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SUBJECT: Toxicological Assessment of ISS Air and Water Quality: March 28, 2023 – September 27, 2023 (Increment 69) Including Axiom-2, SpaceX-28, and NG-19 Ingresses

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

AIR QUALITY

Thirteen archive air samples were collected in mini grab sample containers (mGSCs) on ISS during Increment 69. These consisted of 9 routine, 1 contingency, and 3 ingress samples. The contingency sample was collected on May 10, 2023, after the crew entered a storage area in the Node1 Zenith hatch and reported “a strong plastic-y smell.” Two routine archive samples were collected on August 18, 2023, but could not be analyzed due to low pressure inside the canister, so those results are not reported. A sample was also collected in Crew-7 during ascent to ISS. A summary of the key air quality indicators from the Increment 69 mGSC samples is provided in Table 1A. Additionally, three sets of formaldehyde badges were deployed in the US Lab and the Russian Service Module (SM) during Increment 69. Table 1B includes a summary of the formaldehyde levels measured on the remaining badges.

Data tables containing measured concentrations and corresponding T-values based on appropriate Spacecraft Maximum Allowable Concentrations (SMACs) for compounds present at levels above the laboratory reporting limit are attached to this report. Complete data tables, which include compounds assessed but not detected, are available upon request. Pressure readings for the mGSCs indicate that 11 of the 13 samples collected during Increment 69 were acceptable. The mean relative recoveries of the three surrogate standards were all within acceptable limits for the reported samples.

On-orbit, the Air Quality Monitors (AQMs) nominally collect and analyze samples every 73 hours, which results in 2-3 sampling sessions per unit per week. However, both AQMs failed during the Increment: AQM2 in late May 2023 and AQM1 in late August 2023. Monthly average concentrations as well as the Increment average concentrations for compounds measured on the AQMs are presented in Table 2. During this period, NASA received additional information on trace contaminant levels in ISS from the ESA tech demo, ANITA-2 (Analyzing Interferometer for Ambient Air).

Toxicological Evaluation of ISS Air Quality

Routine air quality monitoring is performed in-flight using the AQMs. Archive air samples (mGSCs and formaldehyde badges) are collected during each Increment and returned for analysis in the Environmental Chemistry Laboratory. Data from the ground analyses complement the in-flight data and provide a more complete understanding of air quality on the ISS. Analytical results from the routine mGSC samples that returned on SpX-27 and -28, Crew-6, and Axiom-2 confirmed that air quality was acceptable during this

Increment. T-values calculated using data from all routine archive samples met the 180-d T-value guideline ($T < 1$), indicating no concern for crew health.

Table 1A. Analytical summary of ISS air analyses from mGSCs during Increment 69

Return Flight	Sample Location	Sample Date	Freon 218 (mg/m ³)	Alcohols ^a (mg/m ³)	T-Value ^b (units)
SpaceX-27	US Lab	4/12/2023	10	6.7	0.3
SpaceX-28	US Lab	4/26/2023	4.4	4.7	0.2
SpaceX-28	Columbus	4/26/2023	4.4	5.0	0.2
SpaceX-28	Node 1 contingency	5/10/2023	8	5.2	0.2
Axiom-2	Axiom-2 ingress	5/22/2023	<0.8	0.2	0.2 (0.1)
SpaceX-28	SpX-28 ingress	6/6/2023	< 1.7	10.4	0.6 (0.5)
SpaceX-28	US Lab	6/14/2023	5.6	5.5	0.3
SpaceX-28	SM	6/14/2023	7.0	4.2	0.2
Crew-6	US Lab	7/26/2023	2.5	5.6	0.2
Crew-6	JPM	7/26/2023	3	4.8	0.2
Crew-6	NG-19 ingress	8/4/2023	2.5	4.1	0.2 (0.1)
Crew-7	Crew-7 ascent	8/26/2023	<1.6	0.7	0.1 (<0.1)
<i>Guideline</i>			---	<5	<1 ^c

^a Includes acetone

^b Sum of the ratios of the measured concentrations and the corresponding 180-day SMAC for each compound; parenthesis indicate value based on 7-day SMACs and applicable to first ingress

^c T-value <1 used to evaluate routine monthly sampling; <3 used to evaluate first ingress.

Table 1B: Analytical summary of formaldehyde samples from Increment 69

Return Flight	Sample Location	Sample Date	Formaldehyde (µg/m ³)
SpaceX-28	US Lab	4/26/2023	32
SpaceX-28	SM	4/26/2023	19
SpaceX-28	US Lab	6/14/2023	25
SpaceX-28	SM	6/14/2023	18
SpaceX-29	US Lab	7/26/2023	40
SpaceX-29	SM	7/26/2023	24
<i>Guideline</i>			<120

The average, rounded T-value calculated from the nominal Increment 69 mGSC samples was 0.2 (Figure 1). This value continues Increment 68's trend of lower T-values compared to Increment 65-67 (0.5 - 1.2) which were mostly attributable to periodic detections of acrylonitrile from the ISS atmosphere. The temporary source of acrylonitrile was not determined despite evaluation of several potential sources.

Table 2. Average monthly concentrations (mg/m³) of AQM target compounds (Increment 69)

Compound	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Increment Average
2-Butanone	ND	ND	ND					ND
2-Propanol	0.09	0.17	0.15	0.23	0.1	0.31		0.18
Acetaldehyde	0.23	0.19	0.19					0.2
Acetone	0.27	0.25	0.21	0.19	0.16	0.06		0.19
Acrolein	ND	ND	ND	ND	ND	ND		ND
Benzene	MI	MI	MI	MI	MI	MI		MI
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND		ND
Dichloromethane	0.06	ND	ND					ND
Decamethylcyclopentasiloxane#	ND	ND	ND	ND	ND	ND		ND
Ethanol	3.8	3.6	3.7					3.7
Ethyl Acetate	0.05	ND	ND					ND
Hexanal	ND	ND	ND	ND	ND	ND		ND
Hexane	ND	ND	ND	ND	ND	ND		ND
Hexamethylcyclotrisiloxane#	ND	ND	ND	ND	ND	ND		ND
Methanol	ND	ND	ND	ND	ND	ND		ND
m,p-Xylenes#	ND	ND	ND	ND	ND	ND		ND
n-Butanol	ND	ND	ND					ND
Octamethylcyclotetra- siloxane#	ND	ND	ND	ND	ND	ND		ND
o-Xylene#	ND	ND	ND	ND	ND	ND		ND
Toluene#	ND	0.05	0.06	0.06	0.06	ND		ND
Trimethylsilanol	ND	0.05	ND					ND

ND: Not detected; <MDL (Minimum Detection Limit)

MI: Matrix Interference

Black cells indicate AQM failures during the Increment, during which no analysis was performed.

