Summary

Test Name:	Popcorn Emission Phase 1 Popcorn 5 (#10) Test (POP-Phase1P5)
Purpose:	Carbonyl compounds emissions from popcorn in the chamber
Reporter:	Xiaoyu Liu
Medium:	DNPH coated silica cartridge
Method:	HPLC
Instrument:	HP 1100 HPLC/DAD
Operator:	Ken Krebs (EPA)

Reporting Format:	**nnn**	Estimated value (bold)
	nnn	Estimated value above quantification limit (bold italics)
	~~**nnn**~~	Estimated value below quantification limit (bold strikethr
	nnn	Estimated value below detection limit (bold underlined)

Test Dates:	February 13, 2004
Analysis Dates:	February 13, 2004
Review Status:	Preliminary review by Xiaoyu Liu was completed on February 17, 2004

Final Review:

VERSION 1

PoP-Phase1P5-HPLC.xls

Popcorn Emission Phase 1 Popcorn 5 (#10) Test (POP-Phase1P5)

DNPH cartridge samples were collected and analyzed by Ken Krebs.
Extraction was performed by ARCADIS.

The EPA instrument was calibrated on 9/7/03.
DCC was made by ARCADIS on 1/15/04 by addition 100 uL of DNPH standard ERA-028 to 200 uL of CH3CN and analyzed before samples.

They were duplicate injections of each DNPH sample.

Pentanal co-elutes with cyclohexanone, MEK co-elutes with butanal in the IAP.
MEK co-elutes with butanal in the calibration standard.

Acetone and acetaldehyde may exist in the solvent or background.

HPLC Analysis of Carbonyls

Number	DataFile	Description	ID Number	Date	Operator
1	DCC011.D	DCC040115STD	DCC-1	2/13/2004	KK
2	DCC012.D	DCC040115STD	DCC-2	2/13/2004	KK
3	5000_1.D	Phase1P5	5000	2/13/2004	KK
4	5000_2.D	Phase1P5	5000	2/13/2004	KK

HPLC Calibration Conducted on September 7, 2003

Method: DNPH09087.M
Instrument: HP 1100 HPLC with DAD
Column: Zorbax ODS 4.6mmX25cm
Flow Rate: 1.0 mL/min
Mobile Phase and Gradient: 60% CH3CN, 40% H2O at 0 min , 70% CH3CN, 30% H2O at 10 min , 100% CH3CN at 25 min, 60% CH3CN, 40% H2O at 26 min, post run 60% CH3CN, 40% H2O for 15 min, total time 41 min.
Injection Volume: 5uL

ERA-028 standard solution purchased from Cerilliant was used as calibration stock solution.
ERA-028 is Aldehyde/Ketone-DNPH Stock Standard-13, 15 ug/mL (as Aldehyde/ketone) of each component in 1.2 mL Acetonitrile
Lot# 35166-14, Exp 04/06
Calibration standards were prepared on 9/3/03 by Julie Jones

Calibration Solution

		Vol of Stock (uL)	14	50	400	200	300
	Stock	uL CH3CN for dil'n	4986	450	800	100	0
	ERA-028	uL Total volume	5000	500	1200	300	300
Target	Conc (ug/mL)		030903STD-1	030903STD-2	030903STD-3	030903STD-4	030903STD-5
Formaldehyde	15		0.04	1.50	5.00	10.00	15.00
Acetaldehyde	15		0.04	1.50	5.00	10.00	15.00
Acrolein	15		0.04	1.50	5.00	10.00	15.00
Acetone	15		0.04	1.50	5.00	10.00	15.00
Propanal	15		0.04	1.50	5.00	10.00	15.00
Crotonaldehyde	15		0.04	1.50	5.00	10.00	15.00
Methacrolein	15		0.04	1.50	5.00	10.00	15.00
MEK	15		0.04	1.50	5.00	10.00	15.00
Butanal	15		0.04	1.50	5.00	10.00	15.00
Benzaldehyde	15		0.04	1.50	5.00	10.00	15.00
Pentanal	15		0.04	1.50	5.00	10.00	15.00
m-Tolualdehyde	15		0.04	1.50	5.00	10.00	15.00
Hexanal	15		0.04	1.50	5.00	10.00	15.00
On Column (ng)			0.21	7.50	25.00	50.00	75.00

