



# Dispersed Airfield Criteria: It Started Here, What's Needed Next?

## Moderator:

- Leticia Soto-Daniels, P.E., HDR

## Speaker:

- Matt Kundrot, P.E., Military Aviation Market Lead, HDR

March 5, 2026 | 8:30 a.m. – 9:30 a.m.

# HOUSEKEEPING ITEMS

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**WOOLPERT**



**WSP**



# Matt Kundrot, P.E.

HDR Engineering, Inc.  
Military Aviation Market Lead

Grew up in:

- California, USA. Parents were travelling students. Eventually Pennsylvania (Kelly's home)

Currently binge-watching:

- Home improvement show addicts. Almost no home project I won't take on.

Proudest accomplishment:

- Holding on to my wife of 40 years through a military & consulting engineer career

Biggest fear:

- Heights. Questions that will be coming from my 3-year-old grand daughter.





2026

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# **Dispersed Airfield Criteria: It Started Here, What's Needed Next?**

**5 March 2026**



# Agenda

1. Introduction
2. Safety Moment
3. Site Picture
4. Dispersed Airfield Operations
5. Airfield Criteria
6. What is Next
7. Summary and Questions



*(DVIDS)*



# Learning Objectives

- Understand the history and status of dispersed air base infrastructure and operations in Europe and other AORs
- Be familiar with airfield requirements for current and future manned and unmanned aircraft
- Understand the requirements and challenges to sustain expeditionary airfield operations into the future
- Key factors to consider in preparing future airfield plans



## 2. Safety Moment: Don't Touch This



Don't Touch This!



*Don't touch anything metal on an airfield.*

*There is no electrical protection from shock or electrocution.*

# Career Defining Event: Runway Obstruction Related Mishap, Misawa AB, Japan. 1998

- **F-16 aborted take-off led to pilot fatality and aircraft loss**
- **Impact with non-frangible localizer antenna and foundation**
- **Led to Air Force Obstruction Reduction Initiative (AORI)**
- ***AEs: Don't be a part of the mishap chain of events***

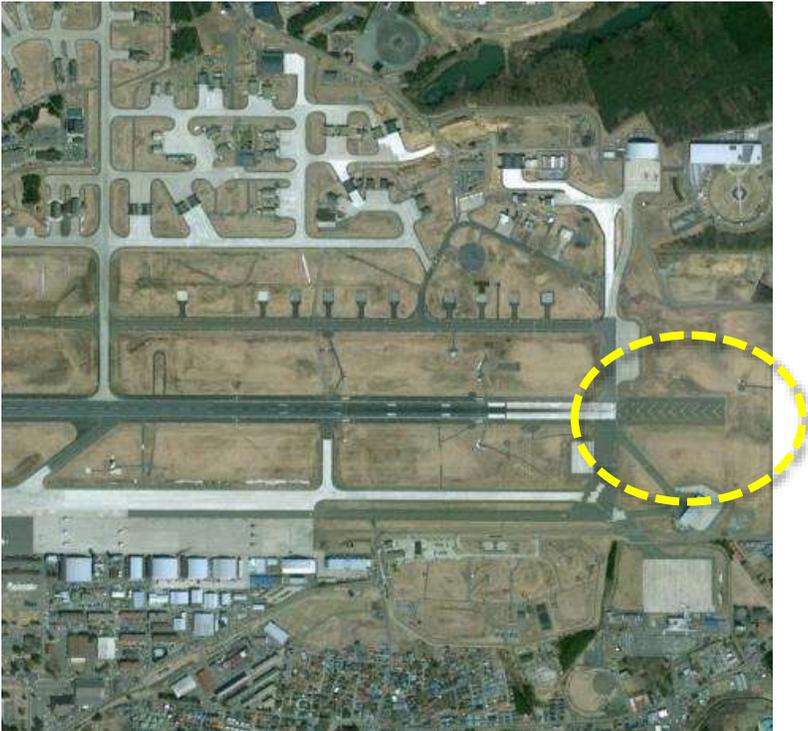
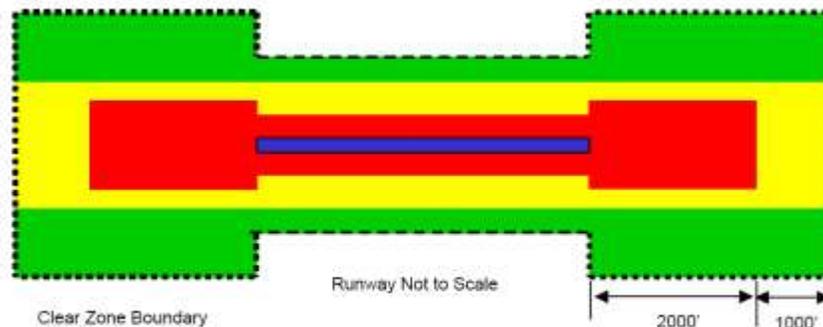


Image Source: <http://www.f-16.net/g3/f-16-photos/album30/aia>



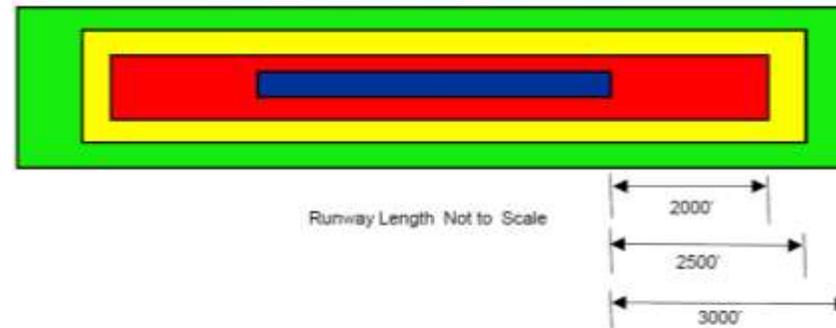
# Airfield Obstruction Reduction Initiative (AORI)

AIR FORCE PRIORITY RISK AREAS



- Priority Area 1 - 350' from r/w center line and 500' in CZ, 2000' beyond threshold
- Priority Area 2 - 350'-700' from r/w centerline, 500'-700' in CZ; 2000' to 3000' in CZ (remainder of CZ longitudinally)
- Priority Area 3 - 700'-1000' from r/w centerline and 700'-1500' in CZ (remainder of CZ laterally)

PACAF PRIORITY RISK AREAS



- Priority Area 1 - 325' (approx) from r/w centerline, 2000' beyond threshold in CZ
- Priority Area 2 - 325'-575' from r/w centerline, 2000'-2500' beyond threshold in CZ
- Priority Area 3 - 575'-825' from r/w center line, 2500'-3000' beyond threshold in CZ

