Chemical Analysis Results for Potable Water from ISS Expeditions 21 through 25

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The Johnson Space Center Water and Food Analytical Laboratory (WAFAL) performed detailed ground-based analyses of archival water samples for verification of the chemical quality of the International Space Station (ISS) potable water supplies for Expeditions 21 through 25. Over a 14-month period the Space Shuttle visited the ISS on four occasions to complete construction and deliver supplies. The onboard supplies of potable water available for consumption by the Expeditions 21 to 25 crews consisted of Russian ground-supplied potable water, Russian potable water regenerated from humidity condensate, and US potable water recovered from urine distillate and condensate. Chemical archival water samples that were collected with U.S. hardware during Expeditions 21 to 25 were returned on Shuttle flights STS-129 (ULF3), STS-130 (20A), STS-131 (19A), and STS-132 (ULF4), as well as on Soyuz flights 19-23. This paper reports the analytical results for these returned potable water archival samples and their compliance with ISS water quality standards.

Nomenclature

CE	Capillary Electrophoresis
CWC	Contingency Water Container
DAI	Direct Aqueous Injection
DMSD	Dimethysilanediol
DWEL	Drinking Water Exposure Limit
EPA	Environmental Protection Agency
GC/MS	Gas Chromatography/Mass Spectrometry
HA	Health Advisory
IC	Ion Chromatography
ICP/MS	Inductively Coupled Plasma/Mass Spectrometry
ISE	Ion Selective Electrode
ISS	International Space Station
JSC	Johnson Space Center
LC	Liquid Chromatography
LC/MS	Liquid Chromatography/Mass Spectrometry
LCV	Leuco Crystal Violet
MCL	Maximum Contaminant Level
MORD	Medical Operations Requirements Document
N/A	Not Applicable
NA	Not Analyzed
NASA	National Aeronautics & Space Administration
NTU	Nephelometric Turbidity Unit
PWD	Potable Water Dispenser
RIP	Rack Interface Panel

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SM	Service Module
SRV-K	System for Regeneration of Condensate Water
SVO-ZV	System for Water Storage and Dispensing
SWEG	Spacecraft Water Exposure Guideline
TDS	Total Dissolved Solids
THM	Trihalomethanes
TOCA	Total Organic Carbon Analyzer
U.S.	United States
UPA	Urine Processor Assembly
UV	Ultraviolet
WAFAL	Water and Food Analytical Laboratory
WPA	Water Processor Assembly
WRS	Water Recovery System

Introduction

While the International Space Station (ISS) recently celebrated the 10-year anniversary of human occupation by some 25 different expedition crews, the Johnson Space Center's (JSC) Water and Food Analytical Laboratory (WAFAL) quietly continued its key role of performing ground-based chemical analyses of returned archival water samples to verify that the ISS potable water remained safe for crew consumption. Chemical analysis results for samples collected during Expeditions 1-20 have been previously published.[1-8] This paper presents and discusses the analytical results from chemical analyses of the archival potable water samples collected and returned during Expeditions 21 - 25, as detailed in Table 1. Only chemical analysis results are discussed herein, as the JSC Microbiology Laboratory has responsibility for microbiological monitoring of the ISS potable water supplies.

The WAFAL sent a representative to the Kennedy Space Center in Florida to retrieve and return the ISS potable water samples that returned on Shuttle flights STS-129 (ULF3), STS-130 (20A), STS-131 (19A), and STS-32(ULF4). These samples were packed into coolers along with ice packs and transported to Houston via commercial air transport. The ISS water samples that returned on Soyuz 19 through Soyuz 23 were retrieved from the vehicle by Russian specialists and subsequently transferred to a NASA representative for cold packing and transportation to Houston via NASA jet. The WAFAL representative took possession of the return after their arrival in Houston for delivery to the JSC laboratory.

Once the samples arrived in the WAFAL, allocation was performed based upon return sample volume. The samples collected into U.S. 1-L Teflon® sample bags typically contained sufficient sample volume (> 500 mL) to support full chemical characterization using the standard and custom analytical methods identified in Table 2.

Water samples collected for return on Soyuz were typically less than 500 mL volume, requiring elimination of some analyses and/or reductions in sensitivity of other analyses performed. During data analysis and reporting, the analytical results for each sample are compared as appropriate against either the Russian Segment potable water quality requirements found in the *ISS Medical Operations Requirement Document* (MORD)[9] or the U.S. Segment potable water quality requirements found in the *System Specification for the ISS* document.[10]

Background

Over the 14-month period beginning October 2009, the Expeditions 21 to 25 crews onboard the International Space Station had access to 3 different sources of potable water: U.S. potable water recovered from urine distillate and humidity condensate, Russian ground-supplied potable water, and Russian potable water regenerated from humidity condensate. These different water supplies were available via water systems located in the U.S. Segment and the Russian Segment of the ISS.

U.S. Segment Water Recovery System

The U.S. Segment Water Recovery System (WRS) was delivered on STS-126 (ULF2) in November of 2008 and began processing a combined wastewater feed consisting of both urine distillate and humidity condensate. During an initial checkout period of about 90-days the product water was tested to verify quality and was subsequently approved for crew consumption beginning in May 2009 prior to the start of ISS 6-person crew operations.

Table 1. Summary of Water Samples Collected & Received during Expeditions 21 through 25

Expedition	Flight No.	Samples Received	Sample Type	Sample Collection Date	Sample Receipt Date
21	**STS-129 (ULF3)**	1	PWD Ambient	11/10/2009	11/30/2009
		1	PWD Hot		
		1	SVO-ZV		
		1	SRV-K Hot		
	Subtotal:	**4**			
	Soyuz 19	1	PWD Ambient	10/20/2009	12/14/2009
		1	PWD Hot		
		1	SVO-ZV		
	Subtotal:	**3**			
	Total:	**7**			
22	**STS-130 (20A)**	1	PWD Ambient	1/6/2010	2/22/2010
		2	SVO-ZV	1/6/2010, 2/3/2010	
		1	SRV-K Hot	2/3/2010	
		1	SRV-K Warm	1/6/2010	
	Subtotal:	**5**			
	Soyuz 20	1	SVO-ZV	3/3/2010	3/26/2010
		1	SRV-K Hot		
		1	SRV-K Warm		
	Subtotal:	**3**			
	Total:	**8**			
23	**STS-131 (19A)**	1	PWD Ambient	3/3/2010	4/22/2010
		1	PWD Hot		
		1	PWD Aux Port	2/25/2010	
		1	WPA RIP		
	Subtotal:	**4**			
	STS-132 (ULF4)	2	PWD Ambient	4/26/2010, 5/18/2010	5/27/2010
		2	SVO-ZV	4/26/2010, 5/18/2010	
		1	SRV-K Hot	5/18/2010	
		2	SRV-K Warm	4/26/2010, 5/18/2010	
	Subtotal:	**7**			
	Soyuz 21	1	PWD Hot	3/31/2010	6/3/2010
		1	SVO-ZV		
		1	SRV-K Hot		
	Subtotal:	**3**			
	Total:	**14**			
24	**Soyuz 22**	2	PWD Ambient	7/14/2010, 9/15/2010	9/26/2010
		1	PWD Hot	8/25/2010	
		1	WPA RIP	7/29/2010	
	Total:	**4**			
25	**Soyuz 23**	2	PWD Hot	10/19/2010, 11/23/2010	11/29/10
		1	SRV-K Warm	11/23/10	
	Total:	**3**			

The WRS includes a urine processor assembly (UPA) that uses a distillation process to purify pretreated urine. The resulting urine distillate is stored in a wastewater tank where it is combined with humidity condensate recovered from the ISS atmosphere. The WRS also includes a water processor assembly (WPA) that uses adsorption/ion exchange and thermal catalytic oxidation to remove contaminants from the combined wastewater feed stream. After iodine biocide is added, the WPA product water is then stored for delivery to the potable water bus. The potable water dispenser (PWD) receives water directly from the potable bus and provides either hot or ambient water for crew use, after removing the iodine biocide at the point of use. Iodinated potable water transferred from the Space Shuttle can also be added directly to the WPA storage tank in the event that make-up water is needed.

A total organic carbon analyzer (TOCA) was also delivered with the WRS in November of 2008.[11] Since that time the TOCA has served as a real-time tool for monitoring the total organic carbon (TOC) content of the WPA product water on a weekly basis. The TOCA includes a dedicated hose for direct sampling of water from the WPA product tank. It has also been used monthly to analyze samples collected from the PWD use-point in Teflon® sample bags. In-flight TOCA results provide insight into the total amount of organic contamination in the WPA water without identification of specific organic constituents.

Table 2. Water Analytical Methods

Parameter	Method
pH & conductivity	Potentiometric
Total Dissolved Solids	Gravimetric
Turbidity	Nephelometric
Iodine & iodide	Leuco crystal violet (LCV)
Fluoride	Ion chromatography (IC)
Metals/Minerals	Inductively coupled plasma/mass spectrometry (ICP/MS)
Inorganic anions & cations	Ion chromatography (IC)
Total organic carbon (TOC)	Ultraviolet or heated persulfate oxidation
Alcohols & glycols	Direct Injection gas chromatography/mass spectrometry (GC/MS)
Volatile organics	GC/MS with a purge & trap concentrator
Semi-volatile organics	GC/MS after liquid/liquid extraction
Organic acids & amines	Capillary electrophoresis (CE)
Urea/Caprolactam	Liquid chromatography (LC) with UV diode array detector
Formaldehyde	GC/MS after derivatization & extraction
Glycerol	LC/MS/MS
Dimethylsilanediol	Direct injection GC/MS or LC with refractive index detector

Russian Segment Water Systems

The Russian condensate water recovery system (SRV-K), which is located in the Service Module (SM), treats humidity condensate recovered from SM cabin air into potable water as previously described.[1-3] Condensate from the U.S. Segment that has been stored in a Contingency Water Container (CWC) can also be transferred using a Condensate Feed Unit and processed by the SRV-K. After the condensate is filtered to remove particulate matter, it flows through a catalytic filter reactor, phase separator, and multifiltration beds to remove organic and inorganic contaminants. Prior to storage the processed water flows through a conditioning bed where silver biocide is added, as well as minerals (calcium, magnesium, and fluoride) to improve palatability. The conditioned product water is pumped from storage to the SRV-K galley where it is pasteurized then made available to the crews via two dispenser ports (hot and warm). Should the demand for potable water exceed the availability of condensate for processing, the crews can install a container of stored potable water to a connection located downstream of the conditioning bed and upstream of the galley for use as make-up water.

The Russian Segment stored potable water system or SVO-ZV is also located in the Service Module as previously described.[1-3] The SVO-ZV provides the crew access to Russian ground-supplied potable water (Rodnik water) that has been launched on Russian Progress vehicles and delivered to the ISS. During pre-launch preparation, groundwater from Korolev, Russia is filtered and silver is added electrolytically as a biocide before storage on Progress in 210-liter Rodnik tanks.

Discussion of Analytical Results

Results from chemical analyses of the SRV-K (regenerated), SVO-ZV (stored), and U.S. WPA archival potable water samples collected during Expeditions 21 through 25 are summarized in Appendices 1, 2 and 3, respectively. Specification limits, if any, are included in these data tabulations for comparison with the analytical results. A discussion of findings obtained from the chemical analysis of archival samples collected during each expedition and their compliance with ISS requirements follows.

EXPEDITION 21

A total of 7 chemical archival potable water samples, including 1 SRV-K hot, 2 SVO-ZV, 2 PWD hot, and 2 PWD ambient, were collected during Expedition 21 as detailed in Table 1. The 4 samples collected on November 10, 2009 were returned on STS-129 (ULF3) and received in the WAFAL on November 30, 2009. The 3 samples collected on October 20, 2009 were returned on Soyuz 19 and received in the WAFAL on December 14, 2009. All of the samples were collected using U.S. 1-liter Teflon® water sample bags. The 4 samples that were returned on Shuttle all had sufficient sample volume to support full chemical characterization. Due to limited sample volume, turbidity was not analyzed on the PWD hot sample and solids were not analyzed on any of the 3 samples collected for Soyuz return.

ISS US SEGMENT:

WPA Processed Water Samples

All chemical parameters measured for the 4 PWD samples were within limits specified in Table LXX of SSP 41000.[10] Nickel levels ranged from 17 to 33 ug/L (see Figure 1). The total iodine (I) was <0.05 mg/L and meets the point of consumption limit of 0.2 mg/L total I (see Figure 2). The iron levels have continued to be at low levels after the PWD disinfection flush on 3/23/09 (see Figure 3). The TOC values ranged from 0.14 to 0.30 mg/L and are well within the 3 mg/L limit (see Figure 4). Trace levels of methyl sulfone (34 to 111 µg/L) and formaldehyde (<2 to 2 µg/L) were identified; however, these levels were toxicologically insignificant.

ISS RUSSIAN SEGMENT:

SRV-K Potable Water Sample

All chemical parameters measured for the SRV-K potable water sample were within the requirements found in Table D-1 of the ISS MORD, Revision C.[9] The nickel level of 34 µg/L was well below the limit of 100 µg/L (see Figure 5). The silver biocide level of 14 µg/L was low, indicating that heating of the water by the pasteurization unit continues to be the main source of microbial control in the SRV-K galley. As shown in Figure 6, an updated plot of the TOC trend in the SRV-K water samples, the TOC level was 0.17 mg/L and well below the specification limit. Trace levels of acetone (4 µg/L) chloroform (0.7 µg/L), diethyl ether (4 µg/L), acetaldehyde (3 µg/L), dibutylphthalate (8 µg/L), and N-phenyl-2-naphthylamine (4 µg/L) were identified. Their levels, however, were toxicologically insignificant.

SVO-ZV Potable Water Samples

All chemical parameters measured for the 2 SVO-ZV water samples were within the ISS MORD requirements except for a turbidity level of 1.6 NTU in the October 20, 2009 sample, which slightly exceeded the 1.5 NTU limit. The concern with elevated turbidity in the SVO-ZV samples is that particulates causing the turbidity can shield bacteria from the silver biocide. The dissolved silver level of 81 µg/L in the October 20 sample indicates that a small amount of the particulates are due to colloidal silver which may help to mitigate this concern. The total silver levels of 28 to 111 µg/L continued to be lower than the expected range of 400 to 500 µg/L, thereby increasing the risk of microbial growth in the water. Updated plots of manganese, and of turbidity, total and colloidal silver ($Ag_{colloidal} = Ag_{total} - Ag_{dissolved}$), and formate in SVO-ZV samples are presented in Figures 7 and 8. The TOC levels in the 2 SVO-ZV samples were 0.36 mg/L and 2.70 mg/L, well below the 20 mg/L limit. Low levels of chloroform (1.6 to 51.9 µg/L) and a trace level of bromodichloromethane (1.9 µg/L) were identified; however, these levels were not considered to be toxicologically significant.

EXPEDITION 22

A total of 8 chemical archival potable water samples, including 2 SRV-K hot, 2 SRV-K warm, 3 SVO-ZV, and 1 PWD ambient, were collected during Expedition 22 as detailed in Table 1. The 5 samples collected on January 6, 2010 and February 3, 2010 were returned on STS-130 (20A) and received in the WAFAL on February 22, 2010. The 3 samples collected on March 3, 2010 were returned on Soyuz 20 and received in the WAFAL on March 26, 2010. All of the samples were collected in U.S. 1-liter Teflon® water sample bags. The 5 samples that were returned on Shuttle all had sufficient sample volume to support full chemical characterization. Due to limited sample volume, solids were not analyzed on the 3 samples that were returned on Soyuz.

ISS US SEGMENT:

WPA Processed Water Sample

All chemical parameters measured for the PWD ambient sample were within limits specified in SSP 41000. The nickel level was 10 µg/L (refer to Figure 1). The total iodine (I) level was <0.05 mg/L and met the point of consumption limit of 0.2 mg/L (Figure 2). The iron level continued to be at a low level after the PWD disinfection flush on 3/23/09 (Figure 3). The TOC value was 0.16 mg/L and is well within the 3 mg/L limit (see Figure 4). Trace levels of methyl sulfone (34 µg/L) and formaldehyde (4 µg/L) were identified; however, these levels were toxicologically insignificant.

