STS 122 Return Samples: Assessment of Air Quality aboard the Shuttle (STS-122) and International Space Station (1E)

The toxicological assessments of 2 grab sample canisters (GSCs) from the Shuttle are reported in Table 1. Formaldehyde badges were not used. Analytical methods have not changed from earlier reports. The recoveries of the 3 surrogates (^{13}C-acetone, fluorobenzene, and chlorobenzene) from the 2 GSCs averaged 100, 107, and 108%, respectively. The Shuttle atmosphere was acceptable for human respiration.

Table 1. Analytical Summary of Shuttle Samples

Sample Location	Date of Sample	NMVOCs [a] (mg/m^3)	T Value[b] (units)	Alcohols (mg/m^3)	Formaldehyde (µg/m^3)
Flight deck (preflight)	2/7/08	0.2	0.02	0.1	--
Middeck (end mission)	2/20/08	3.1	0.49	0.9	--

[a] Non-methane volatile organic hydrocarbons.
[b] Calculated excluding CO_2, formaldehyde, and siloxanes.

The toxicological assessment of 10 GSCs from the ISS is shown in Table 2. Ten pairs of formaldehyde badges were also returned. The recoveries of the 3 control formaldehyde badges averaged 98% and the recoveries from the 3 standards (as listed above) from the GSCs averaged 100, 95 and 97%, respectively.

Table 2. Analytical Summary of ISS Results (previously reported values are in gray)

Module/Sample	Approx. Date	NMVOCs[a] (mg/m^3)	T Value[b] (units)	Alcohols (mg/m^3)	Formaldehyde (µg/m^3)
Lab	9/04/07	4.1	0.57	3.0	32
SM	9/04/07	4.3	0.61	3.1	24
Lab	10/10/07	--	--	--	38
SM	10/10/07	5.3	0.55	4.4	24
Lab	11/12/07	5.8	0.72	4.5	40
SM	11/12/07	6.4	0.74	5.1	32
FGB	11/12/07	6.8	0.82	5.6	--
SM	12/07/07	5.2	0.73	4.0	45
Lab	12/07/07	5.2	0.74	4.0	30
Progress 27	12/26/07	60	2.48	42	--
Lab	1/11/08	6.6	0.95	4.4	41
FGB	1/11/08	6.1	0.75	4.5	--
SM	1/11/08	5.9	0.71	4.4	31
Columbus	2/12/08	15	2.14	8.3	--
Guideline		*<25*	*<1.0*	*<5*	*<120*

[a] Non-methane volatile organic hydrocarbons.
[b] Calculated excluding CO_2, formaldehyde, and siloxanes.

Based on these limited samples, the nominal ISS atmosphere is acceptable for human respiration. The nominal alcohol levels were well controlled throughout the period of sampling. Two first-entry samples, Progress 27 and Columbus, were analyzed. Both showed substantial pollution levels; however, the Progress 27 sample contained a remarkable level of pollution, even though it appears, based on CO_2 levels, that the

sample had been partially mixed with nominal ISS air. The T-value of the Progress sample was primarily increased due to a small amount of furan, which we typically do not see in ISS samples. The increase in alcohols and NMVOCs in Progress was primarily due to high concentrations of ethanol (36 mg/m^3) and acetone (3.8 mg/m3). Ethyl and butyl acetates, C7-alkanes, toluene and xylenes were also markedly increased. The Columbus sample showed unusually high levels of trimethylsilanol (4.2 mg/m^3) and 2-butanone (0.45 mg/m3), which were the major pollutants found in the ground-based offgas test of the module in November 2006. Inspection of the air quality parameters before and after the arrival of a new module (in this case Progress 27) demonstrates that the air revitalization systems are fully capable of maintaining a steady-state condition despite the additional pollution loads.

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Enclosures
Table 1A: Analytical concentrations of compounds found in the STS-122 GSCs
Table 1B: Analytical concentrations of compounds found in 1E GSCs
Table 2A: T-values of the compounds in table 1A
Table 2B: T-values of the compounds in table 1B

