The Joint Service Mask Leakage Tester: Helping to Ensure Protective Mask Readiness

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JSMLT – The Basics

• A portable tool to aid the warfighter to determine leakage and fit of protective masks
  – Used to maintain masks in a high state of readiness
  – Reinforces a unit’s PMCS program

• Concept of Operations
  – Garrison and deployed operations
  – Peacetime, wartime, military operations other than war, garrison training and field exercises
  – Shore and afloat forces
  – Supports NBC capabilities in low, medium and high threat areas
JSMLT – Capabilities

- Mask Leakage
- Drink Tube Flow
- Outlet Valve Leakage
- Drink Train Assembly
- Drink Valve Seating
JSMLT – Capabilities

Quantitative Facefit Test
Fielded Systems Will Provide Testing Capability For:
- M40A1 Masks
- M42A2 Masks
- M45 Masks
- MCU-2A/P Masks
- Joint Service General Purpose Mask (JSGPM)
- Joint Service Aviator Mask (JSAM)
- Many other protective masks
JSMLT – Mask Leakage Testing

- Mask placed on the headform
- Aerosol released under shroud over the protective mask
  - Poly-Dispersed (0.2 - 0.5μ)
- Aerosol penetrates any existing leaks due to negative pressure applied under the mask
- Penetrating Aerosol Particles are Detected by Light Scattering Photometry
- Percent Penetration Is Calculated
JSMLT – Light Scattering Photometry

- The aerosol particles that have penetrated the mask pass into the light scattering chamber.
- The particles scatter the light that passes through the intersection of the cones.
- The PMT converts the scattered light into an electrical signal.
JSMLT vs. Current Capabilities

- Five devices currently required to determine function and fit
  - M14 Mask Leakage Tester
  - M4A1 Outlet Valve Leakage Tester
  - Q179 Drink Tube Air Flow Resistance Tester
  - Q204 Drink Tube Assembly Leakage Tester
  - M41 Protection Assessment Test System
    - Only deployable system on list
    - Cannot identify defective or unserviceable components

(Trailer or fixed site)

From this.....

to this.
JSMLT vs. Current Capabilities

**Current Mask Testing Efforts**
- Mask Serviceability
  - Visual Inspection
  - Qualitative, Low accuracy, Low precision
- Fit Testing
  - Qualitative Methods
    - Negative Pressure Check
  - Quantitative Method
    - M41 PATS (Not widely used by USAF and USMC)
- Current surveillance efforts
  - Continue to identify a large percentage of critical defects
  - Cannot conduct 100% inspections

**Bottom Line:** JSMLT significantly improves ability to detect and repair critical leaks in protective masks
- >50% not identified through visual inspection
- 4.5% not identified in JSMLT operational testing
JSMLT – Benefit to the Warfighter

• Issues with Mask Readiness Have Persisted
  – Leaking Facepieces
  – Torn/Dirty Outlet Valve Disks
  – Incorrectly Installed/Damaged Voicemitters
  – Damaged Drink Systems

• Preventative Maintenance, Checks, and Services (PMCS) Alone Are Insufficient

• JSMLT Will Provide the Warfighter with a Means of Verifying PMCS Has Been Performed Correctly

• Services that Will Use the JSMLT:
  – U.S. Marine Corps
  – U.S. Navy
  – U.S. Air Force
  – U.S. Coast Guard (DHS)
JSMLT - Partnering with Industry and the Joint Services

- JPEO-CBD JPM-IP
- Service User Reps
- JSMLT PMO
- Service Acquisition & Logistics Reps
- Air Techniques International (ATI)
JSMLT – ATI Background

• Based in Owings Mills, Maryland
• Started in 1961 to produce the M14 Gas Mask Leakage Tester
• Provided test equipment for the M17, M40 Series, and MCU-2A/P Protective Masks
• Provider of Support to the Joint Equipment Assessment Program (JEAP)
• An organization committed to quality through ISO 9001 and a Configuration Management program designed for JSMLT
JSMLT – Recent and Upcoming Program Achievements

• Milestone C/FRP Decision – May 05

• FRP Contract Awarded - 7 Sep 05
  – JSMLT Production Has Commenced

• First Unit Equipped – 3QFY06
QUESTIONS???

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