ISS RUSSIAN SEGMENT:

SRV-K Potable Water Samples

All chemical parameters measured for the 4 SRV-K warm & hot potable water samples were within the ISS MORD requirements. The nickel levels (26-48 µg/L) were within specifications (Figure 5). The silver level (added

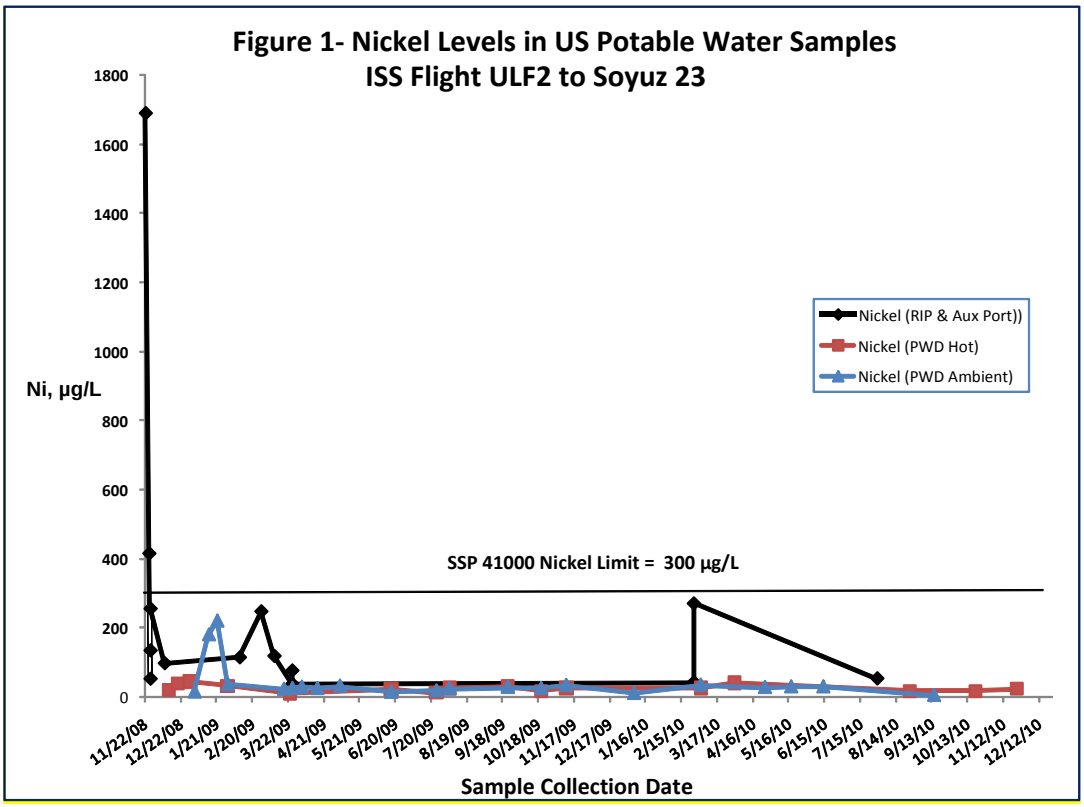
Figure 1- Nickel Levels in US Potable Water Samples
ISS Flight ULF2 to Soyuz 23
Ni, µg/L
1800
1600
1400
1200
1000
800
600
400
200
0
Nickel (RIP & Aux Port))
Nickel (PWD Hot)
Nickel (PWD Ambient)
SSP 41000 Nickel Limit = 300 µg/L
11/22/08
12/22/08
1/21/09
2/20/09
3/22/09
4/21/09
5/21/09
6/20/09
7/20/09
8/19/09
9/18/09
10/18/09
11/17/09
12/17/09
1/16/10
2/15/10
3/17/10
4/16/10
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10/13/10
11/12/10
12/12/10
Sample Collection Date

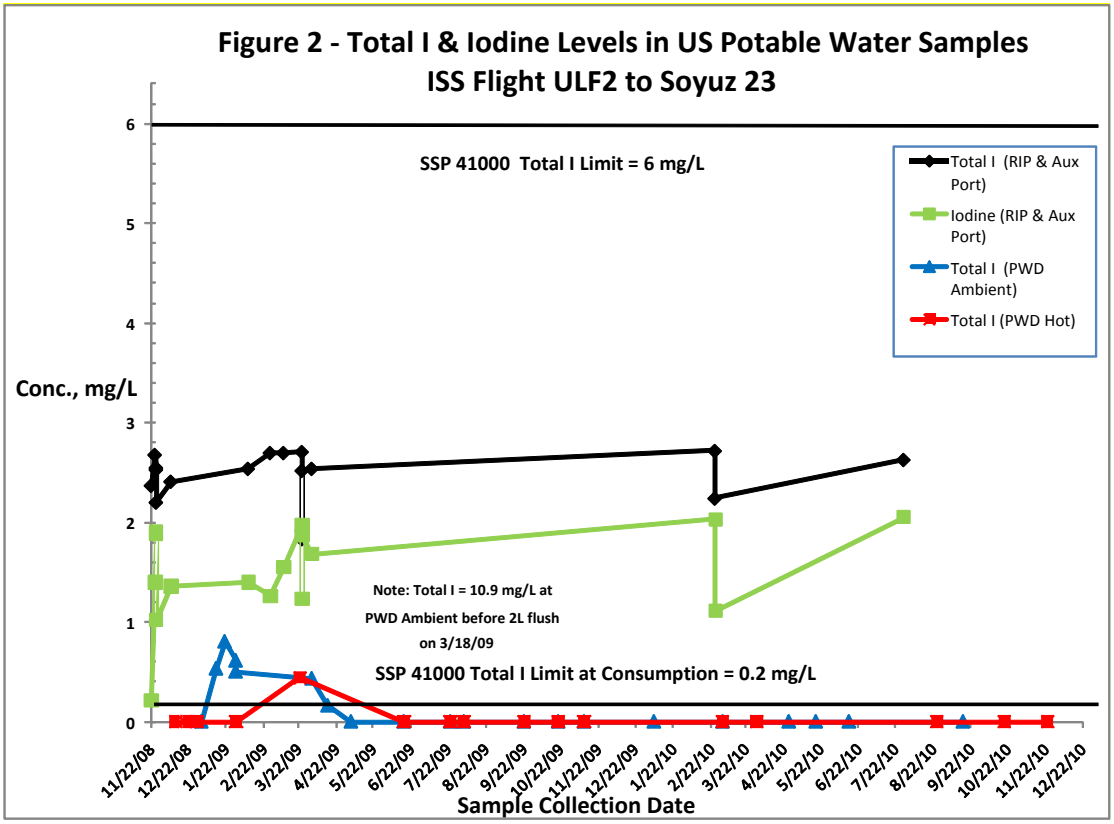
Figure 2 - Total I & Iodine Levels in US Potable Water Samples
ISS Flight ULF2 to Soyuz 23
Conc., mg/L
6
5
4
3
2
1
0
SSP 41000 Total I Limit = 6 mg/L
Total I (RIP & Aux Port)
Iodine (RIP & Aux Port)
Total I (PWD Ambient)
Total I (PWD Hot)
Note: Total I = 10.9 mg/L at
PWD Ambient before 2L flush
on 3/18/09
SSP 41000 Total I Limit at Consumption = 0.2 mg/L
11/22/08
12/22/08
1/22/09
2/22/09
3/22/09
4/22/09
5/22/09
6/22/09
7/22/09
8/22/09
9/22/09
10/22/09
11/22/09
12/22/09
1/22/10
2/22/10
3/22/10
4/22/10
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10/22/10
11/22/10
12/22/10
Sample Collection Date

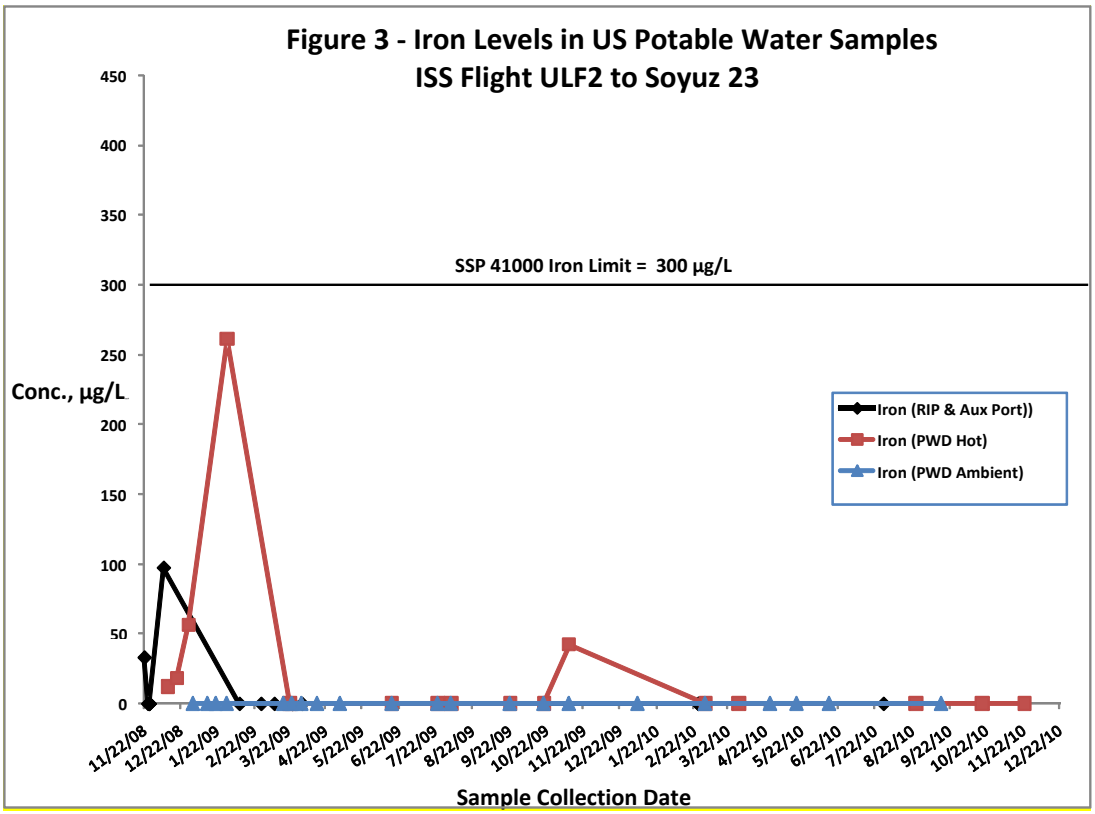


Figure 3 - Iron Levels in US Potable Water Samples
ISS Flight ULF2 to Soyuz 23
SSP 41000 Iron Limit = 300 µg/L
Conc., µg/L
Iron (RIP & Aux Port))
Iron (PWD Hot)
Iron (PWD Ambient)
Sample Collection Date

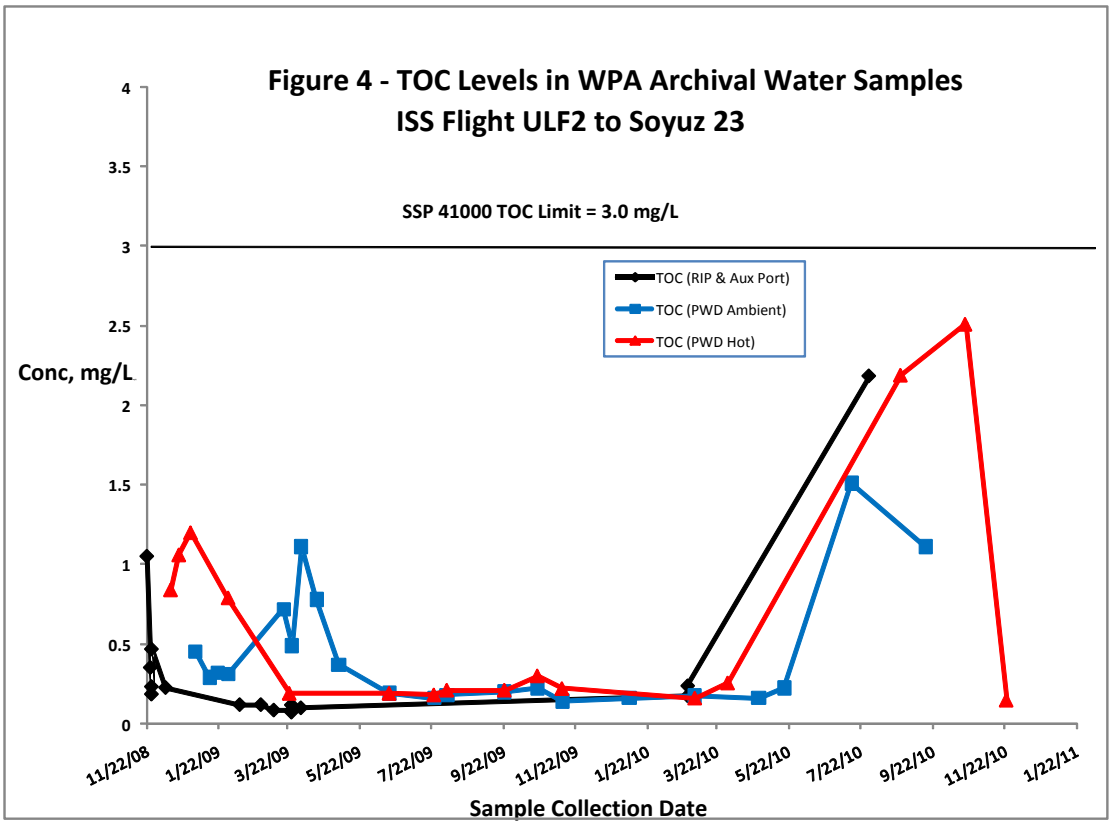


Figure 4 - TOC Levels in WPA Archival Water Samples
ISS Flight ULF2 to Soyuz 23
SSP 41000 TOC Limit = 3.0 mg/L
Conc, mg/L
TOC (RIP & Aux Port)
TOC (PWD Ambient)
TOC (PWD Hot)
Sample Collection Date

Figure 5 - Nickel Levels in SRV-K Water Samples
ISS Flight 4A to Soyuz 23

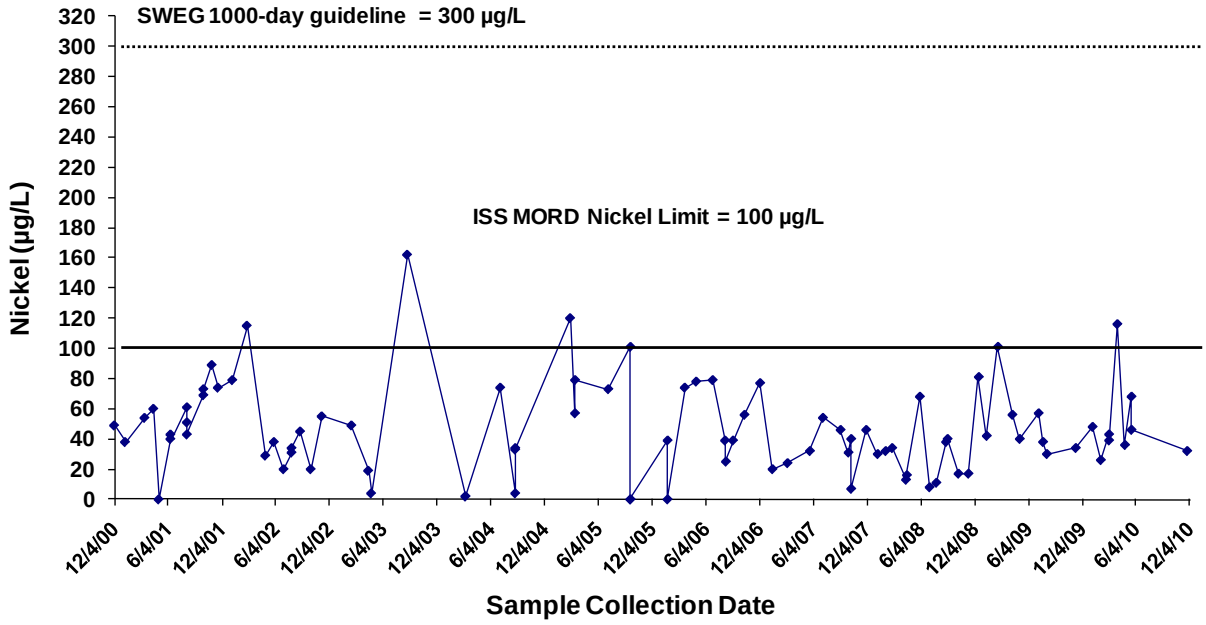


Figure 6 - Total, Formate, & Non-formate Organic Carbon in SRV-K Potable Water
ISS Flight 4A to Soyuz 23

