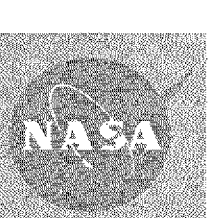

NASA Presentation to TechAmerica G12 Committee

Tempe, Arizona

February 15, 2011

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Counterfeit

- FY11 NASA Authorization Bill S.3729 –
  - Express language to address counterfeit electronic parts
- "The Administrator shall plan, develop, and implement a program …"
- Requires:
  - Coordination with other federal agencies
  - Database to document and track incidents (GIDEP?)
  - Relevant training for selection, procurement etc.
  - Public release of information on incidents
  - "Amend existing acquisition and procurement policy to purchase electronic parts from trusted or approved manufacturers"
  - A list and criteria to support previous bullet
- Administrator to report out in one year

NASA Action

- A team was assembled to implement the requirements
- Emphasis is electronic parts but vision is broad to include materials and software
- Oversight from the Intellectual Property Enforcement Coordinator (IPEC)
- Quickly established cooperative effort with DoD group pursuing similar objectives – the Government Wide Counterfeit Parts (GWCP) Working Group
- Exchanged experiences
- NASA has strong training initiative, DoD has implemented an Item Unique Identification (IUID) system for critical items and has greater experience
- Team agreed that broader government participation and insight into industry perceptions was needed
- So …

Government Wide Counterfeit Parts (GWCP) Working Group

A meeting was held in Rosslyn VA on January 19, for general information exchange

- A broad spectrum of government agencies and industry associations were invited to participate, about 50 people did
- Content consisted of a general overview and then separate, focused discussions on:
  - » Traceability and Reporting: Rob Leibrandt (DoD) and Gerry Brown (DoD)
  - » Standards: Syd Pope (DoD) and Mike Sampson (NASA)
  - » Procurement : LeAntha Sumpter (DoD) and Mike Powers (NASA)
- It was a very productive meeting, with a good exchange of ideas and experiences
- The GWCP will be expanded to include a number of the participants such as DoE, FAA, NRO and GSA

The next GWCP meeting is this week

Interim GIDEP Policy for Suspect Counterfeits

- "Reporting Suspect Counterfeit Parts and Materials"
  - Issued 9/15/10, Expired 12/15/10
- "This guidance is being provided to facilitate and encourage the reporting of suspect counterfeits …"
  - Eliminates requirement to name supplier of the suspect counterfeit item in Alerts and Problem Advisories, avoiding legal concerns
- An initial list of 148 Alerts from one submitter was captured in a single NASA Advisory, NA-JSC-2011-01, to reduce "closed loop" reporting impact to NASA
  - 121/148 have been released by GIDEP
  - 137 Alerts issued by other submitters took advantage of the policy
- NASA has provided feedback to GIDEP, recommending this policy not be permanently adopted.
  - Recommends identification of the supplier and suggests allowing access to that information by government only

General MIL Specification Issues

- Sample sizes – many are not statistically meaningful
- Clear rules for periodic testing:
  - When to test – every six months ± ?
  - What to test – representative sample?
  - What to do if test failed
    - » How quickly to tell the Qualifying Activity
    - » What to quarantine
    - » Options
  - Current specification language is vague and ambiguous
- Outgoing Quality Assessment (ppm)
  - Victim of Acquisition Reform – no mention now in MIL-STD-961
  - Passive specs require calculation but no limit
  - M38535 mentions it, lists JESD 16 as reference document - has NO requirement
  - One QPL supplier told NASA that we should not expect all parts we receive to be conforming!