Cal STD Conc. (ug/mL) = Stock Conc (15ug/mL) *Vol of Stock (uL)/Total Volume (uL)
On Column (ng) = Cal STD Conc (ug/mL) *5 (uL/1000uL/mL) *1000(ng/ug)

Calibration Calculation

Response Factor (RF) = Comp's Amount (ng) / Area
Level 1: 0.21 ng Level 2: 7.5 ng Level 3: 25 ng Level 4: 50 ng Level 5: 75 ng

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Formaldehyde	5.049	0.21	7.97789	0.03					09070015.D
	5.047	0.21	7.75967	0.03					09070014.D
	5.047	0.21	7.55524	0.03	0.03	6.01E-04	2.2	5.048	09070013.D
	5.047	7.50	251.79167	0.03					09070012.D
	5.049	7.50	255.50746	0.03					09070011.D
	5.047	7.50	255.39061	0.03	0.03	2.01E-04	0.7	5.048	09070010.D
	5.046	25.00	839.62561	0.03					09070009.D
	5.045	25.00	848.91003	0.03					09070008.D
	5.047	25.00	844.38422	0.03	0.03	1.33E-04	0.4	5.046	09070007.D
	5.039	50.00	1679.89087	0.03					09070006.D
	5.035	50.00	1668.39136	0.03					09070005.D
	5.039	50.00	1694.95544	0.03	0.03	1.92E-04	0.6	5.038	09070004.D
	5.034	75.00	2602.12842	0.03					09070003.D
	5.023	75.00	2604.04077	0.03					09070002.D
	5.096	75.00	2732.71216	0.03	0.03	6.44E-04	2.3	5.051	09070001.D
Average	5.05			0.03					
STDS	0.02			0.00					
%RSD	0.31			3.97					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Acetaldehyde	6.206	0.21	6.28502	0.03					09070015.D
	6.204	0.21	5.87547	0.04					09070014.D
	6.203	0.21	5.94596	0.04	0.03	1.01E-03	2.9	6.204	09070013.D
	6.205	7.50	197.57599	0.04					09070012.D
	6.206	7.50	201.20203	0.04					09070011.D
	6.204	7.50	199.64633	0.04	0.04	2.80E-04	0.7	6.205	09070010.D
	6.205	25.00	650.54895	0.04					09070009.D
	6.202	25.00	659.17651	0.04					09070008.D
	6.206	25.00	654.05011	0.04	0.04	2.06E-04	0.5	6.204	09070007.D
	6.197	50.00	1319.03003	0.04					09070006.D
	6.190	50.00	1306.44580	0.04					09070005.D
	6.199	50.00	1329.71350	0.04	0.04	2.74E-04	0.7	6.195	09070004.D
	6.198	75.00	2031.00623	0.04					09070003.D
	6.173	75.00	2031.41479	0.04					09070002.D
	6.271	75.00	2089.92871	0.04	0.04	4.89E-04	1.3	6.214	09070001.D
Average	6.20			0.04					
STDS	0.02			0.00					
%RSD	0.33			3.75					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Acrolein	7.500	0.21	5.49176	0.04					09070015.D
	7.498	0.21	5.49055	0.04					09070014.D
	7.499	0.21	5.73061	0.04	0.04	7.53E-04	2.0	7.499	09070013.D
	7.499	7.50	178.33655	0.04					09070012.D
	7.500	7.50	180.81927	0.04					09070011.D
	7.498	7.50	180.65863	0.04	0.04	2.64E-04	0.6	7.499	09070010.D
	7.500	25.00	586.49329	0.04					09070009.D
	7.496	25.00	592.72504	0.04					09070008.D
	7.502	25.00	589.17554	0.04	0.04	1.84E-04	0.4	7.499	09070007.D
	7.492	50.00	1187.73682	0.04					09070006.D
	7.483	50.00	1177.89502	0.04					09070005.D
	7.495	50.00	1196.37561	0.04	0.04	2.68E-04	0.6	7.490	09070004.D
	7.494	75.00	1827.84924	0.04					09070003.D
	7.463	75.00	1827.82617	0.04					09070002.D
	7.585	75.00	2089.92871	0.04	0.04	2.43E-03	6.2	7.514	09070001.D
Average	7.50			0.04					
STDS	0.03			0.00					
%RSD	0.34			5.50					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Acetone	7.786	0.21	4.72861	0.04					09070015.D
	7.787	0.21	4.74903	0.04					09070014.D
	7.786	0.21	4.84811	0.04	0.04	4.77E-04	1.1	7.786	09070013.D
	7.787	7.50	148.70944	0.05					09070012.D
	7.787	7.50	150.88411	0.05					09070011.D
	7.784	7.50	150.74500	0.05	0.05	3.32E-04	0.7	7.786	09070010.D
	7.788	25.00	488.54514	0.05					09070009.D
	7.783	25.00	493.66254	0.05					09070008.D
	7.789	25.00	491.22321	0.05	0.05	2.17E-04	0.4	7.787	09070007.D
	7.780	50.00	992.31891	0.05					09070006.D

