

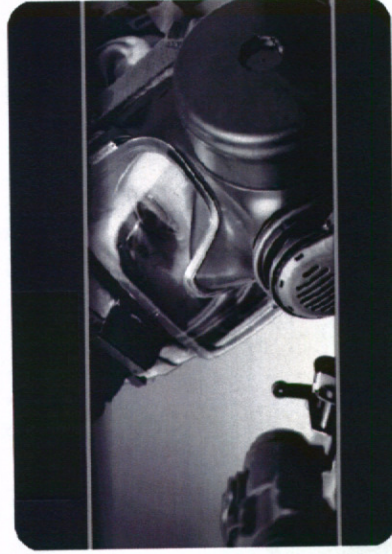
Combination Respirator Unit (CRU) & The Homeland Security Market

Jon Nelson
Avon Protections Systems

What is a Combination Respirator Unit (CRU)?

“A CRU may consist of a combination of different types of respirators”

- Open Circuit Self-Contained Breathing Apparatus (OC-SCBA)
- Closed Circuit Self-Contained Breathing Apparatus (CC-SCBA)
 - Supplied Air Respirator (SAR)
- Powered Air-Purifying Respirator (PAPR)
 - Air-Purifying Respirator (APR)



The end user...

Current User Groups

- DOD: USSOCOM, NAVY EOD, Air Force Fire/Rescue
- Local/State/Federal Law Enforcement agencies
- National Guard CST

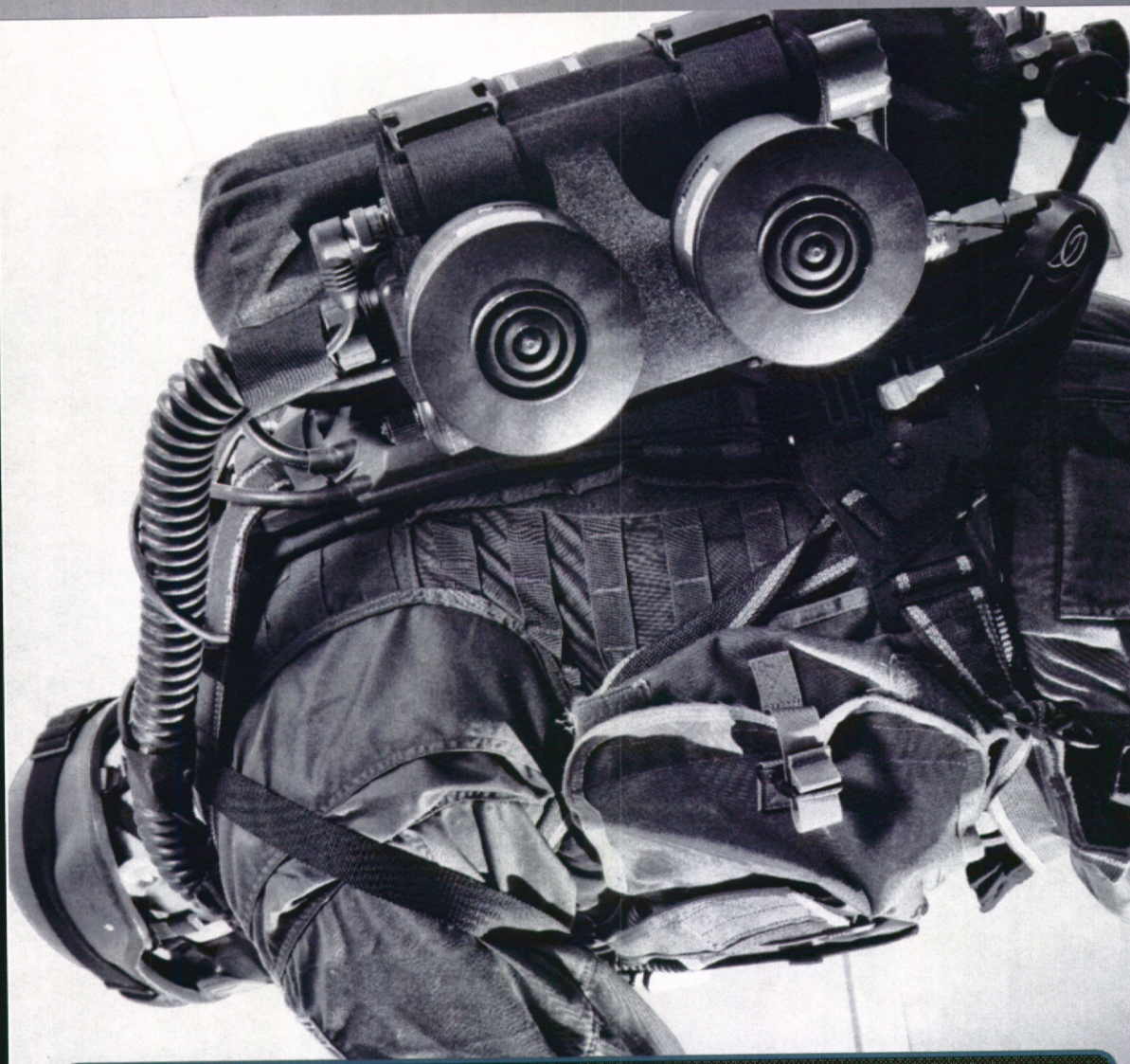


ILEAS
Illinois Law Enforcement
Alarm System



History of CRU

- 2001 DOD (US SOCOM) initiated development program
- Special users required multiple mode system
- Equipment developed:
 - *Combination APR (positive & negative pressure operation)*
 - *Multi-functional PAPER module*
 - *Stripped down SCBA*



