no	1.352	_
	H	HpCB 396	32.48	1578	yes					6			
147 PCB 17	H	<b>394</b> HpCB 396	<b>33.45</b> 33.45	<b>11990</b> 10744	<b>1.12</b> yes	22734	0.024957		-0.00104	47 45	no	1.271	-
148 PCB 19		<b>394</b> HpCB 396	<b>34.01</b> 34.02	<b>6854</b> 6743	1.02 yes	13597	0.010304		-0.00098	28 28	yes	1.345	-
149 PCB 18	39	394 hpCB 396	<b>36.87</b> 36.88	<b>2159</b> 1880	1.15 yes	4038	0.002708		-0.00043	14 16	no	0.944	-
150 PCB 20	)2	428	29.26	3690	1	7365	0.010135		-0.00188	16	no	0.988	-
151 PCB 20	)1	DcCB 430 <b>428</b>	29.28 <b>30.19</b>	3675 <b>1720</b>	yes 0.81	3854	0.004192		-0.00186	15 8	no	0.997	-
152 PCB 20		DcCB 430 428	30.18 NotFnd	2134	yes *	*	-0.00193		-0.00193	8	no	0.962	_
153 PCB 19	C	DcCB 430 428	30.89	* 718	no 0.07	1450	-0.00212			*			
	C	DcCB 430	31.13 31.12	740	0.97 no	1458			-0.00212	*	yes	0.876	-
154 PCB 20		428 DcCB 430	31.23 31.24	20 24	0.85 no	44	-0.00185		-0.00185	*	yes	1.006	-
155 PCB 19		428 DcCB 430	NotFnd 34.19	*	* no	*	-0.00284		-0.00284	*	no	0.654	-
156 PCB 19	16	428	NotFnd	*	*	*	-0.00276		-0.00276	*	no	0.674	-
157 PCB 20	13	0cCB 430 <b>428</b>	34.92 <b>35.12</b>	2653	no <b>0.9</b>	5588	0.009196		-0.00282	11	no	0.659	-
158 PCB 19		0cCB 430 428	35.12 NotFnd	2935	yes *	*	-0.00156		-0.00156	10	no	1.005	_
159 PCB 19	C	OcCB 430 428	36.59 39.20	* -3785.17	no	0020 17		DOD 404 NDD		* 4 E			
	C	OcCB 430	39.22	-4253	0.89 OK	-8038.17	-0.00798	PCB 194 NDR	-0.00143	15 12	xL	1.091	-
160 PCB 20		428 DcCB 430	NotFnd 39.77	*	* no	*	-0.00143		-0.00143	*	no	1.091	-
161 PCB 20		462 loCB 464	NotFnd 36.31	*	* no	*	-0.00159		-0.00159	*	no	1.023	-
162 PCB 20	7	462	NotFnd	*	*	*	-0.00123		-0.00123	*	no	1.32	-
163 PCB 20	6	loCB 464 462	37.32 NotFnd	*	no *	*	-0.00158		-0.00158	*	no	1.027	-
164 PCB 20		loCB 464 498	41.70 NotFnd	*	no *	*	-0.00263		-0.00263	*	no	1.04	-
165 PCB 1L		DCB 500 200	43.54 <b>8.98</b>	* 218884	no <b>3.48</b>	281700	0.18552		0.001	* 3644			94
		202	8.97	62816	yes					340	no	0.824	
166 PCB 3L		<b>200</b> 202	<b>10.17</b> 10.16	<b>193011</b> 55064	3.51 yes	248075	0.157899		0.001	3178 298	no	0.852	80
167 PCB 4L		<b>234</b> 236	<b>10.28</b> 10.28	<b>71778</b> 43712	1.64 yes	115490	0.115468		0	3835 3962	no	0.543	59
168 PCB 15	L	234	12.93	215276	1.61	348881	0.17618		0	2432	no	1.074	90
169 PCB 19	L	236 <b>268</b>	12.91 <b>11.68</b>	133605 <b>69652</b>	yes 1.07	134780	0.126456		0.001	1721 639	no	0.578	64
170 PCB 37	L	270 <b>268</b>	11.66 <b>16.68</b>	65128 <b>190813</b>	yes 1.06	370823	0.218493		0.001	554 472	no	1.987	111
171 PCB 54	L	270 <b>302</b>	16.67 <b>13.06</b>	180010 <b>61324</b>	yes 0.79	139086	0.125491		0	820 1102	no	1.297	64
172 PCB 81		304	13.06	77763	yes					1632			
		<b>302</b> 304	<b>21.41</b> 21.39	<b>141639</b> 176737	0.8 yes		0.214434		0	806 2435	no	1.738	109
173 PCB 77	L	<b>302</b> 304	<b>21.85</b> 21.82	<b>133594</b> 162859	0.82 yes	296453	0.206909		0	732 2199	no	1.677	105
174 PCB 10	4L	<b>338</b> 340	<b>15.93</b> 15.93	<b>87016</b> 53287	1.63 yes	140304	0.163548		0	6357 2470	no	1.156	83
175 PCB 12	3L	338	23.49	187960	1.65	301886	0.210076		0	2058	no	1.936	107
176 PCB 11	8L	340 <b>338</b>	23.50 <b>23.77</b>	113927 <b>180587</b>	yes 1.58	294988	0.208513		0	2392 1963	no	1.906	106
177 PCB 11	4L	340 <b>338</b>	23.76 <b>24.26</b>	114401 <b>172893</b>	yes 1.63	278877	0.21191		0	2379 1848	no	1.773	108
		340 338	24.25	105984	yes					2219			
178 PCB 10		340	<b>24.83</b> 24.81	<b>178712</b> 111850	1.6 yes	290562	0.214783		0	1853 2235	no	1.822	109
179 PCB 12	6L	<b>338</b> 340	<b>27.69</b> 27.67	<b>169689</b> 109007	1.56 yes	278696	0.21633		0	1646 1999	no	1.735	110
180 PCB 15	5L	<b>372</b> 374	<b>19.61</b> 19.61	<b>86996</b> 68360	1.27	155356	0.145963		0	5503	no	1.404	74
181 PCB 16	7L	372	29.50	175506	yes 1.26	314773	0.196734		0	4541 3353	no	2.11	100
182 PCB 15	6L/157L	374 <b>372</b>	29.50 <b>30.68</b>	139267 <b>330468</b>	yes 1.32	580569	0.398548		0	1118 5060	no	1.921	101
183 PCB 16		374 <b>372</b>	30.69 <b>34.08</b>	250101 <b>110716</b>	yes 1.26		0.139044		0	1610 1922	no	1.886	71
	- •	374	34.06	88176	yes		2		Ü	641	5		

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18	4 PCB 188L	406	24.20	82726	1.07	160216	0.158924			0	4021	1	10	1.329	81
12	5 PCB 180L	408 <b>406</b>	24.21 <b>32.09</b>	77490 <b>83331</b>	yes 1.09	450044	0.457220				4125			4.040	
10	3 FOD 100L	408	32.09	76583	yes	159914	0.157328			0	1847 2829	Г	10	1.349	80
18	6 PCB 170L	406	33.42	72808	1.07	140906	0.158413			0	1586		10	1.18	81
	0.05.702	408	33.42	68098	yes	140300	0.130413			U	2529	'	10	1.10	01
18	7 PCB 189L	406	36.84	161506	1.08	310655	0.191056			0	2869		10	2.157	97
		408	36.83	149149	yes	0.000	01.10.1000			0	2509		.0	2.107	01
18	8 PCB 202L	440	29.25	68727	0.9	144671	0.135224			0	5076	r	10	1.419	69
		442	29.27	75944	yes					-	2271				• • •
18	9 PCB 205L	440	39.73	104769	0.93	218057	0.188929			0	2574	r	10	1.531	96
		442	39.73	113288	yes						1887				
19	0 PCB 208L	474	36.27	59602	0.8	134172	0.156231			0	3439	r	10	1.139	79
		476	36.28	74570	yes						2036				
19	1 PCB 206L	474	41.70	44392	0.8	100030	0.174728			0	2491	r	10	0.76	89
		476	41.73	55637	yes						1451				
19	2 PCB 209L	510	43.54	51297	1.2	93999	0.17218			0	2223	r	10	0.724	88
40		512	43.53	42702	yes						1746				
19	3 PCB 28L	268	14.41	218829	1.04	429481	0.24651			0.001	617	r	10	2.039	113
40	PCB Cleanup Standard 4 PCB 111L		14.41	210652	yes					_	1076				
19		338	21.83	133113	1.65	213940	0.214588			0	5031	r	10	1.343	98
10	PCB Cleanup Standard 5 PCB 178L	406	21.84 <b>26.98</b>	80827 <b>57098</b>	yes	440404	0.400050				2598				
19	PCB Cleanup Standard		26.97	53096	1.08	110194	0.198259			0	2585	r	10	0.733	91
10	6 PCB 31L	268	NotFnd	33096	yes *	*				0.001	2658		_	4.004	
10	PCB Audit Standard		14.24	*	no					0.001		r	10	1.934	
19	7 PCB 95L	338	NotFnd	*	*	*				0			10	0.946	
	PCB Audit Standard		17.73	*	no					U			10	0.540	
198	3 PCB 153L	372	NotFnd	*	*	*				0		r	10	1.225	
	PCB Audit Standard		25.40	*	по					v				1.220	
199	PCB 9L	234	11.18	1240308	1.61	2013045	10.15711			_	15569	r	10	_	-
	PCB Recovery Standard	236	11.19	772738	yes						11069		-		
200	PCB 52L	302	15.35	417980	0.81	933049	7.276455			-	4908	r	10	-	-
	PCB Recovery Standard	304	15.36	515068	yes						10618				
201	1 PCB 101L	338	19.77	502581	1.63	810721	7.265971			-	20096	r	10	-	-
	PCB Recovery Standard		19.76	308140	yes						10454				
202	2 PCB 138L	372	26.57	471215	1.32	828212	7.573036			-	11121	r	10	-	-
	PCB Recovery Standard		26.56	356997	yes						14586				
203	3 PCB 194L	440	39.18	395957	0.93	823163	7.494846			-	10166	r	10	-	-
	PCB Recovery Standard	442	39.17	427206	yes						7317				
	Oblemblehende														
	Chlorobiphenyls						-0.00063		0	-0.00063					
	Dichlorobiphenyls Trichlorobiphenyls						0.050195		5	-0.00329					
	Tetrachlorobiphenyls						0.757208		15	-0.00461					
	Pentachlorobiphenyls						1.180809 0.654269	•	23 17	-0.00358 -0.0012					
	Hexachlorobiphenvis						1.374099		20	-0.0012					
	Heptachlorobiphenyls						0.446124		14	-0.00291					
	Octachlorobiphenyls						0.023523		3	-0.00284					
	Nonachlorobiphenyls						-0.00159		0	-0.00264					
	Decachlorobiphenyl						-0.00263		0	-0.00263					
	PCB (total)						4.486227		•	2.00=00					
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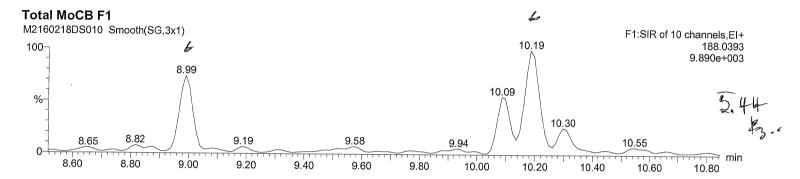
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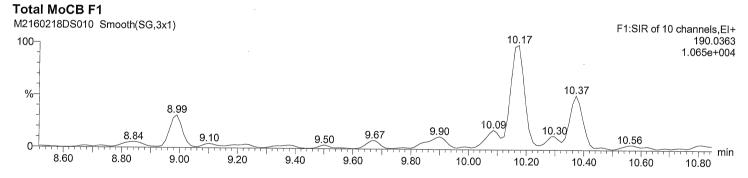
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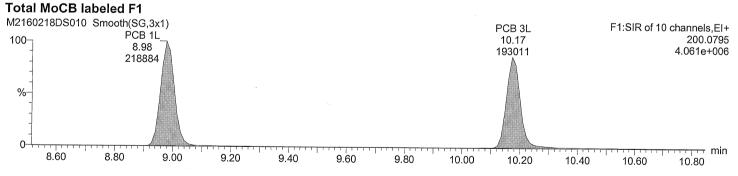
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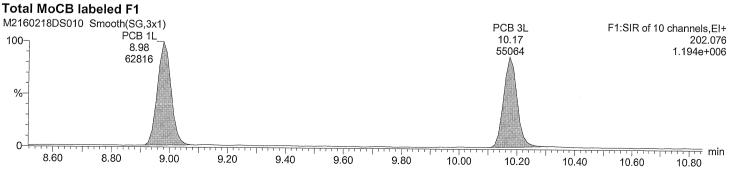
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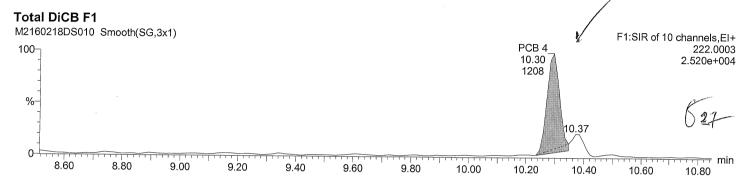
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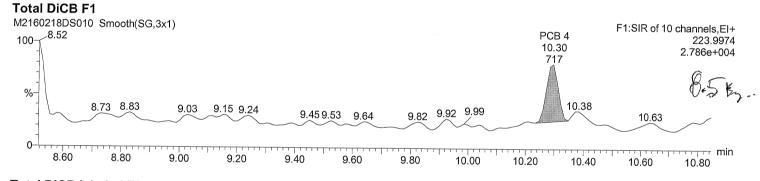
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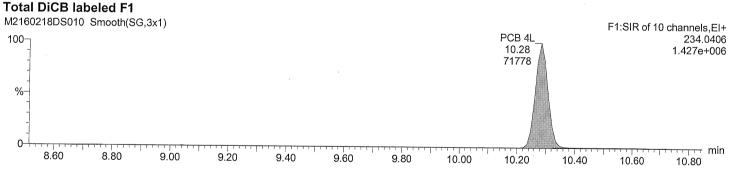
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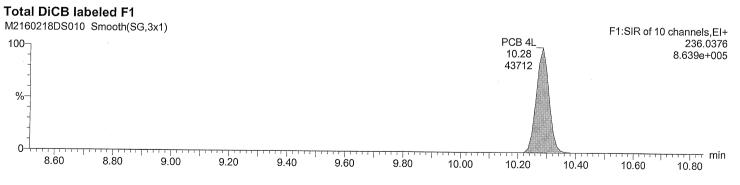
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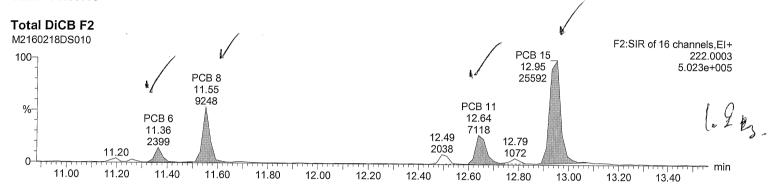
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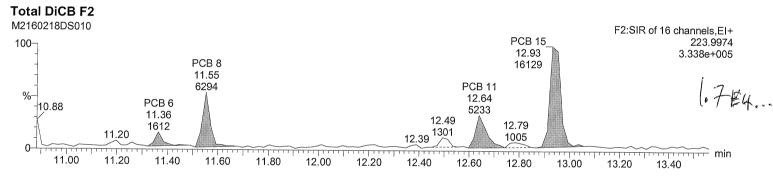
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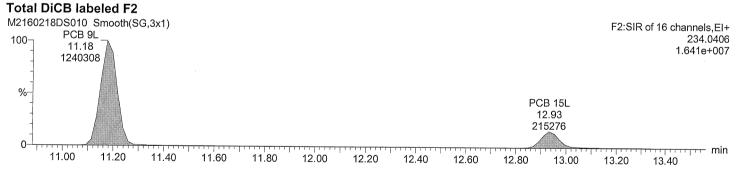
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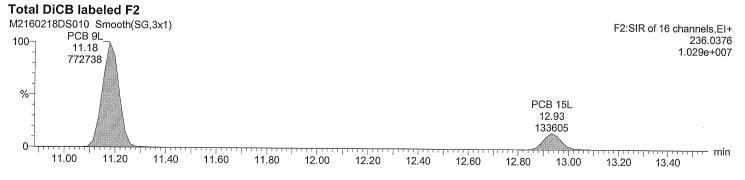
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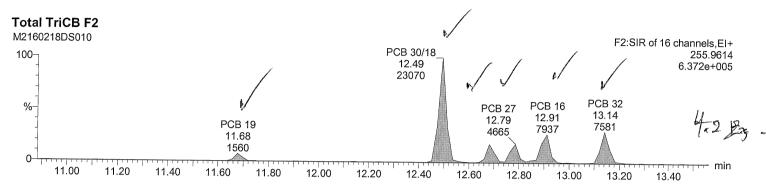
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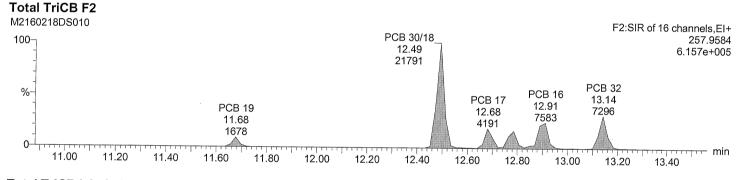
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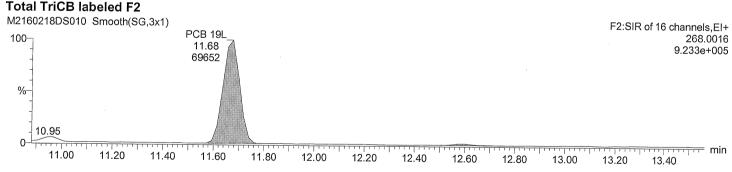
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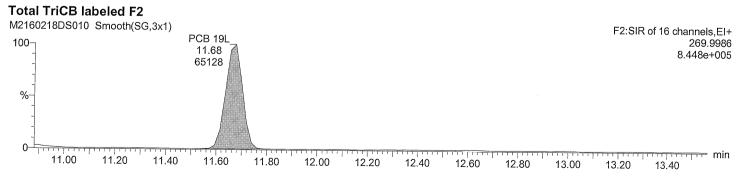
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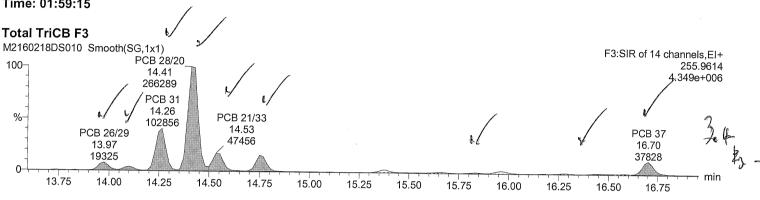
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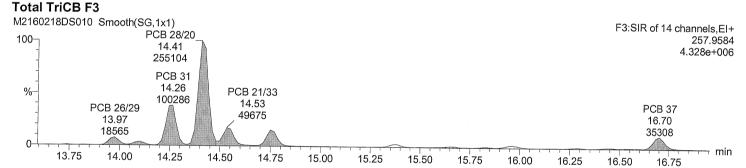
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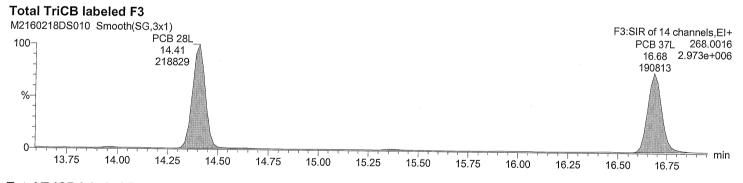
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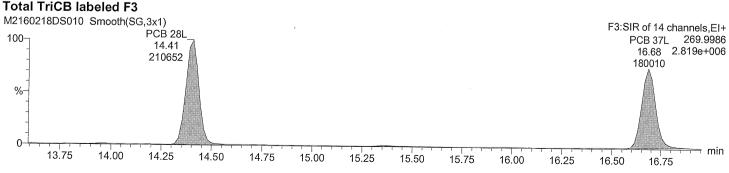
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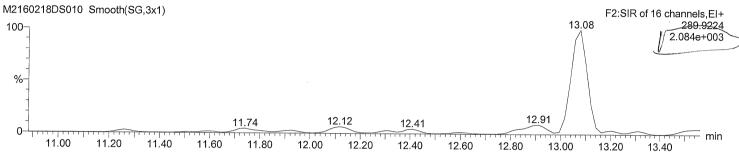
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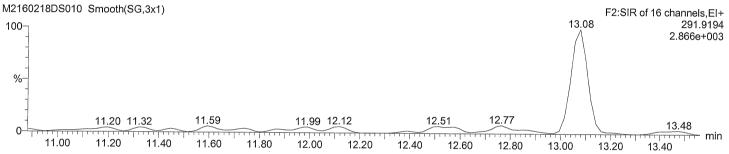
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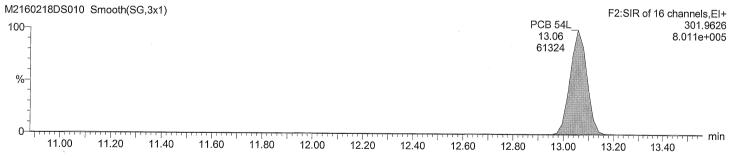
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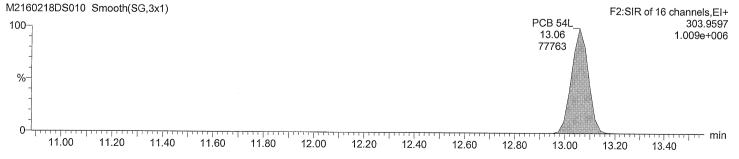
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#### **Total TeCB labeled F2**



#### **Total TeCB labeled F2**



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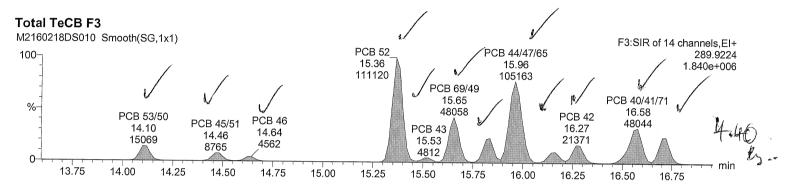
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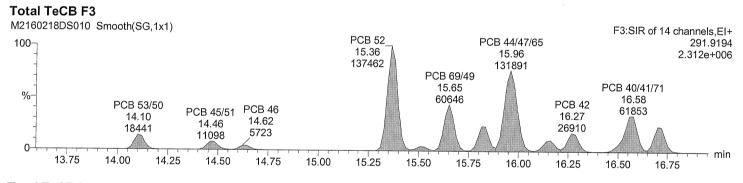
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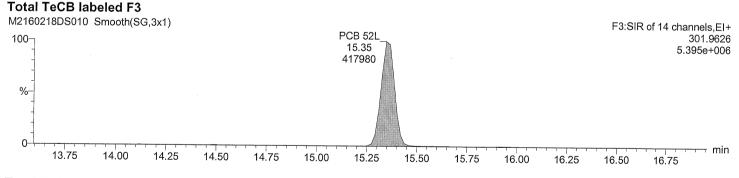
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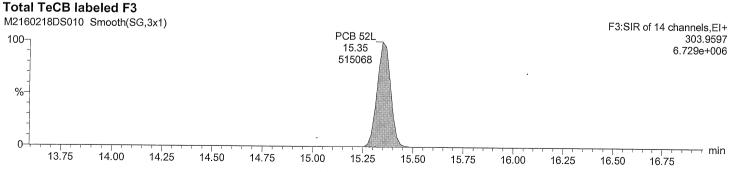
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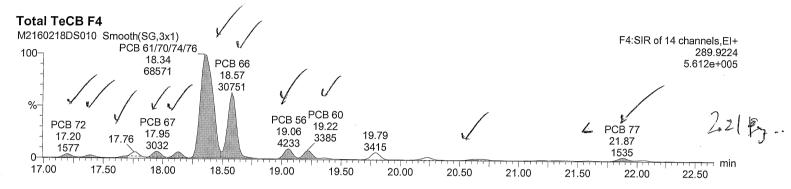
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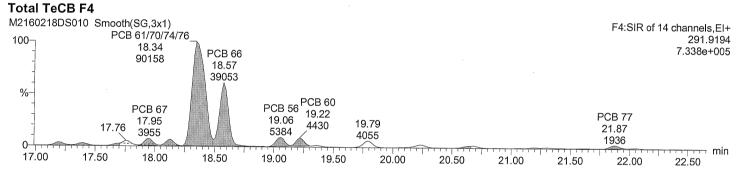
February 20, 2016 02:09:39 PM Eastern Standard Time February 20, 2016 02:11:48 PM Eastern Standard Time

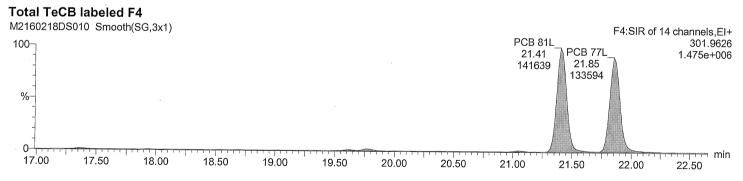
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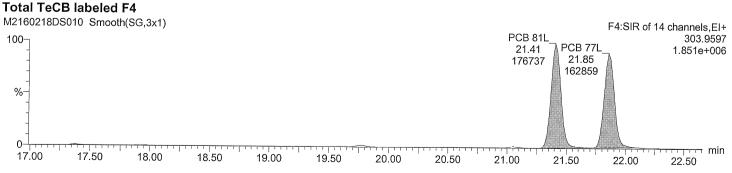
Description: BRP510-01R:D1

Vial: 10









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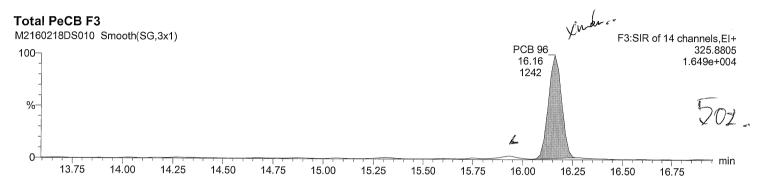
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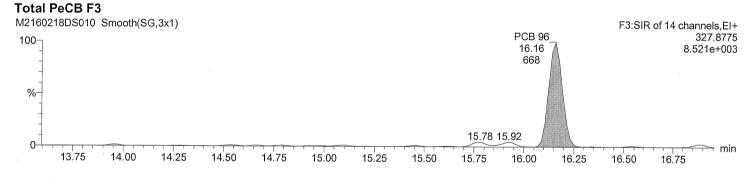
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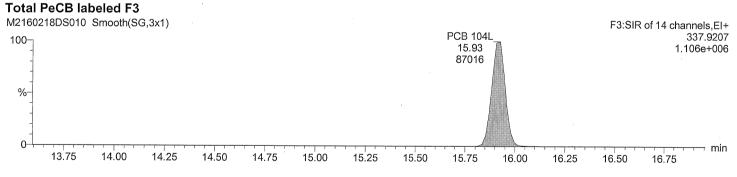
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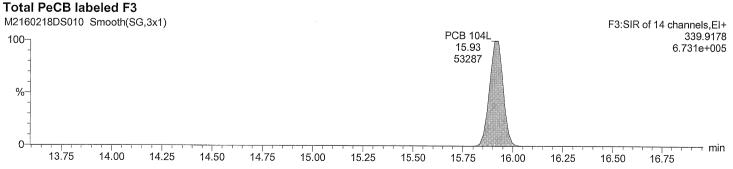
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Vial: 10









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Acquired Date

February 20, 2016 02:09:39 PM Eastern Standard Time February 20, 2016 02:11:48 PM Eastern Standard Time

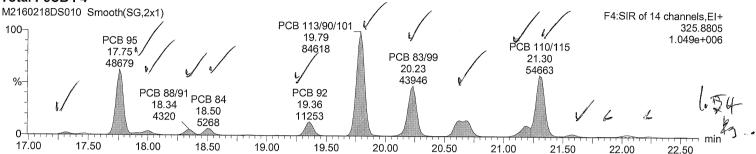
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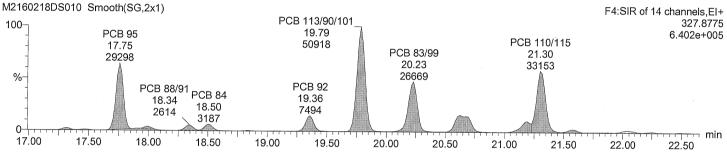
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Date: 18-FEB-2016 Time: 01:59:15

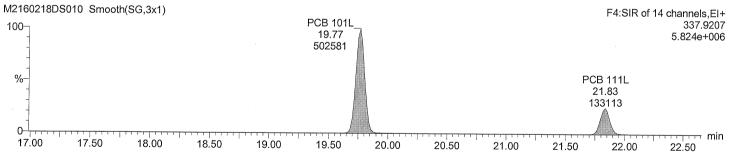




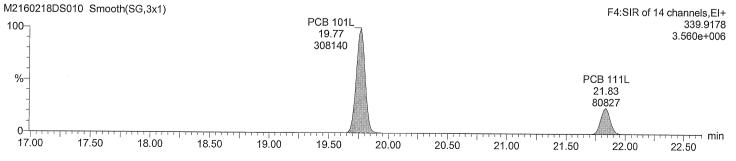
## **Total PeCB F4**



#### **Total PeCB labeled F4**



#### **Total PeCB labeled F4**



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Last Altered:

February 20, 2016 02:09:39 PM Eastern Standard Time February 20, 2016 02:11:48 PM Eastern Standard Time

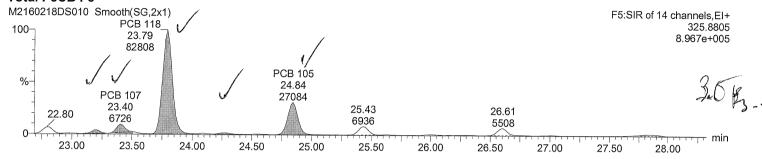
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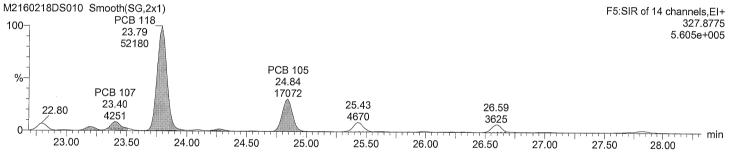
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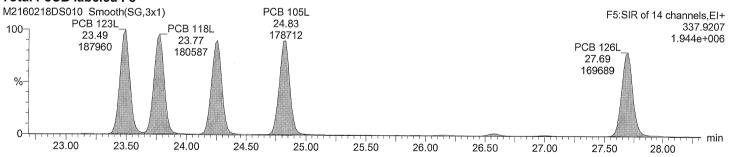
#### **Total PeCB F5**



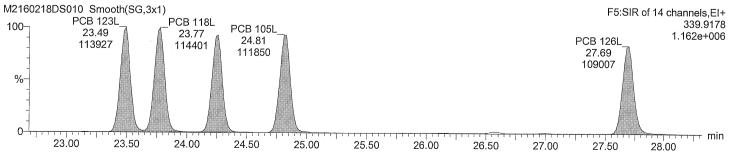
### **Total PeCB F5**



#### **Total PeCB labeled F5**



#### **Total PeCB labeled F5**



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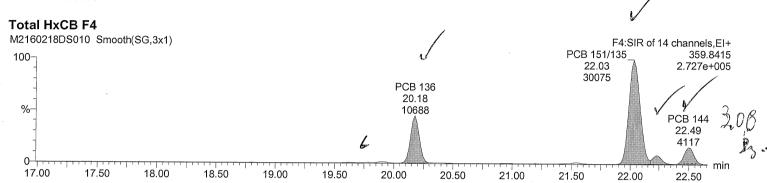
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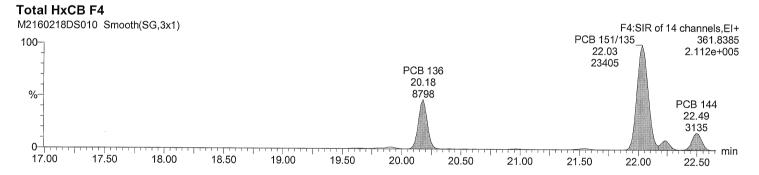
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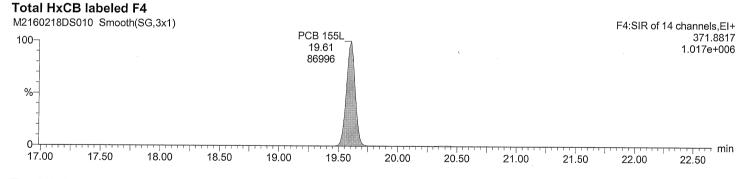
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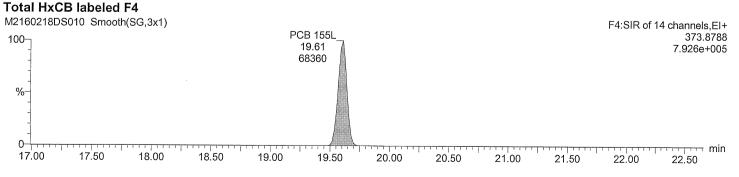
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Vial: 10









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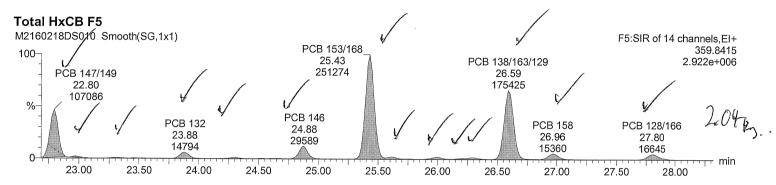
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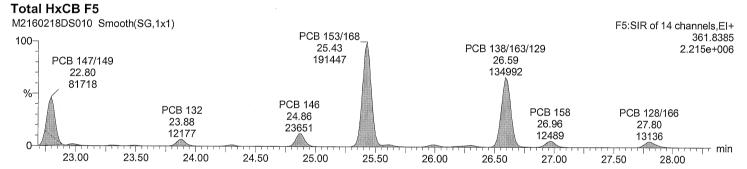
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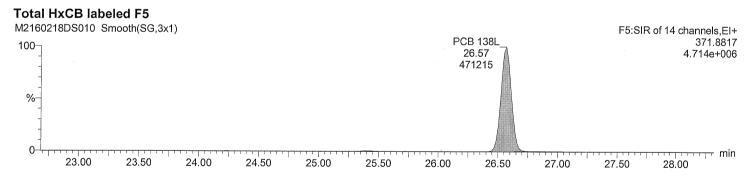
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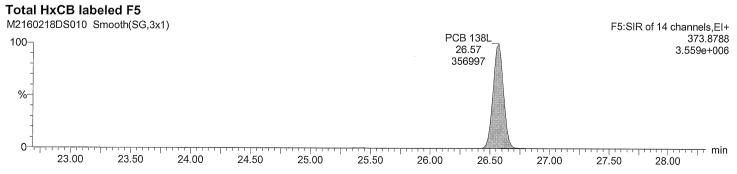
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Vial: 10









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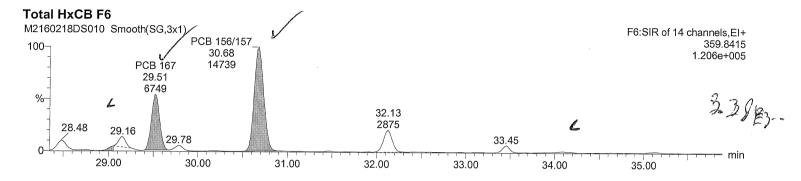
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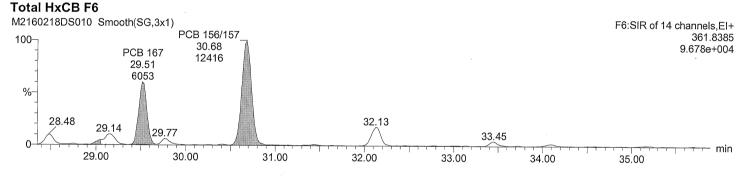
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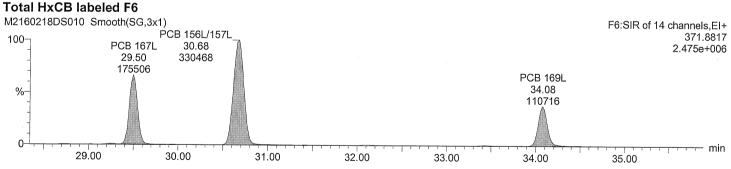
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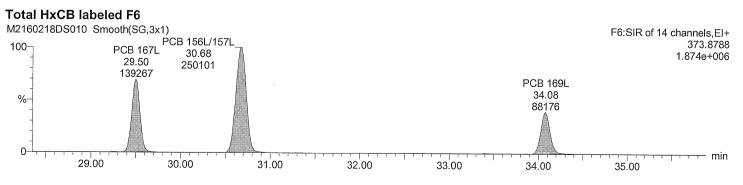
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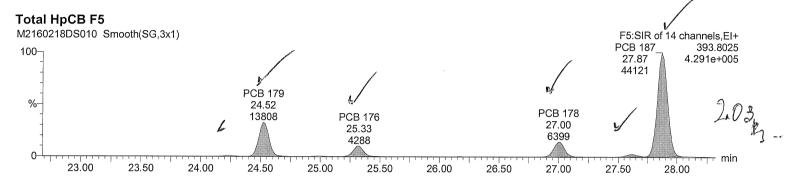
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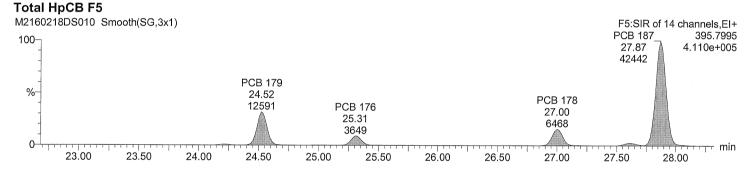
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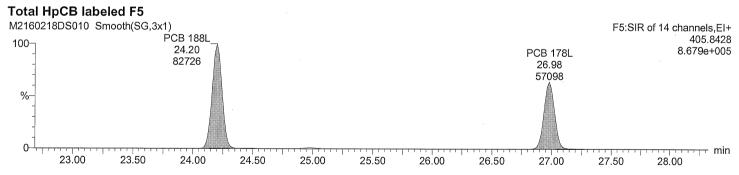
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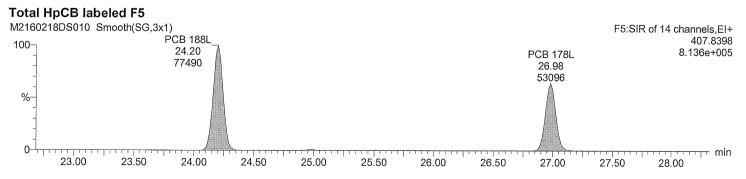
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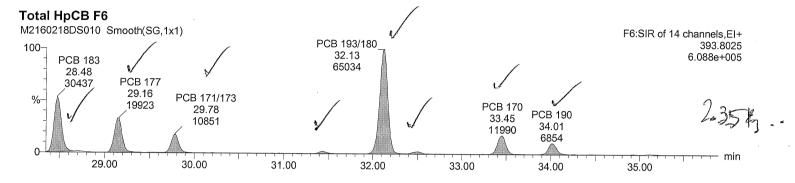
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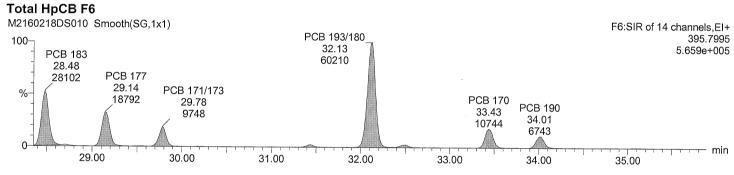
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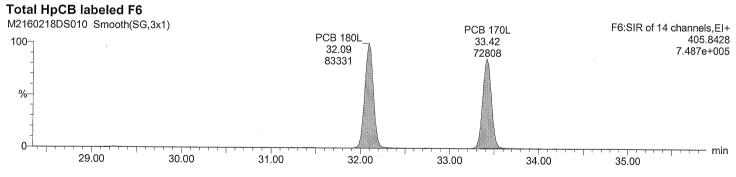
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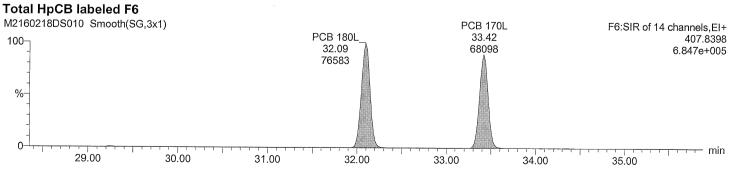
Description: BRP510-01R:D1

Vial: 10









**Quantify Sample Report**Acquired Date

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Dataset:

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February 20, 2016 02:09:39 PM Eastern Standard Time February 20, 2016 02:11:48 PM Eastern Standard Time

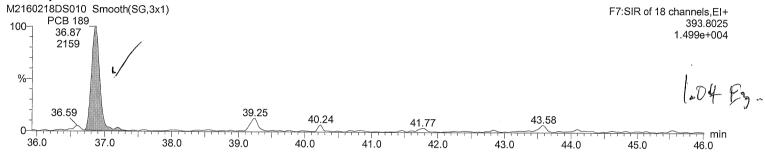
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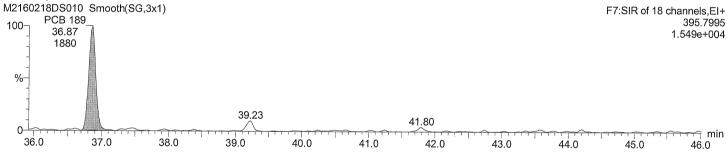
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Date: 18-FEB-2016 Time: 01:59:15

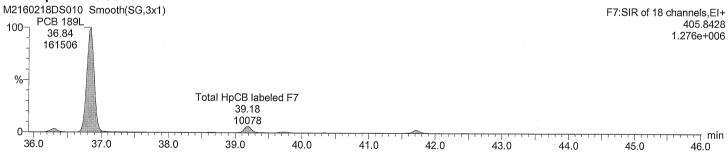




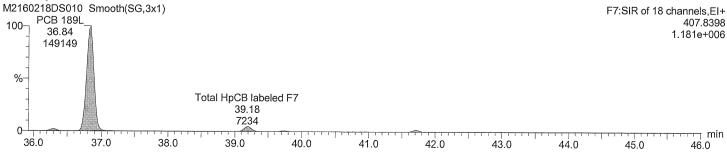




#### Total HpCB labeled F7



# Total HpCB labeled F7



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Acquired Date

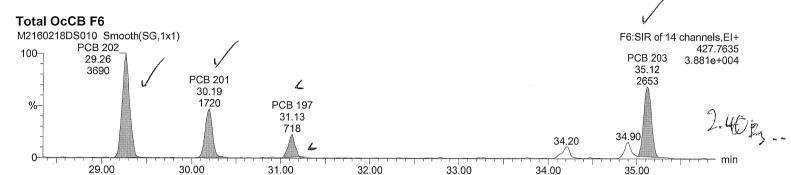
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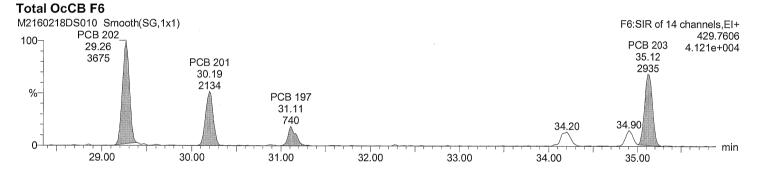
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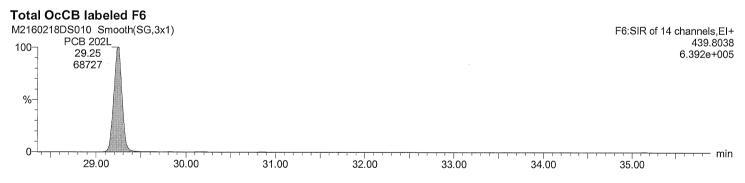
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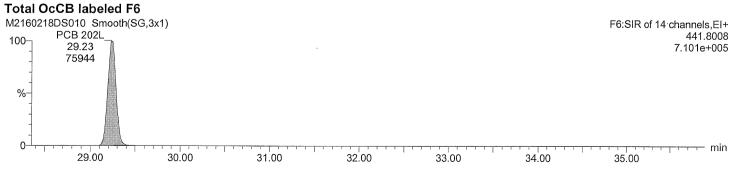
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Printed:









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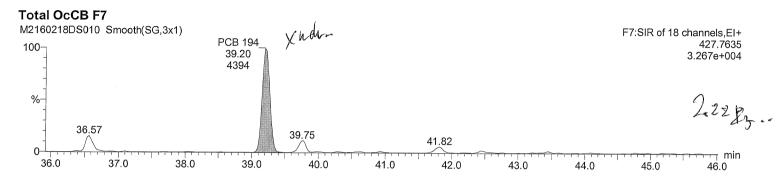
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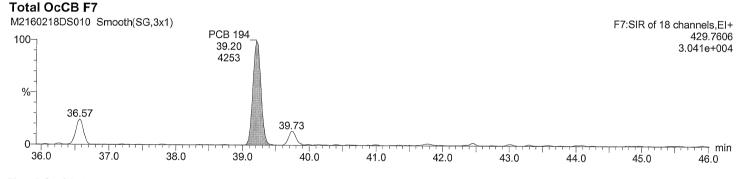
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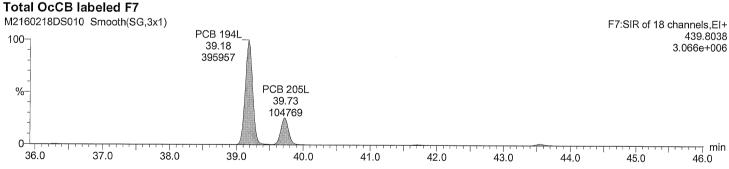
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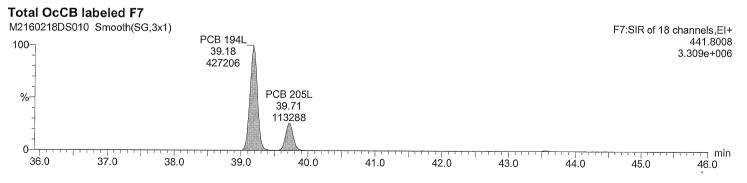
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Vial: 10









Acquired Date

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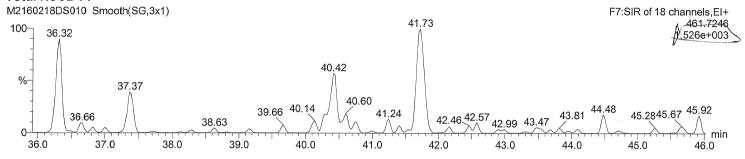
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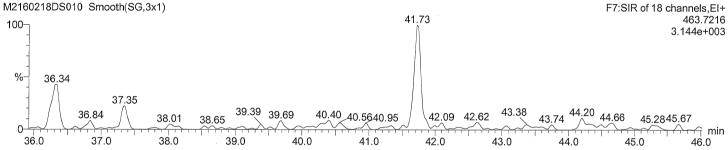
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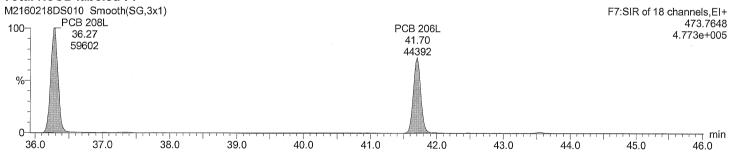




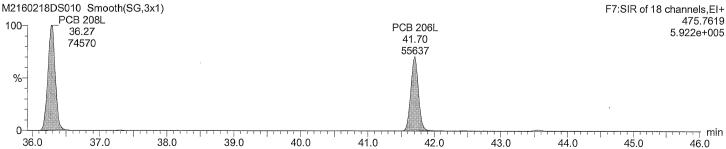




#### Total NoCB labeled F7



## Total NoCB labeled F7



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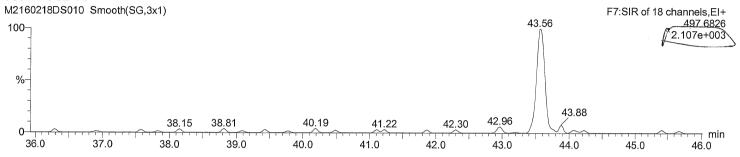
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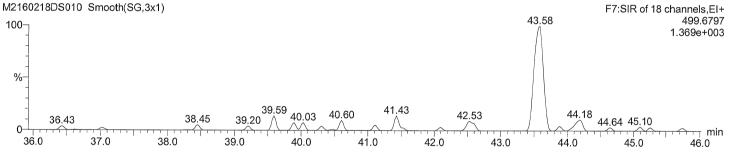
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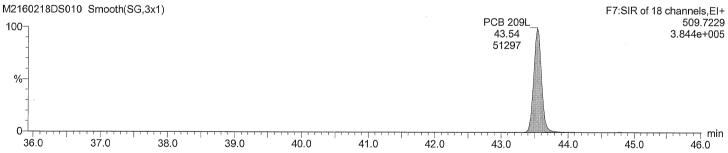




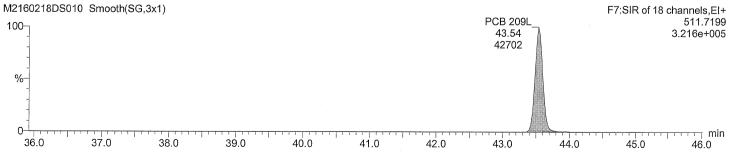




#### **Total DeCB labeled F7**



### Total DeCB labeled F7

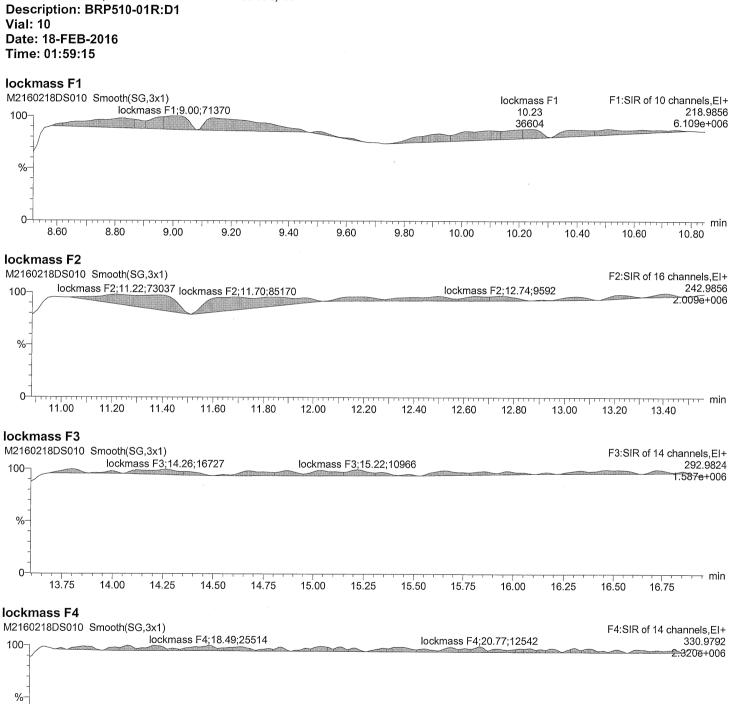


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ID: Anchor QEA, PG-WS-1-MUS-COC-160104, Ti



17.50

18.00

18.50

19.00

19.50

20.00

20.50

21.00

21.50

17.00

22.00

min

22.50

....

