



Counterfeit Electronic Parts

Leadership ViTS Meeting

May 2012

Terry Wilcutt

Chief, Safety and Mission Assurance

Wilson B. Harkins

Deputy Chief, Safety and Mission Assurance



This and previous presentations are archived at
nsc.nasa.gov/articles/SFCS

Definitions

- Electronics Manufacturing Industry

- Substitutes or unauthorized copies
- A part in which the materials used or its performance has changed without notice
- A substandard component misrepresented by the supplier

- Electronics Distributor Industry

- Items that are produced or distributed in violation of intellectual property rights, copyrights, or trademark laws
- Items that are deliberately altered in such a way as to misrepresent the actual quality of the item with intent to defraud or deceive the purchaser.
 - Any information omitted or means taken to mislead the purchaser to believe that such items are authentic or lawful

- US Department of Energy

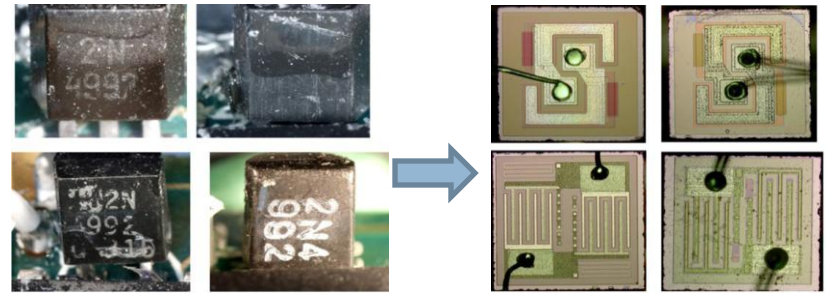
- A copy or substitute without legal right or authority to do so, or one whose material, performance, or characteristics are knowingly misrepresented

- EIA/G-12 Committee

- An item whose identity or pedigree has been deliberately altered or misrepresented by its supplier

Where They Come From

- Parts may be re-topped and/or re-marked to disguise parts differing from those offered by the original part manufacturer
- Defective parts scrapped by the original manufacture may be salvaged and sold as compliant parts
- Previously used parts may be salvaged from scrapped assemblies and resold as new
- Refurbished devices represented as new product



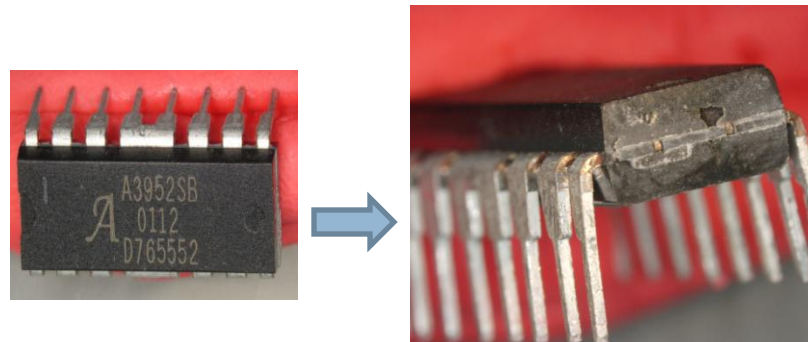
Silicon bilateral switches used in ejection seat hardware



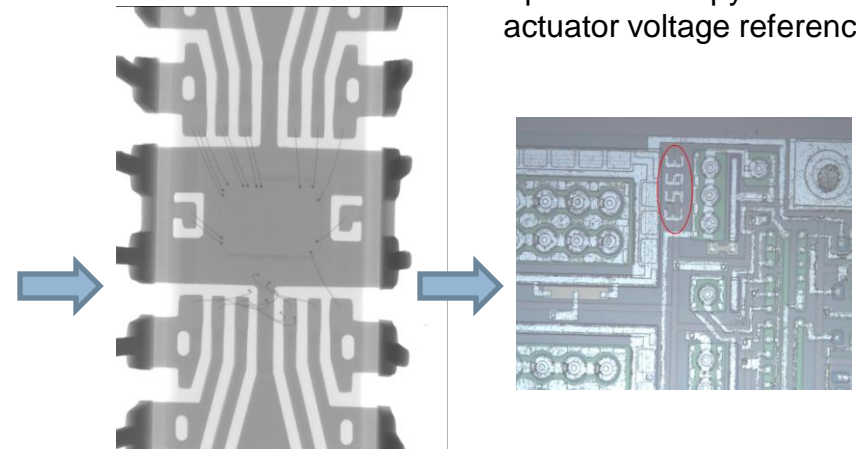
op amp for Shuttle/Station notebook computers



