

9:45 – 10:15 AM



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## **Supply Chain Security: Reducing Threats to Critical Systems**



# National Aeronautics and Space Administration



How Exposing The Target Led To Reducing The Threat

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# Overview

- Dryden Flight Research Center's mission:
  - To do what others only dream about
- What we have learned over the past few years
- Exposing the Target
  - What it is
  - How is it a threat
  - Methods of pushing the threat to you undetected
  - Counterfeit defenses
- Tools utilized to reduce the threat
- How to be successful in being added to our QSL
- What to avoid when being assessed



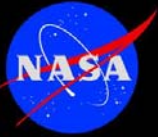
# What We Have Learned

- Two ways Counterfeit parts enter the supply chain:
  - Clandestine: Keep secret or done secretively of sponsor
  - Covert: Not openly acknowledged, does not point back to sponsor
  - It's the appearance of the genuine...but at a high price!
- GAO conducted an investigation using the Internet purchasing platform and found out that the parts ordered were in fact counterfeit.
- The Target is the end item, an electronic part that has been counterfeited, a part that is so close to the genuine that it has been allowed to be installed on America's most sophisticated weapons, advanced avionics and important test projects.



# What We Have Learned

- Distributors who obtain electronics from questionable sources are subject to the greatest risks.
- Suspect/counterfeit parts that are returned to supplier for non-compliance are sometimes placed back on the shelf for purchase.
- Because of minimum inspection/testing from distributor, counterfeit parts are allowed to enter the supply chain undetected.
- Certain aspects of counterfeit inspections performed at the distributor location are not being conducted as advertised.
- Aircraft parts that have been modified with new electronics are not being vetted to ensure counterfeit parts are not being installed.
  - Avionics repaired at Certified Repair Stations
- Counterfeiters are becoming more sophisticated in the art of deception and are becoming a challenge to detect.



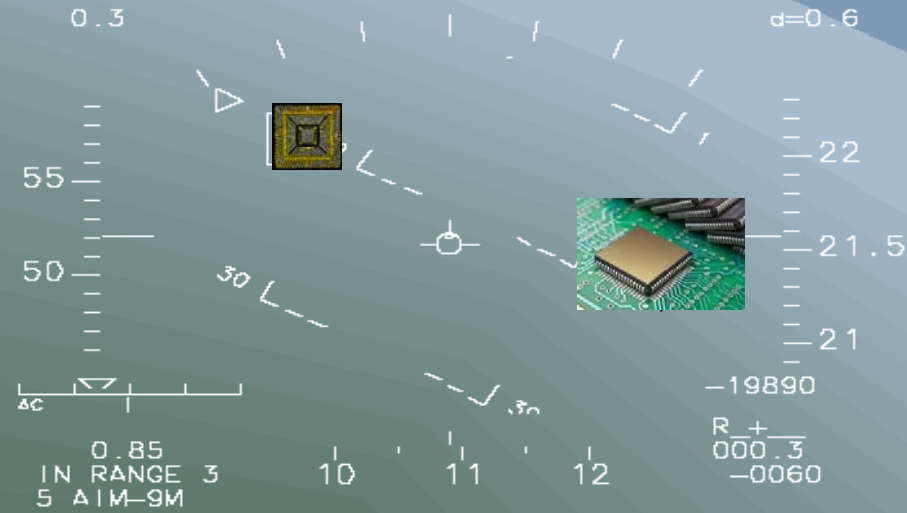
# Exposing The Target

- Counterfeiters have a sophisticated network of stealthy moves. They understand the system by:
  - It's strengths and weaknesses
  - When to enter the supply system and when to not
  - They study established procedures to determine alternate ways
  - They examine posted best practices to avoid conflicts
  
- In order to reduce any threat you have to understand it
  - What it is
  - How is it a threat
  - Methods of pushing the threat to you undetected
  - Counterfeit defenses