	7.770	50.00	982.09717	0.05					09070005.D
	7.782	50.00	997.62909	0.05	0.05	3.29E-04	0.7	7.777	09070004.D
	7.783	75.00	1530.25549	0.05					09070003.D
	7.749	75.00	1526.37915	0.05					09070002.D
	7.870	75.00	1569.99329	0.05	0.05	6.16E-04	1.3	7.801	09070001.D
Average	7.79			0.05					
STDS	0.02			0.00					
%RSD	0.32			5.42					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Propanal	8.259	0.21	4.61004	0.05					09070015.D
	8.257	0.21	4.89759	0.04					09070014.D
	8.257	0.21	4.95893	0.04	0.04	1.40E-03	3.2	8.258	09070013.D
	8.257	7.50	152.71645	0.05					09070012.D
	8.259	7.50	154.96631	0.05					09070011.D
	8.255	7.50	154.80316	0.05	0.05	3.25E-04	0.7	8.257	09070010.D
	8.259	25.00	502.57932	0.05					09070009.D
	8.254	25.00	508.57526	0.05					09070008.D
	8.262	25.00	506.97678	0.05	0.05	2.48E-04	0.5	8.258	09070007.D
	8.251	50.00	1021.58990	0.05					09070006.D
	8.242	50.00	1011.70453	0.05					09070005.D
	8.254	50.00	1196.37561	0.04	0.05	3.49E-03	7.5	8.249	09070004.D
	8.256	75.00	1570.54211	0.05					09070003.D
	8.219	75.00	1571.23157	0.05					09070002.D
	8.350	75.00	1569.99329	0.05	0.05	1.54E-05	0.0	8.275	09070001.D
Average	8.26			0.05					
STDS	0.03			0.00					
%RSD	0.33			5.78					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Crotonaldehyde	9.493	0.21	4.04719	0.05					09070015.D
	9.487	0.21	3.86943	0.05					09070014.D
	9.498	0.21	3.98515	0.05	0.05	9.90E-04	1.9	9.493	09070013.D
	9.494	7.50	131.93152	0.06					09070012.D
	9.493	7.50	133.94269	0.06					09070011.D
	9.489	7.50	134.04214	0.06	0.06	4.13E-04	0.7	9.492	09070010.D
	9.493	25.00	435.34616	0.06					09070009.D
	9.488	25.00	439.12335	0.06					09070008.D
	9.495	25.00	437.99899	0.06	0.06	2.07E-04	0.4	9.492	09070007.D
	9.485	50.00	882.96350	0.06					09070006.D
	9.478	50.00	875.55249	0.06					09070005.D
	9.494	50.00	888.42688	0.06	0.06	3.39E-04	0.6	9.486	09070004.D
	9.490	75.00	1361.99695	0.06					09070003.D
	9.453	75.00	1361.58630	0.06					09070002.D
	9.603	75.00	1387.49072	0.05	0.05	4.81E-04	0.9	9.515	09070001.D
Average	9.50			0.06					
STDS	0.03			0.00					
%RSD	0.33			3.04					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Methacrolein	10.025	0.21	4.49475	0.05					09070015.D
	10.021	0.21	4.36962	0.05					09070014.D
	10.027	0.21	4.54364	0.05	0.05	7.77E-04	1.7	10.024	09070013.D
	10.028	7.50	142.60132	0.05					09070012.D
	10.026	7.50	144.42937	0.05					09070011.D
	10.023	7.50	144.42761	0.05	0.05	3.14E-04	0.6	10.026	09070010.D
	10.028	25.00	470.08188	0.05					09070009.D
	10.022	25.00	473.67477	0.05					09070008.D
	10.029	25.00	471.94705	0.05	0.05	1.65E-04	0.3	10.026	09070007.D
	10.018	50.00	951.93103	0.05					09070006.D
	10.012	50.00	944.50574	0.05					09070005.D
	10.029	50.00	956.73602	0.05	0.05	2.78E-04	0.5	10.020	09070004.D
	10.023	75.00	1473.36597	0.05					09070003.D
	9.986	75.00	1464.10364	0.05					09070002.D
	10.140	75.00	1494.09070	0.05	0.05	4.29E-04	0.8	10.050	09070001.D
Average	10.03			0.05					
STDS	0.03			0.00					
%RSD	0.32			4.50					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
MEK	10.537	0.21	7.04571	0.03					09070015.D
Butaldehyde	10.536	0.21	7.42650	0.03					09070014.D
	10.542	0.21	7.60142	0.03	0.03	9.13E-04	3.2	10.538	09070013.D
	10.539	7.50	242.28218	0.03					09070012.D
	10.539	7.50	246.11275	0.03					09070011.D
	10.534	7.50	246.12773	0.03	0.03	2.28E-04	0.7	10.537	09070010.D
	10.539	25.00	799.04926	0.03					09070009.D
	10.535	25.00	808.57526	0.03					09070008.D
	10.540	25.00	805.08636	0.03	0.03	1.52E-04	0.5	10.538	09070007.D
	10.529	50.00	1620.22668	0.03					09070006.D
	10.523	50.00	1605.79004	0.03					09070005.D
	10.541	50.00	1632.06384	0.03	0.03	2.05E-04	0.7	10.531	09070004.D
	10.535	75.00	2501.31445	0.03					09070003.D
	10.496	75.00	2495.40991	0.03					09070002.D
	10.655	75.00	2553.17603	0.03	0.03	3.05E-04	1.0	10.562	09070001.D
Average	10.54			0.03					
STDS	0.03			0.00					
%RSD	0.32			3.53					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Benzaldehyde	11.220	0.21	2.53127	0.08					09070015.D
	11.216	0.21	2.60168	0.08					09070014.D
	11.223	0.21	2.65887	0.08	0.08	1.63E-03	2.0	11.220	09070013.D
	11.218	7.50	88.65429	0.08					09070012.D
	11.216	7.50	89.67730	0.08					09070011.D
	11.210	7.50	90.01000	0.08	0.08	5.43E-04	0.6	11.215	09070010.D
	11.218	25.00	293.28879	0.09					09070009.D
	11.214	25.00	294.51013	0.08					09070008.D
	11.218	25.00	293.26685	0.09	0.09	1.68E-04	0.2	11.217	09070007.D
	11.206	50.00	597.86780	0.08					09070006.D
	11.200	50.00	592.58099	0.08					09070005.D
	11.220	50.00	598.54565	0.08	0.08	3.76E-04	0.4	11.209	09070004.D
	11.216	75.00	912.56812	0.08					09070003.D
	11.173	75.00	919.47754	0.08					09070002.D
	11.351	75.00	927.70905	0.08	0.08	5.48E-04	0.7	11.247	09070001.D
Average	11.22			0.08					
STDS	0.04			0.00					
%RSD	0.34			2.23					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Valeraldehyde	13.378	0.21	3.41260	0.06					09070015.D
	13.375	0.21	3.54767	0.06					09070014.D
	13.387	0.21	3.41916	0.06	0.06	1.08E-03	1.8	13.380	09070013.D
	13.382	7.50	106.53976	0.07					09070012.D
	13.379	7.50	106.87196	0.07					09070011.D
	13.367	7.50	107.35541	0.07	0.07	2.20E-04	0.3	13.376	09070010.D
	13.382	25.00	347.23505	0.07					09070009.D

