Fiscal Year:	FY 2007	**Task Last Updated:**	FY 10/11/2007
PI Name:	Koscheyev, Victor S Ph.D.		
Project Title:	Test and Evaluation of Liquid Cooling Garments		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Operational and clinical research		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **EVA**:Risk of Injury and Compromised Performance Due to EVA Operations		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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PI Organization Type:	UNIVERSITY	**Phone:**	612-625-8827
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PI Web Page:	http://physiology.med.umn.edu/		
City:	Minneapolis	**State:**	MN
Zip Code:	55455	**Congressional District:**	5
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	Directed Research
Start Date:	06/01/2007	**End Date:**	03/31/2008
No. of Post Docs:	1	**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
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:	NOTE: Original end date was 12/31/2007; Received NCE to 3/31/2008 per PI (12/07)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Gloria, Leon (University of Minnesota)		
Grant/Contract No.:	NNX07AI90A		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	The aim of this research is to compare the physiological functioning and subjective comfort and thermal perception of subjects while donned in each of three liquid cooling garments and in two different environmental chamber conditions. Four males and four females between the ages of 25 and 45 will participate in this study. The liquid cooling garments evaluated are the Minnesota Advanced Cooling Suit (MACS-Delphi), the Russian Orlan, and the NASA liquid cooling/ventilating garment (LCVG). Subjects will be tested on different days in environmental chamber conditions set at 1.24 degrees C temperature, 22% humidity; and 2.35 degrees C, 22% humidity. Each session consists of stages of rest and walking on a treadmill, following the standard NASA exercise protocol. Skin and core temperature, energy expenditure, heart rate, sweat production, and ratings of physical comfort, comfort of specific body area, and thermal perceptions will be measured throughout each session. The optimal features of each of the garments will be identified to provide information on the ability of each garment to maintain core temperature and comfort under intensive physical		

	exertion.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New award for FY2007.
Bibliography Type:	Description: (Last Updated: 02/07/2014)