List of Presentations

Title	Topic	Organization
Active Pixel	Imaging Devices	JPL
High Speed ADC	High Speed & Bandwidth	NRL
High Speed ADC	High Speed & Bandwidth	Aerospace
Advanced Solar Cells	Power Generation	NRL
Microprocessor	On-Board Processing	NRL
ULP-Solid State Recorder	Low Power Applications	UNM
ULP-Microprocessor	Low Power Applications	UNM
Data Path Pipeline	On-Board Processing	UNM
High Speed RTD/HEMT	High Speed & Bandwidth	NRL
Fault Tolerant Computing	On-Board Processing	NRL

Summary of Microelectronics Session

- Total of 11 Presentations Covering Multiple Topics:
    - Higher speed and Bandwidth (4/11)
    - On-Board Processing (5/11)
    - Low Power Applications (5/11)
    - Power Generation (1/11)
    - Imaging Devices (1/11)
    - Photonics (0/11)
    - MEMS (0/11)
- Common Themes
    - Verification of Ground Test Protocols
    - Validation of Models

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):
    General Purpose Processor FPGA & FT Technology
	Title:
	    Flight Testbed for General Purpose Computing and Fault Tolerance Technology

Background: No more than 5 sentences here…. ARGOS Follow on using new hardware and new fault tolerance software	
Description of Technology Requirement for On-Orbit Testing: No more than 5 sentences here…. Be able to run multiple processors for prolonged periods with ability to uplink code.	

Timeframe Technology is Needed:
    NOW
 	
Timeframe Technology Maturity:
    Evolving in responses to new Processors
	Benefiting Mission(s):
	
	Benefits to LWS Applications Areas:

Flight Requirements: *(If known)* Orbit: Flexible Altitude: Inclination: Power: 10 W Weight (kg): Few kg. (2 boards) Size (cm): Telemetry: Environment Measurement:	Name: Kent Wood Phone: 202-767-2506 Email: Organization: NRL Code 7621

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):
    ADC/DAC
	Title:
	    High Speed ADC/DAC

Background: No more than 5 sentences here…. High and width ADC/DAC Measurement Techniques & Model Verification Utilize SiGe, GaAs, InP etc.	
Description of Technology Requirement for On-Orbit Testing: **No more than 5 sentences here….** Availability of adequate power Change Mode/Frequency of Operation Variable Inputs	

Timeframe Technology is Needed:
    NOW
 	
Timeframe Technology Maturity:
    Now – 4yrs
	Benefiting Mission(s):
	
	Benefits to LWS Applications Areas:

Flight Requirements: *(If known)* Orbit: Variable – High Radiation Environment Altitude: Go Through Belts Inclination: Power: 10W/device Weight (kg): 400gms Size (cm): 10x10 cm Telemetry: Not defined. Environment Measurement: Temp., Proton spectrum & dose LET Spectrum, Dose Rate, etc.	**Name: Art Campbell** **Phone: 202-767-9043** **Email:** **Organization: NRL**

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):	Title: Advanced Solar Cells
Background: No more than 5 sentences here…. Amorphous Si, Multi-junction, Thin Films High power output, high voltage, light weight, low cost	
Description of Technology Requirement for On-Orbit Testing: No more than 5 sentences here…. Sun Exposure	
Timeframe Technology is Needed: 2-5 yrs **Timeframe Technology Maturity:** 5 yrs	**Benefiting Mission(s):** **Benefits to LWS Applications Areas:**
Flight Requirements: *(If known)* Orbit: Variable – High Radiation Environment Altitude: Go Through Belts Inclination: Power: Zero Weight (kg): unspecified Size (cm): Telemetry: Environment Measurement: Temp., Proton spectrum & Dose LET Spectrum, Dose Rate, etc.	**Name:** Robert Walters **Phone:** 202-767-2533 **Email:** **Organization:** NRL Code 6820

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):	Title:
Microprocessor	Microprocessor Test Chip

Background: No more than 5 sentences here….
Custom Design, MOSIS Run, Designed to investigate mechanisms of error propagation
Characterization and validation of ground test data and models

Description of Technology Requirement for On-Orbit Testing:
No more than 5 sentences here….
Radiation environment

Timeframe Technology is Needed:	Benefiting Mission(s):
NOW	
Timeframe Technology Maturity:	Benefits to LWS Applications Areas:
2yrs	

Flight Requirements: *(If known)*	
Orbit: Variable – High Radiation Environment	Name: Art Campbell / Kenny Clarck
Altitude: Go through belts	
Inclination:	Phone: 202-767-9043
Power: 2 W	
Weight (kg): 200-400 gms	Email:
Size (cm): 10x10 cm	
Telemetry:	Organization: NRL
Environment Measurement: Temp., Proton spectrum & Dose LET Spectrum, Dose Rate, etc…	

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):
 	
    ULP/CMOS
	Title:
	
	    Ultra Low Power Electronics

Background: No more than 5 sentences here…. Ultra Low Power, Radiation tolerant, Solid State Recorder – SRAM Design w/ Error Correction Microprocessor Suite – 8051, C50, Data Path Pipeline Image Processor	
Description of Technology Requirement for On-Orbit Testing: **No more than 5 sentences here….** Image data source to store and dump image data	
Timeframe Technology is Needed: Timeframe Technology Maturity:	Benefiting Mission(s): ALL LWS missions Benefits to LWS Applications Areas: ALL
Flight Requirements: *(If known)* Orbit: Unspecified Altitude: Inclination: Power: Weight (kg): Size (cm): Telemetry: Environment Measurement:	Name: Gary Maki Phone: 505-272-7050 Email: Organization: University of New Mexico

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):
    High Speed Logic
	Title:
	    High Speed RTD/HEMT

Background: No more than 5 sentences here…. Low Power, Multilevel High Speed Logic SEU comparison of hardened and unhardened parts InP based, In As based	

Description of Technology Requirement for On-Orbit Testing: No more than 5 sentences here…. Undefined	

Timeframe Technology is Needed:
    2-5 yrs
 	
Timeframe Technology Maturity:
    2-6 yrs
	Benefiting Mission(s):
	
	Benefits to LWS Applications Areas:

Flight Requirements: *(If known)* Orbit: Variable – High Radiation Environment Altitude: Go Through Belts Inclination: Power: 2 W Weight (kg): 200-400 gms Size (cm): 10x10 cm Telemetry: Environment Measurement:	Name: Art Campbell/Dale McMorrow/B. Weaver Phone: 202-767-8043 Email: Organization: NRL Code 6820

Living with a Star: Space Environment Testbed Program Spacecraft Microelectronics Technology

Type of Microelectronic(s):
    General Purpose Processor FPGA & FT Technology
	Title:
	    Flight Testbed for General Purpose Computing and Fault Tolerance Technology

Background: No more than 5 sentences here….
ARGOS Follow on using new hardware and new fault tolerance software

Description of Technology Requirement for On-Orbit Testing:
No more than 5 sentences here….
Be able to run multiple processors for prolonged periods with ability to uplink code.

Timeframe Technology is Needed:
    NOW
 	
Timeframe Technology Maturity:
    Evolving in responses to new Processors
	Benefiting Mission(s): ALL LWS missions
	
	Benefits to LWS Applications Areas: ALL

Flight Requirements: *(If known)* Orbit: Flexible Altitude: Inclination: Power: 10 W Weight (kg): Few kg. (2 boards) Size (cm): Telemetry: Environment Measurement:	Name: Kent Wood Phone: 202-767-2506 Email: Organization: NRL Code 7621