

Fiscal Year:	FY 2009	Task Last Updated:	FY 09/01/2009
PI Name:	Catauro, Patricia M.S.		
Project Title:	Suited Contingency Ops Food		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Space Human Factors Engineering		
Joint Agency Name:	TechPort:	Yes	
Human Research Program Elements:	(1) SHFH :Space Human Factors & Habitability (archival in 2017)		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	77058	Congressional District: 22	
Comments:			
Project Type:	Ground	Solicitation / Funding Source:	Directed Research
Start Date:	10/01/2008	End Date:	09/30/2011
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		
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Flight Program:			
Flight Assignment:	NOTE: Start date changed to 10/01/2008 per M. Perchonok (was 10/01/2007)--5/2009		
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:			
Performance Goal No.:			
Performance Goal Text:	<p>NASA has a vision of returning to the moon by 2020. The Moon will be used as a testing ground for future missions to Mars. A vehicle capable of transporting crewmembers to the Moon and Mars is being developed under the Constellation Program. To explore in space, the cabin must provide a livable gaseous environment for the astronauts. In case of vehicle depressurization, a pressure suit system is required to supply oxygen for breathing and maintain pressure (NASW-4938). The purpose of this task is to provide the capability for nutrition consumption by a crewmember in a pressurized suit during unpressurized vehicle survival operations.</p> <p>The Suited Contingency Food System should provide the nutrient composition specified in HS6062 in per the Constellation Program Human Systems Integration Requirements (HSIR) document No: CxP 70024, section 3.10.3.1.2, In-Suit Nutrition during Unpressurized Vehicle Survival. The nutrition consumption capability would be needed during</p>		

Task Description:	<p>limited-duration pressurized survival, Intra-Vehicular Activity (IVA) or contingency Extra-Vehicular Activity (EVA), and extended duration pressurized survival for up to 120 hours. When unplanned cabin pressure reduction occurs and during long duration pressurized suited operations, the crew will need to consume nutrition to maintain enough strength to perform vehicle survival tasks. The design specifications placed upon the feeding system of the pressure suit were restrictive. Understanding the feeding system design limitations, requirements, relevant parameters, and guidelines through discussions with the pressurized suit team in the Advanced EVA Technology group will be the first task of this project. The second task will coordinate interface options with nutrition team to obtain the nutritional requirements for crewmember in a pressurized suit during unpressurized vehicle survival operations.</p> <p>After the establishment of selection criteria for the pressure suited food delivery system, commercially available food items will be identified. All potential food structures will be explored (e.g., liquid foods including true solution and emulsion, semi-solid foods including paste and gel, and solid foods including bar and bite-size foods, etc.)</p> <p>An evaluation system will be developed with consideration of the selection criteria and be divided into four areas: (1) nutrition evaluation, (2) safety and shelf-life evaluation, (3) systems interface evaluation, and (4) human factors evaluation. The commercially available food items will be screened accordingly. If potentially available food items are selected, further testing will be conducted to assure maximum suitability for a pressure suit feeding system.</p> <p>If insufficient commercial food items are available, new products will be developed to support astronauts in pressure-suited contingency operations. The developed Suited Contingency Operations Food System can be reapplied to Lunar EVA Operations.</p>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2009.
Bibliography Type:	Description: (Last Updated: 03/22/2018)