## Airfield Obstruction Reduction Initiative Report

In response to  
 SAF/IG Report of Review of  
 Misawa AB, Japan Runway Construction/Repair Project

Developed by  
 Air Force Tiger Team

Members:  
 AF/ILE (Lead)  
 AF/SE  
 HQ Air Force Flight Standards Agency  
 HQ Air Force Civil Engineer Support Agency  
 AF/SC

27 Nov 00

# 3. Site Picture



# Airfields: WWII, Cold War, Today, Tomorrow



(IWM)



(DVIDS)



(DVIDS)



(Kratos)

# WWII Airfields

- Main Operating Bases
- Grass and PSP Pierced Steel Plate (Marston) matting
- Over 730 airfields in Great Britain
  - Advanced Landing Grounds



(IWM)



# Cold War – Jet Age

- Larger bombers in Great Britain
- Nuclear fighter/bombers forward
- Fewer, larger, longer paved runways
- Features:
  - Runway length 2,500m to 3,500m
  - Secondary runways & taxiways
  - Aircraft protection



(DVIDS)



(DVIDS)



# Today

- Fewer air bases
- Cold War Infrastructure, 70+ years old
- Requires >2,500m runway length
- No safe havens

(DVIDS)



(DVIDS)

(USAFE)



# Tomorrow (Literally!)

- Sixth generation fighters
- Army aviation needs runways
- CCAs and UAS will use runways
- Require 2,400m+ runway length



(Boeing)



(Kratos)



(Bell-Boeing)



## 4. Dispersed Airfield Operations



# Operation Spiderweb - 2025

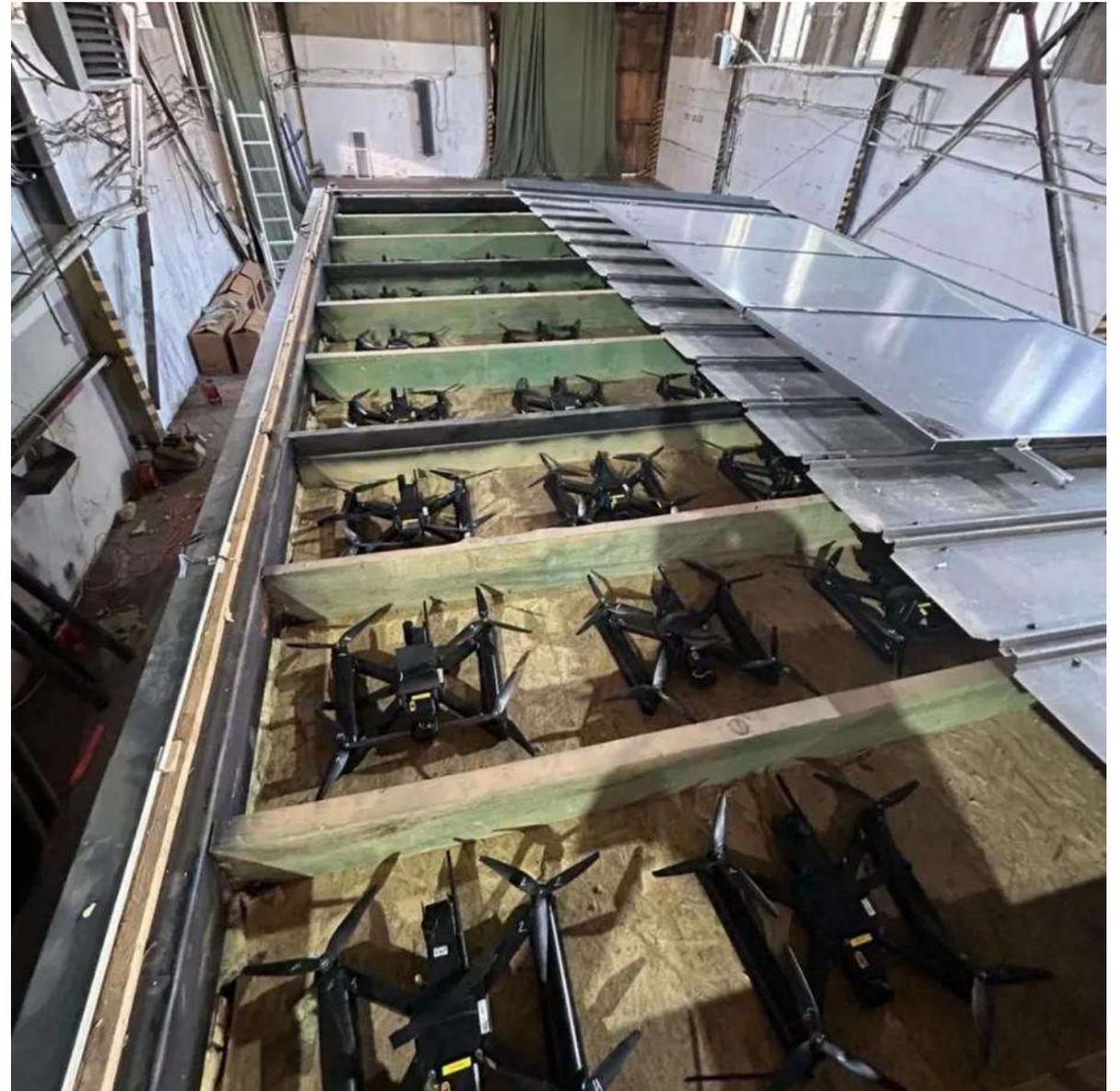


(<https://www.csis.org/analysis/how-ukraines-spider-web-operation-redefines-asymmetric-warfare>)



# Threats

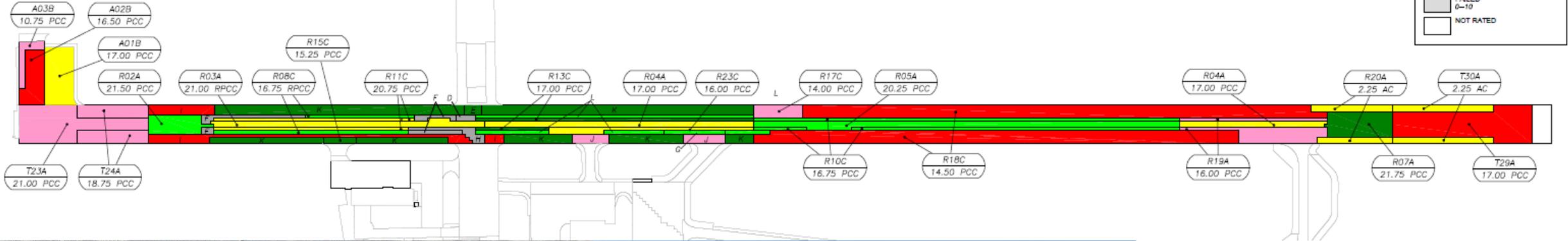
- Long Range Weapon
  - High speed, precise
- Short range drones
  - Prolific and effective
- Active and AI controlled
- Harassment by mass, low cost
  - Achieves denial of use
- Protection measures
  - Kinetic, DE, barriers
  - Significant challenge