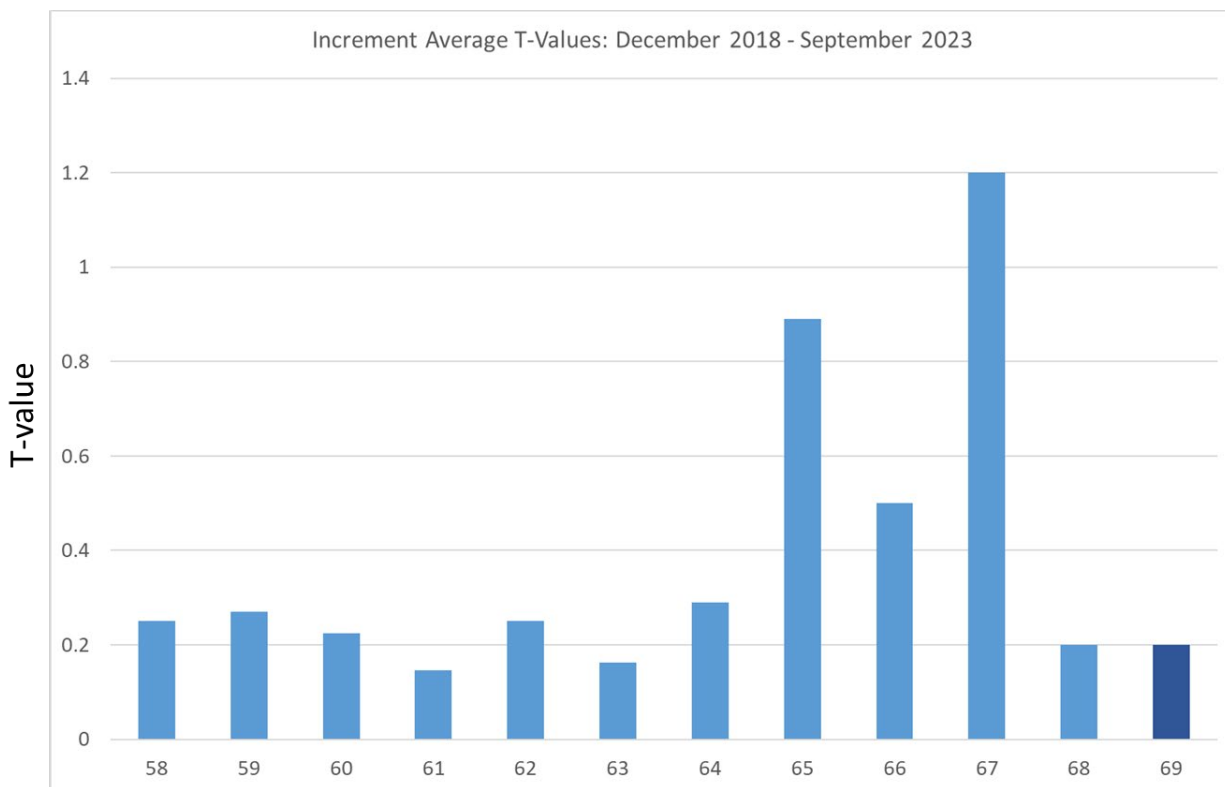


Figure 1. mGSC-Derived T-values for Increments 58-69

Alcohol values for five of the seven routine mGSC samples returned on SpX-28 and Crew-6 exceeded the ECLS guideline of $<5 \text{ mg/m}^3$, and several others were relatively close to the target level. The contingency sample also contained $>5 \text{ mg/m}^3$ total alcohols. The levels are mostly attributable to ethanol. Measured levels do not present a risk to crew health but are a potential concern for the water recovery system.

Levels of octafluoropropane (Freon 218) continue to be very low in ISS air compared with historical measurements due to continued operation of a CO_2 removal tech demonstration unit that very efficiently scrubs octafluoropropane from the ISS atmosphere.

All seven routine mGSC samples collected and analyzed during Increment 69 contained a CO_2 concentration below the limit documented in Flight Note F091532D, which requests that the 24-hour average concentration not exceed 3.0 mmHg (7100 mg/m^3 , 4000 ppm) on the US segment. While mGSC CO_2 sampling provides a snapshot of the CO_2 concentration, real-time CO_2 data are available from a sensor in the Columbus module, and intermittently from the Major Constituent Analyzers (MCAs) in Node 3 and the US Lab (daily average CO_2 concentrations are represented in Figure 2). To preserve the longevity of the instrumentation, MCAs are only activated during EVA activities, crew metabolic characterization, tech demo analysis, anomaly resolution, and when requested by crew surgeons.

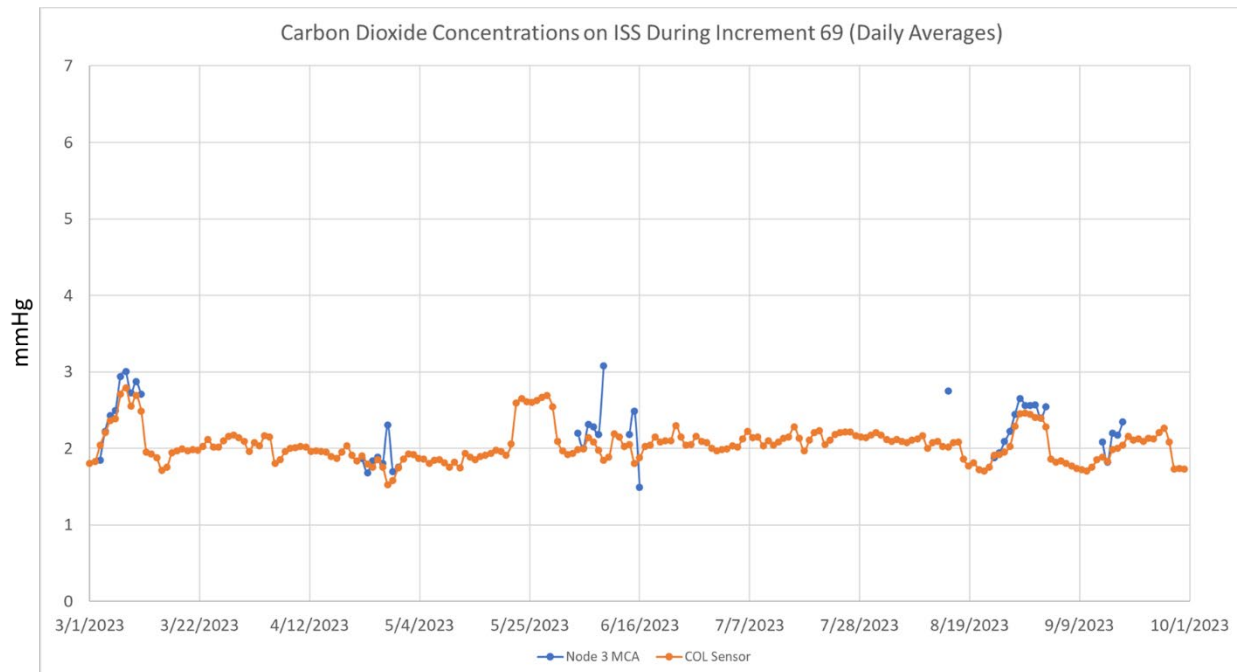


Figure 2. Environmental ppCO_2 Concentrations on ISS During Increment 69 (mmHg)

Three sets of passive formaldehyde badges were deployed on ISS during Increment 69. Results from analysis of the remaining badges indicated that formaldehyde remains at or below the historical range observed on ISS, and concentrations are well below the SMAC of $120 \text{ }\mu\text{g/m}^3$ (Figure 3).