Space Shuttle pyrotechnic actuator voltage reference



Space Shuttle Pulse-Width-Modulation motor driver



How They're Produced



A landfill of discarded circuit boards

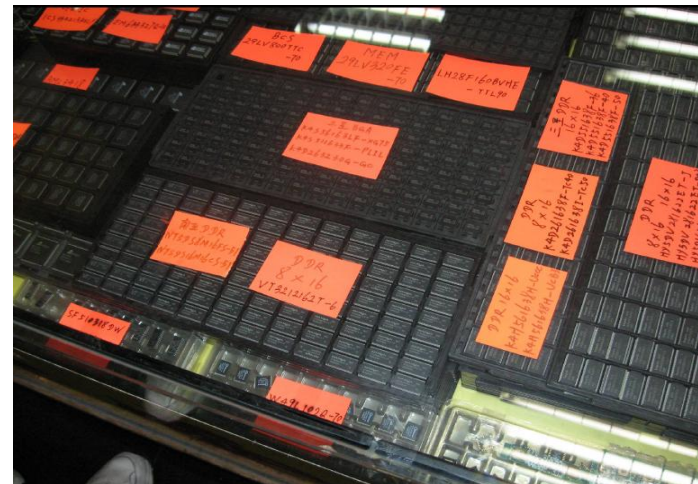


A child salvaging components from a circuit board

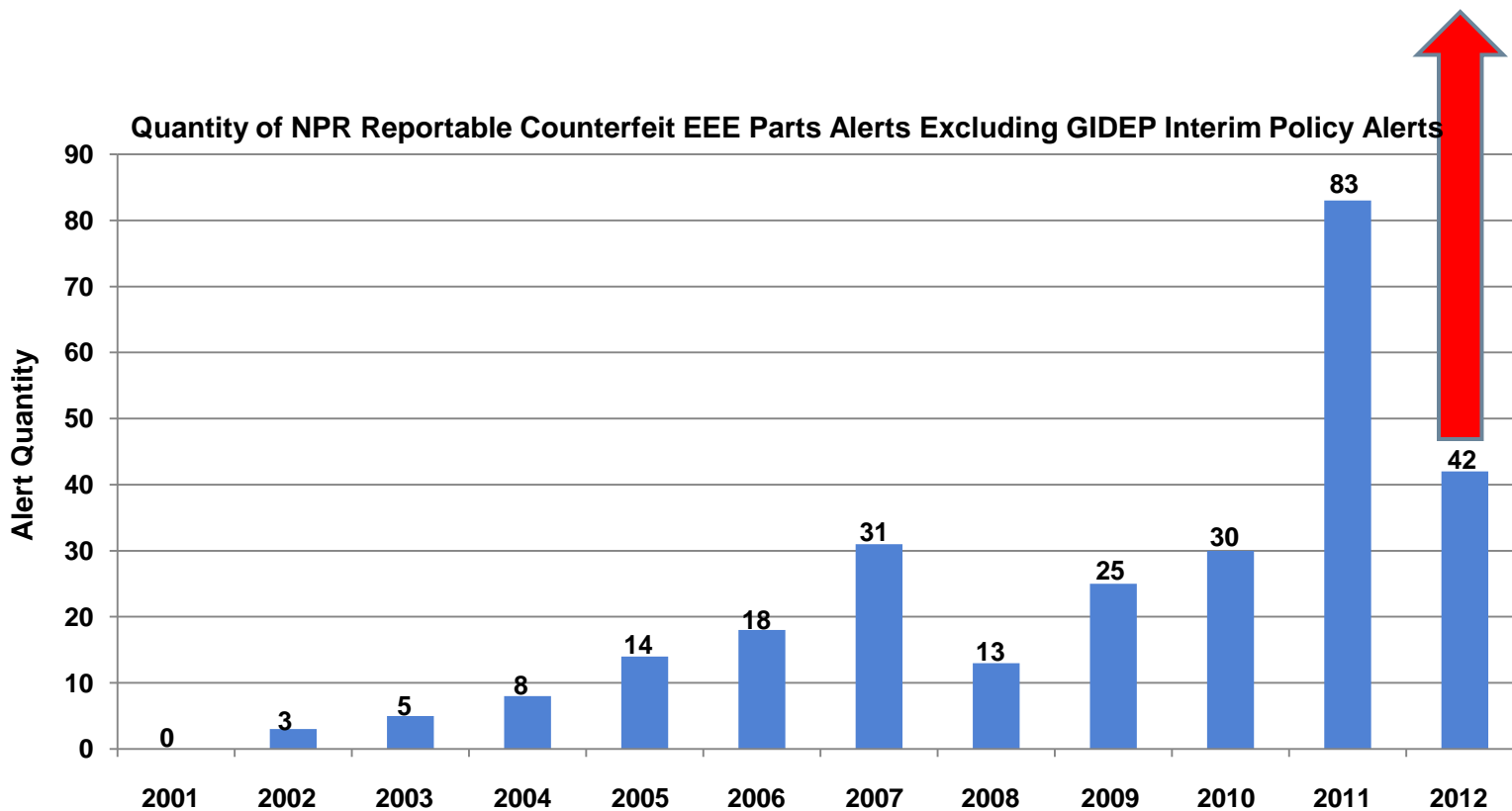
Counterfeiting Industry



Counterfeiting Industry



