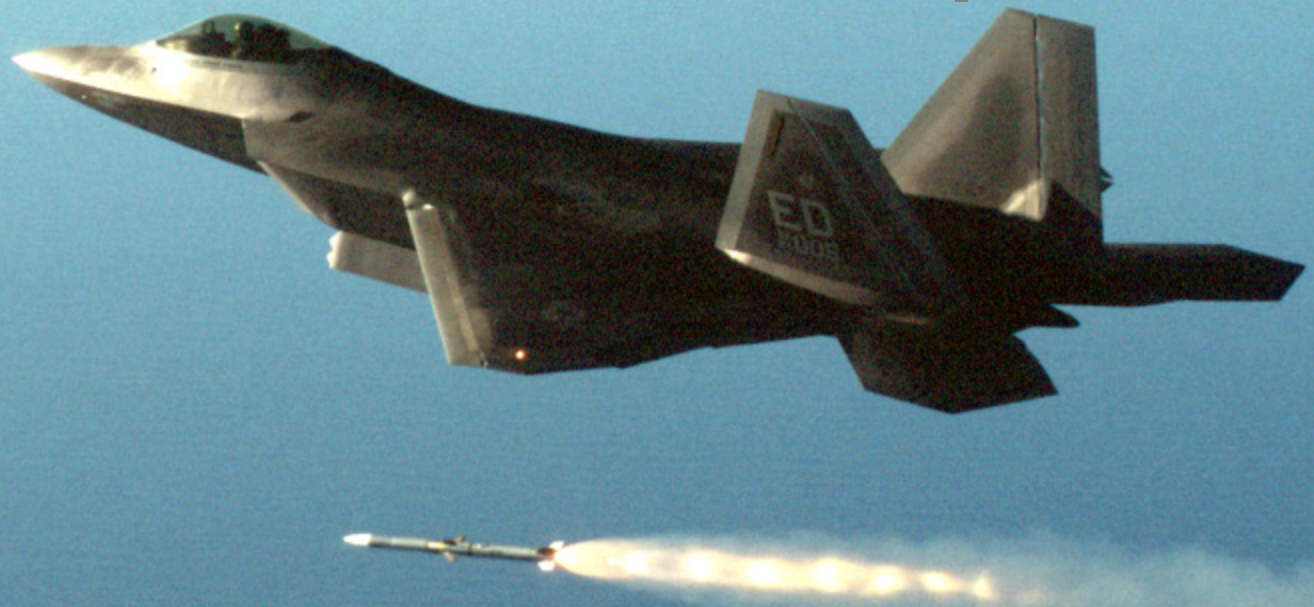
Meeting New Challenges in T&E
"An Air Armament Perspective"



Mr. Bob Arnold
Technical Advisor, 46th Test Wing
Eglin AFB, Florida

The Challenge

- New weapon systems to provide unprecedented capability
  - Flexible aircraft: F-22, JSF, F/A-18E/F, B-1 CAS, B-52 Strike
  - Agile munitions: AIM-9X, JASSM, SDB, Winged--JDAM, WCMD
  - Robust C2ISR: Predator, Global Hawk, JSTARS, AWACS, U-2
- Requires infrastructure to support family of systems tests
- Ranges must adapt…despite:
  - Encroachment, aging infrastructure, and under-funding

We need to think long-term …

So ranges will be relevant in the future

Overview

- Air Armament Summit
- Test and Training Panel
- Key Challenges
- Summary

B-52H Releasing JDAM

Air Armament Summit
In Review

1999: "Forging the Sword"

GETM – S&T -- Roadmaps

2000: "Sustaining the Sword"

Inventory Infrastructure

Weaponized UAV

2001: "Delivering the Sword"

Integrated Armament

Process Acceleration

Expanded Participation

2002: "Strengthening the Sword"

