

## Assessment of Air Quality in the International Space Station (ISS) and Space Shuttle Based on Samples Returned aboard STS-110 (ISS-8A) in April 2002

The toxicological assessment of grab sample canisters (GSCs) returned aboard STS-110 is reported. Analytical methods have not changed from earlier reports, and surrogate standard recoveries from the GSCs were 77-121%, with one exception. Pressure tracking indicated no leaks in the canisters. Recoveries from lab and trip controls for formaldehyde analyses ranged from 87 to 96%.

The two general criteria used to assess air quality are the total-non-methane-volatile organic hydrocarbons (NMVOCs) and the total T-value (minus the CO<sub>2</sub> and formaldehyde contributions). Because of the inertness of Freon 218 (octafluoropropane, OFP), its contribution to the NMVOC is subtracted and tabulated separately. Control of atmospheric alcohols is important to the water recovery system engineers, hence total alcohols are also shown for each sample. Because formaldehyde is quantified from sorbent badges, its concentration is listed separately. These five indices of air quality are summarized below:

| <u>Sample Location</u>       | <u>Date</u> | <u>NMVOCs - OFP</u><br>(mg/m <sup>3</sup> ) | <u>OFP</u><br>(mg/m <sup>3</sup> ) | <u>T Value</u> <sup>a</sup><br>(units) | <u>Alcohols</u><br>(mg/m <sup>3</sup> ) | <u>Formaldehyde</u><br>(mg/m <sup>3</sup> ) |
|------------------------------|-------------|---------------------------------------------|------------------------------------|----------------------------------------|-----------------------------------------|---------------------------------------------|
| Lab                          | 12/27/01    | 15                                          | 278                                | <b>1.38</b>                            | 5.1                                     | 0.045                                       |
| FGB                          | 12/27/01    | 12                                          | 301                                | 0.77                                   | 7.2                                     | ns <sup>b</sup>                             |
| SM                           | 12/27/01    | 8                                           | 265                                | 0.61                                   | 4.7                                     | 0.022                                       |
| Lab                          | 1/22/02     | 9                                           | 173                                | 0.57                                   | 6.5                                     | 0.044                                       |
| FGB                          | 1/22/02     | 7                                           | 187                                | 0.62                                   | 4.2                                     | ns                                          |
| SM                           | 1/22/02     | 9                                           | 220                                | 0.89                                   | 4.2                                     | 0.034                                       |
| Lab (VOA comp)               | 1/24/02     | 7                                           | 137                                | 0.72                                   | 4.3                                     | ns                                          |
| Airlock (Metox) <sup>c</sup> | 2/20/02     | <b>39</b>                                   | 114                                | <b>5.52</b>                            | <b>13.3</b>                             | ns                                          |
| Airlock (Scrub) <sup>d</sup> | 2/22/02     | 15                                          | 112                                | <b>1.45</b>                            | 4.7                                     | ns                                          |
| Lab                          | 3/7/02      | 7                                           | 73                                 | 0.47                                   | 4.0                                     | <b>0.053<sup>f</sup></b>                    |
| FGB                          | 3/7/02      | 12                                          | 79                                 | 0.93                                   | 3.8                                     | ns                                          |
| SM                           | 3/7/02      | 6                                           | 73                                 | 0.38                                   | 3.9                                     | 0.030 <sup>f</sup>                          |
| Node1 (Metox) <sup>e</sup>   | 4/2/02      | 6                                           | 79                                 | 0.34                                   | 3.3                                     | ns                                          |
| Node1 (Metox) <sup>e</sup>   | 4/2/02      | 9                                           | 70                                 | 0.82                                   | 3.2                                     | ns                                          |
| Shuttle Preflight            | 4/8/02      | <1                                          | 0                                  | 0.01                                   | 1.1                                     | ns                                          |
| Shuttle Middeck              | 4/18/02     | 8                                           | 14                                 | 0.45                                   | 4.9                                     | ns                                          |
| Acceptable Guideline:        |             | <25                                         | 85000                              | <1                                     | <10                                     | 0.050                                       |

<sup>a</sup> Formaldehyde and CO<sub>2</sub> not included in T calculation.

<sup>b</sup> ns = not sampled

<sup>c</sup> Contingency sample taken because of strong odors from Metox regeneration

<sup>d</sup> Sample taken after 30-hour TCCS scrub of U.S. segment

<sup>e</sup> Samples taken before and during nominal Metox regeneration

<sup>f</sup> Average of paired samples completed on 3/1/02 and 3/28/02

The table shows that the air quality in general was acceptable for crew respiration; however, during the February Metox regeneration the indices indicated unhealthy air (NMVOCs=39, T=5.52). The crew took refuge in the Russian segment, and the air was scrubbed to a T value of 1.45, of which 0.76 was due to the 3 methylcyclsiloxanes that cause respiratory system injury independently of any other toxic activity. Similarly, the Lab air sample from 12/27/01 showed a T value of 1.38, of which 0.84 was from the same methylcyclsiloxanes. Thus the T values of 1.45 and 1.38 indicate acceptable air quality when toxic groups are considered separately.

There is a trend of decreasing concentrations of OFP, suggesting gradual removal and no new leaks from the SM air conditioner. Formaldehyde levels were consistently higher in the Lab compared to the SM, suggesting local sources of formaldehyde in the Lab. Some of the Lab measurements exceed the acceptable guideline of  $0.05 \text{ mg/m}^3$ , which was set to protect even individuals who are highly sensitive to formaldehyde. The sources of formaldehyde are being investigated.

Enclosures

1A: [Analytical Results of STS-110 GSC Samples](#)

1B: [Analytical Results of 8A GSC Samples](#)

2A: [T Values of STS-110 GSC Samples](#)

2B: [T Values of 8A GSC Samples](#)

**TABLE 1A**  
**ANALYTICAL RESULTS OF**  
**STS-110 CONTAINER AIR SAMPLES**

| CHEMICAL CONTAMINANT                     | CONCENTRATION<br>(mg/m3)                                |                                                |
|------------------------------------------|---------------------------------------------------------|------------------------------------------------|
|                                          | AA03322<br>S/N 1006<br>PREFLIGHT<br>4/8/02<br>@12:00EST | AA03341<br>S/N 1078<br>MIDDECK<br>MET 10\12:27 |
| <b>TARGET COMPOUNDS (TO-14/POLAR)***</b> |                                                         |                                                |
| FREON 12                                 | <0.05                                                   | TRACE                                          |
| CHLOROMETHANE                            | <0.05                                                   | TRACE                                          |
| FREON 114                                | <0.05                                                   | <0.05                                          |
| METHANOL                                 | TRACE                                                   | 0.27                                           |
| ACETALDEHYDE                             | TRACE                                                   | 0.15                                           |
| VINYL CHLORIDE                           | <0.05                                                   | <0.05                                          |
| BROMOMETHANE                             | <0.05                                                   | <0.05                                          |
| ETHANOL                                  | TRACE                                                   | 4.40                                           |
| CHLOROETHANE                             | <0.05                                                   | <0.05                                          |
| ACETONITRILE                             | <0.05                                                   | TRACE                                          |
| PROPENAL                                 | <0.02                                                   | <0.02                                          |
| ACETONE                                  | TRACE                                                   | 0.23                                           |
| PROPANAL                                 | TRACE                                                   | TRACE                                          |
| 2-PROPANOL                               | 0.13                                                    | TRACE                                          |
| FREON 11                                 | <0.05                                                   | <0.05                                          |
| FURAN                                    | <0.05                                                   | <0.05                                          |
| ACRYLONITRILE                            | <0.05                                                   | <0.05                                          |
| PENTANE                                  | <0.05                                                   | <0.05                                          |
| 2-METHYL-2-PROPANOL                      | <0.05                                                   | TRACE                                          |
| METHYL ACETATE                           | <0.05                                                   | <0.05                                          |
| 1,1-DICHLOROETHENE                       | <0.05                                                   | <0.05                                          |
| DICHLOROMETHANE                          | <0.05                                                   | 0.40                                           |
| 3-CHLOROPROPENE                          | <0.05                                                   | <0.05                                          |
| FREON 113                                | <0.05                                                   | <0.05                                          |
| N-PROPANOL                               | <0.05                                                   | <0.05                                          |
| 1,1-DICHLOROETHANE                       | <0.05                                                   | <0.05                                          |
| BUTANAL                                  | <0.05                                                   | TRACE                                          |
| 2-BUTANONE                               | TRACE                                                   | TRACE                                          |
| 1,2-DICHLOROETHENE                       | <0.05                                                   | <0.05                                          |
| 2-METHYLFURAN                            | <0.05                                                   | <0.05                                          |
| ETHYL ACETATE                            | <0.05                                                   | TRACE                                          |
| HEXANE                                   | <0.05                                                   | <0.05                                          |
| CHLOROFORM                               | <0.05                                                   | <0.05                                          |
| 2-BUTENAL                                | <0.05                                                   | <0.05                                          |
| 1,2-DICHLOROETHANE                       | <0.05                                                   | <0.05                                          |
| 1,1,1-TRICHLOROETHANE                    | <0.05                                                   | <0.05                                          |
| N-BUTANOL                                | TRACE                                                   | TRACE                                          |
| BENZENE                                  | <0.05                                                   | <0.05                                          |
| CARBON TETRACHLORIDE                     | <0.05                                                   | <0.05                                          |
| 2-PENTANONE                              | <0.05                                                   | <0.05                                          |
| PENTANAL                                 | <0.05                                                   | TRACE                                          |
| 1,2-DICHLOROPROPANE                      | <0.05                                                   | <0.05                                          |
| 1,4-DIOXANE                              | <0.05                                                   | <0.05                                          |
| TRICHLOROETHENE                          | <0.05                                                   | <0.05                                          |
| 2,5-DIMETHYLFURAN                        | <0.05                                                   | <0.05                                          |
| 4-METHYL-2-PENTANONE                     | <0.05                                                   | <0.05                                          |
| CIS-1,3-DICHLOROPROPENE                  | <0.05                                                   | <0.05                                          |