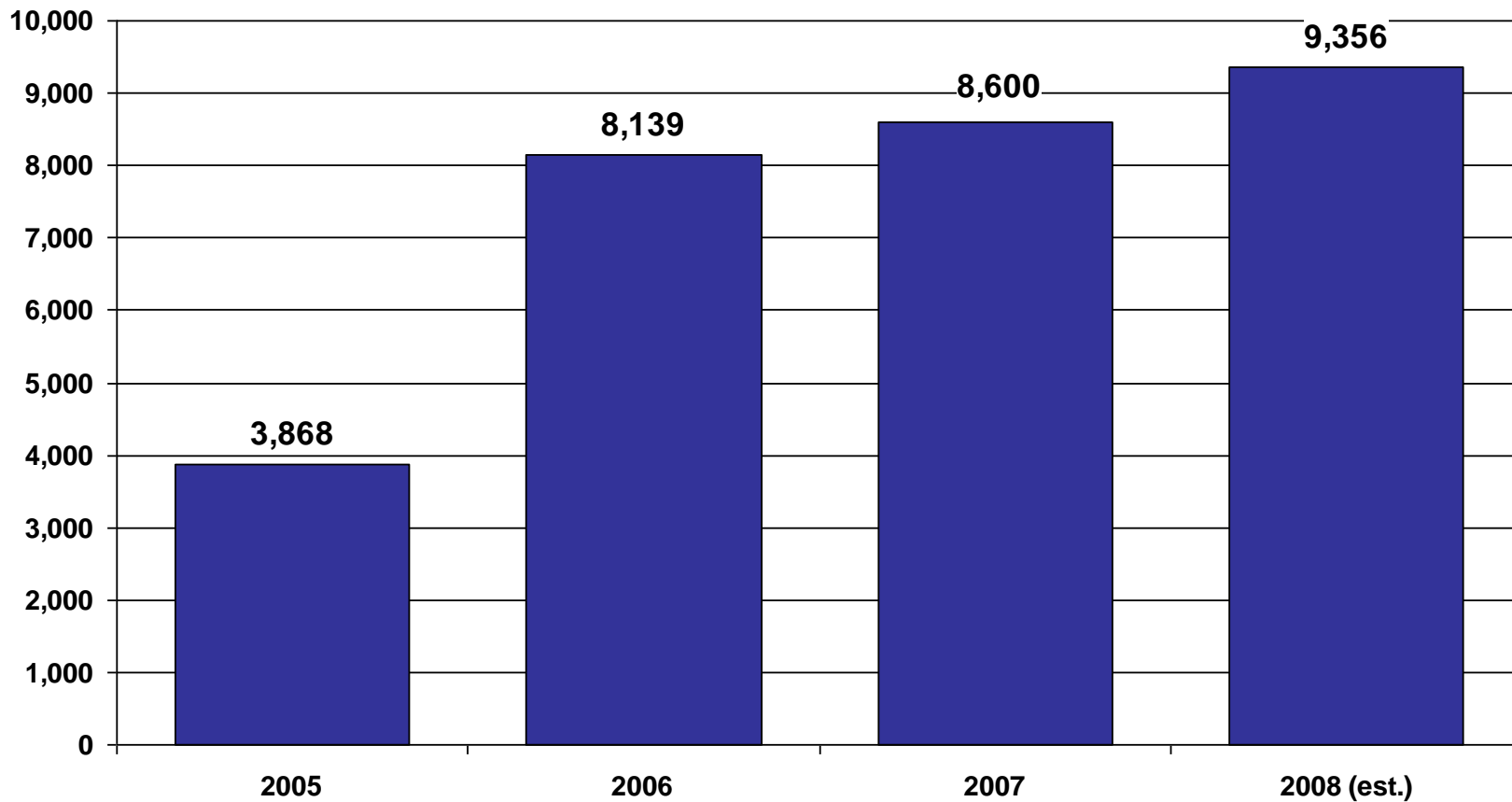
The Trend



Quantity of alerts will increase throughout 2012

The Magnitude

Total Counterfeit Incidents



U.S. Department of Commerce – Preliminary Data (as of March 4, 2009)

United States Customs Notifications



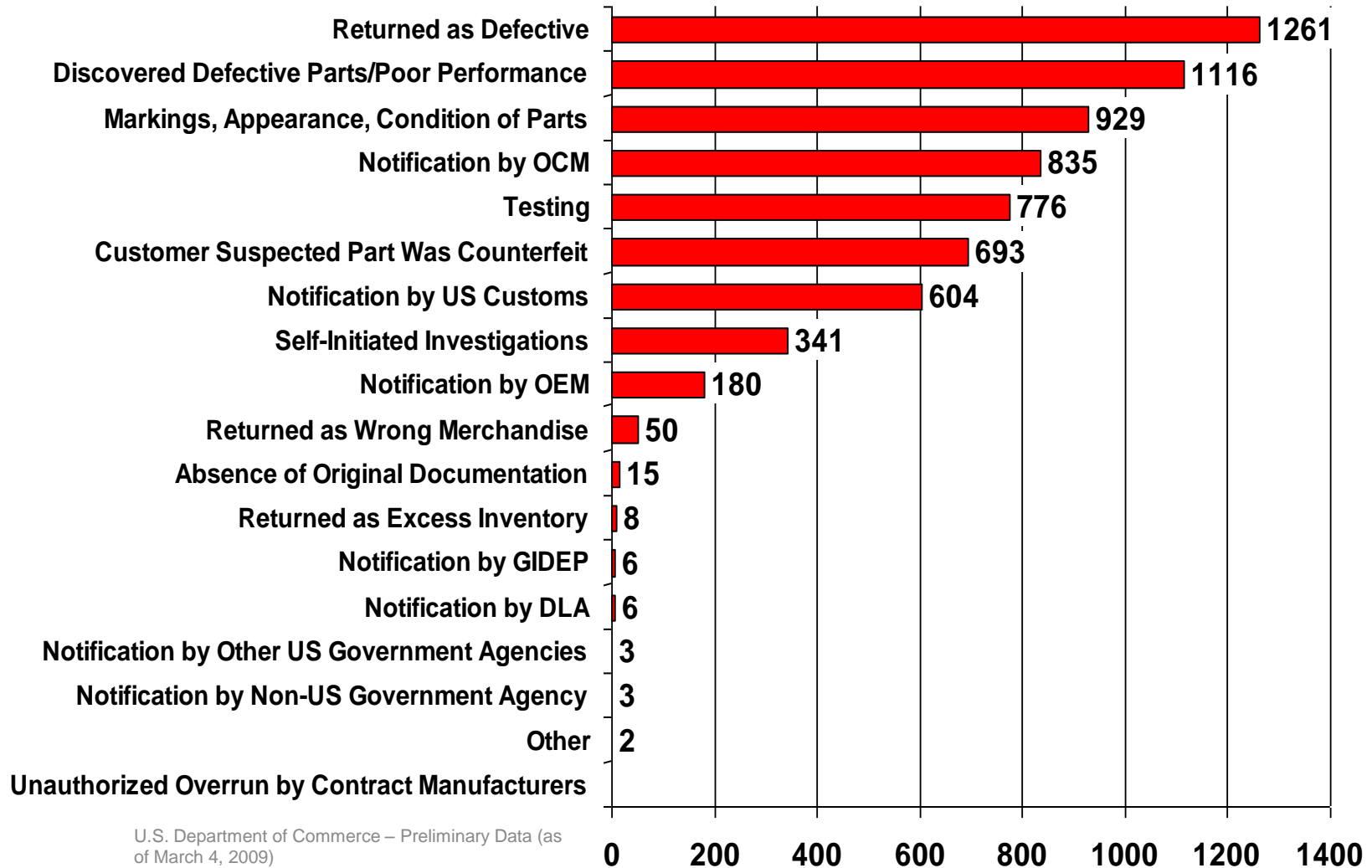
Year	Number of Incidents
2005	1
2006	29
2007	169
2008	604