(AP)



# Vulnerabilities: Airfield Infrastructure



**7-COLOR PCI RATING**

GOOD	86-100
SATISFACTORY	71-85
FAIR	56-70
POOR	41-55
VERY POOR	26-40
SERIOUS	11-25
FAILED	0-10
NOT RATED	



# Main Operating Bases (MOBs)

Missions Drive Facilities: Tanker, Transport, Bomber, Fighter, Special Operations



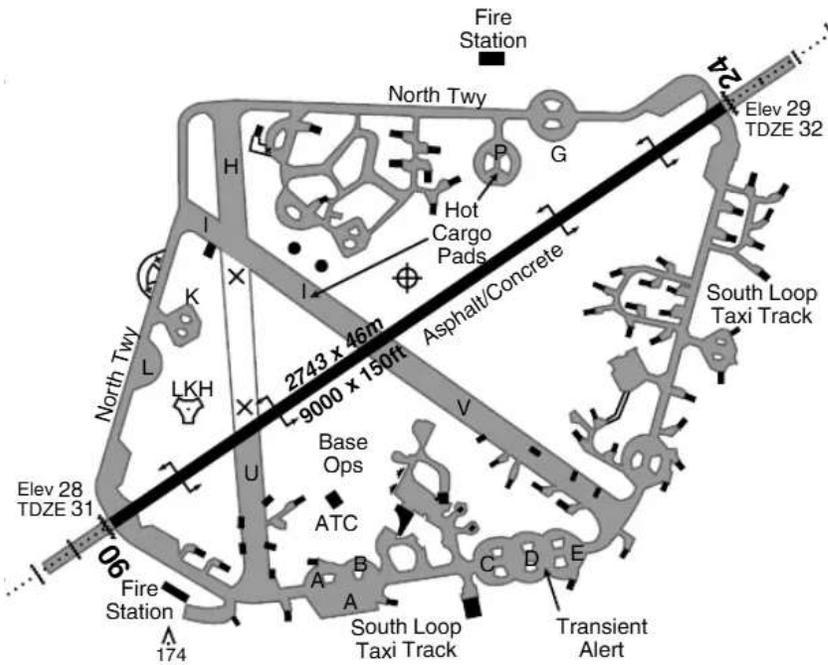
*Spangdahlem AB. (DVIDS)*



*Ramstein AB, (Kundrot)*



# MOBs: Airfield Impediments to Mission Optimization



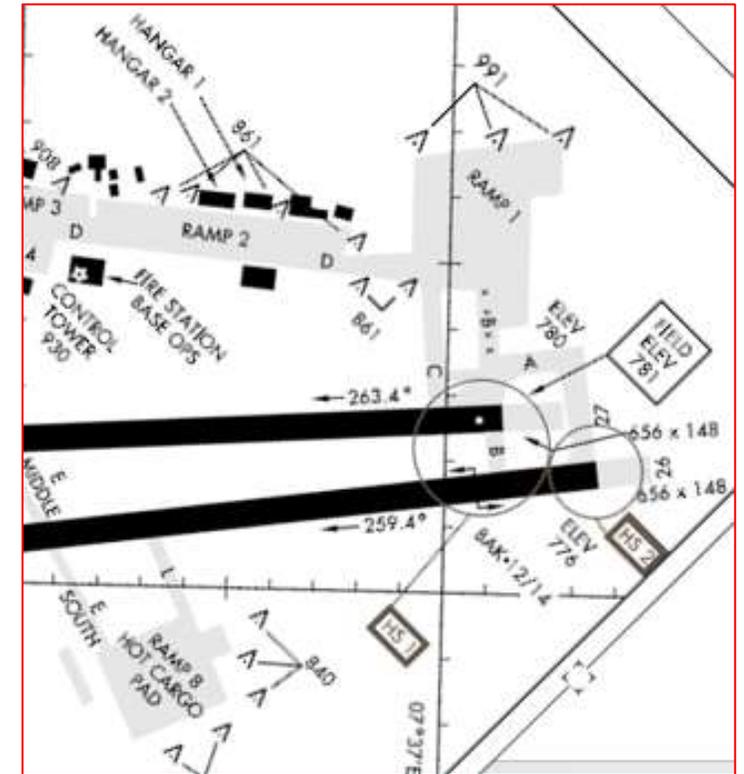
- Quick and simple access to and from the runway is the key to capacity/capability and safety.
- The quickest taxi route must not require taxi on a runway.

RAF Lakenheath (Google Earth)





# MOBs: Airfield Impediments to Mission Optimization



Elimination of "Hot Spots" must be a safety and capability priority!

Ramstein AB (Google Earth)



# Army MOBs

- 12<sup>th</sup> CAB Airfields
- Short runways



*Illesheim AAF (DVIDS)*



*Ansbach AAF (Google Earth)*



# Army Europe Airfields

- Runway shortfall
  - C-130, C-17 & UAS capability



(DVIDS)



Illesheim AAF (DVIDS)



# Vulnerabilities

- Single Runway Airfields. “One is none and two are one”
- Single Points of Failure – Critical Infrastructure
- Lack standards for alternate/backup runway surfaces