TABLE 1
ANALYTICAL RESULTS OF
STS-122 RETURN GRAB SAMPLE CONTAINER AIR SAMPLES

CHEMICAL CONTAMINANT	CONCENTRATION (mg/m3)	
	AA04481 Mid-Deck SN 1088 02/20/08 @ 08:04 GMT	AA04479 Preflight SN 1074 02/07/08 @ 14:03 EST
TARGET COMPOUNDS (TO-14/POLAR)* **		
FREON12	<0.025	<0.025
CHLOROMETHANE	TRACE	<0.025
FREON114	<0.025	<0.025
METHANOL	0.12	TRACE
ACETALDEHYDE	0.27	0.029
VINYLCHLORIDE	<0.025	<0.025
BROMOMETHANE	<0.025	<0.025
ETHANOL	0.44	TRACE
CHLOROETHANE	<0.025	<0.025
ACETONITRILE	TRACE	TRACE
PROPENAL	TRACE	<0.025
ACETONE	0.26	0.035
PROPANAL	0.10	TRACE
ISOPROPANOL	0.052	0.044
FREON11	<0.025	<0.025
FURAN	<0.025	<0.025
ACRYLONITRILE	<0.025	<0.025
PENTANE	<0.025	<0.025
2-METHYL-2-PROPANOL	TRACE	<0.025
METHYLACETATE	<0.025	<0.025
1,1-DICHLOROETHENE	<0.025	<0.025
DICHLOROMETHANE	TRACE	TRACE
3-CHLOROPROPENE	<0.025	<0.025
FREON113	<0.025	<0.025
N-PROPANOL	TRACE	<0.025
1,1-DICHLOROETHANE	<0.025	<0.025
BUTANAL	0.076	TRACE
2-BUTANONE	0.073	TRACE
CIS-1,2-DICHLOROETHENE	<0.025	<0.025
2-METHYLFURAN	<0.025	<0.025
ETHYLACETATE	TRACE	<0.025
HEXANE	<0.025	<0.025
CHLOROFORM	<0.025	<0.025
2-BUTENAL	TRACE	<0.025
1,2-DICHLOROETHANE	<0.025	<0.025
1,1,1-TRICHLOROETHANE	<0.025	<0.025
N-BUTANOL	TRACE	<0.025
BENZENE	<0.025	<0.025
CARBONTETRACHLORIDE	<0.025	<0.025
2-PENTANONE	0.037	<0.025
2-METHYLHEXANE	<0.025	<0.025
2,3-DIMETHYLPENTANE	<0.025	<0.025
PENTANAL	0.074	TRACE
3-METHYLHEXANE	<0.025	<0.025
1,2-DICHLOROPROPANE	<0.025	<0.025

1,4-DIOXANE	<0.025	<0.025
TRICHLOROETHENE	<0.025	<0.025
2,5-DIMETHYLFURAN	<0.025	<0.025
N-HEPTANE	<0.025	<0.025
4-METHYL2-PENTANONE	<0.025	<0.025
CIS-1,3-DICHLOROPROPENE	<0.025	<0.025
2-PENTENAL	TRACE	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025	<0.025
1,1,2-TRICHLOROETHANE	<0.025	<0.025
TOLUENE	<0.025	<0.025
HEXANAL	0.065	TRACE
MESITYLOXIDE	<0.025	<0.025
1,2-DIBROMOETHANE	<0.025	<0.025
BUTYLACETATE	<0.025	<0.025
OCTANE	<0.025	<0.025
TETRACHLOROETHENE	<0.025	<0.025
CHLOROBENZENE	<0.025	<0.025
ETHYLBENZENE	<0.025	<0.025
M/P-XYLENES	<0.025	<0.025
2-HEPTANONE	TRACE	<0.025
CYCLOHEXANONE	TRACE	<0.025
HEPTANAL	0.076	TRACE
STYRENE	<0.025	<0.025
1,1,2,2-TETRACHLOROETHANE	<0.025	<0.025
O-XYLENE	<0.025	<0.025
NONANE	<0.025	<0.025
1,3,5-TRIMETHYLBENZENE	<0.025	<0.025
1,2,4-TRIMETHYLBENZENE	<0.025	<0.025
DECANE	<0.025	<0.025
1,3-DICHLOROBENZENE	<0.025	<0.025
1,4-DICHLOROBENZENE	<0.025	<0.025
1,2-DICHLOROBENZENE	<0.025	<0.025
1,2,4-TRICHLOROBENZENE	<0.025	<0.025
HEXACHLORO-1,3-BUTADIENE	<0.025	<0.025

TARGET COMPOUNDS (TOXIC)		
1,3-BUTADIENE	<0.025	<0.025
ETHYLENE OXIDE	<0.025	<0.025
CARBON DISULFIDE	<0.025	<0.025
2-METHYL-2-PROPENAL	<0.025	<0.025
3-BUTEN-2-ONE	<0.025	<0.025
2-ETHOXYETHANOL	<0.025	<0.025
DIMETHYLDISULFIDE	<0.025	<0.025
OCTAMETHYLCYCLOTETRASILOXANE	*	*

NON-TARGET COMPOUNDS		
SULFURHEXAFLUORIDE	0.058	<0.025
OCTAFLUOROPROPANE	**	**
BROMOTRIFLUOROMETHANE	1.1	<0.025
HEXAMETHYLCYCLOTRISILOXANE	*	*
C8-KETONE	0.084	<0.025
OCTANAL	0.080	<0.025
DECAMETHYLCYCLOPENTASILOXANE	*	*

TOTAL ALCOHOLS PLUS ACETONE	**0.91**	**0.10**

TARGET COMPOUNDS (GC)***		
CARBON MONOXIDE	TRACE	<0.29
METHANE	24	<1.6
HYDROGEN	12	<0.41
CARBON DIOXIDE	5200	1200

TOTAL CONCENTRATION (NON-METHANE HYDROCARBONS)	**3.1**	**0.23**

***Present, subject to large, random variability, therefore not quantifiable**
**** Present but not quantified**
< : Value is less than the laboratory report detection limit.
TRACE: Amount detected is sufficient for compound identification only.
*** Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.