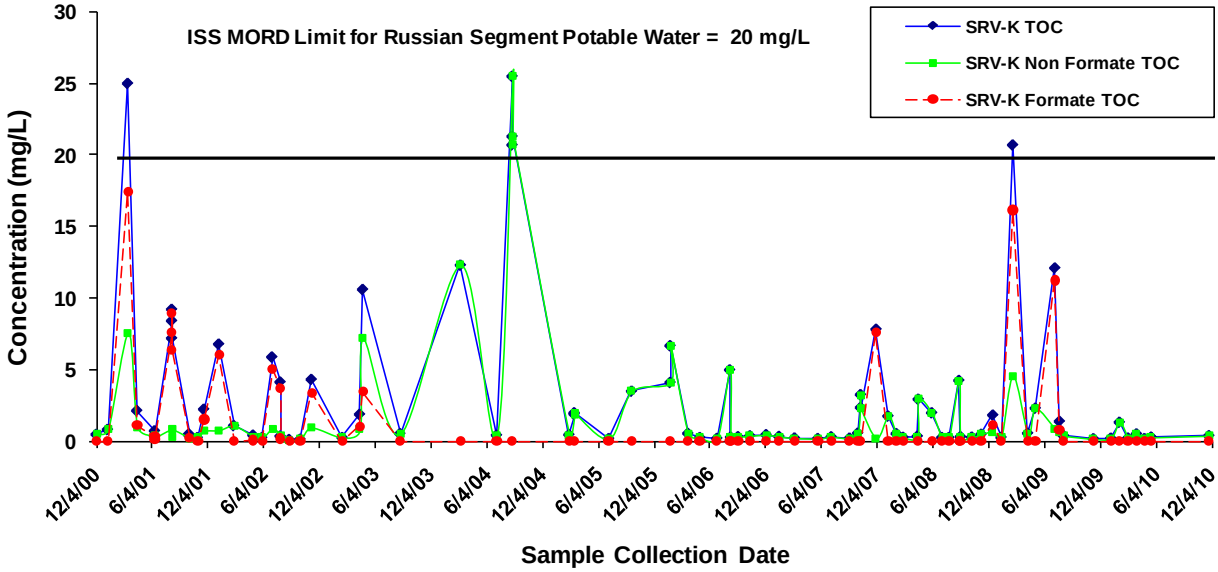


Figure 7 - Manganese Levels in SVO-ZV Water Samples
ISS Flight 5A to Soyuz 21

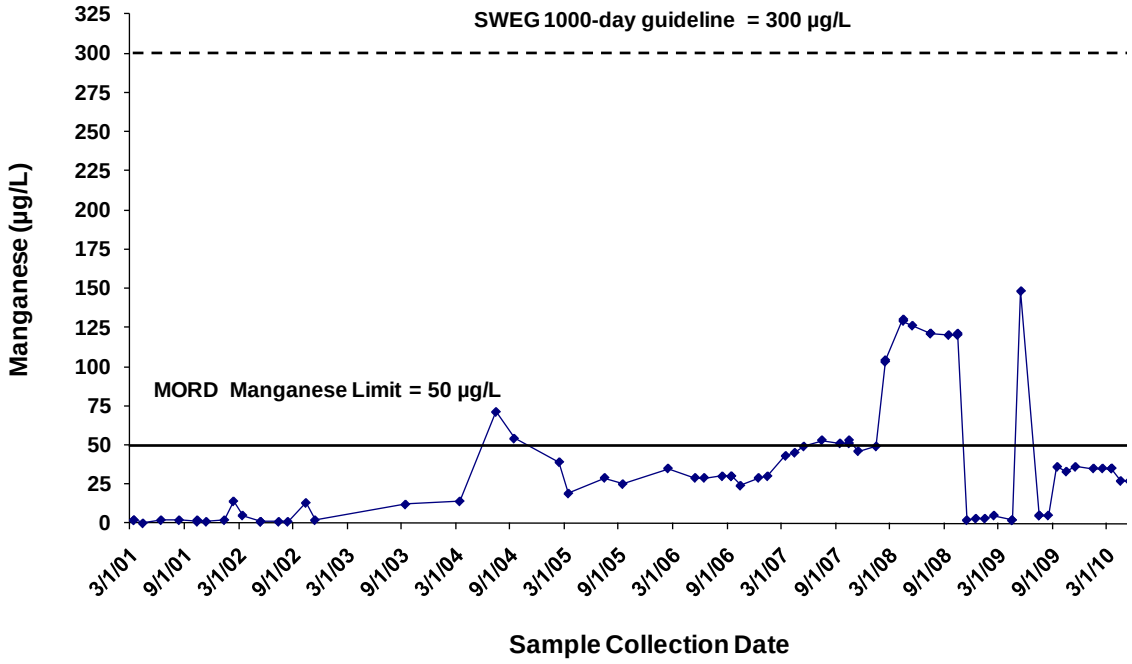
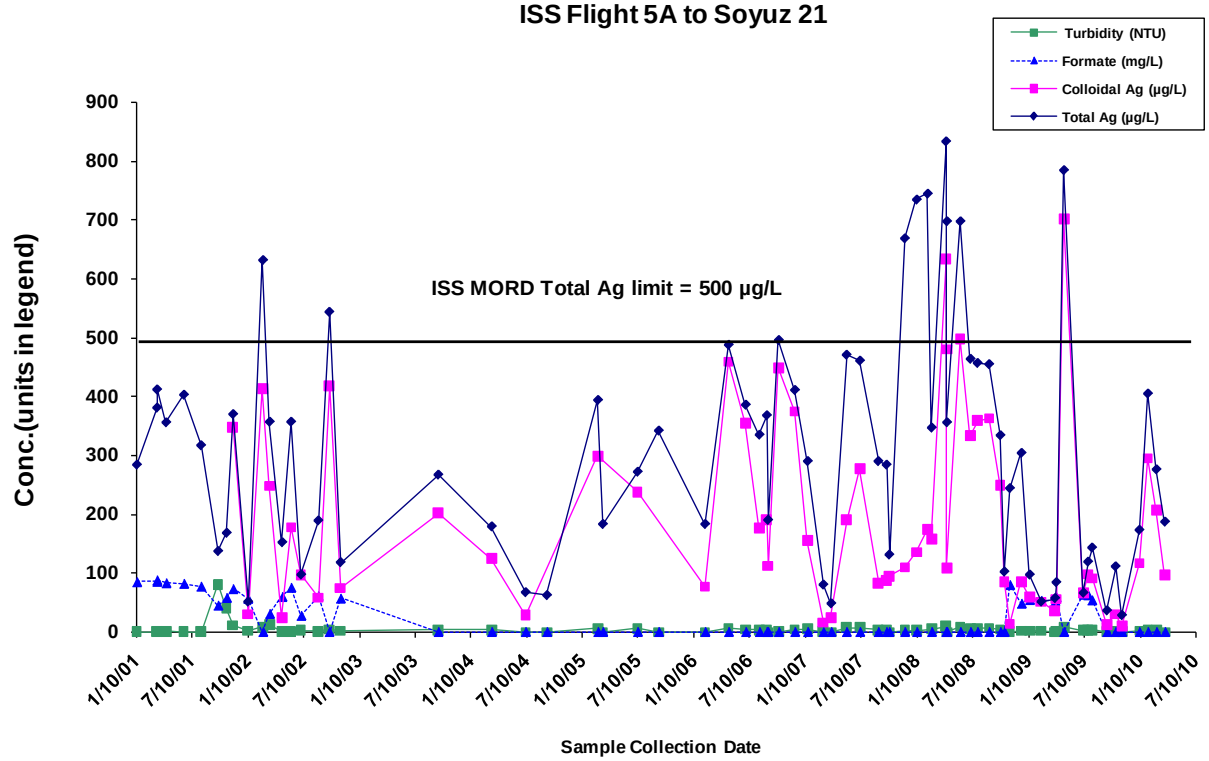


Figure 8 - Turbidity, Formate, Total & Colloidal Silver in SVO-ZV Water Samples
ISS Flight 5A to Soyuz 21



biocide) continued to be low in the SRV-K samples (2-90 µg/L), indicating that heating of the water by the galley continues to be the main source of microbial control. The TOC levels ranged from 0.19-1.32 mg/L (Figure 6). Trace levels of bromodichloromethane (1.2 µg/L), 1,2-dichloroethane (0.6 µg/L), chloroform (28 µg/L), diethyl ether (4 µg/L), o-xylene (1.5 µg/L), and dibutylphthalate (5 µg/L) were identified; however, these levels were not considered to be toxicologically significant.

SVO-ZV Potable Water Samples

All chemical parameters measured for the 3 SVO-ZV water samples were within the ISS MORD requirements except for turbidity (2.0 - 3.8 NTU) which exceeded the 1.5 NTU limit. The concern with elevated turbidity in the SVO-ZV samples is that particulates causing the turbidity can shield bacteria from the silver biocide. The dissolved silver levels ranged from 2-90 µg/L (Figure 8) indicating that a small amount of the particulates are due to colloidal silver which may mitigate this concern. The total silver levels in the January 6 and March 3 samples of 173 and 276 µg/L, respectively, (Figure 8) were both below the expected range of 400-500 µg/L, increasing the risk of microbial growth in the water. On the other hand, the total silver level in the February 3 sample was 405 µg/L and within the expected range. Manganese levels in the 3 samples ranged from 35-36 µg/L and were well below the ISS MORD limit (Figure 7). The TOC levels ranged from 3.26-3.48 mg/L, all well within specifications. Although chloroform (89.2 µg/L) exceeded the 80 µg/L EPA limit in the March 3rd sample, it was within the 6,500 µg/L Spacecraft Water Exposure Guideline (SWEG) for total trihalomethanes and thus did not pose a crew health risk. Only trace levels of bromodichloromethane (3.0-3.1 µg/L) and chloroform (68-77 µg/L) were identified in the other 2 samples.

EXPEDITION 23

A total of 14 chemical archival potable water samples, including 2 SRV-K hot, 2 SRV-K warm, 3 SVO-ZV, 3 PWD ambient, 2 PWD hot, 1 PWD Auxiliary Port, and 1 WPA Rack Interface Panel (RIP) were collected during Expedition 23 as detailed in Table 1. The 4 samples collected on February 25, 2010 and March 3, 2010 were returned on STS-131 (19A) and received in the WAFAL on April 22, 2010. The 7 samples collected on April 26, 2010 and May 18, 2010 were returned on STS-132 (ULF4) and received in the WAFAL on May 27, 2010. The 3 samples collected on March 31, 2010 were returned on Soyuz 21 and received in the WAFAL on June 3, 2010. All of the samples were collected using U.S. 1-liter Teflon® water sample bags. The 5 samples that were returned on Shuttle all had sufficient sample volume to support full chemical characterization. Due to limited sample volume, solids were not analyzed on any of the 3 samples collected for Soyuz return.

ISS US SEGMENT:

WPA Processed Water Samples

All chemical parameters measured for the 7 potable water samples taken from the PWD, WPA RIP, and PWD Auxiliary Port met requirements in SSP 41000. The nickel levels (see Figure 1) ranged from 26-270 µg/L, with the highest level coming from the Aux port. The total iodine (I) was <0.05 mg/L for the PWD ambient and hot samples and meets the requirement limit of 0.2 mg/L at the points of consumption (Figure 2). Total iodine levels were 2.24 and 2.72 mg/L in the PWD Aux and WPA RIP samples, both within the range of 2-4 mg/L that is the desired level for WPA product water. Iron was not detected in any of the 7 samples. The TOC levels ranged from 0.16-0.26 mg/L, well within the 3 mg/L limit (see Figure 4). Trace levels of acetone (11-39 µg/L), iodomethane (5 µg/L), methyl sulfone (34-98 µg/L), o-xylene (1.5 µg/L) and formaldehyde (2-6 µg/L) were identified in the samples. These trace levels were toxicologically insignificant.

ISS RUSSIAN SEGMENT:

SRV-K Potable Water Samples

All chemical parameters measured for the 4 SRV-K water samples met requirements listed in the ISS MORD with the exception of the nickel level of 116 µg/L in the March 31, 2010 SRV-K hot sample, which slightly exceeded the MORD specification of 100 µg/L, but was well within the established SWEG of 300 µg/L (Figure 5). The total silver level in the March 31 sample was 131 µg/L, which is within the acceptable biocidal range (>100 µg/L). The silver biocide levels returned to typical low levels in the SRV-K samples collected on April 26 and May18 (5-9 µg/L), indicating that heating of the water in the galley was the main source of microbial control at that time. The TOC levels in the SRV-K samples ranged from 0.18-0.51 mg/L. Traces of 1,4-dichlorobenzene (1.4 µg/L), dibutylphthalate (6 µg/L), 2-methylthiobenzothiazole (4 µg/L), formaldehyde (2-6 µg/L), and chloroform (1.7 µg/L) were identified in the SRV-K samples, which were not toxicologically significant levels. The TOC levels in the 4 SRV-K water samples ranged from 0.18–0.51 µg/L and were well below the limit (Figure 6).

SVO-ZV Potable Water Samples

All chemical parameters measured for the 3 SVO-ZV water samples met requirements listed in the ISS MORD. Manganese ranged from 27-35 µg/L, well below the specification limit (Figure 7). The total silver levels of 132-187 µg/L were within the acceptable biocidal range (>100 µg/L), but on the lower end of that range which increases the risk of microbial growth (see Figure 8). The TOC levels in the SVO-ZV water samples ranged from 0.48-3.53 mg/L. The only organics identified in the samples were traces of bromodichloromethane (2.6 µg/L), formaldehyde (3-4 µg/L), and chloroform (1.4-47.8 µg/L). Although the chloroform level of 47.8 µg/L in the March 31, 2010 sample is higher than the historical average of 13.5 µg/L in SVO-ZV samples, it falls well below the EPA maximum contaminant limit for trihalomethanes of 80 µg/L. Accordingly, none of the organics detected were at levels sufficient to pose a crew health risk.

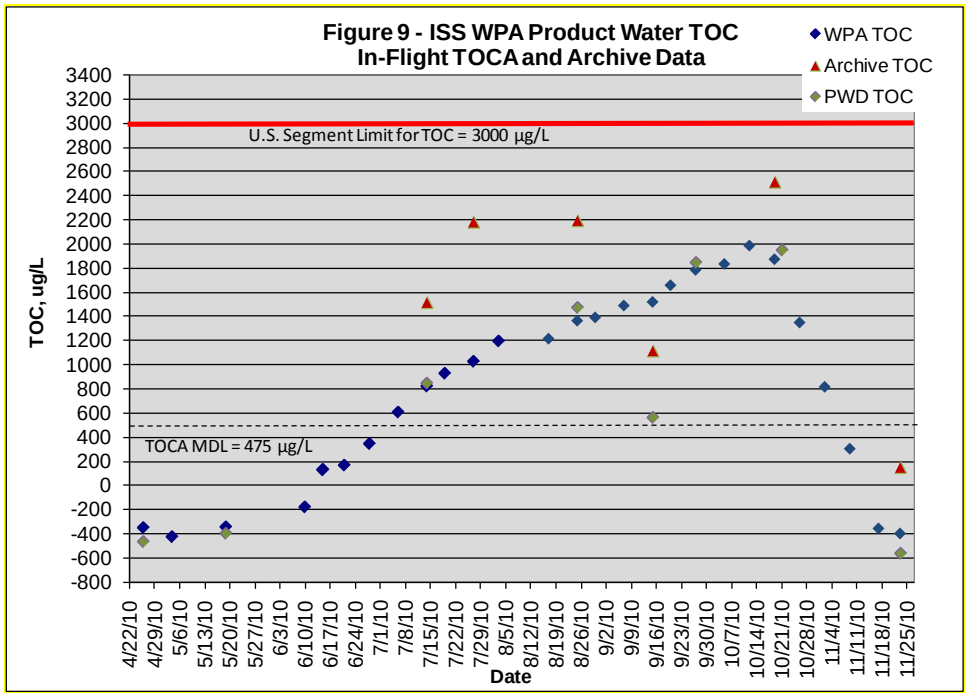
EXPEDITION 24

A total of 4 chemical archival potable water samples, including 2 PWD ambient, 1 PWD hot, and 1 WPA RIP were collected during Expedition 24 as detailed in Table 1. The 4 samples collected on July 14, 2010, July 29, 2010, August 25, 2010, and September 15, 2010 were returned on Soyuz 22 and received in the WAFAL on September 26, 2010. All of the samples were collected using U.S. 1-liter Teflon® water sample bags. Due to limited sample volume, turbidity was not analyzed on the WPA RIP sample, and solids were not analyzed on any of the samples.