GIDEP Counterfeit Case Summaries

EE-A-06-01	Test failures at a defense contractor were found to be microcircuits containing many different chips
EE-A-06-03	Supplier of military hardware found suspect counterfeit microcircuits having dual part number markings
EE-A-06-04	Microcircuits that failed product testing were found to have chips from another source
M9-A-07-01	During manufacturing of a military product, suspect counterfeit transistors were functional failures
6E-P-07-01	Memory device supplier confirmed parts marked with their name did not contain their chips
UY7-P-07-01	Microcircuits, that failed electrical testing, were found to contain chips from another manufacturer
NB4-P-07-01	Suspect counterfeit microcircuits, from an unauthorized distributor, found during testing at an aerospace supplier
J5-A-07-01	Independent distributor supplied suspect counterfeit parts (not available from original supplier) to defense plant
J5-A-07-02	Microcircuits, supplied by an independent distributor, were suspect counterfeit (device markings not authentic)
A2W-A-07-01	Suspect counterfeit transistors failed electrical tests; found to have many different chips
J5-A-07-06	Programmable logic devices found to be suspect counterfeit (lot code was after manufacturer discontinued parts)
J5-A-07-09	Microcircuits found to be suspect counterfeit as the lot date code was after the manufacturer stopped production
UE-A-07-01	Suspect counterfeit microcircuits failed electrical tests; contained chips from another manufacturer
AAN-U-08-052	A government entity reported counterfeit circuit breakers in nuclear power plants
CE9-P-08-02	Military parts manufacturer reported U. S. authorities have recently intercepted many counterfeit parts shipments
UL-P-08-01	Distributor unable to provide test reports on suspect counterfeit microcircuits that failed during factory testing
D4-A-09-01	Military hardware manufacturer found suspect counterfeit programmable devices showed part remarking

Impact (cont)

How Companies are Uncovering Counterfeits



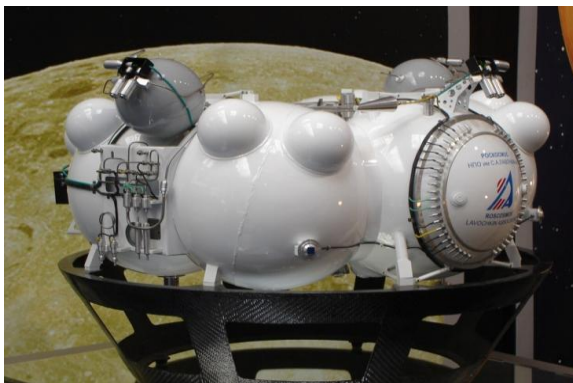
Impact (cont)



IEEE Spectrum Tech Alert [Did Bad Memory Chips Down Russia's Mars Probe?](#)

IEEE report blames the loss of Russia's ambitious Phobos-Grunt space mission on faulty memory chips ... **report suggests that the chips were counterfeits** that had been intentionally misrepresented as offering higher performance than they were actually capable of.

Report cites malfunctioning WS512K32 chip (a single-package assembly of *static random access memory (SRAM)* chips) suspected to be counterfeit



Mockup of Phobos-Grunt main propulsion unit

The Gray Market

“Most broker organizations are very small and do not have established quality control procedures in place. We have more than 10,000 brokers in our database. Of those only 200 have more than 10 employees and quality control procedures for their staff. That leaves us 9,800 to fall victim to. Many brokers are working out of their home. All someone needs is a phone, fax and e-mail address and they are in business.”

American Electronic Resource, Inc.

The Gray Market

Broker with Cage Code in California

Address is a private home

Is this Broker selling genuine product?

Is he maintaining the product under proper conditions?

Do you Really Know this Supplier???



What We're Up Against

Innovative and Hi-Tech Re-Marking



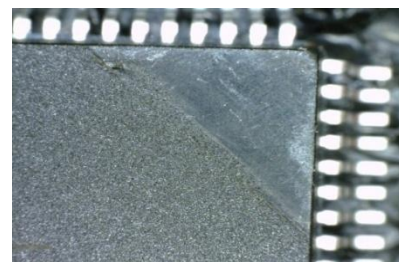
Exemplar Top Surface



Suspect Top Surface



Pure Acetone / 7 Day Soak—No Affect



New blacktop material can only be removed with an X-ACTO blade

What We're Up Against

Bogus Test Reports

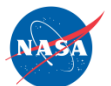
- 19% of companies employing testing contractors had problems with faulty or forged testing.
- The parts were cleared by the test house, but were later found to be counterfeit.

Attachment A

ANALOG DEVICES MIL-STD 883 ATTRIBUTES TEST DATA

Customer <i>ETEC</i>		Special Generic <i>A0290MP/8038</i> <i>5942-8757104KA</i>		QC Lot # <i>F28542265</i>			
Date Code <i>0732</i>	Prepared By <i>C. LEE</i>	QC Lot Size <i>429</i>	Ship Qty: <i>250</i>				
VISUAL/MECHANICAL/ELECTRICAL SCREENING	Method	Screen MIL-STD 883, Method 2004	Cond.	Good	Not REJ. OTHER	Date	Comments
		INTERNAL VISUAL	✓	607	600		
		TEMPERATURE CYCLE	✓	600	490		
		CONSTANT ACCELERATION	✓	490	720		
		HERMETICITY FINE LEAD	✓	490	431		
		PRE BURN-IN ELECTRICAL	✓	431	430		
	1215	BURN IN	✓	430	429		
		POST BURN-IN ELECTRICAL	✓	429	429		
	2008	EXTERNAL VISUAL	✓	429	729		
	QUALITY CONFORMANCE INSPECTION	9005	GROUP A INSPECTION				
		PROGRAM NAMES	PROGRAM NAMES <i>A13748-Z</i>				
		<small>I hereby certify that the products in this document are part of a program or order. All products are inspected, tested, and appear to conform with the drawing, specification, and all other applicable requirements. (MIL-STD-883 and MIL-STD-2000)</small> <i>5-23-04</i> <small>Signature</small> <small>Signature</small> <small>Signature</small> <small>Signature</small>					
Generic PN <i>A0290MP/8038</i> <i>5942-8757104KA</i>		FAI Date Code <i>0410</i>		Report # <i>M26-452K</i>			
Approved By:		DATE: <i>05-28-04</i>					

U.S. Department of Commerce



Recent Convictions

October 25, 2011

Administrator of Vision Tech Components, LLC sentenced to 38 months in prison for role in sales of counterfeit integrated circuits destined to U.S. military.