TABLE 1
ANALYTICAL RESULTS OF
1E RETURN GRAB SAMPLE CONTAINER AIR SAMPLES

CHEMICAL CONTAMINANT	CONCENTRATION (mg/m3)									
	AA04483 S/N 1005 LAB 11/11/2003	AA04484 S/N 1034 SM 11/12/07 @ 15:10 GMT	AA04485 S/N 1063 FGB 11/12/07 @ 15:14 GMT	AA04486 S/N 1039 SM 12/07/07 @ 14:30 GMT	AA04487 S/N 1076 LAB 12/07/07 @ 14:40 GMT	AA04488 S/N 1008 Progress 27 12/26/07 @ 11:57 GMT	AA04489 S/N 1092 LAB 1/11/08 @ 15:10 GMT	AA04490 S/N 1075 FGB 1/11/08 @ 15:14 GMT	AA04491 S/N 1066 SM 1/11/08 @ 15:15 GMT	AA04492 S/N 1045 Columbus Post-Ingress 2/12/08 @ 14:12 GMT
TARGET COMPOUNDS (TO-14/POLAR)* **										
FREON12	TRACE	TRACE	TRACE	TRACE	TRACE	0.095	TRACE	TRACE	TRACE	<0.025
CHLOROMETHANE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE
FREON114	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
**METHANOL ** **	0.24	0.26	**1.1**	0.25	0.25	0.92	0.34	0.33	0.34	**5.6**
ACETALDEHYDE	0.12	0.13	0.092	0.12	0.13	0.82	0.42	0.19	0.14	0.14
VINYLCHLORIDE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE
BROMOMETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ETHANOL *	**3.8**	**4.3**	**4.0**	**3.2**	**3.2**	**36**	**3.4**	**3.6**	**3.6**	0.44
CHLOROETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ACETONITRILE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE
PROPENAL	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE
ACETONE * **	0.19	0.21	0.18	0.22	0.21	**3.8**	0.31	0.23	0.20	0.38
PROPANAL	0.032	0.025	TRACE	TRACE	0.030	0.18	0.11	0.025	TRACE	0.027
ISOPROPANOL	0.14	0.13	0.15	0.16	0.18	0.46	0.16	0.16	0.14	1.3
FREON11	TRACE	TRACE	TRACE	TRACE	TRACE	0.067	TRACE	TRACE	TRACE	<0.025
FURAN	<0.025	<0.025	<0.025	<0.025	<0.025	0.051	<0.025	<0.025	<0.025	<0.025
ACRYLONITRILE	TRACE	TRACE	TRACE	TRACE	TRACE	<0.025	TRACE	TRACE	TRACE	<0.025
PENTANE	<0.025	TRACE	TRACE	TRACE	TRACE	0.044	TRACE	TRACE	<0.025	TRACE
2-METHYL-2-PROPANOL	TRACE	TRACE	TRACE	TRACE	TRACE	0.051	TRACE	TRACE	TRACE	0.033
METHYLACETATE	TRACE	TRACE	TRACE	TRACE	TRACE	0.034	TRACE	TRACE	TRACE	TRACE
1,1-DICHLOROETHENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
DICHLOROMETHANE	0.031	0.034	0.035	0.030	0.036	0.33	0.045	0.046	0.043	0.077
3-CHLOROPROPENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
FREON113	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
N-PROPANOL	0.031	0.034	0.035	0.089	0.040	0.083	0.063	0.039	0.054	0.23
1,1-DICHLOROETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
BUTANAL	TRACE	TRACE	TRACE	TRACE	TRACE	0.065	0.078	TRACE	TRACE	TRACE
2-BUTANONE	0.032	0.029	TRACE	0.027	0.031	0.094	0.067	0.028	TRACE	0.45
CIS-1,2-DICHLOROETHENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
2-METHYLFURAN	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	TRACE
ETHYLACETATE	0.048	0.056	0.057	0.030	0.026	1.2	0.033	0.038	0.036	TRACE
HEXANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.068	<0.025	<0.025	<0.025	TRACE
CHLOROFORM	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE
2-BUTENAL	TRACE	TRACE	<0.025	TRACE	TRACE	0.31	TRACE	TRACE	<0.025	<0.025
1,2-DICHLOROETHANE	TRACE	TRACE	TRACE	TRACE	TRACE	0.11	TRACE	TRACE	TRACE	0.12
1,1,1-TRICHLOROETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
N-BUTANOL	0.084	0.087	0.095	0.12	0.096	0.53	0.11	0.11	0.11	0.40
BENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	0.031	<0.025	<0.025	<0.025	0.072
CARBONTETRACHLORIDE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
2-PENTANONE	TRACE	TRACE	<0.025	TRACE	TRACE	0.19	0.026	TRACE	<0.025	TRACE
2-METHYLHEXANE	TRACE	TRACE	TRACE	TRACE	TRACE	1.5	TRACE	TRACE	TRACE	TRACE
2,3-DIMETHYLPENTANE	TRACE	TRACE	TRACE	TRACE	TRACE	1.2	TRACE	TRACE	TRACE	TRACE
PENTANAL	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	0.059	TRACE	<0.025	TRACE
3-METHYLHEXANE	TRACE	TRACE	TRACE	TRACE	TRACE	2.1	TRACE	TRACE	TRACE	TRACE
1,2-DICHLOROPROPANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,4-DIOXANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
TRICHLOROETHENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE
2,5-DIMETHYLFURAN	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
N-HEPTANE	TRACE	TRACE	TRACE	<0.025	<0.025	0.53	TRACE	TRACE	TRACE	TRACE
4-METHYL2-PENTANONE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	TRACE
CIS-1,3-DICHLOROPROPENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
2-PENTENAL	TRACE	TRACE	TRACE	TRACE	TRACE	<0.025	TRACE	TRACE	<0.025	<0.025
TRANS-1,3-DICHLOROPROPENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,1,2-TRICHLOROETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
TOLUENE	0.030	0.033	0.034	0.029	0.027	0.66	0.035	0.041	0.038	0.30
HEXANAL	TRACE	TRACE	TRACE	TRACE	TRACE	0.027	0.047	TRACE	TRACE	TRACE
MESITYLOXIDE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,2-DIBROMOETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
BUTYLACETATE	TRACE	TRACE	TRACE	TRACE	TRACE	0.39	TRACE	TRACE	TRACE	TRACE
OCTANE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
TETRACHLOROETHENE	<0.025	<0.025	<0.025	<0.025	<0.025	0.074	<0.025	<0.025	<0.025	0.048
CHLOROBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ETHYLBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	0.037	<0.025	TRACE	<0.025	TRACE
M/P-XYLENES	TRACE	TRACE	TRACE	TRACE	TRACE	0.25	TRACE	TRACE	TRACE	TRACE
2-HEPTANONE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	TRACE	<0.025	<0.025	TRACE
CYCLOHEXANONE	0.039	0.036	0.044	0.041	0.041	0.47	0.060	0.062	0.051	0.065
HEPTANAL	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	0.053	TRACE	TRACE	TRACE
STYRENE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
1,1,2,2-TETRACHLOROETHANE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
O-XYLENE	0.039	0.043	0.044	0.041	0.038	3.1	0.069	0.082	0.076	TRACE