ISS US SEGMENT:

PWD Potable Water Samples

All chemical parameters measured for the 3 potable water samples from the PWD met requirements in SSP 41000. The nickel levels (see Figure 1) ranged from 4-29 µg/L. The total iodine (I) was <0.05 mg/L and met the requirement of 0.2 mg/L at points of consumption (Figure 2). The iron levels remained below the detection limit (Figure 3). The TOC levels ranged from 1.11-2.19 mg/L, within the 3 mg/L limit, but trending up beginning July 14, 2010 (see Figure 4). A comparison of in-flight versus archival TOC results is presented in Figure 9. The archival TOC results confirm the trend seen with the TOCA in-flight analyses, although the TOCA results, on average, are 45% lower than the archive results (Figure 9).



Routine analyses for target organics showed only trace levels of 2-butanone (<2-4 µg/L), methyl sulfone (<4-36 µg/L) and formaldehyde (5-8 µg/L) in the samples that were toxicologically insignificant. As the target list did not reveal the contaminant responsible for the increase in TOC, efforts to look for unknown compounds were initiated. A method for glycerol was developed but this compound was not detected in any of the potable samples. Further

work, however, showed an unknown peak in the gas chromatography/mass spectrometry (GC/MS) analysis for glycols. This unknown was identified as dimethylsilanediol (DMSD) by GC/MS analysis.[11] A method for analysis of DMSD was then developed, which provided estimated DMSD levels from 4.7-8.2 mg/L. The results from the DMSD analysis should be considered estimates only as the synthesized standard used for calibration was not traceable. Using the estimated DMSD levels, the organic carbon accountability for the potable water samples ranged from 98-111% indicating that DMSD was the primary contributor to the elevated TOC in the WPA product water. An interim SWEG of 25 mg/L was subsequently established for DMSD. Accordingly, in-flight levels did not pose a crew health risk.[12]

Non-routine silicon analysis by inductively coupled plasma/mass spectrometry (ICP/MS) was also conducted to confirm that the unknown contained silicon and whether there were additional silicon containing contaminants in addition to the DMSD. The results show that the silicon levels ranged from 1.21-2.13 mg/L. These levels are slightly less than values predicted using the estimated DMSD levels, confirming that most of the silicon was accounted for in the DMSD analysis.

More detailed descriptions of the extensive work performed to identify and quantify the DMSD and of the multidisciplinary teamwork used to evaluate associated risk and investigate potential sources and root cause can be found in other recent publications.[12,13]

WPA Processed Water Sample

The TOC level in the product water sample from the WPA RIP was 2.18 mg/L, which also reflects an upward trend (Figure 4). Methyl sulfone and formaldehyde were identified at toxicologically insignificant levels of 150 µg/L and 8 µg/L, respectively. Glycerol was not detected and the silicon level was 1.77 mg/L. The estimated DMSD concentration was 7.3 mg/L, and well below the interim SWEG of 25 mg/L. Organic carbon accountability for the sample improved to 90%, with DMSD as the primary contributor.

EXPEDITION 25

A total of 3 chemical archival potable water samples, including 2 PWD hot and 1 SRV-K warm, were collected during Expedition 25 as detailed in Table 1. The 3 samples were collected on October 19, 2010 and November 23, 2010, returned on Soyuz 23 and received in the WAFAL on November 29, 2010. All of the samples were collected using U.S. 1-liter Teflon® water sample bags. Due to limited sample volume, total dissolved solids were not analyzed on any of the samples and turbidity was not analyzed on the October 19 PWD sample or the SRV-K sample.

ISS US SEGMENT:

PWD Potable Water Samples

All chemical parameters measured for the 2 potable water samples from the PWD met ISS quality requirements listed in SSP 41000. The nickel levels of 17 and 23 µg/L were well within specifications (see Figure 1). The total iodine (I) levels were below the detection limit (<0.05 mg/L) and met the ISS limit of 0.2 mg/L at points of consumption (Figure 2). The iron levels remained below the detection limit (Figure 3). The TOC levels of 2.51 mg/L on October 19 and 0.15 mg/L on November 23 indicate that the TOC level in the WPA product water continued to rise until mid-October, but never reached the 3 mg/L limit before falling precipitously (see Figure 4). These results confirm the TOCA in-flight data trend and an offset between TOCA results and archive results (Figure 9). The primary contributor to the elevated TOC again proved to be DMSD. The DMSD level in the October 19 sample of 8.49 mg/L is the highest seen in product water to date, but still well below the recently established SWEG of 25 mg/L. As expected, DMSD was not detected (<2 mg/L) in the November 23 sample collected after the TOC of the WPA product water returned to a nominal low level. Again, these DMSD results should be considered estimates as the synthesized standard used for calibration of the DMSD method was not traceable. Routine analyses for other target organics detected only trace levels of acetone (< 2 and 40 µg/L), 2-butanone (< 2 and 24 µg/L), and methyl sulfone (48 and 50 µg/L) in the samples. Non-routine silicon analysis by ICP/MS was also performed to confirm the presence of DMSD and determine if there were additional silicon containing contaminants present in the samples. The results indicated silicon levels of 0.94 and 0.22 mg/L in the October 19 and November 23 samples, respectively. These levels are slightly less than values predicted using the estimated DMSD levels, thereby confirming that most of the silicon in the samples was being accounted for in the DMSD analysis.

ISS RUSSIAN SEGMENT:

SRV-K Potable Water Sample

All chemical parameters measured for the SRV-K warm water sample were within the ISS MORD requirements. The nickel level of 32 µg/L was well below the specification limit (Figure 5). The silver biocide level of 75 µg/L was below the acceptable biocidal range (>100 µg/L) indicating that heating of the water by the pasteurization unit was the main source of microbial control in the SRV-K galley at the time. As shown in Figure 6, the TOC level was 0.38 mg/L and well below the specification limit. No specific organics were identified in the sample.

Conclusions

The chemical analysis results for the archival potable water samples collected and returned during Expeditions 21 through 25 indicate that the ISS potable water supplies complied with ISS quality specifications and were acceptable for crew consumption.

Turbidity levels exceeded the ISS MORD limit of 1.5 NTU in 4 of 8 SVO-ZV samples collected during Expeditions 21 through 25. Although elevated turbidity in itself does not pose a direct crew health risk, the concern is that particulate matter causing the turbidity could shield bacteria from the silver biocide that is added for microbial control. Analytical results for dissolved silver indicate that some of the particulates contributing to elevated turbidity are colloidal silver, which has biocidal properties and may help to mitigate the turbidity concern. The silver biocide levels in 2 of 8 SVO-ZV samples were below the acceptable biocidal range (>100 µg/L), which indicates increased risk of microbial growth. Continued close monitoring of the SVO-ZV silver level is therefore recommended to determine if remedial action is required.

Silver biocide levels in all but one SRV-K sample remained typically low (<100 µg/L), indicating that heating of the water by the pasteurization unit continued to be the primary means of microbial control in the SRV-K galley. The nickel level of 116 µg/L in the March 31, 2010 SRV-K hot sample slightly exceeded the ISS MORD specification of 100 µg/L, but was well within the established SWEG of 300 µg/L.

From early July to mid-October the TOC level in the WPA product water showed a continuous rise, approaching the 3 mg/L limit, before falling back to nominal low levels in mid-November. The analytical results for archival PWD and WPA product water samples confirm the TOCA in-flight data trend and an offset between TOCA results and archive results. DMSD was eventually identified as the primary contributor to the elevated TOC. The November 23 PWD sample, collected after the TOC of the WPA product water returned to a nominal low level, did not contain DMSD. It is recommended that WPA troubleshooting support continue as well as support for the multidisciplinary effort to establish root cause and the environmental source(s) of the DMSD.

Appendix

The chemical analysis results for the archival potable water samples collected from the Russian Segment SRV-K (regenerated water) system during Expeditions 21 through 25 are presented in Appendix 1. Analytical results for the chemical archive samples collected from the Russian Segment SVO-ZV (stored water) system during these 5 expeditions are presented in Appendix 2. Appendix 3 contains the chemical analysis results for U.S. Segment Water Processor Assembly product water samples collected during Expeditions 21-25.

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Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Physical Characteristics														
pH	pH units	U.S.	5.5-9.0	MORD	7.31	7.09	7.00	7.45	7.34	6.33	6.51	6.43	6.35	5.82
Conductivity	µS/cm	U.S.			15	14	189	49	50	187	20	22	21	124
Turbidity	NTU	U.S.	1.5*	MORD	0.4	0.2	0.4	0.5	0.2	0.5	0.2	0.3	0.4	NA
Total Dissolved Solids	mg/L	U.S.	100 (1,000#)	MORD	<5	15	112	NA	NA	NA	<5	NA	<5	NA
Iodine (LCV)														
Total I	mg/L	U.S.	0.05	MORD	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anions (IC/ISE)														
Bromide	mg/L	U.S.			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	U.S.	250	MORD	<0.15	<0.15	4.47	1.09	1.14	4.89	0.21	0.18	0.19	4.37
Fluoride	mg/L	U.S.	1.5/4	MORD/EPA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as Nitrogen (NO3-N)	mg/L	U.S.	10	MORD/EPA	<0.11	<0.11	0.16	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.38
Nitrite as Nitrogen (NO2-N)	mg/L	U.S.	1	EPA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P (PO4-P)	mg/L	U.S.			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.02
Sulfate	mg/L	U.S.	250	MORD	<0.75	<0.75	13.5	0.94	1.02	19.2	<0.75	<0.75	<0.75	11.6
Cations (IC)														
Ammonia as Nitrogen (NH3-N)	mg/L	U.S.	2/1	MORD/SWEG	<0.002	<0.002	<0.002	<0.002	<0.002	0.018	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	U.S.			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Metals (ICP/MS)														
Calcium	mg/L	U.S.	100	MORD	2.42	2.34	28.0	9.36	9.61	21.1	3.23	3.17	3.17	18.1
Magnesium	mg/L	U.S.	50	MORD	0.03	0.04	4.21	0.16	0.16	5.34	0.17	0.21	0.21	4.14
Potassium	mg/L	U.S.			0.04	<0.01	0.72	0.01	<0.01	1.71	0.02	0.04	0.03	1.03
Sodium	mg/L	U.S.			0.01	0.02	2.12	0.01	0.01	3.88	0.13	0.15	0.15	5.12
Aluminum	µg/L	U.S.			<2	<2	19	3	4	53	6	<4	4	101
Antimony	µg/L	U.S.	6	EPA	<2	<2	<2	<2	<2	<2	<2	<4	<2	<4
Arsenic	µg/L	U.S.	10	MORD/EPA	<1	<1	<1	<1	<1	<1	<1	<2	<1	<2
Barium	µg/L	U.S.	1,000/10,000	MORD/SWEG	<1	<1	11	<1	<1	8	<1	<2	<1	12
Beryllium	µg/L	U.S.	4	EPA	<1	<1	<1	<1	<1	<1	<1	<2	<1	<2
Cadmium	µg/L	U.S.	5/22	MORD/SWEG	<1	<1	<1	<1	<1	1	<1	<2	<1	<2
Chromium	µg/L	U.S.	100	MORD/EPA	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
Cobalt	µg/L	U.S.			<1	<1	<1	<1	<1	<1	<1	<2	<1	<2
Copper	µg/L	U.S.	1,000/1,300	MORD/EPA	11	4	7	2	9	9	7	15	13	5
Iron	µg/L	U.S.	300	MORD	6	6	39	17	15	36	<5	<10	<5	19
Lead	µg/L	U.S.	50/15	MORD/EPA	<1	<1	<1	<1	<1	1	<1	<2	<1	<2
Manganese	µg/L	U.S.	50/300	MORD/SWEG	<1	<1	13	<1	<1	28	1	<2	1	6
Mercury	µg/L	U.S.	2	MORD/EPA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
Molybdenum	µg/L	U.S.	40	EPA HA	<1	<1	<1	<1	<1	<1	<1	<2	<1	<2
Nickel	µg/L	U.S.	100/300	MORD/SWEG	34	48	26	43	39	116	36	68	46	32
Selenium	µg/L	U.S.	10/50	MORD/EPA	<1	<1	<1	<1	<1	<1	<1	<2	<1	<2
Silver	µg/L	U.S.	500/400	MORD/SWEG	14	7	108	7	3	131	5	7	9	75
Silver, Dissolved	µg/L	U.S.			5	2	90	<4	<4	58	<2	<4	3	57
Zinc	µg/L	U.S.	5,000/2,000	MORD/SWEG	59	69	27	27	21	54	34	129	42	18
Silicon (ICP/MS)														
Silicon (ICP/MS)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA	73	793
Total Organic Carbon (Sievers)														
Total Inorganic Carbon	mg/L	U.S.			2.79	2.64	18.1	6.33	6.44	17.2	3.62	3.54	3.58	14.2