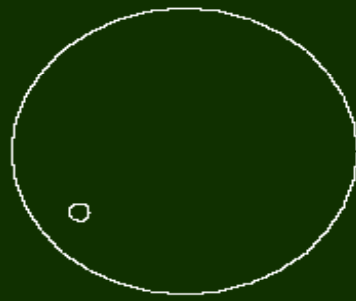


# What Is The Target

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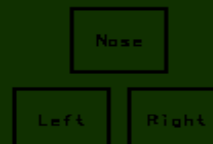
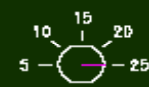
- OIL PRES
- HYD1 PRES
- HYD2 PRES
- GEN1 FAIL
- GEN2 FAIL
- FLAP FAIL
- SPBRK FAIL
- RADAR FAIL
- TEWS FAIL
- HUD FAIL
- LOW FUEL
- SPD BRAKE
- BRAKES



FLAPS



MAX BANK



lb total      lb/hour

3980            250





# What Is The Target

- Counterfeiting often involves cases where parts are offered that present a product substitution risk to the Government Equipment Manufacturer and to the Government user.
  - Parts remarked to disguise parts differing from those offered by the original part manufacturer
  - Defective parts scrapped by the original part manufacturer
  - Previously used parts salvaged from scrapped assemblies
- Electronic components that will fail when needed.
- Aircraft parts that are subjected to counterfeited parts.
- Suppliers at high risk due to no counterfeit program in place.
- Suppliers who do not follow industry practices such as AS5553 and AS6081 measures in their counterfeit avoidance practices, but claim they do.



# How Is It a Threat

- Can cause failure in a critical flight component
- Can cause National Defense concerns
- Failure during critical performance testing
- Mission failure (Class A Mishap)
- It can cause loss of life



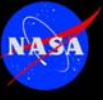
# Pushing The Threat Undetected

- Counterfeiters by the very nature of their business understand the roadblocks and will try to get around them
- They will succeed if we let them, that's why counterfeit avoidance is so critical.
- Supplier relationships are critical, but caution is needed to ensure certain processes are developed to mitigate the risk of receiving and distributing suspect/counterfeit parts.
- Not performing the correct sampling of suspect components