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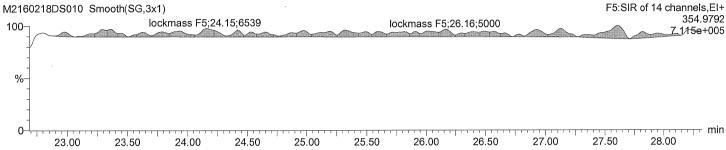
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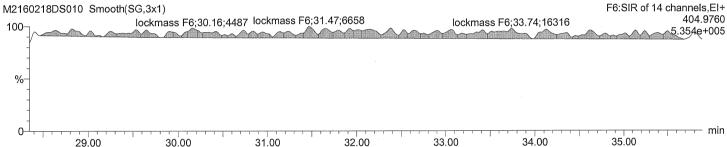
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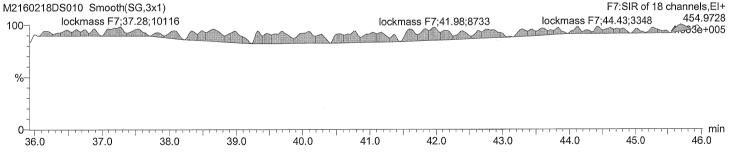


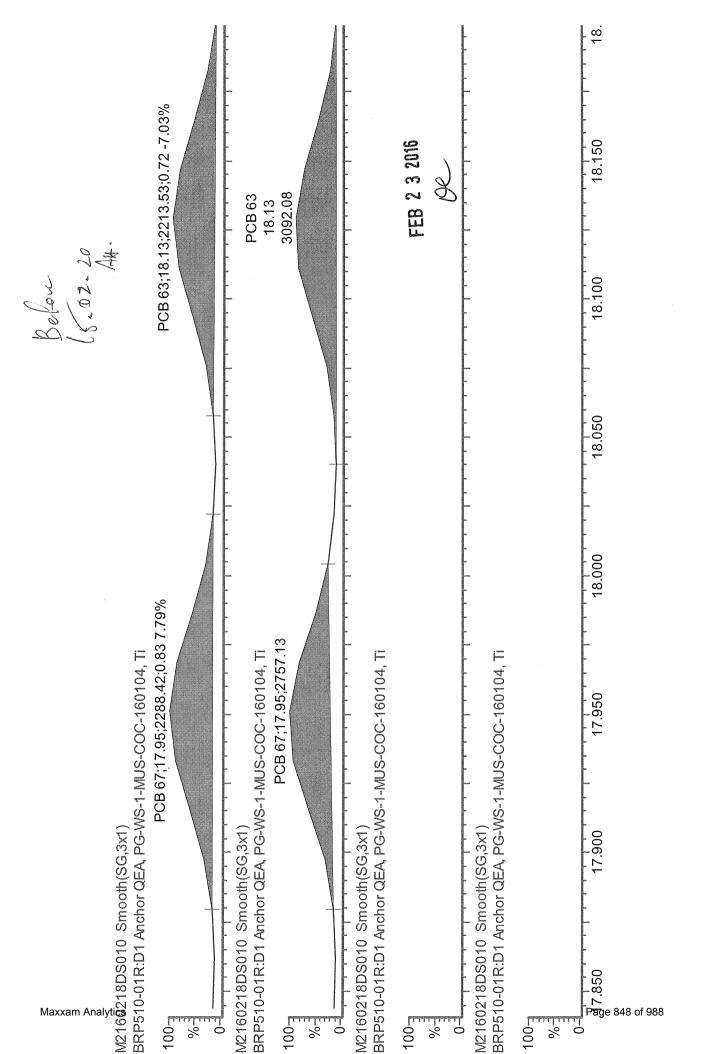


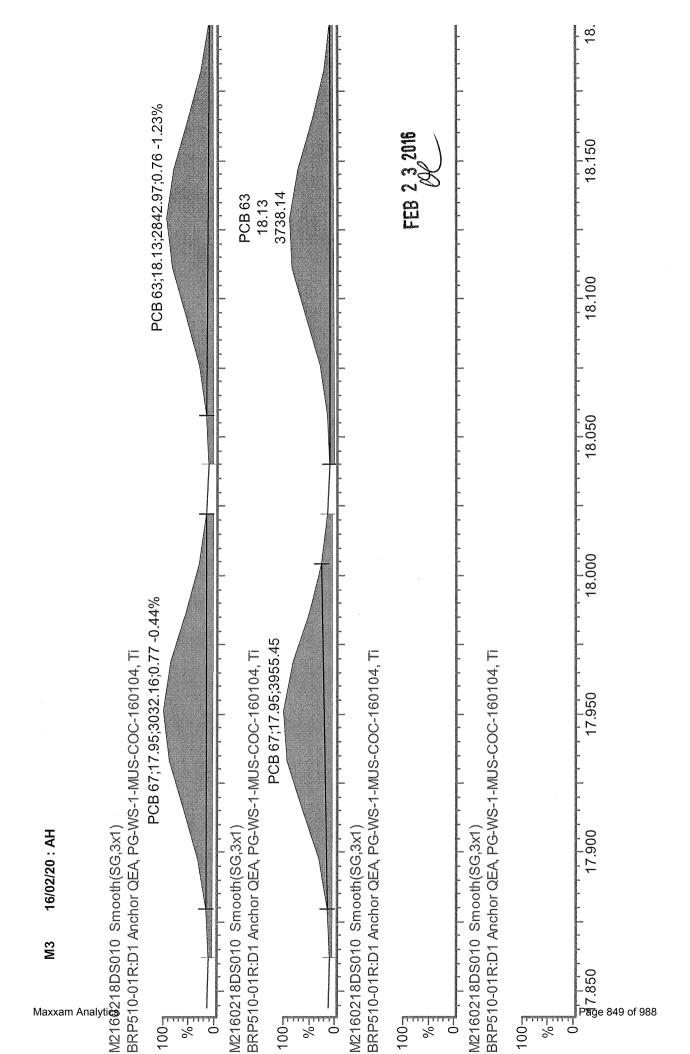
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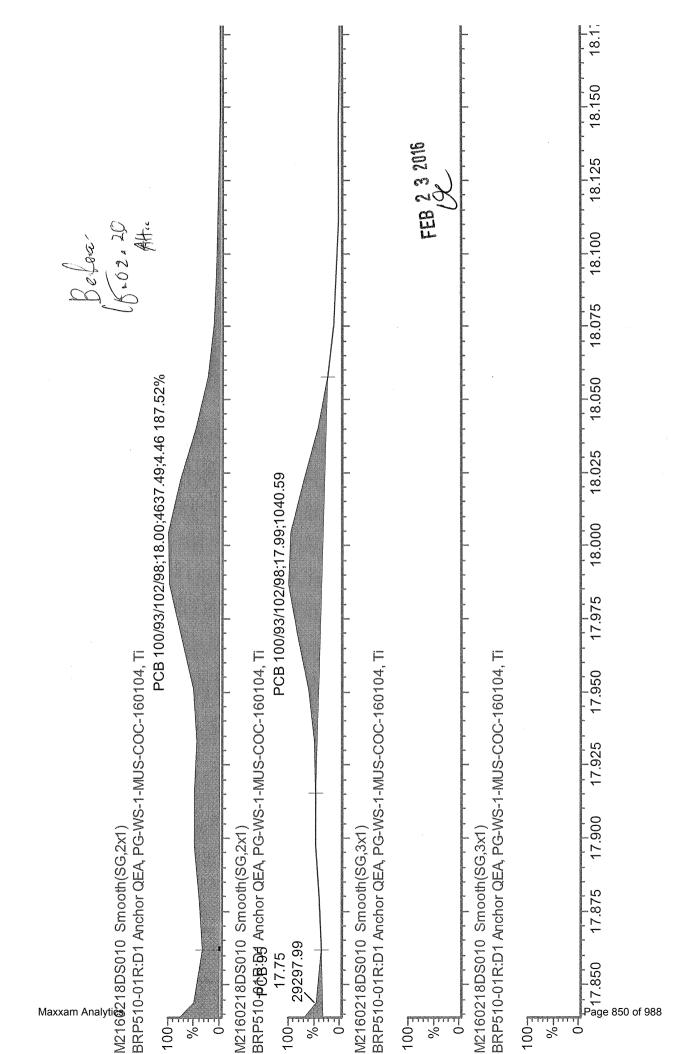


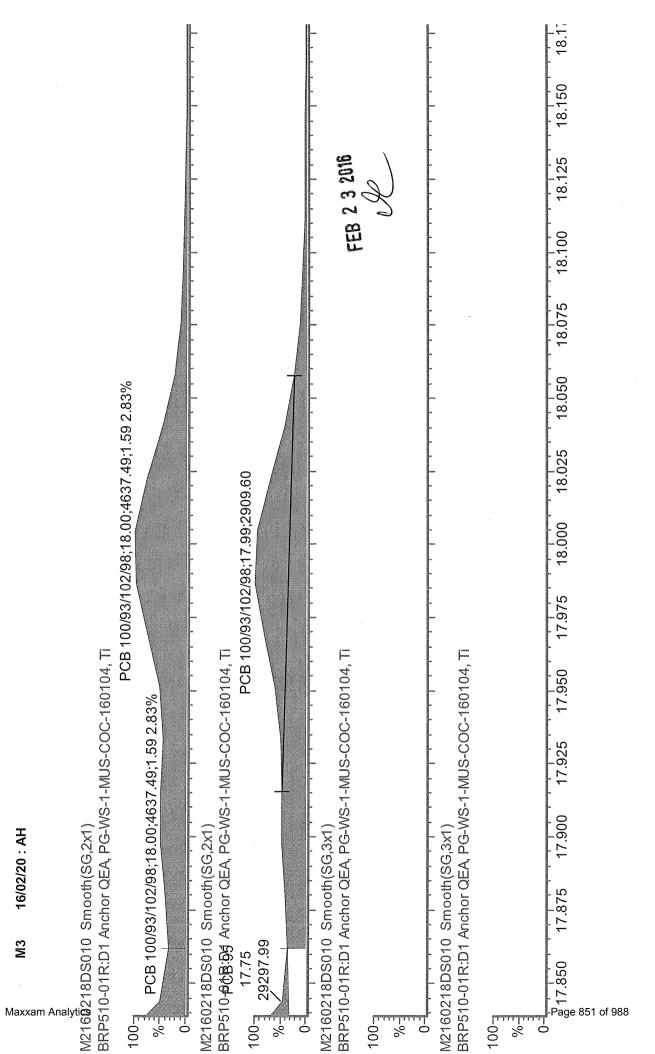
### lockmass F7

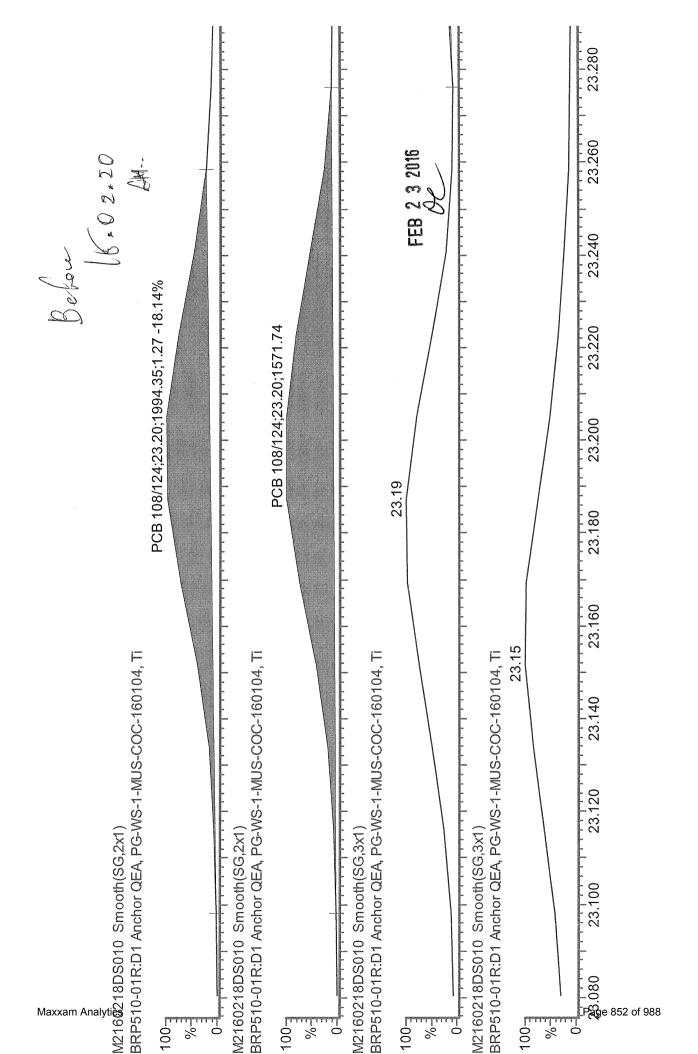


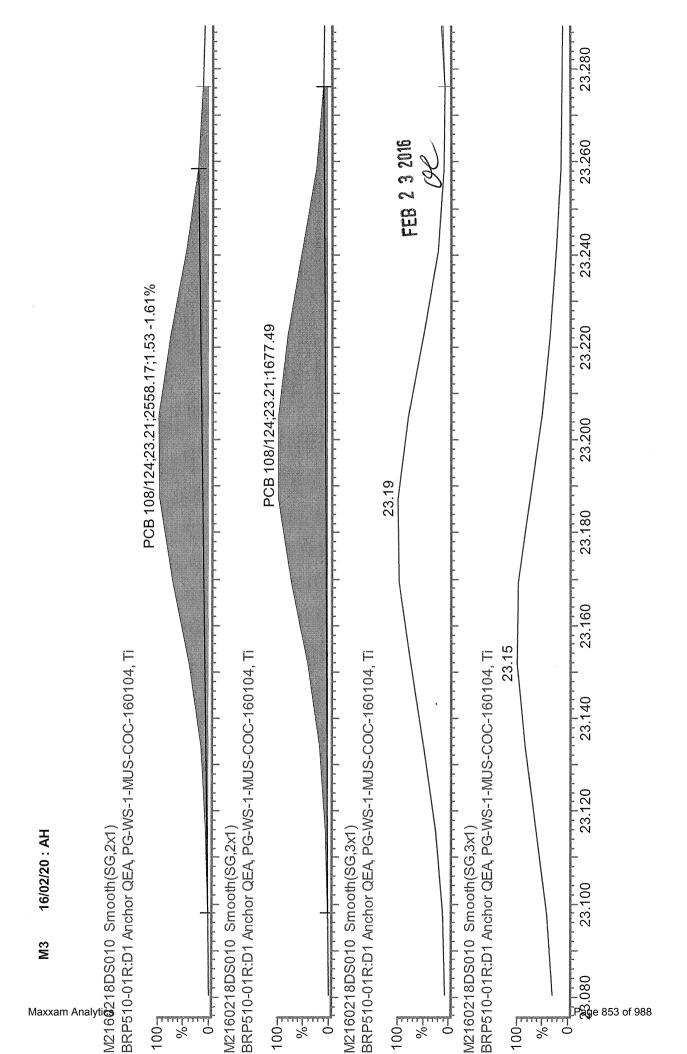


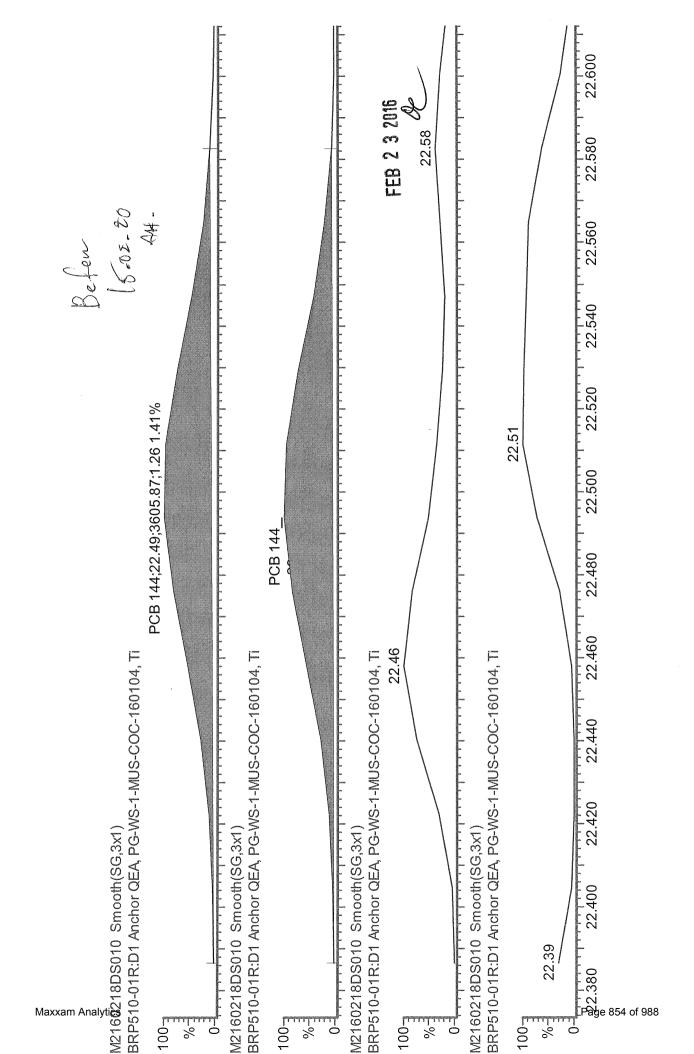


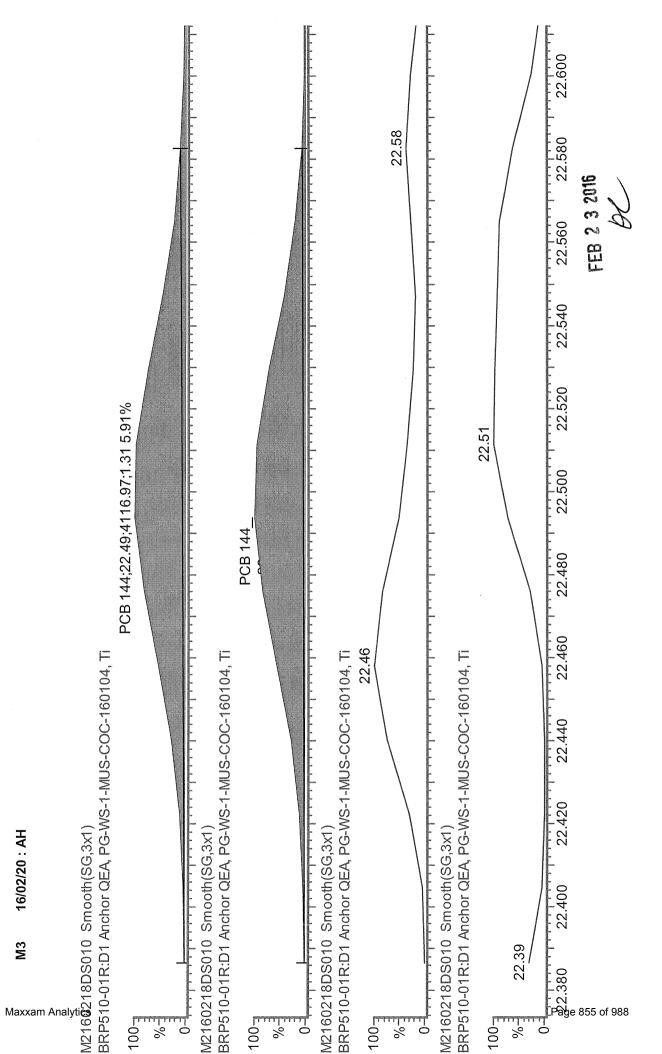


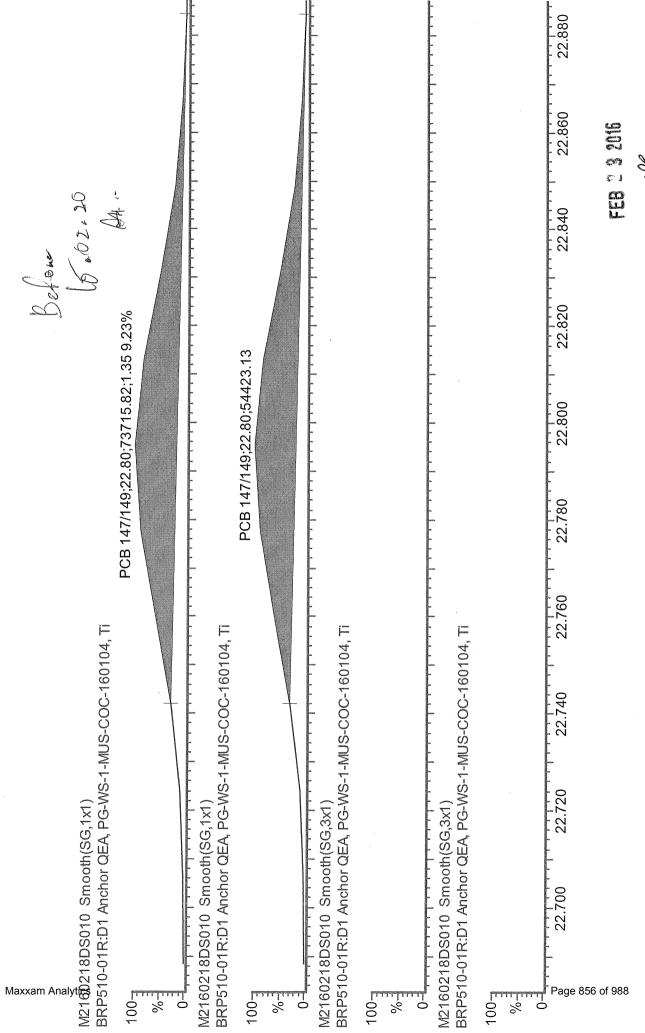


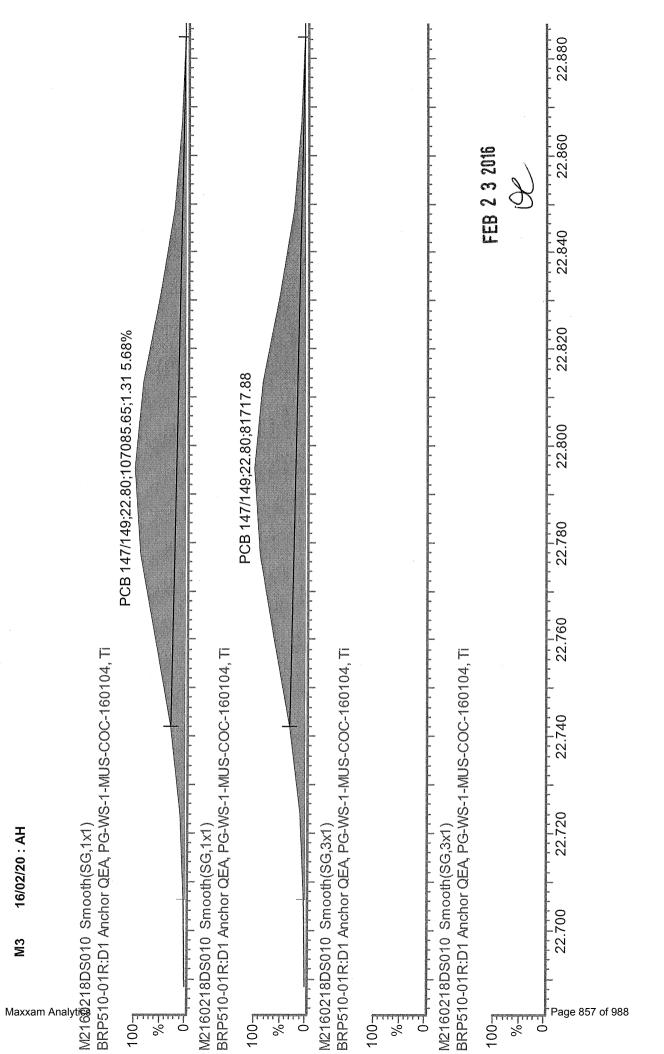


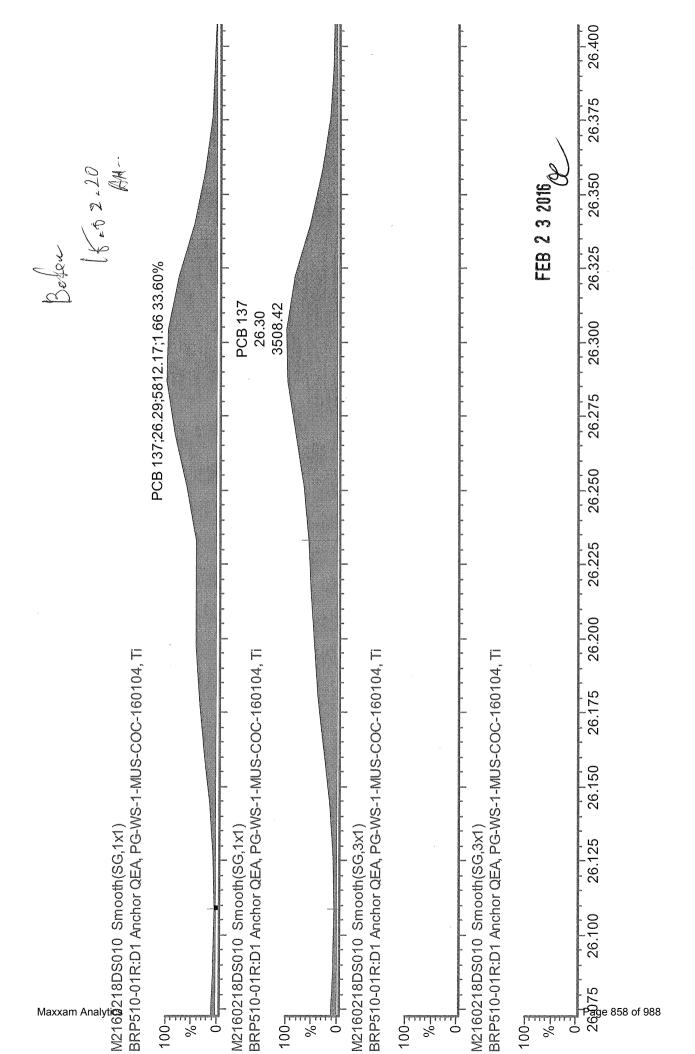


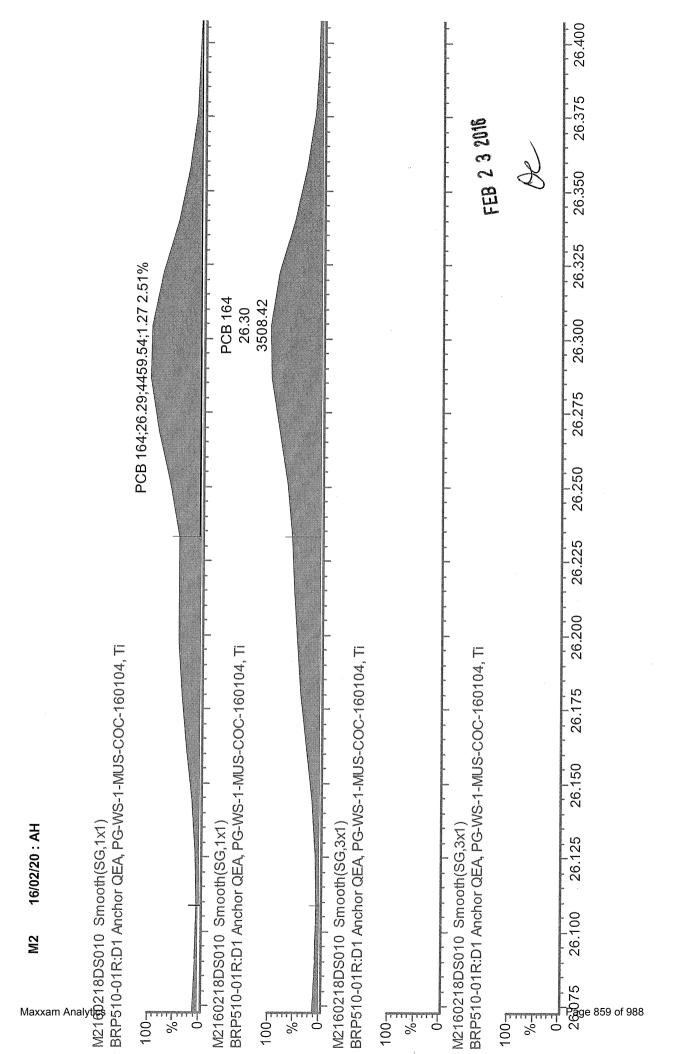












Filename M2160218DS011 Acquired 18/02/2016 2:49

Cali File M2160218D\_209

Sample ID BRP511-01R Comments Instrument File Ultima 3 Sample Size 10.019

Dil Fac 1.00

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2 PCB 2	MoCB 190 188 MoCB 190	8.98 NotFnd 10.10	*	no *	*	-0.00066			-0.00066	*	no	1.2	-
3 PCB 3	188 MoCB 190	NotFnd 10.19	*	no * no	*	-0.00073			-0.00073	*	no	1.079	-
4 PCB 4	222 DICB 224	NotFnd 10.29	*	* no	*	-0.00238			-0.00238	*	no	0.954	-
5 PCB 10	222 DiCB 224	NotFnd 10.37	*	* no	*	-0.00185			-0.00185	*	no	1.229	-
6 PCB 9	222 DiCB 224	NotFnd 11.18	*	* no	*	-0.00288			-0.00288	*	no	1.311	-
7 PCB 7	222 DiCB 224	NotFnd 11.26	*	* no	*	-0.00324			-0.00324	*	no	1.165	-
8 PCB 6	222 DICB 224	NotFnd 11.34	*	* no	*	-0.00286			-0.00286	*	no	1.319	-
9 PCB 5	222 DiCB 224	NotFnd 11.50	*	* no	*	-0.00383			-0.00383	*	no	0.983	-
10 PCB 8	222 DICB 224	11.55 11.55	-5925 -3798.08	1.56 OK	-9723.08	-0.00692	PCB 8 NDR		-0.00259	127 7	хL	1.456	-
11 PCB 14	222 DICB 224	NotFnd 12.26	*	no	*	-0.00283			-0.00283	*	no	1.332	-
12 PCB 11	222 DICB 224	<b>12.66</b> 12.66	<b>5076</b> 3513	1.45 yes *	8589 *	0.006935			-0.00293	75 4	no	1.285	-
13 PCB 13/12 14 PCB 15	222 DiCB 224 <b>222</b>	NotFnd 12.81	*	no		-0.00312			-0.00312	*	no	1.21	-
15 PCB 19	DiCB 224 256	<b>12.95</b> 12.96 <b>11.68</b>	17221 11262 1013	1.53 yes 0.89	28483 2148	0.022437			-0.00433	269 12	no	0.871	-
16 PCB 30/18	TriCB 258 256	11.70 12.49	1135 13565	yes 1.09	25987	0.004438			-0.00164 -0.00181	14 16 180	no	0.899	-
17 PCB 17	TriCB 258 256	12.48 12.68	12422 <b>2916</b>	yes 1.09	5599	0.007768			-0.00216	173 33	no	0.813	-
18 PCB 27	TriCB 258 256	12.69 <b>12.78</b>	2683 <b>2721</b>	yes 1.06	5289	0.005			-0.00210	34 33	no	1.002	_
19 PCB 24	TriCB 258 256	12.78 NotFnd	2568 *	yes *	*	-0.00172			-0.00172	32	no	0.855	_
20 PCB 16	TriCB 258 <b>256</b>	12.87 <b>12.91</b>	* 4759	no 1.02 ·	9400	0.01779			-0.00294	* 56	no	0.501	_
21 PCB 32	TriCB 258 <b>256</b>	12.90 <b>13.14</b>	4641 <b>4749</b>	yes 1.01	9463	0.008204			-0.00135	47 58	no	1.093	-
22 PCB 34	TriCB 258 256	13.14 NotFnd	4714 *	yes *	*	-0.00078			-0.00078	56 *	no	1.235	-
23 PCB 23	TriCB 258 256	13.74 NotFnd	*	no *	*	-0.00093			-0.00093	*	no	1.033	-
24 PCB 26/29	TriCB 258 <b>256</b>	13.82 13.97	11674	no <b>1</b>	23323	0.018095			-0.00079	* 77	no	1.221	-
25 PCB 25	TriCB 258 256 TriCB 258	13.99 <b>14.10</b>	11649 <b>5764</b>	yes 1.05	11251	0.00799			-0.00072	82 37	no	1.334	-
26 PCB 31	256 TriCB 258	14.10 <b>14.26</b> 14.26	5488 <b>59026</b> 58210	yes 1.01	117236	0.083188			-0.00072	36 401	no	1.335	-
27 PCB 28/20	256 TriCB 258	<b>14.42</b> 14.43	167179 163387	yes 1.02 yes	330565	0.263083			-0.00081	408 1079 1070	no	1.191	-
28 PCB 21/33	256 TriCB 258	14.55 14.53	<b>29431</b> 28769	1.02 yes	58200	0.043931			-0.00077	179 180	no	1.255	-
29 PCB 22	256 TriCB 258	<b>14.75</b> 14.76	<b>23511</b> 23993	0.98 yes	47504	0.039938			-0.00085	141 154	no	1.127	-
30 PCB 36	256 TriCB 258	NotFnd 15.60	*	* no	*	-0.00061			-0.00061	*	no	1.57	-
31 PCB 39	<b>256</b> TriCB 258	<b>15.83</b> 15.83	<b>1229</b> 1151	1.07 yes	2380	0.001708			-0.00073	7 7	no	1.32	-
32 PCB 38	256 TriCB 258	NotFnd 16.18	*	* no	*	-0.00067			-0.00067	*	no	1.438	-
33 PCB 35	256 TriCB 258	NotFnd 16.45	*	no no	*	-0.0006			-0.0006	*	no	1.597	-
34 PCB 37	256 TriCB 258	16.70 16.70	23060 23016 *	1 yes	46076	0.032366			-0.00106	138 140	no	0.906	-
35 PCB 54	290 TCB 292	NotFnd 13.08	*	no 0.70	*	-0.00112			-0.00112	*	no	0.911	-
36 PCB 53/50 37 PCB 45/51	290 TCB 292	14.12 14.11	8939 11807	0.76 yes	20746	0.029344			-0.00173	66 69	no	0.654	-
37 PCB 45/51 38 PCB 46	290 TCB 292 290	<b>14.48</b> 14.49 <b>14.64</b>	<b>5244</b> 6626 <b>3185</b>	0.79 yes 0.85	11870 6931	0.017358 0.011584			-0.00178	36 37	no	0.633	-
39 PCB 52	TCB 292 290	14.64 15.36	3746 <b>67639</b>	yes 0.81		0.168124			-0.00204 -0.00135	25 21 489	no	0.554	-
40 PCB 73	TCB 292 290	15.38 NotFnd	83883	yes *	*	-0.00139			-0.00139	489 476 *	no	0.834	-
41 PCB 43	TCB 292 290	15.46 15.53	* 3163	no <b>0.87</b>	6798	0.012182			-0.00219	* 22	yes	0.516	-
42 PCB 69/49	TCB 292 290	15.52 15.65	3636 <b>27445</b>	yes 0.81	61340	0.066691			-0.00213	19 201	no	0.851	_
	TCB 292	15.64	33895	yes						191		,	

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43 PCB 48	290	15.83	17352	0.79	39376	0.054124		-0.00168	122	no	0.673	-
44 PCB 44/47/65	TCB 292 290	15.84 <b>15.96</b>	22023 <b>64305</b>	yes 0.8	144836	0.171157		-0.00144	119 382	no	0.783	_
	TCB 292	15.98	80531	yes					372	110		
45 PCB 59/62/75	290 TCB 292	<b>16.16</b> 16.17	<b>8669</b> 10623	0.82 yes	19292	0.017565		-0.00111	55 52	no	1.017	-
46 PCB 42	290	16.28	12666	0.85	27619	0.037504		-0.00166	83	no	0.682	-
47 PCB 40/41/71	TCB 292 <b>290</b>	16.30 <b>16.57</b>	14953 <b>29442</b>	yes 0.83	64979	0.083116		0.00156	78	20	0.724	
	TCB 292	16.58	35537	yes	04373	0.003110		-0.00156	171 158	no	0.724	-
48 PCB 64	<b>290</b> TCB 292	<b>16.72</b> 16.71	16440 20422	0.81	36862	0.037007		-0.00123	112	no	0.922	-
49 PCB 72	290	17.20	996	yes 0.72	2389	0.001695		-0.00133	107 3	yes	1.304	_
E0 DOD 60	TCB 292	17.19	1393	yes	1010	0.00440			4			
50 PCB 68	290 TCB 292	17.40 17.40	819 793	1.03 no	1612	-0.00143		-0.00143	*	yes	1.22	-
51 PCB 57	290	17.68	399	0.82	884	-0.00142		-0.00142	*	yes	1.221	-
52 PCB 58	TCB 292 290	17.68 NotFnd	485 *	no *	*	-0.00168		-0.00168	*	no	1.035	_
	TCB 292	17.83	*	no					*	110	1.000	
53 PCB 67	<b>290</b> TCB 292	<b>17.95</b> 17.94	<b>1980</b> 2546	0.78 yes	4526	0.003111		-0.00129	7 7	yes	1.347	-
54 PCB 63	290	18.13	1845	0.76	4270	0.003155		-0.00139	6	yes	1.253	-
55 PCB 61/70/74/7	TCB 292 6 290	18.13 <b>18.34</b>	2425 <b>46676</b>	yes 0.79	106100	0.088573		-0.00157	7 110	no	1.109	
	TCB 292	18.34	59424	yes	100100	0.000070		-0.00101	108	110	1.100	_
56 PCB 66	<b>290</b> TCB 292	<b>18.57</b> 18.58	<b>19825</b> 25707	0.77	45532	0.033944		-0.0014	65	no	1.241	-
57 PCB 55	290	NotFnd	*	yes *	*	-0.00174		-0.00174	65 *	no	0.998	_
58 PCB 56	TCB 292 290	18.71 <b>19.05</b>	* 2669	no <b>0.83</b>	5875	0.005462		0.00475	*		0.005	
30 1 35 30	TCB 292	19.05	3206	yes	3073	0.005402		-0.00175	9 9	no	0.995	-
59 PCB 60	<b>290</b> TCB 292	19.22	2202	0.78	5012	0.004697		-0.00176	8	no	0.988	-
60 PCB 80	290	19.22 NotFnd	2811	yes *	*	-0.00142		-0.00142	7	no	1.224	_
61 PCB 79	TCB 292	19.48	*	no	*	0.00440			*			
61 PCB /9	290 TCB 292	NotFnd 20.61	*	no		-0.00119		-0.00119	*	no	1.462	-
62 PCB 78	290 TOD 200	NotFnd	*	*	*	-0.00135		-0.00135	*	no	1.287	-
63 PCB 81	TCB 292 290	21.06 NotFnd	*	no *	*	-0.00169		-0.00169	*	no	1.027	_
64 BGB 77	TCB 292	21.43	*	no					*			
64 PCB 77	<b>290</b> TCB 292	<b>21.87</b> 21.87	<b>1059</b> 1284	0.82 yes	2343	0.001646		-0.00162	3 3	no	1.077	-
65 PCB 104	326	NotFnd	*	*	*	-0.00043		-0.00043	*	no	1.094	-
66 PCB 96	PeCB 328 326	15.94 16.16	-647.9	no 1.55	-1065.9	-0.00106	PCB 96 NDR	-0.00054	* 12	хL	0.874	_
	PeCB 328	16.16	-418	OK			7 00 00 11011		10	XL.		
67 PCB 103	<b>326</b> PeCB 328	<b>17.31</b> 17.33	<b>836</b> 511	1.63 yes	1347	0.00159		-0.00076	8 7	yes	0.739	-
68 PCB 94	326	NotFnd	*	*	*	-0.00104		-0.00104	*	no	0.54	-
69 PCB 95	PeCB 328 <b>326</b>	17.47 <b>17.75</b>	* 31365	no 1.63	50607	0.064668		-0.00082	* 256	yes	0.683	
	PeCB 328	17.77	19242	yes	50007	0.004000		~0.00082	243	yes	0.003	-
70 PCB 100/93/102	/98 326 PeCB 328	<b>18.00</b> 17.93	<b>3453</b> 2056	1.68 yes	5509	0.007762		-0.00091	19	yes	0.619	-
71 PCB 88/91	326	18.34	2440	1.56	4007	0.005592		-0.0009	17 20	yes	0.625	-
72 PCB 84	PeCB 328 326	18.31 <b>18.50</b>	1567 <b>3104</b>	yes 1.41	5310	0.008673		0.00106	20		0.524	
72 FOD 04	PeCB 328	18.50	2206	yes .	. 5510	0.000073		-0.00105	27 27	no	0.534	-
73 PCB 89	326 PeCB 328	NotFnd 18.84	*	*	*	-0.00096		-0.00096	*	no	0.582	-
74 PCB 121	326	NotFnd	*	no *	*	-0.00074		-0.00074	*	no	0.761	-
75 DCB 92	PeCB 328	19.08	* 7775	no 1 74	12226	0.047057		0.00004	*		0.500	
75 PCB 92	<b>326</b> PeCB 328	<b>19.36</b> 19.35	<b>7775</b> 4461	1.74 yes	12236	0.017857		-0.00094	62 55	no	0.598	-
76 PCB 113/90/101	<b>326</b> PeCB 328	<b>19.78</b> 19.76	53436 32006	1.67	85441	0.104935		-0.00079	413	no	0.71	٠ -
77 PCB 83/99	326	20.23	32006 <b>26270</b>	yes 1.61	42640	0.05969		-0.0009	382 191	no	0.623	-
78 PCB 112	PeCB 328 326	20.22 NotFnd	16370 *	yes *	*	-0.00069		0.00000	181			
	PeCB 328	20.33	*	no		-v.vouov		-0.00069	*	no	0.819	-
79 PCB 109/119/86	/97/125/ 326 PeCB 328	<b>20.62</b> 20.62	<b>15821</b> 9992	1.58	25813	0.031002		-0.00077	67	no	0.726	-
80 PCB 117/116/85	326	21.19	6529	yes 1.66	10465	0.011476		-0.00071	63 44	no	0.796	-
81 PCB 110/115	PeCB 328 326	21.23 <b>21.32</b>	3936 <b>34605</b>	yes 1.64	55662				42			
01 FGB 110/115	PeCB 328	21.32	21056	yes	55062	0.064772		-0.00075	242 223	no	0.75	-
82 PCB 82	<b>326</b> PeCB 328	21.57	1551	1.55	2550	0.003941		-0.001	10	no	0.564	-
83 PCB 111	326 328	21.59 NotFnd	999 *	yes *	*	-0.00069		-0.00069	10	no	0.809	_
84 DCB 120	PeCB 328	21.85	*	no *	*				*			
84 PCB 120	326 PeCB 328	NotFnd 22.25	*	no	-	-0.00059		-0.00059	*	no	0.951	-
85 PCB 108/124	326	23.20	1903	1.57	3112	0.002419		-0.00096	7	no	1.122	-
86 PCB 107	PeCB 328 326	23.21 <b>23.42</b>	1209 <b>5219</b>	yes 1.45	8812	0.0067		-0.00093	8 18	yes	1.147	_
	PeCB 328	23.40	3592	yes					18			
87 PCB 123	326 PeCB 328	NotFnd 23.51	*	* no	*	-0.0012		-0.0012	*	no	0.894	-
88 PCB 106	326	NotFnd	*	*	*	-0.00088		-0.00088	*	no	1.218	-
89 PCB 118	PeCB 328 326	23.63 23.79	* 54659	no 1.54	90156	0.069981		-0.00109	* 188	no	0.981	_
	PeCB 328	23.80	35497	yes	20100	2.030001		-0.00100	190	110	0.001	-

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90 PCB 122	326 PeCB 328	NotFnd	*	*	*	-0.00099	-0.00099	*	no	1.079	-
91 PCB 114	326	24.08 NotFnd	*	no *	*	-0.00106	-0.00106	*	no	1.01	-
92 PCB 105	PeCB 328 326	24.28 <b>24.84</b>	* 18035	no 1.55	29642	0.023534	-0.0011	* 58	no	0.977	_
93 PCB 127	PeCB 328 326	24.85 NotFnd	11607 *	yes *	*	-0.00087	-0.00087	59 *		1.23	
	PeCB 328	26.20	*	no				*	no ·		-
94 PCB 126	326 PeCB 328	NotFnd 27.72	*	no	*	-0.0011	-0.0011	*	no	0.977	-
95 PCB 155	360 HxCB 362	NotFnd 19.63	*	* no	*	-0.00131	-0.00131	*	no	0.997	-
96 PCB 152	360	NotFnd	*	*	*	-0.0016	-0.0016	*	no	0.813	-
97 PCB 150	HxCB 362 360	19.78 NotFnd	*	no *	*	-0.002	-0.002	*	no	0.65	_
98 PCB 136	HxCB 362 360	19.88 <b>20.18</b>	* 6740	no 1.31	11901	0.014992	-0.00171	* 35	no	0.761	_
99 PCB 145	HxCB 362 360	20.18 NotFnd	5162 *	yes *	*	-0.00197		34			
	HxCB 362	20.41	*	no			-0.00197	*	по	0.662	-
100 PCB 148	360 HxCB 362	NotFnd 21.55	*	no	*	-0.00237	-0.00237	*	no	0.551	-
101 PCB 151/135	360 HxCB 362	<b>22.03</b> 22.04	<b>19168</b> 13924	1.38 yes	33092	0.061122	-0.00251	80 75	no	0.519	-
102 PCB 154	360	22.23	1162	1.28	2068	0.003209	-0.00211	6	no	0.618	-
103 PCB 144	HxCB 362 360	22.22 <b>22.49</b>	906 <b>2140</b>	yes 1.18	3950	0.006737	-0.00232	6 11	no	0.562	-
104 PCB 147/149	HxCB 362 360	22.51 <b>22.79</b>	1811 <b>66311</b>	yes 1.33	116115	0.168106	-0.0029	11 210	yes	0.662	_
105 PCB 134/143	HxCB 362 360	22.80	49804	yes				198	-		
	HxCB 362	<b>22.97</b> 23.06	<b>1665</b> 1452	1.15 yes	3117	0.0051	-0.00327	6 6	no	0.586	-
106 PCB 139/140	360 HxCB 362	NotFnd 23.31	*	* no	*	-0.00282	-0.00282	*	no	0.68	-
107 PCB 131	360 HxCB 362	NotFnd 23.49	*	* no	*	-0.00357	-0.00357	*	no	0.537	-
108 PCB 142	360	NotFnd	*	*	*	-0.00306	-0.00306	*	no	0.626	-
109 PCB 132	HxCB 362 360	23.65 <b>23.88</b>	7656	no <b>1.22</b>	13930	0.023835	-0.00342	23	no	0.561	-
110 PCB 133	HxCB 362 360	23.88 <b>24.29</b>	6273 <b>1757</b>	yes 1.37	3037	0.004433	-0.00292	23 5	no	0.657	_
	HxCB 362	24.31	1280	yes *	*			4			
111 PCB 165	360 HxCB 362	NotFnd 24.66	*	no		-0.00251	-0.00251	*	no	0.765	-
112 PCB 146	360 HxCB 362	<b>24.88</b> 24.86	<b>17647</b> 13428	1.31 yes	31075	0.042283	-0.00272	50 48	no	0.705	-
113 PCB 161	360 HxCB 362	NotFnd 25.01	*	*	*	-0.00198	-0.00198	*	no	0.97	-
114 PCB 153/168	360	25.43	143407	no <b>1.32</b>	252500	0.284182	-0.00225	409	no	0.852	-
115 PCB 141	HxCB 362 360	25.45 <b>25.61</b>	109093 <b>2852</b>	yes 1.37	4931	0.00694	-0.00281	383 8	no	0.681	
116 PCB 130	HxCB 362 360	25.60 <b>25.98</b>	2079 <b>3414</b>	yes 1.25	6147	0.009555	-0.00311	7 10	no	0.617	
	HxCB 362	25.99	2733	yes				10			-
117 PCB 137	360 HxCB 362	26.21 26.19	1095 709	1.54 no	1804	-0.00316	-0.00316	*	yes	0.607	-
118 PCB 164	360 HxCB 362	<b>26.29</b> 26.28	<b>2734</b> 2222	1.23 yes	4955	0.005205	-0.0021	7 8	yes	0.913	-
119 PCB 138/163/129	360	26.59	101766	1.3	179735	0.244661	-0.00272	270	no	0.705	-
120 PCB 160	HxCB 362 360	26.60 NotFnd	77968 *	yes *	*	-0.00233	-0.00233	259 *	no	0.822	-
121 PCB 158	HxCB 362 360	26.78 <b>26.96</b>	* 9049	no <b>1.28</b>	16106	0.015379	-0.00191	* 25	no	1.004	_
122 PCB 128/166	HxCB 362 360	26.96	7058	yes		0.02275		23			
	HxCB 362	<b>27.80</b> 27.78	<b>10432</b> 7924	1.32 yes	18356	0.02275	-0.00248	23 22	no	0.774	-
123 PCB 159	360 HxCB 362	NotFnd 28.76	*	* no	*	-0.00086	-0.00086	*	no	1.179	-
124 PCB 162	360 HxCB 362	29.05 29.05	392 250	1.57 no	642	-0.00092	-0.00092	*	yes	1.101	-
125 PCB 167	360	29.53	4811	1.32	8444	0.006458	-0.00107	22	no	0.946	-
126 PCB 156/157	HxCB 362 360	29.52 <b>30.68</b>	3634 <b>8671</b>	yes 1.26	15551	0.01205	-0.00099	20 35	no	1.017	-
127 PCB 169	HxCB 362 360	30.71 NotFnd	6880 *	yes *	*	-0.00106	-0.00106	33	no	0.954	_
128 PCB 188	HxCB 362 394	34.11 NotFnd	*	no *	*			*			
	HpCB 396	24.23	*	no		-0.00116	-0.00116	*	no	1.012	-
129 PCB 179	<b>394</b> HpCB 396	<b>24.52</b> 24.52	<b>8834</b> 8055	1.1 yes	16888	0.01889	-0.00112	51 48	no	1.047	-
130 PCB 184	394 HpCB 396	NotFnd 25.00	*	* no	*	-0.00122	-0.00122	*	no	0.961	-
131 PCB 176	394	25.32	2190	1.02	4346	0.004956	-0.00114	13	no	1.027	-
132 PCB 186	HpCB 396 394	25.31 NotFnd	2156	yes *	*	-0.0013	-0.0013	14	no	0.899	_
133 PCB 178	HpCB 396 <b>394</b>	25.75 <b>27.00</b>	* 3972	no 1.07	7671	0.012443	-0.00162	* 22	no	0.722	_
	HpCB 396	27.01	3699	yes *	*			23			
134 PCB 175	394 HpCB 396	NotFnd 27.61	*	no		-0.00156	-0.00156	*	no	0.753	-
135 PCB 187	<b>394</b> HpCB 396	<b>27.87</b> 27.88	<b>25722</b> 23609	1.09 yes	49331	0.079901	-0.00162	142 138	no	0.723	-
136 PCB 182	394 HpCB 396	NotFnd 28.10	*	no	*	-0.00157	-0.00157	*	no	0.747	-
	. ipob 080	20.10		110							

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137 PCB 183	<b>394</b> HpCB 396	28.48 28.50	<b>17337</b> 15737	1.1	33074	0.033359		-0.00181	55	yes	1.162	-
138 PCB 185	394	NotFnd	*	yes *	*	-0.00248		-0.00248	54 *	no	0.851	-
139 PCB 174	HpCB 396 394	28.56 NotFnd	*	no *	*	-0.00217		-0.00217	*	no	0.97	_
140 PCB 177	HpCB 396 <b>394</b>	28.72 <b>29.14</b>	* 11654	no <b>1.08</b>	22484	0.027935		-0.00224	* 36	20		
	HpCB 396	29.14	10830	yes					35	no	0.943	-
141 PCB 181	394 HpCB 396	NotFnd 29.56	*	* no	*	-0.00236		-0.00236	*	no	0.892	-
142 PCB 171/173	<b>394</b> HpCB 396	<b>29.78</b> 29.78	<b>6099</b> 5474	1.11 yes	11573	0.014299		-0.00222	19 19	no	0.948	-
143 PCB 172	394	NotFnd	*	*	*	-0.00222		~0.00222	*	no	0.95	-
144 PCB 192	HpCB 396 394	31.42 NotFnd	*	· no	*	-0.00194		-0.00194	*	no	1.085	
145 PCB 193/180	HpCB 396 394	31.74 <b>32.13</b>	* 34785	no <b>1.09</b>	66754	0.069347		-0.00152	* 100	no	1.383	_
146 PCB 191	HpCB 396 394	32.06 NotFnd	31969	yes *	*				98			
	HpCB 396	32.48	*	no		-0.00156		-0.00156	*	no	1.352	•
147 PCB 170	<b>394</b> HpCB 396	<b>33.45</b> 33.45	<b>5955</b> 5682	1.05 yes	11637	0.014711		-0.00166	17 18	no	1.271	-
148 PCB 190	394 HpCB 396	<b>34.01</b> 34.02	<b>3756</b> 3497	1.07 yes	7253	0.006319		-0.00157	10	no	1.345	-
149 PCB 189	394	36.84	1225	1.01	2436	0.001837		-0.00056	10 8	no	0.944	-
150 PCB 202	HpCB 396 <b>428</b>	36.88 <b>29.26</b>	1211 <b>2167</b>	yes <b>0.92</b>	4525	0.007313		-0.00115	9 19	no	0.988	-
151 PCB 201	OcCB 430 <b>428</b>	29.27 <b>30.19</b>	2358 <b>1284</b>	yes 0.99	2581	0.003212		-0.00114	17 10	no	0.997	_
152 PCB 204	OcCB 430 428	30.18 NotFnd	1297	yes *	*				9			
	OcCB 430	30.88	*	no		-0.00119		-0.00119	*	no	0.962	-
153 PCB 197	428 OcCB 430	31.11 31.12	430 439	0.98 no	869	-0.0013		-0.0013	*	yes	0.876	-
154 PCB 200	428 OcCB 430	31.27 31.23	7 9	0.76 yes	16	-0.00113		-0.00113	*	yes	1.006	-
155 PCB 198/199	428 OcCB 430	NotFnd	*	*	*	-0.00174		-0.00174	*	no	0.654	-
156 PCB 196	428	34.19 NotFnd	*	no *	*	-0.00169		-0.00169	*	no	0.674	-
157 PCB 203	OcCB 430 <b>428</b>	34.90 <b>35.12</b>	* 1382	no <b>0.92</b>	2880	0.005421		-0.00173	* 11	no	0.659	_
158 PCB 195	OcCB 430 428	35.10 NotFnd	1498	yes *	*	-0.0008		-0.0008	9	no	1.005	
159 PCB 194	OcCB 430 428	36.57	*	no	40.57.00		DOD 404 NDD		*			-
	OcCB 430	39.20 39.19	-1910.83 -2147	0.89 OK	-4057.83	-0.0046	PCB 194 NDR	-0.00074	17 16	хL	1.091	-
160 PCB 205	428 OcCB 430	NotFnd 39.75	*	* no	*	-0.00074		-0.00074	*	no	1.091	-
161 PCB 208	462 NoCB 464	NotFnd 36.30	*	* no	*	-0.00153		-0.00153	*	no	1.023	-
162 PCB 207	462 NoCB 464	NotFnd 37.32	*	*	*	-0.00118		-0.00118	*	no	1.32	-
163 PCB 206	462	NotFnd	*	no *	*	-0.00152		-0.00152	*	no	1.027	-
164 PCB 209	NoCB 464 498	41.70 NotFnd	*	no *	*	-0.0025		-0.0025	*	no	1.04	-
165 PCB 1L	DCB 500 200	43.54 <b>8.98</b>	* 166565	no <b>3.49</b>	214235	0.144663		0	* 4294	no	0.824	72
166 PCB 3L	202 <b>200</b>	8.97 <b>10.17</b>	47669 <b>154383</b>	yes	197548				404			
	202	10.16	43165	3.58 yes		0.128924		0	4104 383	yes	0.852	65
167 PCB 4L	<b>234</b> 236	<b>10.28</b> 10.28	<b>58670</b> 35077	1.67 yes	93747	0.096104		0	2545 1497	no	0.543	48
168 PCB 15L	<b>234</b> 236	<b>12.93</b> 12.91	<b>180033</b> 111064	1.62 yes	291098	0.150724		0	1451 1585	no	1.074	76
169 PCB 19L	<b>268</b> 270	<b>11.68</b> 11.65	<b>55706</b> 51811	1.08	107517	0.103433		0.001	209	no	0.578	52
170 PCB 37L	268	16.68	158142	yes 1.02	313836	0.19998		0.001	589 501	no	1.987	100
171 PCB 54L	270 <b>302</b>	16.68 <b>13.06</b>	155694 <b>49374</b>	yes 0.82	109671	0.107012		0	867 826	no	1.297	54
172 PCB 81L	304 <b>302</b>	13.07 <b>21.41</b>	60296 <b>121699</b>	yes 0.8	273588	0.19928		0	1568 1133	no	1.738	100
173 PCB 77L	304 <b>302</b>	21.42 <b>21.85</b>	151889 <b>118669</b>	yes 0.82	263791	0.199111		0	2208 1046	no	1.677	100
	304	21.85	145122	yes					2048			
174 PCB 104L	<b>338</b> 340	<b>15.92</b> 15.93	<b>71151</b> 43885	1.62 yes	115036	0.141566		0	3631 8527	no	1.156	71
175 PCB 123L	<b>338</b> 340	<b>23.49</b> 23.50	<b>164137</b> 101726	1.61 yes	265863	0.195317		0	1411 871	no	1.936	98
176 PCB 118L	<b>338</b> 340	<b>23.77</b> 23.76	<b>161716</b> 100303	1.61 yes	262019	0.195529		0	1354 841	no	1.906	98
177 PCB 114L	<b>338</b> 340	24.25	153325	1.7	243713	0.195508		0.001	1291	no	1.773	98
178 PCB 105L	338	24.25 24.83	90388 <b>160126</b>	yes 1.64	257469	0.200925		0	759 1289	no	1.822	101
179 PCB 126L	340 <b>338</b>	24.81 <b>27.69</b>	97343 <b>146441</b>	yes 1.57	239497	0.196261		0.001	784 1125	no	1.735	98
180 PCB 155L	340 <b>372</b>	27.67 <b>19.61</b>	93055 <b>72214</b>	yes 1.3	127691	0.126601		0	703 4781	no	1.404	63
181 PCB 167L	374 <b>372</b>	19.61 <b>29.50</b>	55477	yes					2477			
	374	29.49	<b>156172</b> 119798	1.3 yes		0.182015		0	2561 1035	no	2.11	91
182 PCB 156L/157L	<b>372</b> 374	<b>30.68</b> 30.69	<b>284187</b> 222405	1.28 yes	506592	0.366985		0	3835 1568	yes	1.921	92
183 PCB 169L	<b>372</b> 374	<b>34.08</b> 34.06	<b>98505</b> 77055	1.28 yes	175560	0.129516		0	1498 599	no	1.886	65
			. , 555	,					550			

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184 PCB 188L	<b>406</b> 408	24.20	71625	1.08	137712	0.144151		0	5141 2416	no	1.329	72
185 PCB 180L	408 406	24.21 <b>32.09</b>	66087 <b>70718</b>	yes 1.04	138987	0.140193		0	2046	no	1.349	70
	408	32.09	68270	yes					2349			
186 PCB 170L	406	33.42	65955	1.13	124243	0.143207		0	1891	no	1.18	72
100 1 02 1702	408	33.42	58288	yes	12-12-10	0.140207		·	1974	110	11.10	
187 PCB 189L	406	36.84	144161	1.06	280572	0.176913		0	2476	no	2,157	89
107 1 015 1032	408	36.83	136411	yes	200312	0.170313		Ü	2493		2.107	00
188 PCB 202L	440	29.25	59750	0.92	125056	0.119841		0	4041	no	1.419	60
100 PCB 202L	442	29.27	65305	yes	123030	0.119041		U	2111	110	1.415	00
189 PCB 205L	442	39.71	95352	0.94	196878	0.174886		0	1936	no	1.531	88
109 FCB 203L	442	39.73	101526		190070	0.174000		U	2290	110	1.001	00
190 PCB 208L	474	36.27	50337	yes 0.76	116490	0.139066		0	4013	no	1.139	70
190 PCB 200L	474	36.28			116490	0.139066		U	3829	110	1.139	70
404 DCD 0001			66153	yes	00000	0.404450		0			0.76	81
191 PCB 206L	474	41.70	40384	0.81	89986	0.161153		U	3064	no	0.76	01
100 000 0001	476	41.73	49601	yes					2705		0.704	70
192 PCB 209L	510	43.54	43249	1.15	80910	0.151947		0	4455	no	0.724	76
	512	43.53	37661	yes					1558		0.000	
193 PCB 28L	268	14.41	211487	1.06	411166	0.255225		0.001	739	no	2.039	115
PCB Cleanup Standa		14.43	199679	yes					1259			
194 PCB 111L	338	21.83	131003	1.66	210014	0.222388		0	1187	no	1.343	100
PCB Cleanup Standa		21.84	79011	yes					2848			
195 PCB 178L	406	26.98	54960	1.05	107242	0.203612	•	0	3687	no	0.733	92
PCB Cleanup Standa		26.97	52282	yes					1805			
196 PCB 31L	268	NotFnd	*	*	*			0.001		no	1.934	
PCB Audit Standa		14.26	*	no								
197 PCB 95L	338	NotFnd	*	*	*			0.001		no	0.946	
PCB Audit Standa		17.73	*	no								
198 PCB 153L	372	NotFnd	*	*	*			0		no	1.225	
PCB Audit Standa	ard 374	25.40	*	no								
199 PCB 9L	234	11.17	1226711	1.6	1993434	10.21245		-	10967	no	-	-
PCB Recovery Standa	ard 236	11.19	766722	yes					12093			
200 PCB 52L	302	15.36	388693	0.8	875996	6.936327		-	4723	no	-	-
PCB Recovery Standa	ard 304	15.36	487303	yes					8627			
201 PCB 101L	338	19.77	483787	1.63	779714	7.095278		-	4656	no	-	-
PCB Recovery Standa	ard 340	19.76	295928	yes					11273			
202 PCB 138L	372	26.57	452058	1.31	796876	7.398286		-	13082	no	-	-
PCB Recovery Standa	ard 374	26.56	344818	yes					10593			
203 PCB 194L	440	39.18	391355	0.92	815204	7.536248		-	8061	no	-	-
PCB Recovery Standa	ard 442	39.17	423849	yes					9691			
Chlorobiphenyls						-0.00073	0	-0.00073				
Dichlorobiphenyls						0.029372	2	-0.00433				
Trichlorobiphenyls						0.56377	14	-0.00294				
Tetrachlorobiphenyls						0.848039	20	-0.00219				
Pentachlorobiphenyls						0.484592	16	-0.0012				
Hexachlorobiphenyls						0.936997	18	-0.00357				
Heptachlorobiphenyls						0.283997	11	-0.00248				
Octachlorobiphenyls						0.015946	3	-0.00174				
Nonachlorobiphenyls						-0.00153	Ō	-0.00153				
Decachlorobiphenyl						-0.0025	Ō	-0.0025				
PCB (total)						3.162713						
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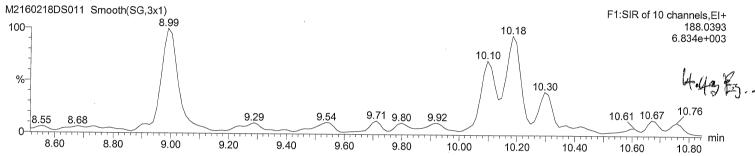
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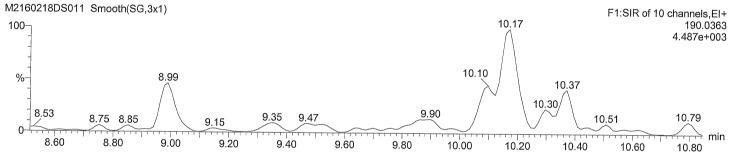
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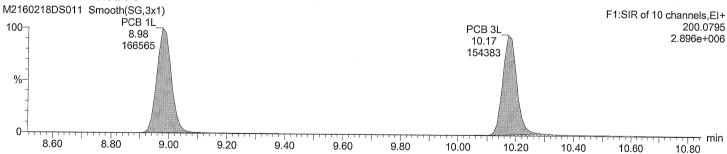




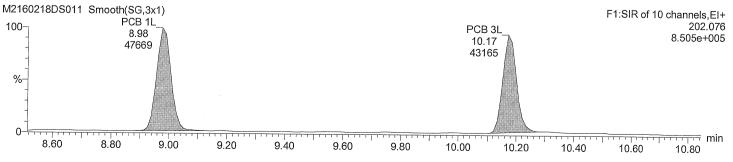
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#### Total MoCB labeled F1