Optimization of The Inventory

Examination of the Industrial Base

Expanded International Participation

Air Armament Summit Successes

Developed 25 year Air Armament Roadmap

Small Diameter Bomb

Predator & Hellfire

JDAM

Air Armament Summit IV
Strategy Panels

Resources Panel
Col Doug Hayner
Air Staff

Global Environment, Threat & Military Strategy Panel
Col John Howe
Air Staff

International Panel
Air Vice Marshal Nigel Day
United Kingdom

Test & Training Panel
Mr. Bob Arnold
Eglin AFB

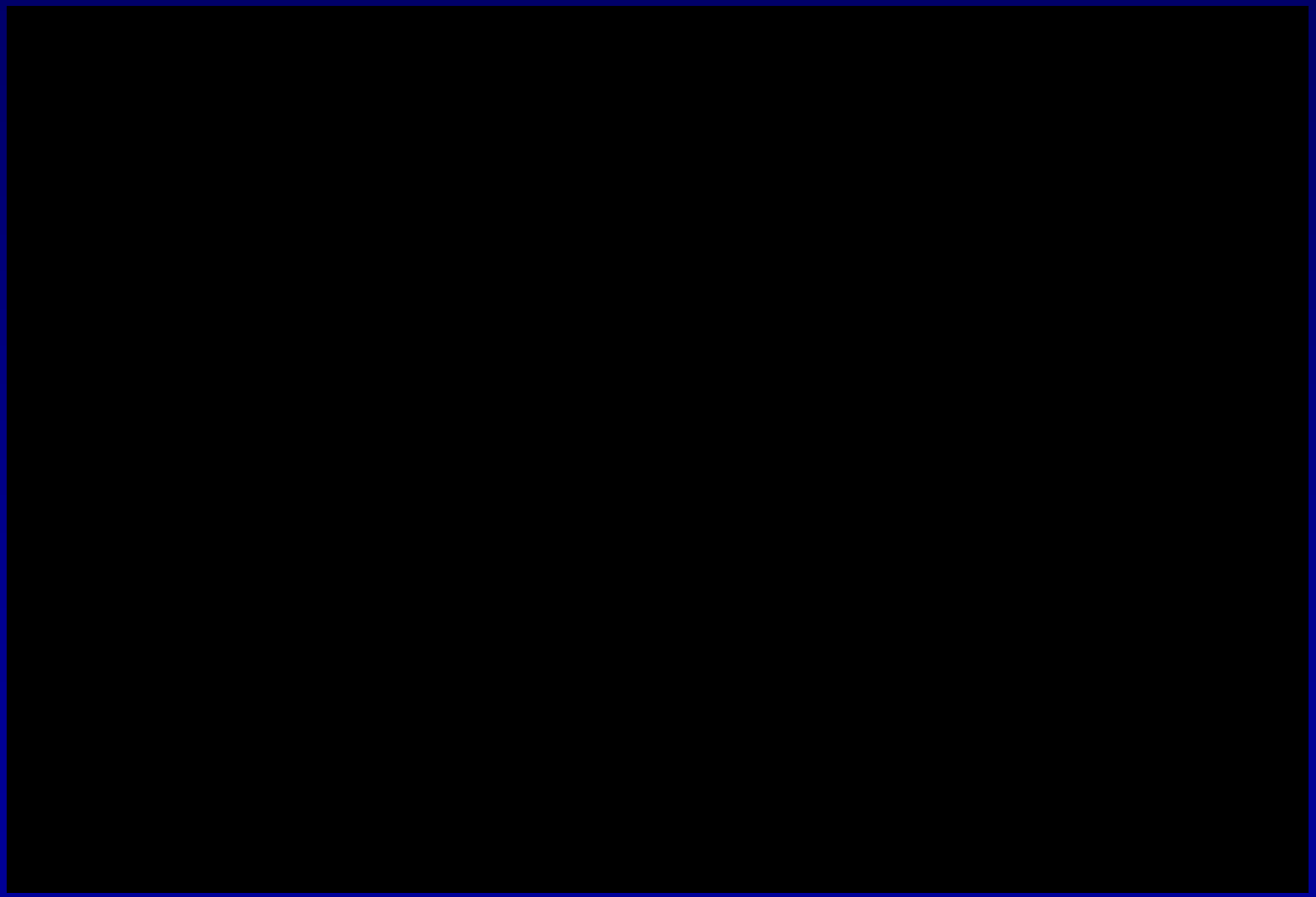
Industrial Base Panel
Mr. Glenn Kuller
Lockheed - Martin

Integrated Armament Planning Panel
Col Mac Sayers
Air Combat Command

"Strengthening The Sword"

Expeditionary Combat Support Force Protection Panel
Col Lou Daly
Air Combat Command

Video



Test and Training Panel

Today's Environment

We are testing and training with

21st century weapons on

WW II ranges in a post-Cold War environment.

Charter

Ensure Testing and Training capability supports weapons and aircraft entering inventory

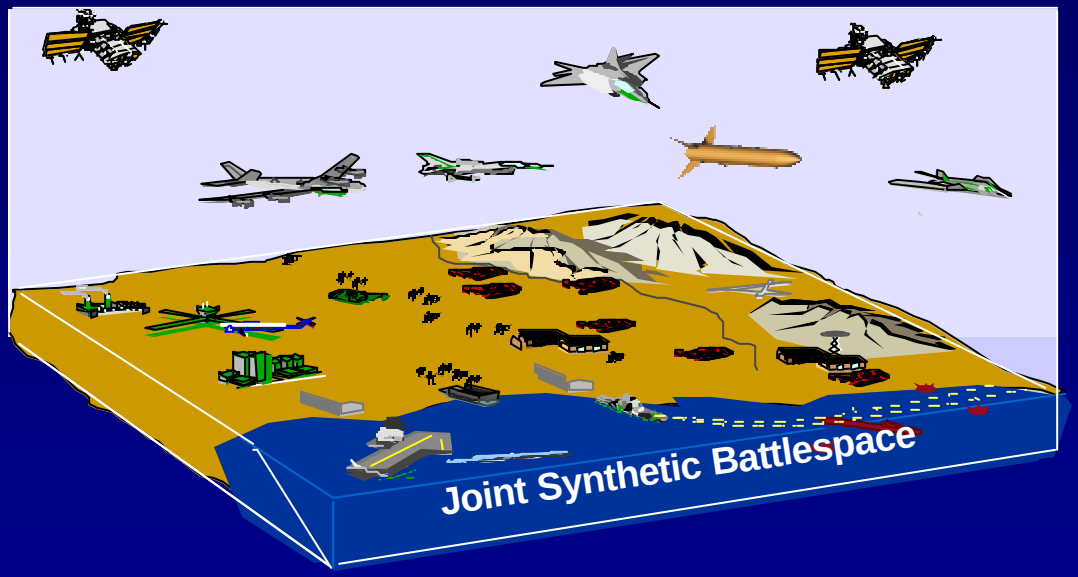
- Review Test and Training Ranges' capabilities and requirements to include instrumentation, targets, and full-scale testing
- Examine modeling and simulations to include virtual environments
- Focus on key disconnects and opportunities