|                           |       |       |
|---------------------------|-------|-------|
| 2-PENTENAL                | <0.05 | <0.05 |
| TRANS-1,3-DICHLOROPROPENE | <0.05 | <0.05 |
| 1,1,2-TRICHLOROETHANE     | <0.05 | <0.05 |
| TOLUENE                   | <0.05 | TRACE |
| HEXANAL                   | <0.05 | TRACE |
| MESITYL OXIDE             | <0.05 | <0.05 |
| 1,2-DIBROMOETHANE         | <0.05 | <0.05 |
| BUTYL ACETATE             | <0.05 | <0.05 |
| TETRACHLOROETHENE         | <0.05 | <0.05 |
| CHLOROBENZENE             | <0.05 | <0.05 |
| ETHYL BENZENE             | <0.05 | <0.05 |
| M- + P-XYLENES            | <0.05 | <0.05 |
| 2-HEPTANONE               | <0.05 | <0.05 |
| CYCLOHEXANONE             | <0.05 | <0.05 |
| HEPTANAL                  | TRACE | TRACE |
| STYRENE                   | <0.05 | <0.05 |
| 1,1,2,2-TETRACHLOROETHANE | <0.05 | <0.05 |
| O-XYLENE                  | <0.05 | <0.05 |
| 1,3,5-TRIMETHYLBENZENE    | <0.05 | <0.05 |
| 1,2,4-TRIMETHYLBENZENE    | <0.05 | <0.05 |
| 1,3-DICHLOROBENZENE       | <0.05 | <0.05 |
| 1,4-DICHLOROBENZENE       | <0.05 | <0.05 |
| 1,2-DICHLOROBENZENE       | <0.05 | <0.05 |
| 1,2,4-TRICHLOROBENZENE    | <0.05 | <0.05 |
| HEXACHLORO-1,3-BUTADIENE  | <0.05 | <0.05 |

| TARGET COMPOUNDS (TOXIC)     |       |       |
|------------------------------|-------|-------|
| 1,3-BUTADIENE                | <0.05 | <0.05 |
| ETHYLENE OXIDE               | <0.05 | <0.05 |
| CARBON DISULFIDE             | <0.05 | <0.05 |
| 2-METHYL-2-PROPENAL          | <0.05 | <0.05 |
| 3-BUTEN-2-ONE                | <0.05 | <0.05 |
| DIMETHYLDISULFIDE            | <0.05 | <0.05 |
| 2-ETHOXYETHANOL              | <0.05 | <0.05 |
| OCTAMETHYLCYCLOTETRASILOXANE | TRACE | 0.10  |

| NON-TARGET COMPOUNDS        |       |       |
|-----------------------------|-------|-------|
| OCTAFLUOROPROPANE           | 0.000 | 14    |
| BROMOTRIFLUOROMETHANE       | BL    | 0.298 |
| 1-PROPENE                   | BL    | 0.003 |
| CARBONYL SULFIDE            | BL    | 0.000 |
| 2-METHYLPROPANE             | BL    | BL    |
| FLUOROTRIMETHYLSILANE       | BL    | BL    |
| 2-METHYL PROPANAL           | BL    | BL    |
| TRIMETHYLSILANOL            | BL    | 0.006 |
| 2-METHYL 2-PROPENENITRILE   | BL    | BL    |
| 1,3-DIOXOLANE               | BL    | 0.002 |
| 2-METHYLPROPANENITRILE      | BL    | BL    |
| C7-ALKANE                   | BL    | BL    |
| C7-ALKANE                   | BL    | BL    |
| C7-ALKANE                   | BL    | BL    |
| C7-ALKANE                   | 0.001 | BL    |
| C7-ALKANE                   | BL    | 0.001 |
| UNKNOWN ALCOHOL             | BL    | BL    |
| HEXAMETHYLDISILOXANE        | BL    | BL    |
| C7-ALKANE                   | BL    | BL    |
| DIMETHYLCYCLOPENTANE ISOMER | BL    | BL    |
| PROPANOIC ACID, ETHYL ESTER | BL    | BL    |
| DIMETHYLCYCLOPENTANE ISOMER | BL    | BL    |
| ACETIC ACID, PROPYL ESTER   | BL    | BL    |
| HEPTANE                     | BL    | BL    |

|                                |       |       |
|--------------------------------|-------|-------|
| FORMIC ACID, BUTYL ESTER       | BL    | BL    |
| METHYLCYCLOHEXANE              | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| ETHYLCYCLOPENTANE              | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| C3-SUBSTITUTED CYCLOPENTANE    | BL    | BL    |
| CARBONIC ACID, DIETHYL ESTER** | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| PENTAMETHYLDISILOXANE-1-OL     | BL    | BL    |
| C8-ALKANE                      | BL    | BL    |
| BUTANOIC ACID, ETHYL ESTER     | BL    | BL    |
| OCTANE                         | BL    | BL    |
| C7-OXYGENATED HYDROCARBON      | BL    | BL    |
| HEXAMETHYLCYCLOTRISILOXANE     | 0.081 | 0.163 |
| BENZALDEHYDE                   | 0.003 | 0.003 |
| A-PINENE                       | BL    | 0.002 |
| C4-SUBSTITUTED BENZENE         | BL    | BL    |
| LIMONENE                       | BL    | 0.002 |
| DECAMETHYLCYCLOPENTASILOXANE   | 0.015 | 1.442 |

|                                    |            |            |
|------------------------------------|------------|------------|
| <b>TOTAL ALCOHOLS PLUS ACETONE</b> | <b>1.1</b> | <b>4.9</b> |
|------------------------------------|------------|------------|

| <b>TARGET COMPOUNDS (GC)***</b> |      |      |
|---------------------------------|------|------|
| ETHYLENE                        | <0.6 | <0.6 |
| CARBON MONOXIDE                 | <1.1 | 3.6  |
| METHANE                         | 1.3  | 25   |
| HYDROGEN                        | <1.6 | 5.3  |
| CARBON DIOXIDE                  | 860  | 8300 |

|                                                           |             |             |
|-----------------------------------------------------------|-------------|-------------|
| <b>TOTAL CONCENTRATION<br/>(NON-METHANE HYDROCARBONS)</b> | <b>0.46</b> | <b>22.0</b> |
|-----------------------------------------------------------|-------------|-------------|

< : Value is less than the laboratory report detection limit.

TRACE: Amount detected is sufficient for compound identification only. Calculations are based on one-half of the laboratory report detection limit (1.1 mg/m<sup>3</sup> for CO; 0.2 mg/m<sup>3</sup> for CH<sub>4</sub>; 1.6 mg/m<sup>3</sup> for H<sub>2</sub>; 0.05 mg/m<sup>3</sup> for VOCs; and 0.02 mg/m<sup>3</sup> for propenal.)

BL: Area below the search routine limit (<20% of the fluorobenzene peak area).

\*\*\*Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.

NOTE: High levels (above 1.5ppm) of Methanol, Ethanol, Acetone, Isopropanol and 2-Butanone are routinely reported based on calibrated GC-FID measurements.