	13.377	25.00	352.09701	0.07					09070008.D
	13.392	25.00	352.55475	0.07	0.07	4.92E-04	0.7	13.384	09070007.D
	13.371	50.00	707.84674	0.07					09070006.D
	13.374	50.00	702.44617	0.07					09070005.D
	13.392	50.00	709.55127	0.07	0.07	3.04E-04	0.4	13.379	09070004.D
	13.381	75.00	1089.03809	0.07					09070003.D
	13.348	75.00	1092.74426	0.07					09070002.D
	13.500	75.00	1106.85999	0.07	0.07	4.77E-04	0.7	13.410	09070001.D
Average	13.39			0.07					
STDS	0.03			0.00					
%RSD	0.25			5.98					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
m-Tolualdehyde	13.972	0.21	2.27454	0.09					09070015.D
	13.957	0.21	2.58275	0.08					09070014.D
	13.973	0.21	2.37841	0.09	0.09	4.55E-03	5.2	13.967	09070013.D
	13.973	7.50	76.03828	0.10					09070012.D
	13.964	7.50	76.47545	0.10					09070011.D
	13.954	7.50	76.82059	0.10	0.10	4.11E-04	0.4	13.964	09070010.D
	13.968	25.00	248.24777	0.10					09070009.D
	13.967	25.00	253.17474	0.10					09070008.D
	13.982	25.00	250.71701	0.10	0.10	8.00E-04	0.8	13.972	09070007.D
	13.961	50.00	506.55878	0.10					09070006.D
	13.967	50.00	505.63165	0.10					09070005.D
	13.987	50.00	511.77609	0.10	0.10	5.22E-04	0.5	13.972	09070004.D
	13.973	75.00	780.61633	0.10					09070003.D
	13.941	75.00	781.16278	0.10					09070002.D
	14.083	75.00	783.96606	0.10	0.10	1.80E-04	0.2	13.999	09070001.D
Average	13.97			0.10					
STDS	0.03			0.01					
%RSD	0.23			5.32					