2002 Panel Output

F-117 releasing GBU-27s

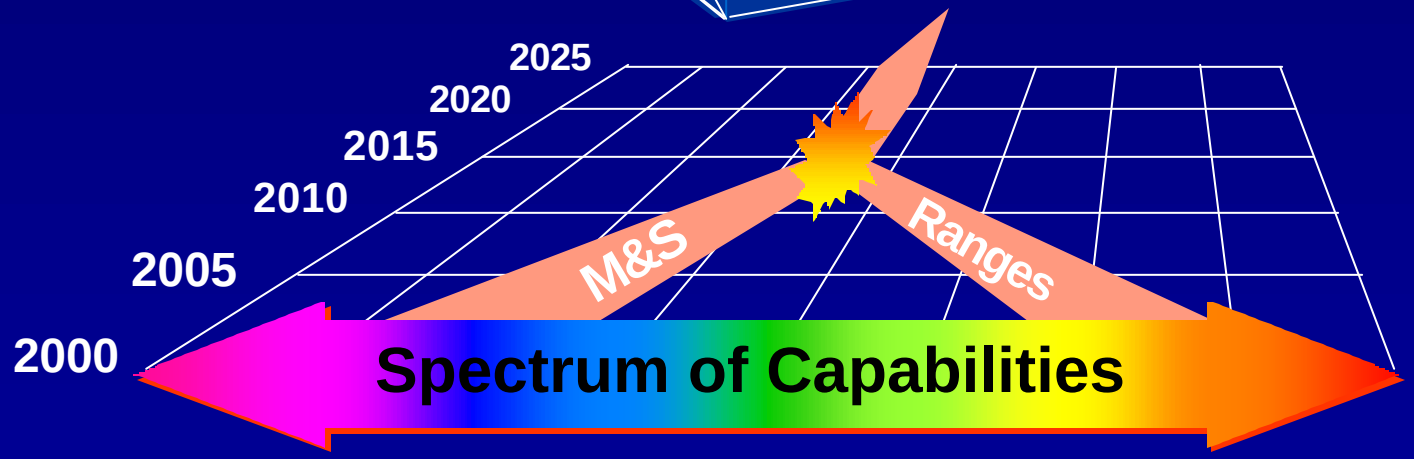
- Established Vision
- Developed Roadmap
- Identified Key Challenges

Vision



"Seamless integration of all Air Armament models, simulations, and ranges to support developer, industry, tester, trainer, and warfighter from concept exploration to combat crew training."