TABLE 1B  
ANALYTICAL RESULTS OF  
ISS 8A CONTAINER AIR SAMPLES

| CHEMICAL CONTAMINANT              | CONCENTRATION<br>(mg/m3)                           |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                      |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
|-----------------------------------|----------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
|                                   | AA03327<br>SN1019<br>Lab<br>12/26/1997<br>08:21GMT | AA03328<br>SN1062<br>FGB<br>12/26/1997<br>08:23GMT | AA03329<br>SN1049<br>Service Mod.<br>12/26/1997<br>08:24GMT | AA03330<br>SN1025<br>Lab<br>1/21/1998<br>07:30GMT | AA03331<br>SN1051<br>FGB<br>1/21/1998<br>07:32GMT | AA03332<br>SN1047<br>Service Mod.<br>1/21/1998<br>07:34GMT | AA03333<br>SN1043<br>Lab<br>1/23/1998<br>09:15GMT | AA03334<br>SN1001<br>Airlock<br>2/20/02@<br>22:14GMT | AA03335<br>S/N 1016<br>Airlock<br>2/22/02@<br>07:28GMT | AA03336<br>SN1036<br>Lab<br>3/7/02@<br>12:28GMT | AA03337<br>SN1032<br>FGB<br>3/7/02@<br>12:29GMT | AA03338<br>SN1002<br>Service Mod.<br>3/7/02@<br>12:30GMT | AA03339<br>S/N 1073<br>Node 1<br>4/2/02@<br>10:37GMT | AA03340<br>S/N 1040<br>Node 1<br>4/2/02@<br>13:40GMT |
|                                   |                                                    |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                      |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
| TARGET COMPOUNDS (TO-14/POLAR)*** |                                                    |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                      |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
| FREON 12                          | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| CHLOROMETHANE                     | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| FREON 114                         | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| METHANOL                          | 0.63                                               | 0.58                                               | 0.71                                                        | 0.85                                              | 0.90                                              | 0.86                                                       | 0.88                                              | 0.72                                                 | 0.78                                                   | 0.69                                            | 0.70                                            | 0.69                                                     | 0.51                                                 | 0.29                                                 |
| ACETALDEHYDE                      | 0.20                                               | 0.20                                               | 0.21                                                        | 0.18                                              | 0.16                                              | 0.21                                                       | 0.14                                              | 0.66                                                 | 0.13                                                   | 0.15                                            | 0.19                                            | 0.20                                                     | 0.17                                                 | 0.16                                                 |
| VINYL CHLORIDE                    | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| BROMOMETHANE                      | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| ETHANOL                           | 3.62                                               | 3.30                                               | 3.28                                                        | 4.70                                              | 2.73                                              | 2.60                                                       | 2.77                                              | 3.32                                                 | 3.1                                                    | 2.90                                            | 2.77                                            | 2.72                                                     | 2.48                                                 | 2.49                                                 |
| CHLOROETHANE                      | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| ACETONITRILE                      | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| PROPENAL                          | <0.02                                              | <0.02                                              | <0.02                                                       | <0.02                                             | <0.02                                             | <0.02                                                      | <0.02                                             | TRACE                                                | <0.02                                                  | <0.02                                           | <0.02                                           | <0.02                                                    | <0.02                                                | <0.02                                                |
| ACETONE                           | 0.31                                               | 0.42                                               | 0.30                                                        | 0.29                                              | 0.22                                              | 0.26                                                       | 0.19                                              | 0.79                                                 | 0.21                                                   | 0.14                                            | 0.14                                            | 0.19                                                     | 0.12                                                 | 0.2                                                  |
| PROPANAL                          | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.12                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 2-PROPANOL                        | 0.26                                               | 0.18                                               | 0.22                                                        | 0.32                                              | 0.18                                              | 0.23                                                       | 0.34                                              | 0.62                                                 | 0.29                                                   | 0.15                                            | 0.12                                            | 0.15                                                     | 0.09                                                 | 0.1                                                  |
| FREON 11                          | <0.05                                              | <0.05                                              | <0.05                                                       | TRACE                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | TRACE                                                  | <0.05                                           | <0.05                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| FURAN                             | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| ACRYLONITRILE                     | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| PENTANE                           | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2-METHYL-2-PROPANOL               | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | <0.05                                             | TRACE                                                      | <0.05                                             | 0.22                                                 | TRACE                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | TRACE                                                |
| METHYL ACETATE                    | <0.05                                              | <0.05                                              | TRACE                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,1-DICHLOROETHENE                | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| DICHLOROMETHANE                   | 0.17                                               | 0.14                                               | 0.13                                                        | 0.26                                              | 0.20                                              | 0.19                                                       | 0.20                                              | 0.17                                                 | 0.27                                                   | 0.18                                            | 0.15                                            | 0.17                                                     | 0.16                                                 | 0.2                                                  |
| 3-CHLOROPROPENE                   | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| FREON 113                         | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | TRACE                                                |
| N-PROPANOL                        | 0.07                                               | 1.84                                               | 0.06                                                        | 0.09                                              | TRACE                                             | 0.06                                                       | TRACE                                             | 0.41                                                 | 0.05                                                   | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 1,1-DICHLOROETHANE                | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| BUTANAL                           | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.19                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 2-BUTANONE                        | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.12                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 1,2-DICHLOROETHENE                | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2-METHYLFURAN                     | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| ETHYL ACETATE                     | 0.06                                               | 0.06                                               | 0.06                                                        | 0.05                                              | TRACE                                             | TRACE                                                      | TRACE                                             | 0.19                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| HEXANE                            | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| CHLOROFORM                        | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2-BUTENAL                         | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,2-DICHLOROETHANE                | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 1,1,1-TRICHLOROETHANE             | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| N-BUTANOL                         | 0.18                                               | 0.91                                               | 0.18                                                        | 0.23                                              | 0.13                                              | 0.16                                                       | 0.11                                              | 7.45                                                 | 0.29                                                   | 0.11                                            | 0.11                                            | 0.14                                                     | 0.09                                                 | 0.09                                                 |
| BENZENE                           | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | 0.12                                                 | TRACE                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | TRACE                                                |
| CARBON TETRACHLORIDE              | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2-PENTANONE                       | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | TRACE                                                | TRACE                                                |
| PENTANAL                          | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.10                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 1,2-DICHLOROPROPANE               | <0.05                                              | <0.05                                              | <0.05                                                       | TRACE                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | TRACE                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,4-DIOXANE                       | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| TRICHLOROETHENE                   | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2,5-DIMETHYLFURAN                 | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 4-METHYL-2-PENTANONE              | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | <0.05                                             | TRACE                                                      | <0.05                                             | 0.21                                                 | TRACE                                                  | TRACE                                           | <0.05                                           | <0.05                                                    | <0.05                                                | TRACE                                                |
| CIS-1,3-DICHLOROPROPENE           | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 2-PENTENAL                        | <0.05                                              | <0.05                                              | TRACE                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| TRANS-1,3-DICHLOROPROPENE         | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,1,2-TRICHLOROETHANE             | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| TOLUENE                           | 0.06                                               | 0.05                                               | 0.06                                                        | 0.05                                              | TRACE                                             | TRACE                                                      | TRACE                                             | 3.05                                                 | 0.13                                                   | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| HEXANAL                           | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| MESITYL OXIDE                     | <0.05                                              | 0.10                                               | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,2-DIBROMOETHANE                 | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| BUTYL ACETATE                     | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.72                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| TETRACHLOROETHENE                 | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | 0.15                                                 | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| CHLOROBENZENE                     | <0.05                                              | <0.05                                              | TRACE                                                       | <0.05                                             | <0.05                                             | TRACE                                                      | <0.05                                             | 0.22                                                 | TRACE                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| ETHYL BENZENE                     | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 0.34                                                 | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| M- + P-XYLENES                    | 0.05                                               | 0.06                                               | 0.06                                                        | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | 1.33                                                 | 0.06                                                   | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| 2-HEPTANONE                       | TRACE                                              | <0.05                                              | TRACE                                                       | <0.05                                             | <0.05                                             | TRACE                                                      | <0.05                                             | TRACE                                                | TRACE                                                  | TRACE                                           | <0.05                                           | <0.05                                                    | <0.05                                                | TRACE                                                |
| CYCLOHEXANONE                     | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| HEPTANAL                          | TRACE                                              | TRACE                                              | TRACE                                                       | TRACE                                             | TRACE                                             | TRACE                                                      | TRACE                                             | TRACE                                                | TRACE                                                  | TRACE                                           | TRACE                                           | TRACE                                                    | TRACE                                                | TRACE                                                |
| STYRENE                           | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,1,2,2-TETRACHLOROETHANE         | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| O-XYLENE                          | 0.10                                               | 0.10                                               | 0.11                                                        | 0.08                                              | 0.08                                              | 0.08                                                       | 0.06                                              | 2.35                                                 | 0.09                                                   | TRACE                                           | 0.06                                            | 0.07                                                     | 0.24                                                 | 0.23                                                 |
| 1,3,5-TRIMETHYLBENZENE            | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,2,4-TRIMETHYLBENZENE            | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,3-DICHLOROBENZENE               | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,4-DICHLOROBENZENE               | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,2-DICHLOROBENZENE               | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | TRACE                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| 1,2,4-TRICHLOROBENZENE            | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |
| HEXACHLORO-1,3-BUTADIENE          | <0.05                                              | <0.05                                              | <0.05                                                       | <0.05                                             | <0.05                                             | <0.05                                                      | <0.05                                             | <0.05                                                | <0.05                                                  | <0.05                                           | <0.05                                           | <0.05                                                    | <0.05                                                | <0.05                                                |

| TARGET COMPOUNDS (TOXIC)      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1,3-BUTADIENE                 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| ETHYLENE OXIDE                | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| CARBON DISULFIDE              | TRACE | TRACE | TRACE | TRACE | <0.05 | <0.05 | TRACE | TRACE | TRACE | <0.05 | TRACE | <0.05 | TRACE | TRACE |
| 2-METHYL-2-PROPENAL           | TRACE | TRACE | <0.05 | <0.05 | <0.05 | TRACE | <0.05 | TRACE | TRACE | <0.05 | <0.05 | <0.05 | <0.05 | TRACE |
| 3-BUTEN-2-ONE                 | <0.05 | TRACE | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | TRACE | TRACE | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 2-ETHOXYETHANOL               | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | TRACE | TRACE | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| DIMETHYLDISULFIDE             | TRACE | TRACE | TRACE | <0.05 | TRACE | TRACE | TRACE | TRACE | TRACE | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| OCTAMETHYLCYCLOTETRAISILOXANE | 3.75  | 2.05  | 0.51  | 0.33  | 0.28  | 1.47  | 0.59  | 2.88  | 3.99  | 0.52  | 3.33  | 0.35  | 0.2   | 1.32  |