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Total Organic Carbon	mg/L	U.S.	20**	MORD	0.17	0.21	1.32	0.21	0.19	0.51	0.18	0.27	0.27	0.38
Volatile Organics														
Acetone	µg/L	U.S.	15,000	SWEG	4	<2	<2	<2	<2	<2	<2	<2	<2	<6
Acryloniltrile	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Allyl chloride (3-Chloropropene)	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Benzene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Bromobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Bromochloromethane	µg/L	U.S.	90	EPA HA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<12
Bromodichloromethane	µg/L	U.S.	THM 80	EPA	<0.4	<0.4	1.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Bromoform	µg/L	U.S.	THM 80	EPA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Bromomethane	µg/L	U.S.	10	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
2-Butanone (Methyl ethyl ketone)	µg/L	U.S.	4,000	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
n-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
sec-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
tert-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Carbon disulfide	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Carbon tetrachloride	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Chloroacetonitrile	µg/L	U.S.			<10	<10	<10	<10	<10	<10	<10	<10	<10	<30
Chlorobenzene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1-Chlorobutane (Butyl chloride)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Chloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Chloroform	µg/L	U.S.	6,500/THM 80	SWEG/EPA	0.7	<0.4	27.6	<0.4	<0.4	1.7	<0.4	<0.4	<0.4	<1.2
Chloromethane	µg/L	U.S.	30	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
2-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
4-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Dibromochloromethane	µg/L	U.S.	THM 80	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	U.S.	0.2	EPA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
1,2-Dibromoethane (EDB)	µg/L	U.S.	0.05	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Dibromomethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2-Dichlorobenzene	µg/L	U.S.	600	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,3-Dichlorobenzene	µg/L	U.S.	600	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,4-Dichlorobenzene	µg/L	U.S.	75	EPA	<0.4	<0.4	1.3	<0.4	<0.4	<0.4	<0.4	1.4	<0.4	<1.2
trans-1,4-Dichloro-2-butene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Dichlorodifluoromethane	µg/L	U.S.	1,000	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
1,1-Dichloroethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2-Dichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	0.6	<0.4	<0.4	<0.4	<0.4	<1.2
1,1-Dichloroethene	µg/L	U.S.	7	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
cis1,2-Dichloroethene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
trans-1,2-Dichloroethene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2-Dichloropropane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,3-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
2,2-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,1-Dichloropropanone	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
1,1-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
cis-1,3-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
trans-1,3-Dichloropropene	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Diethyl ether	µg/L	U.S.			4	4	<2	<2	<2	<2	<2	<2	<2	<6
Ethylbenzene	µg/L	U.S.	700	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Ethyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Hexachlorobutadiene	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Hexachloroethane	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
2-Hexanone	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Iodomethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Isopropylbenzene (Cumene)	µg/L	U.S.	4,000	EPA DWEL	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
4-Isopropyltoluene (Cymene)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Methacrylonitrile	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Methyl acrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Methyl-t-butylether (MTBE)	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Methylene chloride (Dichloromethane)	µg/L	U.S.	15,000/5	SWEG/EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Methyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
4-Methyl-2-pentanone	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Naphthalene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Nitrobenzene	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
2-Nitropropane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Pentachloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Propionitrile (Ethyl cyanide)	µg/L	U.S.			<10	<10	<10	<10	<10	<10	<10	<10	<10	<30
n-Propylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Styrene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,1,1,2-Tetrachloroethane	µg/L	U.S.	70	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,1,2,2-Tetrachloroethane	µg/L	U.S.	0.3	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Tetrachloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Tetrahydrofuran	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Toluene	µg/L	U.S.	1,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2,3-Trichlorobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2,4-Trichlorobenzene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,1,1-Trichloroethane	µg/L	U.S.	200	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,1,2-Trichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Trichloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Trichlorofluoromethane	µg/L	U.S.	2,000	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2,3-Trichloropropane	µg/L	U.S.	40	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,2,4-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
1,3,5-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Vinyl Acetate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Vinyl Chloride	µg/L	U.S.	2	EPA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
m&p-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
o-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	1.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2
Volatile Organics - Non-Targets (Tentatively Identified Compounds (>/= 80% match quality)														
Acetaldehyde	µg/L	U.S.			3	not found	not found	not found	not found	not found	not found	not found	not found	not found
Butyraldehyde (Butanal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,8-Cineole	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Cyclohexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Difluorodimethylsilane	µg/L				not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Dimethoxymethane (Formal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2,5-Dimethylfuran	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2,6-Dimethyl-1,7-octadiene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Dimethyl sulfide (Thiobismethane)	µg/L				not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
p-Dioxane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,3-Dioxolane (Ethylene glycol formal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Ethyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Fluorotrimethylsilane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Heptanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Hexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Hydroxy-3-methylbutyric acid	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Isobutyronitrile	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Isooctanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
L-Menthol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Menthone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Methyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
cis-1-Methyl-4-(1-methylethenyl)-cyclohexane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Methyl-2-pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Methyl-1-propene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
alpha-Methyl styrene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Nonanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Octanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Trimethylsilanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Extractable Organics														
Acetophenone	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
Benzaldehyde	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Benzoic acid	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<48
Benzothiazole	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Benzyl alcohol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Benzyl butyl phthlate	µg/L	U.S.	7,000	EPA DWEL	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Butoxyethanol	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
2-(2-Butoxyethoxy)ethanol	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
2-(2-Butoxyethoxy)ethyl acetate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
n-Butylpalmitate	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
Butylated hydroxyanisole (BHA)	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N-Butylbenzenesulfonamide	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
3-tert-Butylphenol	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<24
Caffeine	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
tris-2-Chloroethyl phosphate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Cholesterol	µg/L	U.S.			<32	<32	<32	<64	<64	<64	<32	<64	<32	<64
o-Cresol (2-Methylphenol)	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Cyclododecane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Decamethylcyclopentasiloxane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Decanoic acid	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<24
2,6-Di-t-butyl-1,4-benzoquinone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2,4-Di-t-butylphenol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
1,4 Diacetylbenzene	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Dibutylformamide	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Dibutyl phthalate	µg/L	U.S.	40,000/4,000	SWEG/EPA DWEL	8	<4	5	<8	<8	<8	<4	<8	6	<8
Dibutylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Diethyl-m-toluamide	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Diethylphthalate	µg/L	U.S.	30,000	EPA DWEL	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Diethylene glycol monoethyl ether	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Diethylformamide	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<24
Diiodomethane (Methyl iodide)	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Diisopropyl adipate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Dimethyl phthalate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Dimethyl acetamide	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Dimethylbenzylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N,N-Dimethylformamide	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
Dipropylene glycol methyl ether	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Dodecamethylcyclohexasiloxane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Ethoxyethanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<16
2-Ethyl-1-hexanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Ethylhexanoic acid	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<16
bis-2-Ethylhexyl adipate	µg/L	U.S.	400	EPA	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
bis-2-Ethylhexyl phthalate (Dioctyl phthlate)	µg/L	U.S.	20,000/6	SWEG/EPA	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
4-Ethylmorpholine	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
1-Formylpiperidine	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Heptanoic acid	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<24
2-Heptanone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
gamma-Hexalactone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Hexanoic acid	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<24
2-Hexanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Hydroxybenzothiazole	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Ibuprofen	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<24
Iodoform	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Isophorone	µg/L	U.S.	100	EPA HA	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
4-Isopropylphenol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Lauramide	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Lauric acid (Dodecanoic acid)	µg/L	U.S.			<120	<120	<120	<240	<240	<240	<120	<240	<120	<240
p-Menth-1-en-8-ol (alpha-Terpineol)	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Mercaptobenzothiazole	µg/L	U.S.	30,000	SWEG	<40	<40	<40	<80	<80	<80	<40	<80	<40	<80
2-Methyl-2,4-pentanediol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
1-Methyl-2-pyrrolidinone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Methyl-4-hydroxybenzoate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Methyl sulfone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Methyl butyric acid	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<24
2-Methylthiobenzothiazole	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	4	<8
Monomethyl phthalate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Myristic acid	µg/L	U.S.			<24	<24	<24	<48	<48	<48	<24	<48	<24	<64
(+)-Neomenthol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Nicotine	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Nonadecane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Nonanoic acid	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<24
1-Octadecanol	µg/L	U.S.			<12	<12	<12	<24	<24	<24	<12	<24	<12	<24
Octamethylcyclotetrasiloxane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Octanoic acid	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<48
4-tert-Octylphenol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Oleic acid	µg/L	U.S.			<40	<40	<40	<80	<80	<80	<40	<80	<40	<80
Oxindole	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Palmitic acid	µg/L	U.S.			<120	<120	<120	<240	<240	<240	<120	<240	<120	<240
Palmitoleic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentacosane	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
sec-Phenethyl alcohol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Phenol	µg/L	U.S.	1,000/4,000	MORD/SWEG	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Phenoxyethanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
N-Phenyl-2-naphthylamine	µg/L	U.S.	260,000	SWEG	4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Phenyl-2-propanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Phenylacetic acid	µg/L	U.S.			<16	<16	<16	<32	<32	<32	<16	<32	<16	<32
Phenethyl alcohol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
2-Phenylphenol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Salicyclic Acid	µg/L	U.S.			<32	<32	<32	<64	<64	<64	<32	<64	<32	<64
trans-Squalene	µg/L	U.S.			<8	<8	<8	<16	<16	<8	<8	<16	<8	<16

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Stearic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Tetradecanol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Tetramethylsuccinonitrile	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Tetramethyl thiourea	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Tetramethylurea	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Thymol	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
1,3,5-Triallyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Tributylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Tributyl phosphate	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Triethyl phosphate	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
Tripropylene glycol monomethyl ether	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Undecanoic acid	µg/L	U.S.			<24	<24	<24	<48	<48	<48	<24	<48	<24	<48
2-Undecanone	µg/L	U.S.			<4	<4	<4	<8	<8	<8	<4	<8	<4	<8
Valeric acid (Pentanoic acid)	µg/L	U.S.			<24	<24	<24	<48	<48	<48	<24	<48	<24	<48
Vanillin	µg/L	U.S.			<8	<8	<8	<16	<16	<16	<8	<16	<8	<16
Alcohols (DAI/GC/MS)														
1-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Ethanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Methanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
3-Methyl-1-butanol (Isopentanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1-Pentanol (Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Pentanol (sec-Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
3-Pentanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1-Propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Propanol (Isopropanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Glycols (DAI/GC/MS)														
1,2-Ethanediol (Ethylene glycol)	µg/L	U.S.	12000/14000	MORD/EPA HA	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Propanediol (Propylene glycol)	µg/L	U.S.			<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Glycerol (LC/MS/MS)														
Glycerol (1,2,3-Propanetriol)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA	NA	<300
Silanols (LC/MS/MS) (R & D Method -NIST traceable standard not available)														
Dimethylsilanediol (DMSD)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA	NA	<400
Carboxylates (CE)														
Acetate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Formate	µg/L	U.S.	2,500,000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Glycolate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Glyoxylate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Lactate	µg/L	U.S.			<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Oxalate	µg/L	U.S.			<125	<125	MI	<125	<125	<125	<125	<125	<125	<125
Propionate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125	<125	<125

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 1. ISS SRV-K Potable Water (Regenerated) Summary for Expeditions 21 through 25

Mission					ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22		Soyuz 21/Exp. 23	ISS ULF4/Exp. 23			Soyuz 23/Exp. 25
Sample Location			Potable Water		SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Warm	SRV-K Hot	SRV-K Hot	SRV-K Warm	SRV-K Warm	SRV-K Hot	SRV-K Warm
Sample Description		Test	Maximum Contaminant	Maximum Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010	5/18/2010	11/23/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091130011	20100222006	20100222008	20100326002	20100326003	20100603001	20100527010	20100527011	20100527012	20101129003
Aldehydes														
Formaldehyde	µg/L	U.S.	12,000/1,000	SWEG/EPA HA	<2	<2	<2	<2	<2	6	3	2	5	<5
Amines (CE)														
Ethylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Methylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
n-Propylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Trimethylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Non-volatiles (LC/UV-VIS)														
Urea	µg/L	U.S.			<800	<800	<800	<800	<800	<800	<800	<800	<800	<800
Caprolactam	µg/L	U.S.	100,000	SWEG	<4	<4	<4	<8	<8	<8	<4	<8	<8	<16
Organic Carbon Recovery	percent	U.S.			9.26	1.92	0.53	0.00	0.08	0.51	0.68	0.56	3.08	0.00
Unaccounted Organic Carbon	mg/L	U.S.			0.15	0.20	1.31	0.21	0.19	0.50	0.17	0.27	0.26	0.38

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
Physical Characteristics												
pH	pH units	U.S.	5.5-9.0	MORD	7.00	7.00	6.69	6.96	7.14	6.50	6.29	6.46
Conductivity	µS/cm	U.S.			334	304	362	362	363	300	251	269
Turbidity	NTU	U.S.	1.5*	MORD	1.6	0.3	2.0	3.8	3.5	NA	1.1	1.3
Total Dissolved Solids	mg/L	U.S.	100 (1,000#)	MORD	NA	180	215	222	NA	NA	NA	141
Iodine (LCV)												
Total I	mg/L	U.S.	0.05	MORD	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anions (IC/ISE)												
Bromide	mg/L	U.S.			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	U.S.	250	MORD	9.75	8.91	9.79	9.81	10.1	10.2	8.61	8.68
Fluoride	mg/L	U.S.	1.5/4	MORD/EPA	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Nitrate as Nitrogen (NO3-N)	mg/L	U.S.	10	MORD/EPA	0.33	<0.11	0.45	0.49	0.57	0.62	<0.11	<0.11
Nitrite as Nitrogen (NO2-N)	mg/L	U.S.	1	EPA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P (PO4-P)	mg/L	U.S.			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Sulfate	mg/L	U.S.	250	MORD	38	28.4	40.7	40.8	41.8	42.1	25.5	26.3
Cations (IC)												
Ammonia as Nitrogen (NH3-N)	mg/L	U.S.	2/1	MORD/SWEG	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	U.S.			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Metals (ICP/MS)												
Calcium	mg/L	U.S.	100	MORD	44.4	39.5	48.6	49.5	47.4	49.9	33.1	32.9
Magnesium	mg/L	U.S.	50	MORD	11.1	10.1	11	11.1	11.2	12.1	8.65	8.19
Potassium	mg/L	U.S.			2.29	3.01	2.05	2.1	2.27	2.2	2.1	2.04
Sodium	mg/L	U.S.			6.37	7.51	6.33	6.34	6.09	6.28	9.62	8.98
Aluminum	µg/L	U.S.			54	103	36	41	44	105	170	166
Antimony	µg/L	U.S.	6	EPA	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	µg/L	U.S.	10	MORD/EPA	<1	<1	<1	<1	<1	<1	<1	<1
Barium	µg/L	U.S.	1,000/10,000	MORD/SWEG	25	7	33	33	36	36	6	6
Beryllium	µg/L	U.S.	4	EPA	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	µg/L	U.S.	5/22	MORD/SWEG	<1	3	<1	<1	<1	<1	1	1
Chromium	µg/L	U.S.	100	MORD/EPA	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt	µg/L	U.S.			<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	U.S.	1,000/1,300	MORD/EPA	2	<1	4	4	4	4	2	1
Iron	µg/L	U.S.	300	MORD	57	76	54	68	102	60	50	56
Lead	µg/L	U.S.	50/15	MORD/EPA	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	U.S.	50/300	MORD/SWEG	33	36	35	35	35	35	27	27
Mercury	µg/L	U.S.	2	MORD/EPA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Molybdenum	µg/L	U.S.	40	EPA HA	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	µg/L	U.S.	100/300	MORD/SWEG	4	3	24	5	5	5	2	1
Selenium	µg/L	U.S.	10/50	MORD/EPA	<1	<1	<1	<1	<1	<1	<1	<1
Silver	µg/L	U.S.	500/400	MORD/SWEG	111	28	173	405	276	187	132	160
Silver, Dissolved	µg/L	U.S.			81	18	56	110	69	90	86	125
Zinc	µg/L	U.S.	5,000/2,000	MORD/SWEG	30	8	132	27	24	29	7	5

