



2020 – NASA SPINOFF NEWS – ESD TRAINING FOR SPACE & DEFENSE

Space & Defense User/Operator Awareness ESD Training™

RMV Technology Group LLC
NASA Ames Research Park
Space Portal | McCord Avenue | Building 555
Moffett Field, CA 94035

2-Year RMV Certification
Group Rates for US Military, DoD Civil Servants

ESD Certified User/Operator: The Space & Defense User/Operator Awareness ESD Training is designed for the Warfighter that may work In Theatre to R&D, Production, Repair Depots, Warehousing or Incoming Inspection that assembles, inspects, tests, kits or handles ESD circuit card assemblies and ESDS (ESD Sensitive Devices) EEE Parts or equipment containing ESDS.

Proper Packaging, Material Handling protocols, Long Term Storage, Transport and Repair Returns with a clear understanding of the source and control of static charges in theatre and the ESD Protected Area (EPA) are presented in an interactive format and brought to you onsite or "Live" from the RMV Laboratory, where you will see on-screen measurements, videos and Case Histories of widely used materials for Space & Defense found to be non-compliant or suspect for ESD compliance despite Visual Inspection or Verification, Supplier Claims and Technical Data Sheets, with RMV solutions in support of current Space & Defense requirements. The RMV training module link will be available on the NASA "whitelisted" software portal for online viewing by each participant. *This course is Virtual or On-Site, for a 4-hour or 1 day training module.*

NOTE: Content Revision is ongoing based upon technology updates and future developments for Space and Defense.

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What You Will Learn

Material Compliance outside the ESD Protected Area (EPA) for the Future of the Warfighter!

FASTPAKs, Class V Ammo Tubes & Cylinders, Special Coatings, Textiles, Polymers, Sustainable Materials & Hard Cases for Lifecycle Engineering of Armament Solutions

Packaging, Handling, Long Term Storage, Transport, Kitting, Return Repairs of ESD Sensitive Equipment (e.g. Optics, UAVs) that protect ESD Sensitive Devices (ESDS)

ESD Workstations (R&D, Production, Repair Depots) and Field Service Kits (in Theatre) to NASA STD. 8739, Section 7, MIL-STD 87893 & related MIL STDs. for Extreme Environments

Verification Testing for Harsh Conditions *not only for Arctic and Tropical Environments, but also low RH as seen in flight and Santa Ana wind conditions can damage or destroy ESD Sensitive Devices!*

Non-Conforming or Suspect Counterfeit Packaging & Materials

Incoming Inspection to Verify Material Compliance of ESD Susceptible Devices - Your First Line of Defense!



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esdaerospacetraining.org

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Course Outline with Measurements

- I. ESD Basics, Materials and ESD Test Methods
 - A. How is ESD Generated and How is it Controlled?
 - B. Charging by Friction-Charge Separation
 - C. Humidity Effect and Charge Generation
 - D. Demonstration of Charge Removal on Conductors and Insulators
- II. ESD Roadmap of Device Microprocessor Densification Issues
- III. How ESD Damages with Experiments
- IV. Device Classifications and ESD Control Measures to Class 0
- V. ESD Control in the Workplace and In Theatre
 - A. Storage Considerations
 - B. Transport Design Considerations outside the ESD Protective Area
 - C. Packaging Protection in a Hostile Shipping Environment by Carriers
- VI. ESD Workstation User/Operator Practices in the Workplace
- VII. Ionization with Live Demonstrations
 - A. Do Ionizers work well with Kapton® Tape and other Charging Surfaces?
 - B. Ionizer Experiments to Reduce Charge Build-up
- VIII. Material Qualification Sequence, How to Qualify Supplier Materials?
 - A. ESD Qualification Program
 - B. Review of Technical Data, and what should a specification sheet contain?
 - C. How to prevent Counterfeits
- IX. Packaging Materials Catalog and Surfing the Web Horror Stories
 - A. Products that Prevent Charge, but do not Provide Static Shielding Barriers
- X. Measures for Packaging, Materials & Components
 - A. Verification Requirements against Suspect Counterfeit ESD Materials
 1. The ESD Grid Bag Experiments
 2. Successful use of Type I Moisture Barrier Bag with Desiccants
- XI. ESD Preventative Measures
 - A. IMPORTANCE OF PERSONNEL GROUNDING
 - B. The Risk of Antistats for packaging DoD ESD Sensitive Devices
 - C. ESD Testing Methods for Material and Packaging Effectiveness
 - D. ESD Workstation: ANSI/ESD STM4.1 & MIL-PRF-87893 and Worksurface Charging
- XII. Wriststrap Verification Measurements for Proper Grounding
- XIII. Safe Handling Practices to Mitigate Risk of ESD Sensitive Circuit Card Assemblies for Removal, Replacement and Shipping by use of a grounded Field Service Kit on WarFighter flight lines, Helicopters, Naval Vessels, Armored Vehicles, UAVs and Missile Systems™
- XIV. Proper Kitting Protocols using ESD Safe Packaging
"Bring your Materials to Class"
- XV. Conclusion and Questions followed by Remote True/False Exam

ESD Traceability to NASA STD. 8739.6B, MIL STD 87893, related MIL.STDs. and ANSI/ESD S20.20 outside the EPA for extreme environments

SME INSTRUCTOR

Bob Vermillion, CPP, Fellow
NASA ESD Technical Authority
DoD ESD Committee
2023 NASA Level A Instructor
2019 DoD Packaging Hall of Fame
NASA Interagency Working Group (ESD)
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Kentucky Windage In-Theater

DoD Contract Vehicle

RMV is a Service-Disabled Veteran
Owned Small Business

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