NONANE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
1,3,5-TRIMETHYLBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,2,4-TRIMETHYLBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
DECANE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
1,3-DICHLOROBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,4-DICHLOROBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,2-DICHLOROBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
1,2,4-TRICHLOROBENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
HEXACHLORO-1,3-BUTADIENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
TARGET COMPOUNDS (TOXIC)										
1,3-BUTADIENE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ETHYLENE OXIDE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
CARBON DISULFIDE	TRACE	TRACE	TRACE	TRACE	TRACE	0.029	TRACE	TRACE	TRACE	TRACE
2-METHYL-2-PROPENAL	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	TRACE	<0.025	<0.025	0.034
3-BUTEN-2-ONE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025
2-ETHOXYETHANOL	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
DIMETHYLDISULFIDE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
OCTAMETHYLCYCLOTETRASILOXANE	##	##	##	##	##	##	##	##	##	##
NON-TARGET COMPOUNDS										
SULFURHEXAFLUORIDE	0.096	0.12	0.054	0.068	0.070	<0.025	0.070	0.079	0.20	<0.025
OCTAFLUOROPROPANE	#	#	#	#	#	#	#	#	#	#
1,1,1,2-TETRAFLUOROETHANE	0.031	0.031	0.031	TRACE	TRACE	<0.025	0.026	0.026	TRACE	0.23
BROMOTRIFLUOROMETHANE	0.054	0.056	0.049	TRACE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
CHLOROTRIFLUOROETHENE	<0.025	<0.025	TRACE	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE
PROPENE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE
CARBONYLSULFIDE	TRACE	TRACE	TRACE	TRACE	TRACE	0.17	TRACE	TRACE	TRACE	0.072
UNIDENTIFIEDFLUORINATEDHYDROCARBON	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE
1-BUTENE	TRACE	TRACE	TRACE	TRACE	TRACE	0.053	TRACE	TRACE	TRACE	0.066
BUTANE	TRACE	TRACE	TRACE	<0.025	<0.025	0.051	<0.025	<0.025	<0.025	TRACE
FLUOROTRIMETHYLSILANE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	0.094
DICHLOROFLUOROETHANE	TRACE	TRACE	TRACE	TRACE	TRACE	<0.025	TRACE	TRACE	TRACE	0.10
PENTADIENE	0.038	0.044	0.043	0.043	0.043	TRACE	0.033	0.038	0.037	TRACE
TRIMETHYLSILANOL	0.16	0.14	0.15	0.17	0.20	0.39	0.18	0.18	0.15	4.2
1,3-DIOXOLANE	0.079	0.075	0.085	0.075	0.089	<0.025	0.086	0.11	0.090	TRACE
CARBONICACID, DIMETHYLESTER	<0.025	TRACE	TRACE	TRACE	TRACE	<0.025	TRACE	TRACE	TRACE	0.030
C7-ALKANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.20	<0.025	<0.025	<0.025	<0.025
C7-ALKANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.14	<0.025	<0.025	<0.025	<0.025
C7-ALKANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.58	<0.025	<0.025	<0.025	<0.025
C7-ALKANE	TRACE	TRACE	TRACE	<0.025	<0.025	0.74	<0.025	<0.025	<0.025	TRACE
C7-ALKANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.27	<0.025	<0.025	<0.025	<0.025
PROPANOICACID, ETHYLESTER	<0.025	<0.025	<0.025	<0.025	<0.025	0.35	<0.025	<0.025	<0.025	<0.025
METHYLCYCLOHEXANE	<0.025	<0.025	<0.025	<0.025	<0.025	0.25	<0.025	<0.025	<0.025	<0.025
PENTAMETHYLDISILOXANE-1-OL	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.14
BUTANOICACID, ETHYLESTER	<0.025	<0.025	<0.025	<0.025	<0.025	0.52	<0.025	<0.025	<0.025	<0.025
HEXAMETHYLCYCLOTRISILOXANE	##	##	##	##	##	##	##	##	##	##
C7-ESTER	<0.025	<0.025	<0.025	<0.025	<0.025	0.15	<0.025	<0.025	<0.025	<0.025
BENZALDEHYDE	0.027	0.029	TRACE	0.029	0.026	TRACE	0.097	0.025	TRACE	TRACE
PINENE	<0.025	<0.025	<0.025	<0.025	<0.025	0.28	<0.025	<0.025	<0.025	<0.025
2-ETHYL-1-HEXANOL	0.056	0.074	0.086	0.044	0.044	TRACE	0.065	0.065	0.058	0.22
LIMONENE	0.035	0.037	0.039	0.051	0.042	0.049	0.15	0.17	0.18	TRACE
DECAMETHYLCYCLOPENTASILOXANE	##	##	##	##	##	##	##	##	##	##
DODECANE	TRACE	<0.025	<0.025	<0.025	<0.025	<0.025	TRACE	0.089	<0.025	TRACE
TOTAL ALCOHOLS PLUS ACETONE	**4.5**	**5.1**	**5.6**	**4.0**	**4.0**	**42**	**4.4**	**4.5**	**4.4**	**8.3**
TARGET COMPOUNDS (GC)* **										
CARBON MONOXIDE	<0.29	<0.29	<0.29	<0.29	<0.29	TRACE	<0.29	<0.29	<0.29	TRACE
METHANE	TRACE	TRACE	TRACE	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	TRACE
HYDROGEN	1.9	2.3	2.1	1.9	1.8	<0.41	2.0	2.1	2.0	<0.41
CARBON DIOXIDE	8000	8100	7900	9800	10000	9100	9800	9600	9800	1800
TOTAL CONCENTRATION (NON-METHANE HYDROCARBONS)	**5.8**	**6.4**	**6.8**	**5.2**	**5.2**	**60**	**6.6**	**6.1**	**5.9**	**15**