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
Silicon (ICP/MS)												
Silicon (ICP/MS)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (Sievers)												
Total Inorganic Carbon	mg/L	U.S.			31.5	29.7	31.7	32.9	31.4	31.9	25.8	25.6
Total Organic Carbon	mg/L	U.S.	20**	MORD	2.70	0.36	3.38	3.26	3.48	3.53	0.48	0.48
Volatile Organics												
Acetone	µg/L	U.S.	15,000	SWEG	<2	<2	<2	<2	<2	<6	<2	<2
Acryloniltrile	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Allyl chloride (3-Chloropropene)	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Benzene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Bromobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Bromochloromethane	µg/L	U.S.	90	EPA HA	<4	<4	<4	<4	<4	<12	<4	<4
Bromodichloromethane	µg/L	U.S.	THM 80	EPA	1.9	<0.4	3	3.1	3.5	2.6	<0.4	<0.4
Bromoform	µg/L	U.S.	THM 80	EPA	<2	<2	<2	<2	<2	<6	<2	<2
Bromomethane	µg/L	U.S.	10	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
2-Butanone (Methyl ethyl ketone)	µg/L	U.S.	4,000	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
n-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
sec-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
tert-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Carbon disulfide	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Carbon tetrachloride	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Chloroacetonitrile	µg/L	U.S.			<10	<10	<10	<10	<10	<30	<10	<10
Chlorobenzene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1-Chlorobutane (Butyl chloride)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Chloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Chloroform	µg/L	U.S.	6,500/THM 80	SWEG/EPA	51.9	1.6	67.9	76.8	89.2	47.8	1.4	1.6
Chloromethane	µg/L	U.S.	30	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
2-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
4-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Dibromochloromethane	µg/L	U.S.	THM 80	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	U.S.	0.2	EPA	<2	<2	<2	<2	<2	<6	<2	<2
1,2-Dibromoethane (EDB)	µg/L	U.S.	0.05	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Dibromomethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2-Dichlorobenzene	µg/L	U.S.	600	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,3-Dichlorobenzene	µg/L	U.S.	600	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,4-Dichlorobenzene	µg/L	U.S.	75	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
trans-1,4-Dichloro-2-butene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Dichlorodifluoromethane	µg/L	U.S.	1,000	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
1,1-Dichloroethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2-Dichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,1-Dichloroethene	µg/L	U.S.	7	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
cis1,2-Dichloroethene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
trans-1,2-Dichloroethene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2-Dichloropropane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,3-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
2,2-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
1,1-Dichloropropanone	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
1,1-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
cis-1,3-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
trans-1,3-Dichloropropene	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Diethyl ether	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Ethylbenzene	µg/L	U.S.	700	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Ethyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Hexachlorobutadiene	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
Hexachloroethane	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<6	<2	<2
2-Hexanone	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Iodomethane	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Isopropylbenzene (Cumene)	µg/L	U.S.	4,000	EPA DWEL	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
4-Isopropyltoluene (Cymene)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Methacrylonitrile	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Methyl acrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Methyl-t-butylether (MTBE)	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Methylene chloride (Dichloromethane)	µg/L	U.S.	15,000/5	SWEG/EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Methyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
4-Methyl-2-pentanone	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Naphthalene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Nitrobenzene	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
2-Nitropropane	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Pentachloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Propionitrile (Ethyl cyanide)	µg/L	U.S.			<10	<10	<10	<10	<10	<30	<10	<10
n-Propylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Styrene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,1,1,2-Tetrachloroethane	µg/L	U.S.	70	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,1,2,2-Tetrachloroethane	µg/L	U.S.	0.3	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Tetrachloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Tetrahydrofuran	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Toluene	µg/L	U.S.	1,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2,3-Trichlorobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2,4-Trichlorobenzene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,1,1-Trichloroethane	µg/L	U.S.	200	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,1,2-Trichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Trichloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Trichlorofluoromethane	µg/L	U.S.	2,000	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2,3-Trichloropropane	µg/L	U.S.	40	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,2,4-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
1,3,5-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
Vinyl Acetate	µg/L	U.S.			<2	<2	<2	<2	<2	<6	<2	<2
Vinyl Chloride	µg/L	U.S.	2	EPA	<2	<2	<2	<2	<2	<6	<2	<2
m&p-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4
o-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
Volatile Organics - Non-Targets (Tentatively Identified Compounds (>/= 80% match quality)												
Acetaldehyde	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Butyraldehyde (Butanal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,8-Cineole	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Cyclohexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Difluorodimethylsilane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Dimethoxymethane (Formal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2,5-Dimethylfuran	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2,6-Dimethyl-1,7-octadiene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Dimethyl sulfide (Thiobismethane)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
p-Dioxane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,3-Dioxolane (Ethylene glycol formal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Ethyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Fluorotrimethylsilane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Heptanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Hexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Hydroxy-3-methylbutyric acid	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Isobutyronitrile	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Isooctanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
L-Menthol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Menthone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Methyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
cis-1-Methyl-4-(1-methylethenyl)-cyclohexane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Methyl-2-pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Methyl-1-propene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
alpha-Methyl styrene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Nonanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Octanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Trimethylsilanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Extractable Organics												
Acetophenone	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Benzaldehyde	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Benzoic acid	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
Benzothiazole	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Benzyl alcohol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Benzyl butyl phthlate	µg/L	U.S.	7,000	EPA DWEL	<8	<4	<4	<4	<4	<16	<8	<8
2-Butoxyethanol	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
2-(2-Butoxyethoxy)ethanol	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
2-(2-Butoxyethoxy)ethyl acetate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
n-Butylpalmitate	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Butylated hydroxyanisole (BHA)	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N-Butylbenzenesulfonamide	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
3-tert-Butylphenol	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
Caffeine	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
tris-2-Chloroethyl phosphate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
Cholesterol	µg/L	U.S.			<64	<32	<32	<32	<32	<128	<64	<64
o-Cresol (2-Methylphenol)	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Cyclododecane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Decamethylcyclopentasiloxane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Decanoic acid	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
2,6-Di-t-butyl-1,4-benzoquinone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2,4-Di-t-butylphenol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
1,4 Diacetylbenzene	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N,N-Dibutylformamide	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Dibutyl phthalate	µg/L	U.S.	40,000/4,000	SWEG/EPA DWEL	<8	<4	<4	<4	<4	<16	<8	<8
Dibutylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<8	<4	<4	<4	<4	<16	<8	<8
N,N-Diethyl-m-toluamide	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Diethylphthalate	µg/L	U.S.	30,000	EPA DWEL	<8	<4	<4	<4	<4	<16	<8	<8
Diethylene glycol monoethyl ether	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N,N-Diethylformamide	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
Diiodomethane (Methyl iodide)	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Diisopropyl adipate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Dimethyl phthalate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N,N-Dimethyl acetamide	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N,N-Dimethylbenzylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<8	<4	<4	<4	<4	<16	<8	<8
N,N-Dimethylformamide	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Dipropylene glycol methyl ether	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Dodecamethylcyclohexasiloxane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Ethoxyethanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Ethyl-1-hexanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Ethylhexanoic acid	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
bis-2-Ethylhexyl adipate	µg/L	U.S.	400	EPA	<8	<4	<4	<4	<4	<16	<8	<8
bis-2-Ethylhexyl phthalate (Dioctyl phthlate)	µg/L	U.S.	20,000/6	SWEG/EPA	<8	<4	<4	<4	<4	<16	<8	<8
4-Ethylmorpholine	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
1-Formylpiperidine	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Heptanoic acid	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Heptanone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
gamma-Hexalactone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Hexanoic acid	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
2-Hexanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Hydroxybenzothiazole	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Ibuprofen	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Iodoform	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Isophorone	µg/L	U.S.	100	EPA HA	<8	<4	<4	<4	<4	<16	<8	<8
4-Isopropylphenol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Lauramide	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Lauric acid (Dodecanoic acid)	µg/L	U.S.			<240	<120	<120	<120	<120	<480	<240	<240
p-Menth-1-en-8-ol (alpha-Terpineol)	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Mercaptobenzothiazole	µg/L	U.S.	30,000	SWEG	<80	<40	<40	<40	<40	<160	<80	<80
2-Methyl-2,4-pentanediol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
1-Methyl-2-pyrrolidinone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Methyl-4-hydroxybenzoate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Methyl sulfone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
2-Methyl butyric acid	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
2-Methylthiobenzothiazole	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Monomethyl phthalate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Myristic acid	µg/L	U.S.			<48	<24	<24	<24	<24	<96	<48	<48
(+)-Neomenthol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Nicotine	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Nonadecane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Nonanoic acid	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
1-Octadecanol	µg/L	U.S.			<24	<12	<12	<12	<12	<48	<24	<24
Octamethylcyclotetrasiloxane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Octanoic acid	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
4-tert-Octylphenol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Oleic acid	µg/L	U.S.			<80	<40	<40	<40	<40	<160	<80	<80
Oxindole	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Palmitic acid	µg/L	U.S.			<240	<120	<120	<120	<120	<480	<240	<240
Palmitoleic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Pentacosane	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
sec-Phenethyl alcohol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Phenol	µg/L	U.S.	1,000/4,000	MORD/SWEG	<8	<4	<4	<4	<4	<16	<8	<8
2-Phenoxyethanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
N-Phenyl-2-naphthylamine	µg/L	U.S.	260,000	SWEG	<8	<4	<4	<4	<4	<16	<8	<8
2-Phenyl-2-propanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Phenylacetic acid	µg/L	U.S.			<32	<16	<16	<16	<16	<64	<32	<32
Phenethyl alcohol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
2-Phenylphenol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Salicyclic Acid	µg/L	U.S.			<64	<32	<32	<32	<32	<128	<64	<64
trans-Squalene	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Stearic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
1-Tetradecanol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Tetramethylsuccinonitrile	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Tetramethyl thiourea	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Tetramethylurea	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Thymol	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
1,3,5-Triallyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Tributylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<8	<4	<4	<4	<4	<16	<8	<8
Tributyl phosphate	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Triethyl phosphate	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Tripropylene glycol monomethyl ether	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Undecanoic acid	µg/L	U.S.			<48	<24	<24	<24	<24	<96	<48	<48
2-Undecanone	µg/L	U.S.			<8	<4	<4	<4	<4	<16	<8	<8
Valeric acid (Pentanoic acid)	µg/L	U.S.			<48	<24	<24	<24	<24	<96	<48	<48
Vanillin	µg/L	U.S.			<16	<8	<8	<8	<8	<32	<16	<16
Alcohols (DAI/GC/MS)												
1-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
Ethanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 2. ISS SVO-ZV Potable Water Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21	ISS ULF3/Exp. 21	ISS 20A/Exp. 22		Soyuz 20/Exp. 22	Soyuz 21/Exp. 23	ISS ULF4/Exp. 23	
Sample Location			Potable Water Maximum	Maximum	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV	SVO-ZV
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	11/10/2009	1/6/2010	2/3/2010	3/3/2010	3/31/2010	4/26/2010	5/18/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214003	20091130010	20100222005	20100222007	20100326001	20100603002	20100527009	20100527013
Methanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
3-Methyl-1-butanol (Isopentanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
1-Pentanol (Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Pentanol (sec-Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
3-Pentanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
1-Propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Propanol (Isopropanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
Glycols (DAI/GC/MS)												
1,2-Ethanediol (Ethylene glycol)	µg/L	U.S.	12000/14000	MORD/EPA HA	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Propanediol (Propylene glycol)	µg/L	U.S.			<500	<500	<500	<500	<500	<500	<500	<500
Glycerol (LC/MS/MS)												
Glycerol (1,2,3-Propanetriol)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Silanols (LC/MS/MS) (R&D Method - NIST traceable standard not available)												
Dimethylsilanediol (DMSD)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Carboxylates (CE)												
Acetate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Formate	µg/L	U.S.	2,500,000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Glycolate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Glyoxylate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Lactate	µg/L	U.S.			<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Oxalate	µg/L	U.S.			<125	<125	MI	<125	<125	<125	<125	<125
Propionate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Aldehydes												
Formaldehyde	µg/L	U.S.	12,000/1,000	SWEG/EPA HA	<2	20	<2	<2	<2	3	4	4
Amines (CE)												
Ethylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Methylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
n-Propylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Trimethylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Non-volatiles (LC/UV-VIS)												
Urea	µg/L	U.S.			<800	<800	<800	<800	<800	<800	<800	<800
Caprolactam	µg/L	U.S.	100,000	SWEG	<8	<4	<4	<4	<4	<16	<8	<8
Organic Carbon Recovery	percent	U.S.			0.20	2.25	0.21	0.24	0.27	0.18	0.36	0.37
Unaccounted Organic Carbon	mg/L	U.S.			2.69	0.35	3.37	3.25	3.47	3.52	0.48	0.47

NA=Not analyzed; MI=Matrix interference
*MORD limit 1.5 mg/L (Russian method)
**limit does not include contribution from formate
#TDS allowable limit after mineralization
SWEG - 1000 days (5-2006)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location			Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Hot Potable Water
Sample Description		Test Conducted by										
Sample Date					10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units				20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Physical Characteristics												
pH	pH units	U.S.	4.5-8.5	41000	7.38	7.09	7.06	6.93	6.91	6.74	6.55	7.15
Conductivity	µS/cm	U.S.			2	2	2	2	14	2	2	2
Turbidity	NTU	U.S.	1	41000	NA	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2
Total Solids	mg/L	U.S.	100	41000	NA	NA	<5	<5	<5	<5	<5	NA
Iodine (LCV)												
Total I	mg/L	U.S.	6/0.2	41000 (tl I max/tl I at pt of consumption)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iodine	mg/L	U.S.			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iodide	mg/L	U.S.			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anions (IC/ISE)												
Bromide	mg/L	U.S.			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	U.S.			<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Fluoride	mg/L	U.S.			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as Nitrogen (NO3-N)	mg/L	U.S.	10	41000	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Nitrite as Nitrogen (NO2-N)	mg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P (PO4-P)	mg/L	U.S.			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Sulfate	mg/L	U.S.	250	41000	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Cations (IC)												
Ammonia as Nitrogen (NH3-N)	mg/L	U.S.	1	SWEG&41000	0.061	<0.002	0.039	<0.002	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	U.S.			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Metals (ICP/MS)												
Calcium	mg/L	U.S.	30	41000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03
Magnesium	mg/L	U.S.	50	41000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Potassium	mg/L	U.S.	340	41000	<0.01	<0.01	0.01	<0.01	0.03	<0.01	<0.01	<0.01
Sodium	mg/L	U.S.			<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	<0.01
Aluminum	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Antimony	µg/L	U.S.	2,000	SWEG	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	µg/L	U.S.	10	41000	<1	<1	<1	<1	<1	<1	<1	<1
Barium	µg/L	U.S.	10,000	SWEG&41000	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium	µg/L	U.S.			<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	µg/L	U.S.	22	SWEG&41000	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	µg/L	U.S.	230	41000	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt	µg/L	U.S.			<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	U.S.	1,000	41000	<1	<1	<1	<1	<1	<1	1	<1
Iron	µg/L	U.S.	300	41000	<5	<5	42	<5	<5	<5	<5	<5
Lead	µg/L	U.S.	50	41000	<1	<1	<1	<1	<1	<1	<1	<1
Manganese	µg/L	U.S.	300	SWEG&41000	<1	<1	<1	<1	<1	<1	<1	<1
Mercury	µg/L	U.S.	2	41000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Molybdenum	µg/L	U.S.			<1	<1	<1	<1	<1	<1	<1	<1
Nickel	µg/L	U.S.	300	SWEG&41000	17	24	25	33	10	34	26	40
Selenium	µg/L	U.S.	10	41000	<1	<1	<1	<1	<1	<1	1	<1
Silver	µg/L	U.S.	400	SWEG&41000	<2	<2	<2	<2	<2	<2	<2	<2

