

Fiscal Year:	FY 2009	Task Last Updated:	FY 08/14/2009
PI Name:	Moore, Steven T. Ph.D.		
Project Title:	Assessment of Operator Proficiency Following Long-Duration Spaceflight		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:	TechPort:	No	
Human Research Program Elements:	(1) HHC: Human Health Countermeasures		
Human Research Program Risks:	(1) Sensorimotor: Risk of Altered Sensorimotor/Vestibular Function Impacting Critical Mission Tasks		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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PI Organization Type:	UNIVERSITY	Phone:	212-241-1943
Organization Name:	Mount Sinai School of Medicine		
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PI Web Page:			
City:	New York	State:	NY
Zip Code:	10029	Congressional District:	14
Comments:	NOTE: PI moved to Central Queensland University, Australia, July 2016.		
Project Type:	FLIGHT,GROUND	Solicitation / Funding Source:	2008 Crew Health NNJ08ZSA002N
Start Date:	06/02/2009	End Date:	06/01/2012
No. of Post Docs:	No. of PhD Degrees:		
No. of PhD Candidates:	No. of Master' Degrees:		
No. of Master's Candidates:	No. of Bachelor's Degrees:		
No. of Bachelor's Candidates:	Monitoring Center: NASA JSC		
Contact Monitor:	Meck, J@n	Contact Phone:	281-244-5405
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Flight Program:	Pre/Post Flight		
Flight Assignment:			
Key Personnel Changes/Previous PI:	Co-Principal Investigator is Hamish MacDougall/University of Sydney (Australia).		
COI Name (Institution):	MacDougall, Hamish (University of Sydney (Australia))		
Grant/Contract No.:	NNX09AL14G		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	<p>Long-term exposure to microgravity has the potential to negatively impact the ability of crewmembers to navigate and land the crew exploration vehicle and perform post-landing surface operations on Mars. Based on our NASA-funded research on head-eye coordination during simulated shuttle landings and automobile control, we will implement a battery of tests, to be performed seated pre- and post-flight on ISS crewmembers, that target physiological mechanisms potentially underlying post-flight deficiencies in manual control. We will develop a portable testing device utilizing a chair mounted on a 6 degree-of-freedom motion base, suitable for implementation at Russian or US post-landing data collection sites. Sensorimotor tests target the vestibulo-ocular reflex, vestibulo-colic reflex, pursuit, dynamic visual acuity, motion perception and manual dexterity. In addition, we will adapt a subset of the computer-based cognitive Test of Basic Aviation Skills, used in pilot selection by the US Air Force, that have demonstrated a significant correlation with subject performance during actual flight training. The results from these test batteries will be correlated with astronaut performance on two operationally-relevant simulator tasks: control of an automobile and teleoperation of a</p>		

robotic arm. Our primary aim is to define the effects of long-duration spaceflight on operator proficiency, and identify microgravity-related sensorimotor or cognitive deficits (or combinations thereof) associated with degradation of operator effectiveness. Successful completion of this study will not only fill the IRP gap SM6, but provide a basis for countermeasure development that could be incorporated into pre- and in-flight training.

Rationale for HRP Directed Research:**Research Impact/Earth Benefits:**

Task Progress: New project for FY2009.

Bibliography Type: Description: (Last Updated: 09/07/2020)