AGENDA

- Why Are We Here?
- Desert Storm -- Victory by Paradigm Shift
- CRAF review
- Airliner Vulnerability
- Chronological Integration of World Events
- Risk Management
Why Are We Here?

- AMC uses airliners
- CRAF essential to troop deployment
- RF weapons threaten airliners
- Threat is invisible
  ➔ Mobilization capability compromised

Risk Is manageable
Desert Storm -- Victory by Paradigm Shift

- Iraq heavily armed -- in OLD paradigm
- Technological paradigm shifts
  - Stealth
  - Smart weapons
- Saddam Hussein had a knife in a gunfight
- Iraq Is No Less Adversarial Today!
Relevant Paradigm Shifts

- CNN factor
- Low tolerance for collateral damage
- Each casualty analyzed
- Single massive catastrophe can kill public support
**CRAF Review**

- “In the most demanding contingencies, as you correctly stated, over 90 percent of DOD passengers and over 40 percent of the DOD cargo long-range air transportation must be provided by our CRAF partners.”
  
  Major General Gary A. Voellger, Director of Operations, Air Mobility Command to Subcommittee on Aviation 5/1/97.

- Airliner vulnerability threatens American strategic mobility analysis.
Airliner RF Vulnerability

- Upset control electronics at low altitude
- Inexplicable loss of pilot control
- Unlikely cause will be found
- Paradigms: COS, PIT
RF Weapons in the Hands of Terrorists -- Threats & Countermesures

Aircraft Survivability Newsletter Tatum & Baker articles

Utilization of High Power Microwave Sources in Electronic Sabotage & Terrorism Sept 3 & 4 US missile strike on Iraq

3/3/91 - Iraq Surrender

Boeing Tests Support Theory

JEC Hearings “RF Weapon Proliferation”

Iraqi Crisis

Method & Apparatus to Detect Radio Frequency Weapon Use

Trends of Microwave Weapon Development (Chinese)

Lt. Gen. Sweitzer testifies COS had "earmarks of an RF attack"

TWA 800 RF Ignition Theory published

3/3/91 - UAL 585 crash at COS

Sept 8 USA 427 crash at PIT

Tatum & Baker articles
Risk Management

- As with any risk, detection is imperative
  - Wind shear, GPWS, TCAS
- Short term - Lamentable Snake
- Long term - RFW detection on CRAF platforms
Fall 1995 Issue Featured Directed Energy Weapons

- Air Force High-Power Microwave Technology Program
  Dr. William L. Baker, Air Force Phillips Laboratory

- A New Threat to Aircraft Survivability: Radio Frequency Directed Energy Weapons (RF DEW)
  John T. Tatum, U.S. Army Research Laboratory
Utilization of High Power Microwave Sources in Electronic Sabotage & Terrorism

Figure 1. Evolution of HPM as an electronic terrorism tool
“The day when [electromagnetic weapons] can give play to their power on the battlefield is not far away”
Lt. Gen. Schweitzer’s Comments

- Joint Economic Committee testimony June, 1997
- USS Forrestal referenced - similar to ‘96 RF Ignition paper
- “Any idiot can go and build one of these weapons”
- Referenced COS as “had the earmarks of an RF Weapon”