*Spangdahlem AB (Google Earth)*

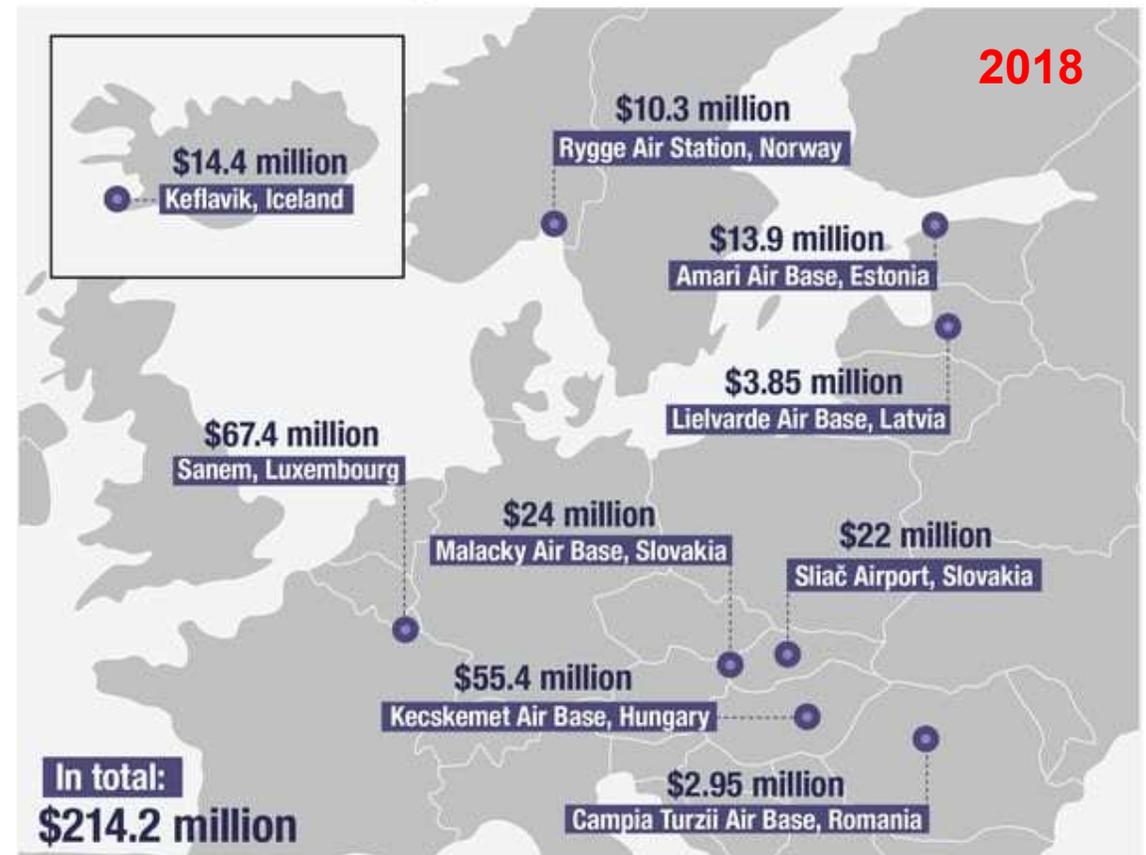


# EDI Investments: Over \$2B Infrastructure

- Forward Operating Locations
  - Willing and permanent
  - Former Soviet Bloc Airfields
  - \$200M does not do much
  - Lack of alternate runway standards understanding
- 
- USAFE-AFAFRICA I 32-1007 “Emergency Runway”
  - DAFMAN 13-217 (2025) “Fighter LZ”

## US AIR BASE DETERRENCE IN EUROPE

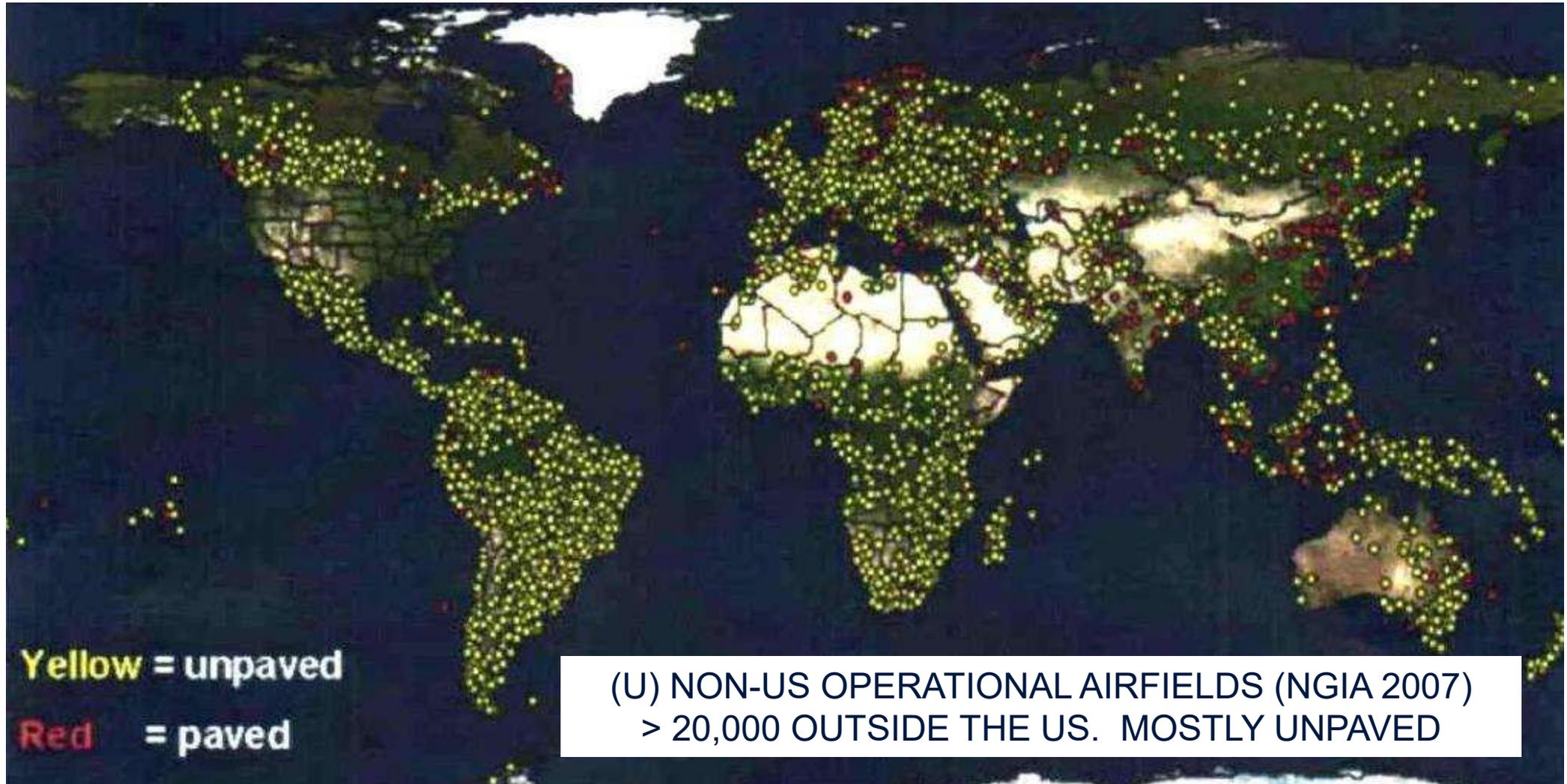
This year, more than \$200 million from the European Deterrence Initiative is being invested in bolstering air bases predominately located in Eastern Europe. The investments will allow the U.S. Air Force to strategically preposition aviation support equipment and rotate air assets as it continues to deter Russia and support NATO allies.