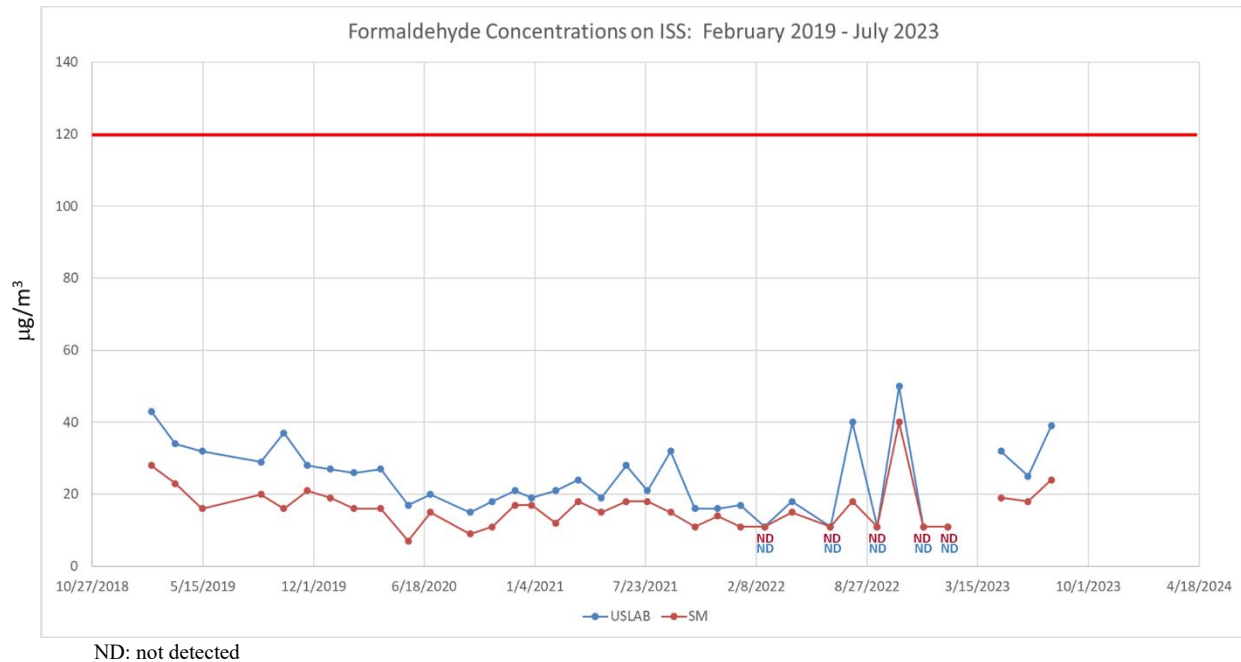


Figure 3: Formaldehyde Concentrations from February 2019 to July 2023

Node 1 Contingency

On May 10, 2023, crew entered a storage dome behind the Node 1 zenith hatch, which hadn't been opened for several years. The crew reported a "plastic-y" smell and were directed by console personnel to collect a contingency mGSC. The sample was collected about 30 minutes after the hatch was opened. Due to the extended duration between hatch opening and sample collection, the analytical results are not likely to reflect the environment encountered by crew when they opened that location. Previous experience indicates that contingency samples taken to assess odors do not provide insight into the source; this is likely due to the fact that the human sense of smell is more sensitive than chemical analysis can achieve.

Axiom-2 Ingress

An mGSC sample was collected upon ingress on Axiom-2 at 15:10 GMT on May 22, 2023. The hatch was opened at 15:01, and the sample was taken 9 minutes thereafter. Analytical results from the sample indicate a lower level of methane (49 mg/m³) than found on ISS (~160 mg/m³), which indicates low levels of mixing between the visiting vehicle and the full ISS volume. Levels of ethanol were also markedly lower. **The T-value for this sample was 0.1, well below levels of concern for crew health.**

SpX-28 Ingress

An ingress sample was collected in SpX-28 on June 6, 2023, at 11:26 GMT. The hatch was opened at 11:24 GMT. Methane, ethanol, and CO₂ levels in the visiting vehicle were both markedly lower than expected in the ISS volume, consistent with a low extent of atmospheric mixing at the time the sample was collected. Further, the SpX-28 atmosphere contained 23 mg/m³ isobutane, which is not regularly detected in ISS air. Trimethylsilanol was also present in levels higher than expected on ISS. Those observed concentrations of isobutane and trimethylsilanol contributed to a **T-value of 0.5, but that value is still well below levels of concern for crew health.**

NG-19 Ingress

An ingress sample was collected in NG-19 on August 4, 2023. The exact time of sampling is unclear, though ingress took place at 16:35. According to console personnel, the sample was taken 90 minutes

after ingress. As expected, the concentrations of all detected analytes in the sample are very similar to those observed in nominal samples collected in the US Lab and JPM ten days earlier. Given that the vehicle atmosphere had mixed with ISS atmosphere, measured contaminant levels are not representative of the contribution of the vehicle.

Crew-7 Ascent

An mGSC was collected on August 26, 2023, while Crew-7 was on ascent to ISS. **The T-value for this sample was 0.1, indicating very good overall air quality for the crew before they arrived at ISS.**

WATER QUALITY

In total, ten water samples were collected from the US Segment during Increment 69 and returned on SpX-27, -28, -29, and Crew-6. Four of these were ambient and hot potable water samples collected from the US Potable Water Dispenser (PWD) and one was an ambient potable water sample from the Exploration Potable Water Dispenser (xPWD), all of which fall under the ISS Crew Health Care System (CHeCS). The remaining five samples were non-potable water, including two wastewater and two condensate samples as well as a sample collected from the PWD Aux Port (ECLS). Summaries of select analytical results from the Increment 69 samples are provided in Tables 3A and 3B.

Table 3A. Analytical Summary of ISS Water Analyses for CHeCS Samples (Increment 69)

Return Mission	Sample Location	Sample Date	TOC (mg/L)	DMSD (mg/L)	Methyl Sulfone (mg/L)	Conductivity (µS/cm)	Total Iodine (mg/L)
SpX-27	WPA PWD Hot	4/3/2023	0.66	1.3	0.08	<1	<0.05
SpX-28	WPA PWD Hot	5/29/2023	0.83	<1	0.17	<1	<0.05
SpX-28	WPA PWD Ambient	6/20/2023	0.54	<1	0.15	<1	<0.05
SpX-29	WPA xPWD Ambient	9/4/2023	0.35	<1	0.07	<1	<0.05
SpX-29	WPA PWD Hot	9/7/2023	0.63	<1	0.13	<1	<0.05

Table 3B. Analytical Summary of ISS Water Analyses for ECLS Samples (Increment 69)

Return Mission	Sample Location	Sample Date	TOC (mg/L)	DMSD (mg/L)	Methyl Sulfone (mg/L)	Conductivity (µS/cm)	Total Iodine (mg/L)
SpX-27	WPA Wastewater	4/5/2023	18.1	6.8	0.04	64	0.5
SpX-27	WPA Condensate	4/5/2023	66.5	7.5	0.07	133	0.4
SpX-27	WPA PWD Aux Port	4/7/2023	0.535	1.1	0.1	2	2.03
Crew-6	WPA Wastewater	8/18/2023	5.15	1.8	0.04	59	0.5
Crew-6	WPA Condensate	8/17/2023	23.6	5.5	0.03	179	0.01