*** FROM GC/FID RESULTS**
****FROM GC/FID RESULTS; MeOH Conc.=GC MeOH Conc.-(2* GC/MS ACETALDEHYDE Conc.)**
*****FROM GC/FID RESULTS; Acetone Conc.=GC Acetone Conc.- GC/MS Acetone C-13 Conc.)**
 # Present, but not quantitated
Present, subject to large, random variability, therefore not quantifiable
< : Value is less than the laboratory report detection limit.
TRACE: Amount detected is sufficient for compound identification only.
*** Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.

TABLE 2
ANALYTICAL RESULTS OF
STS-122 RETURN GRAB SAMPLE CONTAINER AIR SAMPLES

CHEMICAL CONTAMINANT	T-VALUE (7-d SMAC)	
	AA04481 Mid-Deck SN 1088 02/20/08 @ 08:04 GMT	AA04479 Preflight SN 1074 02/07/08 @ 14:03 EST
TARGET COMPOUNDS (TO-14/POLAR)		
FREON12	ND	ND
CHLOROMETHANE	0.00030	ND
FREON114	ND	ND
METHANOL	0.01368	0.00139
ACETALDEHYDE	0.06635	0.00714
VINYLCHLORIDE	ND	ND
BROMOMETHANE	ND	ND
ETHANOL	0.00022	0.00001
CHLOROETHANE	ND	ND
ACETONITRILE	0.00187	0.00187
PROPENAL	0.29876	ND
ACETONE	0.00506	0.00067
PROPANAL	0.00726	0.00087
ISOPROPANOL	0.00035	0.00030
FREON11	ND	ND
FURAN	ND	ND
ACRYLONITRILE	ND	ND
PENTANE	ND	ND
2-METHYL-2-PROPANOL	0.00008	ND
METHYLACETATE	ND	ND
1,1-DICHLOROETHENE	ND	ND
DICHLOROMETHANE	0.00025	0.00025
3-CHLOROPROPENE	ND	ND
FREON113	ND	ND
N-PROPANOL	0.00013	ND
1,1-DICHLOROETHANE	ND	ND
BUTANAL	0.00429	0.00071
2-BUTANONE	0.00244	0.00042
CIS-1,2-DICHLOROETHENE	ND	ND
2-METHYLFURAN	ND	ND
ETHYLACETATE	0.00007	ND
HEXANE	ND	ND
CHLOROFORM	ND	ND
2-BUTENAL	0.00735	ND
1,2-DICHLOROETHANE	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND
N-BUTANOL	0.00016	ND
BENZENE	ND	ND
CARBONTETRACHLORIDE	ND	ND
2-PENTANONE	0.00053	ND
2-METHYLHEXANE	ND	ND
2,3-DIMETHYLPENTANE	ND	ND
PENTANAL	0.00353	0.00059
3-METHYLHEXANE	ND	ND
1,2-DICHLOROPROPANE	ND	ND
1,4-DIOXANE	ND	ND
TRICHLOROETHENE	ND	ND
2,5-DIMETHYLFURAN	ND	ND
N-HEPTANE	ND	ND
4-METHYL2-PENTANONE	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND

2-PENTENAL	0.00595	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND
TOLUENE	ND	ND
HEXANAL	0.00266	0.00051
MESITYLOXIDE	ND	ND
1,2-DIBROMOETHANE	ND	ND
BUTYLACETATE	ND	ND
OCTANE	ND	ND
TETRACHLOROETHENE	ND	ND
CHLOROBENZENE	ND	ND
ETHYLBENZENE	ND	ND
M/P-XYLENES	ND	ND
2-HEPTANONE	0.00054	ND
CYCLOHEXANONE	0.00021	ND
HEPTANAL	0.00272	0.00045
STYRENE	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND
O-XYLENE	ND	ND
NONANE	ND	ND
1,3,5-TRIMETHYLBENZENE	ND	ND
1,2,4-TRIMETHYLBENZENE	ND	ND
DECANE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
1,2-DICHLOROBENZENE	ND	ND
1,2,4-TRICHLOROBENZENE	ND	ND
HEXACHLORO-1,3-BUTADIENE	ND	ND

TARGET COMPOUNDS (TOXIC)		
1,3-BUTADIENE	ND	ND
ETHYLENE OXIDE	ND	ND
CARBON DISULFIDE	ND	ND
2-METHYL-2-PROPENAL	ND	ND
3-BUTEN-2-ONE	ND	ND
2-ETHOXYETHANOL	ND	ND
DIMETHYLDISULFIDE	ND	ND
OCTAMETHYLCYCLOTETRASILOXANE	*	*

NON-TARGET COMPOUNDS		
SULFURHEXAFLUORIDE	0.00005	ND
OCTAFLUOROPROPANE	**	**
BROMOTRIFLUOROMETHANE	0.00010	ND
HEXAMETHYLCYCLOTRISILOXANE	*	*
C8-KETONE	0.00322	ND
OCTANAL	0.00254	ND
DECAMETHYLCYCLOPENTASILOXANE	*	*

TARGET COMPOUNDS (GC)		
CARBON MONOXIDE	0.01302	0.00000
METHANE	0.00629	0.00000
HYDROGEN	0.03637	0.00000
CARBON DIOXIDE	0.39682	0.09271

TOTAL T-VALUE	**0.88317**	**0.10786**

***Present, but not included in total T-Value**
**** Present, but not quantified**
ND : Value is less than the laboratory report detection limit.
Note: Number of decimal places in T-Values do not represent significant figures of measurements.

