**JSC TOXICOLOGY GROUP**

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**Memorandum Number**

# TOX-VM-2015-08

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SUBJECT: Toxicological Assessment of ISS Air and Water Quality: November 10, 2014 – March 12, 2015 (Increment 42)

SUMMARY: Based on these data, air quality was acceptable on ISS for this period, and potable water remains acceptable for crew consumption.

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## AIR QUALITY

Six mini grab sample containers (mGSCs) were collected on ISS during Increment 42 and were returned on 40S. All 6 mGSCs were collected as routine monthly samples in the US Laboratory (Lab) and either the Russian Service Module (SM), the Japanese Pressurized Module (JPM) or the Columbus module (Col). Archive air sampling scheduled for January was postponed until after the arrival of SpX-5 to enable concurrent formaldehyde sampling, but the cargo transfer schedule resulted in a substantial delay and cancellation of the January sampling session. Two pairs of passive-diffusion formaldehyde badges were deployed in the US Lab and Russian Service Module (SM) in December, February, and March. A summary of the analytical results is provided in Table 1.

Table 1. Analytical Summary of ISS air analyses

| Sample Location | Sample Date | NMVOCs[a] (mg/m$^3$) | Freon 218 (mg/m$^3$) | Alcohols[b] (mg/m$^3$) | T-Value[c] (units) | $CO_2$ (mg/m$^3$) | Formaldehyde (µg/m$^3$) |
|---|---|---|---|---|---|---|---|
| Lab | 12/1/2014 | 16 | 465 | 14 | 0.4 | 8200 | 26 |
| SM | 12/1/2014 | 16 | 456 | 13 | 0.4 | 8200 | -- |
| Lab | 2/10/2015 | 15 | 234 | 10 | 0.5 | 8000 | 30 |
| JPM | 2/10/2015 | 15 | 234 | 10 | 0.5 | 7900 | -- |
| SM | 2/10/2015 | -- | -- | -- | -- | -- | 20 |
| Lab | 3/4/2015 | 15 | 194 | 12 | 0.4 | 7500 | 33 |
| Col | 3/4/2015 | 15 | 195 | 12 | 0.4 | 7900 | -- |
| SM | 3/4/2015 | -- | -- | -- | -- | -- | 24 |
| *Guideline* | | *<25* | --- | *<5* | *<1*[d] | *<9300* | *<120* |

[a]Non-methane volatile organic hydrocarbons, excluding Freon 218
[b]Includes acetone
[c]Sum of the ratios of the measured concentration and the corresponding 180-day SMAC for each compound, excluding $CO_2$
[d]T-value <1 used to evaluate routine monthly sampling

Complete data tables of all measured concentrations and corresponding T-values based on 180-day SMACs for the routine archive samples are enclosed. The average relative recoveries of the 3 surrogate standards from the mGSCs were as follows: $^{13}$C-acetone, 107 ± 3%; fluorobenzene-$d_5$, 100 ± 5%; and chlorobenzene-

$d_5$, 99 ± 14%. For the passive-diffusion formaldehyde badges, positive control recoveries (3 lab controls) were 104, 112, and 91%, respectively.

During Increment 42, Air Quality Monitor (AQM) unit 2 (S/N 1004) was located in Col until 11/20/2014 when it was moved to the JEM. The unit remained in the JEM from 11/20/2014 – 1/20/2015 and was then returned to the US Lab. This completed the planned rotation of both AQM units throughout all USOS modules. The goal of this effort was to determine the distribution of contaminants across the USOS. Results indicate good mixing and fairly uniform distribution of trace contaminants. A summary report of the survey will be issued separately. AQM unit 1 (S/N 1003) remained in the US Lab throughout the Increment. On 1/20/2015, AQM 1 failed during its run sequence and has remained inoperable since, as troubleshooting proved ineffective. The nominal replacement plan was early 2016, but efforts are being made to send replacements sooner. These efforts were impacted by the loss of SpX-7.

Simultaneous automated AQM sampling sessions are scheduled every 73 hours, which results in 2-3 sampling sessions per unit per week and ensures that samples are taken on different days of the week and at different time of day over the course of an Increment. Nominally, data are received weekly. Monthly average concentrations as well as the Increment average concentrations are presented in Table 2.

Table 2. Average monthly concentrations ($mg/m^3$) of AQM target compounds.

| | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|
| 2-Propanol | 0.2[a] | 0.2[a] | 0.2[a] | -- | -- | 0.2 |
| Acetone | 0.2[a] | 0.2[a] | 0.2[a] | -- | -- | 0.2 |
| Acrolein | ND | ND | ND | -- | -- | ND |
| Benzene | ND | ND | ND | -- | -- | ND |
| 1,2-Dichloroethane | ND | ND | ND | -- | -- | ND |
| Decamethylcyclo-pentasiloxane[&] | 1.7[a] | 2.2[a] | 2.4[a] | 2.8[a#] | 2.7[a#] | 2.4 |
| Hexanal | ND | ND | ND | -- | -- | ND |
| Hexane | ND | ND | ND | -- | -- | ND |
| m,p-Xylenes | ND | ND | ND | TRACE[a#] | ND[a#] | ND |
| Methanol | 0.4[a] | 0.4[a] | 0.4[a] | -- | -- | 0.4 |
| o-Xylene | TRACE | TRACE | TRACE | 0.1[a#] | 0.1[a#] | 0.1 |
| Octamethylcylco-tetrasiloxane | TRACE | TRACE | TRACE | TRACE | TRACE | TRACE |
| Toluene | ND | ND | ND | TRACE | ND | ND |
| 2-Butanone | TRACE | TRACE | TRACE | TRACE | ND | TRACE |
| Acetaldehyde | 0.2[b] | 0.2[c] | 0.2[c] | 0.3[a] | 0.2[a] | 0.2 |
| Dichloromethane | 0.1[b] | 0.1[c] | 0.1[c] | 0.1[a] | 0.1[a] | 0.1 |
| Ethanol[*] | 7.1[b] | 7.4[c] | 7.9[c] | 6.9[a] | 7.3[a] | 7.3 |
| Ethyl Acetate | 0.1[b] | 0.1[c] | 0.1[c] | 0.1[a] | 0.1[a] | 0.1 |
| Hexamethycyclo-trisiloxane | 1.8[b] | 1.8[c] | 2.0[c] | 1.9[a] | 1.8[a] | 1.9 |
| n-Butanol | 0.1[b] | 0.1[c] | 0.1[c] | 0.1[a] | 0.1[a] | 0.1 |
| Trimethylsilanol | 0.3[b] | 0.3[c] | 0.4[c] | 0.3[a] | 0.3[a] | 0.3 |