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description					Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Test	Potable Water Maximum Contaminant Level	Maximum Contaminant Level	10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units	Conducted by	(MCL)	Source	20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Zinc	µg/L	U.S.	2,000	SWEG&41000	<1	<1	<1	<1	<1	<1	<1	<1
Silicon (ICP/MS)												
Silicon (ICP/MS)					NA	NA	NA	43	22	136	185	NA
Total Organic Carbon (Sievers)												
Total Inorganic Carbon	mg/L	U.S.			0.71	0.73	1.09	1.08	1.22	1.34	1.23	1.70
Total Organic Carbon	mg/L	U.S.	3	41000	0.30	0.22	0.22	0.14	0.16	0.17	0.16	0.26
Volatile Organics												
Acetone	µg/L	U.S.	15,000	SWEG	<2	<2	<2	<2	<2	39	11	<2
Acryloniltrile	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Allyl chloride (3-Chloropropene)	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Benzene	µg/L	U.S.	70/5	SWEG/EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromochloromethane	µg/L	U.S.	90	EPA HA	<4	<4	<4	<4	<4	<4	<4	<4
Bromodichloromethane	µg/L	U.S.	THM 80	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromoform	µg/L	U.S.	THM 80	EPA	<2	<2	<2	<2	<2	<2	<2	<2
Bromomethane	µg/L	U.S.	10	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2
2-Butanone (Methyl ethyl ketone)	µg/L	U.S.	54000/4000	SWEG/EPA	<2	<2	<2	<2	<2	<2	<2	<2
n-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
sec-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
tert-Butylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Carbon disulfide	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Carbon tetrachloride	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroacetonitrile	µg/L	U.S.			<10	<10	<10	<10	<10	<10	<10	<10
Chlorobenzene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1-Chlorobutane (Butyl chloride)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	µg/L	U.S.	6,500/THM 80	SWEG/EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloromethane	µg/L	U.S.	30	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2
2-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
4-Chlorotoluene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dibromochloromethane	µg/L	U.S.	THM 80	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	U.S.	0.2	EPA	<2	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane (EDB)	µg/L	U.S.	0.05	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dibromomethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichlorobenzene	µg/L	U.S.	600	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,3-Dichlorobenzene	µg/L	U.S.	600	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	µg/L	U.S.	75	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,4-Dichloro-2-butene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	µg/L	U.S.	1,000	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1-Dichloroethene	µg/L	U.S.	7	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
cis1,2-Dichloroethene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2-Dichloropropane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description					Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Test	Potable Water Maximum Contaminant Level	Maximum Contaminant Level	10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units	Conducted by	(MCL)	Source	20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
1,3-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,2-Dichloropropane	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1-Dichloropropanone	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
cis-1,3-Dichloropropene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,3-Dichloropropene	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Diethyl ether	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	U.S.	700	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Ethyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Hexachlorobutadiene	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2
Hexachloroethane	µg/L	U.S.	1	EPA HA	<2	<2	<2	<2	<2	<2	<2	<2
2-Hexanone	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Iodomethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Isopropylbenzene (Cumene)	µg/L	U.S.	4,000	EPA DWEL	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
4-Isopropyltoluene (Cymene)	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methacrylonitrile	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Methyl acrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Methyl-t-butylether (MTBE)	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Methylene chloride (Dichloromethane)	µg/L	U.S.	15,000/5	SWEG/EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methyl methacrylate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Naphthalene	µg/L	U.S.	100	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Nitrobenzene	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
2-Nitropropane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Pentachloroethane	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Propionitrile (Ethyl cyanide)	µg/L	U.S.			<10	<10	<10	<10	<10	<10	<10	<10
n-Propylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Styrene	µg/L	U.S.	100	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1,1,2-Tetrachloroethane	µg/L	U.S.	70	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1,2,2-Tetrachloroethane	µg/L	U.S.	0.3	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tetrachloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tetrahydrofuran	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Toluene	µg/L	U.S.	1,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2,3-Trichlorobenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2,4-Trichlorobenzene	µg/L	U.S.	70	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1,1-Trichloroethane	µg/L	U.S.	200	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,1,2-Trichloroethane	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Trichloroethene	µg/L	U.S.	5	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Trichlorofluoromethane	µg/L	U.S.	2,000	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2,3-Trichloropropane	µg/L	U.S.	40	EPA HA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,2,4-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,3,5-Trimethylbenzene	µg/L	U.S.			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Vinyl Acetate	µg/L	U.S.			<2	<2	<2	<2	<2	<2	<2	<2
Vinyl Chloride	µg/L	U.S.	2	EPA	<2	<2	<2	<2	<2	<2	<2	<2
m&p-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
o-Xylene	µg/L	U.S.	Total Xylenes 10,000	EPA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description		Test	Potable Water Maximum Contaminant Level	Maximum Contaminant Level	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted			10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Volatile Organics - Non-Targets (Tentatively Identified Compounds (>/= 80% match quality)												
Acetaldehyde	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Butyraldehyde (Butanal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,8-Cineole	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Cyclohexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Difluorodimethylsilane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2,5-Dimethylfuran	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2,6-Dimethyl-1,7-octadiene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Dimethyl sulfide (Thiobismethane)	µg/L				not found	not found	not found	not found	not found	not found	not found	not found
p-Dioxane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,3-Dioxolane (Ethylene glycol formal)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Ethyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Fluorotrimethylsilane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Heptanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
4-Heptanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Hexanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Hydroxy-3-methylbutyric acid	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Isobutyronitrile	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Isooctanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
L-Menthol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Menthone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Methyl acetate	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
cis-1-Methyl-4-(1-methylethenyl)-cyclohexane	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
3-Methyl-2-pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Methyl-1-propene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
alpha-Methyl styrene	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Nonanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Octanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
2-Pentanone	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Trimethylsilanol	µg/L	U.S.			not found	not found	not found	not found	not found	not found	not found	not found
Extractable Organics												
Acetophenone	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Benzaldehyde	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Benzoic acid	µg/L	U.S.			<24	<24	<24	<12	<12	<24	<24	<24
Benzothiazole	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Benzyl alcohol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Benzyl butyl phthlate	µg/L	U.S.	7,000	EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
2-Butoxyethanol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-(2-Butoxyethoxy)ethanol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-(2-Butoxyethoxy)ethyl acetate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
n-Butylpalmitate	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Butylated hydroxyanisole (BHA)	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N-Butylbenzenesulfonamide	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
3-tert-Butylphenol	µg/L	U.S.			<24	<24	<24	<12	<24	<24	<24	<24
Caffeine	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description			Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Test Conducted by			10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units				20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
tris-2-Chloroethyl phosphate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Cholesterol	µg/L	U.S.			<64	<64	<64	<32	<64	<64	<64	<64
o-Cresol (2-Methylphenol)	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Cyclododecane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Decamethylcyclopentasiloxane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Decanoic acid	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2,6-Di-t-butyl-1,4-benzoquinone	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2,4-Di-t-butylphenol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
1,4 Diacetylbenzene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N,N-Dibutylformamide	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Dibutyl phthalate	µg/L	U.S.	40,000/4,000	SWEG/EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
Dibutylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
N,N-Diethyl-m-toluamide	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Diethylphthalate	µg/L	U.S.	30,000	EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
Diethylene glycol monoethyl ether	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N,N-Diethylformamide	µg/L	U.S.			<24	<24	<24	<12	<24	<24	<24	<24
Diiodomethane (Methyl iodide)	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Diisopropyl adipate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Dimethyl phthalate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N,N-Dimethyl acetamide	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N,N-Dimethylbenzylamine	µg/L	U.S.	Dialkylamines 300	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
N,N-Dimethylformamide	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Dipropylene glycol methyl ether	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Dodecamethylcyclohexasiloxane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Ethoxyethanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Ethyl-1-hexanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Ethylhexanoic acid	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
bis-2-Ethylhexyl adipate	µg/L	U.S.	400	EPA	<8	<8	<8	<4	<8	<8	<8	<8
bis-2-Ethylhexyl phthalate (Dioctyl phthlate)	µg/L	U.S.	20,000/6	SWEG/EPA	<8	<8	<8	<4	<8	<8	<8	<8
4-Ethylmorpholine	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
1-Formylpiperidine	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Heptanoic acid	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Heptanone	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
gamma-Hexalactone	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Hexanoic acid	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-Hexanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Hydroxybenzothiazole	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Ibuprofen	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Iodoform	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Isophorone	µg/L	U.S.	100	EPA HA	<8	<8	<8	<4	<8	<8	<8	<8
4-Isopropylphenol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Lauramide	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Lauric acid (Dodecanoic acid)	µg/L	U.S.			<240	<240	<240	<120	<240	<240	<240	<240
p-Menth-1-en-8-ol (alpha-Terpineol)	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Mercaptobenzothiazole	µg/L	U.S.	30,000	SWEG	<80	<80	<80	<40	<80	<80	<80	<80
2-Methyl-2,4-pentanediol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
1-Methyl-2-pyrrolidinone	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Methyl-4-hydroxybenzoate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location			Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Hot Potable Water
Sample Description		Test Conducted by										
Sample Date					10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units				20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Methyl sulfone	µg/L	U.S.			111	102	66	34	34	66	87	41
2-Methyl butyric acid	µg/L	U.S.			<24	<24	<24	<12	<24	<24	<24	<24
2-Methylthiobenzothiazole	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Monomethyl phthalate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Myristic acid	µg/L	U.S.			<48	<48	<48	<24	<48	<48	<48	<48
(+)-Neomenthol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Nicotine	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Nonadecane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Nonanoic acid	µg/L	U.S.			<24	<24	<24	<12	<24	<24	<24	<24
1-Octadecanol	µg/L	U.S.			<24	<24	<24	<12	<24	<24	<24	<24
Octamethylcyclotetrasiloxane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Octanoic acid	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
4-tert-Octylphenol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Oleic acid	µg/L	U.S.			<80	<80	<80	<40	<80	<80	<80	<80
Oxindole	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Palmitic acid	µg/L	U.S.			<240	<240	<240	<120	<240	<240	<240	<240
Palmitoleic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Pentacosane	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
sec-Phenethyl alcohol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Phenol	µg/L	U.S.	4,000	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
2-Phenoxyethanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
N-Phenyl-2-naphthylamine	µg/L	U.S.	260,000	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
2-Phenyl-2-propanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Phenylacetic acid	µg/L	U.S.			<32	<32	<32	<16	<32	<32	<32	<32
Phenethyl alcohol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
2-Phenylphenol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Salicyclic Acid	µg/L	U.S.			<64	<64	<64	<32	<64	<64	<64	<64
trans-Squalene	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Stearic acid	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
1-Tetradecanol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Tetramethylsuccinonitrile	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Tetramethyl thiourea	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Tetramethylurea	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Thymol	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
1,3,5-Triallyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Tributylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
Tributyl phosphate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Triethyl phosphate	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Tripropylene glycol monomethyl ether	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Undecanoic acid	µg/L	U.S.			<48	<48	<48	<24	<48	<48	<48	<48
2-Undecanone	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Valeric acid (Pentanoic acid)	µg/L	U.S.			<48	<48	<48	<24	<48	<48	<48	<48
Vanillin	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description			Potable Water Maximum Contaminant Level	Maximum Contaminant Level	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Test Conducted by	(MCL)	Source	10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units				20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Acid Extractables-EPA 625 List												
4-Chloro-3-methylphenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-Chlorophenol	µg/L	U.S.	40	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
2,4-Dichlorophenol	µg/L	U.S.	20	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
2,4-Dimethylphenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2,4-Dinitrophenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-Methyl-4,6-dinitrophenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-Nitrophenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
4-Nitrophenol	µg/L	U.S.	60	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
Pentachlorophenol	µg/L	U.S.	1	EPA	<16	<16	<16	<8	<16	<16	<16	<16
Phenol	µg/L	U.S.	4,000/2,000	SWEG/EPA HA	<8	<8	<8	<4	<8	<8	<8	<8
2,4,5-Trichlorophenol	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2,4,6-Trichlorophenol	µg/L	U.S.	10	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
4-Methylphenol	µg/L	U.S.			NA	NA	NA	NA	<4	<8	<8	<8
Base/Neutral Extractables - EPA 625 List												
Benzidine	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
3,3-Dichlorobenzidine	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
bis-(2-Ethylhexyl)phthalate	µg/L	U.S.	20,000/6	SWEG/EPA	<8	<8	<8	<4	<8	<8	<8	<8
Benzyl butyl phthalate	µg/L	U.S.	7,000	EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
Dibutylphthalate	µg/L	U.S.	40,000/4,000	SWEG/EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
Diethylphthalate	µg/L	U.S.	30,000	EPA DWEL	<8	<8	<8	<4	<8	<8	<8	<8
Dimethylphthalate	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Di-n-octyl phthalate	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
N-Nitrosodimethylamine	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
N-Nitrosodiphenylamine	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
N-Nitrosodi-n-propylamine	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2,4-Dinitrotoluene	µg/L	U.S.	100	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
2,6-Dinitrotoluene	µg/L	U.S.	40	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
Isophorone	µg/L	U.S.	100	EPA HA	<8	<8	<8	<4	<8	<8	<8	<8
Nitrobenzene	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Acenaphthene	µg/L	U.S.	2000	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
Acenaphthylene	µg/L	U.S.			<16	<16	<16	<8	NA	<16	<16	<16
Anthracene	µg/L	U.S.	10,000	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
Benzo(a)anthracene	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
Benzo(a)pyrene	µg/L	U.S.	0.2	EPA	<10	<10	<10	<5	<10	<10	<10	<10
Benzo(b)fluoranthene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Benzo(ghi)perylene	µg/L	U.S.			<10	<10	<10	<5	<10	<10	<10	<10
Benzo(k)fluoroanthene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Chrysene	µg/L	U.S.			<20	<20	<20	<10	<20	<20	<20	<20
Dibenzo(a,h)anthracene	µg/L	U.S.			<10	<10	<10	<5	<10	<10	<10	<10
Fluoranthene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Fluorene	µg/L	U.S.	1,000	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
Indeno(1,2,3-cd)pyrene	µg/L	U.S.			<10	<10	<10	<5	<10	<10	<10	<10
Naphthalene	µg/L	U.S.	100	EPA HA	<40	<40	<40	<20	<40	<40	<40	<40
Phenanthrene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
Pyrene	µg/L	U.S.			<8	<8	<8	<4	<8	<8	<8	<8
bis(2-Chloroethyl) ether	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location					WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Ambient Potable Water	WPA PWD Hot Potable Water	WPA PWD Hot Potable Water
Sample Description Sample Date Analysis/Sample ID	Units	Test Conducted by	Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	10/20/2009 20091214001	10/20/2009 20091214002	11/10/2009 20091130012	11/10/2009 20091130013	1/6/2010 20100222001	3/3/2010 20100422006	3/3/2010 20100422007	3/31/2010 20100603003
bis(2-Chloroethoxy) methane	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
bis(2-Chloroisopropyl) ether	µg/L	U.S.	300	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
4-Bromophenyl phenyl ether	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
4-Chlorophenyl phenyl ether	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
2-Chloronaphthalene	µg/L	U.S.			<16	<16	<16	<8	<16	<16	<16	<16
1,2-Dichlorobenzene	µg/L	U.S.	600	EPA	<16	<16	<16	<8	<16	<16	<16	<16
1,3-Dichlorobenzene	µg/L	U.S.	600	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
1,4-Dichlorobenzene	µg/L	U.S.	75	EPA	<16	<16	<16	<8	<16	<16	<16	<16
Hexachlorobenzene	µg/L	U.S.	30	EPA DWEL	<16	<16	<16	<8	<16	<16	<16	<16
Hexachlorobutadiene	µg/L	U.S.	1	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
Hexachlorocyclopentadiene	µg/L	U.S.	50	EPA	<16	<16	<16	<8	<16	<16	<16	<16
Hexachloroethane	µg/L	U.S.	1	EPA HA	<16	<16	<16	<8	<16	<16	<16	<16
1,2,4-Trichlorobenzene	µg/L	U.S.	70	EPA	<16	<16	<16	<8	<16	<16	<16	<16
Alcohols (DAI/GC/MS)												
1-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
Ethanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
Methanol	µg/L	U.S.	40000	SWEG	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-butanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
3-Methyl-1-butanol (Isopentanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
1-Pentanol (Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Pentanol (sec-Amyl alcohol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
3-Pentanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
1-Propanol	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
2-Propanol (Isopropanol)	µg/L	U.S.			<100	<100	<100	<100	<100	<100	<100	<100
Glycols (DAI/GC/MS)												
1,2-Ethanediol (Ethylene glycol)	µg/L	U.S.	12000/4000	MORD/SWEG	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Propanediol (Propylene glycol)	µg/L	U.S.	1700000	SWEG	<500	<500	<500	<500	<500	<500	<500	<500
Glycerol (LC/MS/MS)												
Glycerol (1,2,3-Propanetriol)	µg/L	U.S.			NA	NA	NA	NA	NA	NA	NA	NA
Silanols (GC/MS & LC/MS/MS) (R&D Method - NIST traceable standard not available)												
Dimethylsilanediol (DMSD)	µg/L	U.S.			NA	NA	NA	<400	<400	<400	<400	NA
Carboxylates (CE)												
Acetate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Formate	µg/L	U.S.	2,500,000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Glycolate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Glyoxylate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Lactate	µg/L	U.S.			<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Oxalate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125
Propionate	µg/L	U.S.			<125	<125	<125	<125	<125	<125	<125	<125

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission					Soyuz 19/Exp. 21		ISS ULF3/Exp. 21		ISS 20A/Exp. 22	ISS 19A/Exp. 23		Soyuz 21/Exp. 23
Sample Location			Potable Water Maximum	Maximum	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot
Sample Description		Test	Contaminant	Contaminant	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water
Sample Date		Conducted	Level	Level	10/20/2009	10/20/2009	11/10/2009	11/10/2009	1/6/2010	3/3/2010	3/3/2010	3/31/2010
Analysis/Sample ID	Units	by	(MCL)	Source	20091214001	20091214002	20091130012	20091130013	20100222001	20100422006	20100422007	20100603003
Aldehydes												
Formaldehyde	µg/L	U.S.	12,000/1,000	SWEG/EPA HA	<2	2	<2	<2	4	5	2	4
Amines (CE)												
Ethylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Methylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
n-Propylamine	µg/L	U.S.	Monoalkylamines 2000	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Trimethylamine	µg/L	U.S.	Trialkylamines 400	SWEG	<125	<125	<125	<125	<125	<125	<125	<125
Non-volatiles (LC/UV-VIS)												
Urea	µg/L	U.S.			<800	<800	<800	<800	<800	<800	<800	<800
Caprolactam	µg/L	U.S.	100,000	SWEG	<8	<8	<8	<4	<8	<8	<8	<8
Organic Carbon Recovery	percent	U.S.			9.60	12.05	7.59	6.33	6.46	24.73	18.64	4.73
Unaccounted Organic Carbon	mg/L	U.S.			0.27	0.19	0.21	0.13	0.15	0.13	0.13	0.24