Radiation Highlights FY10

- Low proton energy testing is real and has LOTS of people nervous
  - Big questions still exist on
    - » How to test
    - » How to predict
    - » How to protect
  - Keep in mind: if you harden for heavy ions, you might well be okay for this issue
- Cryogenic latchup
  - Once thought impossible to happen, has now been proved to be real
  - How widespread is the question and if there's consistency on temperature range.
    - » The sky's not falling, but need to have data and not hand wave…

FY11 Rad – Details

RHA	Devices	Technology - CMOS	Technology - Other	Sensors	Modeling
Low proton energy test guide	FPGAs	IBM	SiC	Cryo SEL - ROICS	MOSFET - SEGR
CMOS Dose Rate - TID	FPGA - SIRF (TBD)	TI	SiGE - IBM 9hp	IR Arrays	CRÈME MC Validation
IR Array Lessons Learned	FPGA - RTAX4000DSP	INTEL Processors	SiGe - TI	TBD	32nm CMOS
FPGA Standard Test	ADCs		SiGe - JAZZ		TBD
ADC Standard Test	Structured ASICs	JAZZ	SiGe - other		
NVM Standard Test	FLASH	ST Micro	GaAs HEXFETs		
NVM Combined Effects	Alternate NVM	Cypress			
DDR2 Combined Effects	DDR2/3	Lyric Semiconductor			
Cryo SEL Guide	Power MOSFETs	ON Semiconductor			
FLASH - current spike anomaly	POLs				
Ultra-ELDRS	DC-DC Converters				
	MAESTRO				

Not a complete list

Class Y Status

- G12 Task Group TG2010-01 was formed Jan. 2010
- Notes from the Columbus meeting
  - Large I/O hermetic packages will require substantial investment
  - Majority suggested defining Class Y as items that are of ceramic, non-hermetic construction
  - A simplified approach was adopted
  - Lots of hard work since that meeting is close to producing a draft for coordination
- Tempe meeting (Tuesday, 2-15-11)
  - Discussion of requirements for ceramic based non-hermetic parts
  - Organic based parts can be worked once the above QML standard is in place
- Question: what is a space flight part?
  - LGA configuration (yes, because it goes thru screening)
  - CGA configuration (debatable, because it is not screened at present)
- Continue development of Class Y

NASA Issues in Process - Status

Package case isolation tests needed for 750 and 883?

- Draft test method 1081 Package case isolation test under review for draft MIL-STD-750F
- No package isolation test method currently in or under development for MIL-STD-883

750 Internal Visual Inspection enhancement

- Needed to address die touching the post or bridging insulation
- Comments have been submitted to Defense Logistic Agency Land and Maritime for MIL-STD-750 test methods 2069 and 2072

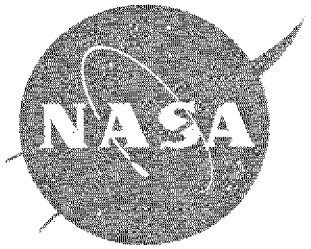
Issues

- **Consistent ESD Control conditions are required across actives commodities, test methods, humidity limits etc.**

Commodity/concern	MIL-PRF-19500	MIL-PRF-38534	MIL-PRF-38535
% Relative humidity (RH)	30% RH minimum per MIL-PRF-19500	N/A	40% RH recommended by JESD 625A
ESD Control and Handling requirements	JESD 625A or equivalent	N/A	JESD 625A or equivalent
ESD Test Method	MIL-STD-750/TM1020	MIL-STD-883/TM3015	MIL-STD-883/TM3015

Film versus Real Time Radiography Cost/Benefit

Film Radiography		Real Time Radiography	
Pro	Con	Pro	Con
Initial equipment cost is less	Slower due to development time,	Immediate preview for judgement of image quality	Higher initial equipment cost,
More personnel trained in the use of film technology	Less resolution, Recurring Film and chemical costs Image storage and retrieval issues	Storage media easy to use on server, searchable by part number, manufacturer. Etc.	Less training and specifications available
More specifications for film radiography	Film storage in refrigerator, More handling required increasing risk of part damage	Analytical software available for pass fail criteria for lid seal voids, can be combined with CT Tomography for die attach integrity	
	Chemical disposal issues	Less handling, reduction of batch processing times	


NASA