#### Total MoCB labeled F1



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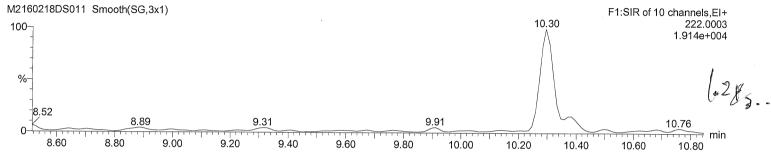
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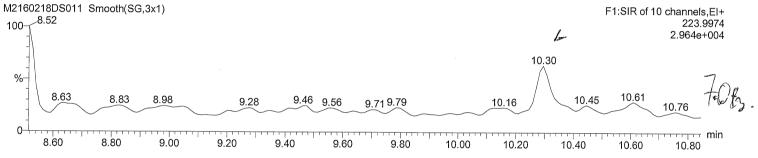
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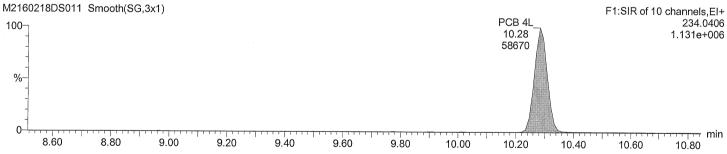




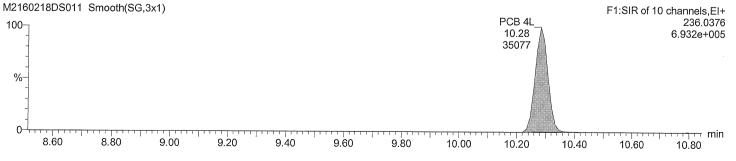
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### **Total DiCB labeled F1**



### Total DiCB labeled F1



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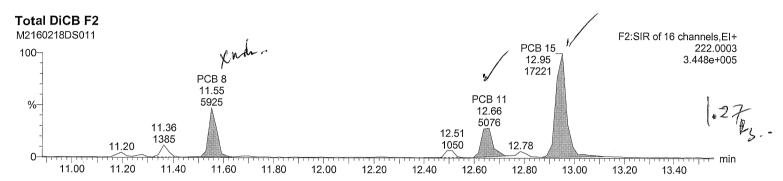
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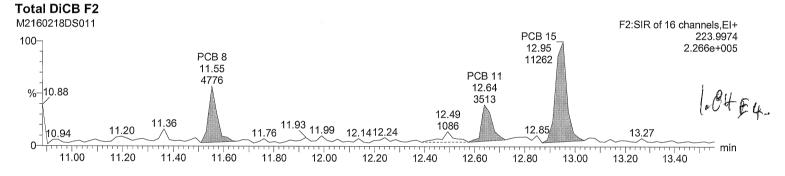
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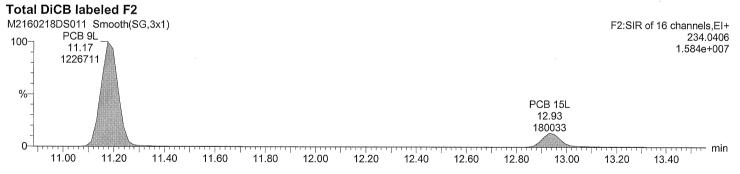
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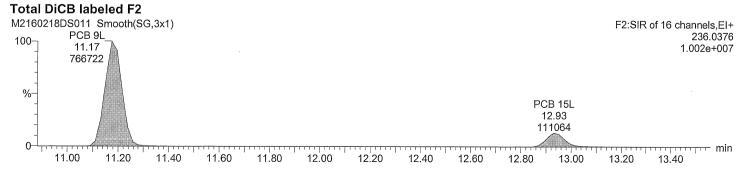
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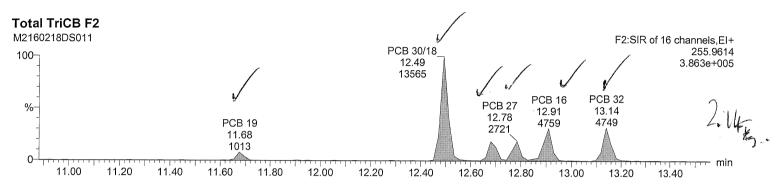
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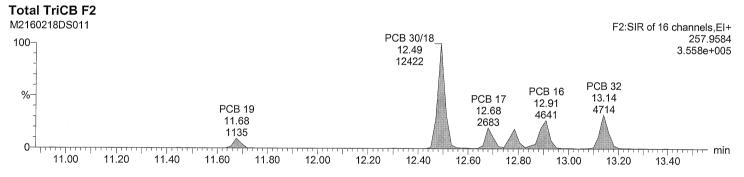
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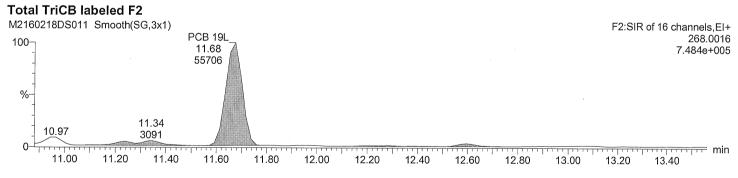
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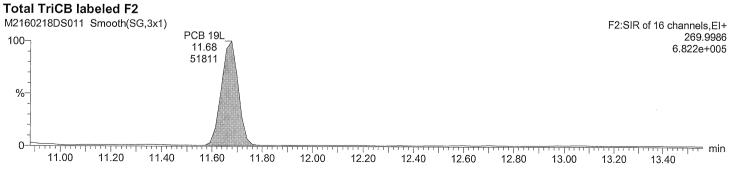
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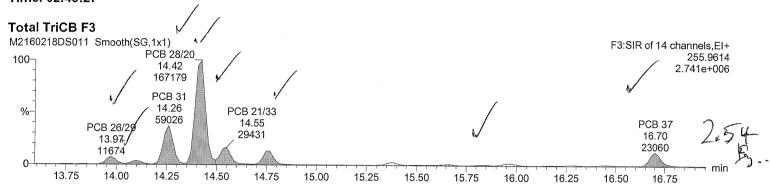
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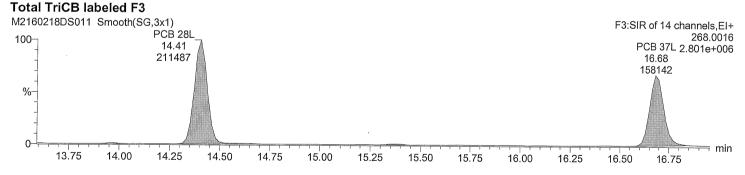
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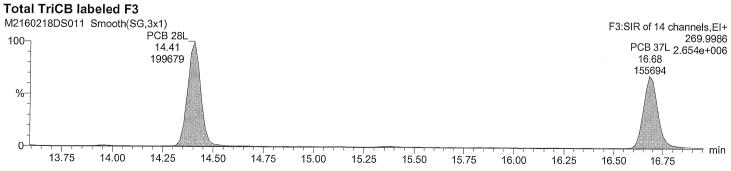
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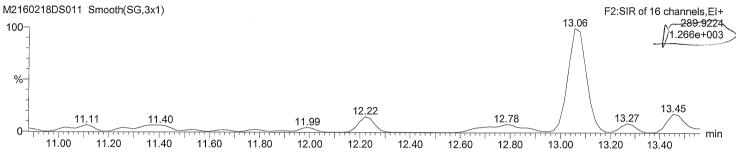
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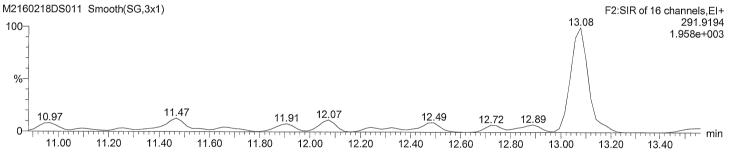
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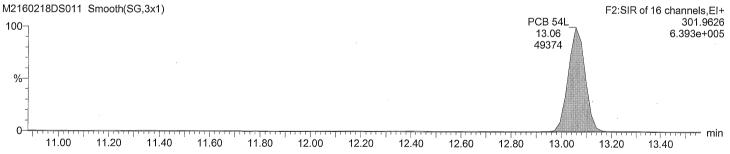
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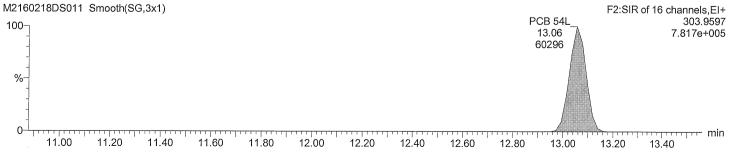
#### **Total TeCB F2**



#### Total TeCB labeled F2



### Total TeCB labeled F2



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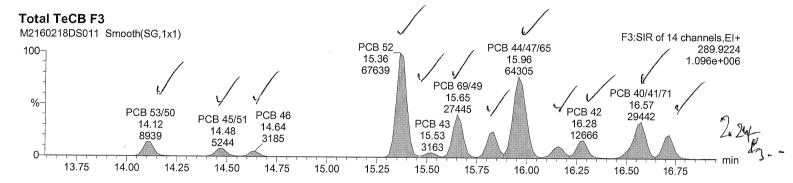
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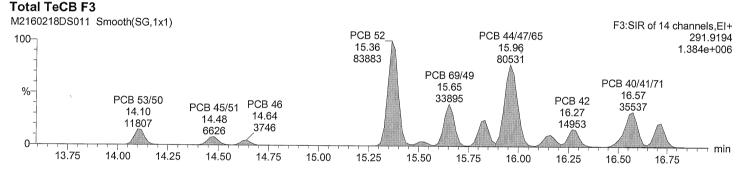
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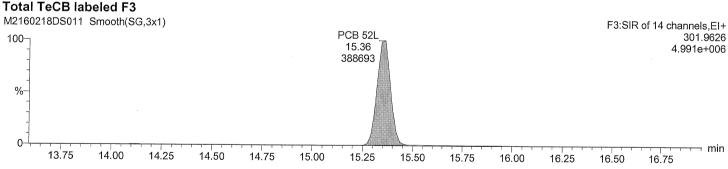
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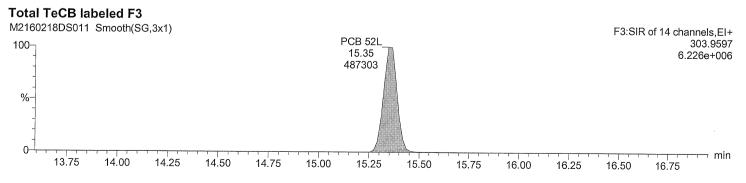
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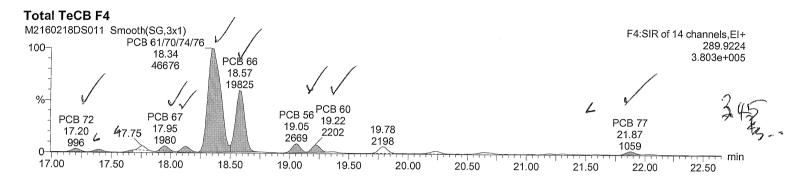
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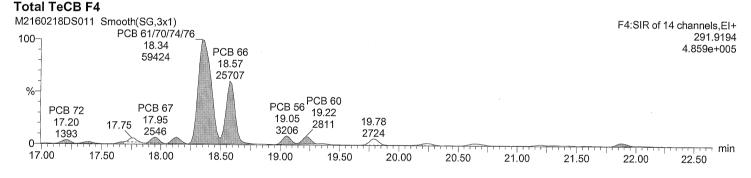
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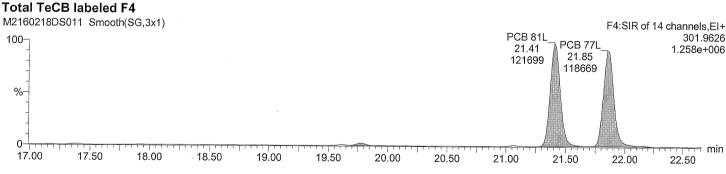
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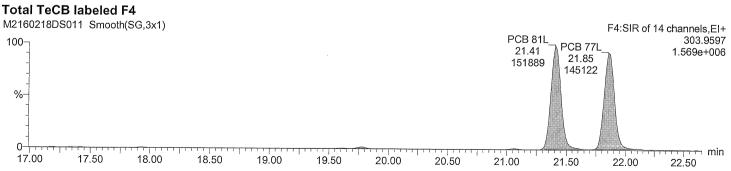
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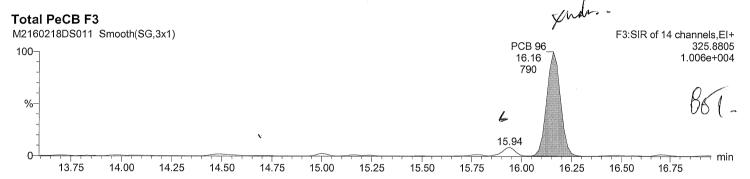
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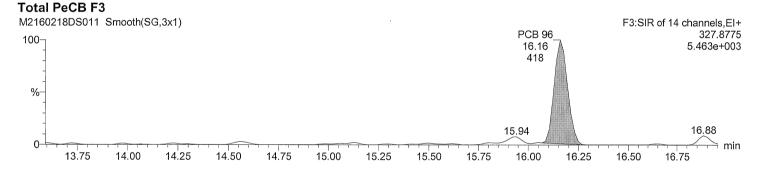
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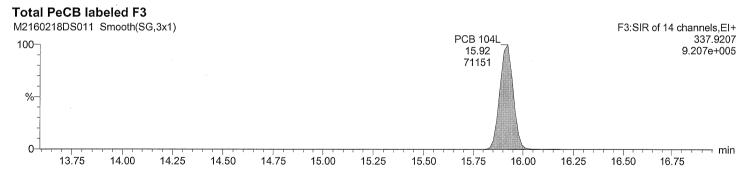
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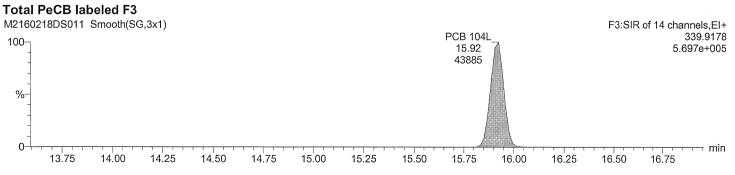
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Vial: 11









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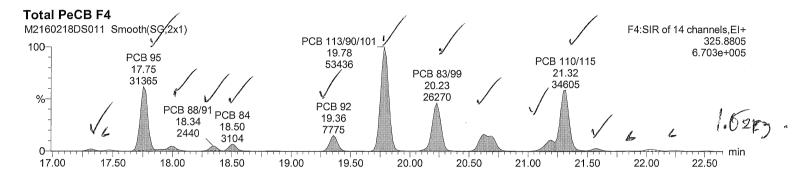
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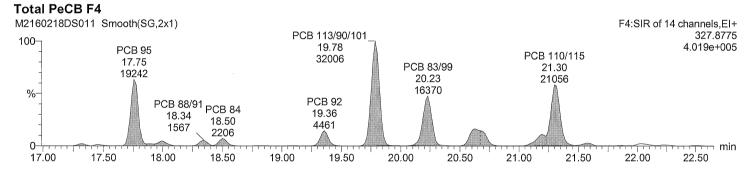
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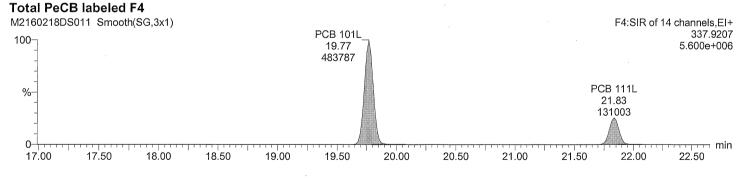
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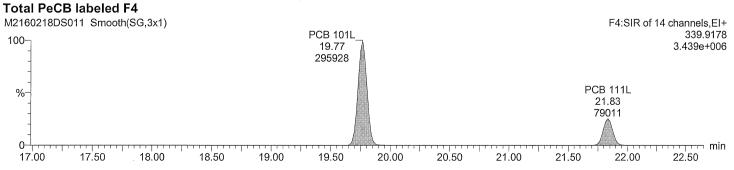
Description: BRP511-01R

Vial: 11









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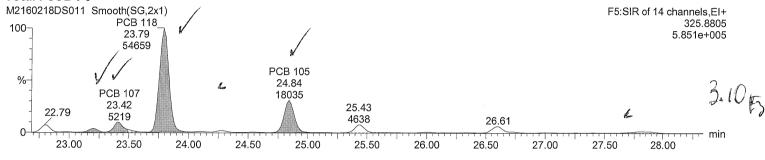
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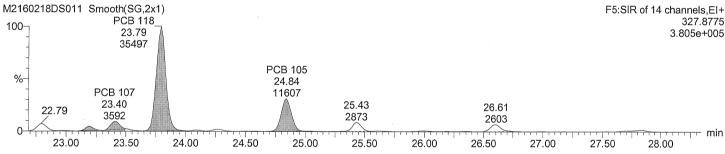
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Date: 18-FEB-2016 Time: 02:49:27

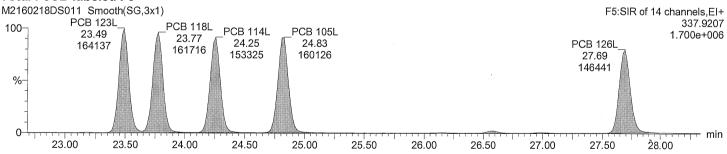
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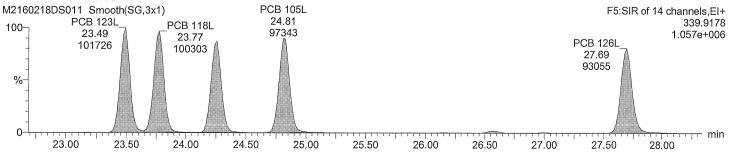
#### Total PeCB F5



#### **Total PeCB labeled F5**



#### **Total PeCB labeled F5**



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**Acquired Date** 

February 20, 2016 02:53:06 PM Eastern Standard Time February 20, 2016 02:55:57 PM Eastern Standard Time

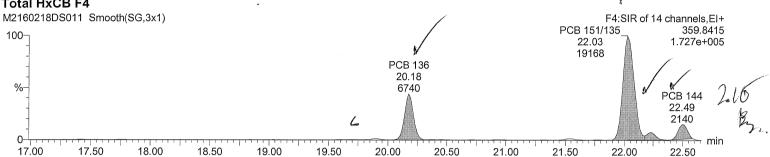
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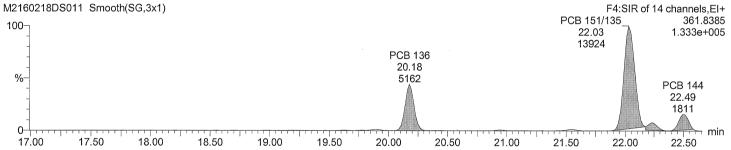
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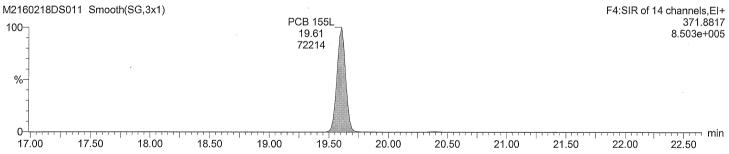




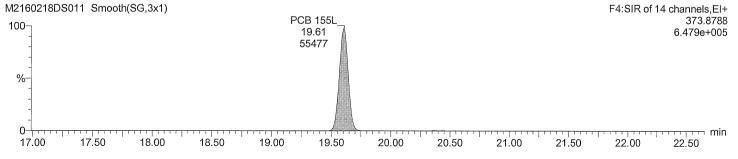
### **Total HxCB F4**



#### Total HxCB labeled F4



#### Total HxCB labeled F4



### **Quantify Sample Report**

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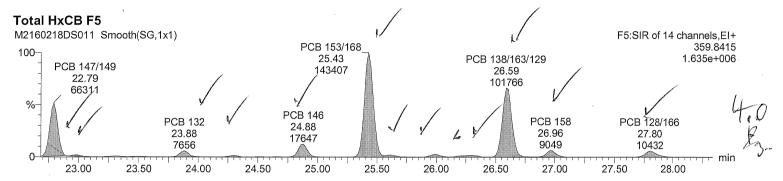
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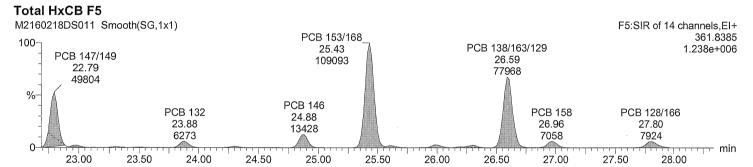
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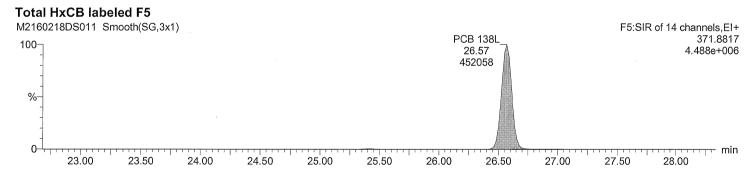
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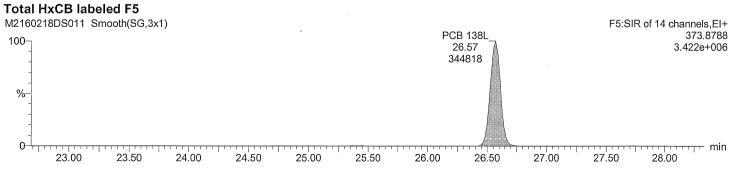
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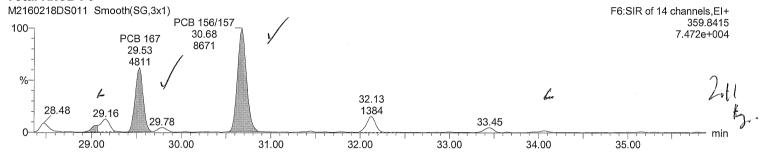
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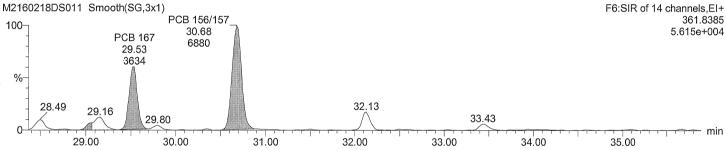
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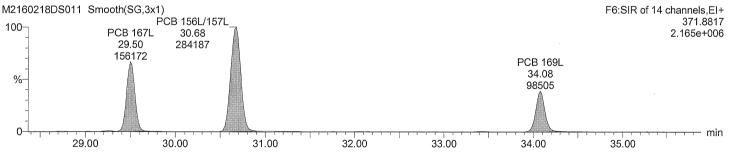
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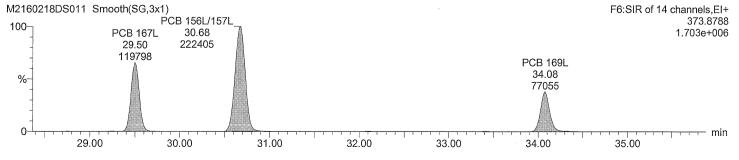




#### Total HxCB labeled F6



#### **Total HxCB labeled F6**



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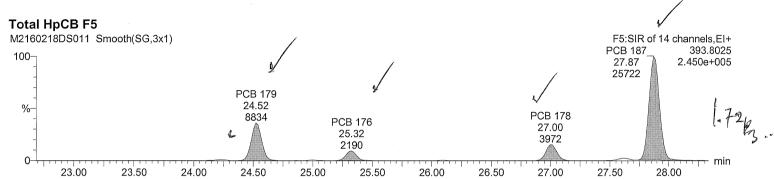
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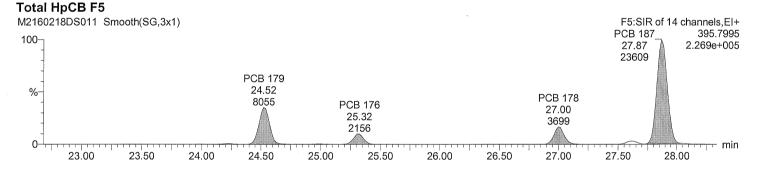
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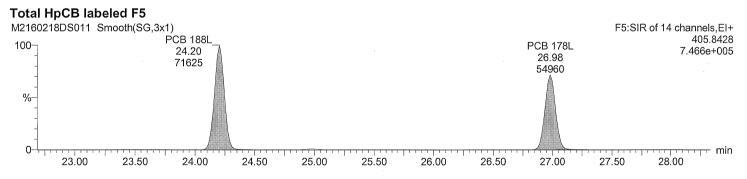
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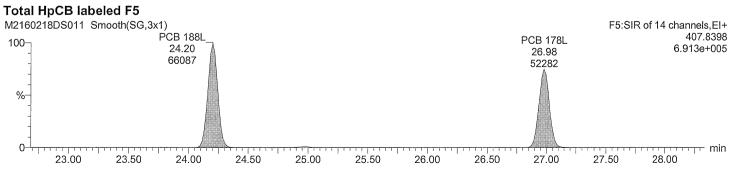
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Vial: 11









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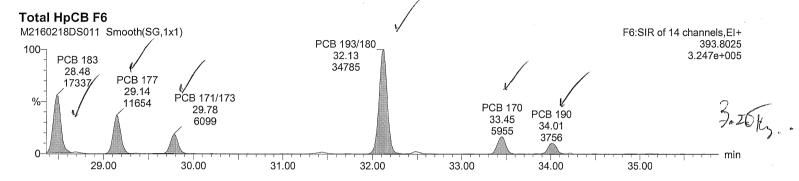
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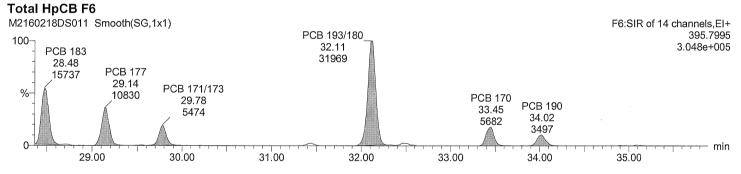
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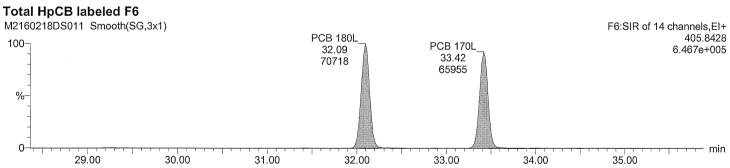
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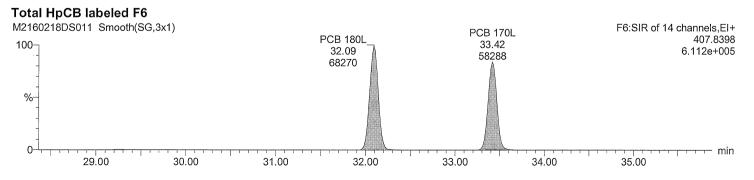
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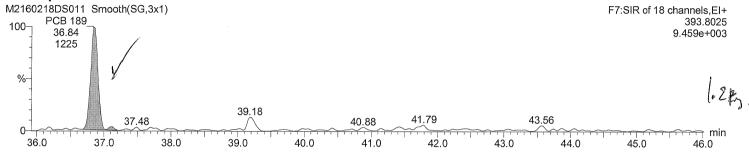
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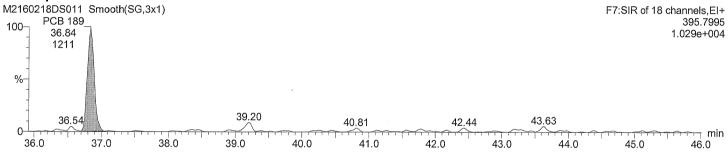
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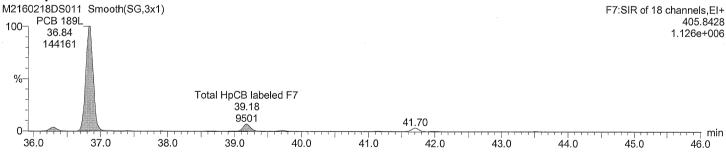




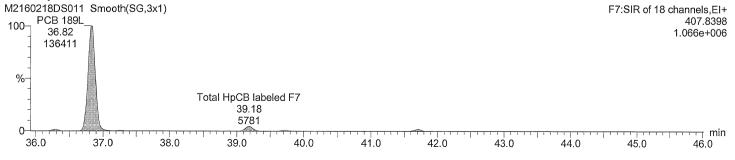
#### **Total HpCB F7**



#### Total HpCB labeled F7



### Total HpCB labeled F7



# ID: Anchor QEA, PG-GP-1-MUS-COC-160104, Ti

February 20, 2016 02:55:57 PM Eastern Standard Time

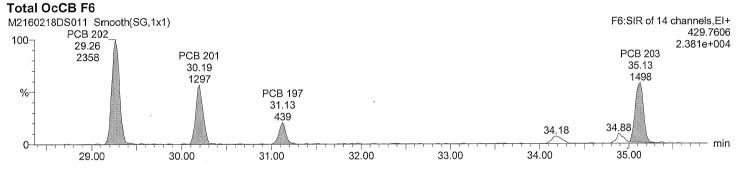
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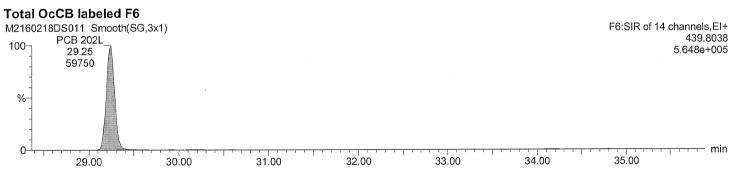
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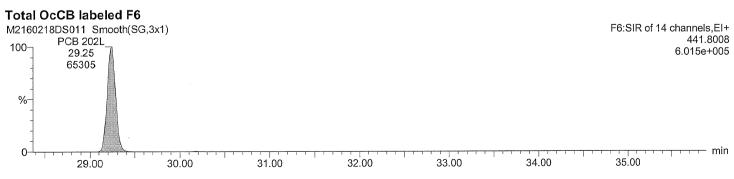
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#### **Total OcCB F6** M2160218DS011 Smooth(SG,1x1) F6:SIR of 14 channels, EI+ 427.7635 PCB 202 100-2.375e+004 29.26 PCB 203 2167 PCB 201 35.12 30.19 1382 4 1284 % PCB 197 31.11 430 34.90 34.24 32.00 33.00 34.00 35.00 29.00 30.00 31.00







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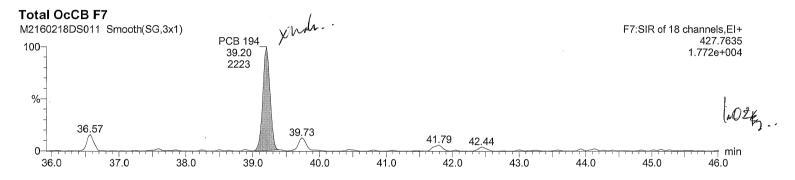
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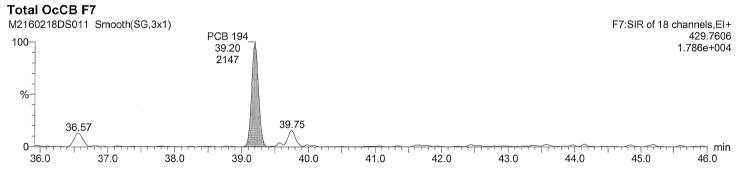
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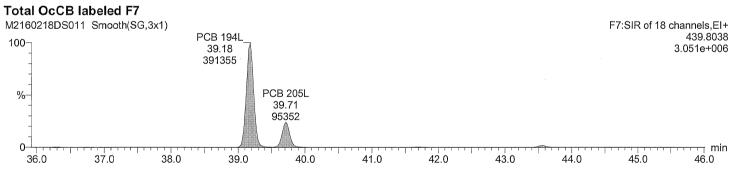
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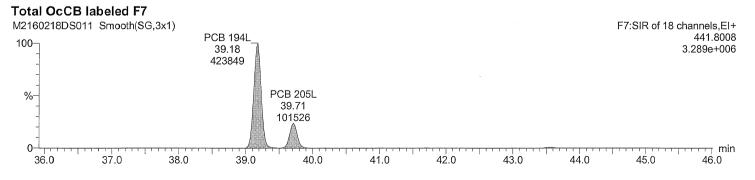
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Vial: 11









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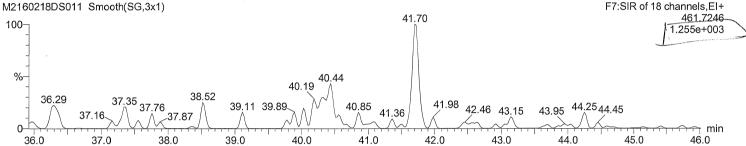
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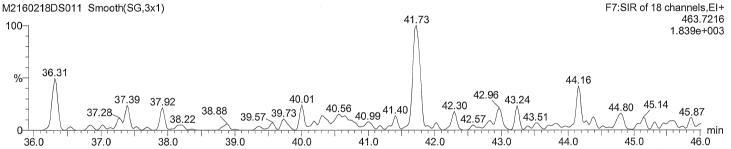
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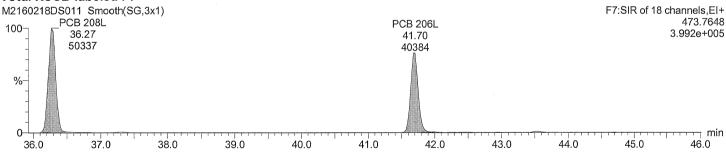




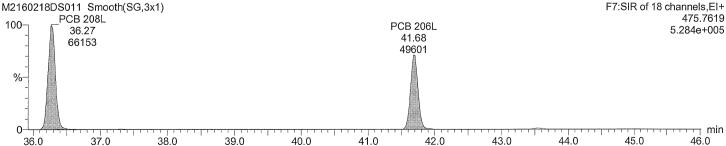
### **Total NoCB F7**



### **Total NoCB labeled F7**



### Total NoCB labeled F7



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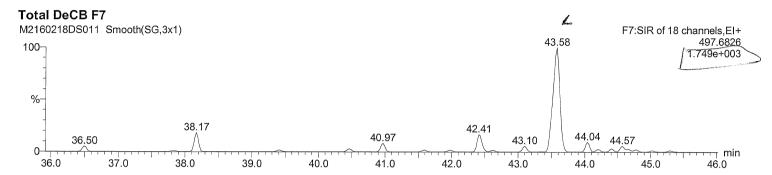
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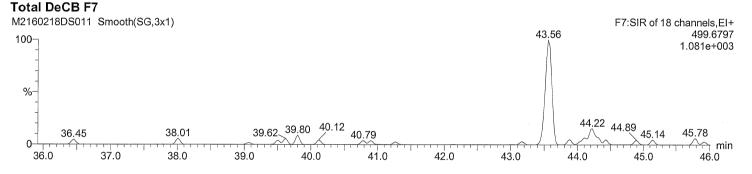
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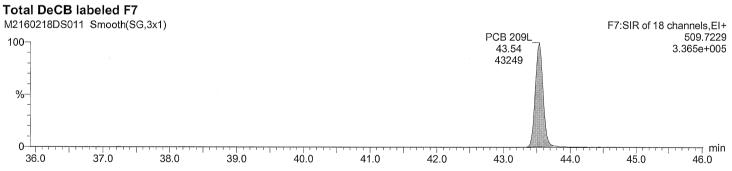
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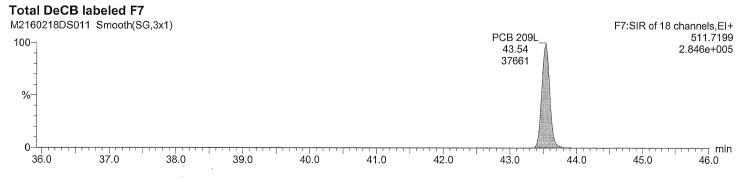
Description: BRP511-01R

Vial: 11









#### lockmass F4 F4:SIR of 14 channels, EI+ M2160218DS011 Smooth(SG,3x1) lockmass F4;18.65;15500 lockmass F4;20.12;17496 330.9792 2.313e+006 % min min 17.00 17.50 18.00 18.50 19.00 19.50 20.00 20.50 21.00 21.50 22.00 22.50

## **Quantify Sample Report**

Acquired Date

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MassLynx 4.0 SP1

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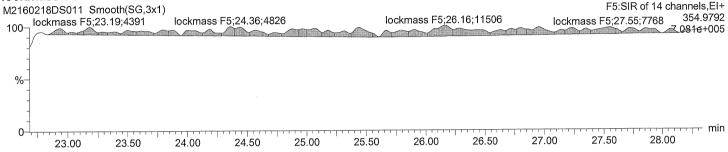
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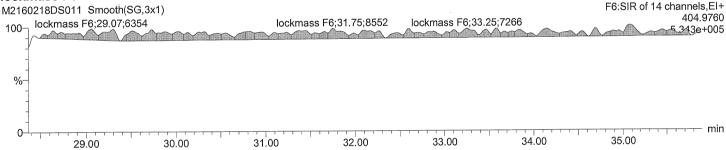
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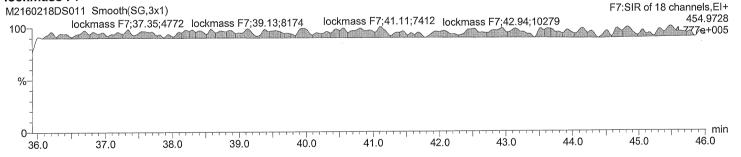


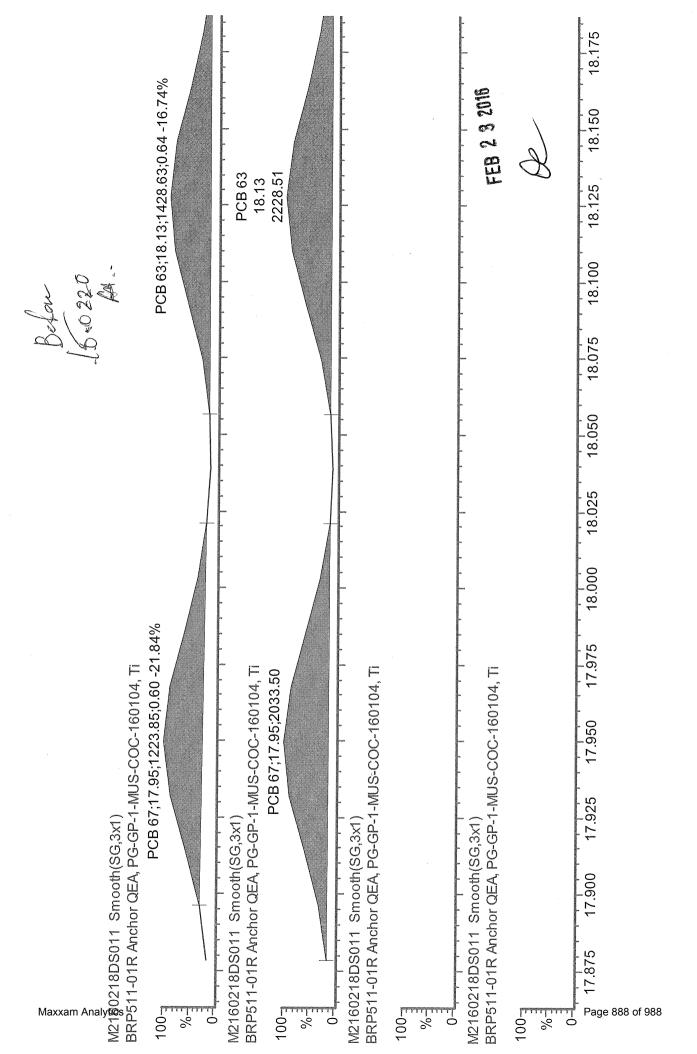


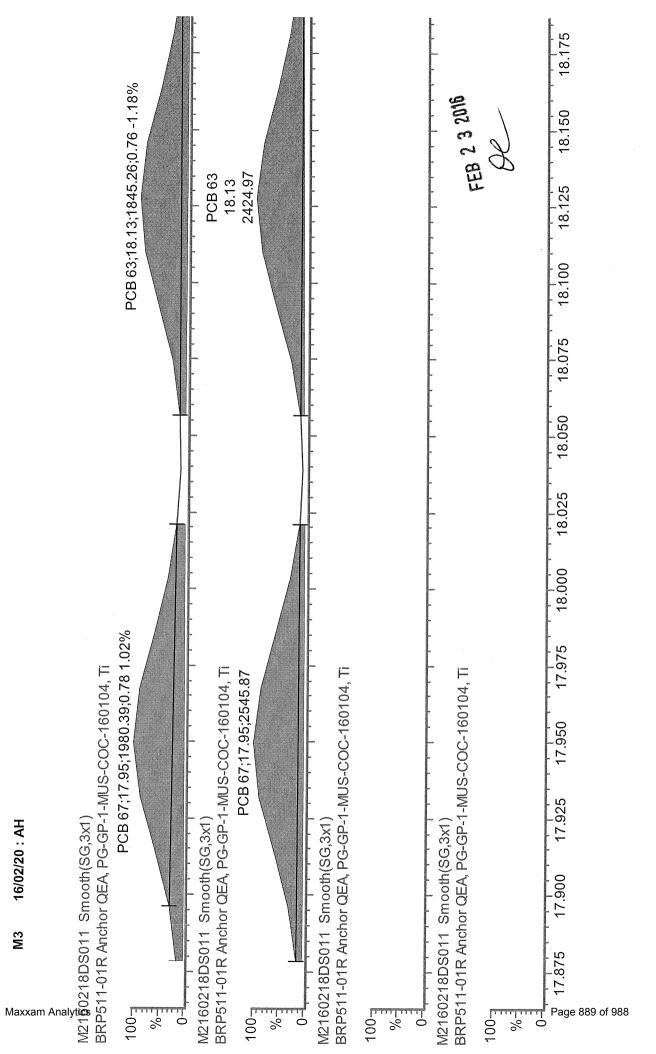
# lockmass F6



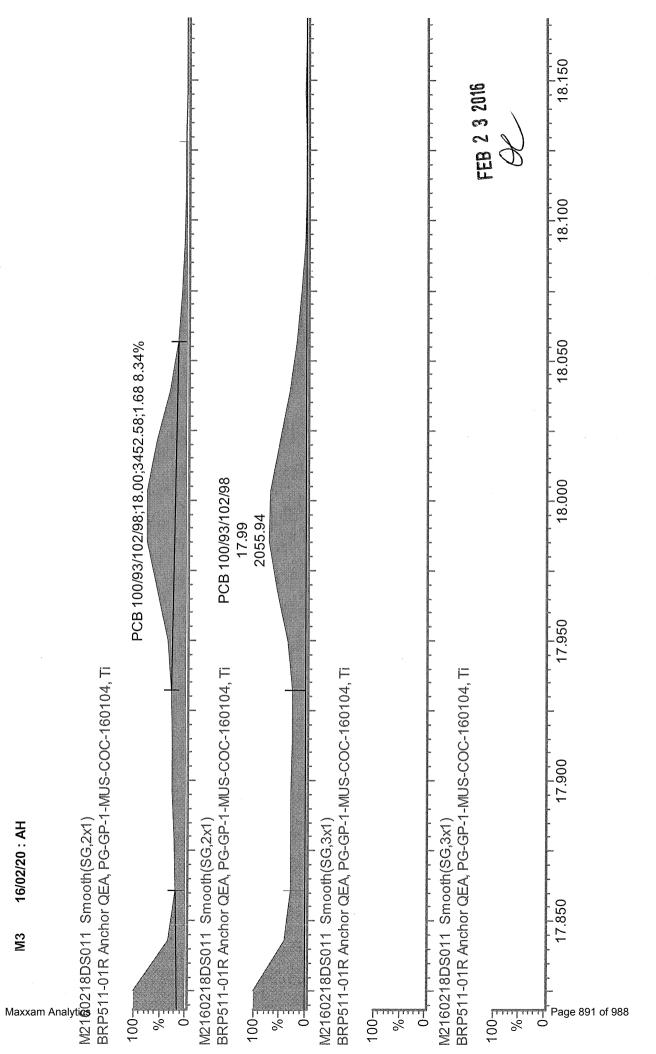
### lockmass F7

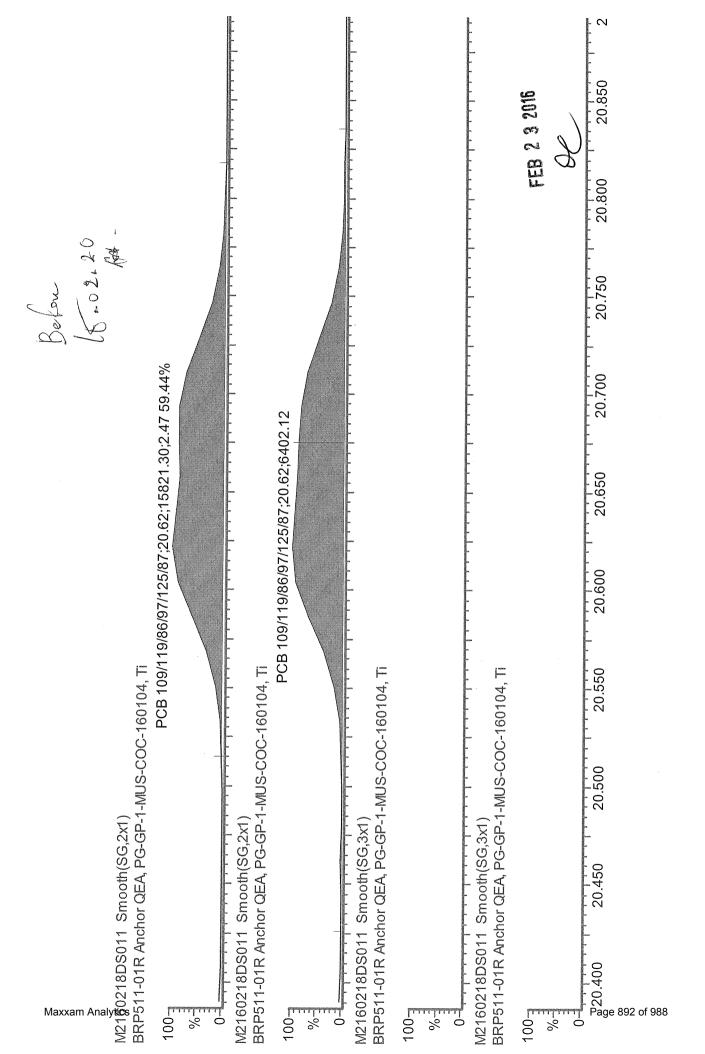


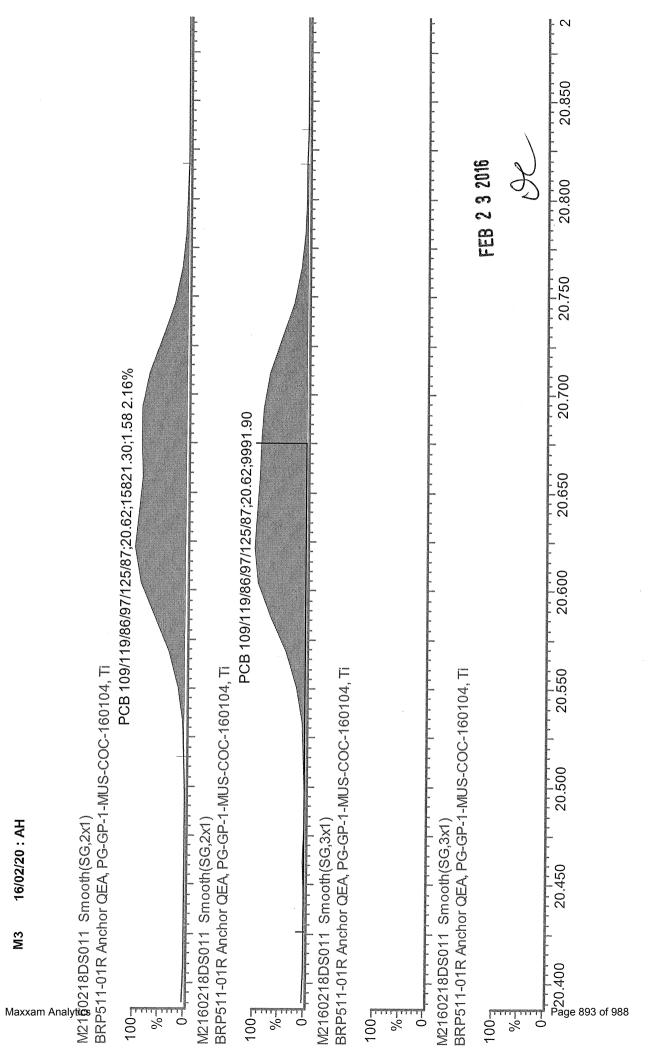


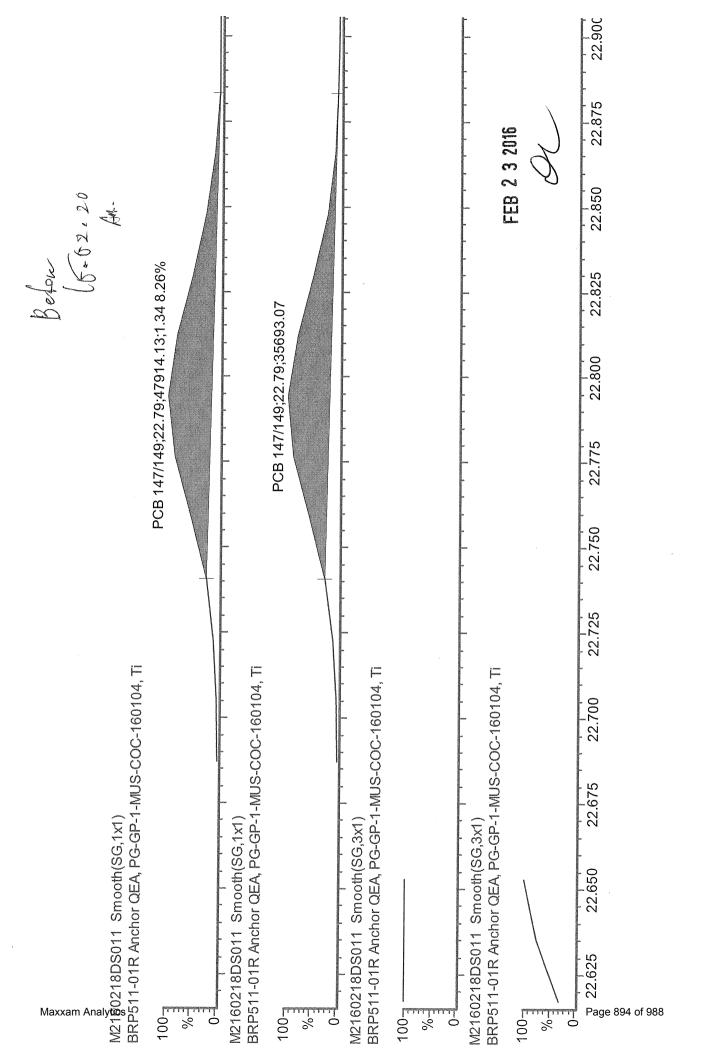


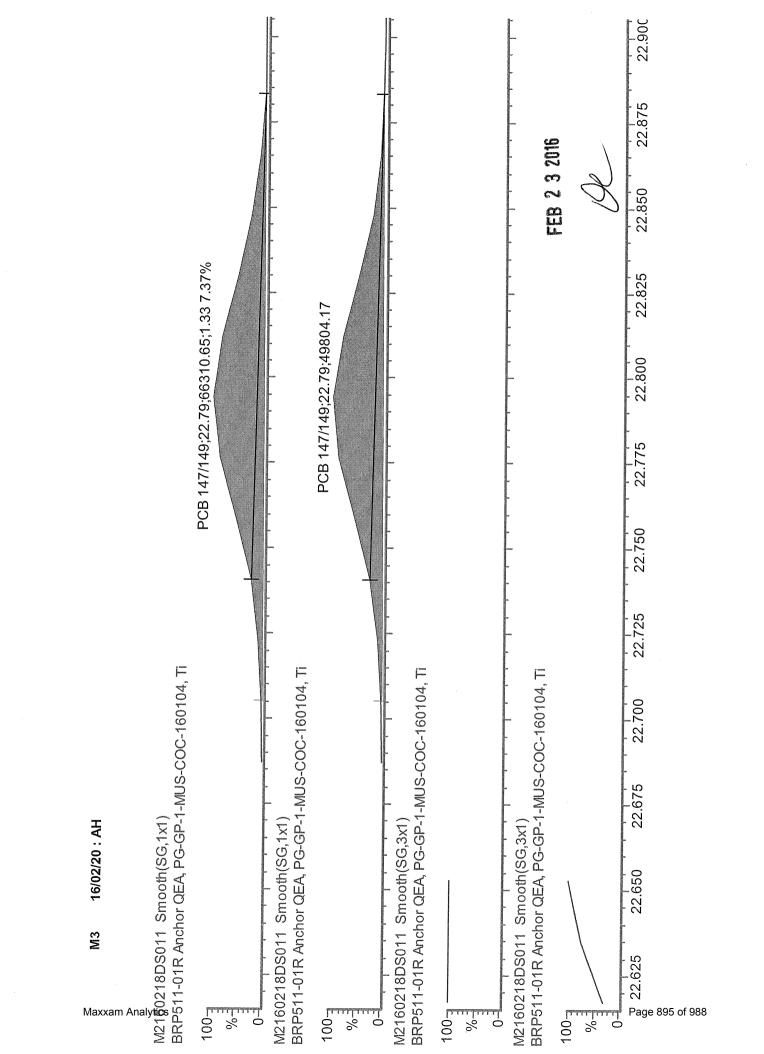
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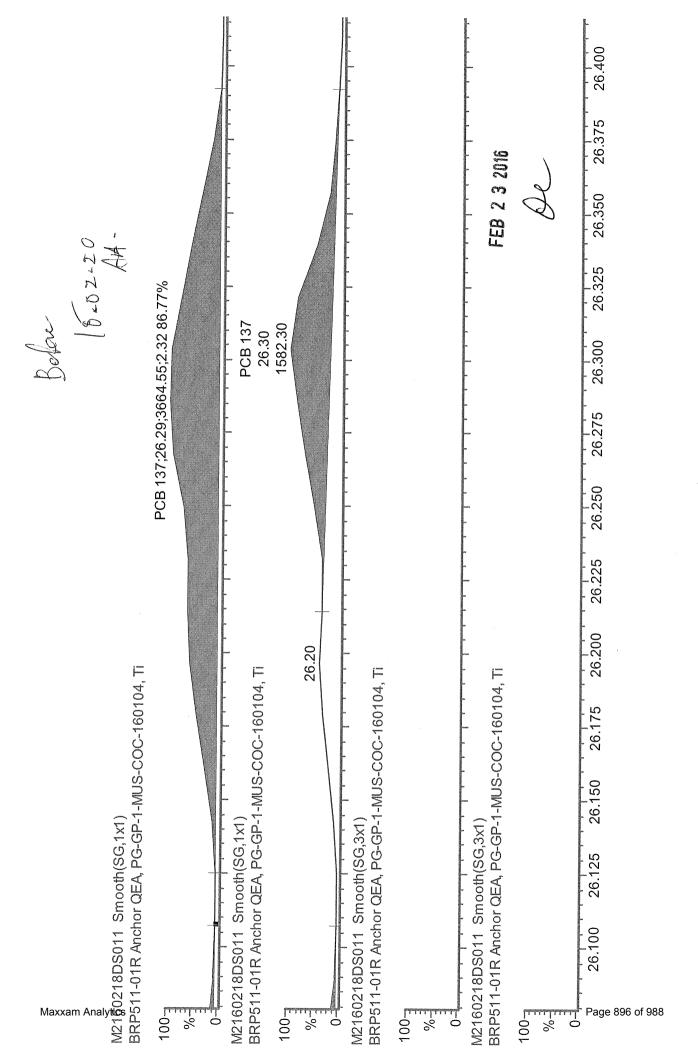


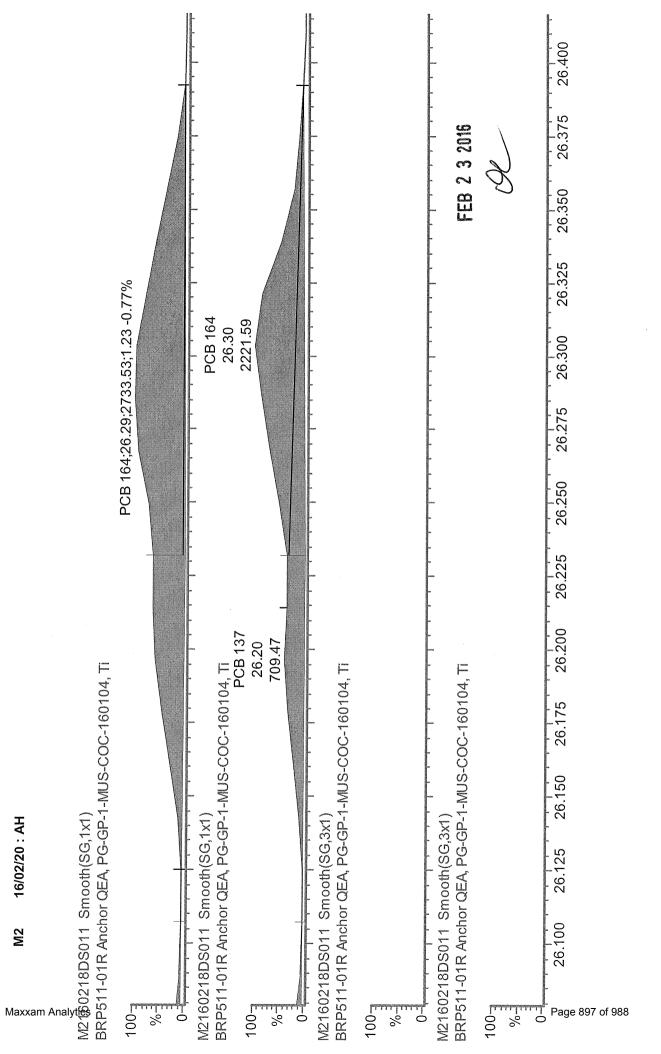












Filename M2160219BS003 Acquired 19/02/2016 13:47

Cali File M2160219\_209

Sample ID BRP512-01R
Comments Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti
Instrument File Ultima 2
Sample Size 10.634
Dil Fac 1.00