[a]Concentrations measured in Lab, [b]Concentrations measured in Col, [c]Concentrations measured in JEM
[&]Decamethylcyclopentasiloxane (DMCPS) is trending only
#AQM Unit 1 failed in late Jan; Data reported in Feb and Mar are from the non-prime Unit 2 as available.
[*]AQM calibration range for ethanol = 0.2 – 7.1 $mg/m^3$; Values exceeding the calibration range are estimates

**Toxicological Evaluation of ISS Air Quality**

Routine monthly mGSC sampling provides a limited set of samples on which to perform an air quality assessment, but is complementary to in-flight air monitoring data collected by the AQMs. **All measured values (mGSC and AQM) were below 1 T unit, indicating no concern for crew health.** Increment T-values from mGSCs (Figure 1) and the AQM (Figure 2) average ~0.4 units. The primary contributors to the total T-value across all routine sampling locations throughout this time period were hexamethylcyclotrisiloxane (HMCTS), acetaldehyde, trimethylsilanol (TMS), and decamethylcyclopentasiloxane (DMCPS). These compounds were measured well below levels of health concern, but HMCTS, TMS, and DMCPS likely contribute to the periodic breakthrough of siloxane compounds in the water recovery system.

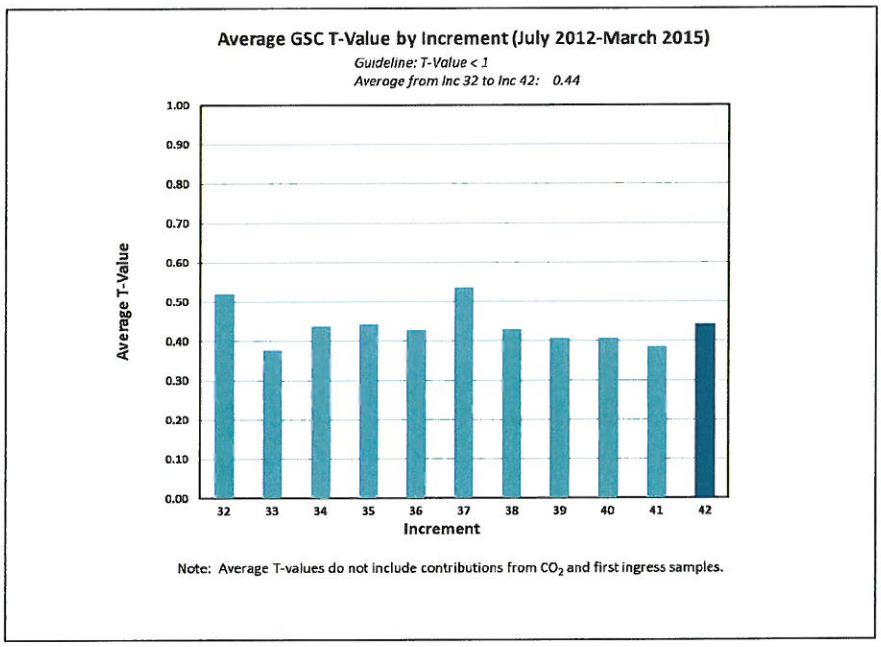


Figure 1. GSC T-values

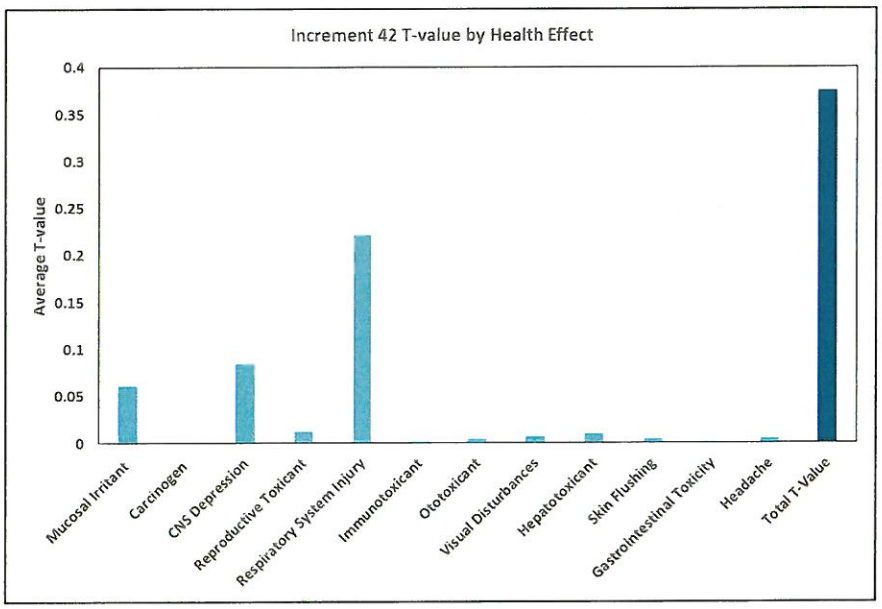


Figure 2. AQM T-values

The mGSCs provide only a snapshot of conditions and are not ideal for evaluating potential $CO_2$ exposures; however, reported levels were below 4 mmHg (9300 mg/m$^3$), as requested for this Increment in Chit 012888. **Notably, alcohol values in all routine monthly samples continue to exceed the alcohol guideline of <5 mg/m$^3$, which is intended to protect the water recovery system from risk of overloading.** These levels are primarily due to a sustained increase in ethanol levels on ISS. Elevated ethanol levels were also detected in US water samples during this Increment (see Water Quality discussion below). Formaldehyde levels in the US Lab (shown in Table 1 and Figure 3) are generally consistent with historic levels and remain below the SMAC of 120 µg/m$^3$.

