

Assessment of operator proficiency after long duration spaceflight

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This flight project compares performance on a cognitive/sensorimotor test battery and three full motion simulations pre-flight and upon return from the ISS. The test battery has eight tasks: reaction time, sleepiness scale, match to sample, perspective taking, manual tracking, dual task (tracking plus entering alarm codes), manual dexterity (Purdue pegboard), and motion perception. The simulations are performed in a cabin mounted on a six degree of freedom motion platform; landing an aircraft using an overhead approach, driving a car (lane control and obstacle avoidance), and a Mars rover (navigation and docking). Test sessions are performed four times preflight and on R+0, R+4 and R+8.

To date we have completed all sessions on two subjects. Post-flight testing on a third subject is currently underway at time of submission (11/15/13). Pre-flight testing is complete on a further two subjects. We estimate completion of data collection by May 2015.