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Combination Respirator Unit vs. Hybrid Breathing Apparatus

1) Combination System

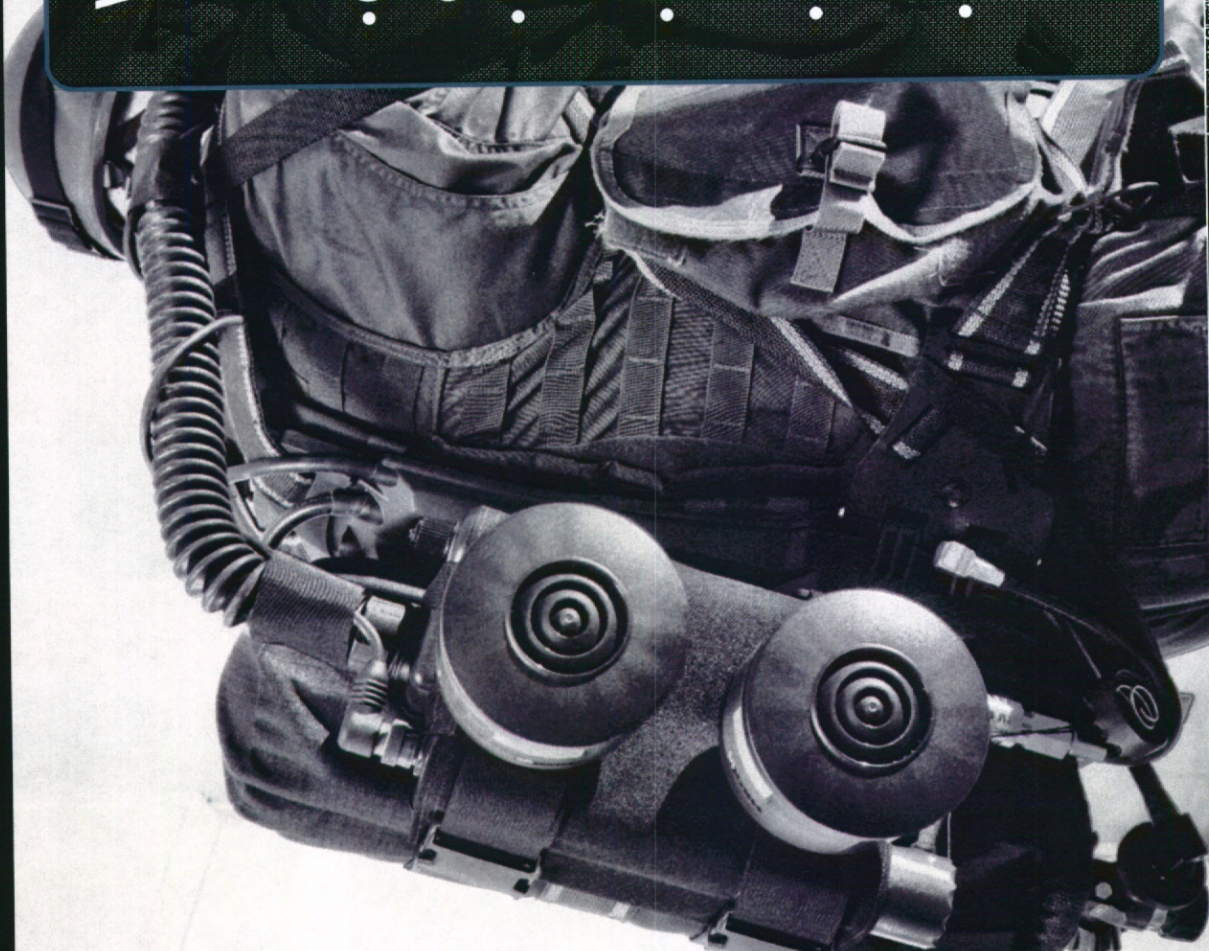
- A combination of several respirator components (modular platform)



2) Hybrid System

- A system developed with integrated components



A person wearing a full-body protective suit, including a helmet and a respirator unit with two large circular filters. The suit is dark-colored and appears to be made of a heavy, durable material. The person is standing in a well-lit area, possibly a laboratory or a training facility.

Why a Combination Respirator Unit?

- Operational flexibility— changing environments/situations
- Longer operational time (SCBA only 30-40 minutes)
- Tailored to meet specific threats (user configurable)
- Product familiarity, thus reducing training time
- Proven operation and technology within DoD

Certification challenges

- No published standard for combining RPE at present
- Users:
 - *Who are they?*
 - *Who may need it?*
 - *How should they use it*
- NIOSH 42 CFR 84 vs. NFPA 1981, 2007 Edition (*LE requirements differ from Fire*)
- Procurement method (*DHS funding*)





Operational Considerations

1) Determining when the user must change modes

- *Integrated gas detection (O₂, CO)*
- *User awareness of environment (Heads Up Display)*
- *Stealth operation (no whistle)*

2) Switching from APR/PAPR to SCBA and back to APR/PAPR

- *Filter contamination can occur during SCBA mode*
 - *Need to cover filters when using SCBA?*
 - *No reversionary mode?*
 - *Auto switching between modes?*

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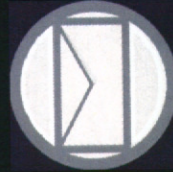
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