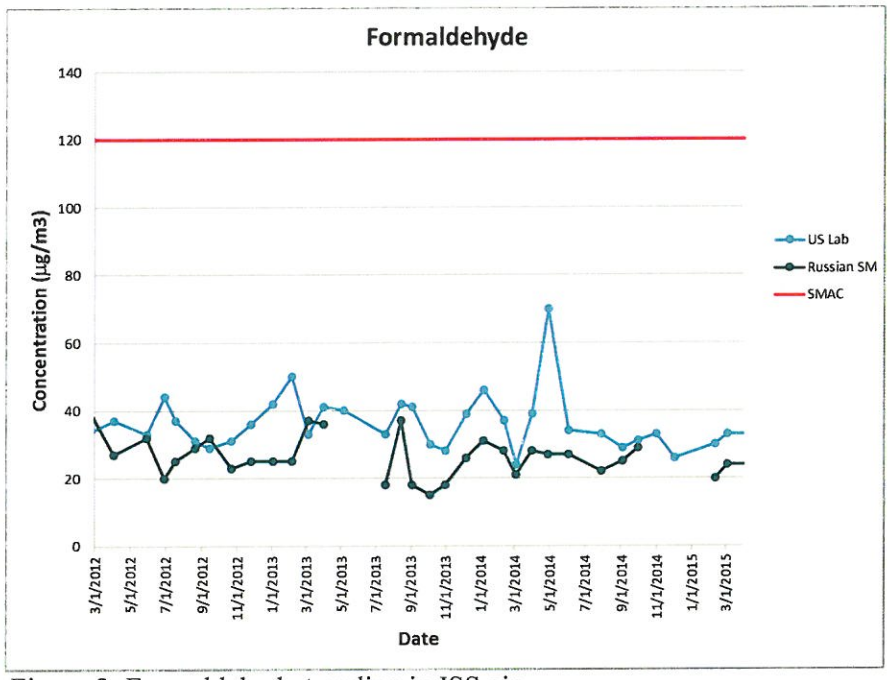

Figure 3. Formaldehyde trending in ISS air.

## WATER QUALITY

Archive samples were collected from the potable water dispenser (PWD) in the US segment and the SVO-ZV and SRV-K systems in the RS during Increment 42 and were returned on 40S. A sample of wastewater was also collected from the US segment during this Increment and returned on SpX-5. Comprehensive organic and inorganic analyses were performed on all returned samples. Complete data tables with results from these analyses can be found in report #2015-WFL-ISSWQ-003.1. A summary of select analytical results is provided in Table 3 below. Expanded summary tables containing organic carbon recoveries and results for analytes detected in the samples at concentrations above reporting limits are included as attachments to this report.

Table 3. Analytical Summary of ISS Water Analyses

| Sample Location | Sample Date | TOC (mg/L) | DMSD (mg/L) | Conductivity (µS/cm) | Total Iodine (mg/L) | Total Silver (µg/L) |
|---|---|---|---|---|---|---|
| Wastewater | 12/9/2014 | 60.9[b] | 11 | 95 | -- | 13 |
| PWD (ambient) | 2/2/2015 | <0.1 | <0.5 | 2 | <0.05 | <1 |
| PWD (hot) | 3/4/2015 | <0.1 | <0.5 | 3 | <0.05 | <1 |
| SVO-ZV | 3/4/2015 | 0.89 | <0.5 | 357[a] | <0.05 | 52 |
| SRV-K (hot) | 3/4/2015 | 0.69 | <0.5 | 154[a] | <0.05 | 33 |

[a]Russian water system is intentionally mineralized.
[b]TOC levels are high in wastewater, but the water recovery system successfully scrubs these compounds prior to consumption.

**Toxicological Evaluation of ISS Water Quality:** Routine water quality monitoring is performed in-flight using the total organic carbon analyzer (TOCA) and the colorimetric water quality monitor kit (CWQMK). Results from these analyses provide a general indication of overall water quality. Archive water samples are collected during each Increment and returned for analysis in ground laboratories. Data from the ground analyses complement the in-flight data and provide a more complete understanding of water quality on the ISS.

*Potable Water*

Total organic carbon (TOC) data from in-flight and archival sampling of the US potable water system conducted between March 2014 and March 2015 are shown in Figure 4. Data display excellent agreement between in-flight levels measured using the TOCA and archival samples. **TOC levels in US and Russian water potable water systems were below the Spacecraft Water Exposure Guideline (SWEG) of 3.0 mg/L throughout the Increment.** Dimethylsilanediol (DMSD) was present in the wastewater sample but was not detected in any of the potable water samples. TOC levels in the SRV-K hot sample were lower than the historical average. Acetone (0.014 mg/L) was the only organic compound detected in the sample, and the measured concentration was well below the SWEG (15 mg/L).