								Isomers					
Name 1 PCB 1	mass 188 MoCB 190	RT 8.99	Area 894	ratio 3.36	Tot Area 1161	ng/g -0.0005	Code	100111010	DL -0.0005	S/N *	Mod Op-O	rrf 1.082	Rec -
2 PCB 2	188 MoCB 190	8.99 10.10 10.09	266 432 171	no 2.52 no	603	-0.00044			-0.00044	*	yes	1.248	-
3 PCB 3	188 MoCB 190	10.18 10.19	-1055 -337.061	3.13 OK	-1392.06	-0.00063	PCB 3 NDR		-0.00051	3 42	xL	1.079	-
4 PCB 4	222 DICB 224	<b>10.30</b> 10.29	<b>3568</b> 2480	1.44 yes	6047	0.006193			-0.001	15 17	yes	0.954	-
5 PCB 10	222 DiCB 224	10.38 10.38	543 472	1.15 no	1015	-0.00081			-0.00081	*	yes	1.177	-
6 PCB 9	<b>222</b> DiCB 224	<b>11.19</b> 11.19	<b>1984</b> 1449	1.37 yes	3433	0.001227			-0.00101	7 8	no	1.357	-
7 PCB 7	222 DiCB 224	11.26 11.25	1403 793	1.77 yes	2196	-0.00119			-0.00119	* *	no	1.155	-
8 PCB 6	<b>222</b> DiCB 224	<b>11.36</b> 11.35	<b>6731</b> 4383	1.54 yes	11115	0.004			-0.00102	21 22	no	1.347	-
9 PCB 5	222 DiCB 224	NotFnd 11.50	*	* no	*	-0.00117			-0.00117	*	no	1.169	-
10 PCB 8	222 DICB 224	11.55 11.54	<b>30122</b> 19541	1.54 yes	49663	0.018424			-0.00105	82 91	no	1.307	-
11 PCB 14	222 DiCB 224	NotFnd 12.26	*	no *	*	-0.00101			-0.00101	*	no	1.351	-
12 PCB 11	222 DiCB 224	<b>12.66</b> 12.65	13008 8355	1.56 yes	21363	0.007792			-0.00103	27 26	no	1.33	-
13 PCB 13/12	222 DiCB 224	12.78 12.79	-3063.84 -1964	1.56 OK	-5027.84	-0.00196	PCB 13/12 NDR		-0.0011	8 8	xL	1.241	-
14 PCB 15	222 DiCB 224	<b>12.95</b> 12.93	<b>73252</b> 45043	1.63 yes	118295	0.043826			-0.00157	176 166	no	0.871	-
15 PCB 19	256 TriCB 258	11.68 11.68	<b>4997</b> 4363	1.15 yes	9360	0.010176			-0.00141	39 35	yes	0.899	-
16 PCB 30/18 17 PCB 17	256 TriCB 258 256	<b>12.49</b> 12.48	<b>54009</b> 52100	1.04 yes	106109	0.052851			-0.00129	406 416	no -	0.976	-
18 PCB 27	TriCB 258 256	<b>12.70</b> 12.69 <b>12.78</b>	13061 12552 10721	1.04 yes	25613	0.015745			-0.0016	81 76	no	0.79	-
19 PCB 24	TriCB 258 256	12.78 12.79 <b>12.87</b>	9692 <b>1236</b>	1.11 yes 0.9	20414 2610	0.008426			-0.00107	85 76	yes	1.177	-
20 PCB 16	TriCB 258 256	12.87 12.87 <b>12.91</b>	1374 <b>17473</b>	yes 1	34993	0.001338			-0.00133	12 12	yes	0.948	-
21 PCB 32	TriCB 258 <b>256</b>	12.90 13.14	17520 23806	yes 1.07	46005	0.021430			-0.00159 -0.00095	129 127	yes	0.793	-
22 PCB 34	TriCB 258 256	13.14 13.74	22199 <b>1479</b>	yes 0.96	3016	0.000987				156 157 5	no	1.335	-
23 PCB 23	TriCB 258 256	13.73 13.83	1536 505	yes 0.95	1037	-0.00069			-0.00067 -0.00069	6 *	yes	1.484	-
24 PCB 26/29	TriCB 258 <b>256</b>	13.82 13.97	532 <b>49571</b>	yes 1.05	96865	0.029163			-0.00069	* 170	yes	1.446	-
25 PCB 25	TriCB 258 <b>256</b>	13.99 <b>14.10</b>	47295 <b>24266</b>	yes 1.04	47688	0.013356			-0.00058	171 81	no no	1.614	-
26 PCB 31	TriCB 258 256	14.11 14.26	23422 <b>257396</b>	yes 1.03	506101	0.134044			-0.00055	83 916	no	1.835	-
27 PCB 28/20	TriCB 258 256	14.28 <b>14.42</b>	248705 <b>662644</b>	yes 1.03		0.375852			-0.00059	922 2291	no	1.688	-
28 PCB 21/33	TriCB 258 256	14.45 <b>14.55</b>	643415 <b>122298</b>	yes 1.04	239713	0.068143			-0.00059	2275 397	no	1.709	
29 PCB 22	TriCB 258 256	14.55 <b>14.77</b>	117415 105560	yes 1.01	210057	0.063852			-0.00063	395 343	no	1.599	
30 PCB 36	TriCB 258 256	14.78 NotFnd	104498	yes *	*	-0.00054			-0.00054	348	no	1.858	_
31 PCB 39	TriCB 258 256	15.62 <b>15.83</b>	* 4196	no <b>0.9</b>	8870	0.002838			-0.00066	* 14	yes	1.519	_
32 PCB 38	TriCB 258 256	15.82 NotFnd	4674 *	yes *	*	-0.00064			-0.00064	16 *	no	1.574	_
33 PCB 35	TriCB 258 <b>256</b>	16.20 <b>16.45</b>	* 4941	no 1.04	9694	0.003112			-0.00066	* 14	no	1.514	_
34 PCB 37	TriCB 258 <b>256</b>	16.47 <b>16.70</b>	4752 <b>94948</b>	yes 1.05	185730	0.066326			-0.0011	14 270	no	0.906	_
35 PCB 54	TriCB 258 290	16.72 13.08	90782 412	yes 1.01	819	-0.00124			-0.00124	269	yes	0.911	_
36 PCB 53/50	TCB 292 290	13.08 <b>14.12</b>	408 <b>29027</b>	no <b>0.79</b>	65884	0.043824			-0.00141	* 129	no	0.77	_
37 PCB 45/51	TCB 292 290	14.11 <b>14.48</b>	36857 <b>18582</b>	yes 0.85	40504	0.028577			-0.0015	124 78	no	0.725	-
38 PCB 46	TCB 292 290	14.49 <b>14.64</b>	21921 <b>9352</b>	yes <b>0.8</b>	21054	0.01784			-0.0018	71 41	no	0.604	-
39 PCB 52	TCB 292 290	14.64 <b>15.38</b>	11702 <b>208643</b>	yes 0.8	469595	0.319578			-0.00145	40 865	no	0.752	-
40 PCB 73	TCB 292 290	15.38 NotFnd	260952	yes *	*	-0.00109			-0.00109	825	no	1.002	-
41 PCB 43	TCB 292 290	15.43 15.53	* 8817	no <b>0.8</b>	19881	0.020282			-0.00217	* 36	no	0.502	-
42 PCB 69/49	TCB 292 290	15.50 <b>15.65</b>	11065 <b>93313</b>	yes 0.8	210028	0.12473			-0.00126	34 370	no	0.862	-
	TCB 292	15.63	116715	yes						366			

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42 DCD 40	200	45.00	E4040		404450	0.000070		-0.00159	220	no	0.683	
43 PCB 48	<b>290</b> TCB 292	<b>15.83</b> 15.84	<b>54049</b> 67404	0.8 yes	121455	0.090979		~0.00109	230 217	no	0.003	-
44 PCB 44/47/65	290	15.96	199393	0.81	446183	0.293028		-0.0014	656	no	0.779	-
45 PCB 59/62/75	TCB 292 290	15.97 <b>16.16</b>	246790 <b>26339</b>	yes 0.81	58682	0.03056		-0.00111	626 99	no	0.983	_
43 1 00 33/02/13	TCB 292	16.16	32342	yes	30002	0.03030		0.00111	95	110	0.000	
46 PCB 42	290	16.28	40961	0.78	93251	0.079001		-0.0018	159	no	0.604	-
47 PCB 40/41/71	TCB 292 290	16.27 <b>16.57</b>	52290 <b>94314</b>	yes 0.79	213842	0.158821		-0.00158	156 315	no	0.689	_
	TCB 292	16.56	119529	yes					309			
48 PCB 64	<b>290</b> TCB 292	<b>16.72</b> 16.70	<b>58869</b> 74843	0.79 yes	133712	0.076075		-0.00121	229 224	no	0.9	-
49 PCB 72	290	17.20	2741	0.72	6551	0.002658		~0.00086	9	no	1.261	-
50 PCB 68	TCB 292 290	17.20 <b>17.40</b>	3810 <b>1901</b>	yes 0.73	4507	0.001777		-0.00084	9 5	no	1.298	_
30 FCB 00	TCB 292	17.42	2606	yes	4507	0.001777		-0.00004	5	110	1.230	-
51 PCB 57	290	17.70	1138	0.71	2751	0.000953		-0.00074	6	no	1.477	-
52 PCB 58	TCB 292 290	17.67 NotFnd	1613 *	yes *	*	-0.00085		-0.00085	6 *	no	1.274	_
	TCB 292	17.85	*	no					*		4.047	
53 PCB 67	<b>290</b> TCB 292	<b>17.95</b> 17.95	<b>6625</b> 8428	0.79 yes	15053	0.00468		-0.00066	19 19	no	1.647	-
54 PCB 63	290	18.13	6432	0.84	14106	0.004709		-0.00071	19	no	1.533	-
55 PCB 61/70/74/76	TCB 292 290	18.15 <b>18.36</b>	7674 <b>143320</b>	yes <b>0.78</b>	327406	0.122081		-0.00079	18 294	· no	1.373	_
	TCB 292	18.36	184086	yes					291			
56 PCB 66	<b>290</b> TCB 292	<b>18.59</b> 18.60	<b>60872</b> 76287	0.8 yes	137159	0.044412		-0.00069	173 168	no	1.581	-
57 PCB 55	290	NotFnd	*	*	*	-0.00089		-0.00089	*	no	1.229	-
58 PCB 56	TCB 292 290	18.72 <b>19.06</b>	* 8397	no <b>0.83</b>	18534	0.00741		-0.00085	* 24	no	1.28	_
30 1 00 30	TCB 292	19.07	10137	yes	10004			-0.00000	22	110	1.20	
59 PCB 60	290 TCB 292	<b>19.23</b> 19.24	<b>7397</b> 9619	0.77	17016	0.00688		-0.00086	21 20	no	1.266	-
60 PCB 80	290	NotFnd	*	yes *	*	-0.00068		-0.00068	*	no	1.596	-
C4 DCD 70	TCB 292	19.50	*	no	0700	0.000818		0.00064	5	1400	1 605	
61 PCB 79	<b>290</b> TCB 292	<b>20.66</b> 20.63	<b>1267</b> 1443	<b>0.88</b> yes	2709	0.000010		-0.00064	4	yes	1.695	-
62 PCB 78	290	NotFnd	*	*	*	-0.00076		-0.00076	*	no	1.435	-
63 PCB 81	TCB 292 290	21.08 21.41	321	no 0.64	822	-0.00106		-0.00106	*	yes	1.027	_
	TCB 292	21.45	501	no ´				0.00404	*		4.077	
64 PCB 77	290 TCB 292	<b>21.89</b> 21.89	<b>3070</b> 3848	<b>0.8</b> yes	6918	0.00282	•	-0.00101	8 8	no	1.077	-
65 PCB 104	326	NotFnd	*	*	*	-0.00103		-0.00103	*	no	1.094	-
66 PCB 96	PeCB 328 326	15.94 <b>16.18</b>	* 2452	no 1.63	3957	0.002426		-0.00141	8	no	0.802	_
	PeCB 328	16.15	1504	yes					7			
67 PCB 103	<b>326</b> PeCB 328	<b>17.33</b> 17.31	<b>2811</b> 1741	1.62	4552	0.003134		-0.00108	10 9	no	0.714	-
68 PCB 94	326	17.47	1205	yes 1.74	1899	0.001793		-0.00147	4	no	0.521	-
CO DOD OF	PeCB 328	17.47	694	yes	450040	0.445055		0.0012	4		0.641	
69 PCB 95	<b>326</b> PeCB 328	<b>17.77</b> 17.76	<b>93674</b> 56369	1.66 yes	150043	0.115055		-0.0012	313 288	no	0.641	•
70 PCB 100/93/102/		18.00	8773	1.61	14221	0.0125		-0.00137	18	no	0.559	-
71 PCB 88/91	PeCB 328 326	17.91 <b>18.36</b>	5448 <b>7933</b>	yes 1.64	12762	0.011001		-0.00135	18 25	no	0.57	-
	PeCB 328	18.33	4829	yes					23		0.404	
72 PCB 84	<b>326</b> PeCB 328	<b>18.52</b> 18.49	<b>8027</b> 4850	1.65 yes	12877	0.012885		-0.00156	25 23	no	0.491	-
73 PCB 89	326	18.84	312	1.65	501	-0.00142		-0.00142	*	yes	0.541	-
74 PCB 121	PeCB 328 326	18.84 NotFnd	189 *	yes *	*	-0.00105	i.	-0.00105	*	no	0.733	_
	PeCB 328	19.08	*	no					*			
75 PCB 92	<b>326</b> PeCB 328	<b>19.36</b> 19.35	<b>18108</b> 10930	1.66 yes	29038	0.024486	1	-0.00132	56 52	no	0.583	-
76 PCB 113/90/101	326	19.78	141503	1.64	227704	0.164882		-0.00113	431	no	0.679	-
77 PCB 83/99	PeCB 328 326	19.76 <b>20.23</b>	86202 <b>54781</b>	yes 1.64	88177	0.083683		-0.00148	413 159	no	0.518	
	PeCB 328	20.22	33397	yes					152			-
78 PCB 112	326 PeCB 328	NotFnd 20.30	*	* no	*	-0.00093		-0.00093	*	no	0.83	-
79 PCB 109/119/86/	97/125/ 326	20.69	38022	1.64	61243	0.045136		-0.00115	63	no	0.667	-
80 PCB 117/116/85	PeCB 328 326	20.62 <b>21.19</b>	23221 11665	yes 1.59	18989	0.013019		-0.00107	59 33	no	0.717	_
00 FGD 11//110/85	PeCB 328	21.19	7323	yes	10909	0.013018			31	110		-
81 PCB 110/115	<b>326</b> PeCB 328	21.32	90659	1.65	145756	0.106779		-0.00114	259	no	0.671	-
82 PCB 82	328 326	21.32 <b>21.58</b>	55097 <b>3495</b>	yes 1.75	5491	0.005253		-0.00149	242 10	yes	0.514	-
	PeCB 328	21.59	1996	yes *	*			0.00400	9		0.740	
83 PCB 111	326 PeCB 328	NotFnd 21.85	*	no	*	-0.00103		-0.00103	*	no	0.749	•
84 PCB 120	326	22.24	847	2.11	1249	-0.0009		-0.0009	*	yes	0.853	-
85 PCB 108/124	PeCB 328 326	22.25 <b>23.20</b>	401 <b>4977</b>	no 1.59	8111	0.003187		-0.00077	11	no	1.251	_
	PeCB 328	23.21	3134	yes				•	11			
86 PCB 107	<b>326</b> PeCB 328	<b>23.42</b> 23.40	<b>12515</b> 7827	1.6 yes	20342	0.00761		-0.00073	24 24	no	1.314	-
87 PCB 123	326	23.53	1100	1.13	2074	-0.00107		-0.00107	*	no	0.894	-
88 PCB 106	PeCB 328 326	23.51 NotFnd	974	no *	*	-0.0007		-0.0007	*	no	1.375	_
	PeCB 328	23.63	*	no					*			-
89 PCB 118	<b>326</b> PeCB 328	23.79 23.80	<b>147935</b> 93161	1.59 yes	241096	0.107639		-0.00098	307 305	no	0.981	-
	. 600 320	20.00	30101	yes					000			

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									0.00070	*	00.0	1.222	_
90 P	CB 122	PeCB :	326	24.10 24.08	1523 787	1.94 no	2310	-0.00079	-0.00079	*	Op-O	1.222	-
91 P	CB 114		326	24.27	2786	1.71	4411	0.001995	-0.00095	5	no	1.01	-
		PeCB :		24.28	1625	yes 1.59	74873	0.034095	-0.00098	5 95	no	0.977	-
92 P	CB 105	PeCB	<b>326</b> 328	<b>24.84</b> 24.85	<b>45961</b> 28912	yes	74075	0.034033		93			
93 P	CB 127		326	NotFnd	*	*	*	-0.00071	-0.00071	*	no	1.348	-
04 0	CB 126	PeCB	328 326	26.20 27.75	* 863	no 1.58	1412	-0.00098	-0.00098	*	yes	0.977	-
94 F		PeCB		27.72	548	yes			0.00000	*		0.997	
95 P	CB 155	HxCB	360	NotFnd 19.63	*	* no	*	-0.00066	-0.00066	*	no	0.551	-
96 P	CB 152		360	NotFnd	*	*	*	-0.00098	-0.00098	*	no	0.675	-
		HxCB	362	19.78	*	no	4000	0.00102	-0.00103	*	yes	0.639	_
97 P	CB 150	HxCB	360 362	19.91 19.88	595 438	1.36 yes	1033	-0.00103	-0.00100	*	-		
98 P	CB 136		360	20.18	24129	1.37	41680	0.034899	-0.00098	134 120	no	0.672	-
00 5	CB 145	HxCB	362 360	20.18 NotFnd	17551 *	yes *	*	-0.00114	-0.00114	*	no	0.579	-
99 F		HxCB		20.41	*	no			0.00400	*	1100	0.487	
100 F	CB 148	HxCB	360	21.55 21.55	604 431	1.4 yes	1035	-0.00136	-0.00136	*	yes	0.407	
101 P	CB 151/135		360	22.05	61852	1.28	110149	0.137525	-0.00147	273	yes	0.451	-
		HxCB		22.04	48297	yes	5818	0.006019	-0.00121	264 19	yes	0.544	_
102 F	PCB 154	HxCB	<b>360</b> 362	<b>22.24</b> 22.21	<b>3307</b> 2511	1.32 yes	5010	0.000013		17			
103 F	CB 144		360	22.51	9111	1.22	16565	0.019307	-0.00137	49 48	yes	0.483	-
104 5	CB 147/149	HxCB	362 360	22.51 <b>22.80</b>	7453 <b>209408</b>	yes 1.32	368564	0.32055	-0.0013	840	yes	0.647	-
1041	05 1477140	HxCB	362	22.80	159156	yes			-0.00149	806 28	yes	0.563	_
105 F	PCB 134/143	HxCB	360	<b>22.99</b> 23.06	<b>7643</b> 6009	1.27 . yes	13652	0.01365	-0.00149	29	yes	0.000	
106 F	CB 139/140	ПХСБ	360	23.31	1899	1.41	3242	0.002856	-0.00131	7	no	0.639	-
		HxCB		23.31	1343	yes	1881	0.002063	-0.00164	7 4	no	0.513	_
107 F	PCB 131	HxCB	<b>360</b> 362	<b>23.49</b> 23.49	<b>1029</b> 851	1.21 yes	1001	0.002003		4			
108 F	PCB 142		360	NotFnd	*	*	*	-0.00144	-0.00144	*	no	0.583	-
100 E	PCB 132	HxCB	362 <b>360</b>	23.65 <b>23.88</b>	27836	no 1.33	48785	0.052514	-0.0016	106	no	0.523	-
103 F	- OD 132	HxCB		23.88	20949	yes			0.00405	103 13	no	0.623	_
110 F	PCB 133	HxCB	360	<b>24.31</b> 24.31	<b>3234</b> 2506	<b>1.29</b> yes	5740	0.005186	-0.00135	13	no	0.023	
111 F	PCB 165	ПХСВ	360	NotFnd	*	*	*	-0.00118	-0.00118	*	no	0.714	-
		HxCB		24.68	*	no	71738	0.060837	-0.00127	157	no	0.663	-
112 F	PCB 146	HxCB	<b>360</b> 362	<b>24.88</b> 24.88	<b>40411</b> 31328	1.29 yes	71730	0.000037		149			
113 F	PCB 161		360	NotFnd	*	*	*	-0.00094	-0.00094	*	no	0.888	-
111 [	PCB 153/168	HxCB	362 <b>360</b>	25.03 <b>25.43</b>	* 371236	no <b>1.29</b>	658432	0.467713	-0.00106	1394	no	0.792	-
114 1	PCB 153/166	HxCB		25.47	287196	yes			0.00405	1352		0.621	
115 F	PCB 141	LLICO	360	<b>25.63</b> 25.62	<b>9514</b> 6822	1.39	16336	0.014796	-0.00135	36 31	no	0.021	-
116	PCB 130	HxCB	362 360	26.02 26.00	7590	yes 1.3	13425	0.013531	-0.0015	27	no	0.558	-
		HxCB	362	26.00	5835	yes	0000	0.000076	-0.00149	27 9	no	0.563	-
117 1	PCB 137	HxCB	360 362	<b>26.23</b> 26.21	<b>1659</b> 1321	1.26 yes	2980	0.002976	-0.001-10	9			
118 1	PCB 164		360	26.31	8226	1.28	14651	0.009974	-0.00102	29 28	no	0.826	-
440 1	PCB 138/163/129	HxCB	362 <b>360</b>	26.30 <b>26.61</b>	6424 <b>273673</b>	yes 1.3	483794	0.422712	-0.0013	1004	no	0.644	-
1191	PCB 130/103/123	HxCB		26.62	210121	yes	400701		0.00440	952		0.722	
120	PCB 160	on	360	NotFnd	*	* no	*	-0.00116	-0.00116	*	no	0.723	-
121	PCB 158	HxCB	360	26.80 <b>26.98</b>	26909	1.29	47726	0.029465	-0.00092	94	no	0.911	-
		HxCB	362	26.98	20817	yes	44600	0.033487	-0.0012	90 69	no	0.7	_
122	PCB 128/166	HxCB	360 362	<b>27.82</b> 27.80	<b>23169</b> 18522	1.25 yes	41690	0.033407	-0,0012	67			
123	PCB 159		360	NotFnd	*	*	*	-0.00101	-0.00101	*	no	1.379	-
194	PCB 162	HxCB	362 360	28.78 <b>29.16</b>	* 5410	no 1.22	9845	0.004417	-0.00111	7	no	1.254	-
124	. 00 102	HxCB	362	29.07	4436	yes			0.00440	8 28	no	0.946	_
125	PCB 167	HxCB	360	<b>29.53</b> 29.55	<b>15045</b> 10956	1.37 yes	26001	0.011708	-0.00148	28 25	110	0.540	-
126	PCB 156/157		360	30.68	29810	1.25	53569	0.024165	-0.00137	51	no	1.017	-
		HxCE	362	30.71 NotFnd	23759	yes *	*	-0.00147	-0.00147	50 *	no	0.954	-
127	PCB 169	HxCE	360 362	34.13	*	no		-0.00147		*			
128	PCB 188		394	24.24	224	1.09	430	-0.00064	-0.00064	*	yes	1.012	-
120	DCR 170	HpCE	396 <b>394</b>	24.23 <b>24.54</b>	206 <b>27947</b>	yes 1.1	53320	0.039309	-0.00064	193	no	1.016	-
129	PCB 179	HpCE	396	24.52	25373	yes			0.00000	181	no	0.937	_
130	PCB 184	LINCE	394	NotFnd	*	*	*	-0.00069	-0.00069	*	110	0.557	_
131	PCB 176	HpCE	396 394	25.00 25.33	8149	no 1.1	15561	0.011742	-0.00065	53	no	0.993	-
		HpCE	396	25.32	7412	yes *	*	-0.00075	-0.00075	52 *	no	0.865	-
132	PCB 186	HpCE	394 3 396	NotFnd 25.75	*	no	=	~0.00070		*			
133	PCB 178	-	394	27.02	9693	1.07	18744	0.02046	-0.00094	62 61	no	0.686	-
404	DCD 175	HpCE	396 <b>394</b>	27.01 <b>27.62</b>	9051 <b>2133</b>	yes 1.15	3983	0.004287	-0.00093	14	no	0.696	-
134	PCB 175	НрСЕ		27.62	1851	yes				13		0.679	
135	PCB 187		394	27.89	71105	1.07	137311	0.152817	-0.00096	453 443	no	0.673	-
136	PCB 182	HpCE	3 396 394	27.88 NotFnd	66206 *	yes *	*	-0.00096	-0.00096	*	no	0.674	-
100	. 52 /52	HpCE	396	28.10	*	no				*			

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											4.450	
137 PCB 183	394	28.50	47588	1.13	89841	0.058342		-0.00109	166 156	no	1.153	-
138 PCB 185	HpCB 396 394	28.51 NotFnd	42253 *	yes *	*	-0.00156		-0.00156	*	no	0.805	-
	HpCB 396	28.58	*	no *	*	-0.00133		-0.00133	*	no	0.947	-
139 PCB 174	394 HpCB 396	NotFnd 28.74	*	no		-0,00133			*	20	0.921	_
140 PCB 177	394	29.16	32670	1.06	63448	0.051608		-0.00136	111 111	no	0.521	
141 PCB 181	HpCB 396 394	29.16 NotFnd	30778 *	yes *	*	-0.00142		-0.00142	*	no	0.885	-
	HpCB 396	29.57 <b>29.80</b>	* 17586	no 1.11	33450	0.027904		-0.0014	60	no	0.898	-
142 PCB 171/173	<b>394</b> HpCB 396	29.80	15864	yes				-0.0014	56 *	no	0.898	_
143 PCB 172	394 HpCB 396	NotFnd 31.44	*	* no	*	-0.0014			*			
144 PCB 192	394	NotFnd	*	*	*	-0.00121		-0.00121	*	no	1.043	-
145 PCB 193/180	HpCB 396 <b>394</b>	31.76 <b>32.13</b>	* 112971	no 1.1	215700	0.151848		-0.00089	360	no	1.408	-
	HpCB 396	32.08	102729	yes	5424	0.003277		-0.00101	343 7	no	1.24	-
146 PCB 191	<b>394</b> HpCB 396	<b>32.51</b> 32.50	<b>2601</b> 2823	0.92 yes			,		9 64	no	1.271	_
147 PCB 170	<b>394</b> HpCB 396	<b>33.45</b> 33.47	<b>19477</b> 18080	1.08 yes	37557	0.03286		-0.00099	62			
148 PCB 190	394	34.03	12007	1	23988	0.014068		-0.00098	40 39	no	1.277	-
149 PCB 189	HpCB 396 <b>394</b>	34.04 <b>36.87</b>	11981 <b>4194</b>	yes 0.95	8598	0.003904		-0.00056	17	no	0.944	-
149 PCB 109	HpCB 396	36.88	4404	yes	0042	0.010021		-0.00087	18 31	no	0.988	-
150 PCB 202	<b>428</b> OcCB 430	<b>29.26</b> 29.28	<b>4674</b> 4968	0.94 yes	9643	0.010021			30		1 069	
151 PCB 201	428	30.21	2752	0.84	6045	0.00498		-0.0008	19 18	no	1.068	-
152 PCB 204	OcCB 430 428	30.18 NotFnd	3293 *	yes *	*	-0.00081		-0.00081	*	no	1.052	-
	OcCB 430	30.88	* 1203	no <b>0.94</b>	2482	0.002295		-0.0009	7	no	0.951	-
153 PCB 197	<b>428</b> OcCB 430	<b>31.13</b> 31.12	1278	yes				-0.00081	7	no	1.056	_
154 PCB 200	428 OcCB 430	NotFnd 31.24	*	* no	*	-0.00081			*			
155 PCB 198/199	428	34.20	-473.48	0.89	-1005.48	-0.00126	PCB 198/199 NDR	-0.00122	4 3	хL	0.702	-
156 PCB 196	OcCB 430 428	34.19 <b>34.92</b>	-532 <b>606</b>	OK <b>0.94</b>	1254	0.001503		-0.00117	4	yes	0.734	-
	OcCB 430	34.93	647	yes	9533	0.011802		-0.00121	4 27	yes	0.711	-
157 PCB 203	<b>428</b> OcCB 430	<b>35.14</b> 35.12	<b>4456</b> 5077	0.88 yes				0.0000	28	no	1.046	_
158 PCB 195	428 0-CP 430	<b>36.59</b> 36.59	<b>1094</b> 1232	0.89 yes	2326	0.001956		-0.0008	5 5	110		
159 PCB 194	OcCB 430 <b>428</b>	39.21	6778	0.96	13847	0.01089		-0.00074	36 32	no	1.119	-
400 DCD 205	OcCB 430 428	39.22 <b>39.76</b>	7070 <b>1130</b>	yes 1.02	2238	0.001579		-0.00076	6	yes	1.091	-
160 PCB 205	OcCB 430	39.77	1108	yes *	*			-0.0008	5 *	no	1.023	_
161 PCB 208	462 NoCB 464	NotFnd 36.33	*	no	•	-0.0008			*			
162 PCB 207	462	NotFnd	*	*	*	-0.00063		-0.00063	* .	no	1.304	-
163 PCB 206	NoCB 464 462	37.35 41.73	223	no 0.59	601	-0.0008		-0.0008	*	Op-O	1.027	-
	NoCB 464	41.71	378 155	no 1.01	309	-0.00097		-0.00097	*	yes	1.04	-
164 PCB 209	498 DCB 500	43.56 43.54	153	yes				0	* 8748	no	0.824	70
165 PCB 1L	<b>200</b> 202	<b>8.99</b> 8.99	<b>301215</b> 87132	3.46 yes	388347	0.131272			476			
166 PCB 3L	200	10.18	299138	3.47	385401	0.125909		0	8765 479	no	0.852	67
167 PCB 4L	202 <b>234</b>	10.20 <b>10.28</b>	86263 <b>119440</b>	yes 1.63	192509	0.098791		0	1915	no	0.543	53
	236	10.30	73069	yes	E02430	0.151147		0	3595 1591	no	1.074	80
168 PCB 15L	<b>234</b> 236	<b>12.93</b> 12.93	<b>366398</b> 216741	1.69 yes	503138				2096	no	0.578	49
169 PCB 19L	268	<b>11.68</b> 11.70	<b>99999</b> 92495	1.08 yes	192495	0.0927		0.001	378 312	110		
170 PCB 37L	270 <b>268</b>	16.70	300924	1.07	581598	0.203724		0.001	798 532	no	1.987	108
171 PCB 54L	270 <b>302</b>	16.69 <b>13.06</b>	280674 <b>99973</b>	yes 0.79	226236	0.121349		0	917	no	1.297	65
	304	13.07	126263	yes				0	2721 1245	no	1.738	95
172 PCB 81L	<b>302</b> 304	<b>21.42</b> 21.42	<b>198808</b> 248841	0.8 yes	44764				1753	20	1.677	95
173 PCB 77L	302	21.87	190389 237965	<b>0.8</b> yes	42835	4 0.177735	i	0	1174 1636	no		
174 PCB 104L	304 <b>338</b>	21.85 <b>15.92</b>	128615	1.64	20686	2 0.14636		0	6355 3544	no	1.156	78
	340 <b>338</b>	15.93 <b>23.49</b>	78247 <b>276227</b>	yes 1.66	44226	2 0.186801		0	3232	no	1.936	99
175 PCB 123L	340	23.50	166035	yes				0	2109 3153	no	1.906	98
176 PCB 118L	<b>338</b> 340	<b>23.77</b> 23.76	<b>269622</b> 159574	1.69 yes	42919	6 0.184141			2009			101
177 PCB 114L	338	24.26	258233	1.68	41156	5 0.18982		0	3006 1927	no	1.773	101
178 PCB 105L	340 <b>338</b>	24.25 <b>24.83</b>	153332 <b>262717</b>	yes 1.64	42293	5 0.189758	3	0	3062	no	1.822	101
	340	24.81	160218	yes 1.67	39964	7 0.18829		0	1989 2593	no	1.735	100
179 PCB 126L	<b>338</b> 340	<b>27.69</b> 27.67	<b>250071</b> 149576	yes				0	1660 7182	no	1.404	71
180 PCB 155L	<b>372</b> 374	<b>19.61</b> 19.61	<b>123698</b> 96485	1.28 yes	22018	3 0.133747	1		6147			
181 PCB 167L	372	29.52	249742	1.3	44156	7 0.178429	9	0	4105 2317	no	2.11	95
182 PCB 156L/15	374 7L <b>372</b>	29.49 <b>30.68</b>	191825 <b>464580</b>	yes 1.31	81981	1 0.36385	5	0	6316	no	1.921	97
	374	30.69	355231	yes	26562	7 0.12005	8	0	3603 2228	no	1.886	64
183 PCB 169L	<b>372</b> 374		<b>149825</b> 115802	1.29 yes	20002	5.12005	-		1269			

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									0	3972	no	1.329	70
184 PCB 188L	406	24.20	107062	1.08	206481	0.132419			U	4342	110	1.020	, ,
	408	24.21	99419	yes								1.349	71
185 PCB 180L	406	32.11	98962	1.09	189797	0.134142			0	3846	no	1.545	, ,
100 1 00 1002	408	32.09	90835	yes						3677		4.40	73
186 PCB 170L	406	33.44	87592	1.07	169124	0.13659			0	3385	no	1.18	13
100 PCB 170L	408	33.42	81531	yes						3249		0.457	400
407 DOD 4001	406	36.84	226251	1.06	438903	0.193913			0	2245	no	2.157	103
187 PCB 189L	408	36.83	212651	yes						4287			
400 BOD 0001	440	29.25	88688	0.94	183253	0.123049			0	1778	no	1.419	65
188 PCB 202L	442	29.27	94565	yes	.00200	•				4556			
			116858	0.92	244339	0.152081			0	2941	no	1.531	81
189 PCB 205L	440	39.73	127481	yes	244555	0.10200.				3819			
	442	39.73		0.8	165304	0.138275			0	2359	no	1.139	74
190 PCB 208L	474	36.29	73458		100304	0.130273				2656			
	476	36.28	91846	yes	122155	0.153286			0	1672	no	0.76	82
191 PCB 206L	474	41.71	53924	0.79	122155	0.133200			-	1865			
	476	41.73	68232	yes	444000	0.454007			0	2742	no	0.724	80
192 PCB 209L	510	43.54	61724	1.16	114933	0.151237			Ü	3794			
	512	43.53	53210	yes					0.001	1237	no	2.039	125
193 PCB 28L	268	14.41	398376	1.08	766331	0.261491			0.001	824	110	2.000	
PCB Cleanup Standa	rd 270	14.43	367955	yes					0	4758	no	1.343	103
194 PCB 111L	338	21.83	219618	1.65	352732	0.214746			U	2602	110	1.040	100
PCB Cleanup Standa	rd 340	21.84	133115	yes						2877		0.733	90
195 PCB 178L	406	26.98	82147	1.04	161299	0.187627			0		no	0.755	50
PCB Cleanup Standa		26.97	79152	yes						3269		4.004	
196 PCB 31L	268	NotFnd	*	*	*				0.001		no	1.934	
PCB Audit Standa		14.26	*	no								0.040	
	338	NotFnd	*	*	*				0		no	0.946	
197 PCB 95L PCB Audit Standa		17.73	*	no									
	372	NotFnd	*	*	*				0		no	1.225	
198 PCB 153L		25.40	*	no									
PCB Audit Standa		11.19	2330435	1.64	3751749	8.393337			-	11372	no	-	-
199 PCB 9L	234		1421314	yes	57517-10	0.00000				15124			
PCB Recovery Standa	ard 236	11.19		0.8	1501255	6.402231			-	8513	no	-	-
200 PCB 52L	302	15.36	666620		1501555	0.402231				7887			
PCB Recovery Standa	ard 304	15.36	834735	yes	4077744	6.762128			_	18466	no	-	-
201 PCB 101L	338	19.77	789963	1.62	12///14	0.702120				10306			
PCB Recovery Standa		19.76	487751	yes	4005446	7.400007			_	29768	no	-	-
202 PCB 138L	372	26.57	689016	1.28	1225413	7.193607				26376			
PCB Recovery Standa	ard 374	26.56	536397	yes					_	13817	no	_	-
203 PCB 194L	440	39.18	529865	0.94	1096120	7.723644				17470			
PCB Recovery Standa	ard 442	39.17	566256	yes						17470			
,								0	-0.00051				
Chlorobiphenyls						-0.00051		0					
Dichlorobiphenyls						0.081462		6	-0.00157				
Trichlorobiphenyls						0.884385		17	-0.0016				
Tetrachlorobiphenyls						1.482493		23	-0.00217				
Pentachlorobiphenyls						0.756558		19	-0.00156				
Hexachlorobiphenyls						1.69035		22	-0.00164				
						0.572426		13	-0.00156				
Heptachlorobiphenyls	,					0.045026		8	-0.00122				
Octachlorobiphenyls						-0.0008		0	-0.0008				
Nonachlorobiphenyls						-0.00097		0	-0.00097				
Decachlorobiphenyl						5.5127							
PCB (total)						0.0121	-						

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Acquired Date

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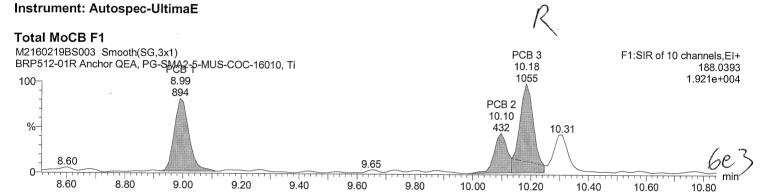
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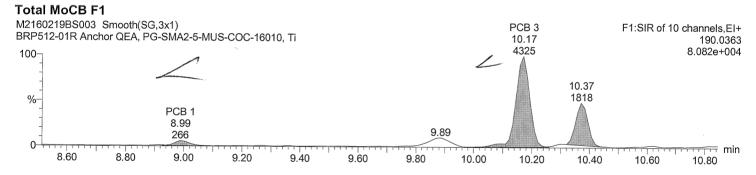
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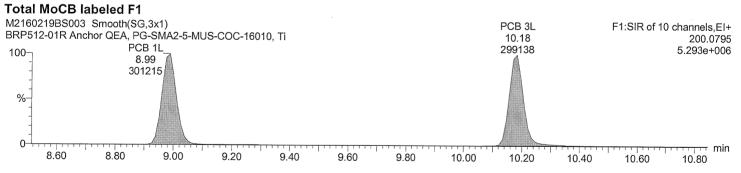
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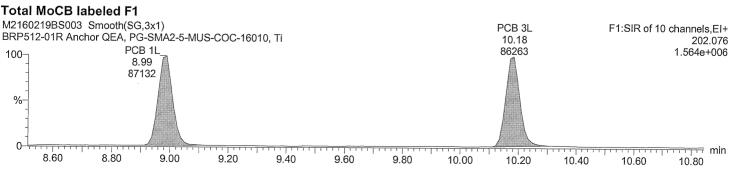
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Date: 19-FEB-2016 Time: 13:47:37

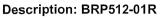








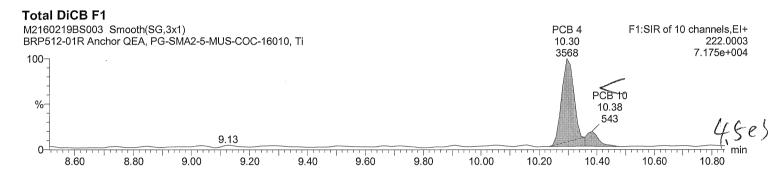
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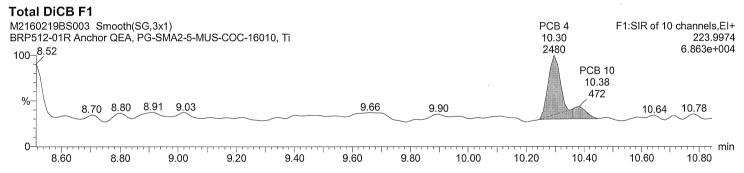


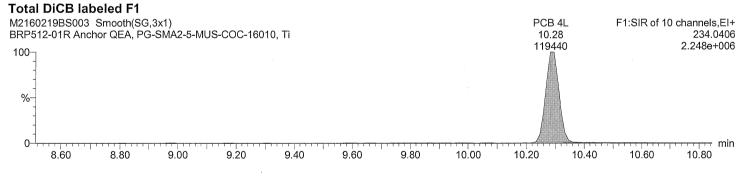
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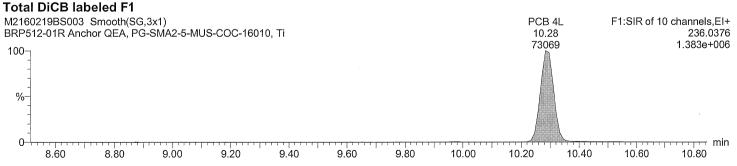
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Instrument: Autospec-UltimaE









Page 3 of 207 MassLynx 4.0 SP1 Quantify Sample Report Acquired Date C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld Dataset: February 23, 2016 12:16:16 PM Eastern Standard Time Last Altered: February 23, 2016 12:17:46 PM Eastern Standard Time Printed: Description: BRP512-01R Vial: 3 Date: 19-FEB-2016 Time: 13:47:37 Instrument: Autospec-UltimaE F2:SIR of 16 channels,EI+ **Total DiCB F2** PCB 15 222,0003 M2160219BS003 12.95 BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16ø10, Ti 1.593e+006 73252 100 PCB 8 11.55 30122 **PCB 11** % PCB 6 12.66 PCB9 12.51 ^11.36 13008 11.19 5563 6731 1984 13.40 13.00 13.20 12.80 12.60 12,40 12,20 12.00 11.80 11.60 11.20 11 40 11.00 **Total DiCB F2** F2:SIR of 16 channels, EI+ **PCB 15** M2160219BS003 223.9974 12.95 BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 9.923e+005 45043 100-PCB 8 11.55 19541 PCB 11 % PCB 6 12.66 PCB 9 12.49 11.36 8355 11.20 3729 10.88 4383 1449 13.40 12.60 12.80 13.00 13.20 12.40 12.20 12.00 11.80 11.40 11.60 11.20 11.00 **Total DiCB labeled F2** F2:SIR of 16 channels, EI+ M2160219BS003 Smooth(SG,3x1) 234.0406 BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 2.923e+007 PCB 9L 100 11.19 2330435 PCB 15L % 12.93 366398 → min 13.40 13.20 13.00 12,40 12.60 12.80 12.20 12.00 11.80 11.60 11.00 11.20 11.40 **Total DiCB labeled F2** F2:SIR of 16 channels,EI+ M2160219BS003 Smooth(SG,3x1) 236.0376



12.20

11.00

0

11.20

11.40

11.60

11.80

12.00

13.20

13.00

12.80

12.60

12.40

- min

13.40

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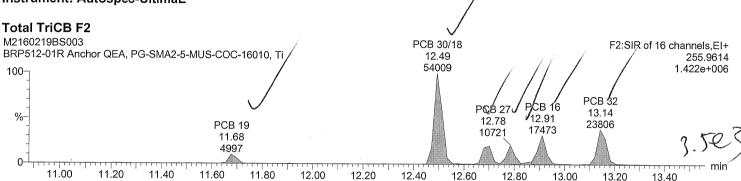
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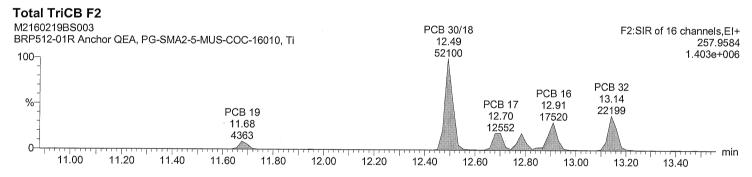
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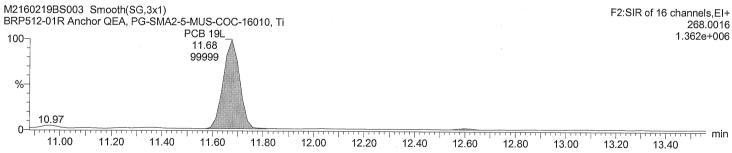
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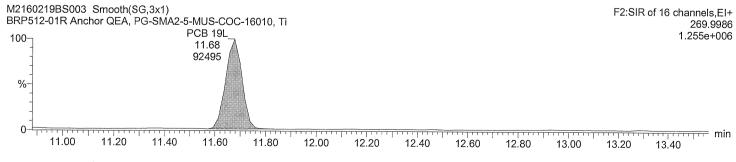












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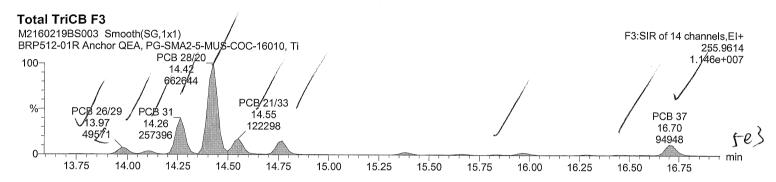
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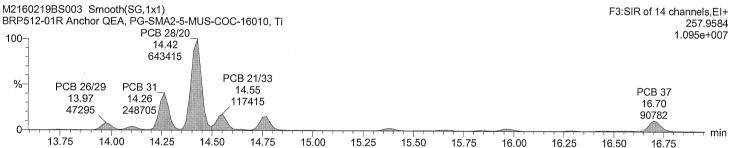
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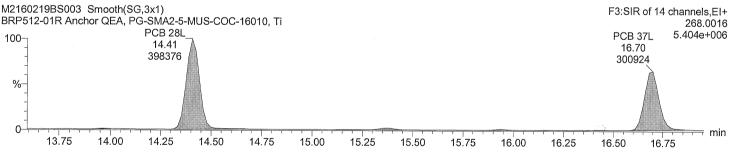
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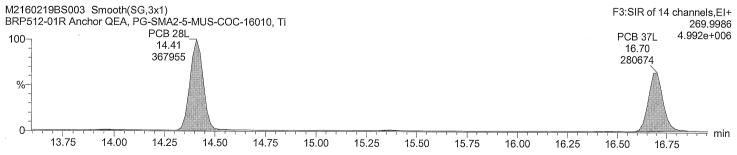




## **Total TriCB labeled F3**



## **Total TriCB labeled F3**



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Acquired Date

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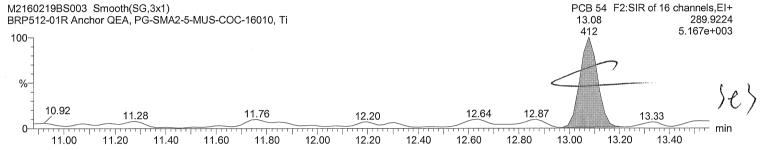
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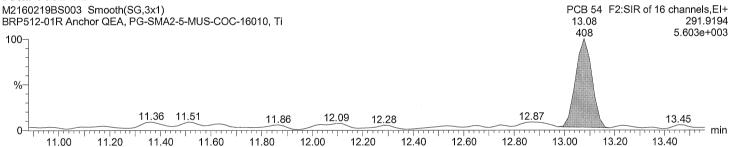
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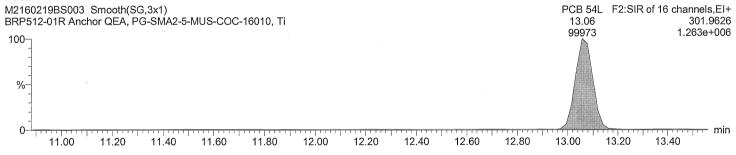
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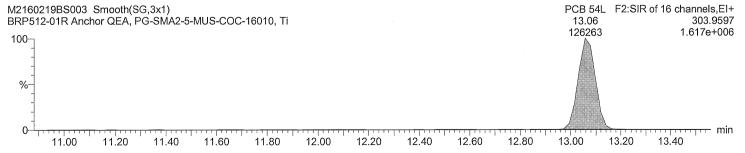
## **Total TeCB F2**



#### **Total TeCB labeled F2**



#### **Total TeCB labeled F2**



Acquired Date

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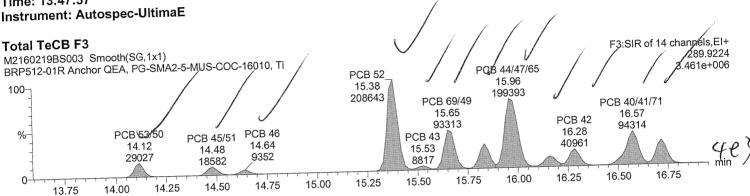
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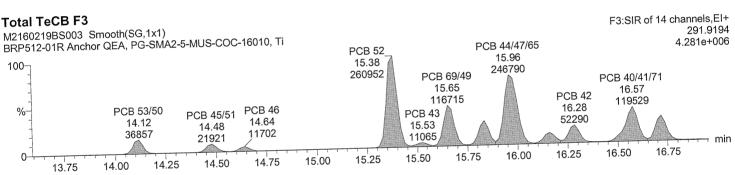
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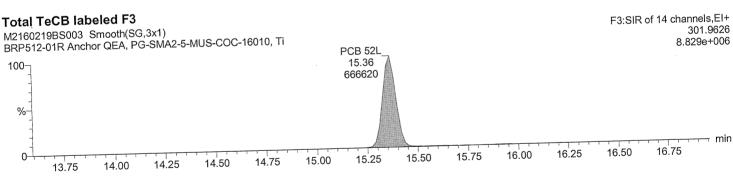
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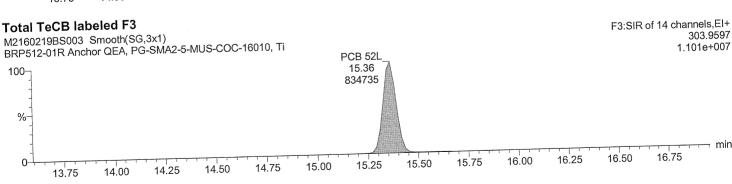
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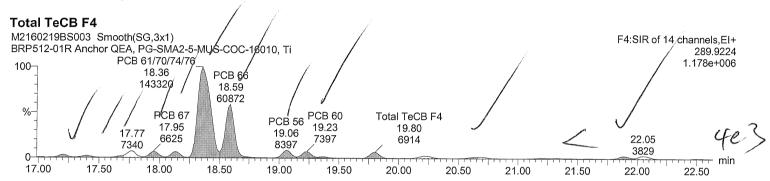
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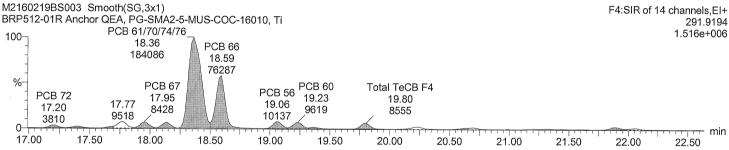
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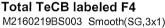
Date: 19-FEB-2016 Time: 13:47:37

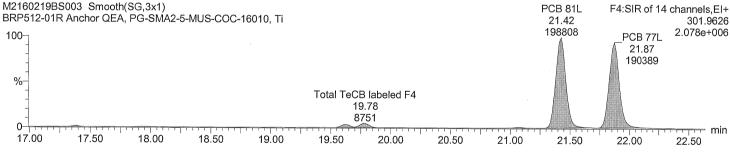
Instrument: Autospec-UltimaE



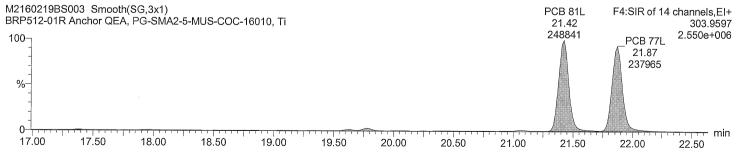


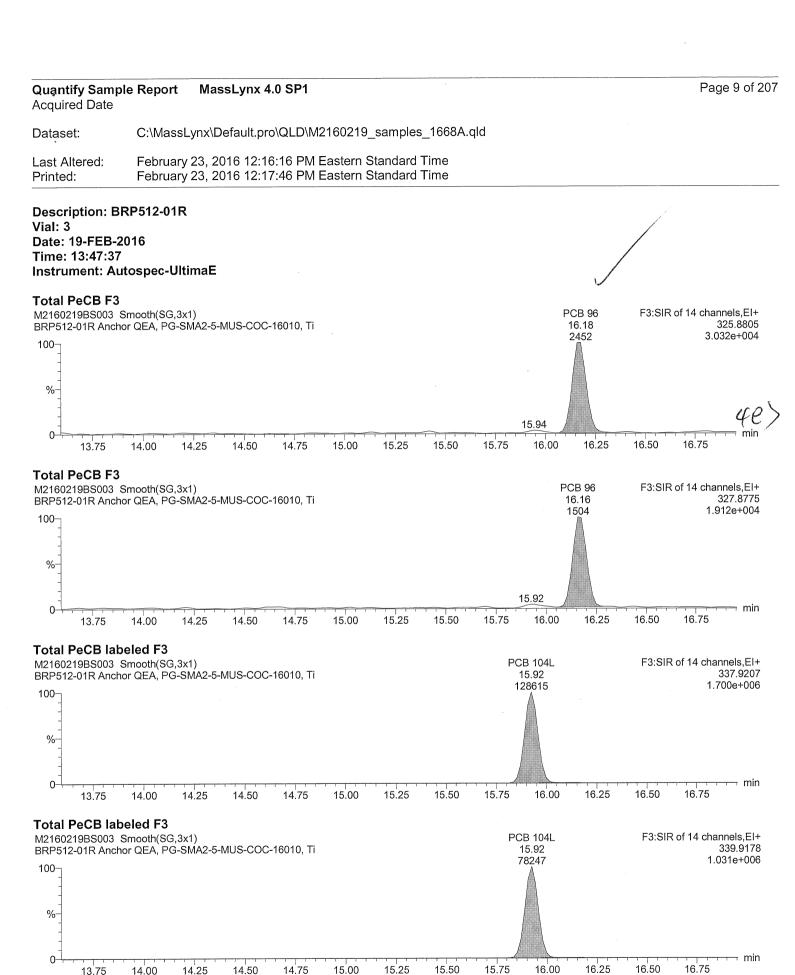












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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

Last Altered: Printed:

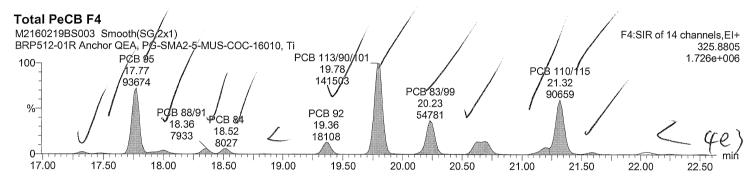
February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

Description: BRP512-01R

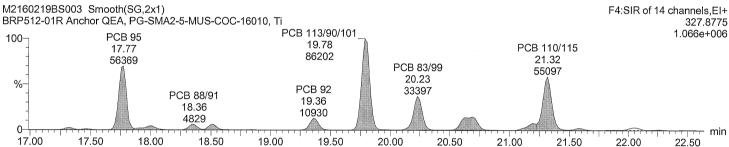
Vial: 3

Date: 19-FEB-2016 Time: 13:47:37

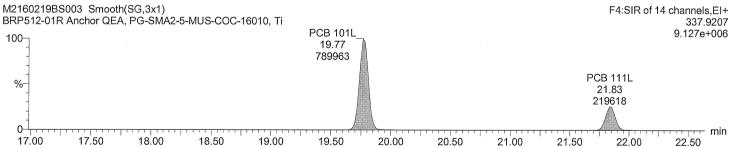
Instrument: Autospec-UltimaE



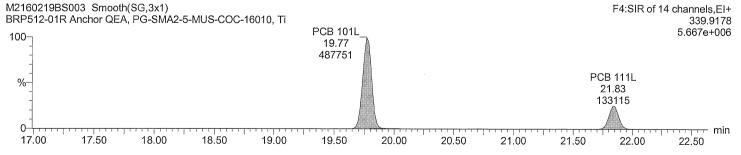
# **Total PeCB F4**



# Total PeCB labeled F4



# Total PeCB labeled F4



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.gld

Last Altered: Printed:

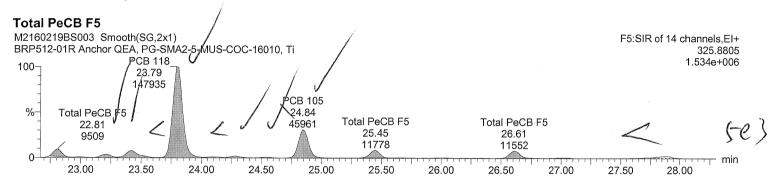
February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

**Description: BRP512-01R** 

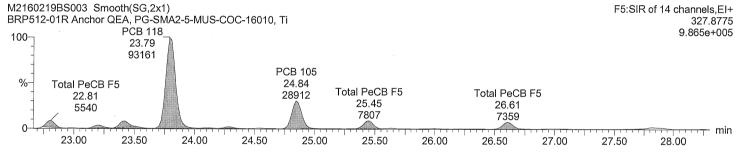
Vial: 3

Date: 19-FEB-2016 Time: 13:47:37

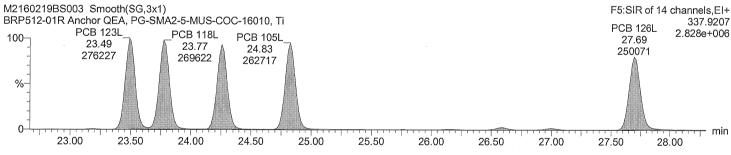
Instrument: Autospec-UltimaE



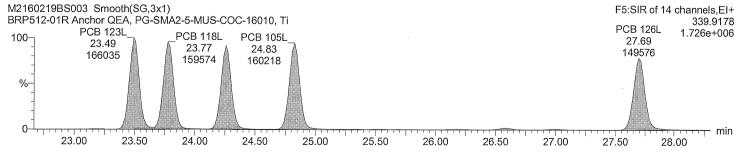




## Total PeCB labeled F5



## **Total PeCB labeled F5**



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.qld

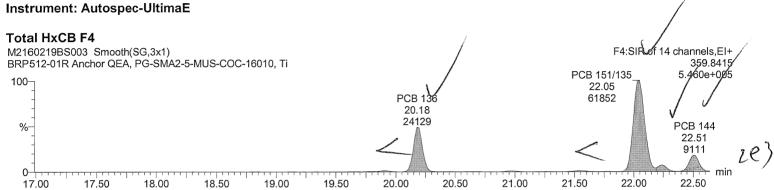
Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