TABLE 2
ANALYTICAL RESULTS OF
1E RETURN GRAB SAMPLE CONTAINER AIR SAMPLES

CHEMICAL CONTAMINANT	T-VALUE (180-d SMAC)									
	AA04483 S/N 1005 LAB 11/11/2003	AA04484 S/N 1034 SM 11/12/07 @ 15:10 GMT	AA04485 S/N 1063 FGB 11/12/07 @ 15:14 GMT	AA04486 S/N 1039 SM 12/07/07 @ 14:30 GMT	AA04487 S/N 1076 LAB 12/07/07 @ 14:40 GMT	AA04488 S/N 1008 Progress 27 12/26/07 @ 11:57 GMT	AA04489 S/N 1092 LAB 1/11/08 @ 15:10 GMT	AA04490 S/N 1075 FGB 1/11/08 @ 15:14 GMT	AA04491 S/N 1066 SM 1/11/08 @ 15:15 GMT	AA04492 S/N 1045 Columbus Post-Ingress 2/12/08 @ 14:12 GMT
TARGET COMPOUNDS (TO-14/POLAR)										
FREON12	0.00003	0.00003	0.00003	0.00003	0.00003	0.00020	0.00003	0.00003	0.00003	ND
CHLOROMETHANE	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
FREON114	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHANOL **	0.02720	0.02887	**0.12664**	0.02818	0.02815	0.10221	0.03832	0.03668	0.03784	**0.62593**
ACETALDEHYDE	0.02935	0.03223	0.02309	0.02956	0.03373	0.20404	0.10377	0.04642	0.03400	0.03614
VINYLCHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00481
BROMOMETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHANOL *	**0.00188**	**0.00217**	**0.00198**	**0.00160**	**0.00160**	**0.01790**	**0.00170**	**0.00179**	**0.00179**	0.00022
CHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACETONITRILE	0.00187	0.00187	0.00187	0.00187	0.00187	0.00187	0.00187	0.00187	0.00187	0.00187
PROPENAL	0.41667	0.41667	0.41667	0.41667	0.41667	0.41667	0.41667	0.41667	0.41667	0.41667
ACETONE	0.00362	0.00407	0.00337	0.00419	0.00398	**0.07307**	0.00603	0.00444	0.00383	0.00739
PROPANAL	0.00880	0.00698	0.00347	0.00347	0.00835	0.04932	0.03183	0.00708	0.00347	0.00738
ISOPROPANOL	0.00094	0.00088	0.00102	0.00107	0.00121	0.00303	0.00105	0.00107	0.00095	0.00835
FREON11	0.00002	0.00002	0.00002	0.00002	0.00002	0.00009	0.00002	0.00002	0.00002	ND
FURAN	ND	ND	ND	ND	ND	0.73440	ND	ND	ND	ND
ACRYLONITRILE	0.00446	0.00446	0.00446	0.00446	0.00446	ND	0.00446	0.00446	0.00446	ND
PENTANE	ND	0.00002	0.00002	0.00002	0.00002	0.00007	0.00002	0.00002	ND	0.00002
2-METHYL-2-PROPANOL	0.00010	0.00010	0.00010	0.00010	0.00010	0.00043	0.00010	0.00010	0.00010	0.00028
METHYLACETATE	0.00010	0.00010	0.00010	0.00010	0.00010	0.00028	0.00010	0.00010	0.00010	0.00010
1,1-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLOROMETHANE	0.00314	0.00339	0.00355	0.00300	0.00357	0.03308	0.00446	0.00464	0.00431	0.00768
3-CHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FREON113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPANOL	0.00031	0.00034	0.00035	0.00091	0.00041	0.00085	0.00064	0.00040	0.00055	0.00239
1,1-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BUTANAL	0.00284	0.00284	0.00284	0.00284	0.00284	0.01484	0.01774	0.00284	0.00284	0.00284
2-BUTANONE	0.00107	0.00098	0.00042	0.00089	0.00103	0.00314	0.00223	0.00094	0.00042	0.01499
CIS-1,2-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-METHYLFURAN	ND	ND	ND	ND	ND	ND	0.09615	ND	ND	0.09615
ETHYLACETATE	0.00027	0.00031	0.00032	0.00016	0.00014	0.00665	0.00018	0.00021	0.00020	0.00007
HEXANE	ND	ND	ND	ND	ND	0.00038	ND	ND	ND	0.00007
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00250
2-BUTENAL	0.00735	0.00735	ND	0.00735	0.00735	0.18103	0.00735	0.00735	ND	ND
1,2-DICHLOROETHANE	0.01250	0.01250	0.01250	0.01250	0.01250	0.11423	0.01250	0.01250	0.01250	0.11888
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTANOL	0.00210	0.00218	0.00237	0.00310	0.00241	0.01324	0.00266	0.00279	0.00265	0.00990
BENZENE	ND	ND	ND	ND	ND	0.15474	ND	ND	ND	0.36106
CARBONTETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-PENTANONE	0.00018	0.00018	ND	0.00018	0.00018	0.00276	0.00037	0.00018	ND	0.00018
2-METHYLHEXANE	0.00043	0.00043	0.00043	0.00043	0.00043	0.05042	0.00043	0.00043	0.00043	0.00043
2,3-DIMETHYLPENTANE	0.00006	0.00006	0.00006	0.00006	0.00006	0.00573	0.00006	0.00006	0.00006	0.00006
PENTANAL	0.00236	0.00236	0.00236	0.00236	0.00236	0.00236	0.01114	0.00236	ND	0.00236
3-METHYLHEXANE	0.00043	0.00043	0.00043	0.00043	0.00043	0.07177	0.00043	0.00043	0.00043	0.00043
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DIOXANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00125
2,5-DIMETHYLFURAN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-HEPTANE	0.00006	0.00006	0.00006	ND	ND	0.00267	0.00006	0.00006	0.00006	0.00006
4-METHYL2-PENTANONE	ND	ND	ND	ND	ND	ND	ND	0.00009	ND	0.00009
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-PENTENAL	0.00595	0.00595	0.00595	0.00595	0.00595	ND	0.00595	0.00595	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	0.00050	0.00055	0.00056	0.00048	0.00045	0.01093	0.00059	0.00068	0.00063	0.00503
HEXANAL	0.00205	0.00205	0.00205	0.00205	0.00205	0.00442	0.00769	0.00205	0.00205	0.00205
MESITYLOXIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BUTYLACETATE	0.00007	0.00007	0.00007	0.00007	0.00007	0.00204	0.00007	0.00007	0.00007	0.00007
OCTANE	ND	ND	ND	ND	ND	0.00004	ND	ND	ND	ND
TETRACHLOROETHENE	ND	ND	ND	ND	ND	0.00219	ND	ND	ND	0.00140
CHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	0.00073	ND	0.00025	ND	0.00025
M/P-XYLENES	0.00006	0.00006	0.00006	0.00006	0.00006	0.00115	0.00006	0.00006	0.00006	0.00006
2-HEPTANONE	ND	ND	ND	ND	ND	0.00054	0.00054	ND	ND	0.00054
CYCLOHEXANONE	0.00066	0.00060	0.00073	0.00068	0.00069	0.00790	0.00100	0.00103	0.00085	0.00108
HEPTANAL	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00751	0.00179	0.00179	0.00179
STYRENE	ND	ND	ND	ND	ND	0.00029	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.00018	0.00020	0.00020	0.00019	0.00017	0.01431	0.00031	0.00037	0.00035	0.00006
NONANE	ND	ND	ND	ND	ND	0.00004	ND	ND	ND	ND