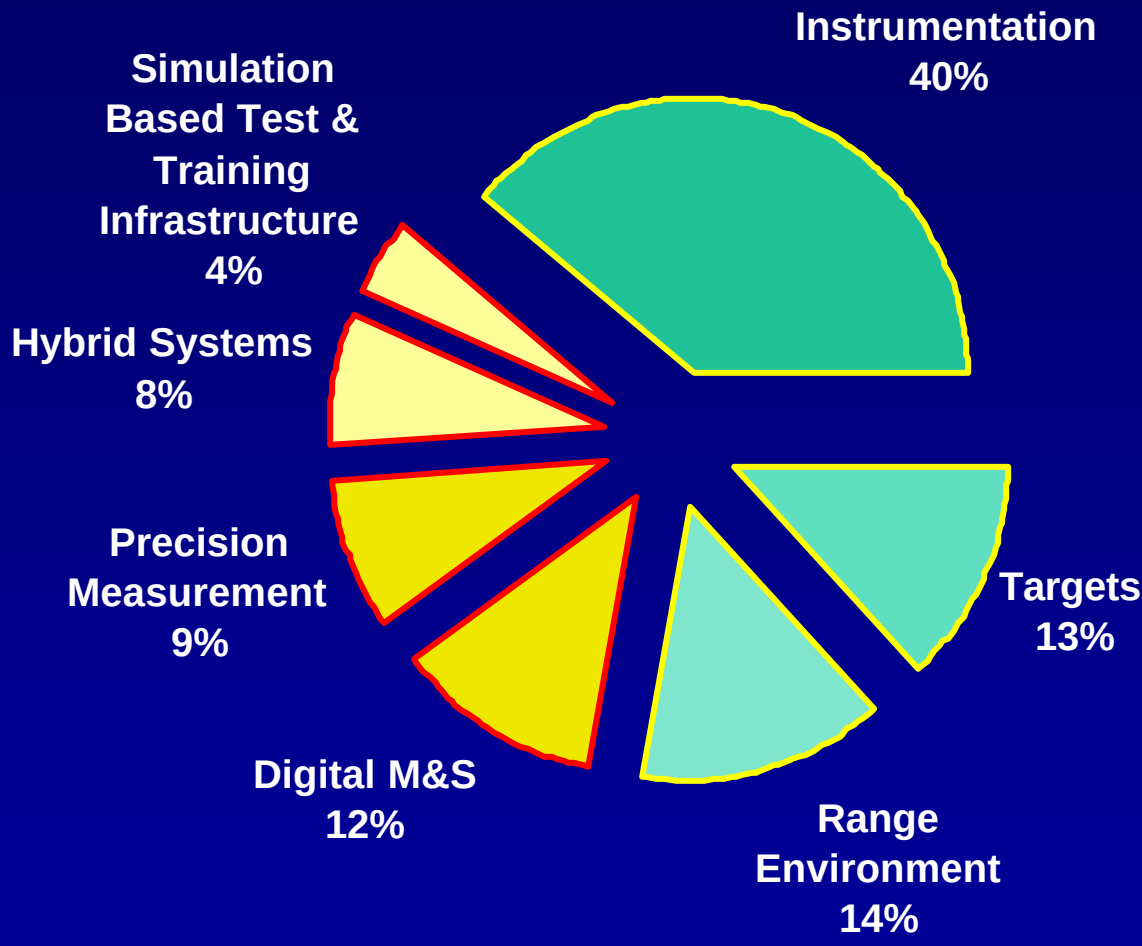
Roadmap to Achieve Vision



VIRTUAL **REAL**

Testers and Trainers

2002 Roadmap Overview



90 Projects In Roadmap

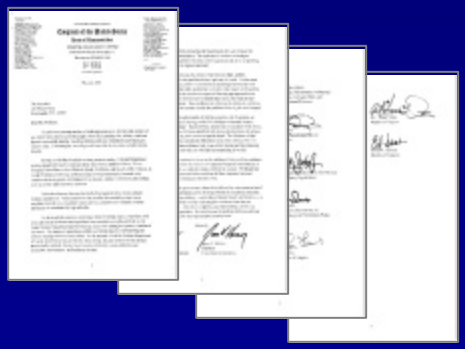
Supports Air Armament Roadmap Requirements

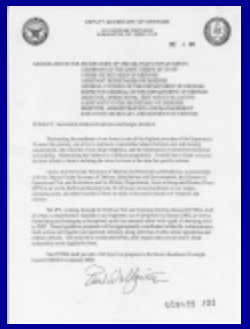
Key Challenges

- Range Sustainment
- Large Footprint Weapons
- Digital Modeling and Simulation
- Directed Energy Weapons

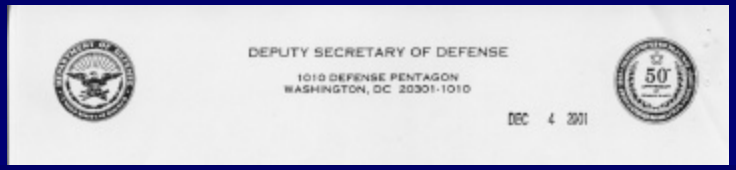
Range Sustainment Challenge

- Senior DoD Leadership Testimony
- Government Reform Oversight Committee (GROC) letter to President
- Sustainable Test and Training Ranges Initiative





Sustainable Defense Readiness & Ranges Initiative Memorandum



DEPUTY SECRETARY OF DEFENSE

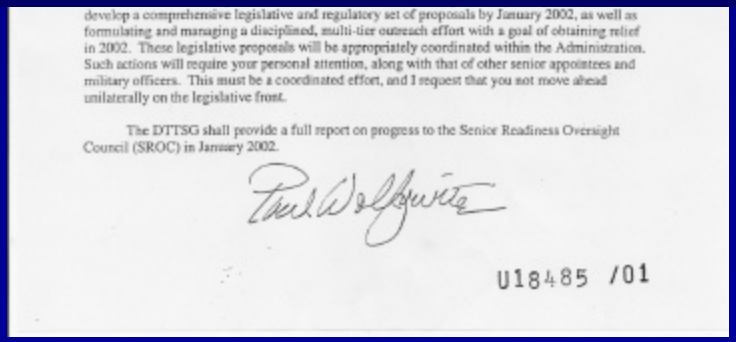
1010 DEFENSE PENTAGON
WASHINGTON, DC 20301-1010

DEC 4 2001

"Develop a comprehensive legislative and

"Formulate a disciplined, multi-tiered

"Act as coordinating body for all issues of encroachment on our ranges"



develop a comprehensive legislative and regulatory set of proposals by January 2002, as well as formulating and managing a disciplined, multi-tier outreach effort with a goal of obtaining relief in 2002. These legislative proposals will be appropriately coordinated within the Administration. Such actions will require your personal attention, along with that of other senior appointees and military officers. This must be a coordinated effort, and I request that you not move ahead unilaterally on the legislative front.

The DTTSG shall provide a full report on progress to the Senior Readiness Oversight Council (SROC) in January 2002.

Paul Wolfowitz

U18485 /01

Urban Growth

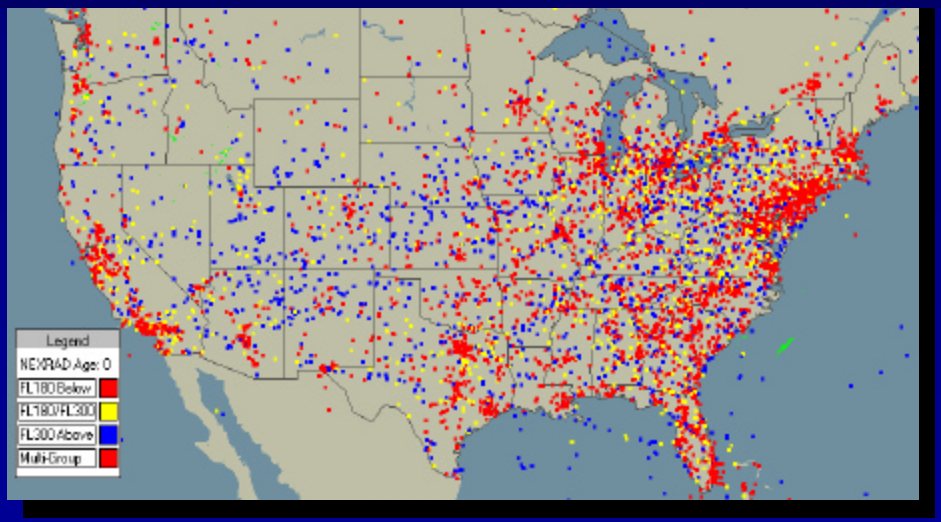
“Urban development has marched to the gates of once remote military training installations” – GROC Letter 24 May 01