|                                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C7-ALKANE                      | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.315 | 0.009 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| DIMETHYLCYCLOPENTANE ISOMER    | 0.001 | 0.001 | 0.000 | 0.000 | BL    | BL    | 0.000 | 0.043 | 0.001 | BL    | BL    | BL    | 0.001 | BL    |
| PROPANOIC ACID, ETHYL ESTER    | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.099 | 0.004 | BL    | BL    | BL    | BL    | BL    |
| DIMETHYLCYCLOPENTANE ISOMER    | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.130 | 0.004 | BL    | BL    | BL    | BL    | 0.001 |
| ACETIC ACID, PROPYL ESTER      | 0.000 | 0.006 | BL    | BL    | BL    | BL    | BL    | 0.069 | 0.003 | BL    | BL    | BL    | BL    | BL    |
| HEPTANE                        | 0.013 | 0.012 | 0.011 | 0.007 | 0.005 | 0.006 | 0.005 | 0.749 | 0.023 | 0.002 | 0.002 | 0.003 | 0.002 | 0.004 |
| FORMIC ACID, BUTYL ESTER       | BL    | 0.004 | BL    | BL    | BL    | BL    | BL    | 0.118 | 0.003 | BL    | BL    | BL    | BL    | BL    |
| METHYLCYCLOHEXANE              | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.227 | 0.009 | BL    | BL    | 0.001 | 0.001 | 0.001 |
| C8-ALKANE                      | 0.001 | 0.001 | 0.001 | BL    | BL    | BL    | BL    | 0.058 | 0.001 | BL    | BL    | BL    | BL    | 0.001 |
| ETHYLCYCLOPENTANE              | 0.001 | 0.001 | 0.001 | BL    | BL    | BL    | BL    | 0.063 | 0.002 | BL    | BL    | BL    | BL    | BL    |
| C8-ALKANE                      | BL    | BL    | BL    | BL    | BL    | BL    | BL    | 0.033 | 0.001 | BL    | BL    | BL    | BL    | BL    |
| C3-SUBSTITUTED CYCLOPENTANE    | BL    | BL    | BL    | BL    | BL    | BL    | BL    | 0.044 | 0.001 | BL    | BL    | BL    | BL    | BL    |
| CARBONIC ACID, DIETHYL ESTER** | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.092 | 0.004 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| C8-ALKANE                      | 0.003 | 0.003 | 0.003 | 0.001 | 0.001 | 0.001 | 0.001 | 0.115 | 0.004 | 0.001 | 0.000 | 0.001 | 0.001 | 0.002 |
| C8-ALKANE                      | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.078 | 0.002 | BL    | BL    | BL    | 0.001 | 0.001 |
| C8-ALKANE                      | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.154 | 0.004 | 0.000 | 0.000 | BL    | 0.001 | 0.001 |
| PENTAMETHYLDISILOXANE-1-OL     | 0.002 | BL    | 0.001 | 0.004 | 0.002 | BL    | 0.003 | 0.006 | 0.002 | 0.001 | 0.000 | 0.001 | 0.002 | BL    |
| C8-ALKANE                      | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | BL    | BL    | 0.094 | 0.003 | BL    | BL    | BL    | BL    | BL    |
| BUTANOIC ACID, ETHYL ESTER     | 0.009 | 0.008 | 0.008 | 0.007 | 0.005 | 0.005 | 0.004 | 0.248 | 0.009 | 0.002 | 0.003 | 0.002 | 0.005 | 0.004 |
| OCTANE                         | 0.003 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.071 | 0.003 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| C7-OXYGENATED HYDROCARBON      | BL    | BL    | BL    | BL    | BL    | BL    | BL    | 0.033 | 0.001 | BL    | BL    | BL    | BL    | BL    |
| HEXAMETHYLCYCLOTRISILOXANE     | 4.376 | 0.485 | 0.956 | 0.500 | 0.503 | 2.113 | 1.341 | 3.867 | 3.610 | 1.032 | 3.278 | 0.699 | 0.354 | 1.881 |
| BENZALDEHYDE                   | 0.013 | 0.012 | 0.014 | 0.007 | 0.007 | 0.012 | 0.007 | 0.184 | 0.013 | 0.008 | 0.010 | 0.009 | 0.006 | 0.009 |
| A-PNENE                        | 0.004 | 0.003 | 0.004 | 0.003 | 0.002 | 0.003 | 0.002 | 0.090 | 0.004 | 0.001 | 0.001 | 0.002 | 0.003 | 0.004 |
| C4-SUBSTITUTED BENZENE         | 0.011 | 0.011 | 0.011 | 0.009 | 0.008 | 0.010 | 0.007 | 0.061 | 0.006 | 0.004 | 0.005 | 0.006 | 0.003 | 0.003 |
| LIMONENE                       | 0.011 | 0.010 | 0.009 | 0.042 | 0.045 | 0.054 | 0.024 | 0.154 | 0.022 | 0.038 | 0.032 | 0.038 | 0.013 | 0.013 |
| DECAMETHYLCYCLOPENTASILOXANE   | 0.611 | 0.013 | 0.195 | 0.444 | 0.287 | 0.397 | 0.371 | 0.603 | 0.546 | 0.173 | 0.461 | 0.164 | 0.098 | 0.177 |

|                             |     |     |     |     |     |     |     |      |     |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|
| TOTAL ALCOHOLS PLUS ACETONE | 5.1 | 7.2 | 4.7 | 6.5 | 4.2 | 4.2 | 4.3 | 13.3 | 4.7 | 4.0 | 3.8 | 3.9 | 3.3 | 3.2 |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|

|                          |       |      |      |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TARGET COMPOUNDS (GC)*** |       |      |      |       |       |       |       |       |       |       |       |       |       |       |
| ETHYLENE                 | <0.6  | <0.6 | <0.6 | <0.6  | <0.6  | <0.6  | <0.6  | TRACE | 1.1   | <0.6  | <0.6  | <0.6  | <0.6  | <0.6  |
| CARBON MONOXIDE          | TRACE | <1.1 | <1.1 | TRACE | TRACE | <1.1  | <1.1  | 1.6   | TRACE | TRACE | <1.1  | <1.1  | TRACE | TRACE |
| METHANE                  | 57.0  | 57.0 | 57.0 | 150.0 | 150.0 | 150.0 | 150.0 | 240.0 | 120.0 | 18.0  | 20.0  | 20.0  | 14.0  | 14.0  |
| HYDROGEN                 | 4.4   | 4.2  | 4.3  | 4.7   | 4.8   | 4.9   | 4.8   | 2.7   | 1.0   | TRACE | TRACE | TRACE | TRACE | TRACE |
| CARBON DIOXIDE           | 7500  | 6800 | 7400 | 7800  | 7300  | 7000  | 7600  | 14000 | 7800  | 8400  | 7500  | 8400  | 7300  | 8900  |

|                                                   |       |       |       |       |       |       |       |       |       |      |      |      |    |      |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|----|------|
| TOTAL CONCENTRATION<br>(NON-METHANE HYDROCARBONS) | 293.2 | 312.9 | 273.2 | 182.3 | 193.7 | 229.1 | 144.4 | 153.2 | 127.2 | 80.1 | 90.7 | 79.4 | 85 | 78.7 |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|----|------|

< : Value is less than the laboratory report detection limit.

TRACE: Amount detected is sufficient for compound identification only. Calculations are based on one-half of the laboratory report detection limit (1.1 mg/m3 for CO; 0.2 mg/m3 for CH4; 1.6 mg/m3 for H2; 0.05 mg/m3 for VOCs; and 0.02 mg/m3 for propenal.)

BL: Area below the search routine limit (<20% of the fluorobenzene peak area).

\*\*\*Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.

NOTE: High levels (above 1.5ppm) of Methanol, Ethanol, Acetone, Isopropanol and 2-Butanone are routinely reported based on calibrated GC-FID measurements.

\*\* TEMPORARY SMAC SET BY JOHN JAMES ON 4/26/02.