1,3,5-TRIMETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	ND	ND	ND	ND	ND	0.00083	ND	ND	ND	ND
DECANE	ND	ND	ND	ND	ND	0.00005	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLORO-1,3-BUTADIENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TARGET COMPOUNDS (TOXIC)										
1,3-BUTADIENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLENE OXIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON DISULFIDE	0.00078	0.00078	0.00078	0.00078	0.00078	0.00182	0.00078	0.00078	0.00078	0.00078
2-METHYL-2-PROPENAL	ND	ND	ND	ND	ND	0.00735	0.00735	ND	ND	0.01995
3-BUTEN-2-ONE	ND	ND	ND	ND	ND	0.02907	ND	ND	ND	ND
2-ETHOXYETHANOL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIMETHYLDISULFIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OCTAMETHYLCYCLOTETRASILOXANE	##	##	##	##	##	##	##	##	##	##
NON-TARGET COMPOUNDS										
SULFURHEXAFLUORIDE	0.00008	0.00010	0.00005	0.00006	0.00006	ND	0.00006	0.00007	0.00017	ND
OCTAFLUOROPROPANE	#	#	#	#	#	#	#	#	#	#
1,1,1,2-TETRAFLUOROETHANE	0.00030	0.00030	0.00030	0.00012	0.00012	ND	0.00025	0.00025	0.00012	0.00223
BROMOTRIFLUOROMETHANE	0.00000	0.00001	0.00000	0.00000	ND	ND	ND	ND	ND	ND
CHLOROTRIFLUOROETHENE	ND	ND	0.00003	ND	ND	ND	ND	ND	ND	0.00003
PROPENE	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
CARBONYLSULFIDE	0.00104	0.00104	0.00104	0.00104	0.00104	0.01407	0.00104	0.00104	0.00104	0.00599
UNIDENTIFIEDFLUORINATEDHYDROCARBON	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00009
1-BUTENE	0.00003	0.00003	0.00003	0.00003	0.00003	0.00012	0.00003	0.00003	0.00003	0.00014
BUTANE	0.00005	0.00005	0.00005	ND	ND	0.00021	ND	ND	ND	0.00005
FLUOROTRIMETHYLSILANE	0.02500	0.02500	0.02500	0.02500	0.02500	0.02500	0.02500	0.02500	0.02500	0.18816
DICHLOROFLUOROETHANE	0.00008	0.00008	0.00008	0.00008	0.00008	ND	0.00008	0.00008	0.00008	0.00068
PENTADIENE	0.13701	0.15715	0.15382	0.15525	0.15239	0.04464	0.11662	0.13547	0.13124	0.04464
TRIMETHYLSILANOL	0.00419	0.00390	0.00396	0.00457	0.00537	0.01050	0.00491	0.00474	0.00413	0.11297
1,3-DIOXOLANE	0.00219	0.00207	0.00237	0.00208	0.00247	ND	0.00239	0.00295	0.00249	0.00035
CARBONICACID, DIMETHYLESTER	ND	0.00000	0.00000	0.00000	0.00000	ND	0.00000	0.00000	0.00000	0.00001
C7-ALKANE	ND	ND	ND	ND	ND	0.00097	ND	ND	ND	ND
C7-ALKANE	ND	ND	ND	ND	ND	0.00067	ND	ND	ND	ND
C7-ALKANE	ND	ND	ND	ND	ND	0.00285	ND	ND	ND	ND
C7-ALKANE	0.00006	0.00006	0.00006	ND	ND	0.00360	ND	ND	ND	0.00006
C7-ALKANE	ND	ND	ND	ND	ND	0.00129	ND	ND	ND	ND
PROPANOICACID, ETHYLESTER	ND	ND	ND	ND	ND	0.00283	ND	ND	ND	ND
METHYLCYCLOHEXANE	ND	ND	ND	ND	ND	0.00416	ND	ND	ND	ND
PENTAMETHYLDISILOXANE-1-OL	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00276
BUTANOICACID, ETHYLESTER	ND	ND	ND	ND	ND	0.00367	ND	ND	ND	ND
HEXAMETHYLCYCLOTRISILOXANE	##	##	##	##	##	##	##	##	##	##
C7-ESTER	ND	ND	ND	ND	ND	0.00288	ND	ND	ND	ND
BENZALDEHYDE	0.00016	0.00016	0.00007	0.00017	0.00015	0.00007	0.00056	0.00015	0.00007	0.00007
PINENE	ND	ND	ND	ND	ND	0.00203	ND	ND	ND	ND
2-ETHYL-1-HEXANOL	0.00106	0.00139	0.00162	0.00084	0.00084	0.00024	0.00123	0.00122	0.00110	0.00416
LIMONENE	0.00006	0.00007	0.00007	0.00009	0.00007	0.00009	0.00028	0.00031	0.00032	0.00002
DECAMETHYLCYCLOPENTASILOXANE	##	##	##	##	##	##	##	##	##	##
DODECANE	0.00004	ND	ND	ND	ND	ND	0.00004	0.00032	ND	0.00004
TARGET COMPOUNDS (GC)										
CARBON MONOXIDE	0.00000	0.00000	0.00000	0.00000	0.00000	0.01302	0.00000	0.00000	0.00000	0.01302
METHANE	0.00022	0.00022	0.00022	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00022
HYDROGEN	0.00569	0.00684	0.00613	0.00572	0.00532	0.00000	0.00592	0.00622	0.00577	0.00000
CARBON DIOXIDE	0.61781	0.62539	0.61040	0.75546	0.76691	0.69642	0.75112	0.73966	0.75742	0.14023
TOTAL T-VALUE	**1.33558**	**1.36812**	**1.42636**	**1.48842**	**1.50619**	**3.17659**	**1.70408**	**1.48690**	**1.46545**	**2.27987**

*** FROM GC/FID RESULTS**
****FROM GC/FID RESULTS; MeOH Conc.=GC MeOH Conc.-(2* GC/MS ACETALDEHYDE Conc.)**
*****FROM GC/FID RESULTS; Acetone Conc.=GC Acetone Conc.- GC/MS Acetone C-13 Conc.)**
 # Present, but not calculated
Present, subject to large, random variability, therefore not quantifiable
ND : Value is less than the laboratory report detection limit.
Note: Number of decimal places in T-Values do not represent significant figures of measurements.