

ISS Potable Water Quality for Expeditions 26 through 30

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ABSTRACT

International Space Station (ISS) Expeditions 26-30 spanned a 16-month period beginning in November of 2010 wherein the final 3 flights of the Space Shuttle program finished ISS construction and delivered supplies to support the post-shuttle era of station operations. Expedition crews relied on several sources of potable water during this period, including water recovered from urine distillate and humidity condensate by the U.S. water processor, water regenerated from humidity condensate by the Russian water recovery system, and Russian ground-supplied potable water. Potable water samples collected during Expeditions 26-30 were returned on Shuttle flights STS-133 (ULF5), STS-134 (ULF6), and STS-135 (ULF7), as well as Soyuz flights 24-27. The chemical quality of the ISS potable water supplies continued to be verified by the Johnson Space Center's Water and Food Analytical Laboratory (WAFAL) via analyses of returned water samples. This paper presents the chemical analysis results for water samples returned from Expeditions 26-30 and discusses their compliance with ISS potable water standards. The presence or absence of dimethylsilanediol (DMSD) is specifically addressed, since DMSD was identified as the primary cause of the temporary rise and fall in total organic carbon of the U.S. product water that occurred in the summer of 2010.

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