

# Testing of COTS/NDI Products



**Joint Service Power Exposition**  
**25 April 2007**

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# Session 10

## Introduction

Mr. John O'DONNELL, USMC

## Marine Corps Approaches

Mr. John O'DONNELL, USMC

## Navy COTS Testing

Mr. Randy Haag, Manger, Power Systems Division NSWC Crane

## COTS Testing By the ARMY

Mr. Jose Antonetti , Test Director  
US Army Aberdeen Test Center

# Testing of COTS/NDI Products



## USMC Approach

John O'Donnell

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# Testing For Military Use



- **Why COTS ?**
- **Cheaper**
- **Get quicker Avoid Development and Qualification**
- **Vendor handles Configuration and Tech Data Package**
- **Faster Delivery Schedule**

# Why Do We Test?



- **The operating environment is more extreme**
  - Greater Temperature extremes**
  - Sand and Dust Rain and Salt Air**
  - EMI interference issues**
  - The transportation conditions are more extreme**
  - The power used for power is from Generators (greater surges sags and phase anomalies)**

# Transportation



- **The Marine profile is based on transportation off road 80% of the time.**
- **The transportation is in the back of truck**
- **Units are dropped and transported to extreme altitudes and via watercraft.**

# Testing



- **Road Course Testing**
- **Loose cargo bounce**
- **Drop Testing**
- **Lift and Tie Down**
- **Environmental**
- **EMI**



# Vibration USMC way



# Testing

Lift and Tie  
Down



Drop  
testing



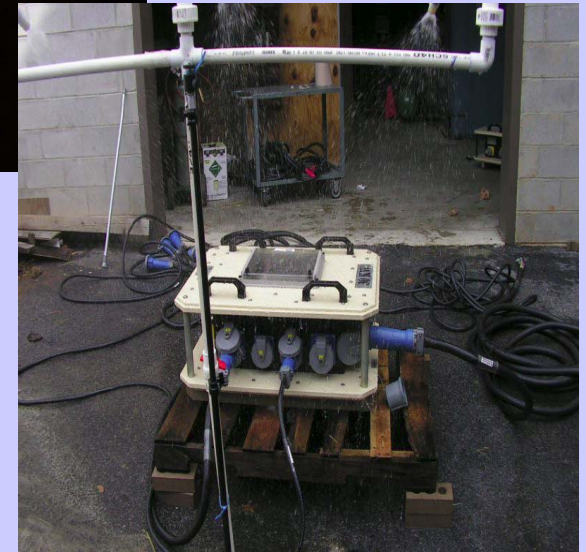
Rail Impact



# Testing Transportation



# Testing Environmental

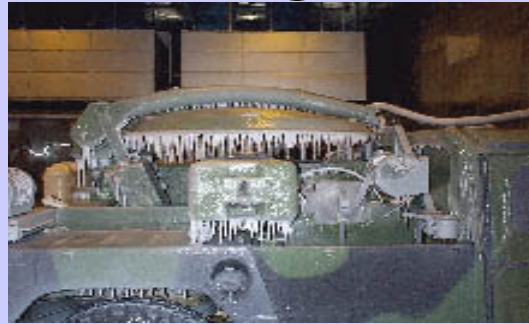


**Temperature -40 to 160 F storage**

**-25 to 130F operating with solar**

**Salt Fog Rain and Humidity Dust  
and Sand**

# Testing Environmental



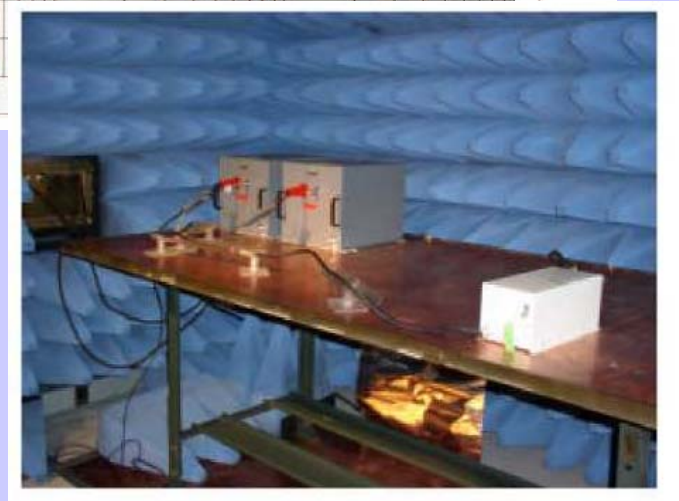
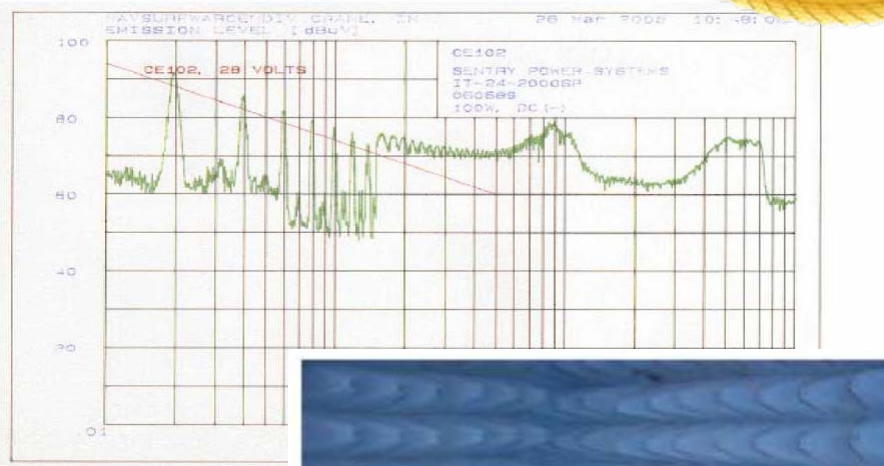
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# Testing EMI



**Do I effect other equipment ?**

**Does other Equipment Effect Me?**

# Testing Performance




- **How will unit work in USMC environment does performance change?**
- **Does it perform as manufacturer claims?**
- **What are the safety issues ?**
- **Human Factors Is it Marine proof?**
- **Operational Testing with training module and manual evaluation**


# Sample Power Supply Performance Test Plan

2. The following tests and examinations were performed:


M  
10




Visual  
\*Initial Electrical  
Drift  
\*Temperature  
Humidity  
Thermal Shock  
Altitude  
Vibration  
Shock  
Transit Drop  
Bench Handling  
Dripproof  
\*EMI  
Salt Fog  
\*Post Electrical  
Safety  
Human Factors



Visual  
\*Initial Electrical  
\*Drift



Visual  
\*Initial Electrical  
Drift  
\*Temperature  
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Thermal Shock  
Altitude  
Vibration  
Shock  
Transit Drop  
Bench Handling  
Dripproof  
\*EMI  
Salt Fog  
Post Electrical  
Safety  
Human Factors



Visual  
Initial Electrical  
Drift  
\*Temperature  
  
  
  
  
  
  
  
Post Electrical



# Testing Conclusion



- **How will unit work in USMC environment?**
- **Will arrive intact?**
- **What are the limits of operation ?**
- **Is it Marine proof?**