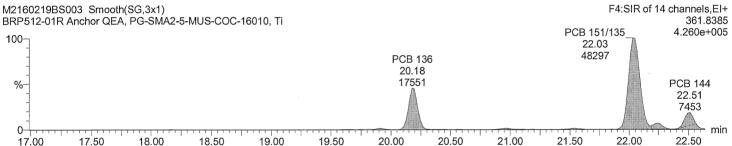
Description: BRP512-01R

Vial: 3

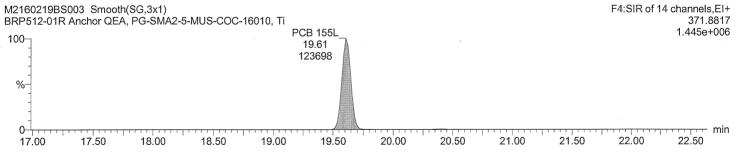
Date: 19-FEB-2016 Time: 13:47:37



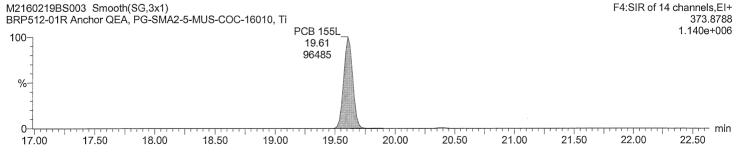




#### Total HxCB labeled F4



#### Total HxCB labeled F4



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Acquired Date

Dataset:

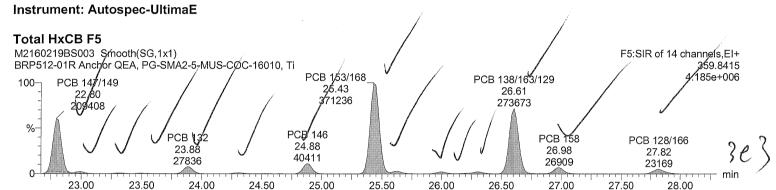
C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.gld

Last Altered: Printed: February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

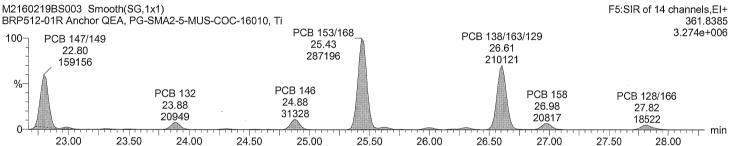
**Description: BRP512-01R** 

Vial: 3

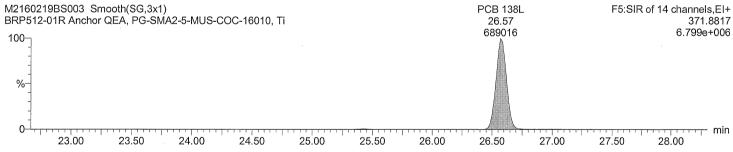
Date: 19-FEB-2016 Time: 13:47:37



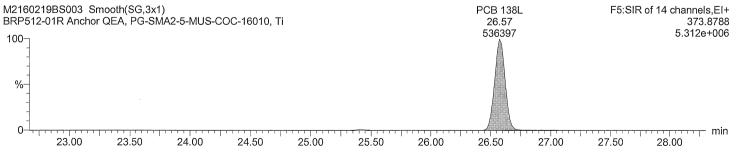
## **Total HxCB F5**







#### **Total HxCB labeled F5**



**Quantify Sample Report** MassLynx 4.0 SP1 Page 14 of 207 Acquired Date Dataset: C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.qld Last Altered: February 23, 2016 12:16:16 PM Eastern Standard Time Printed: February 23, 2016 12:17:46 PM Eastern Standard Time **Description: BRP512-01R** Vial: 3 Date: 19-FEB-2016 Time: 13:47:37 Instrument: Autospec-UltimaE **Total HxCB F6** M2160219BS003 Smooth(SØ,3x1) F6:SIR of 14 channels, EI+ BRP512-01R Anchor QEA, PG-SMA 2-5-MUS-COC-16010, Ti 359.8415 PCB 156/157 2.575e+005 100 30.68 CB 167 29810 29 53 15045 Total HxCB F6 % PCB 162 Total HxCB F6 32.13 Total HxCB F6 29.16 29.80 6315 33.45 5410 1770 28 50 2007 29.00 30.00 31.00 32.00 33.00 34.00 35.00 **Total HxCB F6** M2160219BS003 Smooth(SG,3x1) F6:SIR of 14 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 361.8385 PCB 156/157 2.032e+005 100-30.68 PCB 167 23759 29.53 PCB 162 10956 Total HxCB F6 % Total HxCB F6 29.16 32.13 Total HxCB F6 29.78 4436 4938 33.45 1389 28.50 1710 29.00 30.00 31.00 32.00 33.00 34.00 35.00 Total HxCB labeled F6 M2160219BS003 Smooth(SG,3x1) F6:SIR of 14 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 371.8817 PCB 156L/157L 3.567e+006 100 **PCB 167L** 30.68 29.52 464580 249742 PCB 169L 34.10 % 149825 0 – min 29.00 30,00 31.00 32.00 33.00 34.00 35.00 Total HxCB labeled F6 M2160219BS003 Smooth(SG,3x1) F6:SIR of 14 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 373.8788 PCB 156L/157L 2.750e+006 100-PCB 167L 30.68 29.52 355231 191825 PCB 169L 34.08 % 115802

0

29.00

30.00

31.00

32.00

33.00

34.00

35.00

- min

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24.00

24.50

23.50

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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.gld

Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

Description: BRP512-01R

Vial: 3

Date: 19-FEB-2016 Time: 13:47:37

Instrument: Autospec-UltimaE **Total HpCB F5** M2160219BS003 Smooth(SG,3x1) F5:SIR of 14 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 393.8025 6.798e+005 PCB 187 100 27.89 71**1**/05 PCB 179 24.54 % 27947 PCB 178 PCB 176 25.33 27.02

8149

25.00

9693

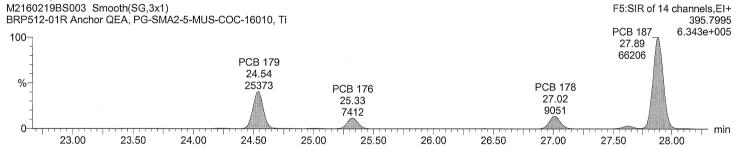
27.00

27.50

28.00

# **Total HpCB F5**

23.00

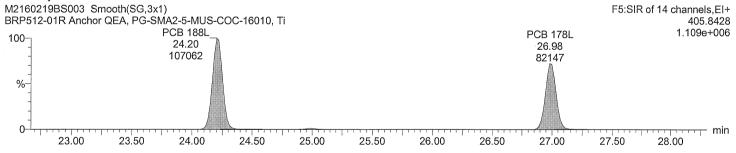


25.50

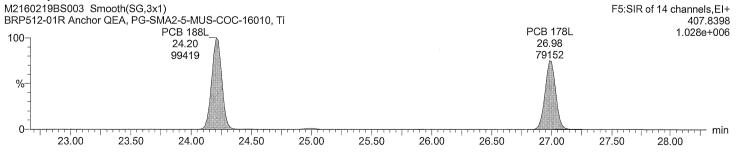
26.00

26.50

## Total HpCB labeled F5



## Total HpCB labeled F5



Dataset:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

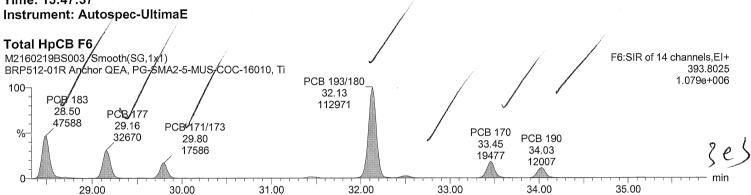
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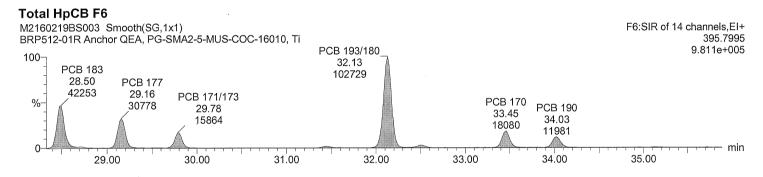
February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

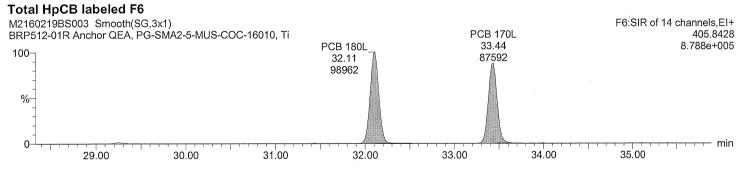
Description: BRP512-01R

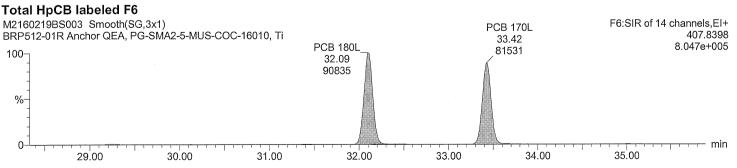
Vial: 3

Date: 19-FEB-2016 Time: 13:47:37

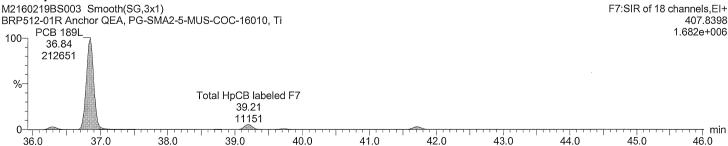








**Quantify Sample Report** MassLynx 4.0 SP1 Page 17 of 207 Acquired Date C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.qld Dataset: February 23, 2016 12:16:16 PM Eastern Standard Time Last Altered: February 23, 2016 12:17:46 PM Eastern Standard Time Printed: **Description: BRP512-01R** Vial: 3 Date: 19-FEB-2016 Time: 13:47:37 Instrument: Autospec-UltimaE **Total HpCB F7** M2160219BS003 Smooth(SG,3/1) BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti F7:SIR of 18 channels,EI+ 393.8025 PCB 189 3.412e+004 100 36.87 4194 % 39.23 43.54 41.80 36.0 37.0 38.0 39.0 40.0 41.0 42.0 43.0 44.0 45.0 46.0 **Total HpCB F7** M2160219BS003 Smooth(SG,3x1) F7:SIR of 18 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 395.7995 PCB 189 3.461e+004 100 36.87 4404 % 39.23 36.59 † min 37.0 42.0 43.0 36.0 38.0 39.0 40.0 41.0 44.0 45.0 46.0 Total HpCB labeled F7 M2160219BS003 Smooth(SG.3x1) F7:SIR of 18 channels, EI+ BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 405.8428 PCB 189L 1.788e+006 36.84 226251 % Total HpCB labeled F7 39.21 17203 41.70 n min 37.0 38.0 41.0 43.0 44.0 36.0 39.0 40.0 42.0 45.0 46.0 Total HpCB labeled F7 M2160219BS003 Smooth(SG,3x1) F7:SIR of 18 channels, EI+



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

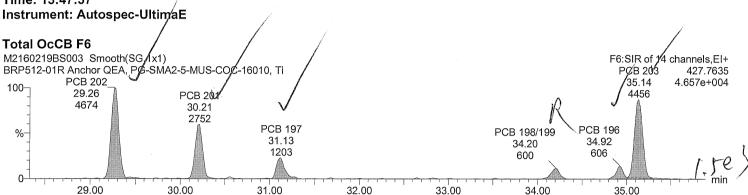
Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

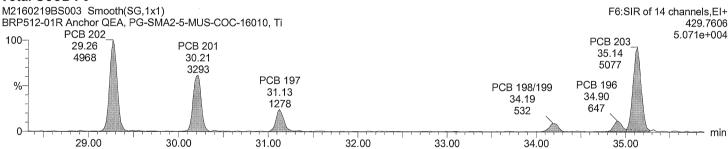
**Description: BRP512-01R** 

Vial: 3

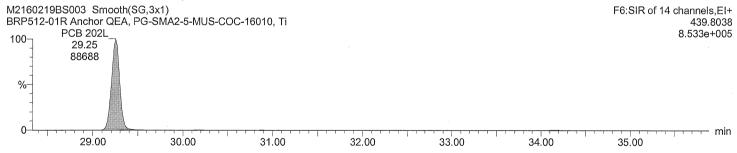
Date: 19-FEB-2016 Time: 13:47:37



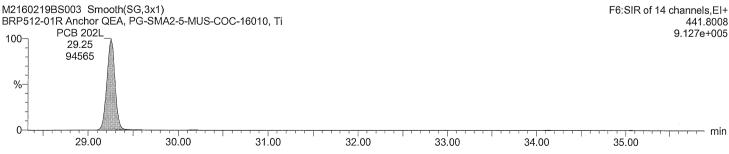




## Total OcCB labeled F6



#### Total OcCB labeled F6



Quantify Sample Report
Acquired Date

Dataset: C:\MassL

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C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

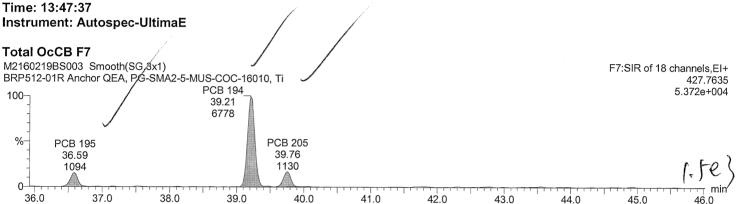
Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

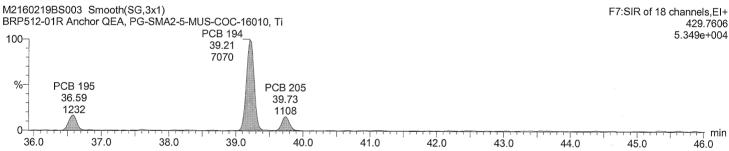
**Description: BRP512-01R** 

Vial: 3

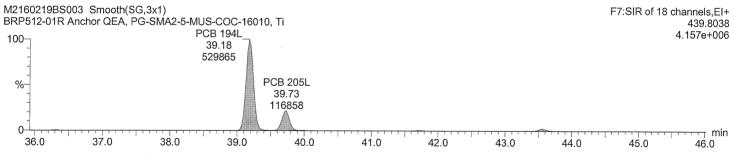
Date: 19-FEB-2016 Time: 13:47:37



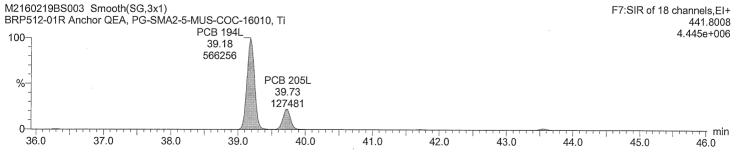
# **Total OccB F7**



#### **Total OcCB labeled F7**



## **Total OcCB labeled F7**



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.qld

Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

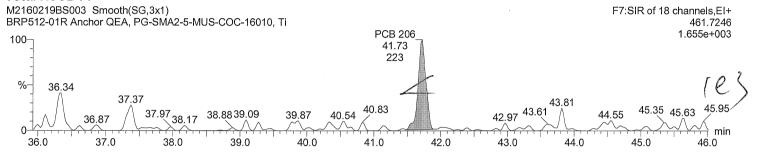
**Description: BRP512-01R** 

Vial: 3

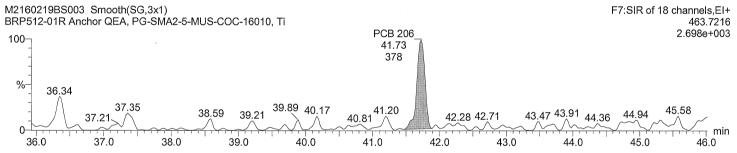
Date: 19-FEB-2016 Time: 13:47:37

Instrument: Autospec-UltimaE

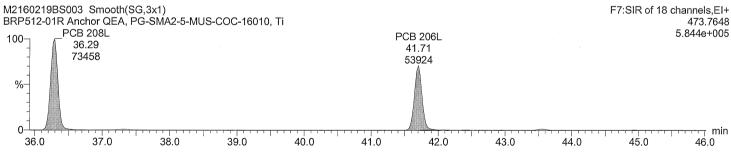
## **Total NoCB F7**



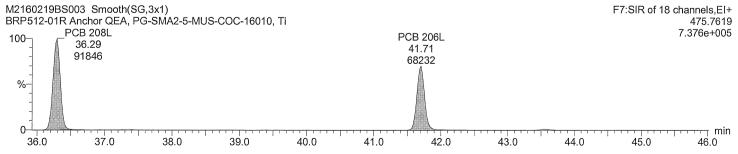
## **Total NoCB F7**



## Total NoCB labeled F7



#### **Total NoCB labeled F7**



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

Last Altered: Printed:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

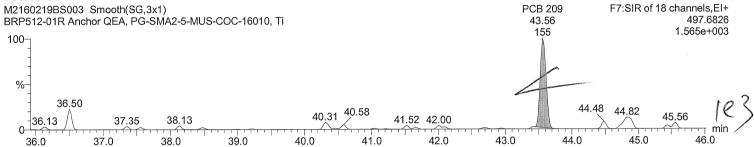
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Vial: 3

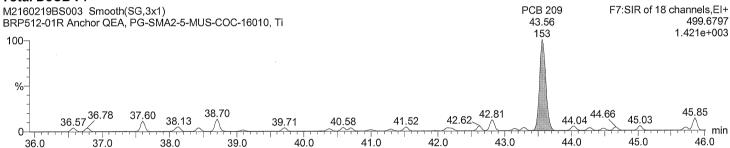
Date: 19-FEB-2016 Time: 13:47:37

Instrument: Autospec-UltimaE

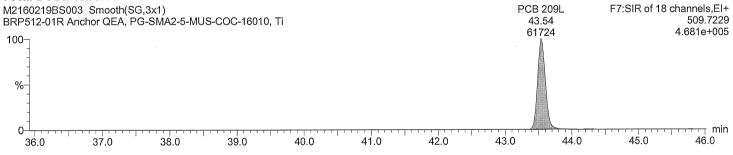




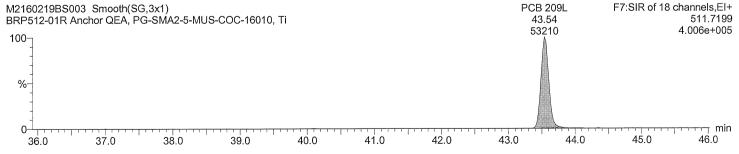
## **Total DeCB F7**



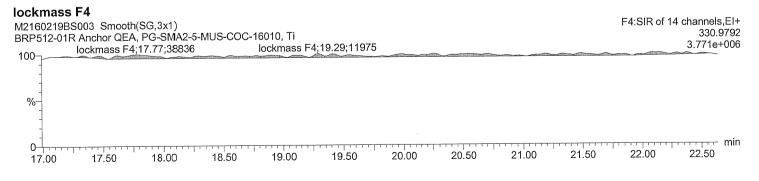
#### **Total DeCB labeled F7**



#### **Total DeCB labeled F7**



Page 22 of 207 **Quantify Sample Report** MassLvnx 4.0 SP1 Acquired Date C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld Dataset: February 23, 2016 12:16:16 PM Eastern Standard Time Last Altered: February 23, 2016 12:17:46 PM Eastern Standard Time Printed: **Description: BRP512-01R** Vial: 3 Date: 19-FEB-2016 Time: 13:47:37 Instrument: Autospec-UltimaE lockmass F1 F1:SIR of 10 channels,EI+ M2160219BS003 Smooth(SG,3x1) BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 218.9856 1.036e+007 100 %min n 10.80 10.20 10.40 10.60 9.60 9.80 10.00 9.20 9.40 8.80 9.00 8.60 lockmass F2 F2:SIR of 16 channels, EI+ M2160219BS003 Smooth(SG,3x1) 242.9856 BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 3.544e+006 lockmass F2;12.12;25466 lockmass F2;11.36;55275 % 13.00 13.20 13.40 12.60 12.80 12.40 11.80 12.00 12.20 11.00 11.20 11.40 11.60 lockmass F3 F3:SIR of 14 channels, EI+ M2160219BS003 Smooth(SG,3x1) 292.9824 BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti 2.690e+006 lockmass F3;15.65;11821 % ¬ min 16.00 16.25 16.50 16.75 15.25 15.50 15.75 15.00 14.75 13.75 14.00 14.25 14.50



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Acquired Date

Dataset:

Printed:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

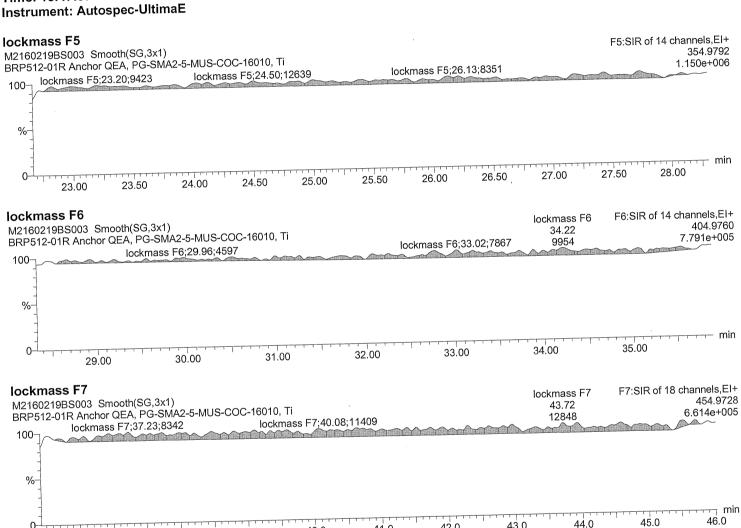
Last Altered:

February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

Description: BRP512-01R

Vial: 3

Date: 19-FEB-2016 Time: 13:47:37



41.0

40.0

39.0

38.0

42.0

43.0

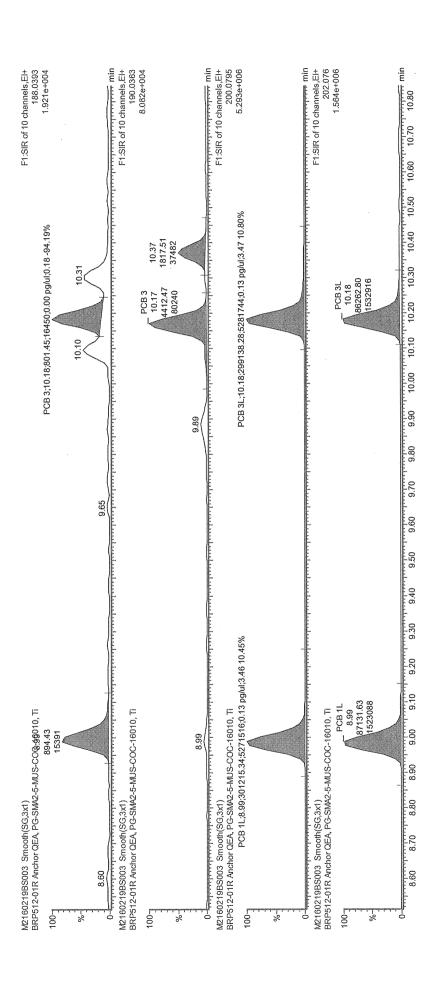
0-

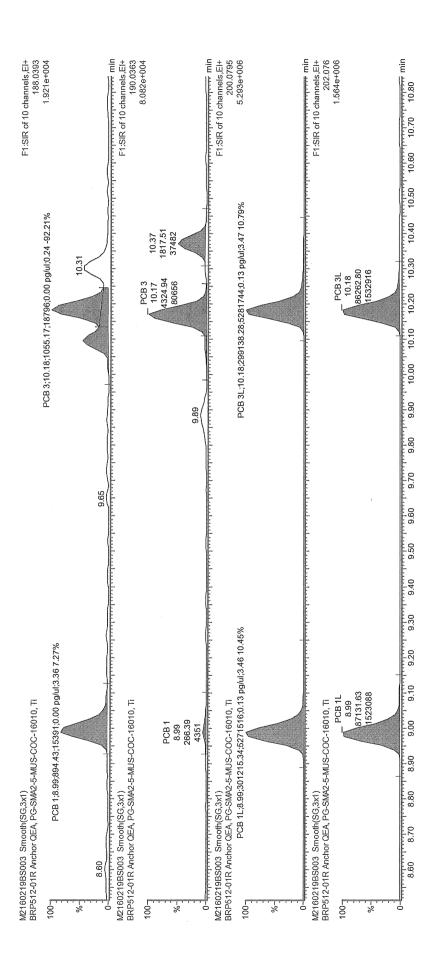
36.0

37.0

44.0

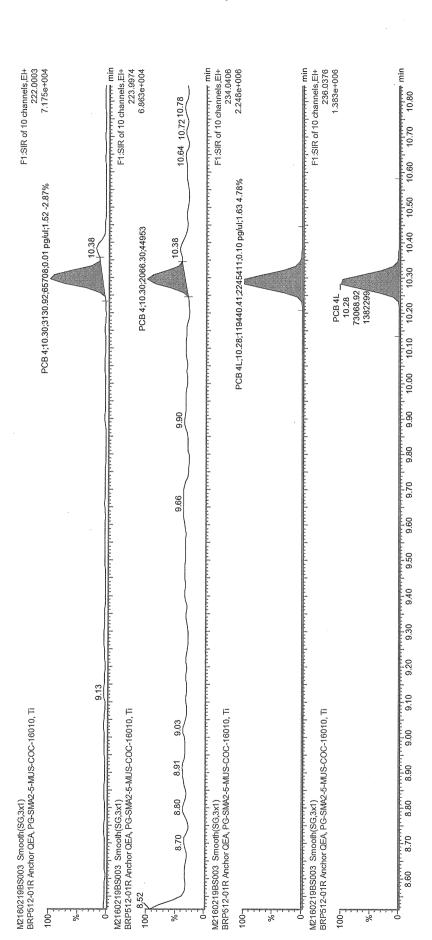
,2016-02-22





,2016-02-22

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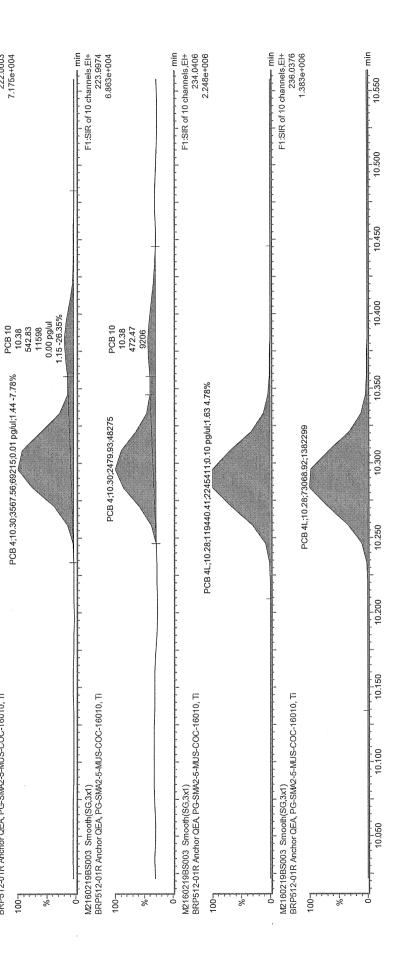


,2016/02-22

3300



2

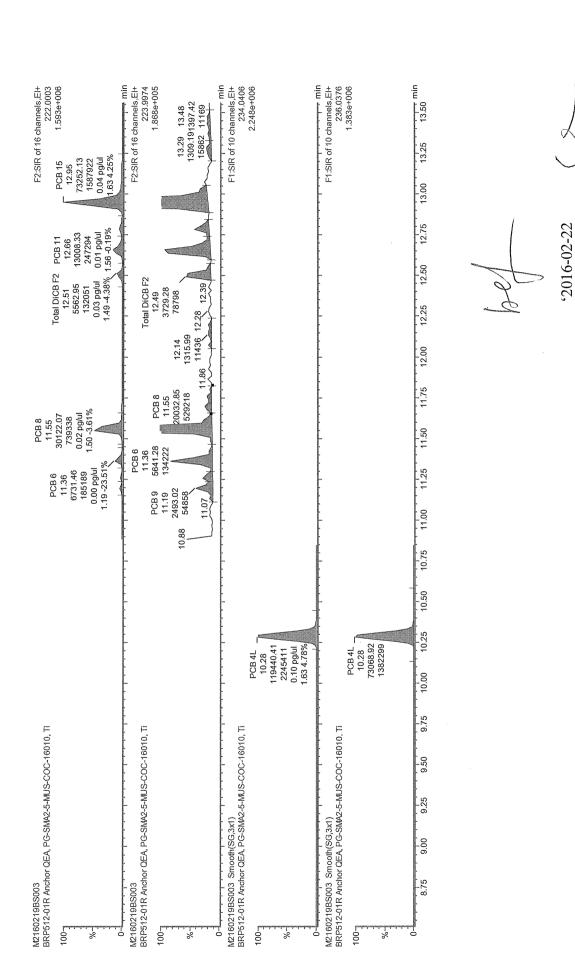


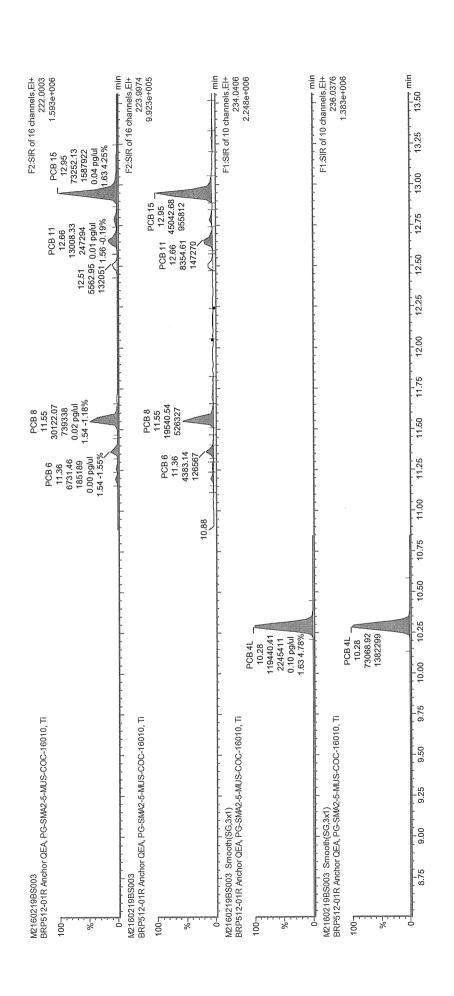
1007

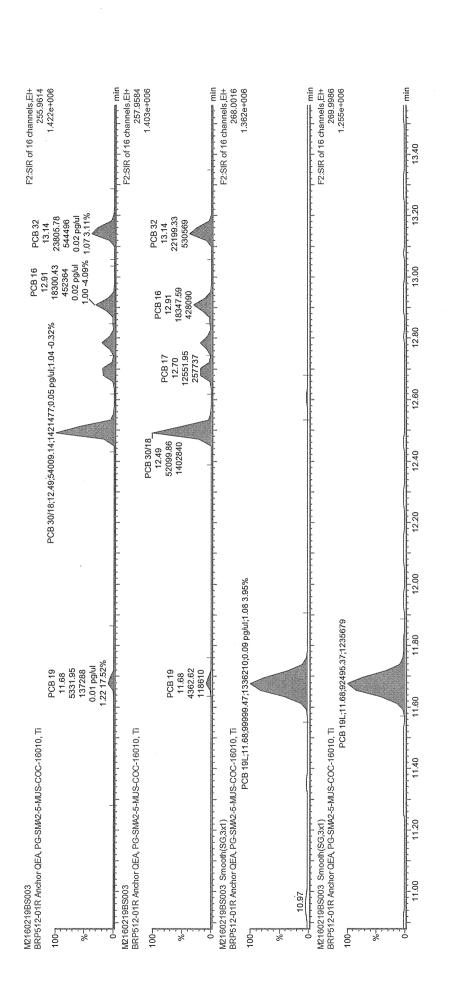
M2160219BS003 Smooth(SG,3x1) BRP512-01R Anchor QEA, PG-SMA2-5-MUS-COC-16010, Ti

F1.SIR of 10 channels,El+ 222.0003 7.175e+004

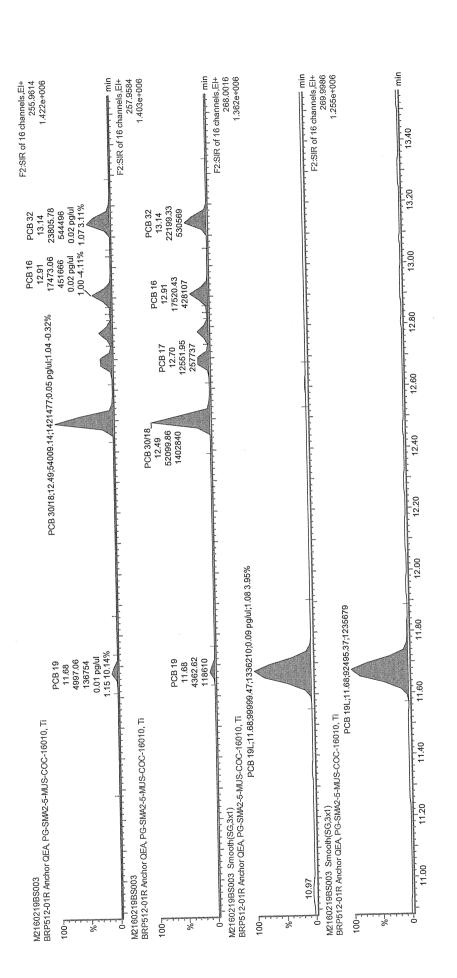
PCB 4;10.30;3567.56;69215;0.01 pg/ul;1.44 -7.78%



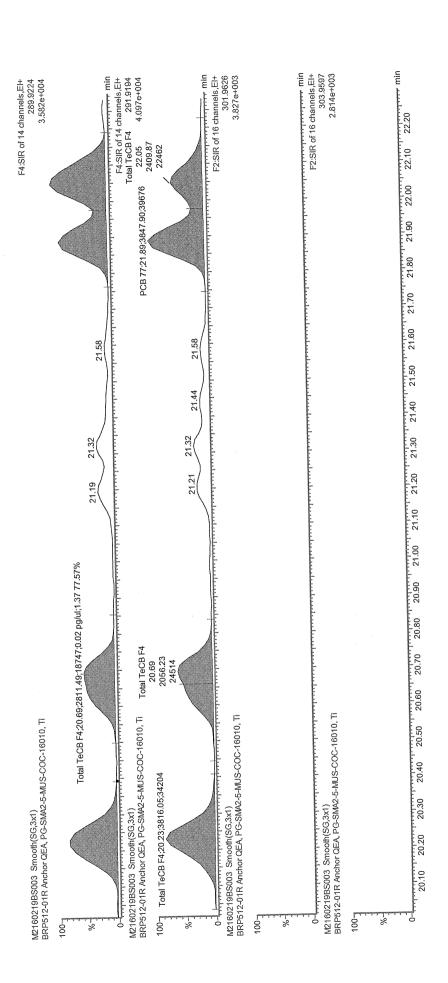


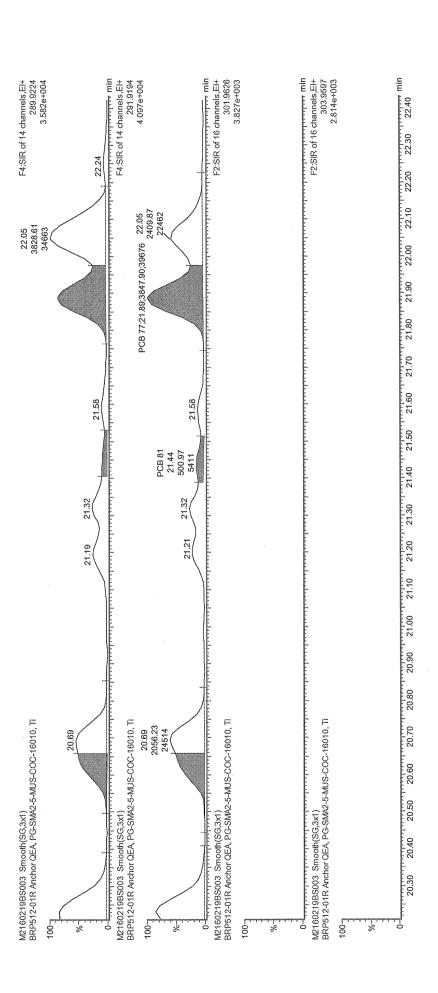


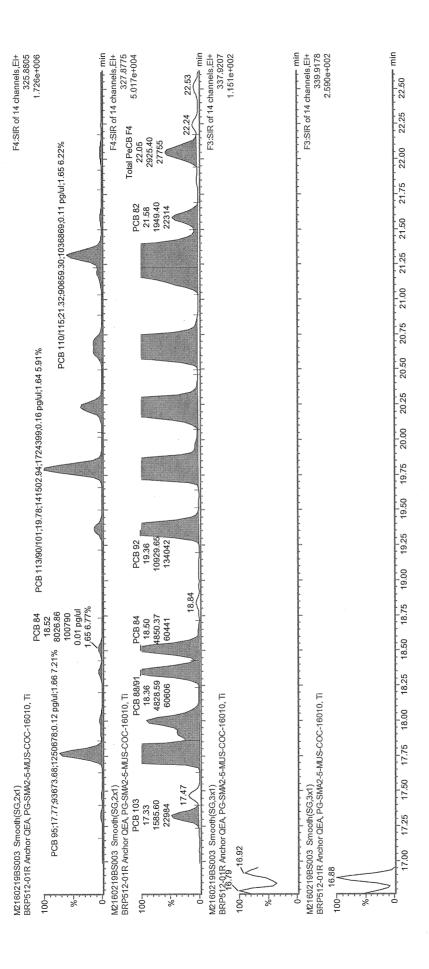
,2016-02-22



2016-02-22

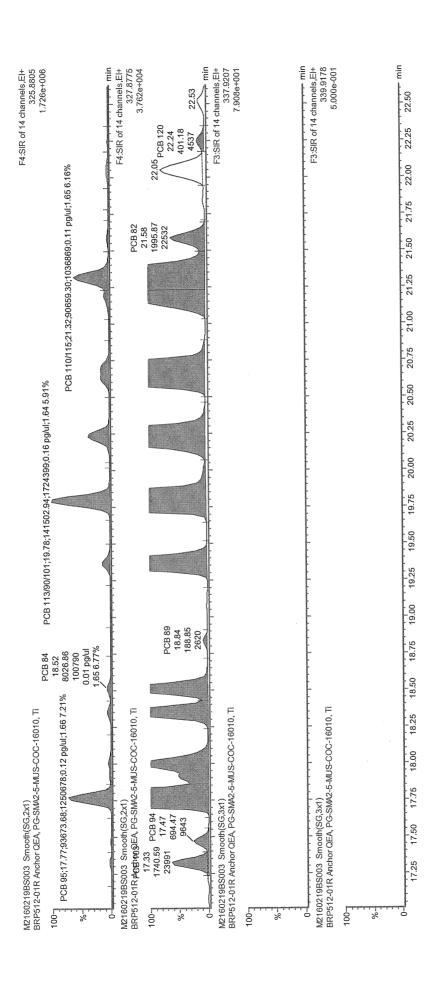


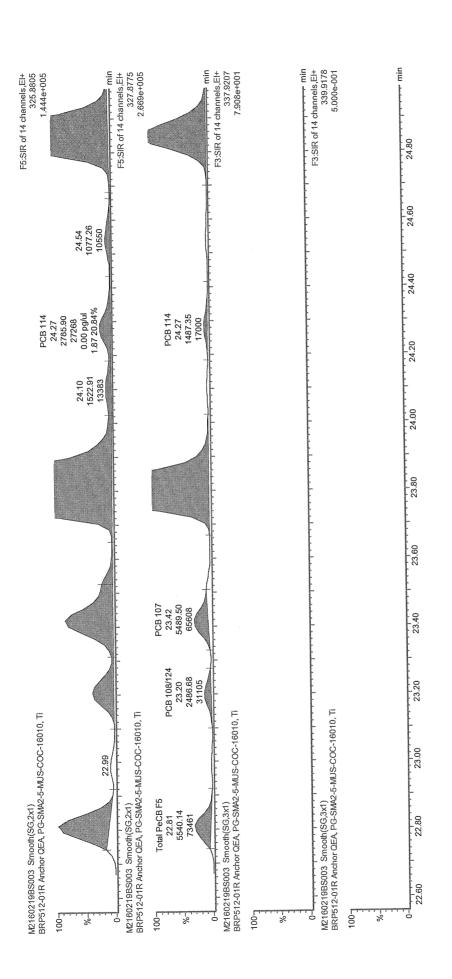




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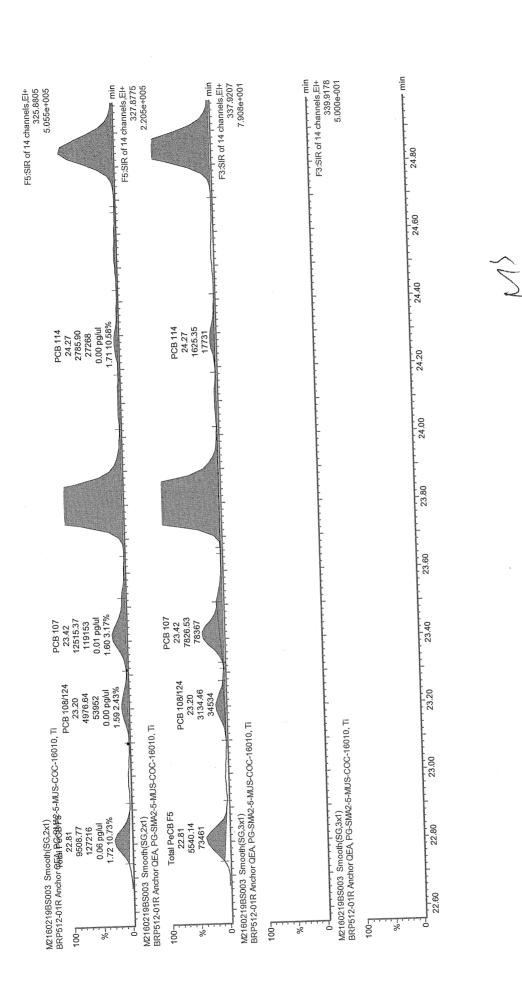




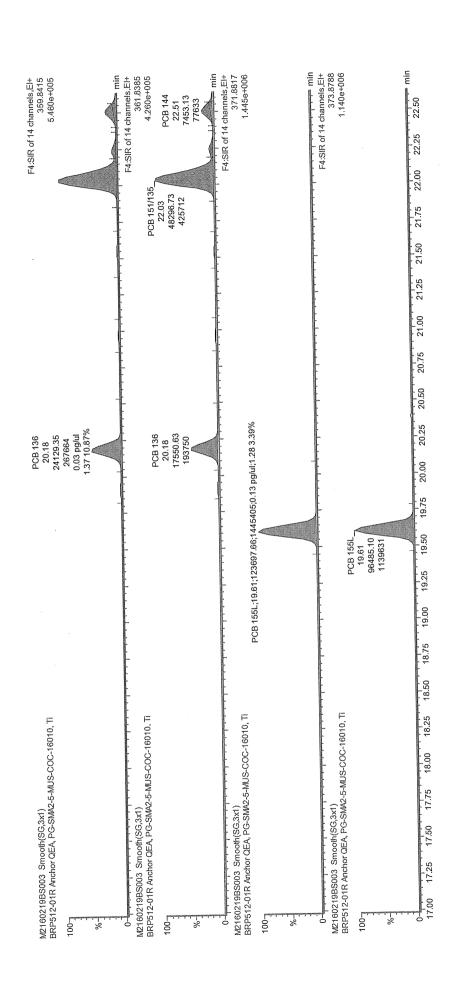


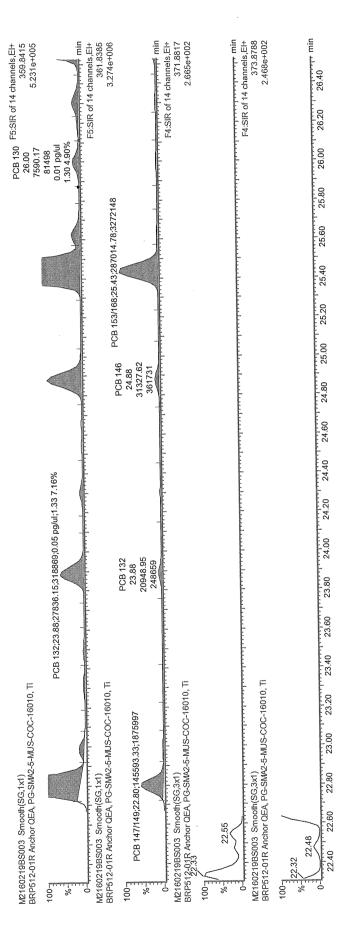
,2016-02-22

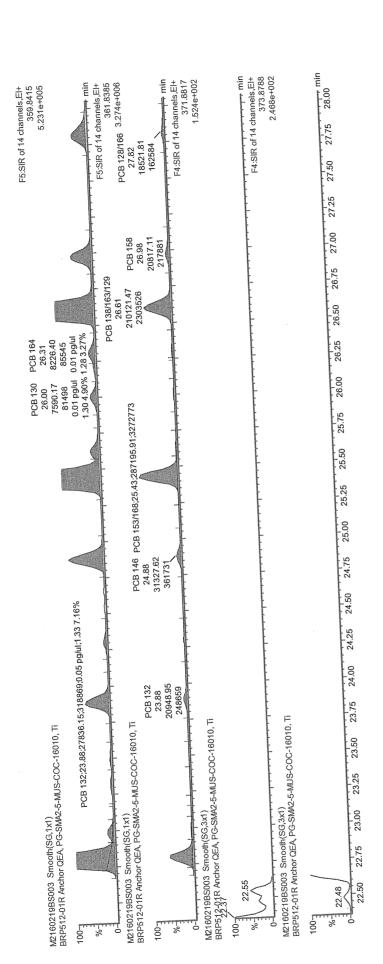
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DAILY RFs Using post concal						1.05	1.128			1.0.007	E*G) 75
	H=	#B	O <sub>II</sub>		<b>=</b>	Ц.	9=	Ξ.	π	=A*E/(C*H*F)*I	=C*D*100/(B*E*G)
Injection Date: 2016/02/19 Injection Time: 14:37:56	8.00E+03	1.34E+06	2.04E+05	11.11	2.00	0.988	1.419	10.134	7-	0.0078	09
Analyte: PCB 202 Injection I SAMPLE DATA: the following is applicable to all reported HRMS analyte calculations	Analyte Area (Primary + Secondary lons) =	Recovery Standard Area (Primary + Secondary lons) =	Internal Standard Area (Primary + Secondary lons) =	Amount of Recovery Standard added to the Extract (pg, ng)=	Amount of Internal Std. added to the sample (pg, rig) =	Average RRF of Analyte =	RRF of Internal Standard =	Amount of Sample Extracted(g g/ L) =	SPLIT / Dilution Factor =	Analyte Conc. $(pg/g, pg/L, Total pg) = oy (\overline{ng}g, \overline{ng}/L, Total ng) = oy (\overline{ng}g, \overline{ng}/L, Total ng) = oy (\overline{ng}/R, \overline{ng}/R, $	Internal Standard Recovery (%) =

PCBCONHR-T

Analysis Type :[

BRP513-01R

Maxxam ID #: [

Filename W2160219BS004 Acquired 19/02/2016 14:37

Cali File M2160219\_209

Sample ID BRP513-01R
Comments Anchor QEA, PG-SMA2-4-MUS-COC-16010, TI
Instrument File Ultima 2
Sample Size 10.134
Dil Fac 1.00

								Isomers					
Name	mass	RT	Area	ratio	Tot Area	ng/g	Code	isomers	DL	S/N	Mod	rrf	Rec
1 PCB 1	188 MoCB 190	9.00 8.99	873 306	2.86 yes	1179	-0.00066			-0.00066	*	no	1.082	-
2 PCB 2	188	10.10	374	1.18	692	-0.00057			-0.00057	*	yes	1.248	-
3 PCB 3	MoCB 190 188	10.09 10.18	318 829	no 0.35	3190	-0.00066			-0.00066	*	Op-O	1.079	_
4 PCB 4	MoCB 190 222	10.19 <b>10.30</b>	2361 <b>2363</b>	no	2045					*	•		
4 1084	DICB 224	10.30	1552	1.52 yes	3915	0.003741			-0.00103	9 9	yes	0.954	-
5 PCB 10	222 DiCB 224	10.38 10.39	333 434	0.77 no	768	-0.00083			-0.00083	*	yes	1.177	-
6 PCB 9	222	11.20	1358	2.76	1850	-0.00092			-0.00092	*	no	1.357	-
7 PCB 7	DiCB 224 222	11.20 NotFnd	492 *	no *	*	-0.00108			-0.00108	*	no	1.155	_
	DICB 224	11.26	*	no						*	110		
8 PCB 6	<b>222</b> DiCB 224	<b>11.36</b> 11.37	<b>4051</b> 2974	1.36 yes	7024	0.002368			-0.00093	12 16	no	1.347	-
9 PCB 5	222 DiCB 224	NotFnd 11.51	*	* no	*	-0.00107			-0.00107	*	no	1.169	-
10 PCB 8	222	11.55	16832	1.56	27617	0.009596			-0.00096	48	no	1.307	-
11 PCB 14	DiCB 224 222	11.55 NotFnd	10785 *	yes *	*	-0.00093			-0.00093	50 *	no	1.351	
	DiCB 224	12.26	*	no						*			
12 PCB 11	<b>222</b> DiCB 224	<b>12.66</b> 12.65	<b>13437</b> 9553	1.41 yes	22989	0.007854			-0.00094	31 32	no	1.33	-
13 PCB 13/12	222 DICB 224	12.78 12.79	-2559 -1640.38	1.56 OK	-4199.38	-0.00154	PCB 13/12 NDR		-0.00101	6	xL	1.241	-
14 PCB 15	222	12.79	51646	1.53	85314	0.02964			-0.00144	10 124	no	0.871	_
15 PCB 19	DiCB 224 256	12.93 <b>11.68</b>	33668 <b>2553</b>	yes 0.96	5215	0.00535			-0.00075	123 35	no	0.000	
	TriCB 258	11.68	2662	yes					~0.00075	38	no	0.899	-
16 PCB 30/18	256 TriCB 258	<b>12.49</b> 12.48	<b>35888</b> 33739	1.06 yes	69627	0.032825			-0.00069	488 491	no	0.976	-
17 PCB 17	<b>256</b> TriCB 258	12.70	6778	1.08	13038	0.007586			-0.00085	72	no	0.79	-
18 PCB 27	256	12.69 <b>12.78</b>	6260 <b>7451</b>	yes 1.1	14249	0.005567			-0.00057	70 96	no	1.177	-
19 PCB 24	TriCB 258 256	12.79 NotFnd	6798 *	yes *	*	-0.00071			-0.00071	89			
	TriCB 258	12.87	*	no					~0.00071	*	no	0.948	-
20 PCB 16	<b>256</b> TriCB 258	<b>12.91</b> 12.90	<b>12347</b> 12012	1.03 yes	24360	0.014124	-		-0.00084	156 154	no	0.793	-
21 PCB 32	256	13.14	12809	1.06	24949	0.008593			-0.0005	149	no	1.335	-
22 PCB 34	TriCB 258 256	13.14 13.74	12140 1223	yes 1.09	2347	-0.00076			-0.00076	157	yes	1.484	_
23 PCB 23	TriCB 258 256	13.73 13.83	1124 282	yes 1.52	467	-0.00078				*			
	TriCB 258	13.83	185	no					-0.00078	*	yes	1.446	-
24 PCB 26/29	<b>256</b> TriCB 258	<b>13.97</b> 13.99	<b>35406</b> 34979	1.01 yes	70385	0.020058			-0.0007	101 106	no	1.614	-
25 PCB 25	<b>256</b> TriCB 258	14.10 14.11	17951	1.02	35621	0.009443			-0.00065	51	no	1.735	-
26 PCB 31	256	14.11	17669 <b>184410</b>	yes 1.02	366015	0.091757			-0.00061	50 544	no	1.835	-
27 PCB 28/20	TriCB 258 256	14.28 <b>14.43</b>	181605 <b>509958</b>	yes 1.01	1015018	0.276477			-0.00067	564 1465	20	1.688	
	TriCB 258	14.45	505060	yes						1488	no	1.000	•
28 PCB 21/33	<b>256</b> TriCB 258	<b>14.55</b> 14.55	<b>88619</b> 88146	1.01 yes	176764	0.047562			-0.00066	233 235	no	1.709	-
29 PCB 22	256 TriCB 258	14.77	79170	1.01	157688	0.04537			-0.00071	220	no	1.599	-
30 PCB 36	256	14.78 NotFnd	78518 *	yes *	*	-0.00061			-0.00061	218	no	1.858	_
31 PCB 39	TriCB 258 <b>256</b>	15.62 <b>15.83</b>	* 3678	no <b>0.91</b>	7737	0.002343			-0.00074	* 10	no	1.519	
	TriCB 258	15.82	4059	yes						11	110		-
32 PCB 38	256 TriCB 258	NotFnd 16.20	*	no	*	-0.00072			-0.00072	*	no	1.574	-
33 PCB 35	256 TriCB 258	<b>16.45</b> 16.47	<b>3636</b> 3595	1.01 yes	7231	0.002197			-0.00075	9	no	1.514	-
34 PCB 37	256	16.70	76038	1.04	149178	0.050477			-0.00125	9 181	no	0.906	-
35 PCB 54	TriCB 258 290	16.72 13.08	73140 279	yes 0.84	610	-0.0006			-0.0006	176	yes	0.911	_
36 PCB 53/50	TCB 292	13.08	331	yes						*			
	<b>290</b> TCB 292	<b>14.12</b> 14.11	<b>22622</b> 25986	0.87 yes	48608	0.030104			-0.001	136 117	no	0.77	-
37 PCB 45/51	<b>290</b> TCB 292	<b>14.48</b> 14.49	<b>13544</b> 16295	0.83 yes	29839	0.019601			-0.00106	76	no	0.725	-
38 PCB 46	290	14.64	6947	0.81	15523	0.012246			-0.00128	70 40	no	0.604	-
39 PCB 52	TCB 292 <b>290</b>	14.64 <b>15.38</b>	8576 <b>164672</b>	yes 0.8	370979	0.235062			-0.00102	37 918	no	0.752	_
40 PCB 73	TCB 292	15.38	206307	yes *	*					867			
	290 TCB 292	NotFnd 15.43	*	no	*	-0.00077			-0.00077	*	no	1.002	-
41 PCB 43	290 TCB 292	<b>15.53</b> 15.50	<b>6897</b> 8903	0.77	15800	0.015008			-0.00153	37	no	0.502	-
42 PCB 69/49	290	15.65	74967	yes 0.81	167749	0.092754			-0.00089	37 401	no	0.862	-
	TCB 292	15.63	92783	yes						385			