**TABLE 2A**  
**ANALYTICAL RESULTS OF**  
**STS-110 CONTAINER AIR SAMPLES**

| CHEMICAL CONTAMINANT                     | T-VALUE (7-d SMAC)                                      |                                                |
|------------------------------------------|---------------------------------------------------------|------------------------------------------------|
|                                          | AA03322<br>S/N 1006<br>PREFLIGHT<br>4/8/02<br>@12:00EST | AA03341<br>S/N 1078<br>MIDDECK<br>MET 10\12:27 |
| <b>TARGET COMPOUNDS (TO-14/POLAR)***</b> |                                                         |                                                |
| FREON 12                                 | ND                                                      | 0.00005                                        |
| CHLOROMETHANE                            | ND                                                      | 0.00061                                        |
| FREON 114                                | ND                                                      | ND                                             |
| METHANOL                                 | 0.00278                                                 | 0.02970                                        |
| ACETALDEHYDE                             | 0.00625                                                 | 0.03640                                        |
| VINYL CHLORIDE                           | ND                                                      | ND                                             |
| BROMOMETHANE                             | ND                                                      | ND                                             |
| ETHANOL                                  | 0.00001                                                 | 0.00220                                        |
| CHLOROETHANE                             | ND                                                      | ND                                             |
| ACETONITRILE                             | ND                                                      | 0.00373                                        |
| PROPENAL                                 | ND                                                      | ND                                             |
| ACETONE                                  | 0.00048                                                 | 0.00437                                        |
| PROPANAL                                 | 0.00175                                                 | 0.00175                                        |
| 2-PROPANOL                               | 0.00088                                                 | 0.00017                                        |
| FREON 11                                 | ND                                                      | ND                                             |
| FURAN                                    | ND                                                      | ND                                             |
| ACRYLONITRILE                            | ND                                                      | ND                                             |
| PENTANE                                  | ND                                                      | ND                                             |
| 2-METHYL-2-PROPANOL                      | ND                                                      | 0.00017                                        |
| METHYL ACETATE                           | ND                                                      | ND                                             |
| 1,1-DICHLOROETHENE                       | ND                                                      | ND                                             |
| DICHLOROMETHANE                          | ND                                                      | 0.00803                                        |
| 3-CHLOROPROPENE                          | ND                                                      | ND                                             |
| FREON 113                                | ND                                                      | ND                                             |
| N-PROPANOL                               | ND                                                      | ND                                             |
| 1,1-DICHLOROETHANE                       | ND                                                      | ND                                             |
| BUTANAL                                  | ND                                                      | 0.00141                                        |
| 2-BUTANONE                               | 0.00083                                                 | 0.00083                                        |
| 1,2-DICHLOROETHENE                       | ND                                                      | ND                                             |
| 2-METHYLFURAN                            | ND                                                      | ND                                             |
| ETHYL ACETATE                            | ND                                                      | 0.00014                                        |
| HEXANE                                   | ND                                                      | ND                                             |
| CHLOROFORM                               | ND                                                      | ND                                             |
| 2-BUTENAL                                | ND                                                      | ND                                             |
| 1,2-DICHLOROETHANE                       | ND                                                      | ND                                             |
| 1,1,1-TRICHLOROETHANE                    | ND                                                      | ND                                             |
| N-BUTANOL                                | 0.00031                                                 | 0.00031                                        |
| BENZENE                                  | ND                                                      | ND                                             |
| CARBON TETRACHLORIDE                     | ND                                                      | ND                                             |
| 2-PENTANONE                              | ND                                                      | ND                                             |
| PENTANAL                                 | ND                                                      | 0.00118                                        |
| 1,2-DICHLOROPROPANE                      | ND                                                      | ND                                             |
| 1,4-DIOXANE                              | ND                                                      | ND                                             |
| TRICHLOROETHENE                          | ND                                                      | ND                                             |
| 2,5-DIMETHYLFURAN                        | ND                                                      | ND                                             |
| 4-METHYL-2-PENTANONE                     | ND                                                      | ND                                             |
| CIS-1,3-DICHLOROPROPENE                  | ND                                                      | ND                                             |

|                           |         |         |
|---------------------------|---------|---------|
| 2-PENTENAL                | ND      | ND      |
| TRANS-1,3-DICHLOROPROPENE | ND      | ND      |
| 1,1,2-TRICHLOROETHANE     | ND      | ND      |
| TOLUENE                   | ND      | 0.00042 |
| HEXANAL                   | ND      | 0.00101 |
| MESITYL OXIDE             | ND      | ND      |
| 1,2-DIBROMOETHANE         | ND      | ND      |
| BUTYL ACETATE             | ND      | ND      |
| TETRACHLOROETHENE         | ND      | ND      |
| CHLOROBENZENE             | ND      | ND      |
| ETHYL BENZENE             | ND      | ND      |
| M- + P-XYLENES            | ND      | ND      |
| 2-HEPTANONE               | ND      | ND      |
| CYCLOHEXANONE             | ND      | ND      |
| HEPTANAL                  | 0.00089 | 0.00089 |
| STYRENE                   | ND      | ND      |
| 1,1,2,2-TETRACHLOROETHANE | ND      | ND      |
| O-XYLENE                  | ND      | ND      |
| 1,3,5-TRIMETHYLBENZENE    | ND      | ND      |
| 1,2,4-TRIMETHYLBENZENE    | 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      |
| DIMETHYLDISULFIDE            | ND      | ND      |
| 2-ETHOXYETHANOL              | ND      | ND      |
| OCTAMETHYLCYCLOTETRASILOXANE | 0.00009 | 0.00035 |

| NON-TARGET COMPOUNDS        |         |         |
|-----------------------------|---------|---------|
| OCTAFLUOROPROPANE           | 0.00000 | 0.00017 |
| BROMOTRIFLUOROMETHANE       | BL      | 0.00003 |
| 1-PROPENE                   | BL      | 0.00000 |
| CARBONYL SULFIDE            | BL      | 0.00004 |
| 2-METHYLPROPANE             | BL      | BL      |
| FLUOROTRIMETHYLSILANE       | BL      | BL      |
| 2-METHYL PROPANAL           | BL      | BL      |
| TRIMETHYLSILANOL            | BL      | 0.00016 |
| 2-METHYL 2-PROPENENITRILE   | BL      | BL      |
| 1,3-DIOXOLANE               | BL      | 0.00006 |
| 2-METHYLPROPANENITRILE      | BL      | BL      |
| C7-ALKANE                   | BL      | BL      |
| C7-ALKANE                   | BL      | BL      |
| C7-ALKANE                   | BL      | BL      |
| C7-ALKANE                   | 0.00001 | BL      |
| C7-ALKANE                   | BL      | 0.00000 |
| UNKNOWN ALCOHOL             | BL      | BL      |
| HEXAMETHYLDISILOXANE        | BL      | BL      |
| C7-ALKANE                   | BL      | BL      |
| DIMETHYLCYCLOPENTANE ISOMER | BL      | BL      |
| PROPANOIC ACID, ETHYL ESTER | BL      | BL      |
| DIMETHYLCYCLOPENTANE ISOMER | BL      | BL      |
| ACETIC ACID, PROPYL ESTER   | BL      | BL      |
| HEPTANE                     | BL      | BL      |

|                                 |                |                |
|---------------------------------|----------------|----------------|
| FORMIC ACID, BUTYL ESTER        | BL             | BL             |
| METHYLCYCLOHEXANE               | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| ETHYLCYCLOPENTANE               | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| C3-SUBSTITUTED CYCLOPENTANE     | BL             | BL             |
| CARBONIC ACID, DIETHYL ESTER**  | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| PENTAMETHYLDISILOXANE-1-OL      | BL             | BL             |
| C8-ALKANE                       | BL             | BL             |
| BUTANOIC ACID, ETHYL ESTER      | BL             | BL             |
| OCTANE                          | BL             | BL             |
| C7-OXYGENATED HYDROCARBON       | BL             | BL             |
| HEXAMETHYLCYCLOTRISILOXANE      | 0.00090        | 0.00181        |
| BENZALDEHYDE                    | 0.00002        | 0.00001        |
| A-PINENE                        | BL             | 0.00001        |
| C4-SUBSTITUTED BENZENE          | BL             | BL             |
| LIMONENE                        | BL             | 0.00000        |
| DECAMETHYLCYCLOPENTASILOXANE    | 0.00010        | 0.00962        |
| <b>TARGET COMPOUNDS (GC)***</b> |                |                |
| ETHYLENE                        | ND             | ND             |
| CARBON MONOXIDE                 | ND             | 0.32727        |
| METHANE                         | 0.00034        | 0.00658        |
| HYDROGEN                        | ND             | 0.01559        |
| CARBON DIOXIDE                  | 0.06615        | 0.63846        |
| <b>TOTAL T-VALUE</b>            |                |                |
|                                 | <b>0.08179</b> | <b>1.09354</b> |

ND : Value is less than the laboratory report detection limit.

BL: Area below the search routine limit (< 20% of the fluorobenzene peak area).

Note: Number of decimal places in T-Values do not represent significant figures of measurements.

\*\*\*Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.

