Fiscal Year:	FY 2015	**Task Last Updated:**	FY 02/20/2015
PI Name:	Mollicone, Daniel Ph.D.		
Project Title:	Development of a Software and User Interface to Support Scenario Modeling of Astronaut Schedules to Aid in the Selection of Fatigue Countermeasures within the Behavioral Health and Performance Dashboard (BHP-DS)		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline-- Element/Subdiscipline:	NSBRI--Human Factors and Performance Team		
Joint Agency Name:		**TechPort:**	Yes
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	**Congressional District:**	2
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	Directed Research
Start Date:	11/01/2013	**End Date:**	10/31/2014
No. of Post Docs:	0	**No. of PhD Degrees:**	0
No. of PhD Candidates:	1	**No. of Master' Degrees:**	0
No. of Master's Candidates:	0	**No. of Bachelor's Degrees:**	0
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NSBRI
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NCC 9-58-HFP00004		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	This project integrated the Circadian Performance Simulation Software (CPSS) biomathematical model developed by the Harvard Biomathematical Modeling Unit (Dr. Elizabeth Klerman, Ph.D.) with the Behavioral Health and Performance Dashboard Software tool (BHP-DS) to support scenario modeling of astronaut schedules (inputs related to sleep, duty, and light exposure) to aid in the selection of fatigue countermeasures within the Behavioral Health and Performance Dashboard (BHP-DS). The BHP-DS was developed to address the need to track a variety of astronaut behavioral health indicators so that behavioral and performance issues can be detected and mitigated at an early stage. It is not intended to be used to automatically establish a diagnosis but instead provide a dashboard of behavioral health indicators placed within the context of behavioral health stressors. The target users of the BHP-DS are flight surgeons and Op Psy Personnel. All data used by the tool is encrypted and securely stored and accessible to approved NASA users (e.g., flight surgeons). User access to the BHP-DS is controlled by local user groups on the server and by the existing NASA active directory infrastructure (password protected). The BHP-DS was developed to be modular in design to support the implementation of countermeasures developed by other research groups in the NASA and National Space Biomedical Research Institute (NSBRI) community.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	The core technology for BHP-DS meets a compelling commercial need in the field of medical care delivery on Earth. BHP-DS will enable tracking of patient time series data in the context of factors that affect patient health and treatment. It will enhance the efficiency and effectiveness of medical care that is delivered remotely (e.g., rural areas, specialists serving a nation-wide patient base) and a medical care delivery care paradigm that involves one to many (single physician providing medical monitoring to large number of patients).
Task Progress:	We accomplished all stated objectives of this one-year project: (1) Develop engineering requirements for a software module and user interface to scenario modeling of astronaut schedules within the BHP-DS; (2) Develop user interface mockups; (3) Implement the software within the BHP-DS platform; (4) Develop a blueprint for future development.
Bibliography Type:	Description: (Last Updated: 02/23/2015)
Abstracts for Journals and Proceedings	Mollicone D, Stubna M, Kan KGW, Mott C, Basner M, Dinges DF, Pickard S. "Software system for real-time medical operational support on ISS." 2014 NASA Human Research Program Investigators' Workshop, Galveston, TX, February 12-13, 2014. 2014 NASA Human Research Program Investigators' Workshop, Galveston, TX, February 12-13, 2014. http://www.hou.usra.edu/meetings/hrp2014/pdf/3265.pdf , Feb-2014