

Justin Hogan  
January 26, 2012  
MSU – Payload 04

Dr. Gregory Guzik  
LSU HASP Program

**Re: Monthly Status Report – January 2012**

This month our team was excited to learn of our acceptance for participation in the HASP program. We have reviewed the Payload Summary document and have made response to the design revisions the highest priority. Before acceptance, our efforts were focused on refining the design requirements for the FPGA circuit card assembly (CCA). Of particular interest to this effort was the definition of the voltage conversion requirements of the payload. We currently anticipate conversion to the following voltages: +3V, -3V, +3.3V, +2.5V, and +1.2V using high-efficiency switching voltage regulators. Two voltage levels used by the radiation sensor circuitry remain to be determined following cyclotron testing. January work performed included:

Justin Hogan – Worked on the FPGA CCA design including drawing CCA-level block diagrams, FPGA parts study, I/O definition, and voltage level requirements. Created a system-level signal list for defining signal sources, destinations, connector pin-outs, and payload stack configuration. Currently finalizing FPGA selection and system architecture definition.

Raymond Weber – Began studying the communications interface requirements, development of the CIP interface emulator using MATLAB.

Todd Buerkle – Manufactured the newest generation of radiation sensors, which will be flown on the payload. Completed the design and population of the radiation sensor CCAs. Re-designed a sensor package board for mounting compatibility with flight-version of sensor CCAs.

Jennifer Hane – No tasks currently assigned. Jennifer's involvement will ramp up as we begin porting her radiation tolerant computer architecture to a new FPGA.

Lizi Clem – Just joined the team, and will begin contributing to the design effort in February.

Adrien Lambert – No tasks currently assigned. Adrien has been helping with system CAD drawings on an as-needed basis.

## Issues encountered during payload design and development

- A problem resulting from radiation sensor CCA design changes caused mechanical interference with the mounting of the radiation sensor to the sensor CCA. The problem was solved through a design change to the sensor package.

## Milestones Achieved

- Fabrication of the radiation sensors to be used on the payload was completed.
- System-level signal list detailing connector pin-outs generated.
- Definition of FPGA CCA required voltages.

## Current team members and leaders

<b>Name</b>	<b>Team Role</b>	<b>E-mail</b>	<b>Phone</b>
Dr. Brock LaMeres	Principal Faculty Advisor	lameres@ece.montana.edu	(406) 994-5987
Dr. Todd Kaiser	Faculty Advisor	tjkaiser@ee.montana.edu	(406) 994-7276
Justin Hogan	Principal Team Lead	justin.hogan@msu.montana.edu	(505) 977-3844
Ray Weber	Principal Team	raymond.weber@msu.montana.edu	(406) 994-5975
Jennifer Hane	Team Member	jennifer.hane@msu.montana.edu	
Todd Buerkle	Team Member	toddbuerkle@gmail.com	
Adrien Lambert	Team Member	adrien.lambert@msu.montana.edu	
Lizi Clem	Team Member	Lizi.clem@gmail.com	