

Fiscal Year:	FY 2009	Task Last Updated: FY 02/19/2010	
PI Name:	Dinges, David F. Ph.D.		
Project Title:	Cognitive Performance and Stress in a Simulated Space Environment		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline--Element/Subdiscipline:	NSBRI--Neurobehavioral and Psychosocial Factors Team		
Joint Agency Name:		TechPort:	No
Human Research Program Elements:	(1) BHP: Behavioral Health & Performance (archival in 2017)		
Human Research Program Risks:	(1) Sleep: Risk of Performance Decrements and Adverse Health Outcomes Resulting from Sleep Loss, Circadian Desynchronization, and Work Overload		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	19104-4209	Congressional District:	2
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	Directed Research
Start Date:	08/01/2009	End Date:	07/31/2010
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:	NSBRI
Contact Monitor:		Contact Phone:	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Mollicone, Daniel (Pulsar Informatics Inc.)		
Grant/Contract No.:	NCC 9-58-NBPF00805		
Performance Goal No.:			
Performance Goal Text:	<p>In spaceflight, crew members are frequently required to do many different critical tasks with associated stress and fatigue factors. The development of embedded performance tests that can be successfully related to performance capability metrics will give the crew member and Mission Control information on the best time to perform critical events and an evaluation of the need for countermeasures.</p> <p>The purpose of this study is to collect cognitive performance and stress information on astronauts and mission support personnel to:</p> <ul style="list-style-type: none"> * identify periods of fatigue and identify stress during analog missions, and * develop normative databases on fatigue and stress in analog environments for comparison to space flight. 		

Task Description:	<p>The observational research study will test tools that measure performance and stress in crew members and mission support personnel working and living in simulated space environments under conditions similar to those crew members experience aboard the International Space Station and on Lunar missions. The studies will occur during NASA Extreme Environment Mission Operations (NEEMO) 14 and a Desert Research and Technology Studies (DRATS) mission.</p> <p>This project aligns with the following high-priority Risk Gaps of NASA Behavioral Health and Performance within the Human Research Program:</p> <ol style="list-style-type: none">1. Risk of Performance Errors Due to Sleep Loss, Circadian Desynchronization, Fatigue, and Work Overload.2. Risk of Behavioral and Psychiatric Conditions. <p>Specific Aims</p> <ol style="list-style-type: none">1. Test the usefulness of three brief validated software-based cognitive performance tests (PVT SelfTest, Digit Symbol Substitution Test and the Descending Subtraction Test), which will collectively be known as the Penn Neurobehavioral Test Battery. Data will be collected on crew members and mission support personnel.2. Acquire saliva samples to assay for cortisol levels, as a physiological measure of stress. Salivary cortisol data will be collected on crew members and mission support personnel.3. Acquire video of the face for assessing feasibility of optical computer recognition using the built in webcam in the laptop used for the cognitive performance tests.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2009.
Bibliography Type:	Description: (Last Updated: 03/24/2024)