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Physical Characteristics											
pH	pH units	7.35	7.25	7.95	7.88	7.56	6.86	6.95	6.05	6.18	7.31
Conductivity	µS/cm	2	1	1	1	1	4	2	3	3	3
Turbidity	NTU	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	0.1	<0.1	NA
Total Solids	mg/L	<5	<5	NA	NA	NA	NA	NA	<5	<5	NA
Iodine (LCV)											
Total I	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.24	2.72	2.63
Iodine	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.11	2.03	2.05
Iodide	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.13	0.69	0.58
Anions (IC/ISE)											
Bromide	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as Nitrogen (NO3-N)	mg/L	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Nitrite as Nitrogen (NO2-N)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate as P (PO4-P)	mg/L	<0.24	<0.24	<0.02	<0.02	<0.02	<0.01	<0.01	<0.24	<0.24	<0.02
Sulfate	mg/L	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Cations (IC)											
Ammonia as Nitrogen (NH3-N)	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Lithium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Metals (ICP/MS)											
Calcium	mg/L	<0.01	<0.01	<0.02	0.03	0.03	0.03	<0.01	<0.01	<0.01	0.03
Magnesium	mg/L	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
Potassium	mg/L	<0.01	<0.01	<0.02	<0.02	<0.02	0.03	<0.01	0.01	<0.01	<0.02
Sodium	mg/L	<0.01	0.02	<0.02	<0.02	<0.02	0.02	<0.01	<0.01	<0.01	<0.02
Aluminum	µg/L	<2	<2	<4	<4	<4	<2	<2	<2	<2	<4
Antimony	µg/L	<2	<2	<4	<4	<4	<2	<2	<2	<2	<4
Arsenic	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Barium	µg/L	<1	<1	<2	<2	15	<1	<1	<1	<1	<2
Beryllium	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Cadmium	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Chromium	µg/L	<5	<5	<10	<10	<10	<5	<5	<5	<5	<10
Cobalt	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Copper	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Iron	µg/L	<5	<5	<10	<10	<10	<5	<5	<5	<5	<10
Lead	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Manganese	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Mercury	µg/L	<0.5	<0.5	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<1
Molybdenum	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Nickel	µg/L	27	29	29	17	4	17	23	270	42	53
Selenium	µg/L	<1	<1	<2	<2	<2	<1	<1	<1	<1	<2
Silver	µg/L	<2	<2	<4	<4	<4	<2	<2	<2	<2	<4

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Zinc	µg/L	<1	<1	<2	<2	2	<1	<1	2	<1	<2
Silicon (ICP/MS)											
Silicon (ICP/MS)		NA	NA	1530	2130	1210	2360	223	NA	NA	1770
Total Organic Carbon (Sievers)											
Total Inorganic Carbon	mg/L	0.87	0.84	1.17	0.93	1.05	0.98	0.73	1.21	1.31	0.94
Total Organic Carbon	mg/L	0.16	0.22	1.51	2.19	1.11	2.51	0.15	0.24	0.18	2.18
Volatile Organics											
Acetone	µg/L	11	<2	<2	<2	<2	40	<2	25	<2	<6
Acryloniltrile	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Allyl chloride (3-Chloropropene)	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Benzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Bromobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Bromochloromethane	µg/L	<4	<4	<4	<4	<4	<12	<4	<4	<4	<12
Bromodichloromethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Bromoform	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Bromomethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
2-Butanone (Methyl ethyl ketone)	µg/L	<2	<2	<2	4	4	24	<2	<2	<2	<6
n-Butylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
sec-Butylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
tert-Butylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Carbon disulfide	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Carbon tetrachloride	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Chloroacetonitrile	µg/L	<10	<10	<10	<10	<10	<30	<10	<10	<10	<30
Chlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1-Chlorobutane (Butyl chloride)	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Chloroethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Chloroform	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Chloromethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
2-Chlorotoluene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
4-Chlorotoluene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Dibromochloromethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
1,2-Dibromoethane (EDB)	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Dibromomethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2-Dichlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,3-Dichlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,4-Dichlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
trans-1,4-Dichloro-2-butene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Dichlorodifluoromethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
1,1-Dichloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2-Dichloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1-Dichloroethene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
cis1,2-Dichloroethene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
trans-1,2-Dichloroethene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2-Dichloropropane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
1,3-Dichloropropane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
2,2-Dichloropropane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1-Dichloropropanone	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
1,1-Dichloropropene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
cis-1,3-Dichloropropene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
trans-1,3-Dichloropropene	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Diethyl ether	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Ethylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Ethyl methacrylate	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Hexachlorobutadiene	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Hexachloroethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
2-Hexanone	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Iodomethane	µg/L	<2	<2	<2	<2	<2	<6	<2	5	<2	<6
Isopropylbenzene (Cumene)	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
4-Isopropyltoluene (Cymene)	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Methacrylonitrile	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Methyl acrylate	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Methyl-t-butylether (MTBE)	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Methylene chloride (Dichloromethane)	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Methyl methacrylate	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
4-Methyl-2-pentanone	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Naphthalene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Nitrobenzene	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
2-Nitropropane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Pentachloroethane	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Propionitrile (Ethyl cyanide)	µg/L	<10	<10	<10	<10	<10	<30	<10	<10	<10	<30
n-Propylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Styrene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1,1,2-Tetrachloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1,2,2-Tetrachloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Tetrachloroethene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Tetrahydrofuran	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Toluene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2,3-Trichlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2,4-Trichlorobenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1,1-Trichloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,1,2-Trichloroethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Trichloroethene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Trichlorofluoromethane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2,3-Trichloropropane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,2,4-Trimethylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
1,3,5-Trimethylbenzene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
Vinyl Acetate	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
Vinyl Chloride	µg/L	<2	<2	<2	<2	<2	<6	<2	<2	<2	<6
m&p-Xylene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	<0.4	<1.2
o-Xylene	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.2	<0.4	<0.4	1.5	<1.2

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Volatile Organics - Non-Targets (Tentatively Identified Comp											
Acetaldehyde	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Butyraldehyde (Butanal)	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,8-Cineole	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Cyclohexanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Difluorodimethylsilane	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2,5-Dimethylfuran	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2,6-Dimethyl-1,7-octadiene	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Dimethyl sulfide (Thiobismethane)	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
p-Dioxane	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,3-Dioxolane (Ethylene glycol formal)	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Ethyl acetate	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Fluorotrimethylsilane	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Heptanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
4-Heptanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Hexanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Hydroxy-3-methylbutyric acid	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Isobutyronitrile	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Isooctanol	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
L-Menthol	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Menthone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Methyl acetate	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
cis-1-Methyl-4-(1-methylethenyl)-cyclohexane	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
3-Methyl-2-pentanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Methyl-1-propene	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
alpha-Methyl styrene	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Nonanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Octanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
2-Pentanone	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Trimethylsilanol	µg/L	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found
Extractable Organics											
Acetophenone	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Benzaldehyde	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Benzoic acid	µg/L	<24	<12	<12	<12	<24	<48	<48	<24	<24	<60
Benzothiazole	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Benzyl alcohol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Benzyl butyl phthlate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Butoxyethanol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-(2-Butoxyethoxy)ethanol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-(2-Butoxyethoxy)ethyl acetate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
n-Butylpalmitate	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Butylated hydroxyanisole (BHA)	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N-Butylbenzenesulfonamide	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
3-tert-Butylphenol	µg/L	<24	<12	<12	<12	<24	<24	<24	<24	<24	<60
Caffeine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
tris-2-Chloroethyl phosphate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Cholesterol	µg/L	<64	<32	<32	<32	<64	<64	<64	<64	<64	<160
o-Cresol (2-Methylphenol)	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Cyclododecane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Decamethylcyclopentasiloxane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Decanoic acid	µg/L	<16	<8	<8	<8	<16	<24	<24	<16	<16	<40
2,6-Di-t-butyl-1,4-benzoquinone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2,4-Di-t-butylphenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
1,4 Diacetylbenzene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Dibutylformamide	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dibutyl phthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dibutylamine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Diethyl-m-toluamide	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Diethylphthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Diethylene glycol monoethyl ether	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Diethylformamide	µg/L	<24	<12	<12	<12	<24	<24	<24	<24	<24	<60
Diiodomethane (Methyl iodide)	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Diisopropyl adipate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dimethyl phthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Dimethyl acetamide	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Dimethylbenzylamine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N,N-Dimethylformamide	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Dipropylene glycol methyl ether	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dodecamethylcyclohexasiloxane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Ethoxyethanol	µg/L	<8	<4	<4	<4	<8	<16	<16	<8	<8	<20
2-Ethyl-1-hexanol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Ethylhexanoic acid	µg/L	<8	<4	<4	<4	<8	<16	<16	<8	<8	<20
bis-2-Ethylhexyl adipate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
bis-2-Ethylhexyl phthalate (Dioctyl phthlate)	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
4-Ethylmorpholine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
1-Formylpiperidine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Heptanoic acid	µg/L	<8	<4	<4	<4	<8	<24	<24	<8	<8	<20
2-Heptanone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
gamma-Hexalactone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Hexanoic acid	µg/L	<16	<8	<8	<8	<16	<24	<24	<16	<16	<40
2-Hexanol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Hydroxybenzothiazole	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Ibuprofen	µg/L	<8	<4	<4	<4	<8	<24	<24	<8	<8	<20
Iodoform	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Isophorone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
4-Isopropylphenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Lauramide	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Lauric acid (Dodecanoic acid)	µg/L	<240	<120	<120	<120	<240	<240	<240	<240	<240	<600
p-Menth-1-en-8-ol (alpha-Terpineol)	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Mercaptobenzothiazole	µg/L	<80	<40	<40	<40	<80	<80	<80	<80	<80	<200
2-Methyl-2,4-pentanediol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
1-Methyl-2-pyrrolidinone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Methyl-4-hydroxybenzoate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Methyl sulfone	µg/L	40	34	36	<4	<8	48	50	88	98	150
2-Methyl butyric acid	µg/L	<24	<12	<12	<12	<24	<24	<24	<24	<24	<60
2-Methylthiobenzothiazole	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Monomethyl phthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Myristic acid	µg/L	<48	<24	<24	<24	<48	<64	<64	<48	<48	<120
(+)-Neomenthol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Nicotine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Nonadecane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Nonanoic acid	µg/L	<24	<12	<12	<12	<24	<24	<24	<24	<24	<60
1-Octadecanol	µg/L	<24	<12	<12	<12	<24	<24	<24	<24	<24	<60
Octamethylcyclotetrasiloxane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Octanoic acid	µg/L	<16	<8	<8	<8	<16	<48	<48	<16	<16	<40
4-tert-Octylphenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Oleic acid	µg/L	<80	<40	<40	<40	<80	<80	<80	<80	<80	<200
Oxindole	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Palmitic acid	µg/L	<240	<120	<120	<120	<240	<240	<240	<240	<240	<600
Palmitoleic acid	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentacosane	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
sec-Phenethyl alcohol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Phenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Phenoxyethanol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
N-Phenyl-2-naphthylamine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Phenyl-2-propanol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Phenylacetic acid	µg/L	<32	<16	<16	<16	<32	<32	<32	<32	<32	<80
Phenethyl alcohol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2-Phenylphenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Salicyclic Acid	µg/L	<64	<32	<32	<32	<64	<64	<64	<64	<64	<160
trans-Squalene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Stearic acid	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Tetradecanol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Tetramethylsuccinonitrile	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Tetramethyl thiourea	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Tetramethylurea	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Thymol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
1,3,5-Triallyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Tributylamine	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Tributyl phosphate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Triethyl phosphate	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Tripropylene glycol monomethyl ether	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Undecanoic acid	µg/L	<48	<24	<24	<24	<48	<48	<48	<48	<48	<120
2-Undecanone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Valeric acid (Pentanoic acid)	µg/L	<48	<24	<24	<24	<48	<48	<48	<48	<48	<120
Vanillin	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Acid Extractables-EPA 625 List											
4-Chloro-3-methylphenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-Chlorophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,4-Dichlorophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,4-Dimethylphenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,4-Dinitrophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-Methyl-4,6-dinitrophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-Nitrophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
4-Nitrophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Pentachlorophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Phenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
2,4,5-Trichlorophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,4,6-Trichlorophenol	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
4-Methylphenol	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Base/Neutral Extractables - EPA 625 List											
Benzidine	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
3,3-Dichlorobenzidine	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
bis-(2-Ethylhexyl)phthalate	µg/L	<8	<4	<4.0	<4.0	<8	<8	<8	<8	<8	<20
Benzyl butyl phthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dibutylphthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Diethylphthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Dimethylphthalate	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Di-n-octyl phthalate	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
N-Nitrosodimethylamine	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
N-Nitrosodiphenylamine	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
N-Nitrosodi-n-propylamine	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,4-Dinitrotoluene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2,6-Dinitrotoluene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Isophorone	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Nitrobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Acenaphthene	µg/L	<16	<8	NA	NA	NA	<16	<16	<16	<16	NA
Acenaphthylene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Anthracene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Benzo(a)anthracene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Benzo(a)pyrene	µg/L	<10	<5	<5	<5	<10	<10	<10	<10	<10	<25
Benzo(b)fluoranthene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Benzo(ghi)perylene	µg/L	<10	<5	<5	<5	<10	<10	<10	<10	<10	<25
Benzo(k)fluoroanthene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Chrysene	µg/L	<20	<10	<10	<10	<20	<20	<20	<20	<20	<50
Dibenzo(a,h)anthracene	µg/L	<10	<5	<5	<5	<10	<10	<10	<1	<10	<25
Fluoranthene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Fluorene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Indeno(1,2,3-cd)pyrene	µg/L	<10	<5	<5	<5	<10	<10	<10	<10	<10	<25
Naphthalene	µg/L	<40	<20	<20	<20	<40	<40	<40	<40	<40	<100
Phenanthrene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
Pyrene	µg/L	<8	<4	<4	<4	<8	<8	<8	<8	<8	<20
bis(2-Chloroethyl) ether	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
bis(2-Chloroethoxy) methane	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
bis(2-Chloroisopropyl) ether	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
4-Bromophenyl phenyl ether	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
4-Chlorophenyl phenyl ether	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
2-Chloronaphthalene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
1,2-Dichlorobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
1,3-Dichlorobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
1,4-Dichlorobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Hexachlorobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Hexachlorobutadiene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Hexachlorocyclopentadiene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Hexachloroethane	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
1,2,4-Trichlorobenzene	µg/L	<16	<8	<8	<8	<16	<16	<16	<16	<16	<40
Alcohols (DAI/GC/MS)											
1-Butanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Butanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Ethanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Methanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-butanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-butanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
3-Methyl-1-butanol (Isopentanol)	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-1-propanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methyl-2-propanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1-Pentanol (Amyl alcohol)	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Pentanol (sec-Amyl alcohol)	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
3-Pentanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1-Propanol	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Propanol (Isopropanol)	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Glycols (DAI/GC/MS)											
1,2-Ethanediol (Ethylene glycol)	µg/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
1,2-Propanediol (Propylene glycol)	µg/L	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Glycerol (LC/MS/MS)											
Glycerol (1,2,3-Propanetriol)	µg/L	NA	NA	<300	<300	<300	<300	<300	NA	NA	<300
Silanols (GC/MS & LC/MS/MS) (R&D Method - NIST tracea											
Dimethylsilanediol (DMSD)	µg/L	NA	NA	6100	8240	4730	8490	<400	NA	NA	7340
Carboxylates (CE)											
Acetate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Formate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Glycolate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Glyoxylate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Lactate	µg/L	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Oxalate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Propionate	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125

NA=Not analyzed;
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SWEG - 1000 days (11-2008)

Appendix 3. ISS WPA RIP and PWD Summary for Expeditions 21 through 25

Mission		ISS ULF4/Exp. 23		Soyuz 22/Exp. 24			Soyuz 23/Exp. 25		ISS 19A/Exp. 23		Soyuz 22/Exp. 24
Sample Location		WPA PWD Ambient	WPA PWD Ambient	WPA PWD Ambient	WPA PWD Hot	WPA PWD Ambient	WPA PWD Hot	WPA PWD Hot	PWD Aux Port	WPA RIP	WPA RIP
Sample Description		Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Potable Water	Processed Water	Processed Water	Processed Water
Sample Date		4/26/2010	5/18/2010	7/14/2010	8/25/2010	9/15/2010	10/19/2010	11/23/2010	2/25/2010	2/25/2010	7/29/2010
Analysis/Sample ID	Units	20100527006	20100527007	20100926001	20100926002	20100926003	20101129001	20101129002	20100422009	20100422008	20100926004
Aldehydes											
Formaldehyde	µg/L	6	3	8	5	6	<5	<5	3	6	8
Amines (CE)											
Ethylamine	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Methylamine	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
n-Propylamine	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Trimethylamine	µg/L	<125	<125	<125	<125	<125	<125	<125	<125	<125	<125
Non-volatiles (LC/UV-VIS)											
Urea	µg/L	<800	<800	<800	<800	<800	<800	<800	<800	<800	<800
Caprolactam	µg/L	<8	<4	<4	<4	<8	<16	<16	<8	<8	<20
Organic Carbon Recovery	percent	12.07	4.43	106.01	98.19	111.42	90.19	8.68	16.63	16.44	89.58
Unaccounted Organic Carbon	mg/L	0.14	0.21	0.00	0.04	0.00	0.25	0.13	0.20	0.15	0.23

NA=Not analyzed;
MI=Matrix interference
SWEG - 1000 days (11-2008)