TABLE 2B  
ANALYTICAL RESULTS OF  
ISS 8A CONTAINER AIR SAMPLES

| CHEMICAL CONTAMINANT              | T-VALUE (180-d SMAC)                               |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                         |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
|-----------------------------------|----------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
|                                   | AA03327<br>SN1019<br>Lab<br>12/26/1997<br>08:21GMT | AA03328<br>SN1062<br>FGB<br>12/26/1997<br>08:23GMT | AA03329<br>SN1049<br>Service Mod.<br>12/26/1997<br>08:24GMT | AA03330<br>SN1025<br>Lab<br>1/21/1998<br>07:30GMT | AA03331<br>SN1051<br>FGB<br>1/21/1998<br>07:32GMT | AA03332<br>SN1047<br>Service Mod.<br>1/21/1998<br>07:34GMT | AA03333<br>SN1043<br>Lab<br>1/23/1998<br>09:15GMT | AA03334<br>9/27/1902<br>Airlock<br>2/20/02@<br>22:14GMT | AA03335<br>S/N 1016<br>Airlock<br>2/22/02@<br>07:28GMT | AA03336<br>SN1036<br>Lab<br>3/7/02@<br>12:28GMT | AA03337<br>SN1032<br>FGB<br>3/7/02@<br>12:29GMT | AA03338<br>SN1002<br>Service Mod.<br>3/7/02@<br>12:30GMT | AA03339<br>S/N 1073<br>Node 1<br>4/2/02@<br>10:37GMT | AA03340<br>S/N 1040<br>Node 1<br>4/2/02@<br>13:40GMT |
|                                   |                                                    |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                         |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
| TARGET COMPOUNDS (TO-14/POLAR)*** |                                                    |                                                    |                                                             |                                                   |                                                   |                                                            |                                                   |                                                         |                                                        |                                                 |                                                 |                                                          |                                                      |                                                      |
| FREON 12                          | 0.00005                                            | 0.00005                                            | 0.00005                                                     | 0.00005                                           | 0.00005                                           | 0.00005                                                    | 0.00005                                           | 0.00005                                                 | 0.00005                                                | 0.00005                                         | 0.00005                                         | 0.00005                                                  | 0.00005                                              | 0.00005                                              |
| CHLOROMETHANE                     | 0.00061                                            | 0.00061                                            | 0.00061                                                     | 0.00061                                           | 0.00061                                           | 0.00061                                                    | 0.00061                                           | 0.00061                                                 | 0.00061                                                | 0.00061                                         | 0.00061                                         | 0.00061                                                  | 0.00061                                              | 0.00061                                              |
| FREON 114                         | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| METHANOL                          | 0.06973                                            | 0.06390                                            | 0.07846                                                     | 0.09462                                           | 0.09957                                           | 0.09564                                                    | 0.09753                                           | 0.07962                                                 | 0.08661                                                | 0.07613                                         | 0.07759                                         | 0.07642                                                  | 0.05662                                              | 0.03275                                              |
| ACETALDEHYDE                      | 0.05019                                            | 0.05104                                            | 0.05268                                                     | 0.04536                                           | 0.04115                                           | 0.05128                                                    | 0.03441                                           | 0.16526                                                 | 0.03287                                                | 0.03768                                         | 0.04798                                         | 0.05060                                                  | 0.04178                                              | 0.04008                                              |
| VINYL CHLORIDE                    | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| BROMOMETHANE                      | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ETHANOL                           | 0.00181                                            | 0.00165                                            | 0.00164                                                     | 0.00235                                           | 0.00137                                           | 0.00130                                                    | 0.00138                                           | 0.00166                                                 | 0.00153                                                | 0.00145                                         | 0.00138                                         | 0.00136                                                  | 0.00124                                              | 0.00124                                              |
| CHLOROETHANE                      | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ACETONITRILE                      | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | 0.00373                                                    | 0.00373                                           | 0.00373                                                 | 0.00373                                                | 0.00373                                         | 0.00373                                         | 0.00373                                                  | 0.00373                                              | 0.00373                                              |
| PROPENAL                          | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.33333                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ACETONE                           | 0.00604                                            | 0.00808                                            | 0.00578                                                     | 0.00563                                           | 0.00428                                           | 0.00495                                                    | 0.00362                                           | 0.01511                                                 | 0.00395                                                | 0.00276                                         | 0.00274                                         | 0.00359                                                  | 0.00231                                              | 0.00358                                              |
| PROPANAL                          | 0.00694                                            | 0.00694                                            | 0.00694                                                     | 0.00694                                           | 0.00694                                           | 0.00694                                                    | 0.00694                                           | 0.03376                                                 | 0.00694                                                | 0.00694                                         | 0.00694                                         | 0.00694                                                  | 0.00694                                              | 0.00694                                              |
| 2-PROPANOL                        | 0.00174                                            | 0.00123                                            | 0.00145                                                     | 0.00216                                           | 0.00121                                           | 0.00152                                                    | 0.00228                                           | 0.00416                                                 | 0.00197                                                | 0.00103                                         | 0.00077                                         | 0.00099                                                  | 0.00060                                              | 0.00088                                              |
| FREON 11                          | ND                                                 | ND                                                 | ND                                                          | 0.00003                                           | ND                                                | ND                                                         | ND                                                | 0.00003                                                 | 0.00003                                                | ND                                              | ND                                              | 0.00003                                                  | 0.00003                                              | 0.00003                                              |
| FURAN                             | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ACRYLONITRILE                     | 0.00893                                            | 0.00893                                            | 0.00893                                                     | 0.00893                                           | 0.00893                                           | 0.00893                                                    | 0.00893                                           | 0.00893                                                 | 0.00893                                                | 0.00893                                         | 0.00893                                         | 0.00893                                                  | 0.00893                                              | 0.00893                                              |
| PENTANE                           | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00004                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2-METHYL-2-PROPANOL               | 0.00021                                            | 0.00021                                            | 0.00021                                                     | 0.00021                                           | ND                                                | 0.00021                                                    | ND                                                | 0.00186                                                 | 0.00021                                                | ND                                              | ND                                              | ND                                                       | ND                                                   | 0.00021                                              |
| METHYL ACETATE                    | ND                                                 | ND                                                 | 0.00021                                                     | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00021                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,1-DICHLOROETHENE                | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| DICHLOROMETHANE                   | 0.01666                                            | 0.01359                                            | 0.01259                                                     | 0.02556                                           | 0.01959                                           | 0.01898                                                    | 0.02012                                           | 0.01732                                                 | 0.02652                                                | 0.01774                                         | 0.01454                                         | 0.01671                                                  | 0.01561                                              | 0.01728                                              |
| 3-CHLOROPROPENE                   | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| FREON 113                         | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00006                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | 0.00006                                              |
| N-PROPANOL                        | 0.00067                                            | 0.01879                                            | 0.00060                                                     | 0.00087                                           | 0.00026                                           | 0.00057                                                    | 0.00026                                           | 0.00415                                                 | 0.00053                                                | 0.00026                                         | 0.00026                                         | 0.00026                                                  | 0.00026                                              | 0.00026                                              |
| 1,1-DICHLOROETHANE                | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| BUTANAL                           | 0.00568                                            | 0.00568                                            | 0.00568                                                     | 0.00568                                           | 0.00568                                           | 0.00568                                                    | 0.00568                                           | 0.04430                                                 | 0.00568                                                | 0.00568                                         | 0.00568                                         | 0.00568                                                  | 0.00568                                              | 0.00568                                              |
| 2-BUTANONE                        | 0.00083                                            | 0.00083                                            | 0.00083                                                     | 0.00083                                           | 0.00083                                           | 0.00083                                                    | 0.00083                                           | 0.00406                                                 | 0.00083                                                | 0.00083                                         | 0.00083                                         | 0.00083                                                  | 0.00083                                              | 0.00083                                              |
| 1,2-DICHLOROETHENE                | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2-METHYLFURAN                     | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ETHYL ACETATE                     | 0.00036                                            | 0.00036                                            | 0.00033                                                     | 0.00030                                           | 0.00014                                           | 0.00014                                                    | 0.00014                                           | 0.00106                                                 | 0.00014                                                | 0.00014                                         | 0.00014                                         | 0.00014                                                  | 0.00014                                              | 0.00014                                              |
| HEXANE                            | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00014                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| CHLOROFORM                        | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2-BUTENAL                         | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,2-DICHLOROETHANE                | 0.02500                                            | 0.02500                                            | 0.02500                                                     | 0.02500                                           | 0.02500                                           | 0.02500                                                    | 0.02500                                           | 0.02500                                                 | 0.02500                                                | 0.02500                                         | 0.02500                                         | 0.02500                                                  | 0.02500                                              | 0.02500                                              |
| 1,1,1-TRICHLOROETHANE             | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| N-BUTANOL                         | 0.00453                                            | 0.02269                                            | 0.00448                                                     | 0.00586                                           | 0.00324                                           | 0.00396                                                    | 0.00280                                           | 0.18631                                                 | 0.00736                                                | 0.00278                                         | 0.00263                                         | 0.00342                                                  | 0.00224                                              | 0.00236                                              |
| BENZENE                           | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.60115                                                 | 0.12500                                                | ND                                              | ND                                              | ND                                                       | ND                                                   | 0.12500                                              |
| CARBON TETRACHLORIDE              | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2-PENTANONE                       | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | 0.00036                                              | 0.00036                                              |
| PENTANAL                          | 0.00472                                            | 0.00472                                            | 0.00472                                                     | 0.00472                                           | 0.00472                                           | 0.00472                                                    | 0.00472                                           | 0.01796                                                 | 0.00472                                                | 0.00472                                         | 0.00472                                         | 0.00472                                                  | 0.00472                                              | 0.00472                                              |
| 1,2-DICHLOROPROPANE               | ND                                                 | ND                                                 | ND                                                          | 0.00060                                           | ND                                                | ND                                                         | ND                                                | 0.00060                                                 | 0.00060                                                | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,4-DIOXANE                       | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| TRICHLOROETHENE                   | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00250                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2,5-DIMETHYLFURAN                 | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 4-METHYL-2-PENTANONE              | 0.00018                                            | 0.00018                                            | 0.00018                                                     | 0.00018                                           | ND                                                | 0.00018                                                    | ND                                                | 0.00151                                                 | 0.00018                                                | 0.00018                                         | ND                                              | ND                                                       | ND                                                   | 0.00018                                              |
| CIS-1,3-DICHLOROPROPENE           | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 2-PENTENAL                        | ND                                                 | ND                                                 | 0.01190                                                     | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| TRANS-1,3-DICHLOROPROPENE         | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,1,2-TRICHLOROETHANE             | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| TOLUENE                           | 0.00098                                            | 0.00091                                            | 0.00092                                                     | 0.00085                                           | 0.00042                                           | 0.00042                                                    | 0.00042                                           | 0.05075                                                 | 0.00215                                                | 0.00042                                         | 0.00042                                         | 0.00042                                                  | 0.00042                                              | 0.00042                                              |
| HEXANAL                           | 0.00410                                            | 0.00410                                            | 0.00410                                                     | 0.00410                                           | 0.00410                                           | 0.00410                                                    | 0.00410                                           | 0.00410                                                 | 0.00410                                                | 0.00410                                         | 0.00410                                         | 0.00410                                                  | 0.00410                                              | 0.00410                                              |
| MESITYL OXIDE                     | ND                                                 | 0.00257                                            | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00063                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,2-DIBROMOETHANE                 | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| BUTYL ACETATE                     | 0.00013                                            | 0.00013                                            | 0.00013                                                     | 0.00013                                           | 0.00013                                           | 0.00013                                                    | 0.00013                                           | 0.00380                                                 | 0.00013                                                | 0.00013                                         | 0.00013                                         | 0.00013                                                  | 0.00013                                              | 0.00013                                              |
| TETRACHLOROETHENE                 | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00450                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| CHLORO BENZENE                    | ND                                                 | ND                                                 | 0.00054                                                     | ND                                                | ND                                                | 0.00054                                                    | ND                                                | 0.00470                                                 | 0.00054                                                | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| ETHYL BENZENE                     | 0.00050                                            | 0.00050                                            | 0.00050                                                     | 0.00050                                           | 0.00050                                           | 0.00050                                                    | 0.00050                                           | 0.00689                                                 | 0.00050                                                | 0.00050                                         | 0.00050                                         | 0.00050                                                  | 0.00050                                              | 0.00050                                              |
| M- + P-XYLENES                    | 0.00023                                            | 0.00025                                            | 0.00026                                                     | 0.00011                                           | 0.00011                                           | 0.00011                                                    | 0.00011                                           | 0.00606                                                 | 0.00025                                                | 0.00011                                         | 0.00011                                         | 0.00011                                                  | 0.00011                                              | 0.00011                                              |
| 2-HEPTANONE                       | 0.00109                                            | ND                                                 | 0.00109                                                     | ND                                                | ND                                                | 0.00109                                                    | ND                                                | 0.00109                                                 | 0.00109                                                | 0.00109                                         | ND                                              | ND                                                       | ND                                                   | 0.00109                                              |
| CYCLOHEXANONE                     | 0.00042                                            | 0.00042                                            | 0.00042                                                     | 0.00042                                           | 0.00042                                           | 0.00042                                                    | 0.00042                                           | 0.00042                                                 | 0.00042                                                | 0.00042                                         | 0.00042                                         | 0.00042                                                  | 0.00042                                              | 0.00042                                              |
| HEPTANAL                          | 0.00357                                            | 0.00357                                            | 0.00357                                                     | 0.00357                                           | 0.00357                                           | 0.00357                                                    | 0.00357                                           | 0.00357                                                 | 0.00357                                                | 0.00357                                         | 0.00357                                         | 0.00357                                                  | 0.00357                                              | 0.00357                                              |
| STYRENE                           | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00058                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,1,2,2-TETRACHLOROETHANE         | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| O-XYLENE                          | 0.00044                                            | 0.00046                                            | 0.00051                                                     | 0.00037                                           | 0.00035                                           | 0.00038                                                    | 0.00026                                           | 0.01067                                                 | 0.00041                                                | 0.00011                                         | 0.00026                                         | 0.00030                                                  | 0.00110                                              | 0.00103                                              |
| 1,3,5-TRIMETHYLBENZENE            | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00167                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,2,4-TRIMETHYLBENZENE            | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00167                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,3-DICHLOROBENZENE               | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,4-DICHLOROBENZENE               | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00083                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,2-DICHLOROBENZENE               | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | 0.00083                                                 | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| 1,2,4-TRICHLOROBENZENE            | ND                                                 | ND                                                 | ND                                                          | ND                                                | ND                                                | ND                                                         | ND                                                | ND                                                      | ND                                                     | ND                                              | ND                                              | ND                                                       | ND                                                   | ND                                                   |
| HEXACHLORO-1,3-BUTADIENE          | ND                                                 | ND                                                 | ND                                                          | ND                                                | 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      | ND      | ND      | ND      | ND      |
| ETHYLENE OXIDE           | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      |
| CARBON DISULFIDE         | 0.00156 | 0.00156 | 0.00156 | 0.00156 | ND      | ND      | 0.00156 | 0.00156 | 0.00156 | ND      | 0.00156 | ND      | 0.00156 | 0.00156 |
| 2-METHYL-2-PROPENAL      | 0.01471 | 0.01471 | ND      | ND      | ND      | 0.01471 | ND      | 0.01471 | 0.01471 | ND      | ND      | ND      | ND      | 0.01471 |
| 3-BUTEN-2-ONE            | ND      | 0.05814 | ND      | ND      | ND      | ND      | ND      | 0.05814 | 0.05814 | ND      | ND      | ND      | ND      | ND      |
| 2-ETHOXYETHANOL          | ND      | ND      | ND      | ND      | ND      | ND      | 0.08333 | ND      | ND      | ND      | ND      | ND      | ND      | ND      |
| DIMETHYLDISULFIDE        | 0.12500 | 0.12500 | 0.12500 | ND      | 0.12500 | 0.12500 | 0.12500 | 0.12500 | ND      | ND      | ND      | ND      | ND      | ND      |
| OCTAMETHYLCYCLOTETRAH    | 0.31278 | 0.17047 | 0.04237 | 0.02779 | 0.02302 | 0.12288 | 0.04953 | 0.23972 | 0.33268 | 0.04300 | 0.27724 | 0.02928 | 0.01426 | 0.11004 |