Airspace

“Maintaining continued access to our ranges and airspace is critical to readiness. These areas are national assets…”

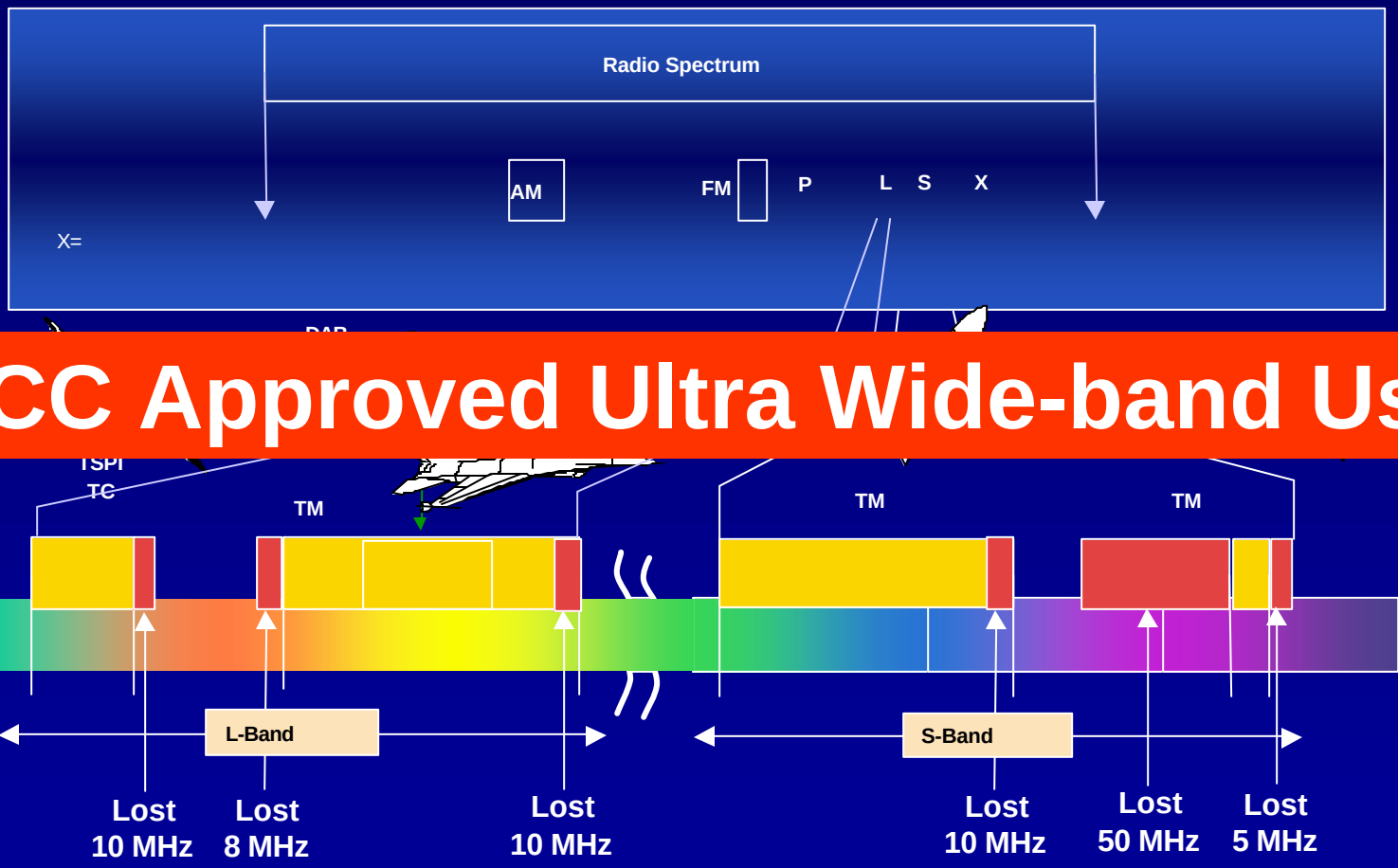
- Maj Gen Walter E. Buchanan III, DO&T, SAF