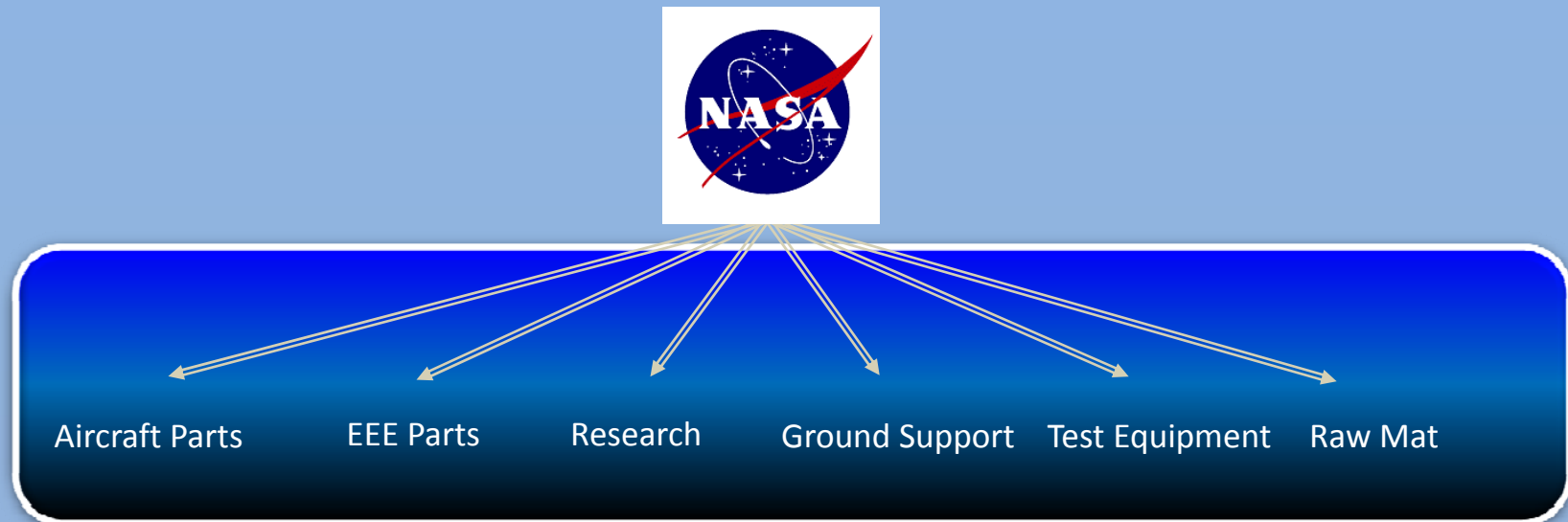


# Counterfeit Defenses

- ERAI: An organization that monitors, investigates and reports issues affecting the global semiconductor supply chain.
  - Email alerts on suspect/counterfeit parts
- IHS: Haystack Gold and BOM Manager to point out counterfeit parts
- GIDEP Alerts
- G-19 and the incorporation of AS5553 and AS6081
- Tighter Customs and Border control
- Trusted Suppliers
- Education and Training: JPL on Counterfeit detection
- NDAA



# DFRC PQA



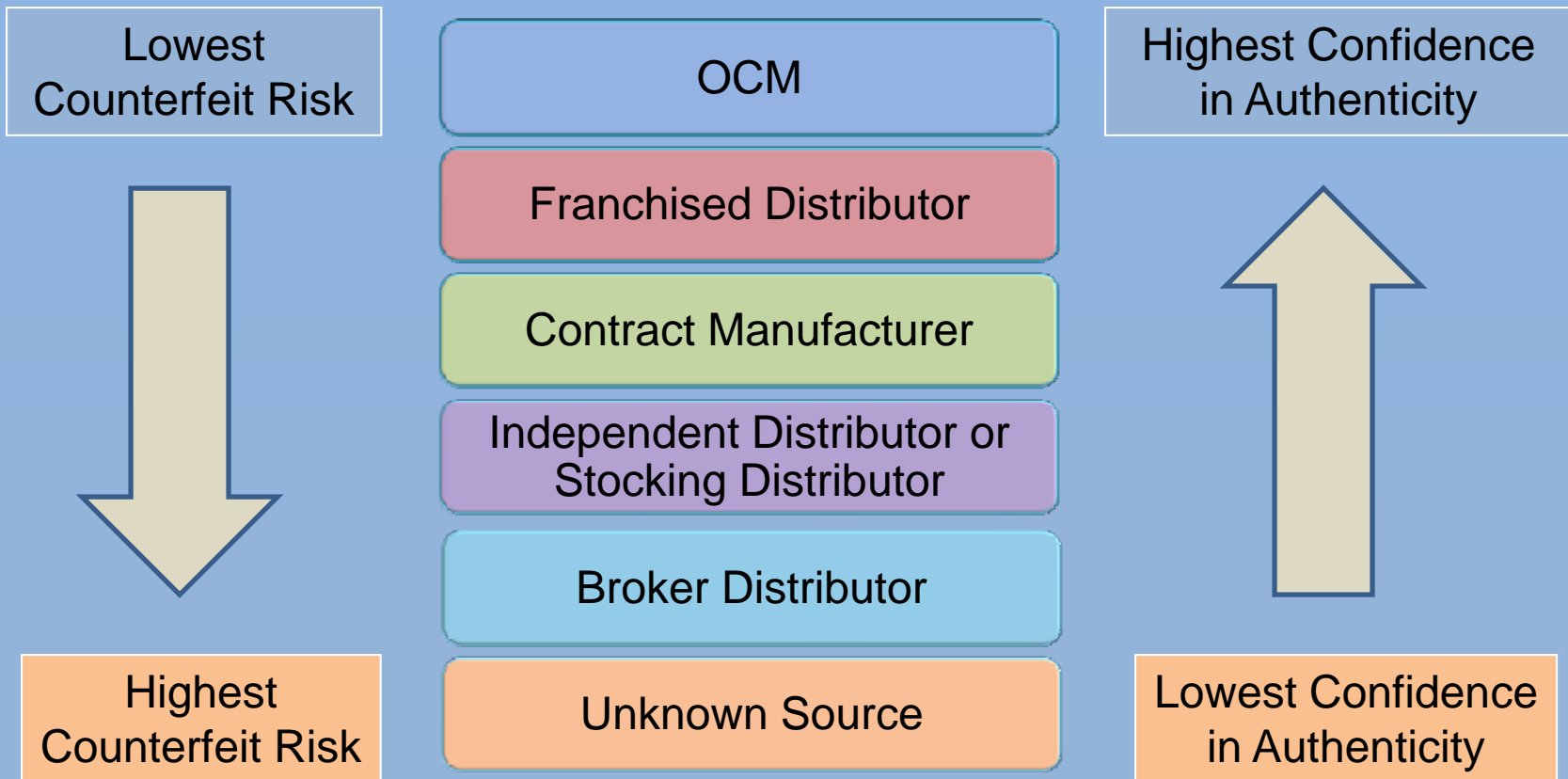
**Procurement Quality Assurance ensures that all materials/parts that are procured go through a specific process to lower risk of receiving a suspect/counterfeit part.**