Toxicological Evaluation of ISS Water Quality

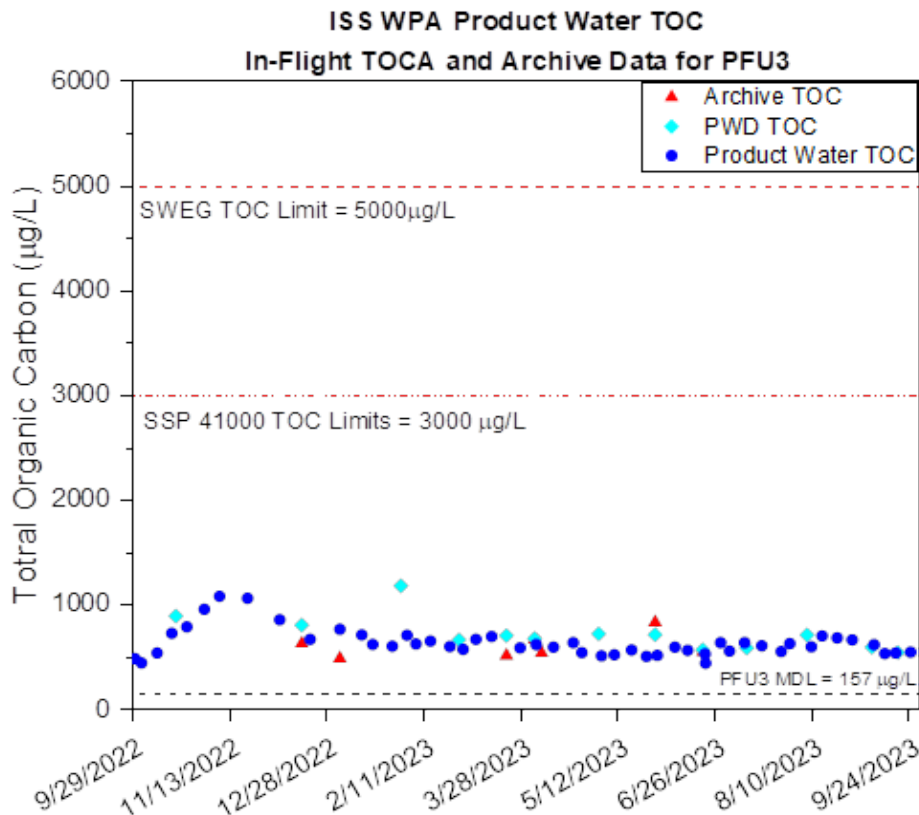
Routine water quality monitoring is performed in-flight using the total organic carbon analyzer (TOCA). Results from these analyses provide a general indication of overall water quality. Typically, archive water samples are also collected during each Increment and returned for comprehensive analysis in ground laboratories (Table 3A). Data from the ground analyses complement the in-flight data and provide a more complete understanding of water quality on the ISS.

Potable Water

Concentrations of all chemicals detected in the potable water samples met the requirements listed in SSP 41000, System Specification for the International Space Station and JSC 63414, Spacecraft Water Exposure Guidelines (SWEGs). Total organic carbon (TOC) concentrations from in-flight (PWD TOC and WPA TOC) and ground analyses (Archive TOC) performed between September 2022 and September 2023 are shown in Figure 4. The TOC concentrations in the five potable samples continued to be low and were well below both the specification for the US segment (<3 mg/L) and the 100-day SWEG (5 mg/L). The DMSD concentrations were above the 1 mg/L reporting limit in the PWD hot sample (1.3 mg/L) from April 2023. Methyl sulfone was detected in all potable water samples at levels well below the SWEG of 1,500 mg/L. Silicon was also detected in all potable samples (0.2 –0.4 mg/L).

Iodine is a biocide used on the US Segment. It is added to the water produced by the WPA but removed prior to crew consumption to avoid potential thyroid dysfunction. The total iodine level in all five potable samples collected from the PWD were below the reporting limit (0.05 mg/L), indicating effective removal of iodine in water intended for consumption. For additional information regarding microbial analyses, see the Increment 69 post-flight report generated by the JSC Environmental Microbiology Laboratory.

Figure 4. Total Organic Carbon (TOC) trending in US Potable Water from Archive Water Samples and On-Orbit TOCA (PFU3) for September 2022 to September 2023



Wastewater (April 5, 2023)

The wastewater sample collected on April 5, 2023, contained a relatively low level of TOC: 18.1 mg/L, compared to a historical average of 41.1 mg/L. As such only three compounds were detected at levels above 1 mg/L: methanol (6.1 mg/L), DMSD (6.8 mg/L), and isovalerate (3.4 mg/L). DMSD accounted for 91% of the reported total silicon (2.3 mg/L). Zinc was detected at 1.9 mg/L, the only metal detected above 0.2 mg/L. Ammonium was detected at 7.1 mg/L, well below the historical average (17.5 mg/L).

Condensate (April 5, 2023)

Condensate collected on the same date also contained a relatively low level of TOC: 66.5 mg/L, compared to the historical average of 150 mg/L. Organic compounds detected at levels greater than 1 mg/L are listed in Table 4A.

Table 4A: Organic Compounds Detected >1 mg/L in US Condensate Sampled on April 5, 2023

Compound	Condensate (mg/L)	Historical average (mg/L)
	April 5, 2023	
Ethanol	59	49
Acetate	21	40
1,2-propanediol (propylene glycol)	9.8	27
Dimethylsilanediol (DMSD)	7.5	36
Benzyl alcohol	7.0	13
Methanol	6.3	4.8
Acetone	3.8	2.0

WPA Product Water (PWD Aux Port)

The sample from the PWD Aux Port on April 7, 2023, contained TOC levels of 0.54 mg/L, below the historical average of 0.69 mg/L. Methyl sulfone was detected at levels well below the SWEG of 1500 mg/L. The total iodine level of this sample was 2.03 mg/L, but otherwise the chemical results from this sample were consistent with potable water.

Wastewater (August 18, 2023)

The wastewater sample collected on August 18, 2023, contained TOC levels of 5.2 mg/L, below the historical average of 41 mg/L. The only organic compound detected above 1 mg/L was DMSD (1.8 mg/L). Zinc was present at 5.7 mg/L, and nickel was detected at 0.5 mg/L. No other metals were detected at levels above 0.1 mg/L. Ammonium was present at a concentration of 5.7 mg/L.

Condensate (August 17, 2023)

The condensate sample collected on August 17, 2023, contained TOC levels of 23.6 mg/L, well below the historical average of 149 mg/L. Organic compounds detected at or above 1 mg/L are listed in Table 4B. Mercury was detected in this condensate sample at 4.3 µg/L; this is the first detection of mercury in condensate. Zinc was detected at 14.4 mg/L, and other metals detected above 0.1 mg/L include chromium (0.13 mg/L), strontium (0.23 mg/L), and nickel (0.3 mg/L).

Table 4B: Organic Compounds Detected >1 mg/L in US Condensate Sampled on August 17, 2023

Compound	Condensate (mg/L)	Historical average (mg/L)
	August 17, 2023	
Ethanol	19	49
Methanol	6.2	4.9
Dimethylsilanediol (DMSD)	5.5	35
Acetone	2.9	2.0
Acetate	1.8	40
2-propanol (isopropanol)	1.4	1.4
1,2-propanediol (propylene glycol)	1.3	27
Formaldehyde	1.0	1.1

Given the results from wastewater and condensate, the cleanliness of potable water dispensed from the PWD and xPWD provide strong evidence that the Water Recovery System is performing well on ISS. Expanded summary tables containing organic carbon recoveries and results for all analytes present at concentrations above reporting limits are included as attachments to this report.

