Fiscal Year:	FY 2014	**Task Last Updated:**	FY 09/30/2013
PI Name:	Glass, John M.S.		
Project Title:	Suited Contingency Ops Food - 2		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Space Human Factors Engineering		
Joint Agency Name:		**TechPort:**	No
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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PI Organization Type:	NASA CENTER	**Phone:**	281-283-6200
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PI Web Page:			
City:	Houston	**State:**	TX
Zip Code:	77058	**Congressional District:**	22
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	Directed Research
Start Date:	10/13/2012	**End Date:**	10/01/2013
No. of Post Docs:	0	**No. of PhD Degrees:**	0
No. of PhD Candidates:	0	**No. of Master' Degrees:**	0
No. of Master's Candidates:	1	**No. of Bachelor's Degrees:**	1
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NASA JSC
Contact Monitor:	Douglas, Grace	**Contact Phone:**	
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Flight Program:			
Flight Assignment:	NOTE: Gap changes per IRP Rev E (Ed., 3/19/14) NOTE: period of performance information updated per M. Canga/JSC (previously listed as 6/18/2012-9/30/2013)--Ed., 7/2/13		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Monica, Leong (Lockheed Martin)		
Grant/Contract No.:	Directed Research		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Aims: 1. To develop food product parameters to meet nutritional, acceptability, stability, and suit interface criteria. 2. To test several concepts for dispensing liquid through a feed port into a pressurized suit. AFT will receive energy requirements and nutritional requirements from HHC (Nutritional Biochemistry Laboratory). The food parameters that enable compatibility with the in-suit feeding system will be defined by interfacing with Crew Survival Systems (CSS).
Rationale for HRP Directed Research:	This research is directed because it contains highly constrained research, which requires focused and constrained data gathering and analysis that is more appropriately obtained through a non-competitive proposal.
Research Impact/Earth Benefits:	
Task Progress:	In a contingency cabin depressurization event, it is expected that crewmembers would be in a pressurized suit for up to 144 hours, requiring nutrition to be safely delivered against a pressure differential of 4 psi. The Advanced Food Technology (AFT) group sought to develop both a prototype fluid delivery system that would overcome the pressure differential and guidelines for a nutritional beverage compatible with the delivery system. Two prototypes were developed and analyzed. The bag-in-bag (BiB) prototype, designed to equalize the suit pressure with the beverage pouch and enable a crewmember to drink normally, was operated successfully in both vacuum chamber and suited subject tests. The Boa restrainer pouch, designed to provide mechanical leverage to overcome the pressure differential, was not successful, and recommendations for improved performance have been offered. Guidelines for developing contingency beverage prototypes, including viscosity and rehydration properties, were compiled based on their compatibility with the delivery hardware. Contingency beverage shelf life predictions were calculated based on generated vapor sorption isotherm curves. Evaluation results and food product parameters have the potential to be used to improve future prototype designs and develop complete nutritional beverages for contingency events and extended EVAs.
Bibliography Type:	Description: (Last Updated:)