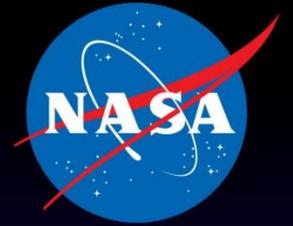


National Aeronautics and
Space Administration



Guiding Innovation Through Test & Analysis

NASA JSC Approach

Public Release Notice

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Proof of Concept Through Design



- Benefits of early testing and analysis:
 - Testing materials, components, systems early in the process can validate a concept and possibly shorten the design cycle.
 - Braided Kevlar for wheel spokes
 - Copper coated aluminum wire
 - New type of fuses
 - Improve probability of success
 - Improve reliability and life of product
 - Improve safety

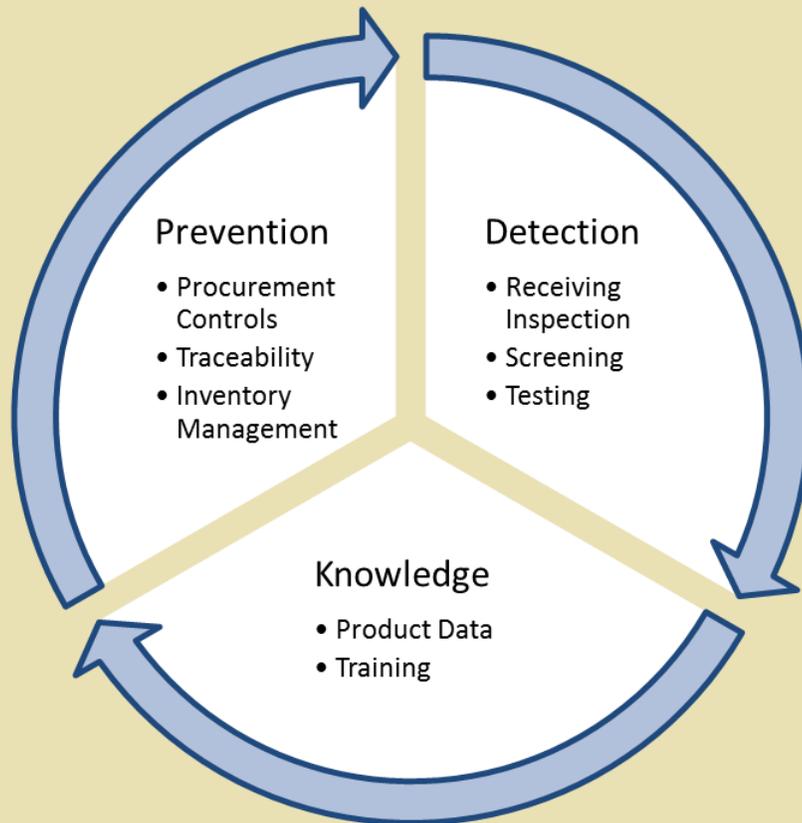


Qualification of Product



- Quality of materials, components, parts, etc. is critical for qualification units to reduce number of variables during test/analysis:
 - Design flaws
 - Environmental conditions exceed expectations
 - Loads higher than predicted
 - Manufacturing or construction flaws

Versus failure of a component which could prove impossible to isolate.

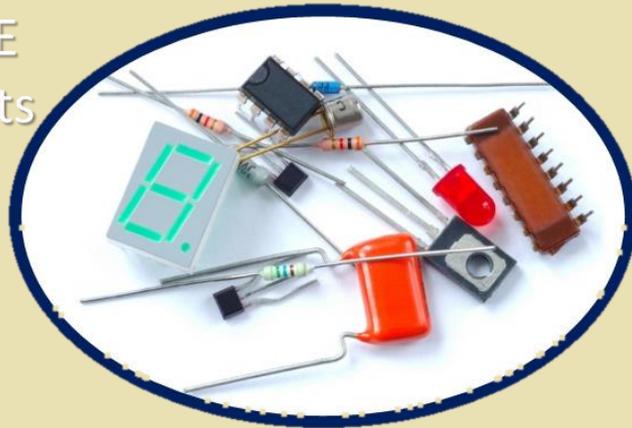


- **Prevention**
 - Efforts to assure good parts/products are procured from reputable vendors
 - Most important aspect of product quality
- **Detection**
 - Efforts to verify authenticity of parts/products
 - Additional investigation (usually destructive) can be performed if discrepant characteristics are noted
- **Knowledge**
 - Efforts to share information on non-conforming product
 - Efforts to train employees on how to identify discrepant characteristics and/or suspicious attributes indicative of counterfeiting