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43	PCB 48		290	15.83	41612	0.82	92430	0.064465	-0.00113	232	no	0.683	-
11	PCB 44/47/65	TCB	292 <b>290</b>	15.84 <b>15.96</b>	50818 <b>157903</b>	yes 0.81	354036	0.216482	-0.00099	217 694	no	0.779	
44	FGB 44/4//03	TCB		15.97	196133	yes	334030	0.210402	-0.00000	664	110	0.770	
45	PCB 59/62/75	TOD	290	16.16	20546	0.8	46086	0.022346	-0.00078	104 95	no	0.983	-
46	PCB 42	TCB	292 290	16.16 <b>16.29</b>	25540 <b>31880</b>	yes 0.79	72176	0.056931	-0.00128	164	no	0.604	_
		TCB		16.27	40295	yes			0.00440	160		0.000	
47	PCB 40/41/71	тсв	<b>290</b> 292	<b>16.58</b> 16.56	<b>70309</b> 89028	0.79 yes	159337	0.110182	-0.00112	315 310	no	0.689	-
48	PCB 64		290	16.72	47108	0.79	106859	0.056606	-0.00086	246	no	0.9	-
40	PCB 72	TCB	292 <b>290</b>	16.70 <b>17.20</b>	59751 <b>2571</b>	yes 0.87	5526	0.002088	-0.00081	237 8	no	1.261	_
	05 /2	TCB	292	17.20	2955	yes	0020	0.002000		7			
50	PCB 68	тсв	290	<b>17.40</b> 17.42	<b>1837</b> 2478	0.74 yes	4315	0.001584	-0.00079	5 5	no	1.298	-
51	PCB 57	ICB	290	17.70	953	0.69	2343	0.000756	-0.00069	4	yes	1.477	-
	DOD 50	TCB		17.68	1390	yes *	*	0.00004	0.00004	5 *	no	1 274	
52	PCB 58	тсв	290 292	NotFnd 17.85	*	no		-0.00081	-0.00081	*	no	1.274	-
53	PCB 67	700	290	17.95	5651	0.78	12873	0.003726	-0.00062	16	yes	1.647	-
54	PCB 63	TCB	292 290	17.95 <b>18.13</b>	7222 <b>4739</b>	yes <b>0.76</b>	11002	0.00342	-0.00067	16 14	yes	1.533	-
		TCB	292	18.15	6263	yes				14	-	4.070	
55	FCB 61/70/74/76	TCB	<b>290</b> 292	<b>18.36</b> 18.36	<b>114025</b> 148558	<b>0.77</b> yes	262583	0.091161	-0.00075	233 235	yes	1.373	-
56	PCB 66		290	18.59	48374	0.77	110844	0.033417	-0.00065	134	yes	1.581	-
57	PCB 55	TCB	292 290	18.60 NotFnd	62470 *	yes *	*	~0.00083	-0.00083	135	no	1.229	_
		TCB	292	18.73	*	no				*			
58	PCB 56	тсв	290	<b>19.07</b> 19.07	<b>5897</b> 8246	0.72	14143	0.005264	-0.0008	17 18	yes	1.28	-
59	PCB 60	100	290	19.23	5575	yes 0.72	13363	0.00503	-0.00081	16	yes	1.266	-
00	DOD 00	TCB		19.24	7788	yes *	*	-0.00064	-0.00064	17	no	1.596	
60	PCB 80	тсв	290 292	NotFnd 19.50	*	no		-0.00004	-0.00004	*	no	1.590	-
61	PCB 79	TOD	290	NotFnd	*	*	*	-0.00061	-0.00061	*	no	1.695	-
62	PCB 78	TCB	292	20.63 NotFnd	*	no *	*	-0.00072	-0.00072	*	no	1.435	_
		TCB	292	21.08	*	no			0.004	*		4.007	
63	PCB 81	TCB	290 292	21.44 21.45	306 355	0.86 yes	661	-0.001	-0.001	*	yes	1.027	-
64	PCB 77		290	21.89	2266	0.71	5440	0.002046	-0.00095	6	no	1.077	-
65	PCB 104	TCB	292 326	21.89 NotFnd	3174 *	yes *	*	-0.00061	-0.00061	6 *	no	1.094	_
		PeCB	328	15.94	*	no				*			1
66	PCB 96	PeCB	326	<b>16.16</b> 16.15	<b>1826</b> 1057	1.73 yes	2883	0.00166	-0.00084	9 8	no	0.802	-
67	PCB 103	FECD	326	17.33	1826	1.51	3032	0.001961	-0.00101	6	yes	0.714	-
00	DOD 04	PeCB		17.31	1206	yes	1400	-0.00138	-0.00138	6	V00	0.521	
80	PCB 94	PeCB	326 328	17.47 17.47	915 521	1.75 yes	1436	-0.00130	-0.00130	*	yes	0.521	-
69	PCB 95	D-0D	326	17.77	70348	1.66	112664	0.081135	-0.00112	233	yes	0.641	-
70	PCB 100/93/102/	PeCB 98	328 326	17.76 <b>18.00</b>	42316 <b>6681</b>	yes 1.69	10631	0.008775	-0.00129	213 15	yes	0.559	-
		PeCB		17.91	3950	yes	0.070	0.007040	0.00400	14		0.57	
71	PCB 88/91	PeCB	<b>326</b> 328	<b>18.34</b> 18.33	<b>5249</b> 3421	1.53 yes	8670	0.007019	-0.00126	16 17	yes	0.57	-
72	PCB 84		326	18.50	6438	1.6	10449	0.009819	-0.00147	20	yes	0.491	-
73	PCB 89	PeCB	328 326	18.49 NotFnd	4011 *	yes *	*	-0.00133	-0.00133	19	no	0.541	-
		PeCB	328	18.84	*	no				*			
74	PCB 121	PeCB	326 328	NotFnd 19.08	*	no	*	-0.00098	-0.00098	*	no	0.733	-
75	PCB 92		326	19.36	14139	1.6	22992	0.018208	-0.00124	44	no	0.583	-
76	PCB 113/90/101	PeCB	328 <b>326</b>	19.35 <b>19.79</b>	8852 <b>108259</b>	yes 1.63	174681	0.11879	-0.00106	42 328	yes	0.679	
		PeCB	328	19.76	66422	yes				314			
77	PCB 83/99	PeCB	<b>326</b> 328	<b>20.23</b> 20.22	<b>44710</b> 27180	1.64 yes	71890	0.064074	-0.00139	127 122	yes	0.518	-
78	PCB 112		326	NotFnd	*	*	*	-0.00087	-0.00087	*	no	0.83	-
70	PCB 109/119/86/	PeCB 97/125/		20.30 <b>20.69</b>	* 29128	no <b>1.59</b>	47444	0.032838	-0.00108	* 48	no	0.667	_
13	F CB 109/119/00/	PeCB		20.62	18316	yes	7/777	0.032030		46	110	0.007	
80	PCB 117/116/85	PeCB	326	<b>21.19</b> 21.19	9551	1.63	15420	0.009928	-0.00101	28 26	no	0.717	-
81	PCB 110/115	Pecb	326	21.19	5869 <b>70784</b>	yes 1.66	113419	0.078033	-0.00107	201	no	0.671	-
		PeCB		21.32	42636	yes	4444	0.000000	0.0044	186		0.514	
82	PCB 82	PeCB	<b>326</b> 328	<b>21.58</b> 21.59	<b>2681</b> 1730	1.55 yes	4411	0.003963	-0.0014	8 7	no	0.514	-
83	PCB 111		326	NotFnd	*	*	*	-0.00096	-0.00096	*	no	0.749	-
84	PCB 120	PeCB	328 326	21.85 22.24	* 825	no 1.74	1298	-0.00085	-0.00085	*	yes	0.853	_
		PeCB	328	22.25	473	yes				*	-		
85	PCB 108/124	PeCB	326 328	<b>23.20</b> 23.21	<b>4000</b> 2654	1.51 yes	6655	0.002456	-0.00115	5	no	1.251	-
86	PCB 107		326	23.42	9617	1.45	16250	0.005709	-0.0011	12	no	1.314	-
07	DCB 122	PeCB		23.40	6634	yes 1.51	2202	_0.00161	-0.00161	13	no	0.894	_
6/	PCB 123	PeCB	326 328	23.51 23.51	1325 878	yes		-0.00161	0.00101	*	110		-
88	PCB 106		326	NotFnd	*	*	*	-0.00105	-0.00105	*	no	1.375	-
89	PCB 118	PeCB	328 <b>326</b>	23.63 <b>23.81</b>	115332	no <b>1.57</b>	188756	0.078732	-0.00147	150	no	0.981	-
		PeCB		23.80	73424	yes				147			

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							0.00440	*	no	1.222	_
90 PCB 122	326 PeCB 328	24.10 24.08	1311 851	1.54 yes	2161	-0.00118	-0.00118	*			
91 PCB 114	326	24.29	1821	1.36	3156	-0.00143	-0.00143	*	no	1.01	-
92 PCB 105	PeCB 328 <b>326</b>	24.28 <b>24.84</b>	1335 <b>33901</b>	yes 1.51	56405	0.024387	-0.00148	43	no	0.977	-
	PeCB 328	24.85	22505	yes *	*	-0.00107	-0.00107	45 *	no	1.348	-
93 PCB 127	326 PeCB 328	NotFnd 26.20	*	no			-0.00148	*	yes	0.977	_
94 PCB 126	326 PeCB 328	27.75 27.72	625 443	1.41 yes	1068	-0.00148		*		0.997	
95 PCB 155	360	NotFnd	*	*	*	-0.00063	-0.00063	*	no		-
96 PCB 152	HxCB 362 360	19.63 NotFnd	*	no *	*	-0.00093	-0.00093	*	no	0.675	-
	HxCB 362 360	19.78 19.89	* 410	no 1.41	700	-0.00098	-0.00098	*	yes	0.639	-
97 PCB 150	HxCB 362	19.88	290	yes		0.02342	-0.00093	* 91	no	0.672	-
98 PCB 136	360 HxCB 362	<b>20.19</b> 20.18	16778 13432	1.25 yes	30210	0.02342		93		0.579	_
99 PCB 145	360	NotFnd	*	no	*	-0.00108	-0.00108	*	no		_
100 PCB 148	HxCB 362 360	20.41 21.53	641	1.47	1078	-0.00128	-0.00128	*	yes	0.487	-
101 PCB 151/135	HxCB 362 360	21.55 <b>22.03</b>	437 <b>47128</b>	no <b>1.32</b>	82873	0.095801	-0.00139	207	yes	0.451	-
	HxCB 362	22.04	35744	yes	4253	0.004074	-0.00115	199 13	yes	0.544	-
102 PCB 154	360 HxCB 362	<b>22.24</b> 22.21	<b>2272</b> 1981	1.15 yes			-0.00129	13 35	yes	0.483	_
103 PCB 144	360 HxCB 362	<b>22.51</b> 22.51	<b>6290</b> 5473	1.15 yes	11763	0.012694		36			
104 PCB 147/149	360	22.80	156686	1.32	275767	0.222067	-0.00119	639 606	yes	0.647	-
105 PCB 134/143	HxCB 362 360	22.80 <b>22.99</b>	119081 <b>5894</b>	yes 1.28	10507	0.009726	-0.00137	22	yes	0.563	-
	HxCB 362	23.06	4613 <b>1543</b>	yes 1.23	2792	0.002277	-0.00121	21 5	yes	0.639	-
106 PCB 139/140	<b>360</b> HxCB 362	<b>23.31</b> 23.31	1250	yes			-0.00151	6 4	yes	0.513	_
107 PCB 131	360 HxCB 362	<b>23.49</b> 23.49	<b>1084</b> 871	1.24 yes	1954	0.001985		4	-		
108 PCB 142	360	NotFnd	*	*	*	-0.00132	-0.00132	*	no	0.583	-
109 PCB 132	HxCB 362 <b>360</b>	23.65 <b>23.88</b>	21336	no <b>1.28</b>	38040	0.037913	-0.00148	81	yes	0.523	-
	HxCB 362	23.88	16704 <b>2710</b>	yes 1.4	4653	0.003892	-0.00124	81 10	yes	0.623	-
110 PCB 133	<b>360</b> HxCB 362	<b>24.31</b> 24.31	1942	yes			-0.00108	8	yes	0.714	_
111 PCB 165	360 HxCB 362	24.65 24.68	298 252	1.18 yes	550	-0.00108		*	-		
112 PCB 146	360	24.88	31997	1.31	56511	0.044372	-0.00116	122 115	yes	0.663	-
113 PCB 161	HxCB 362 360	24.88 NotFnd	24513	yes *	*	-0.00087	-0.00087	*	no	0.888	-
	HxCB 362	25.03 <b>25.43</b>	* 282524	no <b>1.29</b>	502211	0.330304	-0.00098	1066	no	0.792	-
114 PCB 153/168	<b>360</b> HxCB 362	25.47	219686	yes			-0.00124	1027 27	yes	0.621	_
115 PCB 141	<b>360</b> HxCB 362	<b>25.63</b> 25.62	<b>7103</b> 5136	1.38 yes	12239	0.010264		23		0.558	· <u>-</u>
116 PCB 130	360	26.00	6685	1.32	11754	0.010969	-0.00138	23 22	yes		-
117 PCB 137	HxCB 362 360	26.00 <b>26.30</b>	5069 <b>7940</b>	yes 1.32	13977	0.012921	-0.00137	24 21	yes	0.563	-
	HxCB 362 360	26.21 NotFnd	6036	yes *	*	-0.00094	-0.00094	*	no	0.826	-
118 PCB 164	HxCB 362	26.30	*	no	077050		-0.0012	* 784	yes	0.644	-
119 PCB 138/163/	129 360 HxCB 362	<b>26.61</b> 26.62	<b>214081</b> 163768	1.31 yes	377850	0.305677		733	-	0.723	
120 PCB 160	360	NotFnd	*	no	*	-0.00107	-0.00107	*	no		-
121 PCB 158	HxCB 362 360	26.80 <b>26.98</b>	20502	1.33	35957	0.020554	-0.00085	70 66	yes	0.911	-
	HxCB 362 360	26.98 <b>27.82</b>	15455 <b>19145</b>	yes 1.32	33648	0.025024	-0.0011	55	no	0.7	-
122 PCB 128/166	HxCB 362	27.80	14503	yes *	*	-0.00056	-0.00056	54	no	1.379	-
123 PCB 159	360 HxCB 362	NotFnd 28.78	*	no			-0.00062	*	yes	1.254	_
124 PCB 162	360 HxCB 362	29.09 29.07	756 430	1.76 no	1186	-0.00062		*			
125 PCB 167	360	29.53	11792	1.28	20972	0.008667	-0.00082	36 35	yes	0.946	-
126 PCB 156/157	HxCB 362 360	29.55 <b>30.68</b>	9180 <b>23282</b>	yes 1.26	41741	0.017662	-0.00076	65	no	1.017	-
	HxCB 362	30.71 NotFnd	18459 *	yes *	*	-0.00081	-0.00081	63	no	0.954	-
127 PCB 169	360 HxCB 362	34.13	*	no			-0.00081	*	yes	1.012	_
128 PCB 188	394 HpCB 396	24.24 24.23	241 214	1.13 yes	455	-0.00081		*	-		_
129 PCB 179	394	24.54	20283	1.06	39432	0.026587	-0.0008	102 102	no	1.016	-
130 PCB 184	HpCB 396 394	24.52 NotFnd	19149	yes *	*	-0.00087	-0.00087	*	no	0.937	-
	HpCB 396	25.00	. 5860	no <b>1.03</b>	11543	0.007967	-0.00082	29	no	0.993	-
131 PCB 176	394 HpCB 396	<b>25.33</b> 25.32	5683	yes			-0.00095	29	no	0.865	_
132 PCB 186	394 HpCB 396	NotFnd 25.75	*	* no	*	-0.00095		*			
133 PCB 178	394	27.02	7424	1.08	14329	0.014305	-0.00119	36 35	no	0.686	-
134 PCB 175	HpCB 396 394	27.01 <b>27.62</b>	6905 <b>1510</b>	yes 1.17	2804	0.00276	-0.00117	7	no	0.696	-
	HpCB 396	27.62	1294 55815	yes 1.11	10614	1 0.108038	-0.00121	268	. no	0.673	-
135 PCB 187	<b>394</b> HpCB 396	<b>27.89</b> 27.88	50327	yes			~0.00121	255	no	0.674	_
136 PCB 182	394 HpCB 396	NotFnd 28.10	*	* no	*	-0.00121	-0.00121	*			
	i ihon ago	20.10									

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137 PCB 183	394	28.50	38516	1.07	74482	0.044237	-0.00099	131 131	yes	1.153	-
138 PCB 185	HpCB 396 394	28.51 NotFnd	35966 *	yes *	*	-0.00142	-0.00142	*	no	0.805	-
400 DOD 474	HpCB 396	28.58	*	no *	*	0.00424	-0.00121	*	no	0.947	
139 PCB 174	394 HpCB 396	NotFnd 28.74	*	no		-0.00121	*0.00121	*	110		
140 PCB 177	394	29.16	24716	1.03	48605	0.036159	-0.00124	86 85	no	0.921	-
141 PCB 181	HpCB 396 394	29.16 NotFnd	23889	yes *	*	-0.00129	-0.00129	*	no	0.885	-
442 DCD 474/472	HpCB 396	29.57	* 42400	no 1.07	25337	0.019331	-0.00127	* 42	no	0.898	_
142 PCB 171/173	<b>394</b> HpCB 396	<b>29.78</b> 29.80	13100 12237	1.07 yes	20001	0.018331	-0.00127	44	110		
143 PCB 172	394	31.45	<b>1333</b> 1231	1.08	2565	0.001957	-0.00127	5 4	no	0.898	-
144 PCB 192	HpCB 396 394	31.44 NotFnd	*	yes *	*	-0.0011	-0.0011	*	no	1.043	-
145 PCB 193/180	HpCB 396 <b>394</b>	31.76 <b>32.13</b>	* 86156	no <b>1.1</b>	164629	0.10582	-0.00081	* 278	no	1.408	_
145 FGB 193/100	HpCB 396	32.08	78473	yes	104023	0.10002		264			
146 PCB 191	394 HpCB 396	<b>32.51</b> 32.50	<b>1951</b> 2082	<b>0.94</b> yes	4033	0.002228	-0.00092	7 7	no	1.24	-
147 PCB 170	394	33.45	14977	1.11	28493	0.023299	-0.0009	48	yes	1.271	-
148 PCB 190	HpCB 396 <b>394</b>	33.47 <b>34.03</b>	13516 <b>9387</b>	yes 1.02	18622	0.009988	-0.00089	44 31	yes	1.277	-
	HpCB 396	34.04	9235	yes				31	-		
149 PCB 189	<b>394</b> HpCB 396	<b>36.87</b> 36.88	<b>3403</b> 3090	1.1 yes	6493	0.002631	-0.00075	9 8	no	0.944	•
150 PCB 202	428	29.28	3580	0.81	8004	0.007853	-0.00083	26 27	no	0.988	-
151 PCB 201	OcCB 430 <b>428</b>	29.28 <b>30.21</b>	4424 <b>2455</b>	yes 0.93	5108	0.003666	-0.00076	16	no	1.068	-
450 DOD 004	OcCB 430	30.18	2652	yes	10	0.00079	-0.00078	16	yes	1.052	_
152 PCB 204	428 OcCB 430	30.95 30.88	3 10	0.27 no	13	-0.00078	٥١٥٥٥.٥٠	*	yes		_
153 PCB 197	428	31.13	794	0.81	1774	0.001429	-0.00086	5 5	yes	0.951	-
154 PCB 200	OcCB 430 428	31.12 NotFnd	980 *	yes *	*	-0.00077	-0.00077	*	no	1.056	-
155 PCB 198/199	OcCB 430 428	31.24 34.21	* 420	no 0.86	906	-0.00116	-0.00116	*	yes	0.702	_
100 FCB 190/199	OcCB 430	34.19	486	yes				*	•		
156 PCB 196	428 OcCB 430	34.92 34.93	342 397	0.86 yes	739	-0.00111	-0.00111	*	yes	0.734	-
157 PCB 203	428	35.14	3522	0.93	7312	0.007887	-0.00115	20	no	0.711	-
158 PCB 195	OcCB 430 428	35.12 36.57	3790 645	yes 0.76	1494	-0.00093	-0.00093	22	Op-O	1.046	-
	OcCB 430	36.59	850	no				*			
159 PCB 194	<b>428</b> OcCB 430	<b>39.21</b> 39.22	<b>5449</b> 5930	<b>0.92</b> yes	11379	0.007796	-0.00086	21 20	no	1.119	-
160 PCB 205	428	39.76	860	0.9	1810	0.001052	-0.00089	3	yes	1.091	-
161 PCB 208	OcCB 430 462	39.77 NotFnd	950 *	yes *	*	-0.00084	-0.00084	3	no	1.023	_
	NoCB 464	36.33	*	no *	*		0.00000	*		1 204	
162 PCB 207	462 NoCB 464	NotFnd 37.35	*	no		-0.00066	-0.00066	*	no	1.304	-
163 PCB 206	462	41.73	307	0.91	647	-0.00084	-0.00084	*	yes	1.027	-
164 PCB 209	NoCB 464 498	41.71 43.59	339 252	no 1.55	415	-0.00081	-0.00081	*	yes	1.04	-
405 DOD 41	DCB 500	43.56	163	no	444202	0.442954	0	* 6443	no	0.824	73
165 PCB 1L	<b>200</b> 202	<b>8.99</b> 8.97	<b>339845</b> 101358	3.35 yes	441203	0.143851		890	110		
166 PCB 3L	<b>200</b> 202	<b>10.18</b> 10.18	<b>331450</b> 96723	3.43 yes	428172	0.134923	0	6128 845	no	0.852	68
167 PCB 4L	234	10.18	134933	1.65	216501	0.107163	0	3345	no	0.543	54
168 PCB 15L	236 <b>234</b>	10.28 <b>12.93</b>	81568 <b>407421</b>	yes 1.66	652544	0.163139	0	4204 3605	no	1.074	83
100 FGB 132	236	12.91	245123	yes				2748			
169 PCB 19L	<b>268</b> 270	<b>11.68</b> 11.68	110421 103666	1.07 yes	214087	0.099443	0.001	431 265	no	0.578	50
170 PCB 37L	268	16.70	334205	1.08	644132	0.215584	0.001	850	no	1.987	109
171 PCB 54L	270 <b>302</b>	16.69 <b>13.06</b>	309927 <b>111921</b>	yes 0.83	247231	0.126707	0	842 1028	no	1.297	64
	304	13.07	135310	yes			0	2783	no	1.738	98
172 PCB 81L	<b>302</b> 304	<b>21.42</b> 21.42	<b>226885</b> 281141	0.81 yes	508026	0.194361	U	1471 2142	no	1.730	90
173 PCB 77L	302	21.87	219930	0.82	487062	0.193097	0	1378 1985	no	1.677	98
174 PCB 104L	304 <b>338</b>	21.85 <b>15.92</b>	267132 <b>141807</b>	yes 1.59	230727	0.158803	0	5095	no	1.156	80
175 PCB 123L	340 <b>338</b>	15.93 <b>23.49</b>	88920 <b>313665</b>	yes 1.65	503194	0.206754	0	5873 4051	no	1.936	105
175 FGB 123L	340	23.50	189529	yes				2735			
176 PCB 118L	<b>338</b> 340	23.77 23.76	<b>299252</b> 182830	1.64 yes	482082	0.201204	0	3789 2590	no	1.906	102
177 PCB 114L	338	24.26	283836	1.67	453914	0.203656	0	3576	no	1.773	103
178 PCB 105L	340 <b>338</b>	24.26 <b>24.83</b>	170078 288879	yes 1.62	467448	0.204023	0	2376 3619	no	1.822	103
	340	24.81	178569	yes				2509			
179 PCB 126L	<b>338</b> 340	<b>27.69</b> 27.68	283207 174400	1.62 yes	457607	0.209732	0	3151 2188	no	1.735	106
180 PCB 155L	372	19.61	135176	1.27	241831	0.14171	0	8269	no	1.404	72
181 PCB 167L	374 <b>372</b>	19.61 <b>29.52</b>	106655 <b>285166</b>	yes 1.3	504889	0.196813	0	4125 3201	no	2.11	100
	374	29.49	219723	yes				2687			
182 PCB 156L/157L	- <b>372</b> 374	<b>30.68</b> 30.69	<b>517619</b> 399578	1.3 yes	917198	0.392704	0	4830 4093	no	1.921	99
183 PCB 169L	372	34.10	177378	1.33	310334	0.135312	0	1789 1486	no	1.886	69
	374	34.07	132955	yes				1700			

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					228128	0.141135			5039	no	1.329	72
184 PCB 188L	<b>406</b> 408	<b>24.20</b> 24.21	<b>117538</b> 110590	1.06 yes	220.20				3428 2428	no	1.349	67
185 PCB 180L	<b>406</b> 408	<b>32.11</b> 32.09	<b>113947</b> 104187	1.09 yes	218134	0.132564			1893 1979	no	1.18	67
186 PCB 170L	406	33.44	<b>98110</b> 91788	1.07 yes	189898	0.131875		0	1653 3973	no	2.157	99
187 PCB 189L	408 <b>406</b>	33.42 <b>36.84</b>	267623	1.08	516165	0.19609		-	4734		1.419	60
188 PCB 202L	408 <b>440</b>	36.83 <b>29.25</b>	248542 <b>96791</b>	yes 0.91	203686	0.117603		0	5257 2466	no		84
	442 <b>440</b>	29.27 <b>39.73</b>	106895 <b>149342</b>	yes 0.92	311351	0.166633		0	2841 1495	no	1.531	
189 PCB 205L	442 <b>474</b>	39.73 <b>36.29</b>	162009 <b>86948</b>	yes 0.8	195108	0.140334		0	1181 4215	no	1.139	71
190 PCB 208L	476	36.28	108160 <b>69004</b>	yes 0.8	155339	0.16761		0	871 3224	no	0.76	85
191 PCB 206L	<b>474</b> 476	<b>41.71</b> 41.73	86335	yes 1.23	145994	0.165187		0	5334	no	0.724	84
192 PCB 209L	<b>510</b> 512	<b>43.56</b> 43.53	<b>80451</b> 65543	yes	848988	0.276798		0.001	3797 1297	no	2.039	126
193 PCB 28L PCB Cleanup Stand	<b>268</b> dard 270	<b>14.41</b> 14.43	<b>435972</b> 413016	1.06 yes				0	1319 5844	no	1.343	104
194 PCB 111L PCB Cleanup Stan	338	21.83 21.84	240499 142582	1.69 yes	383081	0.226877		0	4606 3530	no	0.733	89
105 PCB 178L	406	<b>27.00</b> 26.97	<b>88750</b> 84193	1.05 yes	172943	0.194068		0.001	2443	no	1.934	
PCB Cleanup Stan 196 PCB 31L	268	NotFnd	*	* no	*			0		no	0.946	
PCB Audit Stan	338	14.26 NotFnd	*	* no	*					no	1.225	
PCB Audit Star 198 PCB 153L	ndard 340 372	17.73 NotFnd	*	*	*			0				_
PCB Audit Star	ndard 374 <b>234</b>	25.40 <b>11.18</b>	2553315	no <b>1.67</b>	408176	9.58264		-	24769 18906	no	-	
PCB Recovery Star		11.19 <b>15.36</b>	1528449 <b>73462</b> 7	yes 0.8	164891	7 7.378756		-	8224 14447	no	-	-
200 PCB 52L PCB Recovery Star	ndard 304	15.36 <b>19.77</b>	914290 <b>851684</b>	yes 1.62	137831	8 7.654827		-	22128 18290	no	-	-
201 PCB 101L PCB Recovery Sta	338 ndard 340	19.76	526634 <b>753976</b>	yes 1.3	133300	2 8,21167		-	15049 24772	no	-	-
202 PCB 138L PCB Recovery Sta	<b>372</b> Indard 374	<b>26.57</b> 26.56	579026	yes 0.94	133772			-	12035	no	-	-
203 PCB 194L PCB Recovery Sta	440	<b>39.18</b> 39.17	<b>647463</b> 690258	yes	100112				6192			
F OD 1000.01) 010	-					-0.00066	0	-0.00066				
Chlorobiphenyls							5	-0.00144				
						0.053199	15	-0.00125				
Dichlorobiphenyls						0.619729	22	-0.00153				
Trichlorobiphenyls						1.080279	17	-0.00161				
Tetrachlorobiphen	ıyıs					0.547487						
Pentachlorobipher	nyis					1.200263	20	-0.00151				
Hexachlorobiphen						0.405307	14	-0.00142				
Heptachlorobiphe						0.029683	6	-0.00116				
Octachlorobiphen	vĺs					-0.00084	0	-0.00084				
Nonachlorobipher	nyle						0	-0.00081				
Nonachiolopiphei	nyio aud					-0.00081	ŭ					
Decachlorobipher	тут					3.935947						
PCB (total)												

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Acquired Date

Dataset:

Printed:

C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld

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February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

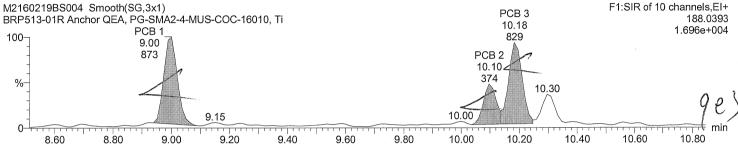
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Vial: 4

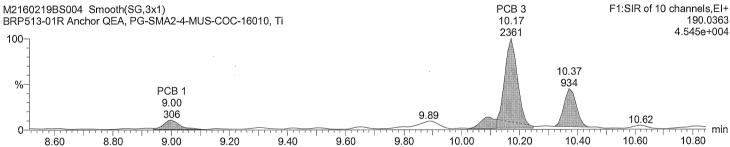
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Instrument: Autospec-UltimaE

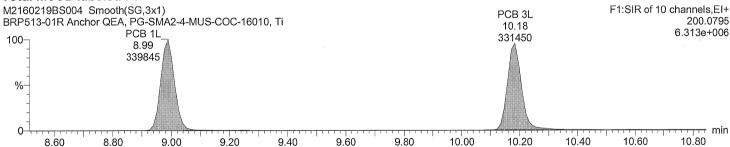




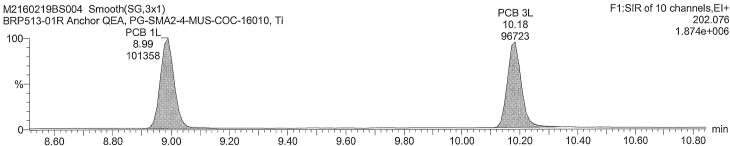
# Total MoCB F1



## **Total MoCB labeled F1**



#### Total MoCB labeled F1



Total DiCB labeled F1
M2160219BS004 Smooth(SG,3x1)

100

%

0

8.60

BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti

9.00

9.20

9.40

9.60

9.80

10.00

8.80

10.60

F1:SIR of 10 channels, EI+

236.0376

min

10.80

1.556e+006

PCB 4L

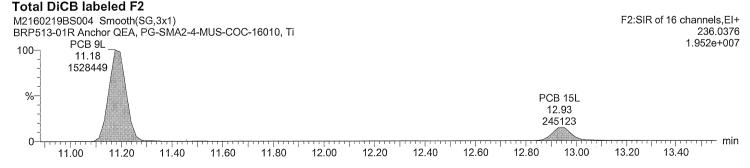
10.30

81568

10.40

10.20

Page 26 of 207 **Quantify Sample Report** MassLynx 4.0 SP1 Acquired Date C:\MassLynx\Default.pro\QLD\M2160219\_samples\_1668A.qld Dataset: Last Altered: February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time Printed: Description: BRP513-01R Vial: 4 Date: 19-FEB-2016 Time: 14:37:56 Instrument: Autospec-UltimaE **Total DiCB F2** M2160219BS004 PCB 15 F2:SIR of 16 channels, EI+ BRP513-01R Anchor QEA, PG-SMA2-4-MUS-CQC-16010, Ti 12.95 222.0003 51646 1.128e+006 100 PCB 8 11.55 PCB 11 % 16832 12.66 PCB 6 PCB 9 13437 11.36 12.51 11.20 4051 3186 1358 11.00 11.20 11.40 11.60 11.80 12.00 12.20 12.40 12.60 12.80 13.00 13.20 13.40 **Total DiCB F2** PCB 15 F2:SIR of 16 channels.EI+ M2160219BS004 223.9974 BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 12.95 33668 7.380e+005 100 PCB 8 11.55 PCB 11 10785 % PCB 6 12.66 PCB 9 11.36 9553 12.51 11.20 12.10 10.88 2974 3568 492 1080 min 12.80 13 00 13.40 11.00 11.20 11.40 11.60 11.80 12.00 12.20 12.40 12.60 13.20 Total DiCB labeled F2 M2160219BS004 Smooth(SG,3x1) F2:SIR of 16 channels, EI+ BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 234.0406 3.219e+007 PCR 9I 100 11.18 2553315 % PCB 15L 12.93 407421 开 min 11.40 11.80 12.00 12.20 12 40 12 60 12.80 13.00 13.20 13.40 11.00 11.20 11.60



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Acquired Date

Dataset:

C:\MassLynx\Default.pro\QLD\M2160219 samples 1668A.qld

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February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

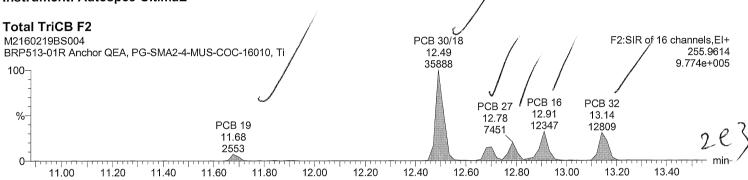
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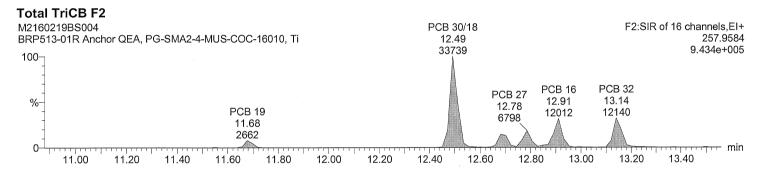
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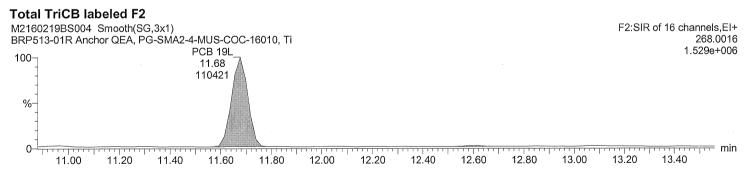
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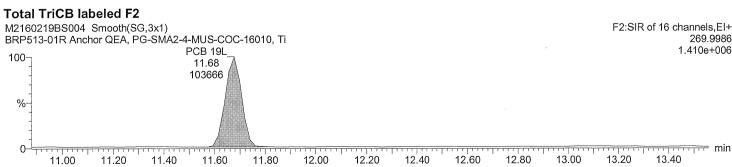
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Instrument: Autospec-UltimaE









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Acquired Date

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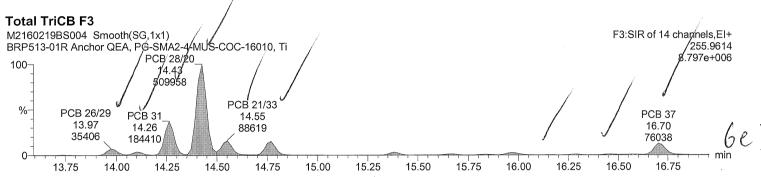
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Vial: 4

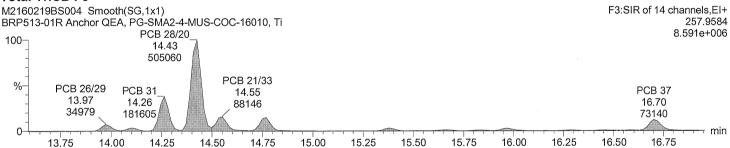
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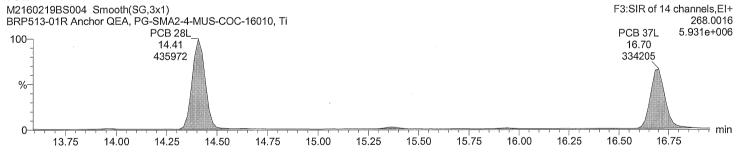
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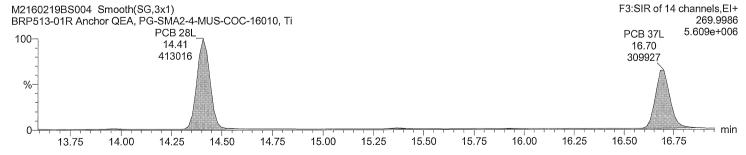




# **Total TriCB labeled F3**



#### Total TriCB labeled F3



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Acquired Date

Dataset:

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February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

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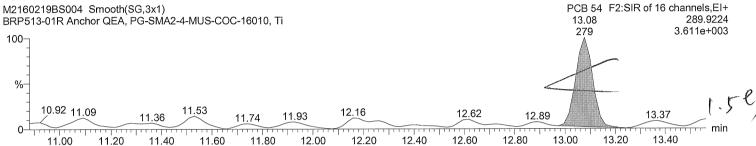
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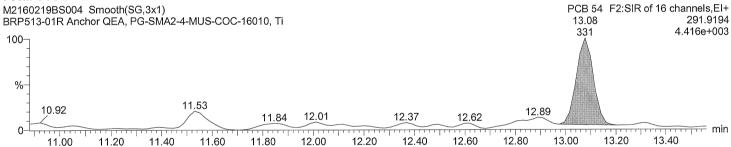
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Instrument: Autospec-UltimaE

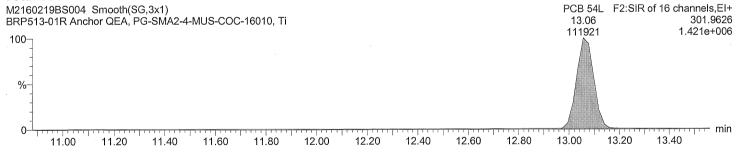




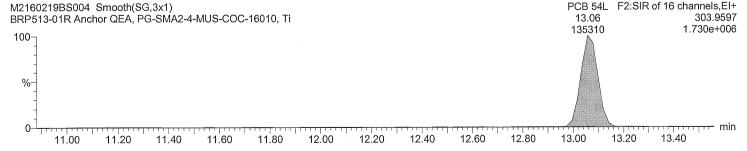




## **Total TeCB labeled F2**



#### **Total TeCB labeled F2**



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**Acquired Date** 

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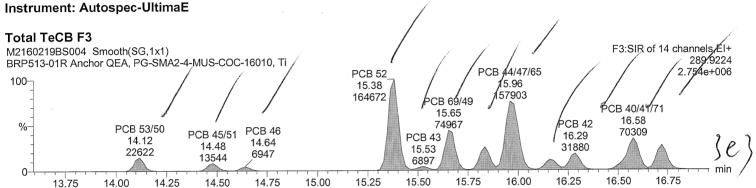
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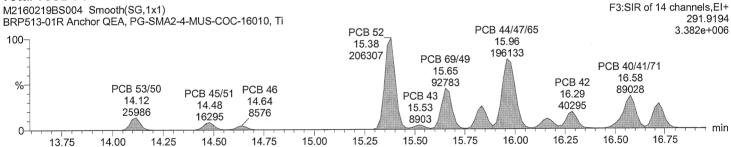
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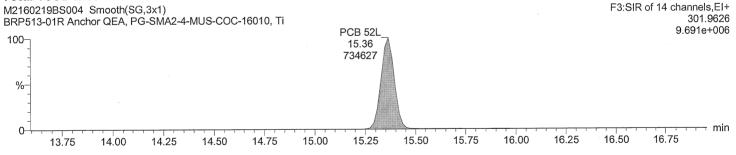
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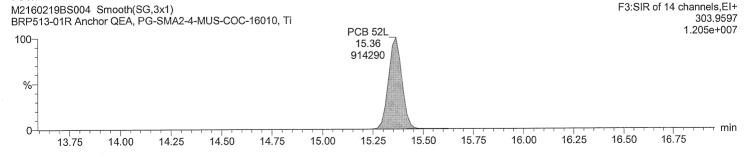


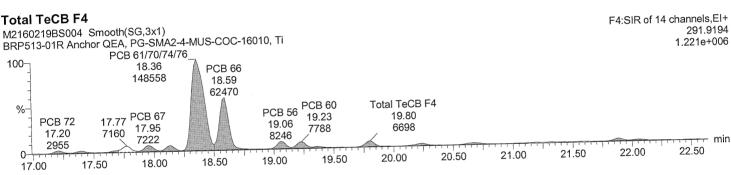


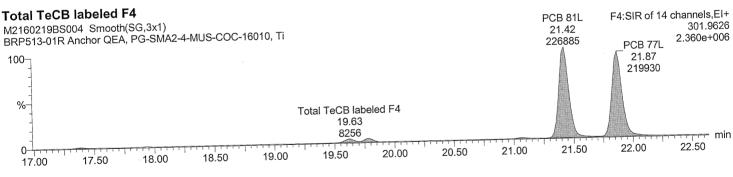
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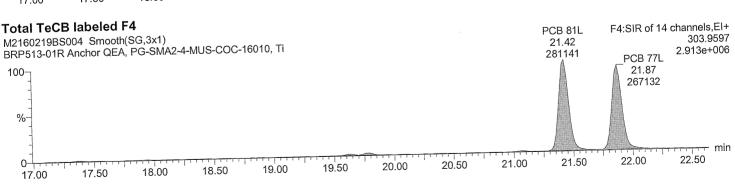


#### Total TeCB labeled F3









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Acquired Date

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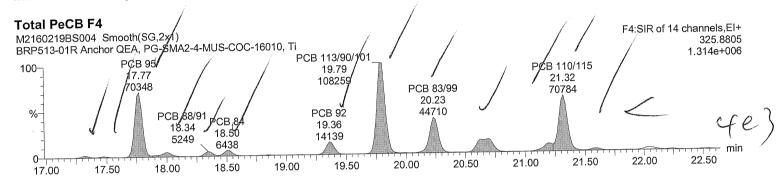
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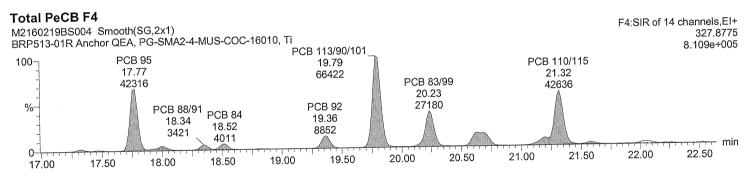
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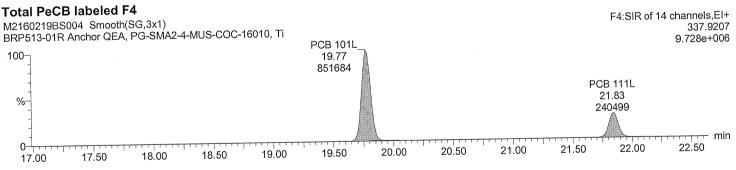
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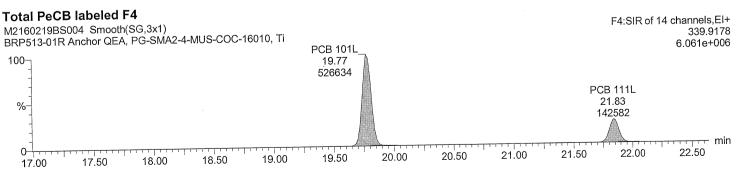
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Instrument: Autospec-UltimaE









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→ min

28.00

Acquired Date

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February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

**Description: BRP513-01R** 

Vial: 4

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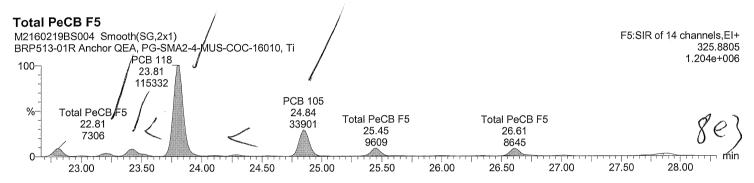
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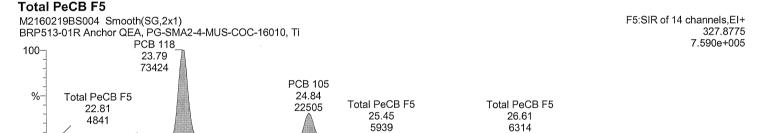
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24.00

24.50

Instrument: Autospec-UltimaE





25.50

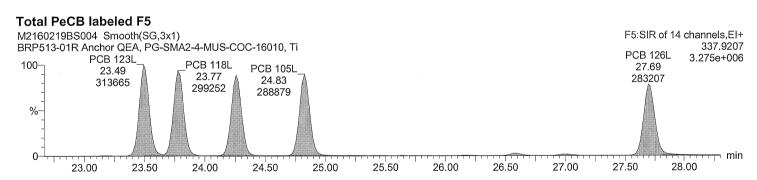
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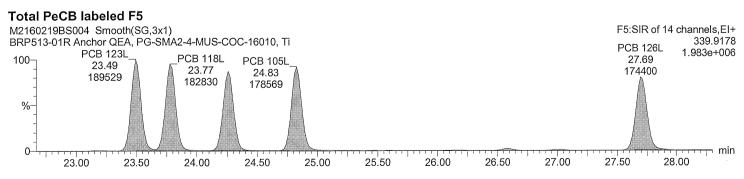
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26.50

27,00

27.50





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106655

19.00

18.50

18.00

19.50

17.50

%

17.00

22.00

21.50

21.00

20.50

20.00

min

22.50

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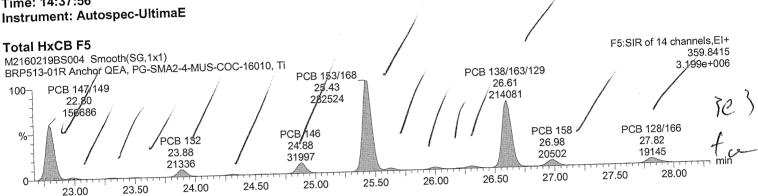
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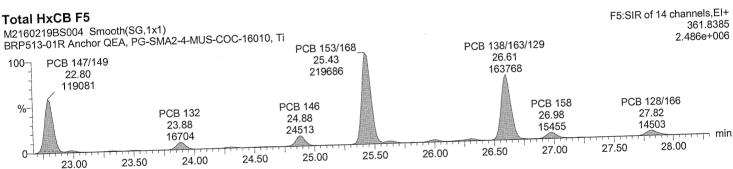
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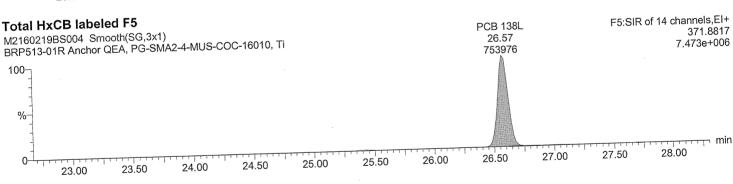
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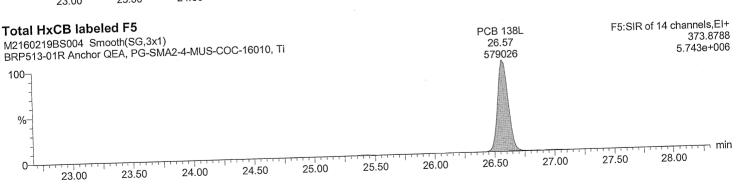
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Date: 19-FEB-2016 Time: 14:37:56









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29.00

35.00

34.00

33.00

32.00

31.00

30.00

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Acquired Date

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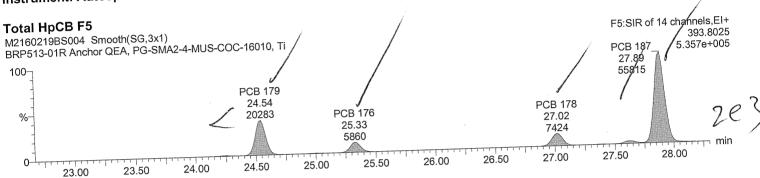
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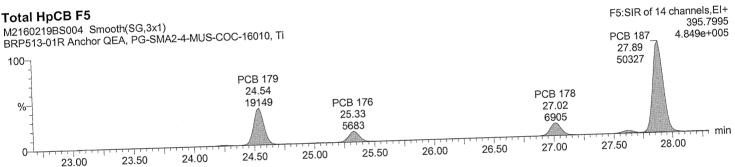
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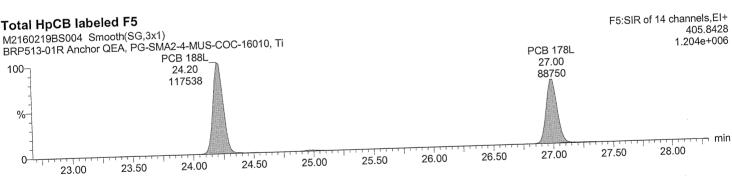
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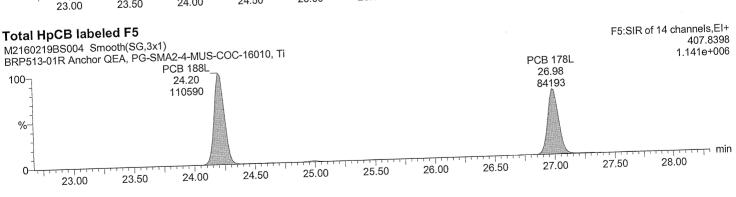
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Instrument: Autospec-UltimaE









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29.00

0

35.00

33.00

32.00

31.00

30.00

34.00

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405.8428 2.134e+006 12171 min 17649 46.0 45.0 44.0 42.0 43.0 41.0 40.0 39.0 38.0 37.0 36.0

F7:SIR of 18 channels,EI+ Total HpCB labeled F7 407.8398 M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 1.998e+006 PCB 189L 100-36.84 248542 %-Total HpCB labeled F7 39.21 min 12703 46.0 45.0 43.0 44.0 42.0 0-41.0 40.0 39.0 38.0 37.0 36.0

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29.00

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37.0

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40.0

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min

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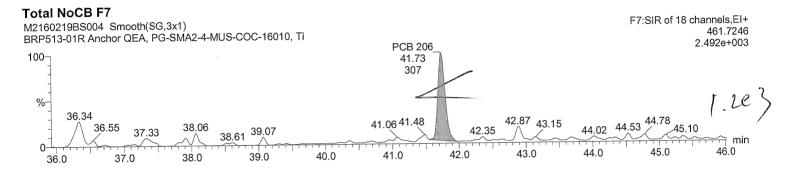
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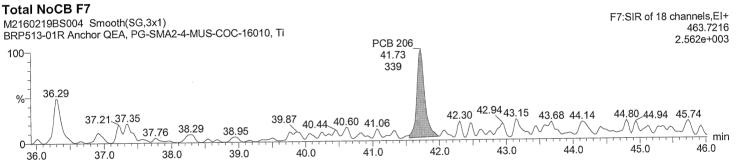
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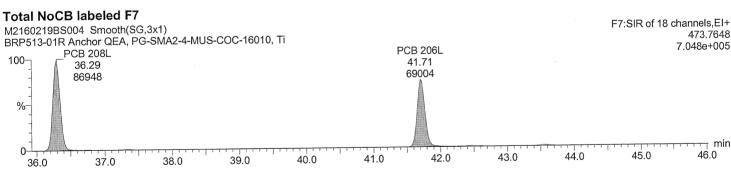
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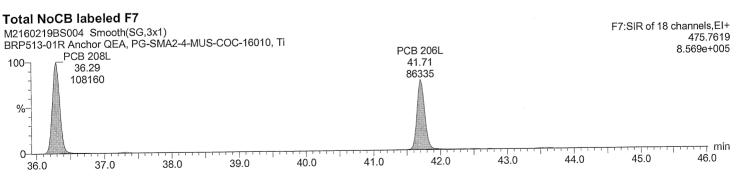
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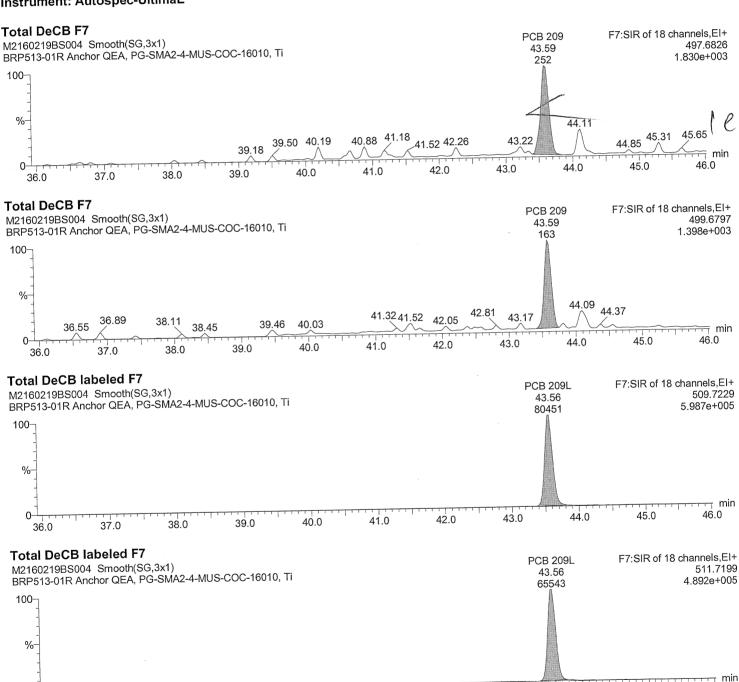
February 23, 2016 12:16:16 PM Eastern Standard Time February 23, 2016 12:17:46 PM Eastern Standard Time

Description: BRP513-01R

Vial: 4

Date: 19-FEB-2016 Time: 14:37:56

Instrument: Autospec-UltimaE



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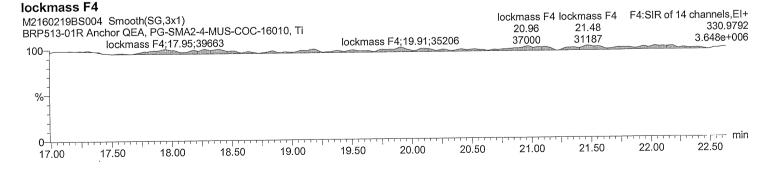
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Page 45 of 207 MassLynx 4.0 SP1 **Quantify Sample Report** Acquired Date C:\MassLvnx\Default.pro\QLD\M2160219\_samples\_1668A.qld Dataset: February 23, 2016 12:16:16 PM Eastern Standard Time Last Altered: February 23, 2016 12:17:46 PM Eastern Standard Time Printed: Description: BRP513-01R Vial: 4 Date: 19-FEB-2016 Time: 14:37:56 Instrument: Autospec-UltimaE lockmass F1 F1:SIR of 10 channels,EI+ M2160219BS004 Smooth(SG,3x1) 218.9856 BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 9.807e+006 lockmass F1;8.93;39708 % - min 10.80 10,60 10.20 10.40 9.60 9.80 10.00 9.40 8.80 9.00 9.20 8.60 lockmass F2 F2:SIR of 16 channels, EI+ M2160219BS004 Smooth(SG,3x1) 242.9856 BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 3.517e+006 lockmass F2;11.80;26372 lockmass F2;11.22;45885 100 % 13.40 13.00 13.20 11.60 11.80 12.00 12.20 12.40 12.60 12.80 11.40 11.00 11.20 lockmass F3 F3:SIR of 14 channels,EI+ M2160219BS004 Smooth(SG,3x1) 292.9824 BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 2.634e+006 lockmass F3;15.53;12967 100 % - min 0 15.25 15.75 16.00 16.25 16.50 16.75 15.50 14.50 14.75 15.00 13.75 14.00 14.25



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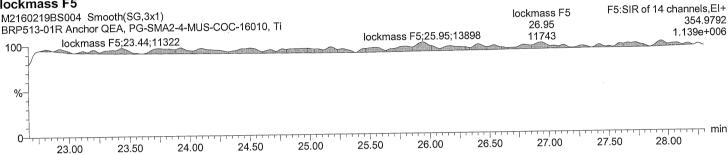
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Vial: 4

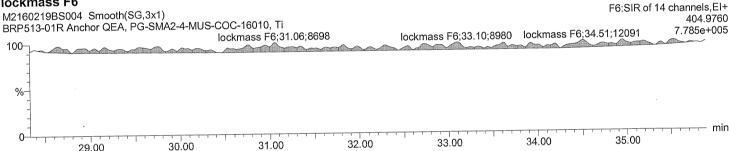
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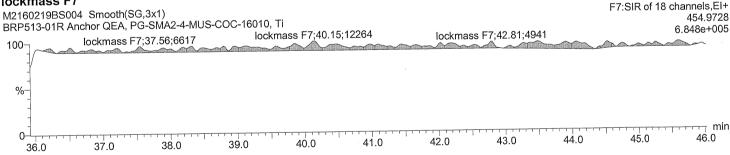


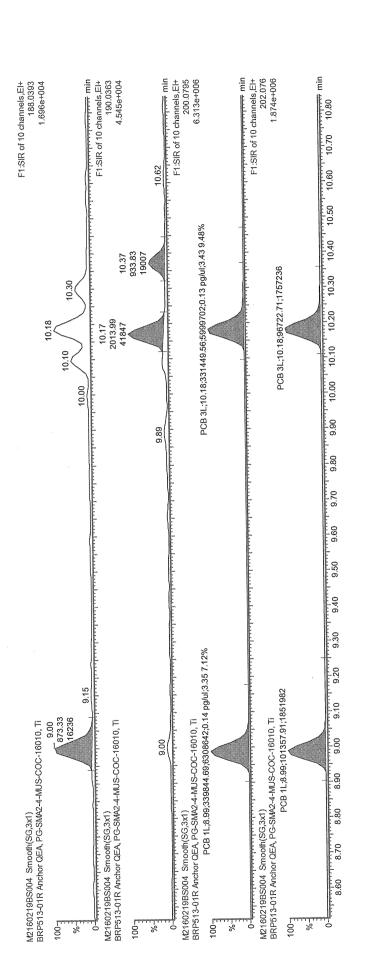
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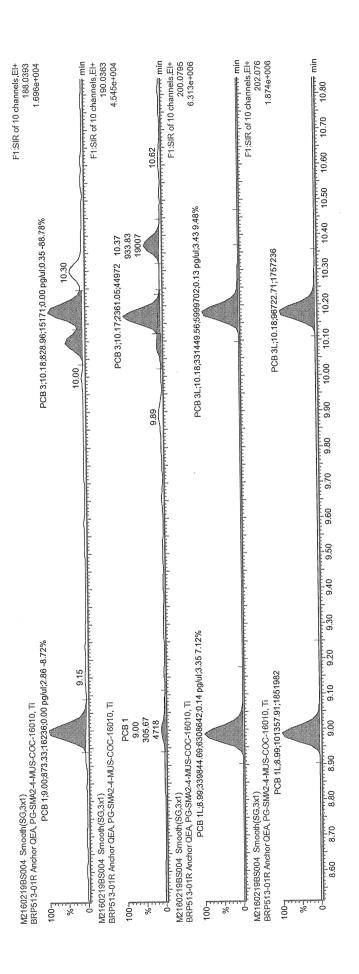
#### lockmass F7

29.00





FEB 2 3 2016



F1:SIR of 10 channels,EI+ 236.0376 1.556e+006 F1:SIR of 10 channels,El+ 234.0406 2:596e+006 F1:SIR of 10 channels, EH 223.9974 5.545e+004 min -F1:SIR of 10 channels,El+ 222.0003 4.740e+004 10,80 10.74 10,70 10.66 10,60 PCB 4L;10.30;134932.88;2592780;0.11 pg/ul;1.65 6.04% PCB 4;10.30;2362.89;44956;0.00 pg/ul;1.52 -2.43% 10.50 PCB 4L;10.30;81568.20;1555092 PCB 4;10.30;1552.33;27618 10,40 10,30 10,20 10.20 10.10 10.08 10,00 9.94 9.90 9.82 9.80 9.70 69.6 9.60 9.60 9.50 9.40 9.37 9.31 9.30 9.20 9.20 9.15 9.10 M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor QEA, PG-SMA2-4-MJS-COC-16010, TI M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor OEA, PG-SMA2-4-MUS-COC-16010, Ti MZ160219BS004 Smooth(SG,3X1) BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 8.52 M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 9.00 8.90 8.85 8.80 8.75

8.70

8.60

1001

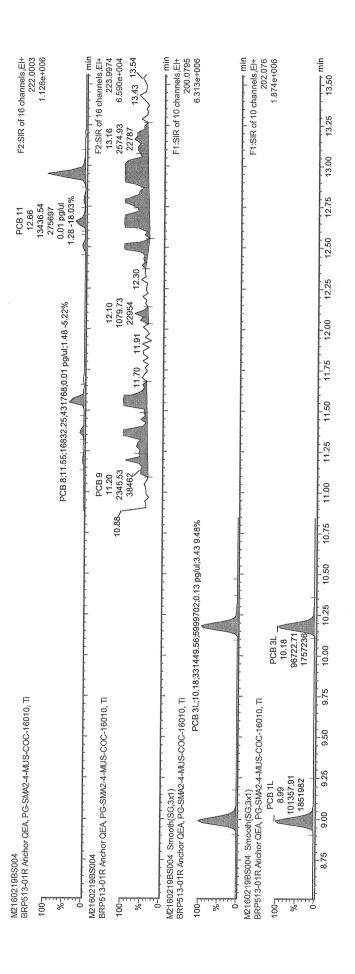
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FB 2 3 205

