Fiscal Year:	FY 2009	**Task Last Updated:**	FY 06/22/2009
PI Name:	Czirr, John B Ph.D.		
Project Title:	Spectroscopic Dosimeter		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Radiation health		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **SR**:Space Radiation		
Human Research Program Risks:	(1) **ARS**:Risk of Acute Radiation Syndromes Due to Solar Particle Events (SPEs) (2) **Cancer**:Risk of Radiation Carcinogenesis (3) **CNS**:Risk of Acute (In-flight) and Late Central Nervous System Effects from Radiation Exposure (4) **Degen**:Risk of Cardiovascular Disease and Other Degenerative Tissue Effects From Radiation Exposure and Secondary Spaceflight Stressors		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	bart.czirr@missionsupport.us	**Fax:**	FY
PI Organization Type:	INDUSTRY	**Phone:**	(801) 374-6722
Organization Name:	Merrill Corporation of Utah, dba MSI Photogenics		
PI Address 1:	515 East 1860 South		
PI Address 2:			
PI Web Page:			
City:	Provo	**State:**	UT
Zip Code:	84606-7312	**Congressional District:**	3
Comments:			
Project Type:	Ground	**Solicitation / Funding Source:**	SBIR Phase II
Start Date:	02/19/2009	**End Date:**	12/31/2010
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:	Cucinott1a, Francis	**Contact Phone:**	281-483-0968
Contact Email:	noaccess@nasa.gov		
Flight Program:			
Flight Assignment:	NOTE: End date changed to 12/31/2010 (previously 6/18/2010), per S. Krenek/JSC (7/2010)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NNX09CA21C		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Analysis of Phase I test data demonstrates that the Photogenics Spectroscopic Dosimeter will detect neutron energies from 0.8 up to 600 MeV. The detector efficiencies in the energy region of interest to NASA of 0.5 to 150 MeV were predicted by MCNP-X models. These models were partially confirmed by the tests at the EAL and LANSCE, with a high confidence in the data for the 1-14 MeV range and a confirmation of the detector's spectroscopic capabilities between 15-150 MeV. Further analysis of the high energy data will be performed in Phase II. Using the detection efficiencies determined Phase I and the IRCP74 damage coefficients, doses have been calculated for the neutron fluxes encountered in the test facilities. During Phase II a full-scale working model of the spectroscopic dosimeter will be fabricated and tested. POTENTIAL NASA COMMERCIAL APPLICATIONS: NASA is seeking improved neutron spectroscopy to enhance its characterization of the space environment and has also identified a need for improved accuracy in the estimate of neutron dose experienced by astronauts on long duration space missions.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	The NASA version of the dosimeter can be redesigned for use in radiation safety monitoring at a wide variety of facilities concerned with potential radiation hazards, i.e. laboratories, university research facilities, and private nuclear power plants.
Task Progress:	New project for FY2009. Reporting not required for this SBIR Phase 2 project.
Bibliography Type:	Description: (Last Updated:)