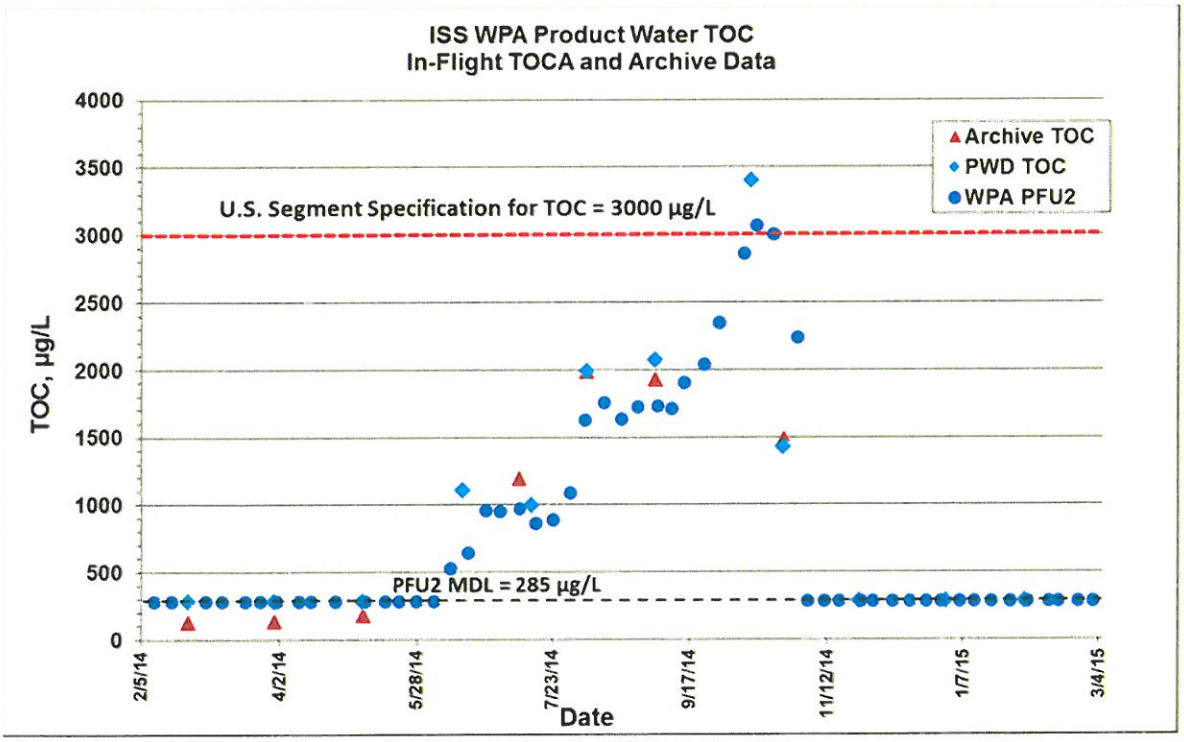


Figure 4. Total Organic Carbon (TOC) trending in US Potable Water

Conductivity provides an indication of the total amount of inorganic contaminants present in water. The conductivity in the samples from the PWD was very low, as expected. Detectable levels of aluminum, nickel, barium, and iron were present in the US potable water. The measured concentration of iron (0.049 mg/L) is below the secondary maximum contaminant level (0.3 mg/L) set to protect against altered taste, color, and sedimentation, but is notable because iron is not typically detected in US potable water samples. Inorganic levels are higher in Russian water, which is mineralized to improve palatability. The only inorganic compound detected above the MORD limit was manganese in the SVO-ZV sample, which was present at 75 µg/L. Manganese has consistently exceeded the MORD limit of 50 µg/L in the SVO-ZV but remains well below the US SWEG of 300 µg/L. All other compounds measured in archive samples were below MORD limits, indicating no concern for crew consumption.

Iodine and silver are biocides used on the US and Russian segments, respectively. Iodine is added to the water produced by the WPA, but it is removed prior to crew consumption to avoid potential thyroid dysfunction. Total iodine levels in the samples collected from the PWD were below detection limits, indicating successful removal of iodine. Conversely, silver levels in Russian water samples are expected to remain above the minimal effective biocidal level of 0.1 mg/L or 100 µg/L. Levels in the SVO-ZV (52 µg/L) and SRV-K hot (33 µg/L) remain below the minimal effective biocide level, which increases the risk of microbial growth. See the Soyuz 40 post-flight report issued by the Environmental Microbiology Laboratory for additional information.

*Wastewater*

US Wastewater is a composite of humidity condensate and urine distillate that is stored in the waste tank of the water processor assembly prior to being processed into potable water. The ethanol concentration in the wastewater sample was elevated (47.7 mg/L) compared to the historical average of 16 mg/L, which is consistent with the elevated levels noted in the air. As expected, due to the mixing of fairly clean urine distillate with humidity condensate, the ethanol concentration in the wastewater is lower than the concentration measured in the most recent condensate sample (collected during Increment 41). The observed levels do not pose a concern for crew health, but may negatively impact the performance of the water recovery system. Methanol was also elevated (7.4 mg/L). Continued monitoring of the condensate and wastewater is important since significant changes in composition could result in contaminants breaking through the water recovery systems and adversely impacting the potable water supply.

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Enclosures
Table 1: Analytical concentrations of compounds evaluated in the mGSCs returned on 40S
Table 2: T-values corresponding to concentrations in Table 1, based on 180-day SMACs
Table 3: Analytical concentrations of compounds quantified in US potable water samples returned on 40S
Table 4: Analytical concentrations of compounds quantified in Russian potable water samples returned on 40S
Table 5: Analytical concentrations of compounds quantified in US wastewater sample returned on SpX-5

TABLE 1
ANALYTICAL RESULTS OF 40S RETURN GSC AIR SAMPLES

| CHEMICAL CONTAMINANT | CONCENTRATION ($mg/M^3$) | | | | | |
|---|---|---|---|---|---|---|
| | AA05882<br>SN 2086<br>LAB<br>12/01/14 @<br>08:10 GMT | AA05883<br>SN 2087<br>SM<br>12/01/14 @<br>8:20 GMT | AA05884<br>SN 2080<br>LAB<br>02/10/15 @<br>18:50 GMT | AA05885<br>SN 2083<br>JPM<br>2/10/15 [1] | AA05886<br>SN2072<br>LAB<br>03/04/15 @<br>14:30 GMT | AA05887<br>SN 2077<br>COL<br>3/4/2015 @<br>14:30 GMT |
| **TARGET COMPOUNDS (TO-15)** | | | | | | |
| Freon 12 (Dichlorodifluoromethane) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Chloromethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Freon 114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Methanol | 0.37 | 0.42 | 0.40 | 0.41 | 0.37 | 0.37 |
| Acetaldehyde | 0.30 | 0.36 | 0.26 | 0.26 | 0.26 | 0.24 |
| Vinyl Chloride | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Bromomethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Ethanol * | **12** | **12** | **8.5** | **8.5** | **11** | **11** |
| Chloroethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Acetonitrile | <0.025 | TRACE | <0.025 | <0.025 | <0.025 | <0.025 |
| Propenal (Acrolein) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Acetone | 0.37 | 0.38 | 0.36 | 0.37 | 0.38 | 0.38 |
| Propanal (Propionaldehyde) | <0.025 | 0.42 | TRACE | <0.025 | <0.025 | <0.025 |
| 2-Propanol (Isopropanol) | 0.28 | 0.32 | 0.29 | 0.29 | 0.66 | 0.24 |
| Freon 11 (Trichlorofluoromethane) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Furan | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Acrylonitrile | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Pentane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Methyl-2-propanol | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Methyl acetate | <0.025 | <0.025 | <0.025 | <0.025 | TRACE | TRACE |
| 1,1-Dichloroethene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Methylene chloride (Dichloromethane) | TRACE | TRACE | TRACE | TRACE | TRACE | TRACE |
| 3-Chloropropene (Allyl chloride) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Freon 113 (1,1,2-Trichloro-1,2,2-trifluoroethane) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1-Propanol | 0.040 | 0.027 | 0.039 | 0.087 | 0.049 | 0.053 |
| 1,1-Dichloroethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Butanal (Butyraldehyde) | <0.025 | TRACE | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Butanone (Methyl ethyl ketone) | TRACE | TRACE | TRACE | TRACE | TRACE | TRACE |
| cis-1,2-Dichloroethene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Methylfuran | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Ethyl acetate | 0.064 | 0.048 | 0.032 | 0.033 | 0.052 | 0.053 |
| Hexane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Chloroform | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Butenal | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2-Dichloroethane | TRACE | TRACE | <0.025 | TRACE | TRACE | TRACE |
| 1,1,1-Trichloroethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1-Butanol | 0.048 | 0.053 | 0.057 | 0.059 | 0.049 | 0.055 |
| Benzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Carbon Tetrachloride | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Pentanone | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Methylhexane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2,3-Dimethylpentane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Pentanal | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 3-Methylhexane | <0.025 | TRACE | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2-Dichloropropane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,4-Dioxane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Trichloroethene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2,5-Dimethylfuran | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| n-Heptane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 4-Methyl-2-pentanone (MIBK) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| cis-1,3-Dichloropropene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Pentenal | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| trans-1,3-Dichloropropene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,1,2-Trichloroethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Toluene | <0.025 | <0.025 | <0.025 | TRACE | TRACE | TRACE |
| Hexanal | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Mesityl oxide (4-Methyl-3-penten-2-one) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2-Dibromoethane (EDB) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Butyl acetate | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Octane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Tetrachloroethene (Perchloroethene) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Chlorobenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Ethylbenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| m & p-Xylene | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Heptanone | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Cyclohexanone | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Heptanal | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Styrene (Ethenylbenzene) | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,1,2,2-Tetrachloroethane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| o-Xylene | TRACE | 0.029 | TRACE | TRACE | 0.047 | 0.048 |
| Nonane | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,3,5-Trimethylbenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2,4-Trimethylbenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,3-Dichlorobenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,4-Dichlorobenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2-Dichlorobenzene | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 1,2,4-Trichlorobenzene | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Hexachlorobutadiene | <0.075 | <0.075 | <0.075 | <0.075 | <0.075 | <0.075 |