U.S. Department of Justice

Ronald C. Machen Jr.
United States Attorney for the
District of Columbia

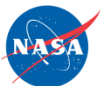
Judiciary Center
555 Fourth St. N.W.
Washington, D.C. 20530

PRESS RELEASE

FOR IMMEDIATE RELEASE
Tuesday, October 25, 2011

For Information Contact:
Public Affairs
(202) 252-6933
<http://www.justice.gov/usao/dc/index.html>

**Administrator of VisionTech Components, LLC Sentenced
To 38 Months in Prison For Her Role in Sales of Counterfeit
Integrated Circuits Destined to U.S. Military and Other Industries
- Counterfeit Devices Were Sold to U.S. Navy and Defense Contractors -**



February 22, 2012

Operations Manager for MVP Micro sentenced to 20 months in prison for conspiring to sell counterfeit electronics to the U.S. military

THE UNITED STATES ATTORNEY'S OFFICE
DISTRICT *of* COLUMBIA

[HOME](#) [ABOUT](#) [NEWS](#) [MEET THE U.S. ATTORNEY](#) [DIVISIONS](#) [PROGRAMS](#)

[Home](#) » [News](#) » [Press Release](#)

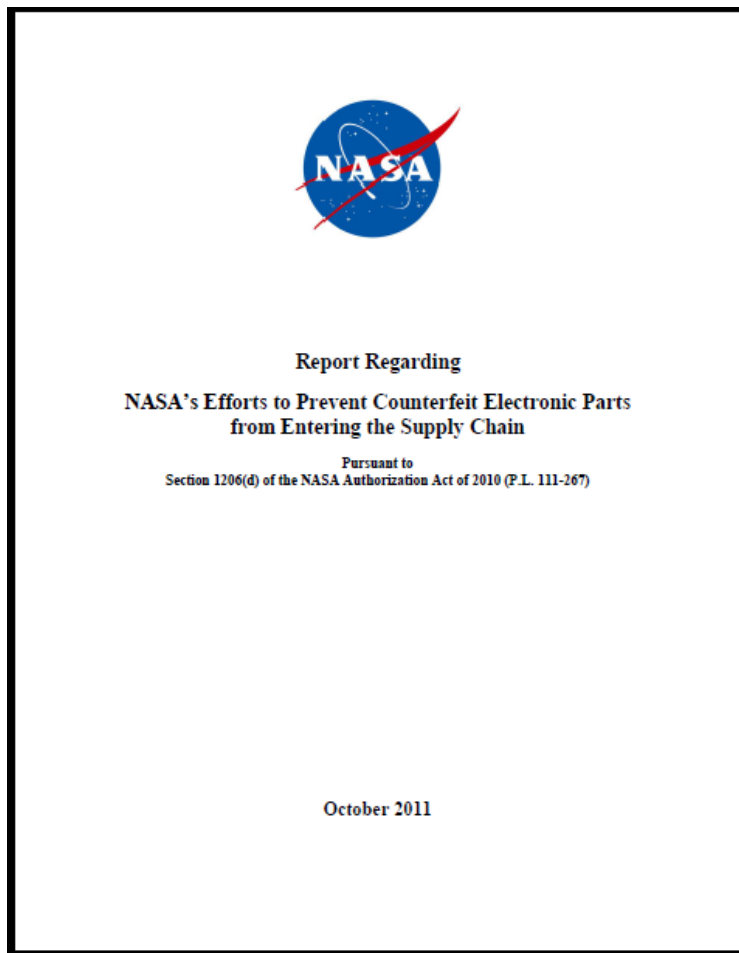
NEWS

FOR IMMEDIATE RELEASE
Wednesday, February 22, 2012

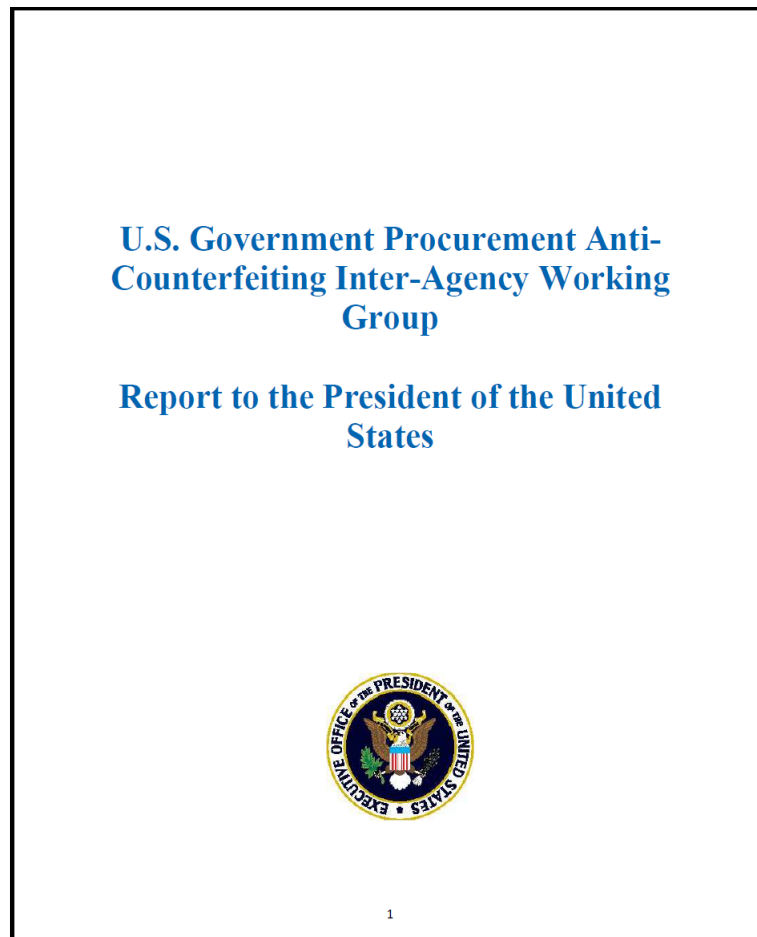
For Information Contact:
Public Affairs
(202) 252-6933
<http://www.justice.gov/usao/dc/index.html>