	RT (min)	ng	Area (Response)	RF	RF Average	RF STD	% RSD	RT Average	Data File
Hexanal	15.948	0.21	2.93674	0.07					09070015.D
	15.945	0.21	5.75732	0.04					09070014.D
	15.957	0.21	3.41728	0.06	0.06	1.47E-02	26.1	15.950	09070013.D
	15.965	7.50	90.95992	0.08					09070012.D
	15.956	7.50	92.48119	0.08					09070011.D
	15.947	7.50	92.50299	0.08	0.08	6.44E-04	0.8	15.956	09070010.D
	15.950	25.00	297.48325	0.08					09070009.D
	15.961	25.00	306.72766	0.08					09070008.D
	15.974	25.00	298.71765	0.08	0.08	1.12E-03	1.3	15.962	09070007.D
	15.954	50.00	607.88989	0.08					09070006.D
	15.968	50.00	600.15570	0.08					09070005.D
	15.988	50.00	609.48627	0.08	0.08	5.57E-04	0.7	15.970	09070004.D
	15.966	75.00	939.99579	0.08					09070003.D
	15.959	75.00	940.32703	0.08					09070002.D
	16.023	75.00	946.01392	0.08	0.08	2.33E-04	0.3	15.983	09070001.D
Average	15.96			0.08					
STDS	0.02			0.01					
%RSD	0.12			16.37					