TABLE 1
ANALYTICAL RESULTS OF 40S RETURN GSC AIR SAMPLES

| CHEMICAL CONTAMINANT | CONCENTRATION ($mg/M^3$) | | | | | |
|---|---|---|---|---|---|---|
| | AA05882<br>SN 2086<br>LAB<br>12/01/14 @<br>08:10 GMT | AA05883<br>SN 2087<br>SM<br>12/01/14 @<br>8:20 GMT | AA05884<br>SN 2080<br>LAB<br>02/10/15 @<br>18:50 GMT | AA05885<br>SN 2083<br>JPM<br>2/10/15 [1] | AA05886<br>SN2072<br>LAB<br>03/04/15 @<br>14:30 GMT | AA05887<br>SN 2077<br>COL<br>3/4/2015 @<br>14:30 GMT |
| **SPECIAL INTEREST COMPOUNDS **** | | | | | | |
| 1,3-Butadiene & | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Ethylene oxide | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Methyl-2-propenal | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 3-Butene-2-one | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Ethoxyethanol | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Dimethyl disulfide | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Octafluoropropane (Perfluoropropane) &* | **465** | **456** | **234** | **234** | **194** | **195** |
| Perfluoro(2-methylpentane) & | <0.050 | <0.050 | 0.31 | 0.34 | <0.050 | <0.050 |
| Carbonyl sulfide (Carbon oxide sulfide) & | TRACE | TRACE | <0.025 | <0.025 | <0.025 | <0.025 |
| Isobutane & | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| 2-Methyl-1-propene & | TRACE | TRACE | TRACE | TRACE | TRACE | TRACE |
| Dimethyl sulfide & | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 |
| Carbon disulfide & | <0.025 | <0.025 | <0.025 | <0.025 | TRACE | TRACE |
| Trimethylsilanol & | 0.090 | 0.060 | 0.12 | 0.14 | 0.11 | 0.13 |
| Octamethylcyclotetrasiloxane & | <0.075 | <0.075 | TRACE | <0.075 | <0.075 | <0.075 |
| Decamethylcyclopentasiloxane & | 0.47 | 0.26 | 0.58 | 0.58 | 0.43 | 0.41 |
| Hexamethylcyclotrisiloxane % | 1.3 | 1.2 | 2.3 | 2.0 | 1.5 | 1.6 |
| **NON-TARGET COMPOUNDS **** | | | | | | |
| Propene & | TRACE | TRACE | <0.050 | <0.050 | <0.050 | <0.050 |
| Propane & | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Butane & | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Isoprene (2-Methyl-1,3-butadiene) & | TRACE | TRACE | TRACE | <0.050 | TRACE | 0.052 |
| Sulfur hexafluoride | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 1,1,1,2-Tetrafluoroethane | 0.11 | 0.12 | 1.1 | 1.2 | 0.31 | 0.32 |
| 2-Ethylhexanal | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| C10-Alkane | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Ethyl-1-hexanol | 0.053 | 0.050 | 0.081 | 0.096 | 0.08 | 0.075 |
| C10-Alkane | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| C11-Alkane | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Limonene | 0.066 | 0.11 | TRACE | TRACE | TRACE | TRACE |
| **TOTAL ALCOHOLS PLUS ACETONE** | **14** | **13** | **9.6** | **9.7** | **12.3** | **11.8** |
| **TARGET COMPOUNDS (GC)** | | | | | | |
| Carbon Monoxide | 0.94 | 0.94 | 1.00 | 0.99 | 0.98 | 0.99 |
| Methane | 3.1 | 3.1 | <1 | <1 | <1 | <1 |
| Hydrogen | 4.3 | 4.5 | 4.9 | 5.0 | 4.6 | 4.7 |
| Carbon Dioxide | 8204 | 8241 | 8038 | 7877 | 7530 | 7903 |
| **TOTAL CONCENTRATION (NON-METHANE HYDROCARBONS)** | **481** | **472** | **249** | **248** | **209** | **210** |
| **TOTAL CONCENTRATION - OFP (NON-METHANE HYDROCARBONS)** | **16** | **16** | **15** | **15** | **15** | **15** |

[1] No time recorded
* GC/FID data results are in bold
** Quantified using "B" response factor except where noted
& Quantified using a multi-point calibration
% Response factor generated from an internal study
< : Value is less than the laboratory report detection limit.
TRACE: Amount detected is sufficient for compound identification only.
OFP - Octafluoropropane