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Enclosures

- Table S-1: Analytical concentrations of compounds quantified in mGSCs collected in and returned on SpaceX-27, SpaceX-28, Crew-6, Crew-7, and Axiom-2
- Table S-2A: T-values corresponding to concentrations for routine mGSC samples returned on SpaceX-27, SpaceX-28, Crew-6, Crew-7, and Axiom-2
- Table S-2B: T-values corresponding to concentrations for Axiom-2, SpaceX-28, and NG-19 ingress air samples, based on 7-day and 180-day SMACs
- Table S-3A: Analytical concentrations of compounds quantified in hot and ambient water samples returned on SpaceX-27, SpaceX-28, and SpaceX-29.
- Table S-3B: Analytical concentrations of compounds quantified in US condensate, wastewater, and PWD Aux Port water samples returned on SpaceX-27 and Crew-6

TABLE S-1: ANALYTICAL RESULTS FOR SPACEX-27, SPACEX-28, CREW-6, AXIOM-2, AND CREW-7 RETURN SAMPLES

Increment Mission Sample Location Sample Description Sample Date Sample Time Analysis/Sample ID	69											
	SpaceX-27		SpaceX-28				Crew-6		Crew-7	Axion-2	SpaceX-28	Crew-6
	Lab	Lab	Columbus	NOD1	Lab	SM	Lab	JPM	Dragon Module	Dragon Module	Dragon Module	NG-19
	Nominal Air Sample, S/N 2017	Nominal Air Sample, S/N 2021	Nominal Air Sample, S/N 2024	Contingency Air Sample, S/N 2029	Nominal Air Sample, S/N 2032	Nominal Air Sample, S/N 2026	Nominal air sample, S/N 2037	Nominal air sample, S/N 2042	Nominal air sample, ascent, S/N 2015	Dragon Module Ingress Air Sample, Ax-2 S/N 2030	Ingress Air Sample, S/N 2031	Ingress air sample, NG-19 S/N 2050
	4/12/2023 12:08	4/26/2023 19:30	4/26/2023 19:32	5/10/2023 10:55	6/14/2023 09:15	6/14/2023 09:15	7/26/2023 17:45	7/26/2023 17:45	8/26/2023 10:37	5/22/2023 15:10	6/6/2023 11:24	8/4/2023 18:07
	AQ230387	AQ230668	AQ230669	AQ230672	AQ230670	AQ230671	AQ230830	AQ230831	AQ240271	AQ230546	AQ230674	AQ230832
Volatiles Targets GCMS (TO-15 mod)	mg/m3										mg/m3	
1,1,1,2-Tetrafluoroethane	0.091	0.087	0.092	0.094	0.18	0.097	0.10	0.088	0.096	<0.021	1.6	0.085
1-Butanol	0.066	0.065	0.078	0.077	0.087	0.089	0.088	0.087	<0.019	<0.0091	0.066	0.087
1-Propanol	0.046	0.050	0.039	0.032	0.047	0.037	0.031	0.035	<0.016	<0.0074	0.034	0.028
2-Butanone (Methyl ethyl ketone)	<0.018	<0.018	<0.018	<0.019	<0.019	0.021	<0.019	<0.019	<0.018	<0.0088	0.045	<0.019
2-Methyl-1-propene	<0.014	<0.014	<0.014	<0.015	<0.015	<0.015	<0.015	<0.015	<0.014	<0.0069	0.042	<0.015
2-Methyl-2-propanol	<0.018	<0.019	<0.019	<0.020	<0.020	<0.020	<0.020	<0.020	<0.019	<0.0091	0.020	<0.020
2-Methylhexane	<0.024	<0.025	<0.025	<0.026	0.031	<0.026	<0.026	<0.026	<0.025	<0.012	<0.026	<0.026
2-Propanol (Isopropanol)	0.25	0.29	0.28	0.38	See GC-FID	0.60	0.17	0.19	0.34	0.032	See GC-FID	0.23
3-Methylhexane	0.026	0.027	0.027	<0.026	<0.026	<0.026	0.047	0.041	<0.025	<0.012	<0.026	0.043
Acetaldehyde	0.14	0.15	0.15	0.16	0.20	0.14	0.10	0.093	0.033	<0.009	0.19	0.10
Acetone	0.32	0.34	0.35	0.38	0.43	0.32	0.34	0.37	0.14	0.035	0.38	0.37
Butane	<0.014	<0.015	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.015	<0.0071	0.66	<0.016
Carbonyl sulfide (Carbon oxide sulfide)	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.0074	0.061	<0.016
Chloromethane	<0.012	<0.013	<0.013	<0.014	<0.014	<0.014	<0.014	<0.014	0.015	<0.0062	<0.014	<0.014
Ethanol	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	0.076	0.064	See GC-FID	See GC-FID
Ethyl acetate	0.036	0.027	0.030	0.024	0.070	0.050	0.033	0.031	<0.023	<0.011	0.066	0.028
Isobutane	<0.014	<0.015	<0.015	0.017	0.037	0.24	<0.016	<0.016	0.15	0.039	23	0.034
Isoprene (2-Methyl-1,3-butadiene)	0.043	0.059	0.059	0.059	0.099	0.051	0.056	0.056	<0.018	<0.0084	<0.018	0.053
Methanol	See GC-FID	0.36	See GC-FID	See GC-FID	See GC-FID	0.32	See GC-FID	See GC-FID	0.11	0.025	0.20	See GC-FID
Methylene chloride (Dichloromethane)	<0.020	<0.021	<0.021	<0.022	<0.022	<0.022	<0.022	<0.022	<0.021	<0.010	0.073	<0.022
o-Xylene	<0.026	<0.027	<0.027	<0.029	0.040	0.066	0.039	0.030	<0.027	<0.013	<0.029	0.036
Pentane	<0.018	<0.019	<0.019	<0.020	<0.020	<0.020	0.045	0.048	0.098	<0.0089	<0.020	0.056
Perfluoro(2-methylpentane)	<0.082	<0.086	<0.086	0.42	<0.090	19	1.7	1.3	<0.086	<0.041	0.43	2.1
Propanal (Propionaldehyde)	<0.014	0.069	<0.015	<0.016	<0.016	<0.016	0.062	0.066	0.075	0.015	0.019	0.067
Propane	<0.011	<0.011	<0.011	<0.012	<0.012	<0.012	<0.012	<0.012	<0.011	<0.0054	0.058	<0.012
Toluene	0.039	0.035	0.039	0.043	0.064	0.050	0.047	0.044	<0.023	<0.011	0.079	0.045
Trimethylsilanol	0.099	0.11	0.16	0.12	0.17	0.31	0.14	0.19	<0.023	<0.011	0.83	0.16
Volatiles Non-Targets GCMS (estimated conc.)												
C11-Alkanes	not found	not found	not found	not found	not found	not found	not found	not found	not found	not found	0.92	not found
Tetradecafluorohexane	1.4	0.89	0.91	0.82	32	10	5.6	4.1	not found	not found	0.48	6.5
Volatiles Targets GC-FID												
2-Propanol (Isopropanol)	NR	NR	NR	NR	1.0	NR	NR	NR	NR	NR	9.0	NR
Ethanol	5.6	3.6	3.8	4.0	3.5	2.8	4.0	3.5	NR	NR	0.69	2.9
Methanol	0.43	NR	0.40	0.35	0.42	NR	0.97	0.59	NR	NR	NR	0.43
Octafluoropropane (Perfluoropropane)	10	4.4	4.4	8.0	5.6	7.0	2.5	3.0	<1.6	<0.77	<1.7	2.6
Volatiles Targets TGA												
Carbon dioxide	3,600	4,100	4,100	4,200	4,100	3,900	4,000	5,300	1,800	3000	1,200	4,300
Carbon monoxide	1.1	1.8	1.8	1.80	1.5	1.5	1.1	1.1	1.4	3.4	2.0	0.95
Hydrogen	5.7	5.2	5.3	5.4	4.7	4.7	6.0	6.2	1.4	2.8	0.73	6.4
Methane	150	150	150	160	190	160	200	200	<2.7	49	17	190
	GMT 102	GMT 116	GMT 116	GMT 130	GMT 165	GMT 165	GMT 207	GMT 207	GMT 238	GMT 142	GMT 157	GMT 216

Comments: NR= Not Reported

Not Found =No unknown peaks above the threshold limit

AQ230672: When the NOD1 hatch was opened, a strong plastic-y smell in NOD1 and, not quite a headache, but a “head sensation”.