Sources: National Defense Authorization Act, U.S. European Command, U.S. Air Force, Pentagon

Devan Feeney/Staff

# 5. Dispersed Airfield Criteria



# Airfield Planning

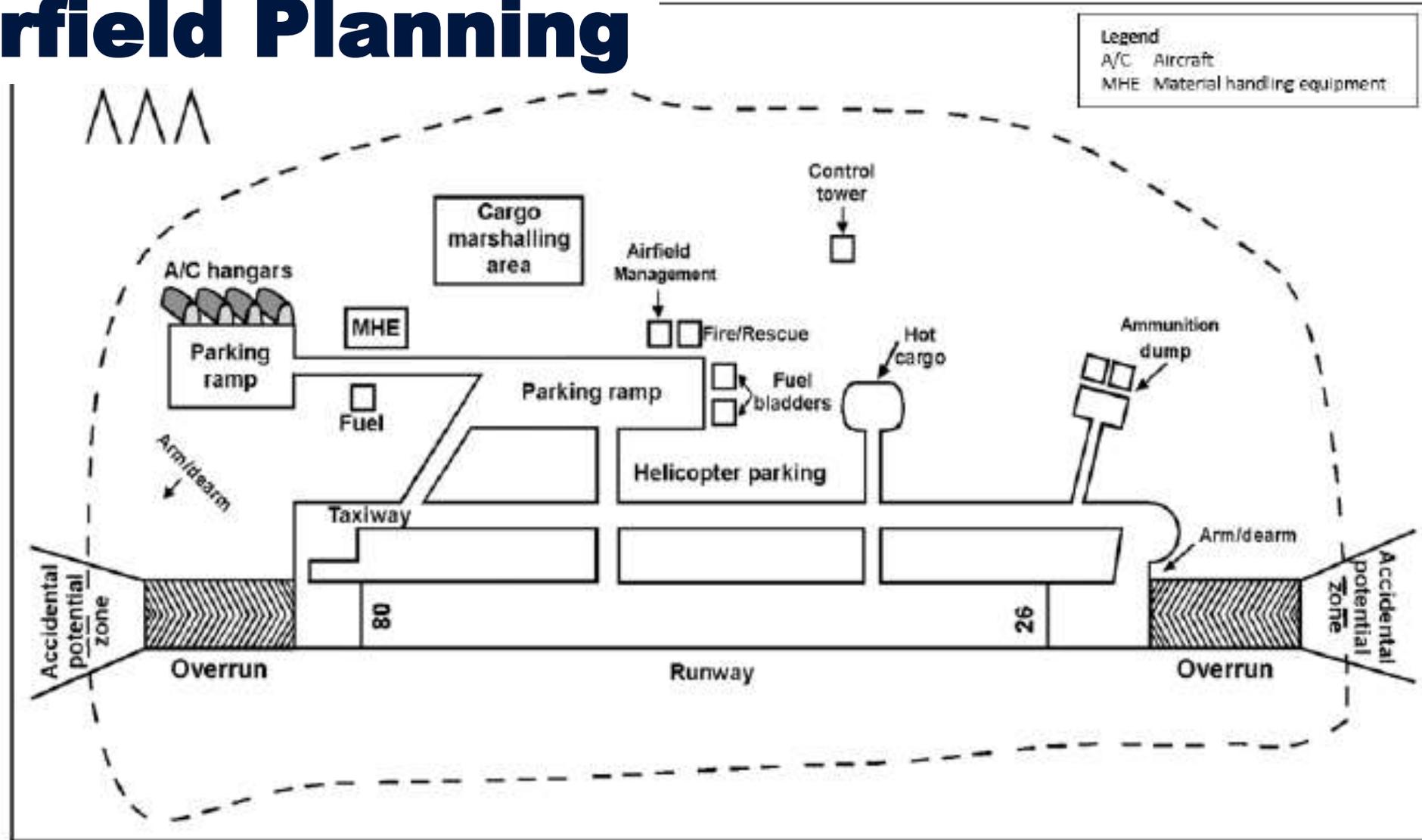
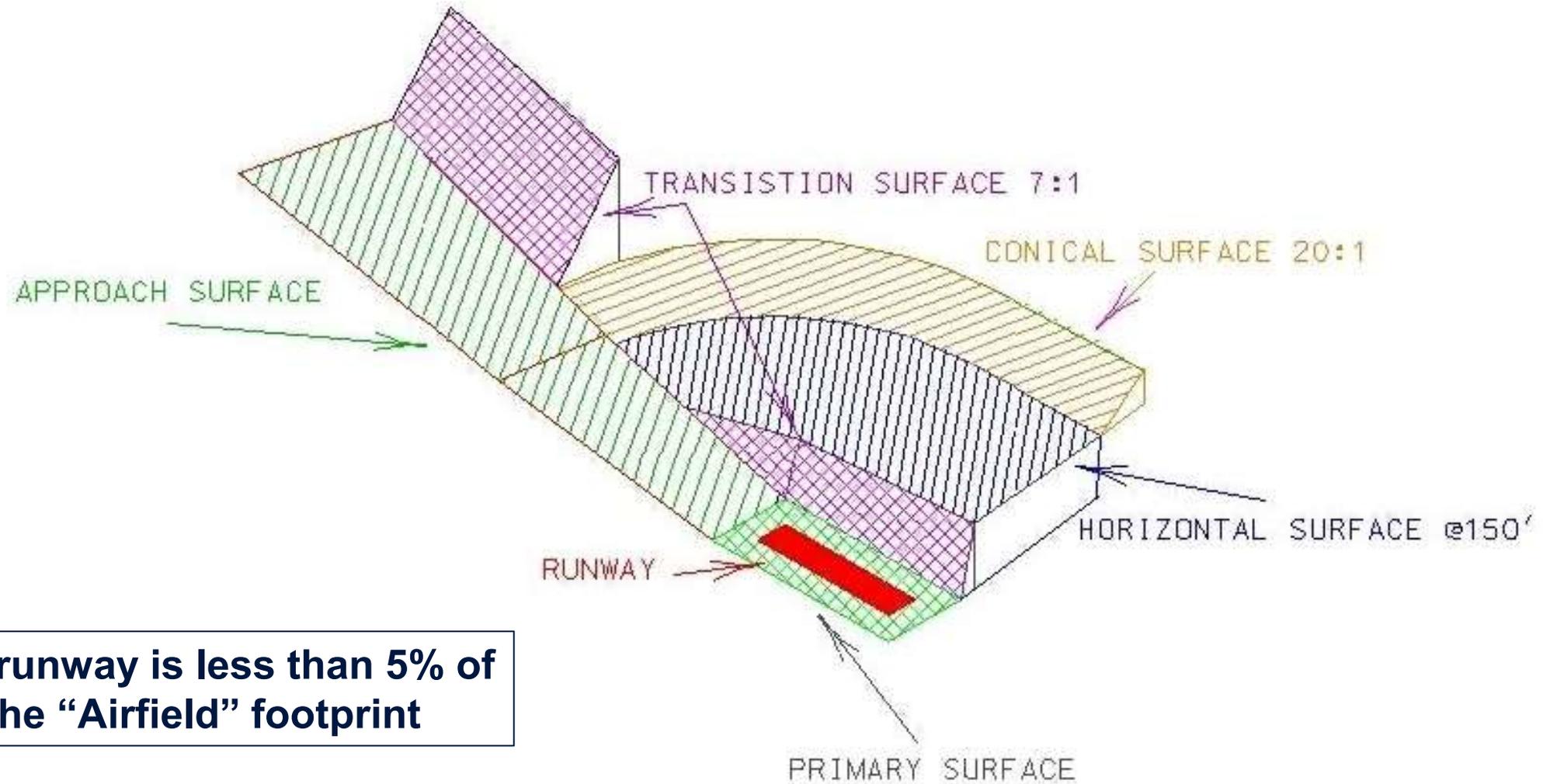