Special Use Airspace



Commercial Air Traffic

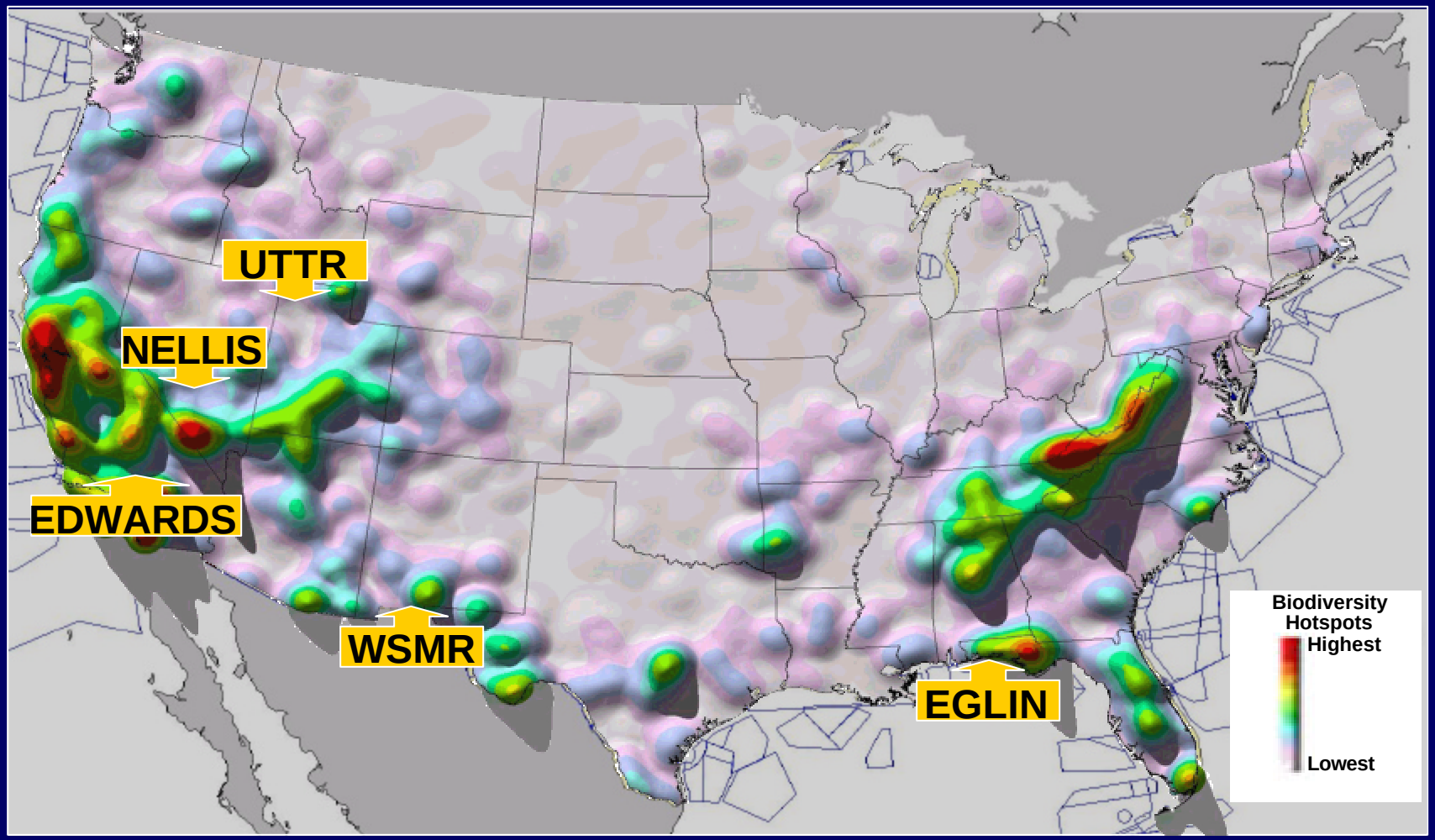
RF Spectrum



FCC Approved Ultra Wide-band Use

Total Loss = 93 MHz

Endangered Species



Unexploded Ordnance (UXO)

- National Defense Authorization Act for FY 2002 mandates
  - Estimate cost of remedy for UXO on all active facilities
  - Estimate cost of remedy for water contamination caused by UXO