AQ230832 (NG-19 Ingress Air Sample) reported to be collected 1.5 hours after hatch opening.

*AQ230833 (Columbus Nominal Air Sample, S/N 2063 collected 8/18/2023 18:14) had a low initial pressure of 4.5 psia when received and therefore no results were reported.

*AQ230834 (Lab, Nominal Air Sample, S/N 2061 collected 8/18/2023 18:16) had a very low initial pressure of 0.7 psia when received and therefore no results were reported.

TABLE S-2A: T-VALUES FOR SPACEX-27, SPACEX-28, CREW-6, AXIOM-2, AND CREW-7 RETURN SAMPLES

Increment Mission Sample Location Sample Description Sample Date Sample Time Analysis/Sample ID	69									
	SpaceX-27	SpaceX-28					Crew-6			
	T-Value (180-day)									
	Lab Nominal Air Sample, S/N	Lab Nominal Air Sample, S/N	Columbus Nominal Air Sample, S/N	NOD1 Contingency Air Sample, S/N 2029	Lab Nominal Air Sample, S/N	SM Nominal Air Sample, S/N	Lab Nominal air sample, S/N	JPM Nominal air sample, S/N	Col Nominal air sample, S/N	Lab Nominal air sample, S/N
	4/12/2023 12:08	4/26/2023 19:30	4/26/2023 19:32	5/10/2023 10:55	6/14/2023 09:15	6/14/2023 09:15	7/26/2023 17:45	7/26/2023 17:45	8/18/2023 18:14	8/18/2023 18:16
	AQ230387	AQ230668	AQ230669	AQ230672	AQ230670	AQ230671	AQ230830	AQ230831	*AQ230833	*AQ230834
Volatiles Targets GCMS (TO-15 mod)										
1,1,1,2-Tetrafluoroethane	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	ND	ND
1-Butanol	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	ND	ND
1-Propanol	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	ND	ND
2-Butanone (Methyl ethyl ketone)	ND	ND	ND	ND	ND	0.001	ND	ND	ND	ND
2-Methyl-1-propene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methyl-2-propanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylhexane	ND	ND	ND	ND	0.002	ND	ND	ND	ND	ND
2-Propanol (Isopropanol)	0.002	0.002	0.002	0.003	See GC-FID	0.004	0.001	0.001	0.007	0.004
3-Methylhexane	0.002	0.002	0.002	ND	ND	ND	0.004	0.003	ND	ND
Acetaldehyde	0.034	0.038	0.037	0.040	0.050	0.036	0.026	0.023	0.017	ND
Acetone	0.006	0.007	0.007	0.007	0.008	0.006	0.007	0.007	0.004	0.023
Carbon disulfide	0.023	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbonyl sulfide (Carbon oxide sulfide)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethanol	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	See GC-FID	0.000
Ethyl acetate	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	ND	ND
Isobutane	ND	ND	ND	0.000	0.000	0.001	ND	ND	ND	ND
Isoprene (2-Methyl-1,3-butadiene)	0.014	0.020	0.020	0.020	0.033	0.017	0.019	0.019	ND	ND
Methanol	See GC-FID	0.014	See GC-FID	See GC-FID	See GC-FID	0.012	See GC-FID	See GC-FID	0.014	0.009
Methylene chloride (Dichloromethane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	ND	ND	ND	ND	0.001	0.002	0.001	0.001	ND	ND
Pentane	ND	ND	ND	ND	ND	ND	0.005	0.005	0.028	ND
Perfluoro(2-methylpentane)	ND	ND	ND	0.000	ND	0.000	0.000	0.000	ND	ND
Propanal (Propionaldehyde)	ND	0.006	ND	ND	ND	ND	0.005	0.006	0.011	0.063
Toluene	0.003	0.002	0.003	0.003	0.004	0.003	0.003	0.003	ND	ND
Trimethylsilanol	0.025	0.028	0.040	0.031	0.042	0.076	0.035	0.047	ND	ND
Volatiles Non-Targets GCMS (estimated conc.)										
C11-Alkanes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetradecafluorohexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	ND	ND
Volatiles Targets GCFID										
2-Propanol (Isopropanol)	NR	NR	NR	NR	0.007	NR	NR	NR	NR	NR
Ethanol	0.003	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.001	NR
Methanol	0.017	NR	0.015	0.013	0.016	NR	0.037	0.023	NR	NR
Octafluoropropane (Perfluoropropane)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	ND	ND
Volatiles Targets TGA										
Carbon monoxide	0.066	0.105	0.106	0.105	0.091	0.087	0.064	0.065	ND	ND
Total T-Value	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1

Comments: ND= Value is less than the laboratory reporting limit.

NR= Not Reported

AQ230832 (NG-19 Ingress Air Sample) reported to be collected 1.5 hours after hatch opening.

*AQ230833 (Columbus Nominal Air Sample, S/N 2063 collected 8/18/2023 18:14) had a low initial pressure of 4.5 psia when received and therefore no results were reported.

*AQ230834 (Lab, Nominal Air Sample, S/N 2061 collected 8/18/2023 18:16) had a very low initial pressure of 0.7 psia when received and therefore no results were reported.

TABLE S-2B: T-VALUES FOR AXIOM-2, SPACEX-28, AND NG-19 INGRESS SAMPLES

Increment Mission Sample Location Sample Description Sample Date Sample Time Analysis/Sample ID	69					
	Axiom-2		SpaceX-28		Crew-6	
	T-Value (7-day)	T-Value (180-day)	T-Value (7-Day)	T-Value (180-day)	T-Value (7-Day)	T-Value (180-day)
	Dragon Module	Dragon Module	Dragon Module	Dragon Module	NG-19	NG-19
	Ingress Air Sample, Ax-2 S/N 2030	Ingress Air Sample, Ax-2 S/N 2030	Ingress Air Sample, S/N 2031	Ingress Air Sample, S/N 2031	Ingress air sample, NG-19 S/N 2050	Ingress air sample, NG-19 S/N 2050
	5/22/2023	5/22/2023	6/6/2023	6/6/2023	8/4/2023	8/4/2023
	15:10	15:10	11:24	11:24	18:07	18:07
	AQ230546	AQ230546	AQ230674	AQ230674	AQ230832	AQ230832
Volatiles Targets GCMS (TO-15 mod)						
1,1,1,2-Tetrafluoroethane	ND	ND	0.000	0.000	0.000	0.000
1-Butanol	ND	ND	0.001	0.002	0.001	0.002
1-Propanol	ND	ND	0.000	0.000	0.000	0.000
2-Butanone (Methyl ethyl ketone)	ND	ND	0.001	0.001	ND	ND
2-Methyl-1-propene	ND	ND	0.000	0.000	ND	ND
2-Methyl-2-propanol	ND	ND	0.000	0.000	ND	ND
2-Propanol (Isopropanol)	0.000	0.000	See GC-FID	See GC-FID	0.002	0.002
3-Methylhexane	ND	ND	ND	ND	0.000	0.004
Acetaldehyde	ND	ND	0.047	0.047	0.026	0.026
Acetone	0.001	0.001	0.007	0.007	0.007	0.007
Carbonyl sulfide (Carbon oxide sulfide)	ND	ND	0.001	0.003	ND	ND
Ethanol	0.000	0.000	See GC-FID	See GC-FID	See GC-FID	See GC-FID
Ethyl acetate	ND	ND	0.000	0.000	0.000	0.000
Isobutane	0.000	0.000	0.123	0.123	0.000	0.000
Isoprene (2-Methyl-1,3-butadiene)	ND	ND	ND	ND	0.009	0.018
Methanol	0.001	0.001	0.008	0.008	See GC-FID	See GC-FID
Methylene chloride (Dichloromethane)	ND	ND	0.001	0.007	ND	ND
o-Xylene	ND	ND	ND	ND	0.000	0.001
Pentane	ND	ND	ND	ND	0.000	0.006
Perfluoro(2-methylpentane)	ND	ND	0.000	0.000	0.000	0.000
Propanal (Propionaldehyde)	0.001	0.001	0.002	0.002	0.006	0.006
Toluene	ND	ND	0.005	0.005	0.003	0.003
Trimethylsilanol	ND	ND	0.207	0.207	0.04	0.04
Volatiles Non-Targets GCMS (estimated conc.)						
C11-Alkanes	ND	ND	0.021	0.021	ND	ND
Tetradecafluorohexane	ND	ND	0.000	0.000	0.000	0.000
Volatiles Targets GCFID						
2-Propanol (Isopropanol)	NR	NR	0.060	0.060	NR	NR
Ethanol	NR	NR	0.000	0.000	0.001	0.001
Methanol	NR	NR	NR	NR	0.017	0.017
Octafluoropropane (Perfluoropropane)	ND	ND	ND	ND	0.000	0.000
Volatiles Targets TGA						
Carbon monoxide	0.055	0.202	0.031	0.115	0.015	0.056
Total T-Value	0.1	0.2	0.5	0.6	0.1	0.2