| NON-TARGET COMPOUNDS      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| OCTAFLUOROPROPANE         | 0.00327 | 0.00355 | 0.00312 | 0.00203 | 0.00220 | 0.00258 | 0.00161 | 0.00134 | 0.00132 | 0.00086 | 0.00093 | 0.00086 | 0.00093 | 0.00082 |
| BROMOTRIFLUOROMETHANE     | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | BL      | BL      | BL      | BL      | BL      |
| 1-PROPENE                 | 0.00006 | 0.00006 | 0.00005 | 0.00010 | 0.00008 | 0.00009 | 0.00008 | 0.00009 | 0.00005 | 0.00002 | 0.00002 | 0.00003 | 0.00001 | 0.00001 |
| CARBONYL SULFIDE          | 0.00019 | 0.00021 | 0.00015 | 0.00020 | 0.00012 | 0.00014 | 0.00017 | 0.00008 | 0.00017 | 0.00013 | 0.00014 | 0.00015 | 0.00018 | 0.00013 |
| 2-METHYLPROPANE           | 0.00001 | 0.00001 | BL      | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00041 | 0.00006 | 0.00001 | 0.00001 | 0.00001 | 0.00005 | 0.00319 |
| FLUOROTRIMETHYLSILANE     | 0.05211 | 0.02991 | 0.02534 | 0.05219 | 0.02919 | 0.02443 | 0.04266 | 1.29464 | 0.08637 | BL      | BL      | BL      | BL      | 0.08904 |
| 2-METHYL PROPANAL         | 0.00030 | BL      | BL      | BL      | 0.00044 | 0.00000 | 0.00407 | 0.00056 | BL      | 0.00024 | BL      | BL      | BL      | 0.00041 |
| TRIMETHYLSILANOL          | 0.00437 | 0.00245 | 0.00237 | 0.00378 | 0.00182 | 0.00192 | 0.00300 | 0.00807 | 0.00439 | 0.00268 | 0.00154 | 0.00145 | 0.00234 | 0.00299 |
| 2-METHYL 2-PROPENENITRILE | 0.00404 | 0.00481 | 0.00412 | 0.00390 | 0.00279 | 0.00343 | 0.00259 | 0.00474 | 0.00105 | BL      | 0.00226 | 0.00230 | BL      | 0.00160 |
| 1,3-DIOXOLANE             | 0.00071 | 0.00050 | 0.00047 | 0.00088 | 0.00039 | 0.00040 | 0.00049 | 0.00075 | 0.00128 | 0.00055 | 0.00039 | 0.00049 | 0.00080 | 0.00064 |
| 2-METHYLPROPANENITRILE    | 0.00112 | 0.00082 | 0.00081 | 0.00087 | 0.00067 | 0.00074 | 0.00059 | 0.00154 | 0.00053 | 0.00043 | 0.00044 | 0.00055 | 0.00049 | 0.00059 |
| C7-ALKANE                 | 0.00000 | 0.00000 | BL      | BL      | BL      | BL      | BL      | 0.00025 | BL      | BL      | BL      | BL      | BL      | BL      |