- **Raw Material counterfeit (Missing Cr within makeup)**



# Dryden's approach to Supplier's QA

Match the supplier evaluation to the risk of counterfeit





# Tools utilized to reduce the threat

- ERAI email alerts on suspect counterfeit components
- IHS programs like Haystack Gold and BOM Manager that help the user detect risks and avoid them
- Suppliers that have robust processes in place that mitigate the risk
- We have added a counterfeit avoidance survey to our basic survey. This is a weighted survey to determine risks of the supplier.
  - We have discovered the following:
    - Electronic suppliers that are active members of ERAI have the lowest risk.
    - Using a weighted scale has allowed us to procure from the lowest risk, thus minimizing the risk of having a counterfeit escape.
    - If we have to order from a high risk supplier (Legacy parts) then we add specific inspections prior to use.







# Supplier Database

## Dryden Flight Research Center Qualified Suppliers List

### Supplier Information

POC:

Address

City

State

Zip

TelNo

Email:

Website:

DateAdded:

Business Size

Women Owned

Veteran Owned

Disabled Veteran Owned

HUBZone

8(a)

Small Disadvantaged Business



Survey Sent

Survey Received

Survey:  Electronic Supplier

Certifications:

Supplier Assessment:

Waiver:  Waiver Exp:

Approval Status:  Risk Grid:

Scope of Approval:

AS9100 Cert Expiration:

ISO 9001 Cert Expiration:

AS9120 Cert Expiration:

ASA 100 Cert:

FAA Repair Station:

Electronic Risk Level:

Score Number:

OCM

OEM

Franchised

Authorized

Aftermarket

Independent

Stocking

Broker

Repair Station



### Procurement Quality Assurance Research

Find Record

Next Record

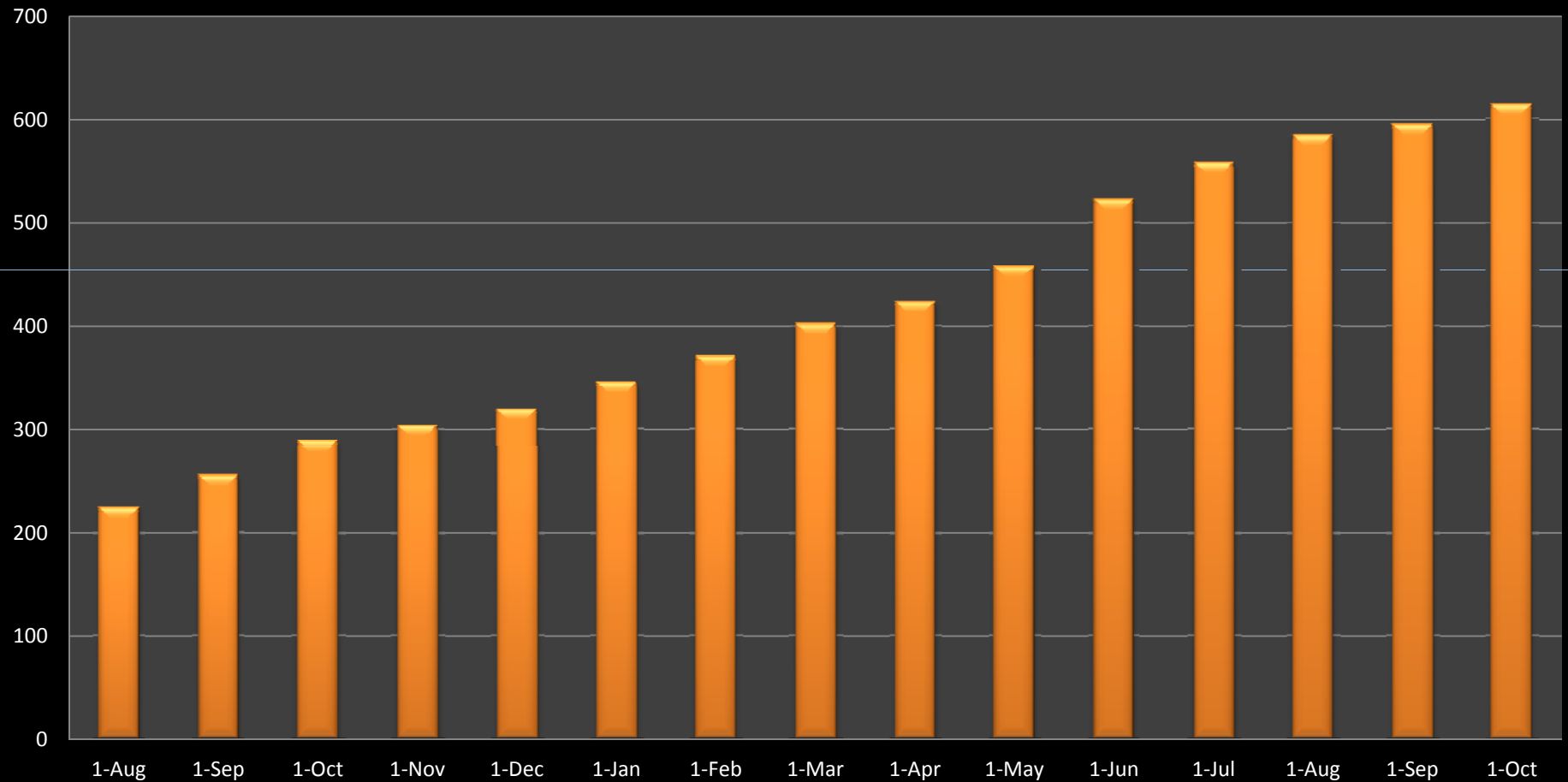
Previous

Add Record



# Supplier Increase

Suppliers added since Aug 2011





# Quality Requirements

- Suppliers are subjected to a complete vetting process to reduce risk.
- Electronic score helps us only pick low risk
- Apparent discrepancies between the main survey and electronic survey helps identifies risk (AS9100 Certified when not)
- We have to see “proof” of certs and the pre/post 911 mentality
- Resurvey suppliers every 3 years for audits.
- Our inspection check list is customized depending on type of service provided, i.e. FAA Repair Station, Distributors of aircraft parts/ electronic components.
- All incoming parts are inspected in accordance with applicable quality documents assigned to them.



# Being added to our QSL

- We look at the whole process, not just one area.
- Certification versus Compliance
- Electronic scores show risk, but not a disqualifier
- The health of a supplier based on our research (GIDEP, ERAI, FAA..etc)
- After a complete vetting we make a decision on who will require an on-site visit and who can be qualified.
- Working on Trusted Supplier list now (Simplified Acquisitions)



# What to Avoid When Being Assessed

10. Stating that “you buy from anyone, at any time, at any price”
9. When asked if you have a counterfeit avoidance program, please don't send me a memo the same day stating that “you don't buy counterfeit parts”
8. If you have attack dogs on site, please put them up when I get there
7. If your website shows a sprawling complex, don't take me to a storage shed instead
6. If you show on your web site ESD 20.20 processes in place, don't act like you don't know what ESD is when I arrive (Also try removing the price tags on it before you show me).



# What to Avoid When Being Assessed

5. Don't tell me you don't buy from overseas and all your boxes say "made in China"
4. If you claim that you are the only one who has legacy parts, don't tell me that for one of a kind parts are marked up 80%
3. If you do a show and tell using Acetone don't use water
2. Make sure you don't have suspect/counterfeit parts on the shelf and for a random sampling pick that one and act confused on how it even got there.
1. Don't say "There's a counterfeit problem?"



➤ Thank you for all that you do in counterfeit risk mitigation!!