Comments: AQ230832 (NG-19 Ingress Air Sample) reported to be collected 1.5 hours after hatch opening.

NR: not reported

ND: not detected

TABLE S-3A: ANALYTICAL CONCENTRATIONS OF COMPOUNDS QUANTIFIED IN HOT AND AMBIENT POTABLE WATER
RETURNED ON SPACEX-27, SPACEX-28, AND SPACEX-29

Increment Mission	Sample Location	Sample Description	Sample Date Analysis/Sample ID	Units	Test Conducted by	Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	69				
								SpaceX-27	SpaceX-28		SpaceX-29	
								WPA PWD Hot	WPA PWD Hot	WPA PWD Ambient	WPA xPWD Ambient	WPA PWD Hot
								Potable Water 4/3/2023 WQ230127	Potable Water 5/29/2023 WQ230186	Potable Water 6/20/2023 WQ230187	Potable Water 9/4/2023 WQ240007	Potable Water 9/7/2023 WQ240008
Physical Characteristics												
pH				pH units	U.S.	4.5-8.5	41000	5.64	5.62	5.62	5.73	5.63
Minerals ICPMS												
Calcium				mg/L	U.S.	30	41000	0.01	0.01	0.01	0.04	0.01
Trace Metals ICPMS												
Aluminum				µg/L	U.S.			3	< 1	< 1	< 1	< 1
Barium				µg/L	U.S.	10,000	SWEG&41000	< 1	< 1	2	< 1	< 1
Boron				µg/L	U.S.			< 1	< 1	< 1	5	< 1
Copper				µg/L	U.S.	1,000	41000	1	< 1	< 1	< 1	< 1
Nickel				µg/L	U.S.	300	SWEG&41000	7	1	2	34	2
Zinc				µg/L	U.S.	2,000	SWEG&41000	1	< 1	< 1	3	< 1
Silicon ICPMS												
Silicon				µg/L	U.S.			416	337	315	181	332
Total Organic Carbon-Sievers												
Total Inorganic Carbon (TIC)				mg/L	U.S.			0.540	0.741	0.708	1.03	0.925
Total Organic Carbon (TOC)				mg/L	U.S.	5 / 3	SWEG / 41000	0.663	0.828	0.544	0.352	0.634
Semi-volatile Organics-Targets												
Methyl sulfone				µg/L	U.S.	1,500,000	interim SWEG (06-2017)	79	166	148	72	125
Base and Neutral Extractables-EPA 625 List GCMS												
bis-(2-Ethylhexyl)phthalate				µg/L	U.S.	20,000/6	SWEG/EPA	< 20	21	< 20	< 20	< 20
Silanol LCRI (Semi-Quantitative-NIST traceable standard not available)												
Dimethylsilanediol (DMSD)				µg/L	U.S.	35,000	SWEG	1,300	< 1,000	< 1000	< 1000	< 1000
Organic Carbon Recovery												
Unaccounted Organic Carbon				percent	U.S.			54.2	7.00	6.99	5.10	5.05
				mg/L	U.S.			0.30	0.77	0.51	0.34	0.60

Data Qualifiers: WQ230186&187 - Octamethylcyclotetrasiloxane (OMCTS) & Decamethylcyclopentasiloxane (DMCPS) & Dodecamethylcyclohexasiloxane & 2-Ethoxyethanol - Data Qualifier: Possible low bias
WQ240008-Data Qualifier-Matrix interference-possible low bias for Base/Neutral analytes.
WQ24007&08-Data Qualifier-Nitrobenzene and Freon 12 (Dichlorodifluoromethane) - Possible low bias in volatiles analysis

TABLE S-3B: ANALYTICAL CONCENTRATIONS OF COMPOUNDS QUANTIFIED IN WASTEWATER AND US CONDENSATE WATER SAMPLES RETURNED ON SPACEX-27 AND CREW-6

Increment Mission	Sample Location	Sample Description	Sample Date Analysis/Sample ID	Units	Test Conducted by	Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	69					
								SpaceX-27			Crew-6		
								WPA PWD Aux Port	WPA Wastewater ORU	WPA Condensate Sample Port	WPA Wastewater ORU	WPA Condensate Sample Port	
								WPA PWD Product Water	WPA Wastewater	US Condensate	WPA Wastewater	US Condensate	
								4/7/2023 WQ230128	4/5/2023 WQ230129	4/5/2023 WQ230130	8/18/2023 WQ230266	8/17/2023 WQ230267	
Physical Characteristics													
									2	64	133	59	179
									5.49	6.97	7.46	6.66	7.29
Iodine ICPMS													
									NA	0.499	0.394	0.533	0.013
Iodine LCV													
									0.09	NA	NA	NA	NA
									1.94	NA	NA	NA	NA
									2.03	NA	NA	NA	NA
Anions IC													
									< 0.5	0.8	< 0.5	< 0.5	< 0.5
									< 0.1	0.2	< 0.1	< 0.1	< 0.1
									< 0.1	0.6	< 0.1	< 0.1	< 0.1
									< 0.5	< 0.5	< 0.5	1.1	2.4
Cations IC													
									< 0.25	7.12	16.6	5.72	17.5
									< 0.25	0.54	< 0.25	< 0.25	< 0.25
									< 0.25	0.53	< 0.25	< 0.25	< 0.25
Minerals ICPMS													
									0.02	0.09	0.05	0.07	0.18
									< 0.01	0.03	< 0.01	< 0.01	< 0.01
									< 0.01	0.82	< 0.01	0.06	< 0.01
									0.01	0.62	< 0.01	0.06	0.12
									< 0.01	0.62	< 0.01	0.03	0.01
Trace Metals ICPMS													
									< 1	< 10	4	10	4
									< 1	< 10	< 1	2	6
									< 1	< 10	12	20	50
									< 1	< 10	< 1	< 1	1
									< 1	166	1	41	127
									< 1	< 10	< 1	2	5
									< 1	< 10	< 1	23	76
									< 1	< 10	< 1	< 1	2
									22	181	104	490	311
									< 1	< 20	2	9	25
									< 1	< 10	< 1	67	226
									< 1	1,920	2,190	5,730	14,400
Mercury ICPMS													
									< 0.5	< 0.5	< 0.5	< 0.5	4.3
Silicon ICPMS													
									386	2,270	3,040	2,110	5,600
Total Organic Carbon-Sievers													