Product lines tested and inspected

EEE
Parts



Fasteners & Mechanical Parts



Gases



Raw Materials





Concerns with today's supply chain

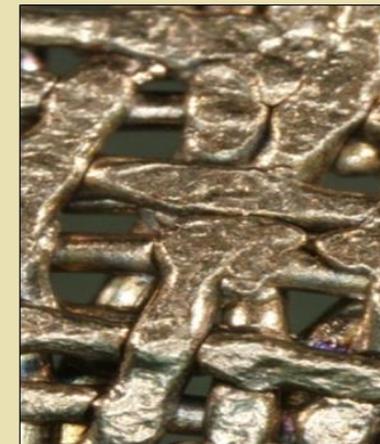


- Industry-wide, global problem. “Since 1982, the global trade in illegitimate goods has increased from \$5.5 billion to approximately \$600 billion annually. Approximately 5%-7% of the world trade is in counterfeit goods.” Source: International Anti-Counterfeiting Coalition (IACC)
- “Counterfeiting and piracy cost the U.S. economy between \$200-\$250 billion per year, and has contributed to the loss of approximately 750,000 American jobs.” Source: FBI estimates.
- Current value of counterfeit components is between \$1 and \$10 billion annually. Most counterfeit cases are not documented – volume too large.
- “U.S. companies suffer \$9 billion in trade losses due to international copyright piracy. Counterfeiting poses a threat to global health and safety. Counterfeiting poses a threat to global health and safety.” Source: IACC
- ERAI, Inc. receives ~200 suspect counterfeit part complaints/month and confirmed more than 2800 brokers selling counterfeit components.
 - Source: SAE International

Product Lines – Fasteners & Mechanical Parts



- NASA Receiving Inspection and Test Facility (RITF) tests lots of fasteners for NASA, contractors, and other corporations
- 2014 – 329 Fastener Jobs
 - 7 rejections – Failed fastener Tensile
 - 2 rejections – Failed fastener Hardness
 - 5 rejections – Failed fastener OES (Chemistry)
- 2015 - 164 Fastener Jobs (YTD)
 - 2 rejections – Failed fastener Tensile
 - 2 rejections – Failed fastener OES (Chemistry)





RITF Capabilities – Electrical and Mechanical



The RITF's screening services subject hardware, parts, components, and raw materials to a rigorous regimen of testing to identify and avoid use of substandard parts and materials as well as counterfeits.

- Electronic component screening
 - A regimen of testing is used to ensure that parts and components meet the respective specifications for which they were procured.
- Counterfeit parts identification
 - An expanded regimen of testing and non-destructive evaluation is required to disposition suspect parts that are flagged as being potentially counterfeit.
- Fastener acceptance screening
 - A regimen of testing is used to screen fasteners to ensure they perform according to the specifications for which they were procured.
- FOD and loose particle screening
 - A screening method to identify devices with loose particles that could become dislodged and short out the device.
- Raw material validation (metallics)
 - A screening regimen used to validate that metallic materials meet requirements of their procurement specifications.
- Wire and cable acceptance screening
 - A regimen of testing is used to screen wire and its insulation to assess performance in extreme environments.



How to Utilize the RITF



The RITF testing and analysis capabilities are available to commercial companies and other government agencies through a third party intermediary – BayTech and through independent Space Act Agreements (SAA)

- BayTech holds an existing (SAA) with NASA
 - Agreements can be established in a few days
 - Turnaround times for testing and analysis minimized
- Commercial companies can establish their own SAA with NASA for partnerships allowing the use of the RITF
- Existing agreements providing screening and failure analysis for:
 - Oil and Gas Industry
 - Government Regulatory Agency
 - Chemical Industry
 - Electronics Industry

To schedule a tour of the RITF or to discuss needs and possible partnering opportunities, please contact the following:

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