Figure B-1. Airfield layout

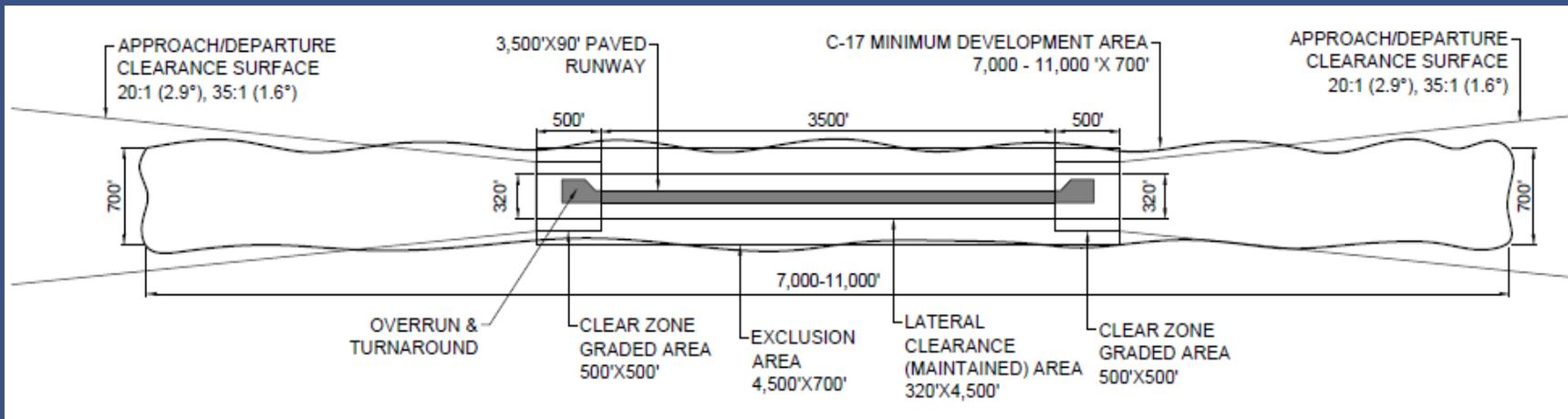
# Dispersed Airfields are More than a Runway



The runway is less than 5% of the “Airfield” footprint

# Air Force Landing Zones (LZs)

## C-17/C-130 LZ FOOTPRINT



### NOTES:

1. PAVED LENGTH: 3,500' MINIMUM (EXCLUDING OVERRUNS)
2. PAVED WIDTH: 90' MINIMUM
3. GRADED AND OBSTACLE FREE AREA 52 ACRES
4. APPROACH/DEPARTURE SLOPES: 20:1 (2.9°) FOR C-17, 35:1 (1.6°) FOR C-130
5. RUNWAY END OBSTRUCTION REMOVAL: 3,000' X 700' (UP TO APPROX 48 ACRES)
6. C-17 MINIMUM DEVELOPMENT AREA: 7,000' X 700' (APPROX 113 ACRES) TO 11,000 X 700' (180 ACRES)