NA=Not analyzed
MI=Matrix Interference
N/A=Not applicable
#previously identified as bis(2-Chloroisopropyl) ether

TABLE S-3B: ANALYTICAL CONCENTRATIONS OF COMPOUNDS QUANTIFIED IN WASTEWATER AND US CONDENSATE WATER SAMPLES RETURNED ON SPACEX-27 AND CREW-6

Increment Mission	Sample Location	Sample Description	Sample Date Analysis/Sample ID	Units	Test Conducted by	Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	69				
								SpaceX-27			Crew-6	
								WPA PWD Aux Port	WPA Wastewater ORU	WPA Condensate Sample Port	WPA Wastewater ORU	WPA Condensate Sample Port
								WPA PWD Product Water	WPA Wastewater	US Condensate	WPA Wastewater	US Condensate
								4/7/2023 WQ230128	4/5/2023 WQ230129	4/5/2023 WQ230130	8/18/2023 WQ230266	8/17/2023 WQ230267
				mg/L	U.S.			0.568	9.23	11.5	11.0	20.0
				mg/L	U.S.	5 / 3	SWEG / 41000	0.535	18.1	66.5	5.15	23.6
Volatile Organics-Targets												
				µg/L	U.S.	54,000	SWEG	< 5	< 25	39	< 25	< 25
				µg/L	U.S.	15,000	SWEG	< 5	< 25	See Alcohols	< 25	See Alcohols
Volatile Organics-Special Interest Compounds (Semi-quantitative)												
				µg/L	U.S.			not found	not found	79	not found	200
				µg/L	U.S.			not found	82	200	not found	not found
Semi-volatile Organics-Targets												
				µg/L	U.S.			< 20	< 20	< 20	23	22
				µg/L	U.S.	1,500,000	interim SWEG (06-2017)	98	41	70	37	27
				µg/L	U.S.			< 20	< 20	< 20	22	28
				µg/L	U.S.			< 20	< 20	< 20	< 20	37
Acid Extractables-EPA 625 List GCMS												
				µg/L	U.S.			< 100	< 100	497	< 100	189
				µg/L	U.S.	4,000	SWEG	< 20	< 20	< 20	< 20	26
Base and Neutral Extractables-EPA 625 List GCMS												
				µg/L	U.S.			< 20	< 20	7,010	< 20	918
				µg/L	U.S.			< 20	94	86	60	173
				µg/L	U.S.			< 20	< 20	< 20	< 20	21
				µg/L	U.S.	40,000	SWEG	< 20	< 20	< 20	27	58
Semi-volatile Organics-Special Interest Compounds (Semi-quantitative)												
				µg/L	U.S.			not found	not found	110	< 80	< 80
				µg/L	U.S.			not found	not found	71	not found	< 40
				µg/L	U.S.			not found	not found	120	not found	33
				µg/L	U.S.			not found	< 40	180	not found	< 40
				µg/L	U.S.			not found	not found	< 40	not found	< 40
				µg/L	U.S.			not found	not found	40	not found	52
				µg/L	U.S.			not found	not found	92	not found	54
				µg/L	U.S.			not found	not found	not found	< 10	not found
				µg/L	U.S.			not found	not found	63	not found	< 20
				µg/L	U.S.			not found	< 20	not found	not found	< 20
				µg/L	U.S.			not found	260	not found	not found	not found
				µg/L	U.S.			not found	not found	not found	16	16
				µg/L	U.S.			not found	not found	not found	not found	19
				µg/L	U.S.			not found	< 20	46	not found	< 20
				µg/L	U.S.			not found	not found	130	not found	51
				µg/L	U.S.			not found	< 80	230	< 80	< 80
				µg/L	U.S.			not found	not found	not found	< 20	< 20
				µg/L	U.S.			not found	650	640	not found	680
				µg/L	U.S.			not found	not found	not found	not found	< 20
				µg/L	U.S.			not found	not found	not found	not found	17
				µg/L	U.S.			not found	not found	not found	not found	21
Alcohols & Acetone GCMS												

NA=Not analyzed
MI=Matrix Interference
N/A=Not applicable
#previously identified as bis(2-Chloroisopropyl) ether

TABLE S-3B: ANALYTICAL CONCENTRATIONS OF COMPOUNDS QUANTIFIED IN WASTEWATER AND US CONDENSATE WATER SAMPLES RETURNED ON SPACEX-27 AND CREW-6

Increment Mission	Sample Location	Sample Description	Sample Date Analysis/Sample ID	Units	Test Conducted by	Potable Water Maximum Contaminant Level (MCL)	Maximum Contaminant Level Source	69				
								SpaceX-27			Crew-6	
								WPA PWD Aux Port	WPA Wastewater ORU	WPA Condensate Sample Port	WPA Wastewater ORU	WPA Condensate Sample Port
								WPA PWD Product Water	WPA Wastewater	US Condensate	WPA Wastewater	US Condensate
								4/7/2023 WQ230128	4/5/2023 WQ230129	4/5/2023 WQ230130	8/18/2023 WQ230266	8/17/2023 WQ230267
1-Butanol				µg/L	U.S.			< 400	< 400	542	< 400	< 400
1-Propanol				µg/L	U.S.			< 400	< 400	447	< 400	< 400
2-Propanol (Isopropanol)				µg/L	U.S.			< 400	< 400	846	< 400	1,360
Acetone				µg/L	U.S.	15,000	SWEG	See Volatiles	See Volatiles	3,800	See Volatiles	2,940
Ethanol				µg/L	U.S.			< 400	< 400	58,900	< 400	19,100
Methanol				µg/L	U.S.	40,000	SWEG	< 400	6,060	6,330	< 400	6,240
Glycols GCMS												
1,2-Propanediol (Propylene glycol)				µg/L	U.S.	1,700,000	SWEG	< 1000	< 1000	9,790	< 1000	1,250
Silanols LCRI (Semi-Quantitative-NIST traceable standard not available)												
Dimethylsilanediol (DMSD)				µg/L	U.S.	35,000	SWEG	1,100	6,800	7,500	1,800	5,500
Carboxylates IC												
Acetate				µg/L	U.S.			< 500	< 500	21,200	< 500	1,830
Formate				µg/L	U.S.	2,500,000	SWEG	< 500	< 500	< 500	< 500	574
Isovalerate (3-Methylbutanoic acid)				µg/L	U.S.			< 500	3,380	< 500	< 500	< 500
Aldehydes GCMS												
Formaldehyde (Methanal)				µg/L	U.S.	12,000	SWEG	< 10	< 10	289	< 10	1,030
Organic Carbon Recovery				percent	U.S.			58.13	37.65	88.73	11.13	85.12
Unaccounted Organic Carbon				mg/L	U.S.			0.22	11.29	7.50	4.58	3.52

Data Qualifiers: WQ230129 & -130 - Fluoride - Data qualifier - possible low bias (MS rec. 64.6%).
WQ230129 & -130 - Methanol - Data Qualifier: Possible high bias (MS rec. 125.1%).
WQ230266&267 - 2-Ethoxyethanol - Possible low bias

NA=Not analyzed
MI=Matrix Interference
N/A=Not applicable
#previously identified as bis(2-Chloroisopropyl) ether