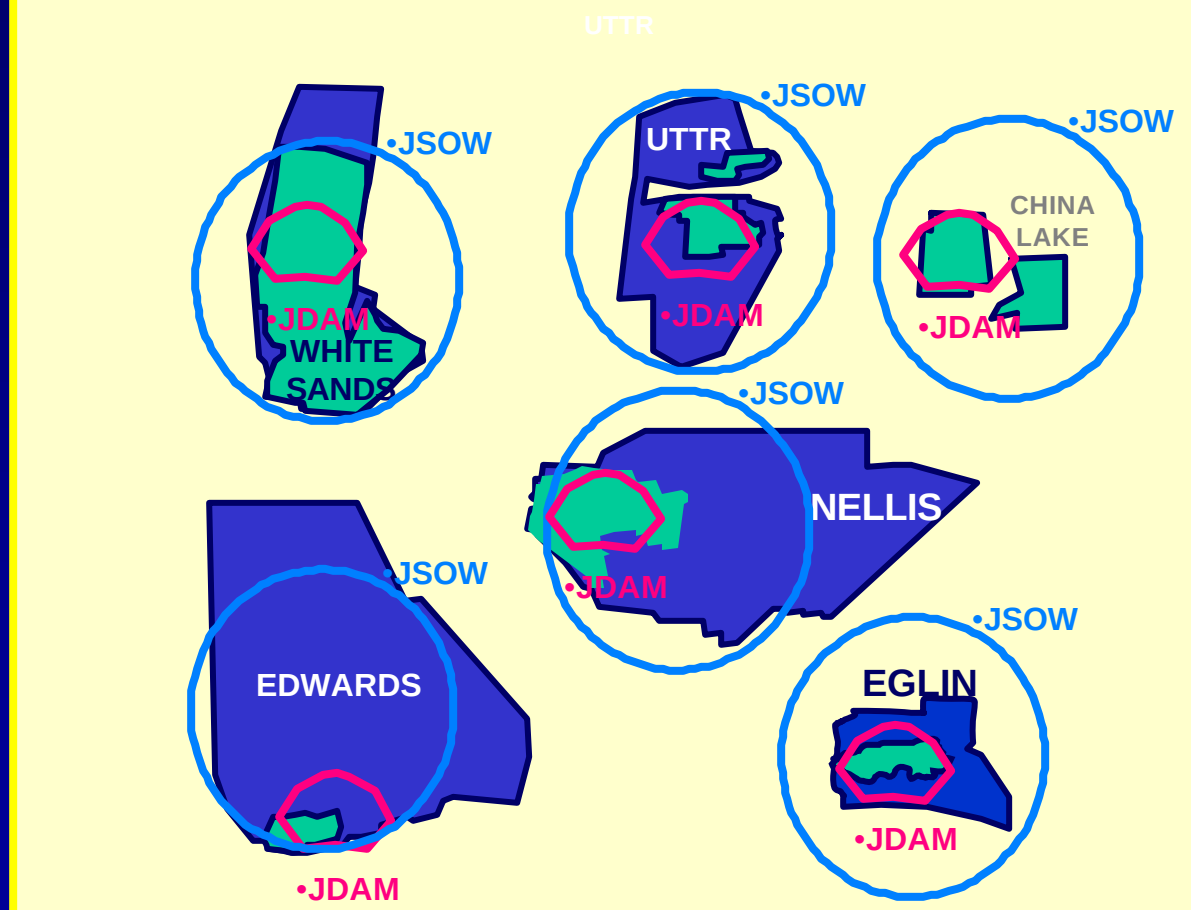
Range Sustainment Recommendations

- Increase pro-activism in formation of legislation/ regulation
- Sharing of lessons learned and successful solutions
- Increase acquisition and training communities involvement

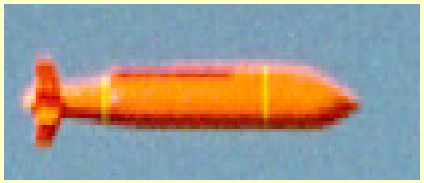
Weapon Footprint Challenge

- Aircraft and weapons performance vastly improved
- Safety footprints exceeding range boundaries
- Weapon employment parameters constrained
- Limits operationally realistic test and training