**200-300 Acres**

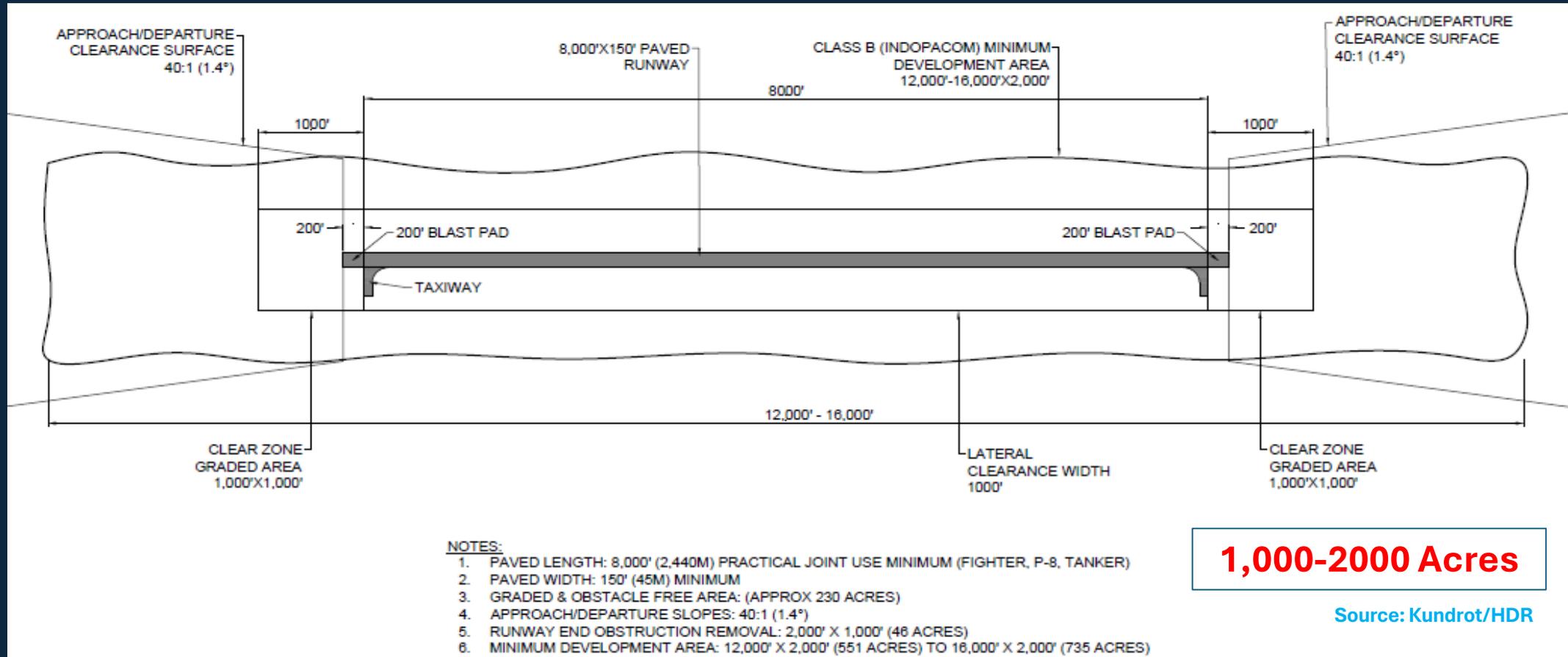
Source: Kundrot/HDR

**Requires more than a strip of pavement  
- 100 to 200 acres**



Source: DVIDS

# High Performance Forward Airfield Concept



**1,000-2000 Acres**

Source: Kundrot/HDR



# Expeditionary Air Operations Worldwide

- Air Force
  - Agile Combat Employment (ACE)



(DVIDS)



(DVIDS)

- Marine Corps:
  - Expeditionary Air Base Operations (EABO)
  - Distributed Aviation Operations (DAO)



(DVIDS)



(DVIDS)



## 6. Airfields: What is Needed Next?



<https://www.boeing.com/defense/autonomous-and-unmanned-systems/mq-28-ghost-bat>

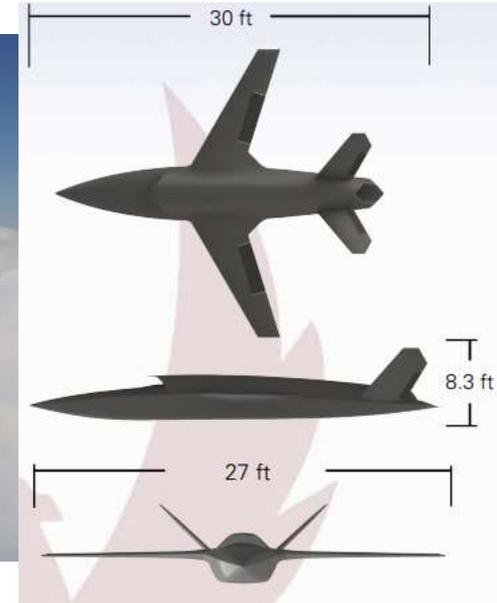


Loyal Wingmen = More Aircraft = More Facilities



# Collaborative Combat Aircraft (CCA)

- Unmanned
- Low Observable
- High Performance
- Lower Cost (\$25-50M)
- Rapid Development
- Operational Concepts
  - Autonomous
  - Wingman
- Impact on airfield infrastructure?



## General Dimensions:

Length: 30 to 40 feet  
Wingspan: 25-30 feet  
Weight: 6,000-10,000 lbs.

F-16: L: 50 ft, W: 33 ft, Wt: 38,000 lbs.

