Fiscal Year:	FY 2012	**Task Last Updated:**	FY 09/05/2012
PI Name:	Roma, Peter Ph.D.		
Project Title:	Field Test of a Simple, Rapid, and Objective Behavioral Assay of Group Cohesion in an Antarctic Space Analog 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) **Team**:Risk of Performance and Behavioral Health Decrements Due to Inadequate Cooperation, Coordination, Communication, and Psychosocial Adaptation within a Team		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	pete.roma@nasa.gov	**Fax:**	FY
PI Organization Type:	NASA CENTER	**Phone:**	
Organization Name:	KBR/NASA Johnson Space Center		
PI Address 1:	Behavioral Health & Performance Laboratory		
PI Address 2:	2101 NASA Parkway		
PI Web Page:			
City:	Houston	**State:**	TX
Zip Code:	77058	**Congressional District:**	36
Comments:			
Project Type:	Ground	**Solicitation / Funding Source:**	Directed Research
Start Date:	09/01/2011	**End Date:**	08/31/2013
No. of Post Docs:	0	**No. of PhD Degrees:**	0
No. of PhD Candidates:	0	**No. of Master' Degrees:**	1
No. of Master's Candidates:	0	**No. of Bachelor's Degrees:**	0
No. of Bachelor's Candidates:	1	**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-NBPF00008		
Performance Goal No.:			
Performance Goal Text:			
	The Johns Hopkins team has developed a simple, rapid, objective, and language-free assay of small-group behavioral dynamics. In cooperation with the European Space Agency (ESA), the team is testing this behavioral science technology during two consecutive 10-month winter-over periods at Concordia Station in Antarctica as an isolated, confined, and extreme (ICE) environment similar to what Astronaut crews will experience during long-duration exploratory missions. The primary aims/objectives for the project are to (1) assess operational acceptability and logistical feasibility of an objective group-level behavioral assay in an ICE environment, (2) validate the behavioral assay data against naturally occurring behaviors and subjective opinions relevant to group cohesion, and (3) inform next-generation software development based on user and operator feedback. This research can be used to enhance selection, composition, and objective monitoring of high-performance teams in extreme environments where group cohesion is		

Task Description:	essential to mission success. Despite the persistent efforts and remarkable professionalism of the Research MD responsible for carrying out all biomedical and behavioral research protocols, as of this submission (approximate half-way point of the winter), no behavioral or psychosocial data have been collected for our project or another group-level protocol from colleagues in the Netherlands. While this outcome may seem discouraging in terms of operational feasibility of team-level testing, note that in addition to our group-level testing, data collection for individual-level protocols (e.g., exercise, physiology, sleep) has been scattered and inconsistent at best both within and across individual Crew members. The acute cause for the poor data yield is a lack of Crew participation. Several potential underlying factors include crew participation and Concordia Station administrative support variability. Given the circumstances, the key findings thus far have been limited to our secondary goals for the project, specifically the broader issues of understanding the administrative and logistical processes of US-based Investigators conducting biobehavioral research at Concordia Station, the overarching importance of the relationship between Crew and management in operational settings, and empirically informing the return-on-investment analysis for prospective BHP research conducted at Concordia Station and other ICE space analog environments. For the coming year, we plan to continue our attempts to collect team-level behavioral and psychosocial data throughout the remainder of the 2012 winter-over period. If successful, the resulting data would not likely elucidate the process of developing group cohesion over time; however, concomitant questionnaire data may still yield insight on the predictive validity of our behavioral technology. In addition, given the extraordinary circumstances of the 2012 winter-over campaign, we have been invited to return to Concordia for the 2013 campaign.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	The heart of the research is to develop a simple, rapid, and objective language-free behavioral assay of cooperative propensity at the group level to serve as a complement to subjective questionnaire-based assessments at the individual level. Once fully developed, this technology could be used to inform the Crew selection, composition, and even training processes through novel but heuristically informative quantitative modeling of individual- and team-level "social personality" profiles. However, this technology would not have to be limited to applications within human space exploration, as any organization that relies on cooperation in high-performance and multi-national teams including military, medical/healthcare, athletics, business, and other settings could employ this emerging technology.
Task Progress:	During the past year of funding, we worked extensively and in close cooperation with our Austrian partners, Dutch colleagues, and other Investigators to purchase, organize, prepare, and test all hardware, software, accessories, and documentation necessary for a successful data collection campaign and to carefully integrate all research protocols into a single workflow. All equipment was successfully transferred and setup at Concordia Station. In fact, the 2012 Research MD informed the Principal Investigator that our TPT (Team Performance Task) study was the best prepared of all the research protocols in terms of equipment stability, documentation, clear instructions, data management procedures, etc. Despite lack of data thus far, Dr. Kumar is optimistic about the potential for some data collection in two 3-person teams (6 individuals) during the second half of the winter. Perhaps most encouraging is the opportunity to collect data again during the 2013 campaign, which will overlap with our second year of funding with nominal additional cost since the bulk of our 2012 preparations will easily rollover.
Bibliography Type:	Description: (Last Updated: 01/20/2025)
Articles in Peer-reviewed Journals	Hursh S, Roma P. "Behavioral Economics and Empirical Public Policy." J Exp Anal Behav. 2013 Jan;99(1):98-124. https://doi.org/10.1002/jeab.7 ; PMID: 23344991 , Jan-2013
Articles in Peer-reviewed Journals	Hursh SR, Roma PG. "Behavioral economics and the analysis of consumption and choice." Managerial and Decision Economics. 2016 Jun-Jul;37(4-5):224-38. http://dx.doi.org/10.1002/mde.2724 , Jun-2016
Articles in Peer-reviewed Journals	Roma PG, Hursh SR, Hudja S. "Hypothetical purchase task questionnaires for behavioral economic assessments of value and motivation." Managerial and Decision Economics. 2016 Jun-Jul;37(4-5):306-23. http://dx.doi.org/10.1002/mde.2718 , Jun-2016
Books/Book Chapters	Roma PG, Hursh SR, Hienz RD, Brinson ZS, Gasior ED, Brady JV. "Effects of autonomous mission management on crew performance, behavior, and physiology: Insights from ground-based experiments. Chapter 13." in "On Orbit and Beyond: Psychological Perspectives on Human Spaceflight." Ed. D.A. Vakoch. Berlin : Springer, 2013. p. 245-266. Space Technology Library Series; v. 29. https://doi.org/10.1007/978-3-642-30583-2_13 , Jan-2013
Significant Media Coverage	Livingston DM. "Neurobehavioral and psychosocial factors for long-duration spaceflight crew safety. Interview with Dr. Robert D. Hienz and Dr. Peter G. Roma." The Space Show (Radio Broadcast), June 2011., Jun-2011