IAP Sample Analyzed on 9/8/03 after Calibration
Carbonyl-DNPH-Mix 2, Supelco Cat# 47671-U, Lot# LB-11635, Exp. Date: Apr 2006
Cyclohexanone-DNPH coelute with Pentanal-DNPH in the IAP mixture
IAP made by Xiaoyu Liu on 9/4/03 (split the original solution)

Compound	Original Conc. (ng/uL)	IAP Concentration (ng/uL)	RT(min)	AVG RF	Area	Measured (ng/uL)	Avg Measured (ng/uL)	%Recovery	%AVG Recovery	Recovery STD	%RSTD	Data File
Formaldehyde	3.89	3.89	5.049	0.03	635.34	3.67		94				09070016.D
	3.89	3.89	5.049	0.03	630.11	3.64		93				09070017.D
	3.89	3.89	5.05	0.03	628.94	3.63	3.64	93	94	0.51	0.54	09070018.D
Acetaldehyde	2.01	2.01	6.206	0.04	279.40	2.07		103				09070016.D
	2.01	2.01	6.207	0.04	278.12	2.06		102				09070017.D
	2.01	2.01	6.206	0.04	276.65	2.05	2.06	102	102	0.51	0.49	09070018.D
Acrolein	1.99	1.99	7.501	0.04	252.11	2.05		103				09070016.D
	1.99	1.99	7.503	0.04	250.77	2.04		102				09070017.D
	1.99	1.99	7.504	0.04	249.87	2.03	2.04	102	103	0.46	0.45	09070018.D
Acetone	2.00	2.00	7.789	0.05	212.63	2.07		104				09070016.D
	2.00	2.00	7.791	0.05	211.95	2.07		103				09070017.D
	2.00	2.00	7.792	0.05	210.55	2.05	2.07	103	103	0.52	0.50	09070018.D
Propanal	2.00	2.00	8.258	0.05	214.26	2.02		101				09070016.D
	2.00	2.00	8.263	0.05	213.23	2.01		101				09070017.D
	2.00	2.00	8.262	0.05	211.37	2.00	2.01	100	101	0.69	0.69	09070018.D
Crotonaldehyde	2.00	2.00	9.493	0.06	191.01	2.12		106				09070016.D
	2.00	2.00	9.5	0.06	189.31	2.10		105				09070017.D
	2.00	2.00	9.498	0.06	189.03	2.10	2.11	105	105	0.60	0.56	09070018.D
Methacrolein	2.00	2.00	10.024	0.05	220.04	2.21		110				09070016.D
	2.00	2.00	10.03	0.05	219.04	2.24		112				09070017.D
	2.00	2.00	10.03	0.05	218.52	2.23	2.23	112	111	0.78	0.70	09070018.D
MEK	2.00	2.00	10.536	0.03	325.26	1.96		98				09070016.D
Butyraldehyde	2.00	2.00	10.544	0.03	323.55	1.95		98				09070017.D
	2.00	2.00	10.544	0.03	323.05	1.95	1.96	98	98	0.35	0.36	09070018.D
Benzaldehyde	2.00	2.00	11.215	0.08	131.14	2.18		109				09070016.D
	2.00	2.00	11.224	0.08	131.05	2.18		109				09070017.D
	2.00	2.00	11.225	0.08	131.26	2.18	2.18	109	109	0.09	0.08	09070018.D
Pentanal	**2.01**	2.01	**13.329**	0.07	**466.71**	6.37		317				09070016.D
Cyclohexanone	**2.01**	2.01	**13.331**	0.07	**463.52**	6.33		315				09070017.D
	2.01	2.01	**13.332**	0.07	**465.14**	6.35	6.35	316	**316**	1.08	0.34	09070018.D
p-Tolualdehyde	2.00	2.00	14.129									09070016.D
	2.00	2.00	14.133									09070017.D
	2.00	2.00	14.131									09070018.D
Hexanal	2.00	2.00	15.949	0.08	126.02	1.93		97				09070016.D
	2.00	2.00	15.957	0.08	125.53	1.92		96				09070017.D
	2.00	2.00	15.955	0.08	124.96	1.92	1.92	96	96	0.41	0.42	09070018.D