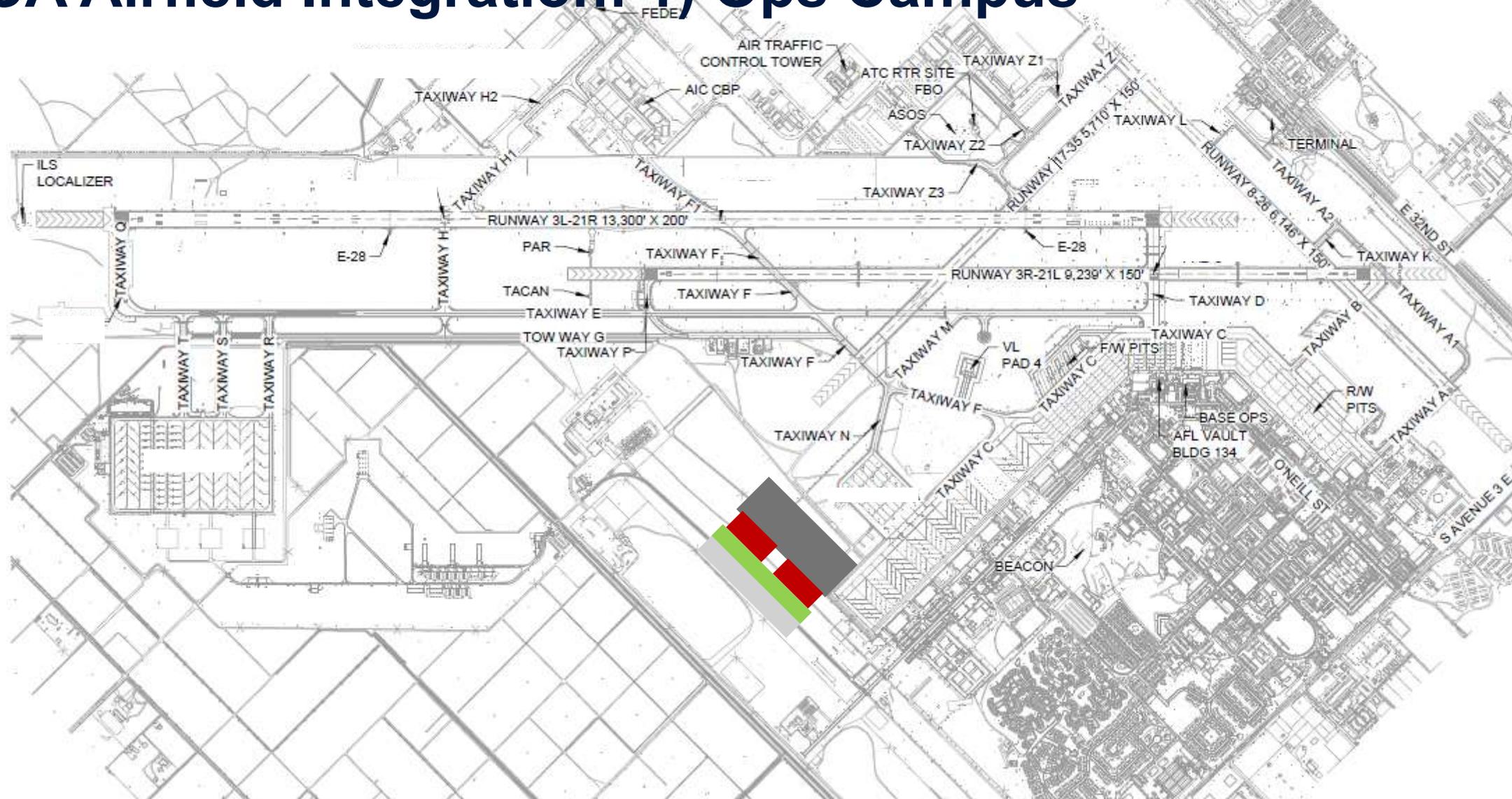




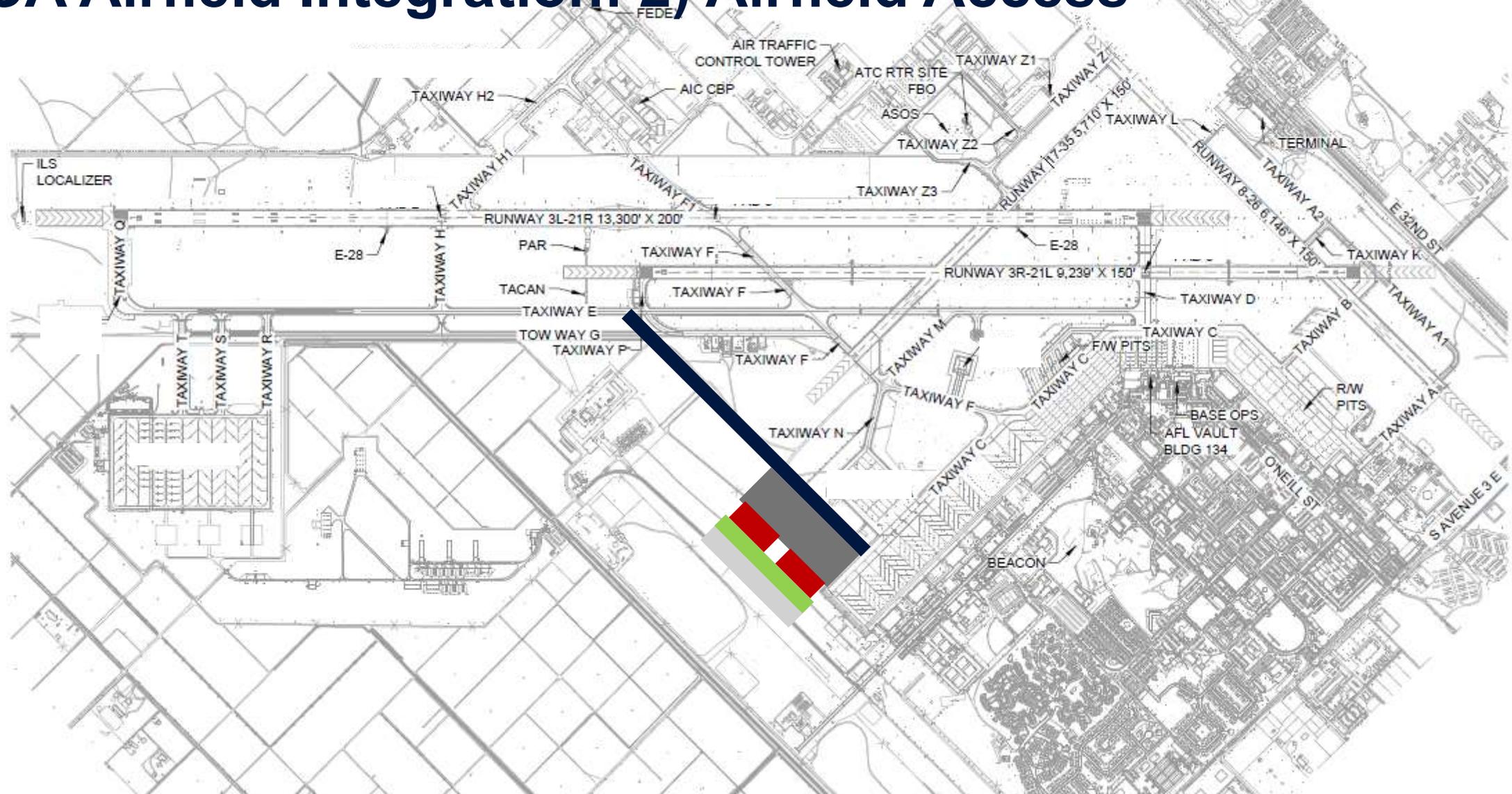
# CCA Airfield Integration Concept Plan Example



# CCA Airfield Integration: 1) Ops Campus



# CCA Airfield Integration: 2) Airfield Access







## CCA Airfield Integration in Europe

- More aircraft = More facilities
- Where do we fit the campus and how do we manage the traffic?



# Key Steps in Airfield Planning

1. Employ airfield subject matter experts!
2. Define the mission and performance requirements – Ops leadership must be at the table
3. Apply the total footprint template for the airfield and support functions
4. Assess the existing infrastructure – Condition and configuration shortfalls will exist
5. Determine the minimum requirements for pavements, clearances, airspace and waiver approvals from Ops & Eng leadership
6. Match the facility improvement/beddown plan to the Initial Operational Capability (IOC) and Full Operational Capability (FOC) force plans



# Summary: Dispersed Airfields - What's Needed

- Look back to the history of airfield infrastructure in Europe and take those lessons learned to today. We still need the basic elements to fly planes manned or unmanned.
- Dispersed and expeditionary airfields are integral to defeating the threats of today and tomorrow.
- We must develop additional airfield footprint forward and we must recapitalize and harden our existing critical airfield infrastructure.
- Airfield requirements will not be reduced by the employment of Collaborative Combat Aircraft. Look to lessons learned of fielding the F-35
- Engage airfield experts and stakeholders in the planning



QUESTIONS?

ANSWERS!



# Thanks For Listening!

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