TABLE 2
T-VALUES FOR 40S RETURN GSC AIR SAMPLES

| CHEMICAL CONTAMINANT | T-VALUE (180-d SMAC) | | | | | |
|---|---|---|---|---|---|---|
| | AA05882 SN 2086 LAB 12/01/14 @ 08:10 GMT | AA05883 SN 2087 SM 12/01/14 @ 8:20 GMT | AA05884 SN 2080 LAB 02/10/15 @ 18:50 GMT | AA05885 SN 2083 JPM 2/10/15 [1] | AA05886 SN2072 LAB 03/04/15 @ 14:30 GMT | AA05887 SN 2077 COL 3/4/2015 @ 14:30 GMT |
| TARGET COMPOUNDS (TO-15) | | | | | | |
| Freon 12 (Dichlorodifluoromethane) | ND | ND | ND | ND | ND | ND |
| Chloromethane | ND | ND | ND | ND | ND | ND |
| Freon 114 (1,2-Dichloro-1,1,2,2-tetrafluoroethane) | ND | ND | ND | ND | ND | ND |
| Methanol | 0.00408 | 0.00468 | 0.00450 | 0.00456 | 0.00413 | 0.00416 |
| Acetaldehyde | 0.07596 | 0.09105 | 0.06528 | 0.06415 | 0.06497 | 0.06076 |
| Vinyl Chloride | ND | ND | ND | ND | ND | ND |
| Bromomethane | ND | ND | ND | ND | ND | ND |
| Ethanol | 0.00625 | 0.00596 | 0.00423 | 0.00425 | 0.00538 | 0.00536 |
| Chloroethane | ND | ND | ND | ND | ND | ND |
| Acetonitrile | ND | 0.00187 | ND | ND | ND | ND |
| Propenal (Acrolein) | ND | ND | ND | ND | ND | ND |
| Acetone | 0.00705 | 0.00722 | 0.00696 | 0.00707 | 0.00739 | 0.00740 |
| Propanal (Propionaldehyde) | ND | 0.03806 | 0.00114 | ND | ND | ND |
| 2-Propanol (Isopropanol) | 0.00185 | 0.00214 | 0.00196 | 0.00197 | 0.00440 | 0.00159 |
| Freon 11 (Trichlorofluoromethane) | ND | ND | ND | ND | ND | ND |
| Furan | ND | ND | ND | ND | ND | ND |
| Acrylonitrile | ND | ND | ND | ND | ND | ND |
| Pentane | ND | ND | ND | ND | ND | ND |
| 2-Methyl-2-propanol | ND | ND | ND | ND | ND | ND |
| Methyl acetate | ND | ND | ND | ND | 0.00010 | 0.00010 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | ND |
| Methylene chloride (Dichloromethane) | 0.00125 | 0.00125 | 0.00125 | 0.00125 | 0.00125 | 0.00125 |
| 3-Chloropropene (Allyl chloride) | ND | ND | ND | ND | ND | ND |
| Freon 113 (1,1,2-Trichloro-1,2,2-trifluoroethane) | ND | ND | ND | ND | ND | ND |
| 1-Propanol | 0.00041 | 0.00028 | 0.00040 | 0.00089 | 0.00050 | 0.00054 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND |
| Butanal (Butyraldehyde) | ND | 0.00096 | ND | ND | ND | ND |
| 2-Butanone (Methyl ethyl ketone) | 0.00042 | 0.00042 | 0.00042 | 0.00042 | 0.00042 | 0.00042 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | ND |
| 2-Methylfuran | ND | ND | ND | ND | ND | ND |
| Ethyl acetate | 0.00035 | 0.00027 | 0.00018 | 0.00019 | 0.00029 | 0.00030 |
| Hexane | ND | ND | ND | ND | ND | ND |
| Chloroform | ND | ND | ND | ND | ND | ND |
| 2-Butenal | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | 0.00781 | 0.00781 | ND | 0.00781 | 0.00781 | 0.00781 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | ND |
| 1-Butanol | 0.00120 | 0.00133 | 0.00143 | 0.00148 | 0.00124 | 0.00137 |
| Benzene | ND | ND | ND | ND | ND | ND |
| Carbon Tetrachloride | ND | ND | ND | ND | ND | ND |
| 2-Pentanone | ND | ND | ND | ND | ND | ND |
| 2-Methylhexane | ND | ND | ND | ND | ND | ND |
| 2,3-Dimethylpentane | ND | ND | ND | ND | ND | ND |
| Pentanal | ND | ND | ND | ND | ND | ND |
| 3-Methylhexane | ND | 0.00104 | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | ND |
| 1,4-Dioxane | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND |
| 2,5-Dimethylfuran | ND | ND | ND | ND | ND | ND |
| n-Heptane | ND | ND | ND | ND | ND | ND |
| 4-Methyl-2-pentanone (MIBK) | ND | ND | ND | ND | ND | ND |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | ND |
| 2-Pentenal | ND | ND | ND | ND | ND | ND |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | ND |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | ND |
| Toluene | ND | ND | ND | 0.00083 | 0.00083 | 0.00083 |
| Hexanal | ND | ND | ND | ND | ND | ND |
| Mesityl oxide (4-Methyl-3-penten-2-one) | ND | ND | ND | ND | ND | ND |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | ND |
| Butyl acetate | ND | ND | ND | ND | ND | ND |
| Octane | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene (Perchloroethene) | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND | ND | ND |
| m & p-Xylene | ND | ND | ND | ND | ND | ND |
| 2-Heptanone | ND | ND | ND | ND | ND | ND |
| Cyclohexanone | ND | ND | ND | ND | ND | ND |
| Heptanal | ND | ND | ND | ND | ND | ND |
| Styrene (Ethenylbenzene) | ND | ND | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | ND |
| o-Xylene | 0.00034 | 0.00079 | 0.00034 | 0.00034 | 0.00126 | 0.00129 |
| Nonane | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | ND | ND | ND | ND | ND | ND |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | ND |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | ND |
| 1,2-Dichlorobenzene | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | ND |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | ND |