Calibration Range of the Instrument

Analyte	PQL(ng/uL)	Hi Cal(ng/uL)
Formaldehyde	0.04	15.0
Acetaldehyde	0.04	15.0
Acrolein	0.04	15.0
Acetone	0.04	15.0
Propanal	0.04	15.0
Crotonaldehyde	0.04	15.0
Methacrolein	0.04	15.0
Butanal	0.04	15.0
Benzaldehyde	0.04	15.0
Pentanal	0.04	15.0
m-Tolualdehyde	0.04	15.0
Hexanal	0.04	15.0

Daily Calibration Check

DCC was made on 1/15/04 by addition 100 uL of DNPH standard ERA-028 to 200 uL of CH3CN
The concentration is 25 ng on column for each compound with 5 uL injection.

Compound	RT(min)	AVG RF	Area	Measured (ng/uL)	Injected (ng/uL)	%Recovery	Data File	Run Date	Pass/Fail
Formaldehyde	5.103	0.03	861.68469	4.97	5.0	99	DCC011.D	2/13/2004	Pass
Acetaldehyde	6.277	0.04	652.46112	4.83	5.0	97			
Acrolein	7.590	0.04	587.71088	4.78	5.0	96			
Acetone	7.882	0.05	489.43808	4.78	5.0	96			
Propanal	8.358	0.05	504.04675	4.76	5.0	95			
Crotonaldehyde	9.608	0.06	432.93283	4.81	5.0	96			
Methacrolein	10.149	0.05	478.83044	4.89	5.0	98			
Benzaldehyde	11.353	0.08	297.0329	4.93	5.0	99			
Pentanal	13.527	0.07	349.92712	4.78	5.0	96			
m-Tolualdehyde	14.109	0.10	251.78265	4.83	5.0	97			
Hexanal	16.063	0.08	300.38556	4.60	5.0	92			
Formaldehyde	5.108	0.03	858.76154	4.96	5.0	99	DCC012.D	2/13/2004	Pass
Acetaldehyde	6.286	0.04	649.96735	4.81	5.0	96			
Acrolein	7.603	0.04	587.48657	4.78	5.0	96			
Acetone	7.895	0.05	488.70673	4.77	5.0	95			
Propanal	8.373	0.05	503.44604	4.75	5.0	95			
Crotonaldehyde	9.625	0.06	431.73294	4.80	5.0	96			
Methacrolein	10.166	0.05	480.72382	4.91	5.0	98			
Benzaldehyde	11.371	0.08	296.05881	4.92	5.0	98			
Pentanal	13.541	0.07	346.91238	4.74	5.0	95			
m-Tolualdehyde	14.123	0.10	251.50212	4.82	5.0	96			
Hexanal	16.076	0.08	299.29297	4.59	5.0	92			

	%Recovery		AVG	STD	%RSTD
Date	2/13/2004	2/13/2004			
Formaldehyde	99.45	99.12	99.29	0.24	0.24
Acetaldehyde	96.63	96.26	96.44	0.26	0.27
Acrolein	95.55	95.52	95.54	0.03	0.03
Acetone	95.52	95.38	95.45	0.10	0.11
Propanal	95.21	95.10	95.16	0.08	0.08
Crotonaldehyde	96.20	95.94	96.07	0.19	0.20
Methacrolein	97.86	98.25	98.06	0.27	0.28
Benzaldehyde	98.67	98.35	98.51	0.23	0.23
Pentanal	95.56	94.73	95.15	0.58	0.61
m-Tolualdehyde	96.58	96.47	96.53	0.08	0.08
Hexanal	92.10	91.76	91.93	0.24	0.26

Concentrations of Carbonyls Measured on HPLC column
(HPLC injection 5 uL)
ND = Not Detected
BDL = Below Detection Limit
NA = Not Available