**Operations Manager for MVP Micro Sentenced to 20 Months in Prison
For Conspiring to Sell Counterfeit Microelectronics to the U.S. Military**
- Company's Owner Was Sentenced to Prison Last Week -

Congress



White House



FY2012 NDAA

H.R.1540: NATIONAL
DEFENSE
AUTHORIZATION
ACT FOR FY 2012

Public Law No: 112-081

**SEC. 848. DETECTION AND AVOIDANCE OF COUNTERFEIT
ELECTRONIC PARTS.**

(a) REVISED REGULATIONS REQUIRED.—

(1) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall revise the Department of Defense Supplement to the Federal Acquisition Regulation to address the detection and avoidance of counterfeit electronic parts.

(2) CONTRACTOR RESPONSIBILITIES.—The revised regulations issued pursuant to paragraph (1)

Data Reporting



ERAI Home Contact Us Log Out
ELECTRONIC RESELLERS ASSOCIATION INTERNATIONAL, INC - Working to protect electronic distributors around the world

MEMBER DIRECTORY & SERVICES LOSS PREVENTION & RECOVERY HIGH RISK PARTS INFORMATION & DOWNLOADS

Back

Complaint Type: Counterfeit Parts

Comment Date:

Company	Additional Information
For Lik Shun Electronics Technology Limited Phone: 86-755-8395-8937 Fax: 86-755-8395-8657 Email: kelixin888@hotmail.com Address: R2008 North #2 Unit Jing Gang Mingyuan Shenzhen China Status: UNRESOLVED Last Updated: 08/28/2007 Date Modified: 08/28/2007 Scheduled Release: 08/22/2012	Bank Name: Standard Chartered Bank, Shenzhen Futian Central Sub-Branch Account: 9841380411 Beneficiary Name: FOR LIK SHUN ELECTRONICS TECHNOLOGY COMPANY LIMITED

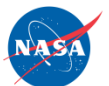
Details

In June 2007, a Member placed an order with For Lik Shun Electronics for 1,100 pieces of part number PEF20534H10V2 totaling \$16,500.00. The invoice is dated June 26, 2007 and the order was facilitated through an escrow service with a 5-day inspection period.

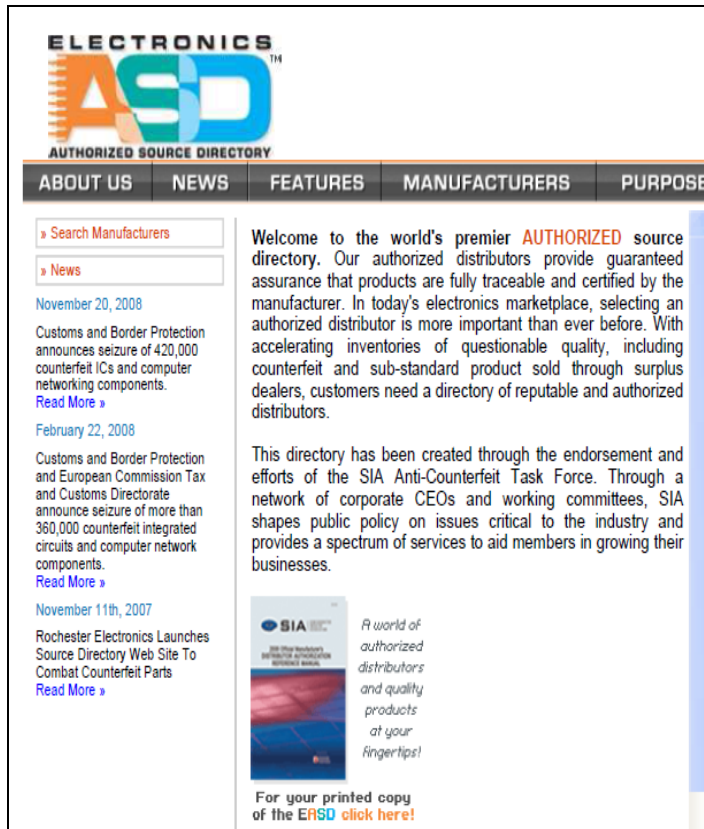
The parts were sent to an independent test facility for testing prior to being sent to the Customer. The test results dated July 10, 2007 state:

"...showed evidence of remarking and resurfacing. The die shows LSI Logic as the manufacturer with HS083F as a mask code in an Infineon marked part. The product is remarked and therefore counterfeit."

According to the Reporting Member, they contacted For Lik Shun the same day the test results were received, July 10th, for an RMA and refund and this and all other subsequent attempts to contact For Lik Shun Electronics have been ignored. ERAI has not received a response from For Lik Shun Electronics regarding this matter, leaving it unresolved as of this date.



Authorized Suppliers List



ELECTRONICS ASD™
AUTHORIZED SOURCE DIRECTORY

ABOUT US | NEWS | FEATURES | MANUFACTURERS | PURPOSE

» Search Manufacturers

» News

November 20, 2008
Customs and Border Protection announces seizure of 420,000 counterfeit ICs and computer networking components.
[Read More »](#)

February 22, 2008
Customs and Border Protection and European Commission Tax and Customs Directorate announce seizure of more than 360,000 counterfeit integrated circuits and computer network components.
[Read More »](#)

November 11th, 2007
Rochester Electronics Launches Source Directory Web Site To Combat Counterfeit Parts
[Read More »](#)

Welcome to the world's premier **AUTHORIZED** source directory. Our authorized distributors provide guaranteed assurance that products are fully traceable and certified by the manufacturer. In today's electronics marketplace, selecting an authorized distributor is more important than ever before. With accelerating inventories of questionable quality, including counterfeit and sub-standard product sold through surplus dealers, customers need a directory of reputable and authorized distributors.