TABLE 2
T-VALUES FOR 40S RETURN GSC AIR SAMPLES

| CHEMICAL CONTAMINANT | T-VALUE (180-d SMAC) | | | | | |
|---|---|---|---|---|---|---|
| | AA05882 SN 2086 LAB 12/01/14 @ 08:10 GMT | AA05883 SN 2087 SM 12/01/14 @ 8:20 GMT | AA05884 SN 2080 LAB 02/10/15 @ 18:50 GMT | AA05885 SN 2083 JPM 2/10/15 [1] | AA05886 SN2072 LAB 03/04/15 @ 14:30 GMT | AA05887 SN 2077 COL 3/4/2015 @ 14:30 GMT |
| SPECIAL INTEREST COMPOUNDS | | | | | | |
| 1,3-Butadiene & | ND | ND | ND | ND | ND | ND |
| Ethylene oxide | ND | ND | ND | ND | ND | ND |
| 2-Methyl-2-propenal | ND | ND | ND | ND | ND | ND |
| 3-Butene-2-one | ND | ND | ND | ND | ND | ND |
| 2-Ethoxyethanol | ND | ND | ND | ND | ND | ND |
| Dimethyl disulfide | ND | ND | ND | ND | ND | ND |
| Octafluoropropane (Perfluoropropane) & | 0.00547 | 0.00536 | 0.00275 | 0.00275 | 0.00228 | 0.00229 |
| Perfluoro(2-methylpentane) & | ND | ND | 0.00000 | 0.00000 | ND | ND |
| Carbonyl sulfide (Carbon oxide sulfide) & | 0.00104 | 0.00104 | ND | ND | ND | ND |
| Isobutane & | ND | ND | ND | ND | ND | ND |
| 2-Methyl-1-propene & | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 |
| Dimethyl sulfide & | ND | ND | ND | ND | ND | ND |
| Carbon disulfide & | ND | ND | ND | ND | 0.00078 | 0.00078 |
| Trimethylsilanol & | 0.02240 | 0.01498 | 0.03076 | 0.03551 | 0.02726 | 0.03164 |
| Octamethylcyclotetrasiloxane & | ND | ND | 0.00313 | ND | ND | ND |
| Decamethylcyclopentasiloxane & | 0.03151 | 0.01739 | 0.03893 | 0.03840 | 0.02844 | 0.02703 |
| Hexamethylcyclotrisiloxane % | 0.14917 | 0.13780 | 0.25074 | 0.22476 | 0.16719 | 0.18218 |
| | | | | | | |
| NON-TARGET COMPOUNDS | | | | | | |
| Propene & | 0.00058 | 0.00058 | ND | ND | ND | ND |
| Propane & | ND | ND | ND | ND | ND | ND |
| Butane & | ND | ND | ND | ND | ND | ND |
| Isoprene (2-Methyl-1,3-butadiene) & | 0.00833 | 0.00833 | 0.00833 | ND | 0.00833 | 0.01740 |
| Sulfur hexafluoride | ND | ND | ND | ND | ND | ND |
| 1,1,1,2-Tetrafluoroethane | 0.00105 | 0.00115 | 0.01104 | 0.01153 | 0.00301 | 0.00309 |
| 2-Ethylhexanal | ND | ND | ND | ND | ND | ND |
| C10-Alkane | ND | ND | ND | ND | ND | ND |
| 2-Ethyl-1-hexanol | 0.00101 | 0.00095 | 0.00153 | 0.00181 | 0.00147 | 0.00141 |
| C10-Alkane | ND | ND | ND | ND | ND | ND |
| C11-Alkane | ND | ND | ND | ND | ND | ND |
| Limonene | 0.00057 | 0.00094 | 0.00022 | 0.00022 | 0.00022 | 0.00022 |
| | | | | | | |
| TARGET COMPOUNDS (GC) | | | | | | |
| Carbon Monoxide | 0.05545 | 0.05505 | 0.05895 | 0.05814 | 0.05747 | 0.05827 |
| Methane | 0.00088 | 0.00087 | 0.00019 | 0.00019 | 0.00019 | 0.00019 |
| Hydrogen | 0.01259 | 0.01319 | 0.01446 | 0.01460 | 0.01365 | 0.01369 |
| Carbon Dioxide | 0.63107 | 0.63393 | 0.61830 | 0.60590 | 0.57925 | 0.60795 |
| | | | | | | |
| **TOTAL T-VALUE** | **1.02812** | **1.05673** | **1.12741** | **1.08903** | **0.98954** | **1.03933** |
| | | | | | | |
| **TOTAL T-VALUE - CO2** | **0.39705** | **0.42280** | **0.50911** | **0.48313** | **0.41029** | **0.43138** |

[1] No time recorded
ND : Value is less than the laboratory report detection limit.
Note: Number of decimal places in T-Values do not represent significant figures of measurements.

# Table 3. Expedition 42 Water Sample Summary Report
# US Potable Water Samples

| Mission | | | | Soyuz 40/Exp. 42 | |
|---|---|---|---|---|---|
| **Sample Location** | | **Potable Water Maximum Contaminant Level (MCL)** | **Maximum Contaminant Level Source** | WPA PWD Ambient | WPA PWD Hot |
| **Sample Description** | | | | Potable Water | Potable Water |
| **Sample Date** | | | | 2/2/2015 | 3/4/2015 |
| **Analysis/Sample ID** | **Units** | | | **20150313001** | **20150313002** |
| | | | | | |
| **Physical Characteristics** | | | | | |
| pH | pH units | 4.5-8.5 | 41000 | 6.25 | 5.65 |
| Conductivity | µS/cm | | | 2 | 3 |
| **Trace Metals (ICP/MS)** | | | | | |
| Aluminum | µg/L | | | 2 | 1 |
| Barium | µg/L | 10,000 | SWEG&41000 | <1 | 6 |
| Iron | µg/L | 300 | 41000 | 49 | <5 |
| Nickel | µg/L | 300 | SWEG&41000 | 4 | 7 |
| **Silicon (ICP/MS)** | | | | | |
| Silicon (ICP/MS) | µg/L | | | 25 | 18 |
| **Total Organic Carbon (Sievers)** | | | | | |
| Total Inorganic Carbon | mg/L | | | 0.96 | 0.96 |
| Total Organic Carbon | mg/L | 3 | 41000 | <0.10 | <0.10 |
| **Organic Carbon Recovery** | percent | | | N/A | N/A |
| **Unaccounted Organic Carbon** | mg/L | | | N/A | N/A |