|                                       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| C7-ALKANE                             | 0.00002 | 0.00002 | 0.00002 | 0.00002 | 0.00001 | 0.00001 | 0.00001 | 0.00113 | 0.00003 | BL      | 0.00000 | BL      | BL      | BL      |
| C7-ALKANE                             | 0.00009 | 0.00008 | 0.00008 | 0.00006 | 0.00005 | 0.00007 | 0.00004 | 0.00357 | 0.00015 | 0.00004 | 0.00003 | 0.00004 | 0.00003 | 0.00006 |
| C7-ALKANE                             | 0.00004 | 0.00003 | 0.00003 | 0.00003 | 0.00002 | 0.00002 | 0.00002 | 0.00218 | 0.00007 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 |
| C7-ALKANE                             | 0.00009 | 0.00008 | 0.00007 | 0.00006 | 0.00004 | 0.00005 | 0.00004 | 0.00444 | 0.00015 | 0.00002 | 0.00002 | 0.00002 | 0.00002 | 0.00003 |
| UNKNOWN ALCOHOL                       | 0.03631 | 0.02615 | 0.02651 | 0.04507 | 0.02591 | 0.02647 | 0.03127 | 0.95086 | 0.06059 | 0.02816 | 0.02281 | 0.02706 | 0.02702 | 0.02680 |
| HEXAMETHYLDISILOXANE                  | 0.00009 | 0.00013 | BL      | BL      | BL      | BL      | BL      | 0.00301 | 0.00010 | BL      | BL      | BL      | BL      | BL      |
| C7-ALKANE                             | 0.00002 | 0.00002 | 0.00002 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00154 | 0.00004 | 0.00000 | 0.00000 | 0.00000 | 0.00001 | 0.00001 |
| DIMETHYLCYCLOPENTANE ISOMER           | 0.00002 | 0.00002 | 0.00001 | 0.00001 | BL      | BL      | BL      | 0.00144 | 0.00004 | BL      | BL      | BL      | 0.00002 | BL      |
| PROPANOIC ACID, ETHYL ESTER           | 0.00002 | 0.00002 | 0.00002 | 0.00002 | 0.00001 | 0.00001 | 0.00001 | 0.00079 | 0.00003 | BL      | BL      | BL      | BL      | BL      |
| DIMETHYLCYCLOPENTANE ISOMER           | 0.00008 | 0.00007 | 0.00006 | 0.00006 | 0.00004 | 0.00004 | 0.00004 | 0.00434 | 0.00012 | BL      | BL      | BL      | BL      | 0.00002 |
| ACETIC ACID, PROPYL ESTER             | 0.00000 | 0.00003 | BL      | BL      | BL      | BL      | BL      | 0.00040 | 0.00002 | BL      | BL      | BL      | BL      | BL      |
| HEPTANE                               | 0.00007 | 0.00006 | 0.00005 | 0.00004 | 0.00003 | 0.00003 | 0.00003 | 0.00374 | 0.00011 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00002 |
| FORMIC ACID, BUTYL ESTER              | BL      | 0.00005 | BL      | BL      | BL      | BL      | BL      | 0.00141 | 0.00004 | BL      | BL      | BL      | BL      | BL      |
| METHYLCYCLOHEXANE                     | 0.00007 | 0.00006 | 0.00005 | 0.00004 | 0.00003 | 0.00003 | 0.00003 | 0.00379 | 0.00016 | BL      | BL      | 0.00001 | 0.00001 | 0.00002 |
| C8-ALKANE                             | 0.00000 | 0.00000 | 0.00000 | BL      | BL      | BL      | BL      | 0.00025 | 0.00001 | BL      | BL      | BL      | BL      | 0.00000 |
| ETHYLCYCLOPENTANE                     | 0.00002 | 0.00001 | 0.00001 | BL      | BL      | BL      | BL      | 0.00158 | 0.00004 | BL      | BL      | BL      | BL      | BL      |
| C8-ALKANE                             | BL      | BL      | BL      | BL      | BL      | BL      | BL      | 0.00014 | 0.00000 | BL      | BL      | BL      | BL      | BL      |
| C3-SUBSTITUTED CYCLOPENTANE           | BL      | BL      | BL      | BL      | BL      | BL      | BL      | 0.00129 | 0.00003 | BL      | BL      | BL      | BL      | BL      |
| CARBONIC ACID, DIETHYL ESTER          | 0.00013 | 0.00010 | 0.00012 | 0.00018 | 0.00010 | 0.00011 | 0.00013 | 0.00923 | 0.00036 | 0.00013 | 0.00011 | 0.00012 | 0.00013 | 0.00010 |
| C8-ALKANE                             | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00050 | 0.00002 | 0.00000 | 0.00000 | 0.00000 | 0.00001 | 0.00001 |
| C8-ALKANE                             | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00034 | 0.00001 | BL      | BL      | BL      | 0.00000 | 0.00000 |
| C8-ALKANE                             | 0.00002 | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00066 | 0.00002 | 0.00000 | 0.00000 | BL      | 0.00001 | 0.00001 |
| PENTAMETHYLDISILOXANE-1,3,5-TRIMETHYL | 0.00004 | BL      | 0.00002 | 0.00008 | 0.00003 | BL      | 0.00007 | 0.00012 | 0.00004 | 0.00002 | 0.00001 | 0.00002 | 0.00003 | BL      |
| C8-ALKANE                             | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | BL      | 0.00000 | 0.00040 | 0.00001 | BL      | BL      | BL      | BL      | BL      |
| BUTANOIC ACID, ETHYL ESTER            | 0.00006 | 0.00006 | 0.00006 | 0.00005 | 0.00003 | 0.00004 | 0.00003 | 0.00176 | 0.00006 | 0.00001 | 0.00002 | 0.00002 | 0.00003 | 0.00003 |
| OCTANE                                | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00020 | 0.00001 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| C7-OXYGENATED HYDROCARBONS            | BL      | BL      | BL      | BL      | BL      | BL      | BL      | 0.33213 | 0.00523 | BL      | BL      | BL      | BL      | BL      |
| HEXAMETHYLCYCLOTRI-SILOXANE           | 0.48621 | 0.05390 | 0.10625 | 0.05552 | 0.05589 | 0.23474 | 0.14896 | 0.42971 | 0.40110 | 0.11462 | 0.36427 | 0.07767 | 0.03937 | 0.20906 |
| BENZALDEHYDE                          | 0.00008 | 0.00007 | 0.00008 | 0.00004 | 0.00004 | 0.00007 | 0.00004 | 0.00107 | 0.00008 | 0.00005 | 0.00006 | 0.00005 | 0.00003 | 0.00005 |
| A-PINENE                              | 0.00003 | 0.00002 | 0.00003 | 0.00002 | 0.00002 | 0.00002 | 0.00002 | 0.00064 | 0.00003 | 0.00001 | 0.00001 | 0.00001 | 0.00002 | 0.00003 |
| C4-SUBSTITUTED BENZENE                | 0.00078 | 0.00079 | 0.00080 | 0.00065 | 0.00057 | 0.00071 | 0.00052 | 0.00438 | 0.00041 | 0.00029 | 0.00034 | 0.00040 | 0.00020 | 0.00020 |
| LIMONENE                              | 0.00002 | 0.00002 | 0.00002 | 0.00007 | 0.00008 | 0.00010 | 0.00004 | 0.00027 | 0.00004 | 0.00007 | 0.00006 | 0.00007 | 0.00002 | 0.00002 |
| DECAMETHYLCYCLOPENTASILENE            | 0.04076 | 0.00090 | 0.01301 | 0.02962 | 0.01915 | 0.02648 | 0.02471 | 0.04017 | 0.03639 | 0.01153 | 0.03076 | 0.01092 | 0.00650 | 0.01180 |

| TARGET COMPOUNDS (GC)*** |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| ETHYLENE                 | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      |
| CARBON MONOXIDE          | 0.05000 | ND      | ND      | 0.05000 | 0.05000 | ND      | ND      | 0.14545 | 0.05000 | 0.05000 | ND      | ND      | 0.05000 |
| METHANE                  | 0.01500 | 0.01500 | 0.01500 | 0.03947 | 0.03947 | 0.03947 | 0.03947 | 0.06316 | 0.03158 | 0.00474 | 0.00526 | 0.00526 | 0.00368 |
| HYDROGEN                 | 0.01294 | 0.01235 | 0.01265 | 0.01382 | 0.01412 | 0.01441 | 0.01412 | 0.00794 | 0.00294 | 0.00235 | 0.00235 | 0.00235 | 0.00235 |
| CARBON DIOXIDE           | 0.57692 | 0.52308 | 0.56923 | 0.60000 | 0.56154 | 0.53846 | 0.58462 | 1.07692 | 0.60000 | 0.64615 | 0.57692 | 0.64615 | 0.56154 |

|               |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| TOTAL T-VALUE | 1.95655 | 1.29278 | 1.18495 | 1.17484 | 1.18566 | 1.42460 | 1.30009 | 6.59662 | 2.05005 | 1.11298 | 1.50184 | 1.02487 | 0.89973 | 1.50695 |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|

ND : Value is less than the laboratory report detection limit.

BL: Area below the search routine limit (< 20% of the fluorobenzene peak area).

Note: Number of decimal places in T-Values do not represent significant figures of measurements.

\*\*\*Measurements are calibrated by multi-point initial calibration and verified by mid-point continuing calibration.