This directory has been created through the endorsement and efforts of the SIA Anti-Counterfeit Task Force. Through a network of corporate CEOs and working committees, SIA shapes public policy on issues critical to the industry and provides a spectrum of services to aid members in growing their businesses.


SIA™ *A world of authorized distributors and quality products at your fingertips!*

For your printed copy of the **ERASD** [click here!](#)

Qualified Suppliers List

DSCC-QSLD-5961/5962
DRAFT
October 23, 2008

Defense Supply Center, Columbus



**Criteria and Provisions
for Qualified Suppliers List of
Distributors (QSLD)**

FSCS 5961 (Semiconductors)/5962 (Microcircuits)

Training



IDEA-ICE-3000

Professional Inspector's Certification Exam

Available to Employees of:

- IDEA Member Companies
- OEMs
- CM/EMS'

The IDEA Professional Inspector's Certification Exam is designed to demonstrate inspection competency for the benefit of all stakeholders. Successful examination provides the employee and the employer with a heightened degree of confidence in the basic working knowledge and resource-ability of the inspector.

When personnel who conduct visual inspection of product from the excess market have been certified, the company's stakeholders are provided objective evidence of inspection competency and therefore reason for increased confidence that customer satisfaction will be achieved and further offer increased marketability of products and services.

Upon successfully passing the IDEA Professional Inspector's Exam (IDEA-ICE-3000) the candidate will be awarded a certificate stating that the individual has passed the exam and their name will be maintained on record at IDEA as having met this achievement.

IDEA Members	Add to Cart
\$ 200.00 USD	
OEM's/CM's/EMS'	Add to Cart
\$ 395.00 USD	
IDEA Member Exam Renew	Add to Cart
\$ 100.00 USD	
Click "View Cart" to checkout	View Cart

Counterfeit Parts Avoidance Training

Counterfeit Parts in the News

- In 2009, Acting Administrator Christopher Scolese disclosed to Congress that counterfeit parts are a significant cause of budget over-runs for NASA
 - Estimated cost to NASA - *unknown*
- In late 2007, the US Patent and Trademark Office estimated that counterfeiting and piracy drain about \$250 billion out of the US economy each year along with 750,000 jobs
- Counterfeit EEE parts comprise about 10% of the parts in the supply chain
- In December 2008, four executives at Western Titanium, Inc were indicted for fraud
- US Dept of Commerce Bureau of Industry and Security survey reveals China as biggest geographical source of counterfeit electronic parts



Class Details

Class Objectives

- To learn about counterfeit parts and why they are a significant risk.
- To learn inspection methods to be used for the detection and avoidance of counterfeit parts.
- To mitigate the risks of acquiring counterfeit parts and to eliminate the risk of introducing counterfeit parts into flight hardware.
- To apply inspection techniques during an individual hands-on examination of counterfeit EEE parts, with microscopes.

4-hour class is for anyone who works with EEE parts and includes the following:


- Terms and Definitions Overview
- Counterfeit Parts in the Industry
- JPL's Counterfeit Parts Mitigation Strategy
- Best Industry Practices
- Case Studies of Counterfeit Investigations
- Hands-On Training and Written Exam

Class Date and Time


- The QLF class is scheduled for September 29 2009, 1:00 – 5:00 p.m.
- Enrollment requests should be submitted to Diana Shellman

Please contact
Katherine Whittington
Katherine.V.Whittington@jpl.nasa.gov
or 818.354.8749
for information about the class
content or related questions.

Standards

 SAE Aerospace <small>An SAE International Group</small>	AEROSPACE STANDARD	SAE AS5553
		Issued Proposed Draft 2008-11-07
Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition		
RATIONALE		
This standard was created in response to a significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain, posing significant performance, reliability, and safety risks.		
This standard was created to provide uniform requirements, practices and methods to mitigate the risks of receiving and installing counterfeit electronic parts.		
FOREWORD		
To assure customer satisfaction, aerospace industry organizations must produce, and continually improve, safe, reliable products that meet or exceed customer and regulatory authority requirements. The globalization of the aerospace industry and the resulting diversity of regional/national requirements and expectations has complicated this objective. End-product organizations face the challenge of assuring the quality and integration of product purchased from suppliers throughout the world and at all levels within the supply chain. Aerospace suppliers and processors face the challenge of delivering product to multiple customers having varying quality expectations and requirements.		
This document standardizes requirements, practices, and methods related to: parts management, supplier management, procurement, inspection, test/evaluation, and response strategies when suspect or confirmed counterfeit parts are discovered.		


The Independent Distributors of Electronics Association's





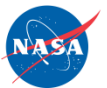
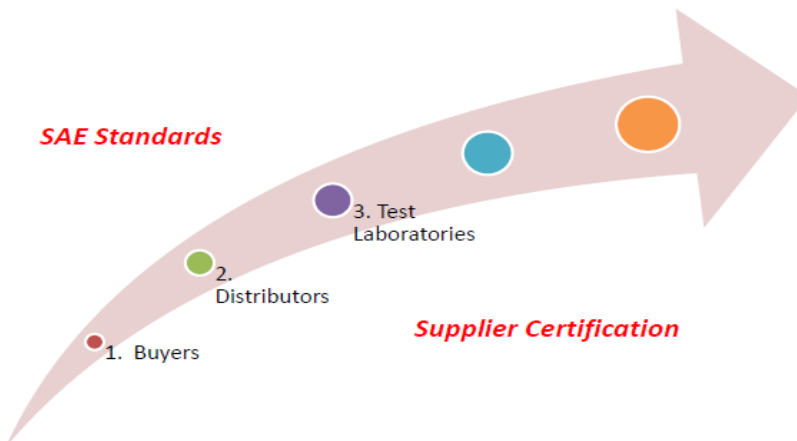
IDEA-STD-1010-A
*Acceptability of Electronic Components
 Distributed in the Open Market*