Sample	DataFile	Analyte	AVG RF	RT	Area	On column (ng)
Phase1P5	5000_1.D	Formaldehyde	0.03	5.093	2.76174	~~0.08~~
5000		Acetaldehyde	0.04	6.267	34.56398	1.28
		Acrolein	0.04			
		Acetone	0.05	7.876	9.34391	0.46
		Propanal	0.05	8.374	0.99527	~~0.05~~
		Crotonaldehyde	0.06			
		Methacrolein	0.05			
		Benzaldehyde	0.08			
		Pentanal	0.07			
		m-Tolualdehyde	0.10			
		Hexanal	0.08	16.043	1.59390	~~0.12~~
Phase1P5	5000_2.D	Formaldehyde	0.03	5.104	3.14257	~~0.09~~
5000		Acetaldehyde	0.04	6.273	29.48710	1.09
		Acrolein	0.04			
		Acetone	0.05	7.882	9.28147	0.45
		Propanal	0.05	8.358	2.38879	~~0.11~~
		Crotonaldehyde	0.06			
		Methacrolein	0.05			
		Benzaldehyde	0.08			
		Pentanal	0.07			
		m-Tolualdehyde	0.10			
		Hexanal	0.08	16.071	1.23151	~~0.09~~

Concentrations of Carbonyls Measured in the Test

The amount of analyte on column was calculated in "ConcOncolumn" sheet
BDL = Below Detection Limit

Tube ID	Description	Analyte	Sample Volume (L)	Concentration (ng/L)	Data File
5000	Phase1P5-POPPING&OPENING	Formaldehyde	2.99	~~26.65~~	5000_1.D
		Acetaldehyde		428.05	
		Acrolein			
		Acetone		152.50	
		Propanal		~~15.72~~	
		Crotonaldehyde			
		Methacrolein			
		Benzaldehyde			
		Pentanal			
		mTolualdehyde			
		Hexanal		~~40.86~~	
5000	Phase1P5-POPPING&OPENING	Formaldehyde	2.99	~~30.33~~	5000_2.D
		Acetaldehyde		365.17	
		Acrolein			
		Acetone		151.48	
		Propanal		~~37.73~~	
		Crotonaldehyde			
		Methacrolein			
		Benzaldehyde			
		Pentanal			
		mTolualdehyde			
		Hexanal		~~31.57~~	

Concentrations of Carbonyls Measured for the Test

BDL = Below Detection Limit

Sample ID	Description	Sample Volume (L)	Concentration (ug/m3) Formaldehyde	Acetaldehyde	Acetone	Propanal	Hexanal
5000	Phase1P5-POPPING&OPENING	2.99	~~28.49~~	396.61	151.99	~~26.73~~	~~36.22~~

Sampling Time and Volume for the Test

Tube Type	Tube ID	Sample ID	Start Date	Start Time	End Time	Sample Time	Sample Flow L/min	Sample Duration minutes	Volume L	Corrected flow mL/min	MFC	Flow mL/min	Flow mL/min	Flow mL/min	Temp C
DNPH	5000	Phase1P5-POPPING&OPENING	2/13/2004	9:37	9:47	9:42	0.299	10	2.99	298.97	97308-2	298.5	299.2	299.2	

Data Summary of Duplicates and Triplicates for the Test

BDL = Below Detection Limit

There were duplicate injections of each sample.

Tube ID	Description	Sample Volume (L)	Concentration (ug/m3) Formaldehyde	Acetaldehyde	Acetone	Propanal	Hexanal	DataFile
5000	Phase1P5-POPPING&OPENING	2.99	~~26.65~~	428.05	152.50	~~15.72~~	~~40.86~~	5000_1.D
5000	Phase1P5-POPPING&OPENING	2.99	~~30.33~~	365.17	151.48	~~37.73~~	~~31.57~~	5000_2.D
		AVG	28.49	396.61	151.99	26.73	36.22	
		STDS	2.60	44.46	0.72	15.56	6.57	
		%RSD	9.12	11.21	0.47	58.24	18.14	

Background Measured for the Test

No background sample was collected.

Field Blanks Measured for the Test

No field blank sample was collected.

Field Controls Measured for the Test

No field control sample was prepared.