Weapon Footprint Reality



• JDAM
50 kft, 1.5M

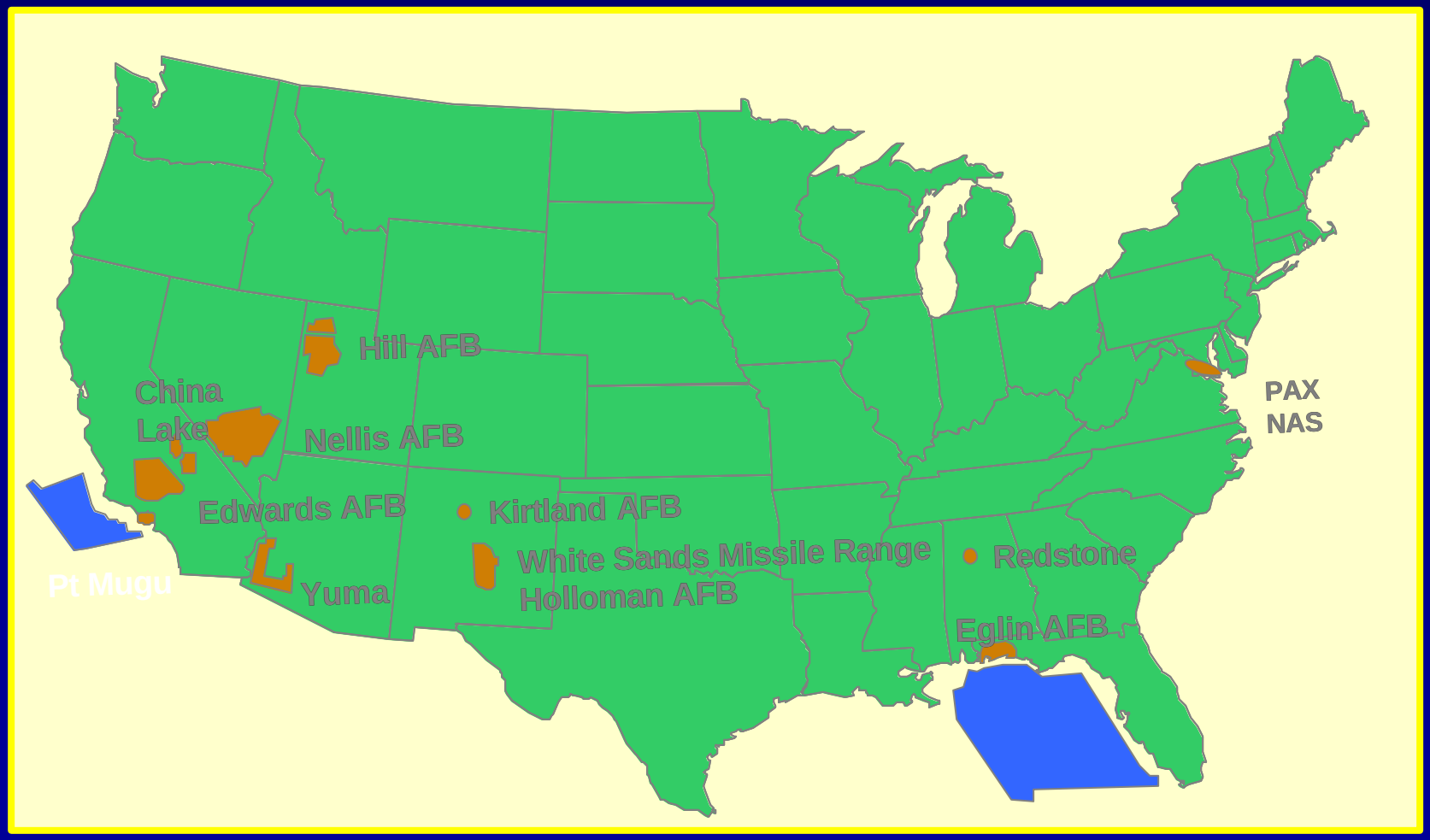


• JSOW
Medium altitude, 0.7M

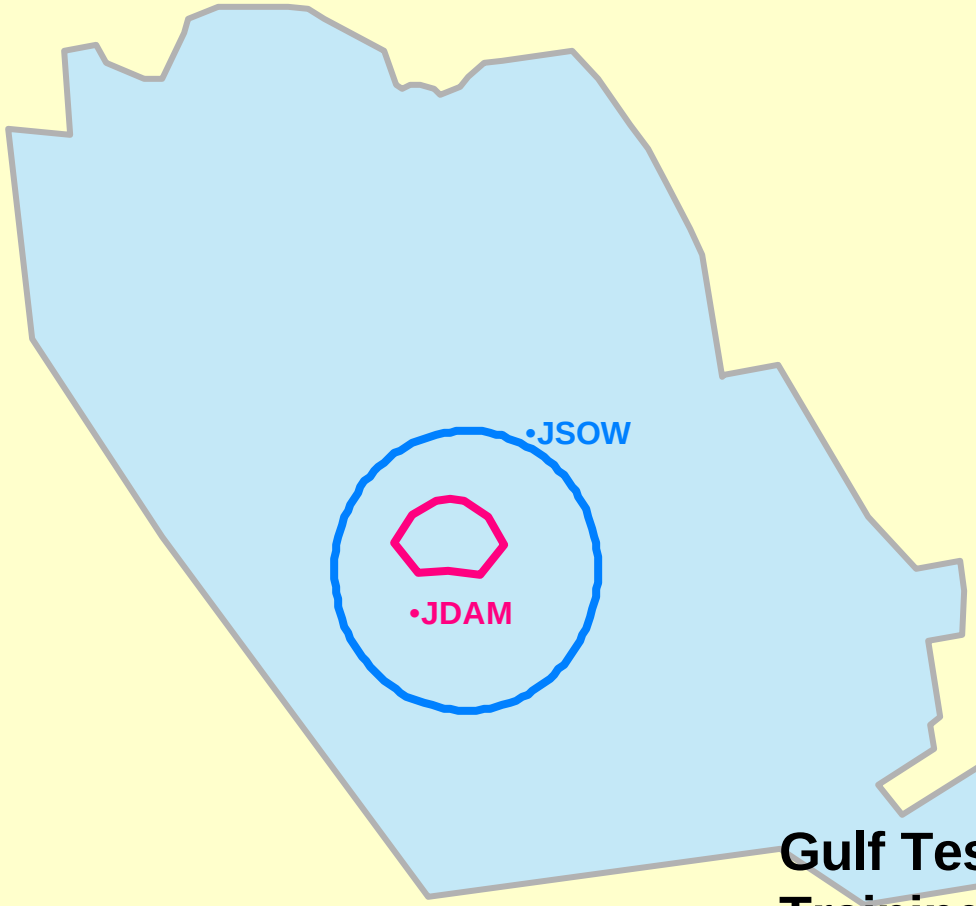
DoD Land

DoD Airspace

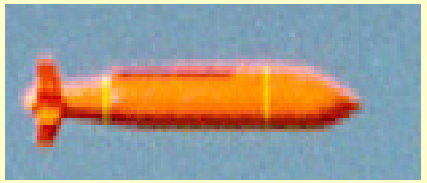
Weapon Footprint
“A Solution”



Weapon Footprint
“A Solution”



• JDAM
50 kft, 1.5M

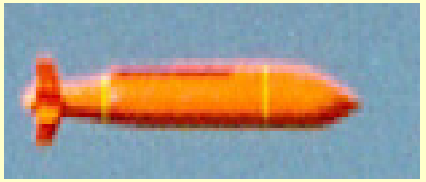


• JSOW
Medium altitude, 0.7M

Gulf Test and Training Range

Weapon Footprint
“A Solution”

• JDAM
50 kft, 1.5M



• JSOW
Medium altitude, 0.7M

Weapon Footprint Recommendations

- **Facilitize Over-Water Test and Training Ranges**

Summary

- Air Armament Summit proven process
- Test and Training Panel identified challenges

Key Challenges

- Range sustainment most challenging issue
  - Need to foster senior leadership advocacy to preserving ranges
- Safety footprints exceed most range boundaries
  - Need to expand over-water test and training ranges
- Additional future challenges also addressed
  - Digital Modeling and Simulation
  - Directed Energy Weapons

What are your challenges?