INSPECTION OF ELECTRONIC COMPONENTS IN THE
 INDEPENDENT DISTRIBUTION SUPPLY CHANNEL

Quality
Qualität **Calidad**
质量 **Qualité**

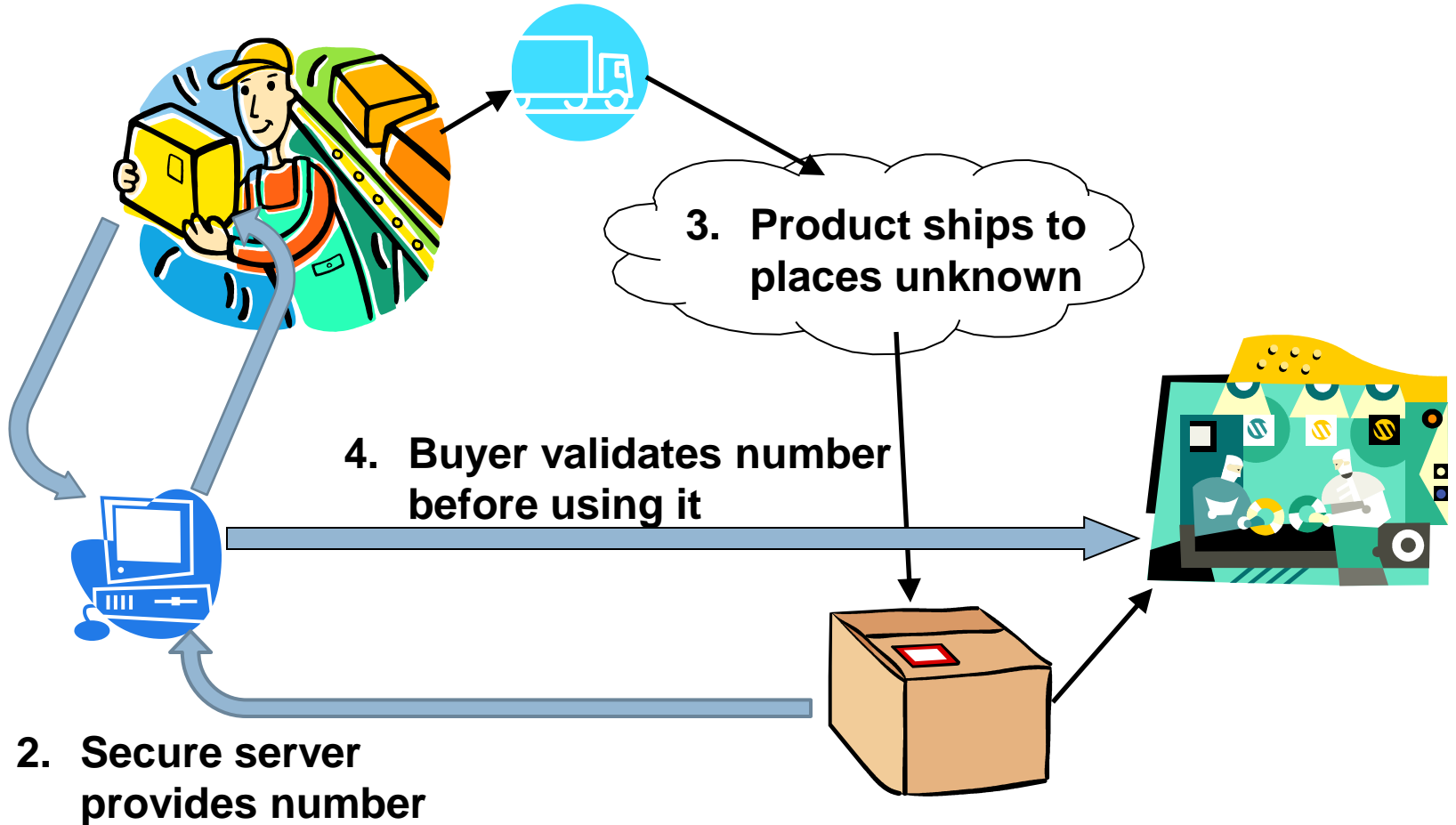




Authentication Services

1. Manufacturer asks for encrypted number



Closing Remarks



[Good Morning America](#) | [World News](#) | [20/20](#) | [What Would You Do?](#) | [Nightline](#) | [This Week](#) | [ABC News Now](#) | [ABC.com](#)

Tuesday, March 10, 2009
[Register](#) | [Sign In](#)

SEARCH

[Home](#) | [World](#) | [U.S.](#) | [Investigative](#) | [Politics](#) | [Polls](#) | [Money](#) | [Health](#) | [Entertainment](#) | [ESPN Sports](#) | [SciTech](#) | [Law](#) | [Travel](#) | [On Campus](#)

Breaking News

Dow Climbs Almost 400 Points on Good News About Citigroup's Profits

Technology & Science

[Home](#) > [Technology & Science](#)

NASA Satellites Get 'Counterfeit' Parts; Taxpayers Pay

Agency Chief Says Suppliers Sometimes Skip Safety Tests

By NED POTTER
March 7, 2009



15 comments

Maybe it was something he didn't mean to say. Or maybe NASA has a problem.



At a House subcommittee hearing on NASA's cost overruns, the agency's acting administrator, Christopher Scolese, was

FONT SIZE A A A

- EMAIL
- PRINT
- RSS
- DIGG
- SHARE

Watch Video



WATCH: Digging Up Shakespeare



WATCH: Baby Elephant Gets a Jumbo Leg



WATCH: Facebook and Myspace Dominate E-Mail

ADVERTISEMENT