NA=Not analyzed;
MI=Matrix Interference

# Table 4. Expedition 42
# Water Sample Summary Report
# Russian Potable Water Samples

| Mission | | | | Soyuz 40/Exp. 42 | |
|---|---|---|---|---|---|
| **Sample Location** | | **Potable Water Maximum Contaminant** | **Maximum Contaminant** | SVO-ZV | SRV-K Hot |
| **Sample Description** | | | | Potable Water | Potable Water |
| **Sample Date** | | **Level** | **Level** | 3/4/2015 | 3/4/2015 |
| **Analysis/Sample ID** | **Units** | **(MCL)** | **Source** | **20150313003** | **20150313004** |
| | | | | | |
| **Physical Characteristics** | | | | | |
| pH | pH units | 5.5-9.0 | MORD | 7.82 | 7.56 |
| Conductivity | µS/cm | | | 357 | 154 |
| Turbidity | NTU | 1.5* | MORD | 0.4 | NA |
| **Anions (IC/ISE)** | | | | | |
| Chloride | mg/L | 250 | MORD | 10.5 | 4.4 |
| Fluoride | mg/L | 1.5/4 | MORD/EPA | 0.1 | <0.1 |
| Nitrate as Nitrogen (NO3-N) | mg/L | 10 | MORD/EPA | 0.2 | <0.2 |
| Sulfate | mg/L | 250 | MORD | 35.2 | 18.5 |
| **Metals (ICP/MS)** | | | | | |
| Calcium | mg/L | 100 | MORD | 47.9 | 22.0 |
| Magnesium | mg/L | 50 | MORD | 10.2 | 4.26 |
| Potassium | mg/L | | | 1.88 | 0.62 |
| Sodium | mg/L | | | 8.74 | 3.24 |
| Aluminum | µg/L | | | 138 | 32 |
| Barium | µg/L | 1,000/10,000 | MORD/SWEG | 23 | 11 |
| Copper | µg/L | 1,000/1,300 | MORD/EPA | 2 | 4 |
| Iron | µg/L | 300 | MORD | <5 | 15 |
| Manganese | µg/L | 50/300 | MORD/SWEG | **75** | 37 |
| Nickel | µg/L | 100/300 | MORD/SWEG | 4 | 3 |
| Silver | µg/L | 500/400 | MORD/SWEG | 52 | 33 |
| Silver, Dissolved | µg/L | | | 2 | 2 |
| Zinc | µg/L | 5,000/2,000 | MORD/SWEG | 175 | 49 |
| **Silicon (ICP/MS)** | | | | | |
| Silicon (ICP/MS) | µg/L | | | 1960 | 558 |
| **Total Organic Carbon (Sievers)** | | | | | |
| Total Inorganic Carbon | mg/L | | | 34.5 | 14.2 |
| Total Organic Carbon | mg/L | 20 | MORD | 0.89 | 0.69 |
| **Volatile Organics** | | | | | |
| Acetone | µg/L | 15,000 | SWEG | <5 | 14 |
| **Organic Carbon Recovery** | percent | | | 0.00 | 1.30 |
| **Unaccounted Organic Carbon** | mg/L | | | 0.89 | 0.68 |

NA=Not analyzed; MI=Matrix interference

# Table 5. Expedition 42 Water Sample Summary Report
# US Wastewater Sample

| **Mission** | | **SpaceX-5/Exp. 42** |
|---|---|---|
| **Sample Location** | | WPA Wastewater ORU |
| **Sample Description** | | Wastewater Sample |
| **Sample Date** | | 12/9/2014 |
| **Analysis/Sample ID** | **Units** | **20150223001** |
| | | |
| **Physical Characteristics** | | |
| pH | pH units | 7.26 |
| Conductivity | µS/cm | 95 |
| **Anions (IC/ISE/ICP/MS)** | | |
| Fluoride | mg/L | 0.2 |
| **Cations (IC)** | | |
| Ammonia as Nitrogen (NH3-N) | mg/L | 9.07 |
| **Trace Metals (ICP/MS)** | | |
| Calcium | mg/L | 0.19 |
| Magnesium | mg/L | 0.03 |
| Potassium | mg/L | 0.45 |
| Sodium | mg/L | 0.38 |
| Aluminum | µg/L | 14 |
| Barium | µg/L | 29 |
| Chromium | µg/L | 38 |
| Copper | µg/L | 7 |
| Iron | µg/L | 19 |
| Manganese | µg/L | 8 |
| Molybdenum | µg/L | 6 |
| Nickel | µg/L | 216 |
| Silver | µg/L | 13 |
| Zinc | µg/L | 9410 |
| **Silicon (ICP/MS)** | | |
| Silicon (ICP/MS) | µg/L | 5630 |
| **Total Organic Carbon (Sievers)** | | |
| Total Inorganic Carbon | mg/L | 14.5 |
| Total Organic Carbon | mg/L | 60.9 |
| **Volatile Organics** | | |
| Acetone | µg/L | 4460 |
| **Volatile Organics -Special Interest Compounds (Semi-quantitative)** | | |
| Trimethylsilanol | µg/L | 110 |
| **Semi-volatiles (GC/MS) - Target List** | | |
| Benzothiazole | µg/L | 46 |
| Decamethylcyclopentasiloxane | µg/L | 56 |
| Dodecamethylcyclohexasiloxane | µg/L | 34 |
| Diethylphthalate | µg/L | 42 |
| **Semi-volatiles (GC/MS) - Special Interest Compounds (Semi-quantitative)** | | |
| p-Menth-1-en-8-ol (alpha-Terpineol) | µg/L | trace |
| 1-Methyl-2-pyrrolidinone | µg/L | trace |
| 2-Phenyl-2-propanol | µg/L | trace |
| **Alcohols (DAI/GC/MS)** | | |
| Ethanol | µg/L | 47,700 |
| Methanol | µg/L | 7450 |
| 2-Propanol (Isopropanol) | µg/L | 651 |
| **Glycols (DAI/GC/MS)** | | |
| 1,2-Ethanediol (Ethylene glycol) | µg/L | 1220 |
| 1,2-Propanediol (Propylene glycol) | µg/L | 5380 |
| **Silanols (LC/RI) (R & D Method -NIST traceable standard not available)** | | |
| Dimethylsilanediol (DMSD) | µg/L | 11,000 |
| **Aldehydes** | | |
| Formaldehyde | µg/L | 14 |
| **Organic Carbon Recovery** | percent | 60.49 |
| **Unaccounted Organic Carbon** | mg/L | 24.06 |

NA=Not analyzed;
MI=Matrix Interference