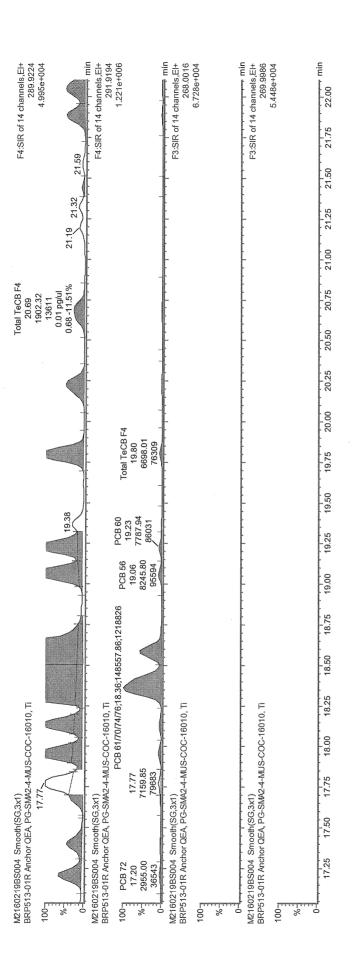
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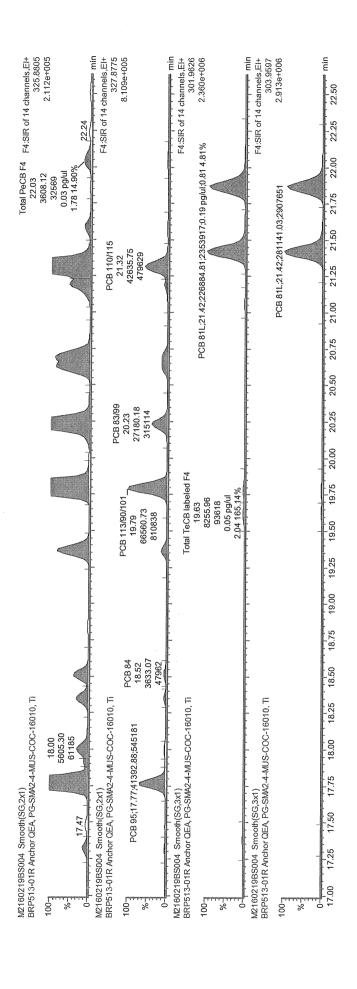
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WZ16021 BRP513- 1003 %-	0 116 M216021	1001 %	0-1	0 M2160211 BRP513-(	**************************************

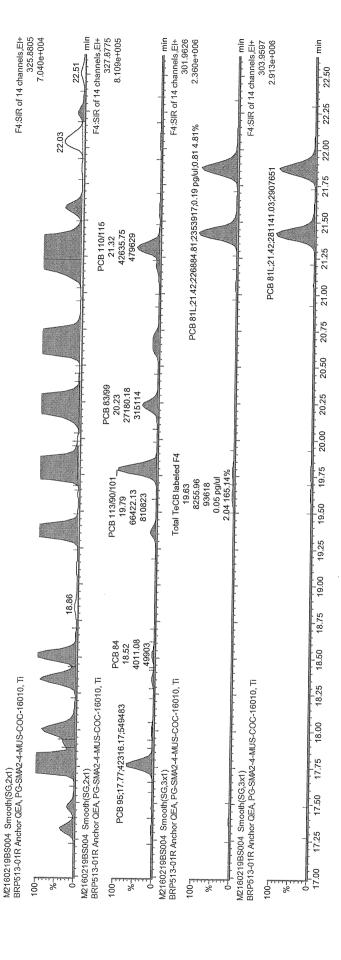


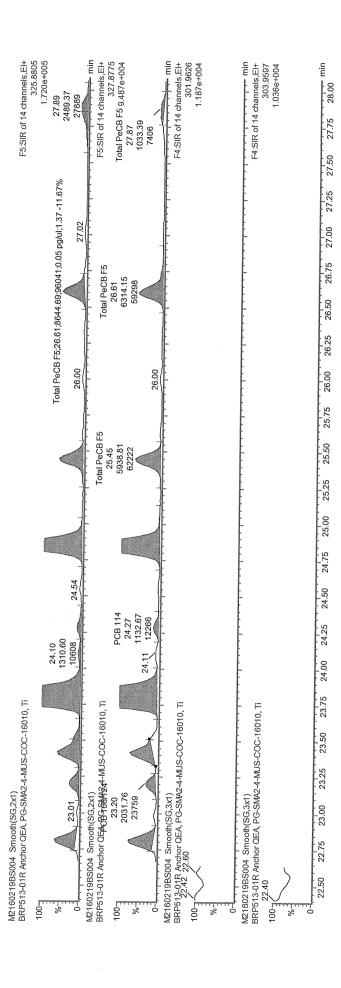




Maxxam Analytics

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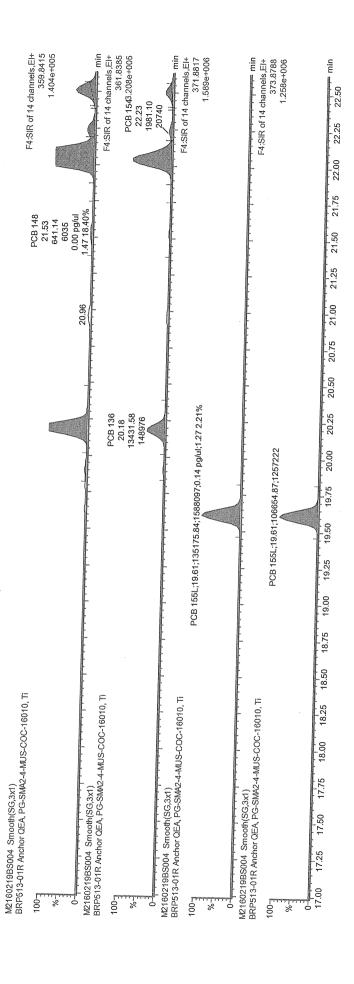
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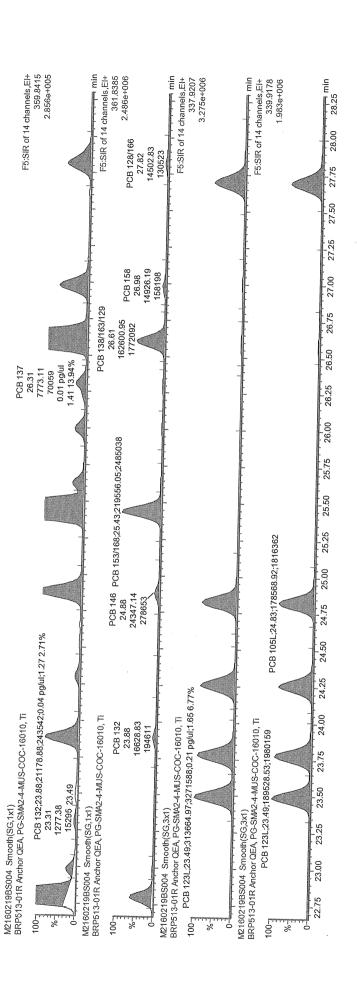
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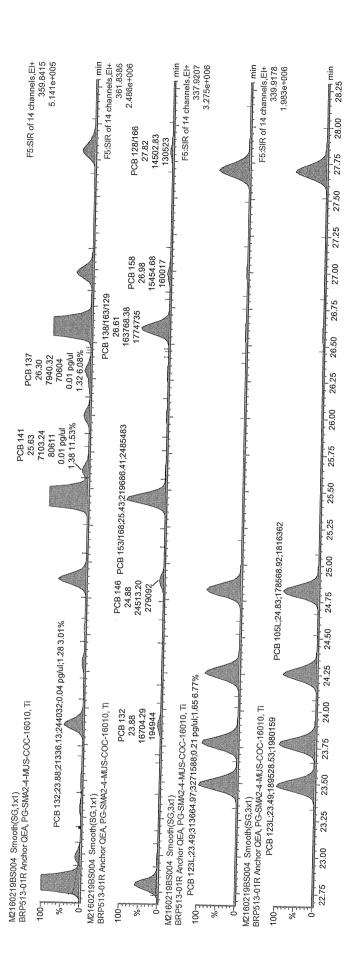
F5:SIR of 14 channels, El+ 327.8775 6.777e+004 F4:SIR of 14 channels,El+ 303.9597 7.289e+003 F5:SIR of 14 channels, EH 27.87 301.9626 1.011e+004 - min 1.075e+005 F4:SIR of 14 channels, EI+ 28.00 27.89 2489.37 27889 27.75 27.50 27.25 Total PeCB F5;26.61;8644.69;96041;0.05 pg/ul;1.37 -11.67% 27.00 Total PeCB F5;26\_61;6314.15;59298 26,75 26.50 26.32 26.23 26,25 26.00 26.00 26,00 Total PeCB F5;25;45;5938.81;62222 25,75 25,50 25.25 25.00 24.75 24.54 24.54 24.50 PCB 114 24.27 1335.39 13288 24.25 MZ160219BS004 Smooth(SG,2x1) BRP513-01R Anchor QEA, PG-SMAZ-4-MJS-COC-16010, TI M2160219BS004 Smooth(SG,2X1) BRP613-Q4BB4q6Bpt2qEA, PG-SMA2-4-MUS-COC-16010, TI M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti M2160219BS004 Smooth(SG,3x1) BRP513-01R Anchor QEA, PG-SMA2-4-MUS-COC-16010, Ti 24,00 23,75 23,50 23.21 2654.50 27025 23.25 23.01 23,00

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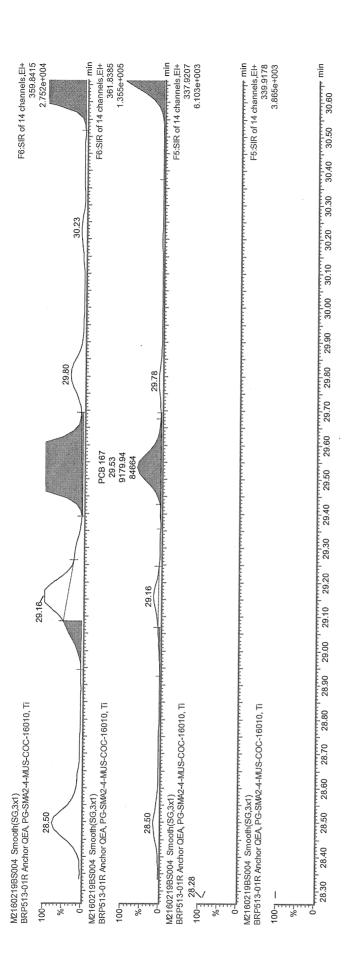
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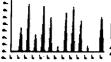
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Maxxam Analytics International 6740 Campobello Rd. Mississauga, Ontario, Canada L5N 2L8 1-800-668-0639 www.maxxamanalytics.com

WWW.maxxamanaryeresicom

Maxxam Analytics Page 988 of 988

# APPENDIX E DATA VALIDATION REPORTS



### LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 ATTN: Ms. Cindy Fields

January 19, 2016

SUBJECT: Port Gamble, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fraction listed below. This SDG was received on December 23, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

#### LDC Project #35625:

#### SDG # Fraction

AQJ9 Polynuclear Aromatic Hydrocarbons

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

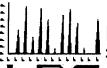
- Quality Assurance Project Plan for Port Gamble Bay, Washington, May 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Project Manager/Chemist



### LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 ATTN: Ms. Cindy Fields

February 22, 2016

SUBJECT: Revised Port Gamble, Data Validation

Dear Ms. Fields,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

#### LDC Project #35625:

SDG # Fraction

AQJ9 Polynuclear Aromatic Hydrocarbons

Revised to add method blank qualifications.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Project Manager/Chemist

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble

LDC Report Date:

February 22, 2016

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): AQJ9

	Laboratory Sample	***************************************	Collection
Sample Identification	Identification	Matrix	Date
PG-GP-1-PEMD-151109-A	AQJ9A	PEMD	11/09/15
PG-PJ-1-PEMD-151109-A	AQJ9C	PEMD	11/09/15
PG-WS-1-PEMD-151109-A	AQJ9E	PEMD	11/09/15
PG-SMA2-5-PEMD-151109-A	AQJ9G	PEMD	11/09/15
PG-SMA2-4-PEMD-151109-A	AQJ9I	PEMD	11/09/15
PG-SMA2-4-PEMD-151109-ADL	AQJ9IDL	PEMD	11/09/15
PG-SMA2-3-PEMD-151110-A	AQJ9K	PEMD	11/10/15
PG-SMA2-3-PEMD-151110-ADL	AQJ9KDL	PEMD	11/10/15
PG-SMA2-3-PEMD-151110-B	AQJ9L	PEMD	11/10/15
PG-SMA2-3-PEMD-151110-BDL	AQJ9LDL	PEMD	11/10/15
PG-SMA2-2-PEMD-151110-A	AQJ9M	PEMD	11/10/15
PG-SMA2-2-PEMD-151110-ADL	AQJ9MDL	PEMD	11/10/15
PG-SMA2-1-PEMD-151110-A	AQJ9O	PEMD	11/10/15
PG-SMA2-1-PEMD-151110-ADL	AQJ9ODL	PEMD	11/10/15
PG-FB-PEMD-151110	AQJ9Q	PEMD	11/10/15
PG-TB-PEMD-151110	AQJ9R	PEMD	11/10/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan for Port Gamble Bay, Washington (May 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

#### II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

#### III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

#### IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/14/15	Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	26.0 24.7 37.1	PG-SMA2-4-PEMD-151109-ADL PG-SMA2-3-PEMD-151110-ADL PG-SMA2-3-PEMD-151110-BDL PG-SMA2-2-PEMD-151110-ADL PG-SMA2-1-PEMD-151110-ADL	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

#### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
MB-111815	11/18/15	Naphthalene	1.33 ug/Kg	All samples in SDG AQJ9

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
PG-SMA2-4-PEMD-151109-ADL (10X)	Naphthalene	22.6 ug/Kg	22.6U ug/Kg
PG-SMA2-3-PEMD-151110-ADL (10X)	Naphthalene	14.3 ug/Kg	14.3U ug/Kg
PG-SMA2-3-PEMD-151110-BDL (10X)	Naphthalene	13.3 ug/Kg	13.3U ug/Kg
PG-SMA2-1-PEMD-151110-ADL (10X)	Naphthalene	18.5 ug/Kg	18.5U ug/Kg
PG-SMA2-2-PEMD-151110-A	Naphthalene	5.47 ug/Kg	5.47U ug/Kg

#### VI. Field Blanks

Sample PG-TB-PEMD-151110 was identified as a trip blank. No contaminants were found with the following exceptions:

Blank ID	Compound	Concentration (ug/Kg)
PG-TB-PEMD-151110	Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	19.9 7.28 1.24 1.48 3.44 2.40 4.17 5.21

Sample PG-FB-PEMD-151110 was identified as a field blank. No contaminants were found with the following exceptions:

Blank ID	Compound	Concentration (ug/Kg)
PG-FB-PEMD-151110	Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	41.9 58.7 1.61 48.4 23.6 32.1 1.71 12.6 7.47

#### VII. Surrogates

Surrogates were added to all samples as required by the method. Surrogate recoveries (%R) were not within QC limits for sample PG-SMA2-5-PEMD-151109-A. Using professional judgment, no data were qualified when one surrogate %R was outside the QC limits and the %R was greater than or equal to 10%.

#### VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

#### IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
LCS/D 111815 (All samples in SDG AQJ9)	Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene Perylene Benzo(e)pyrene Total Benzofluoranthenes	47.8 (50-150) 44.5 (50-150) 45.1 (50-150) 4.5 (50-150) 47.5 (50-150) - 24.1 (50-150) 48.1 (50-150)	36.2 (50-150) 37.1 (50-150) 35.0 (50-150) 43.8 (50-150) 40.4 (50-150) 49.6 (50-150) 49.6 (50-150) 48.7 (50-150) 44.5 (50-150) 47.2 (50-150) 43.9 (50-150) 47.2 (50-150) 48.5 (50-150) 49.9 (50-150)	J (all detects) UJ (all non-detects)	Р

Relative percent differences (RPD) were within QC limits.

#### X. Field Duplicates

Samples PG-SMA2-3-PEMD-151110-A and PG-SMA2-3-PEMD-151110-B and samples PG-SMA2-3-PEMD-151110-ADL and PG-SMA2-3-PEMD-151110-BDL were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentra	ation (ug/Kg)	
Compound	PG-SMA2-3-PEMD-151110-A	PG-SMA2-3-PEMD-151110-B	RPD
Naphthalene	10.8	9.72	11
2-Methylnaphthalene	5.79	7.41	25
Acenaphthylene	1.29	1.75	30
Acenaphthene	13.2	67.5	135
Fluorene	19.1	63.2	107
Anthracene	24.3	34.2	34
Benzo(a)anthracene	32.4	15.8	69
Chrysene	28.6	14.1	68
Benzo(b)fluoranthene	9.23	3.87	82
Benzo(k)fluoranthene	4.10	1.52	92
Benzo(a)pyrene	7.07	1.86	117
Indeno(1,2,3-cd)pyrene	1.35	1.12U	200
Benzo(g,h,i)perylene	1.48	1.12U	200
Perylene	1.75	1.12U	200
Benzo(e)pyrene	5.71	2.43	81
Total Benzofluoranthense	17.8	7.15	85

	Concentra		
Compound	PG-SMA2-3-PEMD-151110-ADL PG-SMA2-3-PEMD-151110-BDL		RPD
Phenanthrene	204	364	56
Fluoranthene	353	332	6

	Concentra		
Compound	PG-SMA2-3-PEMD-151110-ADL	PG-SMA2-3-PEMD-151110-B	RPD
Pyrene	198	110	57

#### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

#### XII. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
PG-SMA2-4-PEMD-151109-A PG-SMA2-3-PEMD-151110-B PG-SMA2-2-PEMD-151110-A	Phenanthrene Fluoranthene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
PG-SMA2-3-PEMD-151110-A	Phenanthrene Fluoranthene Pyrene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects)	A
PG-SMA2-1-PEMD-151110-A	Fluoranthene Pyrene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	Α

Raw data were not reviewed for Level III validation.

#### XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

#### XIV. System Performance

Raw data were not reviewed for Level III validation.

#### XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
PG-SMA2-4-PEMD-151109-A PG-SMA2-3-PEMD-151110-B PG-SMA2-2-PEMD-151110-A	Phenanthrene Fluoranthene	R	А
PG-SMA2-4-PEMD-151109-ADL PG-SMA2-3-PEMD-151110-BDL PG-SMA2-2-PEMD-151110-ADL	All TCL compounds except Phenanthrene Fluoranthene	R	А
PG-SMA2-3-PEMD-151110-A	Phenanthrene Fluoranthene Pyrene	R	Α
PG-SMA2-3-PEMD-151110-ADL	All TCL compounds except Phenanthrene Fluoranthene Pyrene	R	Α
PG-SMA2-1-PEMD-151110-A	Fluoranthene Pyrene	R	Α
PG-SMA2-1-PEMD-151110-ADL	All TCL compounds except Fluoranthene Pyrene	R	Α

Due to LCS/LCSD %R, data were qualified as estimated in sixteen samples.

Due to laboratory blank contamination, data were qualified as not detected in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## Port Gamble Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG AQJ9

Commis	Commont		A a z D	
Sample	Compound	Flag	A or P	Reason
PG-GP-1-PEMD-151109-A PG-PJ-1-PEMD-151109-A PG-WS-1-PEMD-151109-A PG-SMA2-5-PEMD-151109-A PG-SMA2-4-PEMD-151109-A PG-SMA2-4-PEMD-151109-ADL PG-SMA2-3-PEMD-151110-A PG-SMA2-3-PEMD-151110-B PG-SMA2-3-PEMD-151110-B PG-SMA2-3-PEMD-151110-B PG-SMA2-2-PEMD-151110-A PG-SMA2-1-PEMD-151110-ADL PG-SMA2-1-PEMD-151110-A PG-SMA2-1-PEMD-151110-A PG-SMA2-1-PEMD-151110-ADL PG-SMA2-1-PEMD-151110-ADL PG-FB-PEMD-151110	Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene Perylene Benzo(e)pyrene Total Benzofluoranthenes	J (all detects) UJ (all non-detects)	Р	Laboratory control samples (%R)
PG-SMA2-4-PEMD-151109-A PG-SMA2-3-PEMD-151110-B PG-SMA2-2-PEMD-151110-A	Phenanthrene Fluoranthene	R	A	Overall assessment of data
PG-SMA2-4-PEMD-151109-ADL PG-SMA2-3-PEMD-151110-BDL PG-SMA2-2-PEMD-151110-ADL	All TCL compounds except Phenanthrene Fluoranthene	R	A	Overall assessment of data
PG-SMA2-3-PEMD-151110-A	Phenanthrene Fluoranthene Pyrene	R	Α	Overall assessment of data
PG-SMA2-3-PEMD-151110-ADL	All TCL compounds except Phenanthrene Fluoranthene Pyrene	R	Α	Overall assessment of data
PG-SMA2-1-PEMD-151110-A	Fluoranthene Pyrene	R	Α	Overall assessment of data
PG-SMA2-1-PEMD-151110-ADL	All TCL compounds except Fluoranthene Pyrene	R	Α	Overall assessment of data

# Port Gamble Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG AQJ9

Sample	Compound	Modified Final Concentration	A or P
PG-SMA2-4-PEMD-151109-ADL (10X)	Naphthalene	22.6U ug/Kg	Α
PG-SMA2-3-PEMD-151110-ADL (10X)	Naphthalene	14.3U ug/Kg	Α
PG-SMA2-3-PEMD-151110-BDL (10X)	Naphthalene	13.3U ug/Kg	Α
PG-SMA2-1-PEMD-151110-ADL (10X)	Naphthalene	18.5U ug/Kg	Α
PG-SMA2-2-PEMD-151110-A	Naphthalene	5.47U ug/Kg	Α

LDC #: 35625A2b	VALIDATION COMPLETENESS WORKSHEET	Date: 12/31/15
SDG #: AQJ9	Stage 2B	Page:_/of_2
Laboratory: Analytical Resource	s, inc.	Reviewer:
		2nd Reviewer:
METHOD: CCM/S Dalvarialaar	Aromatic Hydrocarbone (EDA SIM 846 Mathod 9270D SIM)	

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1	Sample receipt/Technical holding times	A /A	
11.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	% RSD = 20  C1 = 30
IV.	Continuing calibration	رسي	CUN 4 20
V.	Laboratory Blanks	SW	
VI.	Field blanks	ےس	FB = 15 TB = 16
VII.	Surrogate spikes	رسى	
VIII.	Matrix spike/Matrix spike duplicates	12	05
IX.	Laboratory control samples	SW	ks 10
X.	Field duplicates	SW	D = 7,9 8, 10
XI.	Internal standards	A	'
XII.	Compound quantitation RL/LOQ/LODs	sW	
XIII.	Target compound identification	N	
XIV.	System performance	_ N ,	
XV.	Overall assessment of data	لىي	

D = Duplicate TB = Trip blank A = Acceptable
N = Not provided/applicable
SW = See worksheet ND = No compounds detected R = Rinsate Note: FB = Field blank

EB = Equipment blank

SB=Source blank OTHER:

	PEMD = Polyethylene	Membrane De	vice	
	Client ID	Lab ID	Matrix	Date
1	PG-GP-1-PEMD-151109-A	AQJ9A	Fissur PEMID	11/09/15
2	PG-PJ-1-PEMD-151109-A	AQJ9C	Tissue	11/09/15
3	PG-WS-1-PEMD-151109-A	AQJ9E	Tissue	11/09/15
4	PG-SMA2-5-PEMD-151109-A	AQJ9G	Tissue	11/09/15
5	PG-SMA2-4-PEMD-151109-A	AQJ9I	Tissue	11/09/15
6	PG-SMA2-4-PEMD-151109-ADL	AQJ9IDL	Tissue	11/09/15
7	PG-SMA2-3-PEMD-151110-A	AQJ9K	Tissue	11/10/15
8	PG-SMA2-3-PEMD-151110-ADL 01	AQJ9KDL	Tissue	11/10/15
9	PG-SMA2-3-PEMD-151110-B	AQJ9L	Tissue	11/10/15
10	PG-SMA2-3-PEMD-151110-BDL	AQJ9LDL	Tissue	11/10/15
11	PG-SMA2-2-PEMD-151110-A	AQJ9M	Tissue	11/10/15
12	PG-SMA2-2-PEMD-151110-ADL	AQJ9MDL	Tissue	11/10/15
13	PG-SMA2-1-PEMD-151110-A	AQJ9O	Tlesne	11/10/15

LDC #: 35625A2b VALIDATION COMPLETENESS WORKSHEET SDG #: AQJ9 Stage 2B Laboratory: Analytical Resources, Inc.  METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)					Date: 12/31/10  Page: 20f 2  Reviewer: 2  2nd Reviewer: 2		
	Client ID		Lab ID	Matrix		Date	
14	PG-SMA2-1-PEMD-151110-ADL		AQJ9ODL	<del>Tissuje</del>	PEMD	11/10/15	
15	PG-FB-PEMD-151110		AQJ9Q	Tissue		11/10/15	
16	PG-TB-PEMD-151110		AQJ9R	Tissue		11/10/15	
17							
18							
19							
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Note			<u> </u>	<del></del>	<del></del>		
	MB - 11815						
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		<u> </u>					

### **VALIDATION FINDINGS WORKSHEET**

### METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chioronaphthalene	AAA. Butyibenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD, Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	11.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN, Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 2,6-Dinitrotoluene	01.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4 Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiphene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	uuuu. Total Bunzoghubranthen	v <sup>U</sup> 1:
V. 4-Chloro-3-methylphenol	VV. Anthracene	WV.Benzonaphthothiophene	ww.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	www.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	xxxx.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC#: 35625 ADD

# VALIDATION FINDINGS WORKSHEET Continuing Calibration

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	/_of_ 

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?

Whyna

Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Y(N) N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
_	12/14/15	ccV	777	26.0		6,8,10,12,14	(CN) ALULL
	0909		kKK	24.7		1	2/43/2 (10)
			LLL	37.1	}		
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#### **VALIDATION FINDINGS WORKSHEET** Blanks

Page:_	<u>/</u> of	1
Reviewer:_	FT	
2nd Reviewer:	0	_
_		

METHOD:	GC/MS	BNA	(EPA	SW	846	Method	8270E	))
				•				

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

MN N/A Was a method blank analyzed for each matrix?

YW N/A Was a method blank analyzed for each concentration preparation level?

Y N N/A Was a method blank associated with every sample?

Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/18 PBlank analysis date: 12/5/15

Blank analysis date:

biank extraction date:	n istanian au	aiysis date:			<i>   A</i>				
Conc. units: ng kg			Associat	ed Samples:	<u> </u>				
Compound	Blank ID								
	MB-111815	5×	6 (10x)	& (10x)	10 (10x)	14 (10X)	11,		
<u> </u>	1.33	6.65	22.6 /U	14.3/U	13.3 V	18.5/4	5.47 U		
							<u> </u>		
							<u> </u>	<u> </u>	

Associated Samples: Conc. units: Compound Blank ID

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Blank extraction date:

LDC #: 35625 Adb

#### VALIDATION FINDINGS WORKSHEET Field Blanks

Page: <u>/</u> of	_ ′
Reviewer: FT	
2nd reviewer:	-
	-

METHOD: GC/MS PAH (EPA SW 846 Method 8270D SIM)

Y N N/A

Were field blanks identified in this SDG?

Y/N N/A

Were target compounds detected in the field blanks?

Sample: \_

5 (FB)

\_\_ Field Blank / Rinsate Blank/ Rinsate (circle one)

Compound	Concentration   Ka
5	41.9
W	58.7
DO	1.6
44	48.4
NA	23.6
ии	32.1
VV	1.71
77	12.6
27	7.47

Sample: 16 (76) Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration, Units ( U.G.) K. 9
S	19.9
W	7.28
46	1.24
NN	1.48
นน	3.44
٧V	2.40
14	4.17
72	5.2

LDC #:	35	625	Adb
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#### **VALIDATION FINDINGS WORKSHEET Surrogate Recovery**

Page:_	<u>/</u> of	_] _
Reviewer:_	FT	
2nd Reviewer:	9	_
_		_

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y(N/N/A) Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A

If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Sample ID	Surrogate	%R (Limits)		Qua	alifications
	<u>d</u>	*	<b>x.</b> 0 (	30-16Q	no mual	
			, , , , ,	<u> </u>	no qual	355)
			(	)	( , , , , ,	
			(	)		
			(	. )		·
			(	)		- U
		* 2 - methyln	aphthalene - &	lu) i		<del></del>
		9	(	)		
			(	)		
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		<u></u>		)		

(NBZ) = Nitrobenzene - d5

(FBP) = 2-Fluorobiphenyl

(TPH) = Terphenyl - d14

(2FP) = 2-Fluorophenol

(TBP) = 2,4,6 -Tribromophenol

(2CP) = 2-Chlorophenol - d4

LDC#: 35625A26

### VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:	1 of 1
Reviewer:	FT
2nd Reviewer:	01

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

Plaase see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a LCS required?
Y N N/A Were the LCS/LCSD r

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	us/D-	5	47.8 (50-150	36.2 (50-154)	( )	Αll	JIND P (ND+Det)
	111815	W	44.5 ( )	37.1 ( )	( )	1	
	·	pp	45.1 ( )	35.0 ( )	( )		
		96	44.5 ( V )	33.8()	( )		
		NN	( )	40.4 ( )	( )		
		UU	( )	49.6 ( )	()		
		44	()	41.2 ( )	( )		
		YY	( )	49.6 ( )	( )		
L		ccc	()	48.7 ( )			
		000	( )	44.5 ( )	( )		
L		946	( )	47.2 ( )	( )		
L		HHH	( )	43.9 ( )	( )		
		TIT	47.5 ( / )	39.8()	( )		
		177	( )	46.0 ( )	( )		
		KKK	()	47.2 ( )	( )		
		LLL	( )	니다. ( )	( )		
		222	24.1 ( )	235 ( )	( )		
		そろろ	48.1 ( )	40.9 ( ,/)			
	Total Benzoth	oranthene	( )	439 ( )	( )	V	$\downarrow$
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( "		
			( )	( )	( )		
			(				

## LDC#: 35625AZb

# VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page: of Reviewer: FT 2nd Reviewer:

METHOD: GCMS PAH (EPA SW 846 Method 8270D-SIM)

	Concentration (ug/Kg)		
Compound	7	9	RPD
S	10.8	9.72	11
w	5.79	7.41	25
DD	1.29	1.75	30
GG	13.2	67.5	135
NN	19.1	63.2	107
w	24.3	34.2	34
ccc	32.4	15.8	69
DDD	28.6	14.1	68
GGG	9.23	3.87	82
ннн	4.10	1.52	92
III ·	7.07	1.86	117
111	1.35	1.12U	200
LLL	1.48	1.12U	200
zzz	1.75	1.12U	200
www	5.71	2.43	81
υυυυ	17.8	7.15	85

	Concentration (ug/Kg)		
Compound	8	10	RPD
UU	204	364	56
YY	353	332	6

	Concentration (ug/Kg)		
Compound	8	9	RPD
ZZ	198	110	57

V:\FIELD DUPLICATES\35625A2b.wpd

LDC# 35625 ADD

### **VALIDATION FINDINGS WORKSHEET Compound Quantitation and CRQLs**

Page:	/ of
Reviewer:	FT
2nd Reviewer:	9

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Please, see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound? Y N N/A Y N N/A

Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Sample ID	Compound	Finding	Qualifications
	5,9,11	uu , yy	Xolcal Range	Jan /A
	7	UU, YY, ZZ		V
		•	V	y
	13	YY, 22	J	V

Comments:	See sample calculation verification worksheet for rec	calculations	
_	•	,	

LDC# 35625 Adb

# VALIDATION FINDINGS WORKSHEET <u>Overall Assessment of Data</u>

Page: _	_/of_/
Reviewer:	FT
2nd Reviewer:	01

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Sample ID	Compound	Finding	Qualifications
	5,9,11	uu, yy	x'd cal Range	R/A
	`		,	
<b></b>	6,10,12	all except UU, YY	diluted	PA
	<del></del>	111 11 2	<i>y</i> 11 1 2	D /4
}		uu, 17, 2-2	X'd cal Range	P/A
	8	all except UU, YY, 22	diluted	2/1
	13	14, 22	xld cal Range	P/A
			3	
-	14	all except YY, ZZ	diluled	R/A
<u> </u>				
<u> </u>				
<b>}</b>				
-				
1		1		

Comments:	 	 	 		 	

LDC #: 75625

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: <u>\AN 19</u> / &
Page: 1 of 1
2 <sup>nd</sup> Reviewer:

The LDC job number listed above was entered by \_\_\_\_\_.

	EDD Process	Y/N	lnit	Comments/Action
I,	EDD Completeness	_		
la.	- All methods present?	/	W	
lb.	- All samples present/match report?	1	(V)	
lc.	- All reported analytes present?	1	W	
ld	-10% verification of EDD?	1		
			3,114	
II.	EDD Preparation/Entry	_		
lla.	- QC Level applied? (EPAStage28 or EPAStage4)	/	(P)	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	C	
	。"我们的这个人,一直被 <b>是</b>		U z oliku di in	
10.	Reasonableness Checks			
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	/	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	1	(ii)	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	/	(S)	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	MA	Ø	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	MIA	Q	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	/	Q d	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	MIF	N	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	N	Q	

Notes:	*see readme			
		 		• · ·

The attached zipped file contains two files:

<u>File</u>

1) Readme PortGamble 011916.doc

**Format** MS Word 2003 Description

A "Readme" file (this document).

MS Excel 2007

AQJ9

A spreadsheet for the following SDG(s):

35625A

2) LDC35625\_AQJ9\_VEDD\_20160107.xls

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 ATTN: Ms. Cindy Fields February 19, 2016

SUBJECT: Port Gamble, Shellfish Monitoring, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on February 1, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

#### **LDC Project #35818:**

#### SDG # Fraction

AUA2 Polynuclear Aromatic Hydrocarbons, Lipids

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project, May 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Project Manager/Chemist

	EDD Stage 2B LDC #35818 (Anchor Environmental-Seattle WA / Port Gamble, Shellfish Monitoring)																																				
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# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 10, 2016

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): AUA2

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
13EB_ME-MTW01Z	AUA2A	Tissue	01/07/13
13EB_ME-MTW01ZDL	AUA2A	Tissue	01/07/13
13CPS_DB-MTW01Z	AUA2B	Tissue	01/10/13
13NPS_CIAR2-MTW01Z	AUA2C	Tissue	01/14/13

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

The chain-of-custodies were not provided and therefore were not reviewed. Per client, samples were stored frozen prior to receipt at the laboratory and shipped for overnight delivery.

All technical holding time requirements were met.

#### II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

#### III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

#### IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
01/22/16	Benzo(k)fluoranthene	20.8	13EB_ME-MTW01Z 13CPS_DB-MTW01Z 13NPS_CIAR2-MTW01Z	Benzo(k)fluoranthene Total Benzofluoroanthenes	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А

All of the continuing calibration relative response factors (RRF) were within validation criteria.

#### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

#### VI. Field Blanks

No field blanks were identified in this SDG.

#### VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

#### VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

#### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS-011416	Acenaphthylene	49.2 (50-150)	All samples in SDG AUA2	J (all detects) UJ (all non-detects)	Р

#### X. Field Duplicates

No field duplicates were identified in this SDG.

#### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

#### XII. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
13EB_ME-MTW01Z	Fluoranthene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	Α

Raw data were not reviewed for Stage 2B validation.

#### XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

#### XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

#### XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
13EB_ME-MTW01Z	Fluoranthene	R	Α
13EB_ME-MTW01ZDL	All TCL compounds except Fluoranthene	R	А

Due to continuing calibration %D and LCS %R, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG AUA2

Sample	Compound	Flag	A or P	Reason
13EB_ME-MTW01Z 13CPS_DB-MTW01Z 13NPS_CIAR2-MTW01Z	Benzo(k)fluoranthene Total Benzofluoroanthenes	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Continuing calibration (%D)
13EB_ME-MTW01Z 13CPS_DB-MTW01Z 13NPS_CIAR2-MTW01Z	13CPS_DB-MTW01Z		Р	Laboratory control samples (%R)
13EB_ME-MTW01Z Fluoranthene		R	Α	Overall assessment of data
13EB_ME-MTW01ZDL All TCL compounds except Fluoranthene		R	Α	Overall assessment of data

Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG AUA2

No Sample Data Qualified in this SDG

SDG Labo <b>MET</b> I	#:35818A2b	S rocarbons (E	tage 2 EPA SV	2B V 846 N			Date: 2//0/ Page: 1 of / Reviewer: 7 Reviewer: 7
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	Validation Area				Cc	omments	
I.	Sample receipt/Technical holding times	SWA					
II.	GC/MS Instrument performance check	A					
III.	Initial calibration/ICV	$A/\Lambda$	•/0	PSD	±20	101 =	30
IV.	Continuing calibration	رين	•			101 £	£20
V.	Laboratory Blanks	Δ					
VI.	Field blanks	2					
VII.	Surrogate spikes	A					
VIII.	Matrix spike/Matrix spike duplicates	2	۷	5		<del>_</del>	
IX.	Laboratory control samples	رسی	IC	>			
X.	Field duplicates	N					
XI.	Internal standards	A					
XII.	Compound quantitation RL/LOQ/LODs	SW					
XIII.	Target compound identification	N					
XIV.	System performance	N					
XV.	N = Not provided/applicable R = R	No compounds insate Field blank	detecte	d	D = Duplicate TB = Trip blank EB = Equipmen	OTHER	rce blank
	Client ID				Lab ID	Matrix	Date
1	13EB_ME-MTW01Z				AUA2A	Tissue	01/07/13
2	13EB_ME-MTW01ZDL				AUA2A	Tissue	01/07/13
3	13CPS_DB-MTW01Z				AUA2B	Tissue	01/10/13
4	13NPS_CIAR2-MTW01Z		AUA2C	Tissue	01/14/13		
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#### **VALIDATION FINDINGS WORKSHEET**

#### METHOD: GC/MS SVOA

A. Phenol	T. 4-Chloroaniline	MM. 4-Chlorophenyl-phenyl ether	FFF. Di-n-octylphthalate	YYY. 2,3,5-Trimethylnaphthalene
B. Bis (2-chloroethyl) ether	U. Hexachlorobutadiene	NN. Fluorene	GGG. Benzo(b)fluoranthene	ZZZ. Perylene
C. 2-Chlorophenol	V. 4-Chloro-3-methylphenol	OO. 4-Nitroaniline	HHH. Benzo(k)fluoranthene	AAAA. Dibenzothiophene
D. 1,3-Dichlorobenzene	W. 2-Methylnaphthalene	PP. 4,6-Dinitro-2-methylphenol	III. Benzo(a)pyrene	BBBB. Benzo(a)fluoranthene
E. 1,4-Dichlorobenzene	X. Hexachlorocyclopentadiene	QQ. N-Nitrosodiphenylamine	JJJ. Indeno(1,2,3-cd)pyrene	CCCC. Benzo(b)fluorene
F. 1,2-Dichlorobenzene	Y. 2,4,6-Trichlorophenol	RR. 4-Bromophenyl-phenylether	KKK. Dibenz(a,h)anthracene	DDDD. cis/trans-Decalin
G. 2-Methylphenol	Z. 2,4,5-Trichlorophenol	SS. Hexachlorobenzene	LLL. Benzo(g,h,i)perylene	EEEE. Biphenyl
H. 2,2'-Oxybis(1-chloropropane)	AA. 2-Chloronaphthalene	TT. Pentachlorophenol	MMM. Bis(2-Chloroisopropyl)ether	FFFF. Retene
I. 4-Methylphenol	BB. 2-Nitroaniline	UU. Phenanthrene	NNN. Aniline	GGGG. C30-Hopane
J. N-Nitroso-di-n-propylamine	CC. Dimethylphthalate	VV. Anthracene	OOO. N-Nitrosodimethylamine	HHHH. 1-Methylphenanthrene
K. Hexachloroethane	DD. Acenaphthylene	WW. Carbazole	PPP. Benzoic Acid	IIII. 1,4-Dioxane
L. Nitrobenzene	EE. 2,6-Dinitrotoluene	XX. Di-n-butylphthalate	QQQ. Benzyi alcohol	JJJJ. Acetophenone
M. Isophorone	FF. 3-Nitroaniline	YY. Fluoranthene	RRR. Pyridine	KKKK. Atrazine
N. 2-Nitrophenol	GG. Acenaphthene	ZZ. Pyrene	SSS. Benzidine	LLLL. Benzaldehyde
O. 2,4-Dimethylphenol	HH. 2,4-Dinitrophenol	AAA. Butylbenzylphthalate	TTT. 1-Methylnaphthalene	MMMM. Caprolactam
P. Bis(2-chloroethoxy)methane	II. 4-Nitrophenol	BBB. 3,3'-Dichlorobenzidine	UUU.Benzo(b)thiophene	NNNN.
Q. 2,4-Dichlorophenol	JJ. Dibenzofuran	CCC. Benzo(a)anthracene	VVV.Benzonaphthothiophene	0000.
R. 1,2,4-Trichlorobenzene	KK. 2,4-Dinitrotoluene	DDD. Chrysene	WWW.Benzo(e)pyrene	PPPP.
S. Naphthalene	LL. Diethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	XXX. 2,6-Dimethylnaphthalene	QQQQ.

LDC#: 35818A2b

### VALIDATION FINDINGS WORKSHEET Technical Holding Times

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Reviewer:	F	2
2nd Reviewer:	á	

All circled dates have exceeded the technical holding times.

		vvere all cooler	temperatures within	validation criteria?_
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METHOD: GC/MA BNA SW846 METHOD 8270C								
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#### **TECHNICAL HOLDING TIME CRITERIA**

Water:

Extracted within 7 days, analyzed within 40 days.

Soil:

Extracted within 14 days, analyzed within 40 days.

LDC#: 35818AZh

# VALIDATION FINDINGS WORKSHEET <u>Continuing Calibration</u>

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METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A
Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF?

#_	Date	Standard ID	Compound	Finding %D (Limit: <u>&lt;</u> 20.0%)	Finding RRF (Limit: <u>&gt;</u> 0.05)	Associated Samples	Qualifications
<u>-</u>	1/22/16	ccv	444	20.8		1.3.4, MB-01416	
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LDC#: 35818 A2b

### VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

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2nd Reviewer:	9

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Mease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a LCS required?

Y(N/N/A) Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-011416	DD	49.2 (50-150)	( )	( )	A ]]	JUJP (ND+PUT)
			( )	( )	( )		
			( )	( )	( )		
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# VALIDATION FINDINGS WORKSHEET Compound Quantitation and CRQLs

Page: _	
Reviewer:	FT
2nd Reviewer:	01

METHOD: GC/MS SVOA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N/N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Sample ID	Compound	Finding	Qualifications
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Comments:	See sample calculation verification worksheet for recalculations	
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LDC#: 35818A2b

# VALIDATION FINDINGS WORKSHEET <u>Overall Assessment of Data</u>

Page: _	of
Reviewer:	<u>FT</u>
2nd Reviewer:	$-\mathcal{O}_{2}$

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N/A Was the overall quality and usability of the data acceptable?

#	Sample ID	Compound	Finding	Qualifications
	PXI	44	x'd cal Range	R/A
	2	all except YY	diluted	R/A
				,
	<u> </u>			

Comments:	 	 	 	

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 4, 2016

Parameters:

Lipids

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): AUA2

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
13EB_ME-MTW01Z	AUA2A	Tissue	01/07/13
13CPS_DB-MTW01Z	AUA2B	Tissue	01/10/13
13NPS_CIAR2-MTW01Z	AUA2C	Tissue	01/14/13

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Lipids by Bligh and Dyer Method

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

The chain-of-custodies were not provided and therefore were not reviewed. Per client, samples were stored frozen prior to receipt at the laboratory and shipped for overnight delivery.

All technical holding time requirements were met.

#### II. Initial Calibration

All criteria for the initial calibration of each method were met.

#### III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

#### IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

#### V. Field Blanks

No field blanks were identified in this SDG.

#### VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

#### VII. Duplicates

Duplicate (DUP) sample analysis was not required by the method.

#### VIII. Laboratory Control Samples

Laboratory control samples (LCS) were not required by the method.

#### IX. Field Duplicates

No field duplicates were identified in this SDG.

#### X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

#### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

### Port Gamble, Shellfish Monitoring Lipids - Data Qualification Summary - SDG AUA2

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Lipids - Laboratory Blank Data Qualification Summary - SDG AUA2

No Sample Data Qualified in this SDG

SDG # _abora <b>METH</b> The sa	:35818A6	S Oyer)	Stage 2B	s WORKSHEET	2nd	Date: AH/A Page: of J Reviewer: AFC Reviewer: AFC noted in attached
	Validation Area			Comme	ents	
l.	Sample receipt/Technical holding times	A,A				
<u></u> []	Initial calibration	A			······································	
Hf.	Calibration verification	A		· · · · · · · · · · · · · · · · · · ·		
IV	Laboratory Blanks	A		<del></del>		
V	Field blanks	N				
VI.	Matrix Spike/Matrix Spike Duplicates	T'N	norday	red		
VII.	Duplicate sample analysis	N	notrequ CS			
VIII.	Laboratory control samples	N	norrequi	Est.		
IX.	Field duplicates	N			-	
Χ.	Sample result verification	N				
ΧL	Overall assessment of data	A				
ote:	N = Not provided/applicable R = Ri	No compounds nsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	OTHER:	rce blank
	Client ID			Lab ID	Matrix	Date
1 1	3EB_ME-MTW01Z			AUA2A	Tissue	01/07/13
	3CPS_DB-MTW01Z			AUA2B	Tissue	01/10/13
	3NPS_CIAR2-MTW01Z			AUA2C	Tissue	01/14/13
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LDC #: 758/8

### **EDD POPULATION COMPLETENESS WORKSHEET**

Anchor

	Date: <u> </u>
•	Page: 1_of 1
$2^{nd}$	Reviewer:
	7/

The LDC job number listed above was entered by

	EDD Process	Y/N	Init	Comments/Action
1.	EDD Completeness	-		
la.	- All methods present?	/	W	
lb.	- All samples present/match report?		W	
lc.	- All reported analytes present?	/	(W)	
ld	-10% verification of EDD?		N	
II.	EDD Preparation/Entry			
IIa.	- QC Level applied? (EPAStage2B or EPAStage4)		(W)	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	n a	0	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	/	<u> </u>	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	/	N	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	1	<b>W</b>	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	71#	(V)	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	77A(	(b)	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	/		
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	niA	$\mathcal{D}$	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?		(S)	

·•·• <u>·</u>	"see readme			 
		 · ·		

The attached zipped file contains two files:

File

1) Readme\_Port Gamble\_021816.doc

**Format** 

MS Word 2003

Description

A "Readme" file (this document).

MS Excel 2007

AUA2

A spreadsheet for the following SDG(s):

35818A

2) LDC35818\_AUA2\_VEDD\_20160214.xlsx

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 ATTN: Ms. Cindy Fields

February 26, 2016

SUBJECT: Port Gamble, Shellfish Monitoring, Data Validation

Dear Ms. Fields,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on February 8, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

## LDC Project #35845:

## SDG # Fraction

APR4, ATS0 Polynuclear Aromatic Hydrocarbons, Cadmium, AVB4/AVB5 Polychlorinated Dioxins/Dibenzofurans, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project, May 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review, September 2011
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

**Project Manager/Chemist** 

	EDD Stag	e 2B	LDC#	358	345	(Aı	nch	or	En	virc	nm	en	tal-	Sea	attl	e V	/A	/Po	ort	Ga	mb	le,	Sho	ellfi	sh	Мс	nit	orii	ng)							
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# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 19, 2016

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): APR4

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-T0-MUS-COC-151030	APR4A	Tissue	10/30/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

#### II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

#### III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
01/22/16	Benzo(k)fluoranthene	20.8	All samples in SDG APR4	Benzo(k)fluoranthene Total Benzofluoranthenes	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А

All of the continuing calibration relative response factors (RRF) were within validation criteria.

#### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

#### VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within QC limits. No data were qualified since there were no associated samples in this SDG. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS-011416	Acenaphthylene	49.2 (50-150)	All samples in SDG APR4	UJ (all non-detects)	Р

Standard reference materials (SRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

SRM ID	Compound	Concentration (Limits)	Associated Samples	Flag	A or P
SRM1974C 011416	2-Methylnaphthalene Fluorene Fluoranthene Benzo(a)anthracene Chrysene Perylene	0.59 ug/Kg (0.750-2.25) 0.98 ug/Kg (1.16-1.73) 22.4 ug/Kg (22.7-68.0) 2.27 ug/Kg (2.84-8.54) 8.90 ug/Kg (9.60-28.8) 0.50U ug/Kg (0.280-0.840)	All samples in SDG APR4	J (all detects) UJ (all non-detects)	А
SRM1974C 011416	Dibenz(a,h)anthracene	0.18 ug/Kg (0.050-0.150)	All samples in SDG APR4	NA	-

## X. Field Duplicates

No field duplicates were identified in this SDG.

#### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

## XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

#### XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, LCS %R, and SRM concentration, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG APR4

Sample	Compound	Flag	A or P	Reason
PG-T0-MUS-COC-151030	Benzo(k)fluoranthene Total Benzofluoranthenes	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	А	Continuing calibration (%D)
PG-T0-MUS-COC-151030	Acenaphthylene	UJ (all non-detects)	Р	Laboratory control samples (%R)
PG-T0-MUS-COC-151030	2-Methylnaphthalene Fluorene Fluoranthene Benzo(a)anthracene Chrysene Perylene	J (all detects) UJ (all non-detects)	А	Standard reference material (concentration)

Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG APR4

No Sample Data Qualified in this SDG

SDG 7	#:35845A2b		PLETENES Stage 2B	S WORKSHEE	T 2nd	Date: <u>2/10</u> /16 Page: _/of _/ Reviewer:
METH	IOD: GC/MS Polynuclear Aromatic Hydro	ocarbons (I	EPA SW 846	Method 8270D-SII	VI)	reviewer
	amples listed below were reviewed for eation findings worksheets.	ach of the fo	ollowing valida	ation areas. Valida	tion findings are	noted in attached
	Validation Area			Com	ments	
I.	Sample receipt/Technical holding times	AIA				
11.	GC/MS Instrument performance check	Δ				
111.	Initial calibration/ICV	AIA	0/0 P	15D = 20	10V =	30
IV.	Continuing calibration	50			cw =	20
V.	Laboratory Blanks	A				
VI.	Field blanks	Ŋ				
VII.	Surrogate spikes	A			0/0 12	
VIII.	Matrix spike/Matrix spike duplicates	SW	45 AT	SOBMS/D (	NO ASSOC	sample)
IX.	Laboratory control samples /5 P M	Sw/41	N LCS.	SRM		
X.	Field duplicates	N				
XI.	Internal standards	Δ				
XII.	Compound quantitation RL/LOQ/LODs	N				
XIII.	Target compound identification	N				
XIV.	System performance	N	<del></del>			
XV.	Overall assessment of data	A				
Note:	A = Acceptable ND = N N = Not provided/applicable R = Rin	o compounds sate eld blank	detected	D = Duplicate TB = Trip blank EB = Equipment bla	OTHER:	rce blank
	Client ID			Lab ID	Matrix	Date
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## **VALIDATION FINDINGS WORKSHEET**

## METHOD: GC/MS SVOA

A. Phenol	T. 4-Chloroaniline	MM. 4-Chlorophenyl-phenyl ether	FFF. Di-n-octylphthalate	YYY. 2,3,5-Trimethylnaphthalene
B. Bis (2-chloroethyl) ether	U. Hexachlorobutadiene	NN. Fluorene	GGG. Benzo(b)fluoranthene	ZZZ. Perylene
C. 2-Chlorophenol	V. 4-Chloro-3-methylphenol	OO. 4-Nitroaniline	HHH. Benzo(k)fluoranthene	AAAA. Dibenzothiophene
D. 1,3-Dichlorobenzene	W. 2-Methylnaphthalene	PP. 4,6-Dinitro-2-methylphenol	III. Benzo(a)pyrene	BBBB. Benzo(a)fluoranthene
E. 1,4-Dichlorobenzene	X. Hexachlorocyclopentadiene	QQ. N-Nitrosodiphenylamine	JJJ. Indeno(1,2,3-cd)pyrene	CCCC. Benzo(b)fluorene
F. 1,2-Dichlorobenzene	Y. 2,4,6-Trichlorophenol	RR. 4-Bromophenyl-phenylether	KKK. Dibenz(a,h)anthracene	DDDD. cis/trans-Decalin
G. 2-Methylphenol	Z. 2,4,5-Trichlorophenol	SS. Hexachlorobenzene	LLL. Benzo(g,h,i)perylene	EEEE. Biphenyl
H. 2,2'-Oxybis(1-chloropropane)	AA. 2-Chloronaphthalene	TT. Pentachlorophenol	MMM. Bis(2-Chloroisopropyl)ether	FFFF. Retene
I. 4-Methylphenol	BB. 2-Nitroaniline	UU. Phenanthrene	NNN. Aniline	GGGG. C30-Hopane
J. N-Nitroso-di-n-propylamine	CC. Dimethylphthalate	VV. Anthracene	OOO. N-Nitrosodimethylamine	HHHH. 1-Methylphenanthrene
K. Hexachloroethane	DD. Acenaphthylene	WW. Carbazole	PPP. Benzoic Acid	IIII. 1,4-Dioxane
L. Nitrobenzene	EE. 2,6-Dinitrotoluene	XX. Di-n-butylphthalate	QQQ. Benzyl alcohol	JJJJ. Acetophenone
M. Isophorone	FF. 3-Nitroaniline	YY. Fluoranthene	RRR. Pyridine	KKKK. Atrazine
N. 2-Nitrophenol	GG. Acenaphthene	ZZ. Pyrene	SSS. Benzidine	LLLL. Benzaldehyde
O. 2,4-Dimethylphenol	HH. 2,4-Dinitrophenol	AAA. Butylbenzylphthalate	TTT. 1-Methylnaphthalene	MMMM. Caprolactam
P. Bis(2-chloroethoxy)methane	II. 4-Nitrophenol	BBB. 3,3'-Dichlorobenzidine	UUU.Benzo(b)thiophene	NNNN.
Q. 2,4-Dichlorophenol	JJ. Dibenzofuran	CCC. Benzo(a)anthracene	VVV.Benzonaphthothiophene	0000.
R. 1,2,4-Trichlorobenzene	KK. 2,4-Dinitrotoluene	DDD. Chrysene	WWW.Benzo(e)pyrene	PPPP.
S. Naphthalene	LL. Diethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	XXX. 2,6-Dimethylnaphthalene	QQQQ.

LDC#: 35845 Aab

## VALIDATION FINDINGS WORKSHEET <u>Continuing Calibration</u>

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Q,

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A
Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?

Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF?

H	<u>/N/A</u> V	Vere all %D and RRFs w	T			<del></del>	T
#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: <u>&gt;</u> 0.05)	Associated Samples	Qualifications
_	1/22/16	cev	HHH	20.8		All	JUJ/A (NO+Det
	0905						qual HHH+
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LDC #: 3584 CA2b

## VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

<u></u>
FT
_C1

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y N N/A Was a LCS required?

N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
			(	( )	( )		
	LCS - 011416	DD	49.2 (50-15	D ( )	( )	IIA	(QN) 9/LN/L
			(	( )	( )		
			(	()	( )		·
			(	( )	_ ( )		
			(	( )	( )		
			(	( )	( )		
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LDC#: 35845 ADD

## VALIDATION FINDINGS WORKSHEET SRM

Page: .	of/
Reviewer: _	FT
2nd Reviewer:	<u></u>

METHOD: GC/MS PAH (EPA SW 846 Method 8270D-SIM)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Were the SRM values within the certified values?

<u></u>							
#	SRM ID	Compound	Reported values (ug/Kg)	Certified true Value (ug/Kg)	Criteria: ± 50% of the certified true value	Associated Samples	Qualifications
	SRM 1974C	W	0.59	1.50	0.750 - 2.25	#1	JUJ/A (Rut)
	0114110	NN	0.98	2-31	1.16-1.73		
		YY	22.4	45.3	22.7 - 68.0		
		CLL	2.27	5.69	2-84 - 8-54		
		DDD	8.90	192	9.60-28.8		
	FT	966	2.98	595	298-892		I FI
		KKK	0.18	0.100	0.050-0.150		(04) A/ILL
		772	0.504	0.560	0.280-0.840	)	J/RU/A* (ND)
		7777	0.89	not a taro	et analyte		text
				in the	SRM 1974°C is	₹	
				·			
						*spike at RL	
				·		1 .	
				**			
						7.	

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 19, 2016

Parameters:

Cadmium

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): APR4

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-T0-MUS-COC-151030	APR4A	Tissue	10/30/15
PG-T0-MUS-COC-151030MS	APR4AMS	Tissue	10/30/15
PG-T0-MUS-COC-151030DUP	APR4ADUP	Tissue	10/30/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Cadmium by Environmental Protection Agency (EPA) SW 846 Method 6010C

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

#### II. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## III. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

#### V. Field Blanks

No field blanks were identified in this SDG.

#### VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

#### VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

#### VIII. Serial Dilution

Serial dilution was not performed for this SDG.

#### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

#### X. Field Duplicates

No field duplicates were identified in this SDG.

## XI. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

#### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

## Port Gamble, Shellfish Monitoring Cadmium - Data Qualification Summary - SDG APR4

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Cadmium - Laboratory Blank Data Qualification Summary - SDG APR4

No Sample Data Qualified in this SDG

SDG Labor METI The s	#:APR4	S 6010C <del>B/7470N7</del> 4	Stage 2B - <del>(471A)</del>	m4	2nd Rev	Date: 2-16- Page: _L of _L riewer:MG riewer: ried in attached
	Validation Area			Comm	ents	
1.	Sample receipt/Technical holding times	Α				!
11.	Instrument Calibration	A				
III.	ICP Interference Check Sample (ICS) Analysis	A				
IV.	Laboratory Blanks	Α				
V.	Field Blanks	2				
VI.	Matrix Spike/Matrix Spike Duplicates	Α	MS			
VII.	Duplicate sample analysis	Α	DUP			
VIII.		7	not	performed		
IX.	Laboratory control samples	A	LCS			
X.	Field Duplicates	2				
XI.	Sample Result Verification	N				
XII	Overall Assessment of Data	Α				
Note:	N = Not provided/applicable R = Rins	o compounds sate eld blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blank	SB=Source b OTHER:	lank
	Client ID			Lab ID	Matrix	Date
1	PG-T0-MUS-COC-151030			APR4A	Tissue	10/30/15
	PG-T0-MUS-COC-151030MS	-		APR4AMS	Tissue	10/30/15
	PG-T0-MUS-COC-151030DUP			APR4ADUP	Tissue	10/30/15
4						
5						
6						
7						
8						
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10						
11						

PBS

Notes:\_\_

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

LDC Report Date:

February 19, 2016

Parameters:

**Percent Lipids** 

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): APR4

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
PG-T0-MUS-COC-151030	APR4A	Tissue	10/30/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Percent Lipids by Bligh and Dyer Method

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

#### II. Initial Calibration

All criteria for the initial calibration were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Percent lipids	0.0700 mg/L	All samples in SDG APR4

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

#### V. Field Blanks

No field blanks were identified in this SDG.

## VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

## VII. Duplicate Sample Analysis/Triplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) analyses were not required by the method.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

## X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

#### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

## Port Gamble, Shellfish Monitoring Percent Lipids - Data Qualification Summary - SDG APR4

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Percent Lipids - Laboratory Blank Data Qualification Summary - SDG APR4

No Sample Data Qualified in this SDG

LDC #: 35845A6	_ VALIDATION COMPLETENESS WORKSHEET	Date: <u>2-16-1</u>
SDG #: APR4	_ Stage 2B	Page: <u></u> of
Laboratory: Analytical Reso	purces, Inc.	Reviewer: MG
		2nd Reviewer: 6

## METHOD: (Analyte) Percent Lipids (Method Bligh & Dyer)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

		T	
<u> </u>	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	5 W	PB only
V	Field blanks	N	<u>'</u>
VI.	Matrix Spike/Matrix Spike Duplicates	N	not required
VII.	Duplicate sample analysis	A	Trip (SDG: ATSO)
VIII.	Laboratory control samples	N	not required
IX.	Field duplicates	N	D
X.	Sample result verification	N	
IX	Overall assessment of data	A	

Note:	A = Acceptable	ND = No compounds detected	D = Duplicate	SB=Source blank
14010.	N = Not provided/applicable	R = Rinsate	TB = Trip blank	OTHER:
	SW = See worksheet	FR = Field blank	FR = Equipment blank	

	Client ID	Lab ID	Matrix	Date
1	PG-T0-MUS-COC-151030	APR4A	Tissue	10/30/15
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15	PBS			

15 PBS	<u></u>	
Notes:		

LDC #: 35845A6

## VALIDATION FINDINGS WORKSHEET Blanks

Page:_	of
Reviewer:	MG
2nd Reviewer:	a

METHOD:Inorganics, Method Bligh & Dyer

Conc. units	s: <u> </u>	<u> </u>			Asso	ciated Sar	nples: <u>al</u> l	(>5x)	 	 	
Analyte	Blank ID	Blank ID	i :								
	РВ	ICB/CCB (mg/L)	Action Limit	No Qual.							
% Lipids	0.0700		0.3500								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 22, 2016

Parameters:

Polychlorinated Dioxins/Dibenzofurans

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): APR4

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
PG-T0-MUS-COC-151030	APR4A	Tissue	10/30/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

#### II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

#### III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were within the QC limits for unlabeled compounds and labeled compounds with the following exceptions:

Date	Compound	Concentration (Limits)	Associated Samples	Affected Compound	Flag	A or P
10/15/15	1,2,3,4,7,8-HxCDF	59.905 pg (45-56)	All samples in SDG APR4	1,2,3,4,7,8-HxCDF Total HxCDF	NA	-

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method and validation criteria.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
MB-012516	01/25/16	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HxCDD Total HpCDD Total HpCDD Total HpCDF	0.0500 pg/g 0.142 pg/g 0.374 pg/g 0.541 pg/g 6.16 pg/g 0.0378 pg/g 0.124 pg/g 0.743 pg/g 0.0500 pg/g 0.286 pg/g	All samples in SDG APR4

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
PG-T0-MUS-COC-151030	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HxCDD Total HpCDD Total HpCDD	0.0518 pg/g 0.189 pg/g 0.775 pg/g 0.502 pg/g 7.46 pg/g 0.0474 pg/g 0.249 pg/g 3.03 pg/g 0.446 pg/g	0.0518U pg/g 0.189U pg/g 0.775U pg/g 0.502U pg/g 7.46U pg/g 0.0474J pg/g 0.249J pg/g 3.03J pg/g 0.446J pg/g

#### VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Ongoing Precision Recovery**

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

#### X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

## XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG APR4	All compounds reported as estimated maximum possible concentration (EMPC)	J (all detects)	А

Raw data were not reviewed for Stage 2B validation.

## XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

## XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

#### XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported by the laboratory as EMPCs, data were qualified as estimated in one sample.

Due to laboratory blank contamination, data were qualified as not detected or estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

## Port Gamble, Shellfish Monitoring Polychlorinated Dioxins/Dibenzofurans - Data Qualification Summary - SDG APR4

Sample	Compound	Flag	A or P	Reason
PG-T0-MUS-COC-151030	All compounds reported as estimated maximum possible concentration (EMPC)	J (all detects)	А	Compound quantitation (EMPC)

## Port Gamble, Shellfish Monitoring Polychlorinated Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG APR4

Sample	Compound	Modified Final Concentration	A or P
PG-T0-MUS-COC-151030	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HxCDD Total HpCDD Total HpCDD	0.0518U pg/g 0.189U pg/g 0.775U pg/g 0.502U pg/g 7.46U pg/g 0.0474J pg/g 0.249J pg/g 3.03J pg/g 0.446J pg/g	A

SDG :	#:35845A21 #:APR4 atory:Analytical Resoul	VALIDATIO		P <b>LETEN</b> Stage &	_	DRKSHEET		Revi	Date:2-20 Page:of_ lewer:n lewer:
The s	HOD: HRGC/HRMS Polycamples listed below were tion findings worksheets.	e reviewed for ea		,		•			
	Validation	Area				Comme	ents	· · · · · · · · · · · · · · · · · · ·	
I.	Sample receipt/Technical ho		A/A						
11.	HRGC/HRMS Instrument pe	erformance check	A						
111.	Initial calibration/ICV		A 5N	420	0/35	ICV	QCI	limit	
IV.	Continuing calibration		ľΑ	QC	limit				
V.	Laboratory Blanks		SW						
VI.	Field blanks		N						
VII.	Matrix spike/Matrix spike du	plicates	N	C-S.					
VIII.	Laboratory control samples		A	OPR					
IX.	Field duplicates		T N	<del></del>					
X.	Internal standards		A						
XI.	Compound quantitation RL/L	-OQ/LODs	SW						
XII.	Target compound identificati	ion	N	Not r	eview	ed for St	age 2	B	
XIII.	System performance		N			V			
XIV.	Overall assessment of data		A						
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet	R = Rin	lo compounds isate ield blank	detected	TB =	Duplicate = Trip blank = Equipment blank	01	3=Source bl ΓHER:	lank
	Client ID				Lab II	D	Matrix		Date
1 1	PG-T0-MUS-COC-151030				APR4	A	Tissue	•	10/30/15
2									
3									
4			, ,, ,,						
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## **VALIDATION FINDINGS WORKSHEET**

**METHOD:** HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:		

LDC #: 35845A21

## **VALIDATION FINDINGS WORKSHEET Initial Calibration Verification**

Page:_	<u> </u>
Reviewer:_	0
2nd Reviewer:_	9

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Y (N N/A Were results within the QC limits to	for the method?
---	-----------------

#	Date	Standard ID	Compound	Finding (Limit: pg )	Associated Samples	Qualifications	
	10/15/15	15101510	K	56.905 (45-56)	all	Jdets/P (+X)	(ND)
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LDC #: 35845A21

# **VALIDATION FINDINGS WORKSHEET Blanks**

Page:_	of_)_
Reviewer:	on
2nd Reviewer:	9

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all samples associated with a method blank?

N N/A N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?

(Y) N N/A Was the method blank contaminated?

Blank extraction date: 01/25/16 Blank analysis date: 01/29/16

Associated samples: Conc. units: pg/g all

Accordated cumples: dil								
Compound	Blank ID		Sample Identification					
	MB-012516	5x	11					
ī	0.0500*	0.250	0.0518* /U					
0	0.142*	0.710	0.189 /U					
F	0.374	1.87	0.775 /U					
Q	0.541	2.71	0.502 /U					
G	6.16	30.8	7.46 /U					
S	0.0378*	0.189	0.0474* /J					
T	0.124*	0.620	0.249* /J					
U	0.743	3.72	3.03 /J			:		
w	0.0500*	0.250						
Υ	0.286*	1.43	0.446* /J				 	
	· 							

\*EMPC

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #:35845A H

# VALIDATION FINDINGS WORKSHEET Compound Quantitation and Reported RLs

Page:	<u>1_</u> of_1
Reviewer:	Or
2nd Reviewer:	9

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Υ	Ν	(N/A
Y	N	MA
		$\overline{}$

Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Doto	Compound	Finding	Associated Communication	0.115.11
#	Date	Compound	Finding	Associated Samples	Qualifications
		-	EMPC results	all	Jdets/A
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				***	

Comments: _	See sample calculation verification worksheet for recalculations—	

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 24, 2016

Parameters:

Polynuclear Aromatic Hydrocarbons

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): ATS0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/05/16
PG-PJ-1-MUS-COC-160104MS	ATS0BMS	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104MSD	ATS0BMSD	Tissue	01/04/16

### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polynuclear Aromatic Hydrocarbons (PAHs) by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

### I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

### II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

### III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

### IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
01/22/16	Benzo(k)fluoranthene	20.8	All samples in SDG ATS0	Benzo(k)fluoranthene Total Benzofluoranthenes	J (all detects) J (all detects)	А

All of the continuing calibration relative response factors (RRF) were within validation criteria.

### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

### VI. Field Blanks

No field blanks were identified in this SDG.

### VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

# VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
PG-PJ-1-MUS-COC-160104MS/MSD (PG-PJ-1-MUS-COC-160104)	Naphthalene 2-Methylnaphthalene Acenaphthene Phenanthrene Fluoranthene Benzo(k)fluoranthene	44.0 (50-150) - - - - - - -	34.7 (50-150) 43.3 (50-150) 49.3 (50-150) 44.0 (50-150) 46.7 (50-150) 48.7 (50-150)	J (all detects) UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS-011416	Acenaphthylene	49.2 (50-150)	All samples in SDG ATS0	UJ (all non-detects)	Р

Standard reference materials (SRM) were analyzed as required by the method. The results were within QC limits with the following exceptions:

SRM ID	Compound	Concentration (Limits)	Associated Samples	Flag	A or P
SRM1974C 011416	2-Methylnaphthalene Fluorene Fluoranthene Benzo(a)anthracene Chrysene Perylene	0.59 ug/Kg (0.750-2.25) 0.98 ug/Kg (1.16-1.73) 22.4 ug/Kg 22.7-68.0) 2.27 ug/Kg (2.84-8.54) 8.90 ug/Kg (9.60-28.8) 0.50U ug/Kg (0.280-0.840)	All samples in SDG ATS0	J (all detects) UJ (all non-detects)	А
SRM1974C 011416	Dibenz(a,h)anthracene	0.18 ug/Kg (0.050-0.150)	All samples in SDG ATS0	NA	-

### X. Field Duplicates

No field duplicates were identified in this SDG.

### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

### XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

### XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

### XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, MS/MSD %R, LCS %R, and SRM concentration, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG ATS0

Sample	Compound	Flag	A or P	Reason
PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-GP-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160105	Benzo(k)fluoranthene Total Benzofluoranthenes	J (all detects) J (all detects)	А	Continuing calibration (%D)
PG-PJ-1-MUS-COC-160104	Naphthalene 2-Methylnaphthalene Acenaphthene Phenanthrene Fluoranthene Benzo(k)fluoranthene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-GP-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160105	Acenaphthylene	UJ (all non-detects)	Р	Laboratory control samples (%R)
PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-GP-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160105	2-Methylnaphthalene Fluorene Fluoranthene Benzo(a)anthracene Chrysene Perylene	J (all detects) UJ (all non-detects)	А	Standard reference materials (concentration)

Port Gamble, Shellfish Monitoring Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG ATS0

No Sample Data Qualified in this SDG

		1 1
LDC #: 35845B2b	_ VALIDATION COMPLETENESS WORKSHEET	Date: 2/10/16
SDG #: ATS0	_ Stage 2B	Page: <u>/</u> of <u>/</u>
Laboratory: Analytical Resour	ces, Inc.	Reviewer: <del>F</del> -7
		2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	Δ	
111.	Initial calibration/ICV	SWA	% PSD 520 101 = 30
IV.	Continuing calibration	آجيل)	2/ PSD ≤20 COV ≤20
V.	Laboratory Blanks	Δ	
VI.	Field blanks	7	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW.	
IX.	Laboratory control samples /SRM	وس/ه	ULCS, SRM
X.	Field duplicates	7	
XI.	Internal standards	Δ	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	<u>م</u>	

A = Acceptable N = Not provided/applicable SW = See worksheet ND = No compounds detected Note:

D = Duplicate TB = Trip blank R = Rinsate FB = Field blank

SB=Source blank OTHER: EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
2	PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
3	PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
4	PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
5	PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
6	PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/ <del>04</del> /16
7	PG-PJ-1-MUS-COC-160104MS	ATS0BMS	Tissue	01/04/16
8	PG-PJ-1-MUS-COC-160104MSD	ATS0BMSD	Tissue	01/04/16
9				
10	MB-011416			
11				
12				

Notes:

# **VALIDATION FINDINGS WORKSHEET**

# METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	11.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 2,6-Dinitrotoluene	01.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4 Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiphene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	ບບບບ.	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV.Benzonaphthothiophene	vvv.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	www.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC#: 35845B2b

# **VALIDATION FINDINGS WORKSHEET Continuing Calibration**

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	of FT <i>C1</i>

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument? Y /N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ? Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ? N N/A

Y/N/N/A

	<u>/ N/A                                      </u>	Vere all %D and RRFs w	Vitain the Validation Chi			<del></del>	
#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/22/16	ccV	ннн	20.8		AI	1/UJ/A (Det)
	0905						qual HHH a
						Tot	qual HHH a BenzofluBranth
L							1
						<del> </del>	
-					<u> </u>	<u> </u>	
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LDC#: 35846 B26

# VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

of
FT
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METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an

associated MS/MSD. Soil / Water.

√ N N/A

Was a MS/MSD analyzed every 20 samples of each matrix?

Y/N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)		MSD %R (Limits)		RPD (Limits)		Associated Samples	Qualit	ications
	7+8	<u>s</u>	44,0 (90-150	))	34.7 (50-	SD)	(	)	2	A/LML	NO+Oct
		W	(	)	43-3(	)	(	)		'	
		<u> 40</u>	(	)	49.31	)					
		uu	(	)	44.0 (	)	(	)			
		44	(	)	46.7 (	)	(	)			
		ННН	(	)	48.7	<i>y</i> )		)	<u> </u>		
			(	)	(	)	(	)			
			(	)	(	)	(	)			
			(	)	(	)	(	)			
			(	)	(	)	(	)			
			(	)	(	)	(	)			
			(	)	(	)	(	)			
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			(	)	(	)	(	)			
			(	)	(	)	(	)			
			(	)	(	)	(	)			

LDC#: 35345B2b

# VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page:	
Reviewer:	FT
2nd Reviewer:	9

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N-N/A

Was a LCS required?

Y/N N/A

Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
			( )	( )	( )		
	LCS-011416	DD	49.2 (50-150	( )	( )	NA	1/11/P (ND)
			( )	( )	( )		~
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC#: 35845B2b

# VALIDATION FINDINGS WORKSHEET SRM

Page:	
Reviewer:	<u>FT</u>
2nd Reviewer:	0

METHOD: GC/MS PAH (EPA SW 846 Method 8270D-SIM)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y)N N/A

Were the SRM values within the certified values?

		T	<del>†                                      </del>	<del></del>	<del></del>	<del>гээ эээ эээ эээ эээ</del>	<del></del>
#	SRM ID	Compound	Reported values (ug/Kg)	Certified true Value (ug/Kg)	Criteria: ± 50% of the certified true value	Associated Samples	Qualifications
	SRM 1974C	W	0.59	1.50	0.750 - 2.25	1-76	JUJ/A (NO+Det
	011416	NN	0.98	2-31	1.16-1.73		
		YY	22.4	45.3	22.7 - 68.0		
		CLL	2.27	5 69	2-84 - 8.54		
		DDD	8.90	192	9.60-28.8		
	FT.	999	2.98	595	2.98-892		<b>1</b> ₹7
		KKK	0.18	0.100	0.050-0.150		JUT/A GU ND) J/RD/A* (1,2,4=ND
		<del>772</del>	0.504	0.560	0.280-0.840		J/RO/A* (1,2,4=NO
		777	0.89		jet analyte	<u> </u>	tex+
				in the	SRM A74°C iss		
						* Spikeat RL	
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# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 19, 2016

Parameters:

Cadmium

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): ATS0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/05/16

### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Cadmium by Environmental Protection Agency (EPA) SW 846 Method 6010C

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

### II. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## III. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

### IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

### V. Field Blanks

No field blanks were identified in this SDG.

### VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

### VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits

### VIII. Serial Dilution

Serial dilution was not performed for this SDG.

### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### X. Field Duplicates

No field duplicates were identified in this SDG.

# XI. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Cadmium - Data Qualification Summary - SDG ATS0

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Cadmium - Laboratory Blank Data Qualification Summary - SDG ATS0

No Sample Data Qualified in this SDG

.DC #	: 35845B4b VALIDATIOI	N COMF	PLETENES	S WORKSHEET		Date: 2-17-
	t:ATS0	5	Stage 2B			Page: Lof L
.abora	atory: Analytical Resources, Inc.	010C			Ond	Page: lof l Reviewer: MG Reviewer:
/ETH	Cadmium  OD: Metals (EPA SW 846 Method 6010E	3/7470A/7	ر <del>(471A)</del>		2110	Reviewer.
	(		WA)			
	amples listed below were reviewed for each	ch of the f	following valid	lation areas. Validation	on findings are	e noted in attached
alloat	ion findings worksheets.					
	Validation Area			Comm	nents	
l.	Sample receipt/Technical holding times	A				
II.	Instrument Calibration	A				
111.	ICP Interference Check Sample (ICS) Analysis	A				
IV.	Laboratory Blanks	A				
V.	Field Blanks	7				
VI.	Matrix Spike/Matrix Spike Duplicates	Α	M5	(5DG: APRL	1)	
VII.	Duplicate sample analysis	A	900	( 1	)	
VIII.	Serial Dilution	N	not pe	rformed		
IX.	Laboratory control samples	A	LCS	<u>.</u>		
X.	Field Duplicates	N			<del> </del>	
XI.	Sample Result Verification	N				
XII	Overall Assessment of Data	A			· · · · · · · · · · · · · · · · · · ·	
ote:	A = Acceptable ND = No N = Not provided/applicable R = Rins SW = See worksheet FB = Fie		s detected	D = Duplicate TB = Trip blank EB = Equipment blan	OTHER	urce blank :
c	Client ID			Lab ID	Matrix	Date
P	PG-SMA2-2-MUS-COC-160104			ATS0A	Tissue	01/04/16
Р	PG-PJ-1-MUS-COC-160104			ATS0B	Tissue	01/04/16
Р	PG-WS-1-MUS-COC-160104			ATS0C	Tissue	01/04/16
Р	G-GP-1-MUS-COC-160104			ATS0D	Tissue	01/04/16
Р	G-SMA2-5-MUS-COC-160104			ATS0E	Tissue	01/04/16
P	G-SMA2-4-MUS-COC-160105			ATS0F	Tissue	(01/04/16
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Notes:

PBS

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

LDC Report Date:

February 19, 2016

Parameters:

Percent Lipids

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): ATS0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/05/16
PG-SMA2-2-MUS-COC-160104DUP	ATS0ADUP	Tissue	01/04/16
PG-SMA2-2-MUS-COC-160104TRP	ATS0ATRP	Tissue	01/04/16

### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Percent Lipids by Bligh and Dyer Method

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

### I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

### II. Initial Calibration

All criteria for the initial calibration were met.

### **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met.

### IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Percent lipids	0.0700 mg/L	All samples in SDG ATS0

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

### V. Field Blanks

No field blanks were identified in this SDG.

### VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

### VII. Duplicate Sample Analysis/Triplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

### VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) analyses were not required by the method.

# IX. Field Duplicates

No field duplicates were identified in this SDG.

# X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Percent Lipids - Data Qualification Summary - SDG ATS0

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Percent Lipids - Laboratory Blank Data Qualification Summary - SDG ATS0

No Sample Data Qualified in this SDG

LDC #: 35845B6	VALIDATION COMPLETENESS WORKSHEET
SDG #:ATS0	Stage 2B

Date: <u> ∂ - ≀ 7 -</u> ۱	6
Page: <u> </u> of <u>    (    </u>	
Reviewer: MG	
2nd Reviewer:	

Laboratory: Analytical Resources, Inc.

### METHOD: (Analyte) Percent Lipids (Method Bligh & Dyer)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l. I.	Sample receipt/Technical holding times	A	
=	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	PB only
V	Field blanks	N	/
VI.	Matrix Spike/Matrix Spike Duplicates	N	not required
VII.	Duplicate sample analysis	Α	Trip (1,7,8)
VIII.	Laboratory control samples	7	Trip (1,7,8) not required
IX.	Field duplicates	N	V
Χ.	Sample result verification	N	
Χl	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
2	PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
3	PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
4	PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
5	PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
6	PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/04/16
7	#I DUP			1/5/16
8	#I TRAPP			
9				
10				
11				
12				
13				
14				
15	PBS			

LDC #: 3584<u>5</u>B6

# VALIDATION FINDINGS WORKSHEET Blanks

Page:_	<u>l</u> of_l_
Reviewer:	MG
2nd Reviewer:_	9

METHOD:Inorganics, Method Bligh & Dyer

Conc. units	s: <u> </u>			<u> </u>	Asso	ociated San	nples: <u>al</u> l	<u>(&gt;5x)</u>	 	 	
Analyte	Blank ID	Blank ID	Blank							 	
	РВ	ICB/CCB (mg/L)	Action Limit	No Qual.							
% Lipids	0.0700		0.3500								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

# Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** 

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 22, 2016

Parameters:

Polychlorinated Dioxins/Dibenzofurans

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): ATS0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-SMA2-2-MUS-COC-160104	ATS0A	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	ATS0B	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	ATS0C	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	ATS0D	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	ATS0E	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160105	ATS0F	Tissue	01/05/16

### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

### II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

### III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were within the QC limits for unlabeled compounds and labeled compounds with the following exceptions:

Date	Compound	Concentration (Limits)	Associated Samples	Affected Compound	Flag	A or P
10/15/15	1,2,3,4,7,8-HxCDF	56.905 pg (45-56)	PG-GP-1-MUS-COC-160104	1,2,3,4,7,8-HxCDF Total HxCDF	J (all detects)	Р
10/15/15	1,2,3,4,7,8-HxCDF	56.905 pg (45-56)	PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160105	1,2,3,4,7,8-HxCDF Total HxCDF	NA	-

# IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method and validation criteria.

# V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
MB-012516	01/25/16	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HxCDD Total HpCDD Total HpCDD Total HpCDF	0.0500 pg/g 0.142 pg/g 0.374 pg/g 0.541 pg/g 6.16 pg/g 0.0378 pg/g 0.124 pg/g 0.743 pg/g 0.7500 pg/g 0.286 pg/g	All samples in SDG ATS0

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration	
PG-SMA2-2-MUS-COC-160104	1,2,3,7,8-PeCDF	0.0460 pg/g	0.0460U pg/g	
	1,2,3,4,6,7,8-HpCDF	0.127 pg/g	0.127U pg/g	
	1,2,3,4,6,7,8-HpCDD	1.01 pg/g	1.01U pg/g	
	OCDF	0.376 pg/g	0.376U pg/g	
	OCDD	13.6 pg/g	13.6U pg/g	
	Total HxCDD	0.494 pg/g	0.494J pg/g	
	Total HpCDF	0.296 pg/g	0.296J pg/g	
PG-PJ-1-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF	0.175 pg/g	0.175U pg/g	
	1,2,3,4,6,7,8-HpCDD	1.36 pg/g	1.36U pg/g	
	OCDF	0.437 pg/g	0.437U pg/g	
	OCDD	14.0 pg/g	14.0U pg/g	
	Total PeCDD	0.173 pg/g	0.173J pg/g	
	Total HpCDF	0.496 pg/g	0.496J pg/g	
PG-WS-1-MUS-COC-160104	1,2,3,7,8-PeCDF	0.0612 pg/g	0.0612U pg/g	
	1,2,3,4,6,7,8-HpCDF	0.173 pg/g	0.173U pg/g	
	1,2,3,4,6,7,8-HpCDD	1.20 pg/g	1.20U pg/g	
	OCDF	0.443 pg/g	0.443U pg/g	
	OCDD	16.1 pg/g	16.1U pg/g	
	Total HpCDF	0.393 pg/g	0.393J pg/g	

Sample	ample Compound		Modified Final Concentration	
PG-GP-1-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF	0.127 pg/g	0.127U pg/g	
	1,2,3,4,6,7,8-HpCDD	0.821 pg/g	0.821U pg/g	
	OCDF	0.320 pg/g	0.320U pg/g	
	OCDD	9.47 pg/g	9.47U pg/g	
	Total PeCDD	0.133 pg/g	0.133J pg/g	
	Total PeCDF	0.215 pg/g	0.215J pg/g	
	Total HpCDF	0.306 pg/g	0.306J pg/g	
PG-SMA2-5-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF	0.252 pg/g	0.252U pg/g	
	1,2,3,4,6,7,8-HpCDD	1.61 pg/g	1.61U pg/g	
	OCDF	0.768 pg/g	0.768U pg/g	
	OCDD	19.6 pg/g	19.6U pg/g	
	Total HpCDF	0.663 pg/g	0.663J pg/g	
PG-SMA2-4-MUS-COC-160105	1,2,3,7,8-PeCDF	0.0449 pg/g	0.0449U pg/g	
	1,2,3,4,6,7,8-HpCDF	0.152 pg/g	0.152U pg/g	
	1,2,3,4,6,7,8-HpCDD	0.866 pg/g	0.866U pg/g	
	OCDF	0.313 pg/g	0.313U pg/g	
	OCDD	11.0 pg/g	11.0U pg/g	
	Total PeCDD	0.0667 pg/g	0.0667J pg/g	
	Total HpCDF	0.373 pg/g	0.373J pg/g	

### VI. Field Blanks

No field blanks were identified in this SDG.

### VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **VIII. Ongoing Precision Recovery**

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### IX. Field Duplicates

No field duplicates were identified in this SDG.

### X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

### XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG ATS0	All compounds reported as estimated maximum possible concentration (EMPC)	J (all detects)	А

Raw data were not reviewed for Stage 2B validation.

### XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

### XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

### XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to ICV concentration and results reported by the laboratory as EMPCs, data were qualified as estimated in six samples.

Due to laboratory blank contamination, data were qualified as not detected or estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Polychlorinated Dioxins/Dibenzofurans - Data Qualification Summary - SDG ATS0

Sample	Compound	Flag	A or P	Reason
PG-GP-1-MUS-COC-160104	1,2,3,4,7,8-HxCDF Total HxCDF	J (all detects)	Р	Initial calibration verification (concentration)
PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-GP-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160105	All compounds reported as estimated maximum possible concentration (EMPC)	J (all detects)	А	Compound quantitation (EMPC)

# Port Gamble, Shellfish Monitoring Polychlorinated Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG ATS0

Sample	Compound	Modified Final Concentration	_ A or P
PG-SMA2-2-MUS-COC-160104	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total HxCDD Total HpCDF	0.0460U pg/g 0.127U pg/g 1.01U pg/g 0.376U pg/g 13.6U pg/g 0.494J pg/g 0.296J pg/g	А
PG-PJ-1-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HpCDF	0.175U pg/g 1.36U pg/g 0.437U pg/g 14.0U pg/g 0.173J pg/g 0.496J pg/g	Α
PG-WS-1-MUS-COC-160104	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total HpCDF	0.0612U pg/g 0.173U pg/g 1.20U pg/g 0.443U pg/g 16.1U pg/g 0.393J pg/g	Α
PG-GP-1-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total PeCDF Total HpCDF	0.127U pg/g 0.821U pg/g 0.320U pg/g 9.47U pg/g 0.133J pg/g 0.215J pg/g 0.306J pg/g	А
PG-SMA2-5-MUS-COC-160104	1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total HpCDF	0.252U pg/g 1.61U pg/g 0.768U pg/g 19.6U pg/g 0.663J pg/g	A

Sample	Compound	Modified Final Concentration	A or P
PG-SMA2-4-MUS-COC-160105	1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDD OCDF OCDD Total PeCDD Total HpCDF	0.0449U pg/g 0.152U pg/g 0.866U pg/g 0.313U pg/g 11.0U pg/g 0.0667J pg/g 0.373J pg/g	А

	: 35845B21	VALIDATIO			ESS WORKSHE	ET	Date: 2-20/) Page: lof l Reviewer: 4h
	t: <u>ATS0</u> atory: <u>Analytical Resou</u>	rces Inc	Stage 4 7 S			Page:lof_/_	
						2nd	Reviewer: 02
METH	OD: HRGC/HRMS Poly	chlorinated Diox	kins/Dibenz	ofurans (E	EPA Method 1613B)		
Γhe sa	amples listed below were	e reviewed for e	ach of the f	ollowing v	alidation areas. Vali	dation findings are	noted in attached
/alidat	ion findings worksheets.	•		_			
	Validation	Area			Co	omments	
l.	Sample receipt/Technical ho		AIA		<u> </u>	milens .	
IJ.	HRGC/HRMS Instrument pe		A				
III.	Initial calibration/ICV		AISW	42	0/35 1	CV QC IM	u <del>i</del> s
IV.	Continuing calibration		A	(2)	Climuts		
V.	Laboratory Blanks		SW				
VI.	Field blanks		N				
VII.	Matrix spike/Matrix spike du	plicatos	1 2	C-S·			
VIII.		plicates	Ä	OPR			
IX.	Laboratory control samples	··· ·· · · · · · · · · · · · · · · · ·		012			
X.	Field duplicates		<del>  A</del>				
XI.	Internal standards		5.4				
	Compound quantitation RL/b		SW	10	1 .01\0.10	Orc Silano	
XII.	Target compound identificat	ion	N	Not reviewed for Stage 2B			
XIII.	System performance		N			,	
XIV.	Overall assessment of data		I A				
ote:	A = Acceptable N = Not provided/applicable SW = See worksheet	R = Ri	No compounds nsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment	OTHER:	rce blank
			Telu blank		EB - Equipment	DIATIK	
c	Client ID				Lab ID	Matrix	Date
P	PG-SMA2-2-MUS-COC-16010	)4			ATS0A	Tissue	01/04/16
P	PG-PJ-1-MUS-COC-160104				ATS0B	Tissue	01/04/16
	PG-WS-1-MUS-COC-160104				ATS0C	Tissue	01/04/16
	PG-GP-1-MUS-COC-160104				ATS0D	Tissue	01/04/16
	PG-SMA2-5-MUS-COC-16010	· · · · · · · · · · · · · · · · · · ·			ATS0E	Tissue	01/04/16
	PG-SMA2-4-MUS-COC-16010				ATS0F	Tissue	01/24/16
			-	, ,,, -			
otes:							
۲	1B-012516						
$\top$							

# **VALIDATION FINDINGS WORKSHEET**

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:						
•	 				 	

LDC#: 35845B21

# **VALIDATION FINDINGS WORKSHEET Initial Calibration Verification**

Page:	of
Reviewer:	Or_
2nd Reviewer:	_a_

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Were results within the QC limits for the method?

#	Date Date	Standard ID	Compound	Finding (Limit: pg )	Associated Samples	Qualifications
	10/15/15	15101510	К	56.905 (45-56)	all	Jdets/P (+X) (4 = det)
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		.,				

LDC #: 35845B21

### **VALIDATION FINDINGS WORKSHEET** Blanks

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N N/A N N/A Were all samples associated with a method blank?

Was a method blank performed for each matrix and whenever a sample extraction was performed?

(Y)N N/A Was the method blank contaminated?

Blank extraction date: 01/25/16 Blank analysis date: 01/29/16

Associated samples: Conc. units: pg/g

Compound	Blank ID		Sample Identification							
	MB-012516	5x	1	2	3	4	5	6		
-	0.0500*	0.250	0.0460* /U		0.0612 /U			0.0449 /U		
0	0.142*	0.710	0.127 /U	0.175 /U	0.173 /U	0.127 /U	0.252 /U	0.152* /U		
F	0.374	1.87	1.01 /U	1.36 /U	1.20 /U	0.821 /U	1.61 /U	0.866 /U		
Q	0.541	2.71	0.376 /U	0.437 /U	0.443 /U	0.320 /U	0.768 /U	0.313* /U		
G	6.16	30.8	13.6 /U	14.0 /U	16.1 /U	9.47 /U	19.6 /U	11.0 /U		
s	0.0378*	0.189		0.173* /J		0.133* /J		0.0667*/J		
Т	0.124*	0.620	0.494*/J							
U	0.743	3.72								
w	0.0500*	0.250				0.215* /J				
Υ	0.286*	1.43	0.296 /J	0.496 /J	0.393 /J	0.306 /J	0.663* /J	0.373*/J		
									<u> </u>	

\*EMPC

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 35845B2

# VALIDATION FINDINGS WORKSHEET <u>Compound Quantitation and Reported RLs</u>

Page:	1_of_1
Reviewer:	<u> </u>
2nd Reviewer:	_

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results	all	Jdets/A
		-			
		-			
					360

Comments:	See sample calculation verification worksheet for recalculations		
•			

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

February 19, 2016

Parameters:

**Total Solids** 

Validation Level:

Stage 2B

Laboratory:

Analytical Resources, Inc.

Sample Delivery Group (SDG): AVB4/AVB5

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
13EB_ME-MTW01Z	AVB4A	Tissue	01/07/13
13CPS_DB-MTW01Z	AVB4B	Tissue	01/10/13
13NPS_CIAR2-MTW01Z	AVB4C	Tissue	01/14/13
PG-T0-MUS-COC-151030	AVB5A	Tissue	10/30/15
PG-SMA2-2-MUS-COC-160104	AVB5B	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	AVB5C	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	AVB5D	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	AVB5E	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	AVB5F	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160105	AVB5G	Tissue	01/05/16
PG-GP-1-MUS-COC-160104DUP	AVB5EDUP	Tissue	01/04/16

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Total Solids by Standard Method 2540G

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

#### II. Initial Calibration

All criteria for the initial calibration were met.

#### III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

#### IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

#### V. Field Blanks

No field blanks were identified in this SDG.

# VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

#### VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

#### VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) analyses were not required by the method.

#### IX. Field Duplicates

No field duplicates were identified in this SDG.

#### X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

#### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Total Solids - Data Qualification Summary - SDG AVB4/AVB5

No Sample Data Qualified in this SDG

Port Gamble, Shellfish Monitoring Total Solids - Laboratory Blank Data Qualification Summary - SDG AVB4/AVB5

No Sample Data Qualified in this SDG

LDC #:_	35845C6	VALIDATION COMPLETENESS WORKSHEET
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SDG #: AVB4/AVB5 Laboratory: Analytical Resources, Inc. Stage 2B

Reviewer: M 2nd Reviewer:

METHOD: (Analyte) Total Solids (SM2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
- 11	Initial calibration	Α	
III.	Calibration verification	Α	
IV	Laboratory Blanks	N	not required
٧	Field blanks	7	
VI.	Matrix Spike/Matrix Spike Duplicates	2	not required
VII.	Duplicate sample analysis	Α	DUP
VIII.	Laboratory control samples	7	not required
IX.	Field duplicates	7	U
X.	Sample result verification	N	
XL	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Client ID Lab ID Matrix Date Tissue 13EB\_ME-MTW01Z AVB4A 01/07/13 2 13CPS\_DB-MTW01Z AVB4B Tissue 01/10/13 3 13NPS\_CIAR2-MTW01Z AVB4C Tissue 01/14/13 PG-T0-MUS-COC-151030 AVB5A Tissue 10/30/15 5 PG-SMA2-2-MUS-COC-160104 AVB5B Tissue 01/04/16 6 PG-PJ-1-MUS-COC-160104 AVB5C Tissue 01/04/16 7 AVB5D 01/04/16 PG-WS-1-MUS-COC-160104 Tissue 8 01/04/16 PG-GP-1-MUS-COC-160104 AVB5E Tissue 9 PG-SMA2-5-MUS-COC-160104 AVB5F Tissue 01/04/16 10 AVB5G 01/04/16 PG-SMA2-4-MUS-COC-160105 Tissue 11 PG-GP-1-MUS-COC-160104DUP **AVB5EDUP** Tissue 01/04/16 12 13 14

Notes:

9MAJ

LDC #: 35845

# EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date:	À	1. Ab	./ (
Page:_			
2 <sup>nd</sup> Reviewer:		D	

The LDC job number listed above was entered by

	EDD Process	Y/N	Init	Comments/Action
l.	EDD Completeness	_		
la.	- All methods present?	/	<b>D</b>	
lb.	- All samples present/match report?	1		
lc.	- All reported analytes present?	1	(1)	
ld	-10% verification of EDD?	V CONTRACTOR CONTRACTOR		
144 (4)				
II.	EDD Preparation/Entry			
lla.	- QC Level applied? (EPA&tage2B or EPAStage4)	<b>V</b>	0	
llb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	1	<b>(</b>	
	The second secon		7410 B	
111.	Reasonableness Checks			
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	/	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	/	(V)	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	/	<b>(4)</b>	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	/	R	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	אר	<b>3</b>	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓		·
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	797	(p	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?		Ø	

Notes:	*see readme	 	 		 
				_	

The attached zipped file contains two files:

<u>File</u> 1) Readme_projectname_date.doc	Format MS Word 2003	<u>Description</u> A "Readme" file (this o	document).
2) LDC35845_APR4,ATS0,AVB4,AVB	MS Excel 2007 5_VEDD_20160214.xlsx	A spreadsheet for the fo APR4 ATS0 AVB4/AVB5	llowing SDG(s): 35845A 35845B 35845C

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



# LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 ATTN: Ms. Cindy Fields

March 24, 2016

SUBJECT: Port Gamble, Shellfish Monitoring, Data Validation

Dear Ms. Fields,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on February 29, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

#### LDC Project #35972:

SDG # Fraction

B612062, B612077 Polychlorinated Biphenyls as Congeners

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project, May 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review, September 2011

Please feel free to contact us if you have any questions.

Christina Rink

Sincerely.

Project Manager/Chemist

1685 Pages SF Attachment 1 LDC #35972 (Anchor Environmental-Seattle WA / Port Gamble, Shellfish Monitoring) Stage 2B EDD PCB (3) DATE DATE Cong. (1668A) SDG# REC'D LDC DUE w l T Matrix: Water/Soil/Tissue 02/29/16 B612062 03/21/16 0 0 1 В 02/29/16 03/21/16 B612077 0 0 0 0 0 0 0 0 0 0 0 Γotal A/CR

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Port Gamble, Shellfish Monitoring

LDC Report Date: March 24, 2016

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Stage 2B

**Laboratory:** Maxxam

Sample Delivery Group (SDG): B612062

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PG-SMA2-2-MUS-COC-160104	BRP508	Tissue	01/04/16
PG-PJ-1-MUS-COC-160104	BRP509	Tissue	01/04/16
PG-WS-1-MUS-COC-160104	BRP510	Tissue	01/04/16
PG-GP-1-MUS-COC-160104	BRP511	Tissue	01/04/16
PG-SMA2-5-MUS-COC-160104	BRP512	Tissue	01/04/16
PG-SMA2-4-MUS-COC-160104	BRP513	Tissue	01/04/16
PG-WS-1-MUS-COC-160104DUP	BRP510DUP	Tissue	01/04/16

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) Method 1668A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

#### II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

#### III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and labeled compounds.

The ion abundance ratios for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for unlabeled and labeled compounds.

#### IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all compounds were within validation criteria.

#### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
4386412-MB	02/11/16	PCB-11 PCB-20/28 PCB-21/33 PCB-22 PCB-26/29 PCB-31 PCB-37 PCB-49/69 PCB-52 PCB-66 PCB-83/99 PCB-85/116/117 PCB-86/87/97/109/119/125 PCB-90/101/113 PCB-105 PCB-107 PCB-110/115 PCB-118 PCB-129/138/163 PCB-146 PCB-147/149 PCB-156/157 PCB-180/193 PCB-187 PCB-209	0.0092 ng/g 0.00436 ng/g 0.00231 ng/g 0.00231 ng/g 0.00161 ng/g 0.00069 ng/g 0.00340 ng/g 0.00143 ng/g 0.0016 ng/g 0.0020 ng/g 0.00519 ng/g 0.00281 ng/g 0.0048 ng/g 0.00113 ng/g 0.00586 ng/g 0.00227 ng/g 0.00227 ng/g 0.00365 ng/g 0.00125 ng/g 0.00125 ng/g 0.00125 ng/g 0.00125 ng/g 0.00125 ng/g 0.00125 ng/g 0.00365 ng/g 0.00581 ng/g	All samples in SDG B612062

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
PG-SMA2-2-MUS-COC-160104	PCB-11	0.0069 ng/g	0.0069U ng/g
PG-PJ-1-MUS-COC-160104	PCB-11	0.0070 ng/g	0.0070U ng/g
PG-WS-1-MUS-COC-160104	PCB-11	0.0099 ng/g	0.0099U ng/g
PG-GP-1-MUS-COC-160104	PCB-11	0.0069 ng/g	0.0069U ng/g
PG-SMA2-5-MUS-COC-160104	PCB-11	0.0078 ng/g	0.0078U ng/g
PG-SMA2-4-MUS-COC-160104	PCB-11	0.00785 ng/g	0.00785U ng/g

#### VI. Field Blanks

No field blanks were identified in this SDG.

#### VII. Matrix Spike/Matrix Spike Duplicates/Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

#### **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
4386412-BS/BSD (All samples in SDG B612062)	PCB-209	154 (50-150)	153 (50-150)	NA	-

Relative percent differences (RPD) were within QC limits.

#### IX. Field Duplicates

No field duplicates were identified in this SDG.

#### X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

#### XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG B612062	Results were flagged (1) by the laboratory to indicate results reported as estimated maximum possible concentration (EMPC)	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

#### XII. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

#### XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

#### XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported by the laboratory as EMPC, data were qualified as estimated in six samples.

Due to laboratory blank contamination, data were qualified as not detected in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

# Port Gamble, Shellfish Monitoring Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG B612062

Sample	Compound	Flag	A or P	Reason
PG-SMA2-2-MUS-COC-160104 PG-PJ-1-MUS-COC-160104 PG-WS-1-MUS-COC-160104 PG-GP-1-MUS-COC-160104 PG-SMA2-5-MUS-COC-160104 PG-SMA2-4-MUS-COC-160104	Results were flagged (1) by the laboratory to indicate results reported as estimated maximum possible concentration (EMPC)	J (all detects)	A	Compound quantitation (EMPC)

# Port Gamble, Shellfish Monitoring Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG B612062

Sample	Compound	Modified Final Concentration	A or P
PG-SMA2-2-MUS-COC-160104	PCB-11	0.0069U ng/g	Α
PG-PJ-1-MUS-COC-160104	PCB-11	0.0070U ng/g	Α
PG-WS-1-MUS-COC-160104	PCB-11	0.0099U ng/g	Α
PG-GP-1-MUS-COC-160104	PCB-11	0.0069U ng/g	Α
PG-SMA2-5-MUS-COC-160104	PCB-11	0.0078U ng/g	Α
PG-SMA2-4-MUS-COC-160104	PCB-11	0.00785U ng/g	Α

SDG # .abora	: 35972A31 t: B612062 atory: Maxxam	- -	S	stage 2B	S WORKSHEET	2nd	Date: <u>3-                                   </u>
he sa	OD: HRGC/HRMS Poly amples listed below were ion findings worksheets	e reviewed for ea	, -	•	·	n findings are	noted in attached
	Validation	Area			Comm	ents	
1.	Sample receipt/Technical h	olding times	AIA				
11.	HRGC/HRMS Instrument po	erformance check	A				
111.	Initial calibration/ICV		AIA	420	1CV5	30	
IV.	Continuing calibration		A A	4	30150		
V.	Laboratory Blanks		SW				
VI.	Field blanks		$  \mathcal{N}  $				
VII.	Matrix spike/Matrix spike du	plicates AAP	NA	C.S. /D	103+7		
VIII.	Laboratory control samples	1 32 2 1	5W	LCS/D	·		
iX.	Field duplicates		N				
Χ.	Internal standards		A				
XI.	Compound quantitation RL/	L <del>OQ/LOD</del> s.	SW				
XII.	Target compound identificat	tion	N				
XIII.	System performance		N				
XIV.	Overall assessment of data		A				
ote:	A = Acceptable N = Not provided/applicable SW = See worksheet	R = Rir	lo compounds sate ield blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blant	OTHER	urce blank :
0	Client ID				Lab ID	Matrix	Date
1 F	PG-SMA2-2-MUS-COC-16010	)4			BRP508	Tissue	01/04/16
	PG-PJ-1-MUS-COC-160104				BRP509	Tissue	01/04/16
	PG-WS-1-MUS-COC-160104				BRP510	Tissue	01/04/16
	PG-GP-1-MUS-COC-160104				BRP511	Tissue	01/04/16
	O CNAAO E NUIO OOO 4004				PDD540		

	Client ID	Lab ID	Matrix	Date
1	PG-SMA2-2-MUS-COC-160104	BRP508	Tissue	01/04/16
2	PG-PJ-1-MUS-COC-160104	BRP509	Tissue	01/04/16
3	PG-WS-1-MUS-COC-160104	BRP510	Tissue	01/04/16
4	PG-GP-1-MUS-COC-160104	BRP511	Tissue	01/04/16
5	PG-SMA2-5-MUS-COC-160104	BRP512	Tissue	01/04/16
6	PG-SMA2-4-MUS-COC-160104	BRP513	Tissue	01/04/16
7	PG-WS-1-MUS-COC-160104DUP	BRP510DUP	Tissue	01/04/16
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# **VALIDATION FINDINGS WORKSHEET Blanks**

Page:_	_of_2
Reviewer:	om
2nd Reviewer:_	0

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Plea	se see qualifications b	elow for all questions ansv	vered "N". Not applicable o	questions are identified as "N/A".
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Were all samples associated with a method blank?

N N/A

Was a method blank performed for each matrix and whenever a sample extraction was performed?

N N/A

Was the method blank contaminated?

A IA IAVA ANSO THE THEFT	ou blank contain	ili lateu !				
Blank extraction date:	02/11/16	Blank analysis date:_	02/18/16	Associated samples:	ali	_ Shall
Conc. units: ng/g						

Compound	Blan	k ID	Sample Identification							
	4386412-MB	5x	1	2	3	4	5	6		
PCB-11	0.0092	0.0460	0.0069	0.0070	0.0099	0.0069	0.0078	0.00785		
PCB-20/28	0.00436	0.0218								
PCB-21/33	0.00231	0.0116						:		
PCB-22	0.00161	0.00805								
PCB-26/29	0.00069	0.00345								
PCB-31	0.00340	0.0170								
PCB-37	0.00143	0.00715								
PCB-49/69	0.0016	0.00800								
PCB-52	0.0020	0.0100								
PCB-61/70/74/76	0.00519	0.0260								
PCB-66	0.00281	0.0141								
PCB-83/99	0.0048	0.0240								
PCB-85/116/117	0.00113	0.00565								
PCB-86/87/97/109/119/125	0.00196	0.00980								
PCB-90/101/113	0.00586	0.0293								
PCB-105	0.00227	0.0114								
PCB-107	0.00098	0.00490								
PCB-110/115	0.00336	0.0168								
PCB-118	0.00707	0.0354								
PCB-129/138/163	0.0113	0.0565								

# VALIDATION FINDINGS WORKSHEET Blanks

Page: 2 of 2	
Reviewer:	
2nd Reviewer: 01	_

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blan	k ID	Sample Identification							
	4386412-MB	5x	1	2	3	4	5	6		
PCB-146	0.0031	0.0155								
PCB-147/149	0.0026	0.0130								
PCB-156/157	0.00125	0.00625								
PCB-180/193	0.00365	0.0183								
PCB-187	0.0041	0.0205								
PCB-209	0.0581	0.2905								
					}					
EMPC										

\*EMPC

LDC #: 35972A3)

# VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: of / Reviewer: 2nd Reviewer: 2

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

**N N/A** Was a LCS required?

Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

Y(N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	Lab ID/Reference	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4386412BSBSD	PCB-209	154 (50450)	153 (50-150)	( )	all	Jobets D (ND)
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LDC#: 35972A3

# VALIDATION FINDINGS WORKSHEET Compound Quantitation and Reported CRQLs

Page: _	<u>1_of_1_</u>
Reviewer.	<u>₹</u>
2nd Reviewer:	-CC
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METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Υ	N	NUR
Y	N	MA

Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
		MATERIAL MATERIAL AND A STREET A	EMPC results results flagged (1) by the laboratory (reported concentration at an elevated EDL)	All	Jdets/A
<u> </u>					

Comments:		 	

# Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port Gamble, Shellfish Monitoring

**LDC Report Date:** 

March 23, 2016

Parameters:

Polychlorinated Biphenyls as Congeners

Validation Level:

Stage 2B

Laboratory:

Maxxam

Sample Delivery Group (SDG): B612077

	Laboratory Sample		Collection
Sample Identification	Identification	Matrix	Date
PG-T0-MUS-COC-151030	BRP572	Tissue	10/30/15

#### Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Shellfish Monitoring Plan for Port Gamble Bay Cleanup Project (May 2015) and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (September 2011). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) as Congeners by Environmental Protection Agency (EPA) Method 1668A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to nonconformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

#### I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

#### II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

#### III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and labeled compounds.

The ion abundance ratios for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for unlabeled and labeled compounds.

#### IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all compounds were within validation criteria.

#### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Extraction Date	Compound	Concentration	Associated Samples
4386412-MB	02/11/16	PCB-11 PCB-20/28 PCB-21/33 PCB-22 PCB-26/29 PCB-31 PCB-37 PCB-49/69 PCB-52 PCB-67/70/74/76 PCB-66/95 PCB-83/99 PCB-83/99 PCB-85/116/117 PCB-86/87/97/109/119/125 PCB-90/101/103 PCB-105 PCB-107 PCB-110/115 PCB-118 PCB-129/138/163 PCB-146 PCB-147/149 PCB-156/157 PCB-180/193 PCB-187 PCB-209	0.0092 ng/g 0.00436 ng/g 0.00231 ng/g 0.00161 ng/g 0.00069 ng/g 0.00340 ng/g 0.00143 ng/g 0.00161 ng/g 0.0020 ng/g 0.0021 ng/g 0.00281 ng/g 0.00281 ng/g 0.00196 ng/g 0.00196 ng/g 0.00196 ng/g 0.00586 ng/g 0.00227 ng/g 0.00336 ng/g 0.00707 ng/g 0.0013 ng/g 0.0013 ng/g 0.0011 ng/g 0.00125 ng/g 0.00125 ng/g 0.00365 ng/g 0.0041 ng/g 0.00581 ng/g	All samples in SDG B612077

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
PG-T0-MUS-COC-151030	PCB-11	0.00912 ng/g	0.00912U ng/g
	PCB-66/95	0.0124 ng/g	0.0124U ng/g
	PCB-105	0.0100 ng/g	0.0100U ng/g
	PCB-107	0.00307 ng/g	0.00307U ng/g
	PCB-118	0.0304 ng/g	0.0304U ng/g
	PCB-146	0.0132 ng/g	0.0132U ng/g
	PCB-156/157	0.00290 ng/g	0.00290U ng/g
	PCB-180/193	0.0091 ng/g	0.0091U ng/g
	PCB-187	0.0187 ng/g	0.0187U ng/g

#### VI. Field Blanks

No field blanks were identified in this SDG.

#### VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

#### VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
4386412-LCS/D (All samples in SDG B612077)	PCB-209	154 (50-150)	153 (50-150)	NA	-

Relative percent differences (RPD) were within QC limits.

#### IX. Field Duplicates

No field duplicates were identified in this SDG.

#### X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

#### XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG B612077	Results were flagged (1) by the laboratory to indicate results reported as estimated maximum possible concentration (EMPC)	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

#### XII. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

#### XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

#### XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results reported by the laboratory as EMPC, data were qualified as estimated in one sample.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

### Port Gamble, Shellfish Monitoring Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG B612077

Sample	Compound	Flag	A or P	Reason
All samples in SDG B612077	Results were flagged (1) by the laboratory to indicate results reported as estimated maximum possible concentration (EMPC)	J (all detects)	A	Compound quantitation (EMPC)

# Port Gamble, Shellfish Monitoring Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG B612077

Sample	Compound	Modified Final Concentration	A or P
PG-T0-MUS-COC-151030	PCB-11 PCB-66/95 PCB-105 PCB-107 PCB-118 PCB-146 PCB-156/157 PCB-180/193 PCB-187	0.00912U ng/g 0.0124U ng/g 0.0100U ng/g 0.00307U ng/g 0.0304U ng/g 0.0132U ng/g 0.00290U ng/g 0.0091U ng/g 0.0187U ng/g	Α

SDG # _abora	t: 35972B31 VALIDATI t: B612077 atory: Maxxam  IOD: HRGC/HRMS Polychlorinated Bip	S	tage 2B	S WORKSHEET ethod 1668A)		Date: <u>3-8-7</u> Page: <u>1</u> of <u>7</u> Reviewer: <u>1</u> Reviewer: <u>1</u>
	amples listed below were reviewed for tion findings worksheets.	each of the fo	ollowing valida	ation areas. Validation	on findings are	noted in attached
	Validation Area			Comm	nents	
I.	Sample receipt/Technical holding times	AIA				
II.	HRGC/HRMS Instrument performance check	A				
111.	Initial calibration/ICV	AIA	≥ 20	1C V	<i>430</i>	
IV.	Continuing calibration	A	±30,	50		
V.	Laboratory Blanks	<u>SW</u>				
VI.	Field blanks	N				
VII.	Matrix spike/Matrix spike duplicates	N	C.S.			
VIII.	Laboratory control samples	SW	LCS/D			
IX.	Field duplicates	N				
Χ.	Internal standards	A				
XI.	Compound quantitation RL/LOQ/LODs ~	SW	NO EMP	C (reported	as ND)	JW- 3-23-14
XII.	Target compound identification	N				
XIII.	System performance	N				
XIV.	Overall assessment of data	A				
lote:	N = Not provided/applicable R =	= No compounds Rinsate = Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blar	OTHER	urce blank ::
	Client ID			Lab ID	Matrix	Date
1 !	PG-T <b>Ø-</b> MUS-COC-151Ø3 <b>Ø</b>			BRP572	Tissue	10/30/15
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Notes:			T		T	2
_	4386412-MB					
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# **VALIDATION FINDINGS WORKSHEET Blanks**

Page: <u>   /</u> of <u> </u> 2	
Reviewer:	
2nd Reviewer: 04	

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Pl <u>e</u> ase see qualifications below for all questions answered "N". Not applicable questions are identified as "N	3 "IN/A".
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Were all samples associated with a method blank?

N N/A

Was a method blank performed for each matrix and whenever a sample extraction was performed?

YN N/A

Was the method blank contaminated?

Blank extraction date:	02/11/16	Blank analysis date:_	02/18/16	Associated samples:	all	Qual U
Conc. units: ng/g						-

Compound	Blan	k ID		Sample Identification						
	4386412-MB	5x	1							
PCB-11	0.0092	0.0460	0.00912							
PCB-20/28	0.00436	0.0218								
PCB-21/33	0.00231	0.0116								
PCB-22	0.00161	0.00805								
PCB-26/29	0.00069	0.00345								
PCB-31	0.00340	0.0170								
PCB-37	0.00143	0.00715						****		
PCB-49/69	0.0016	0.00800								
PCB-52	0.0020	0.0100								
PCB-61/70/74/76	0.00519	0.0260								
PCB-66/95	0.00281	0.0141	0.0124							
PCB-83/99	0.0048	0.0240								
PCB-85/116/117	0.00113	0.00565								
PCB-86/87/97/109/119/125	0.00196	0.00980								
PCB-90/101/113	0.00586	0.0293								
PCB-105	0.00227	0.0114	0.0100							
PCB-107	0.00098	0.00490	0.00307							
PCB-110/115	0.00336	0.0168								
PCB-118	0.00707	0.0354	0.0304							
PCB-129/138/163	0.0113	0.0565								

# VALIDATION FINDINGS WORKSHEET Blanks

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2nd Reviewer: \_\_\_\_\_

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blan	k ID			San	nple Identifica	ation		
	4386412-MB	5x	1						
PCB-146	0.0031	0.0155	0.0132						
PCB-147/149	0.0026	0.0130		 				 	
PCB-156/157	0.00125	0.00625	0.00290						
PCB-180/193	0.00365	0.0183	0.0091						
PCB-187	0.0041	0.0205	0.0187						
PCB-209	0.0581	0.2905							
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									,

\*EMPC

# **VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)**

Page: <u> </u> of <u> </u>
Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

 $\bigcirc$ N N/A Was a LCS required?

Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed? N/A

Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	Lab ID/Reference	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4386412-LISA	PCB-209	154 (50-150)	153 (50-150)	( )	all	Idets P (ND)
		,		( )	( )	( )		
				()	( )	( )		
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# VALIDATION FINDINGS WORKSHEET <u>Compound Quantitation and Reported CRQLs</u>

Page: _	_1_of_1_
Reviewer:	<u> </u>
2nd Reviewer:	_CL

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Υ	N	(VA)
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Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	ound Finding Associated Samples		Qualifications
		:	EMPC results results flagged (1) by the laboratory (reported concentration at an elevated EDL)	All	Jdets/A
			(reported concentration at an elevated EDL)		

Comments:		 				
	 	 •			 	

LDC#: 75972

# **EDD POPULATION COMPLETENESS WORKSHEET**

Date: 3.24.10
Page: 1 of 1
2<sup>nd</sup> Reviewer: 2

Anchor

The LDC job number listed above was entered by \_

	EDD Process	Y/N	Init	Comments/Action
l.	EDD Completeness	_		
la.	- All methods present?		N)	
lb.	- All samples present/match report?		<b>Q</b>	
lc.	- All reported analytes present?	1		
ld	-10% verification of EDD?	•	N	
Π.	EDD Preparation/Entry	-		
lla.	- QC Level applied? (EPAStage2B or EPAStage4)	/		
llb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	/	لما	
III.	Reasonableness Checks	_		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	Na		
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	<b>\</b>	(V)	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	<b>\</b>	(4)	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	<b>V</b>	0	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	na	(3)	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	V	<b>(2)</b>	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	m (	W	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	1		
lotes.	*see readme			

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		•	
		***************************************	 

The attached zipped file contains two files:

<u>File</u> 1) Readme_Gamble_032416.doc	<u>Format</u> MS Word 2003	<u>Description</u> A "Readme" file (this	document).
	MS Excel 2007	A spreadsheet for the fo	ollowing SDG(s):
2) LDC35972_B612062,B612077_VED	DD_20160311.xlsx	B612062	35972A
		B612077	35972B

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.