Fiscal Year:	FY 2022	**Task Last Updated:**	FY 12/12/2022
PI Name:	Lewandowski, Beth Ph.D.		
Project Title:	Tempus ALS ISS Technology Demonstration		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **ExMC**:Exploration Medical Capabilities		
Human Research Program Risks:	(1) **Medical Conditions**:Risk of Adverse Health Outcomes and Decrements in Performance Due to Medical Conditions that occur in Mission, as well as Long Term Health Outcomes Due to Mission Exposures (IRP Rev M)		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	44135	**Congressional District:**	9
Comments:			
Project Type:	FLIGHT	**Solicitation / Funding Source:**	Directed Research
Start Date:	08/08/2022	**End Date:**	09/30/2024
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
Contact Monitor:	Lehnhardt, Kris	**Contact Phone:**	281.244.0524
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Lehnhardt, Kris M.D. (NASA Johnson Space Center) Easter, Benjamin M.D. (NASA Johnson Space Center) Suresh, Rahul M.D. (NASA Johnson Space Center) Thompson, Moriah M.D. (NASA Johnson Space Center)		
Grant/Contract No.:	Directed Research		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The aim of this project is to evaluate the use of the Tempus Advanced Life Support (ALS) device in the spaceflight environment: • In collaboration with the European Space Agency (ESA), Phase 1 entails using the Tempus ALS device, compared to current International Space Station (ISS) medical devices, for the completion of Periodic Health Status exams and ISS medical contingency drills for 6 crewmembers (ESA = 2, NASA = 4), in order to achieve ESA's test objectives as described in the ESA Tempus ALS Technology Demonstration Activity Requirements Document (ARD)1. • NASA-led Phase 2 of the demonstration will entail Exploration Medical Capability (ExMC) and the Exploration Medical Integrated Product Team (XMIPT) working together to demonstrate the use of Tempus ALS on the ISS as part of progressively Earth-Independent Medical Operations (EIMO) through the execution of onboard medical simulations that emphasize crew autonomy during exploration medical care. The Tempus ALS is a multifunctional medical device with capabilities that include vital sign collection and monitoring, communications to enable telemedicine, interfaces with electronic health records, ultrasound, video laryngoscopy, and defibrillation. Tempus for ISS project activities will include evaluation of the usability of the Tempus ALS in a spaceflight environment, its functionality during the diagnosis and treatment of simulated medical conditions, and the increased onboard capabilities that it can provide when operated autonomously. The project results will be used to answer the question: Is the Tempus ALS a good candidate for inclusion within spaceflight medical system operations on exploration missions? For this project, simulations of one or more medical contingency scenarios will be executed and ISS astronauts will be required to follow and perform the NASA and ESA developed medical procedures necessary for diagnosing and treating the medical emergency. The astronauts will be required to use several of the capabilities of the Tempus ALS device while performing these procedures. The astronauts will perform the procedures under varying levels of autonomy, including with and without communication delays and with different types of procedural guidance.
Rationale for HRP Directed Research:	This research is directed because it contains highly constrained research. Currently aboard the International Space Station (ISS), NASA has the ability to perform in-flight medical vital signs monitoring, in-flight imaging, and Periodic Health Status exams with a suite of medical devices and techniques. On the ISS, these medical procedures are currently accomplished with reliance on the Flight and Medical Operations teams on the ground. For long-duration space missions, mass, power, and volume requirements for medical devices will be increasingly limited. Further, with increased distance, the Earth-Independent Medical Operations (EIMO) capability will be a cornerstone of the provision of adequate medical care during exploration missions beyond low-Earth orbit (BLEO). There is a need to identify and evaluate medical devices that will be amenable to the EIMO construct.
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2022.
Bibliography Type:	Description: (Last Updated: 03/01/2018)