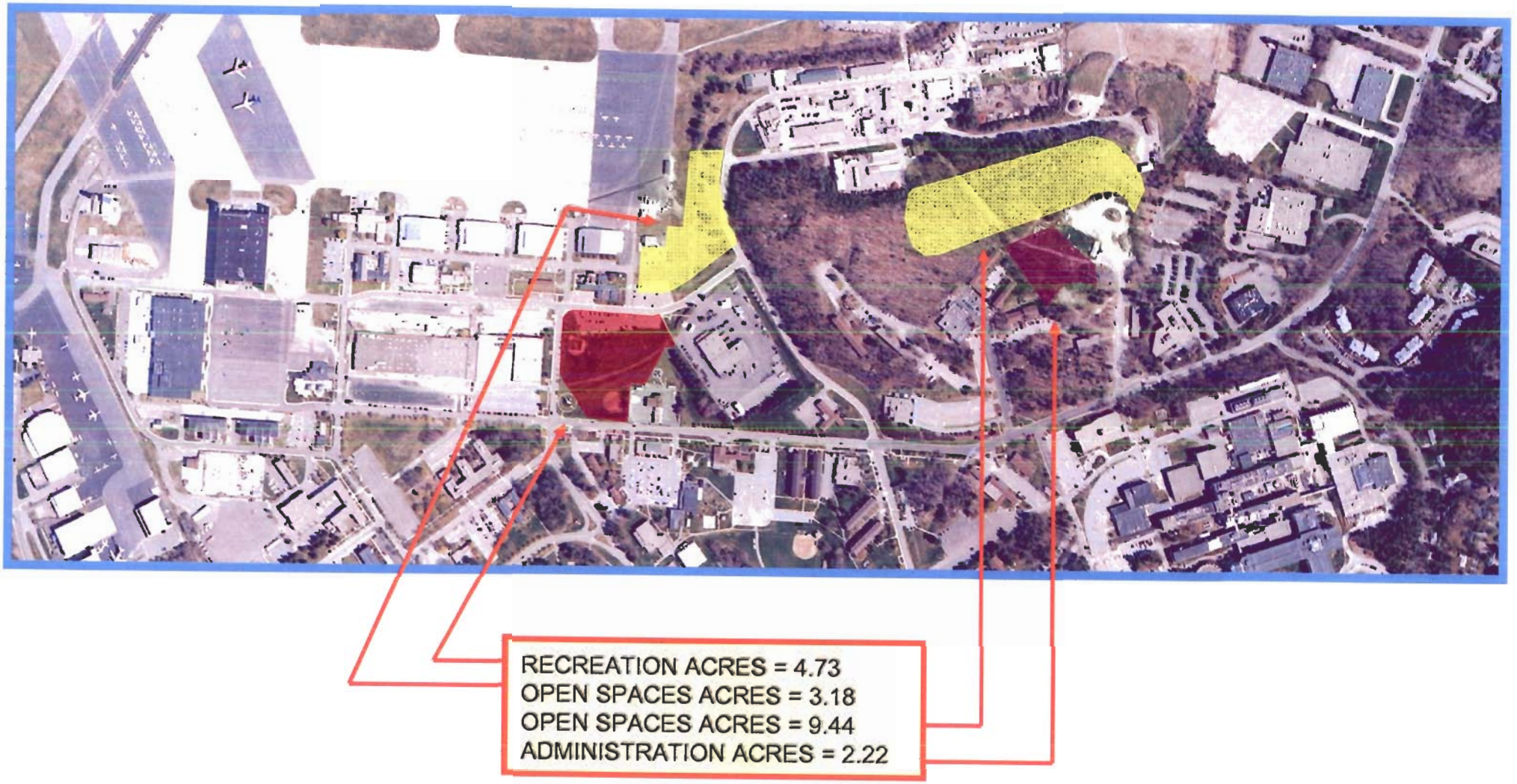
DCN 6785

Hanscom AFB
Future Developable Areas

Hanscom AFB
Future Developable Areas



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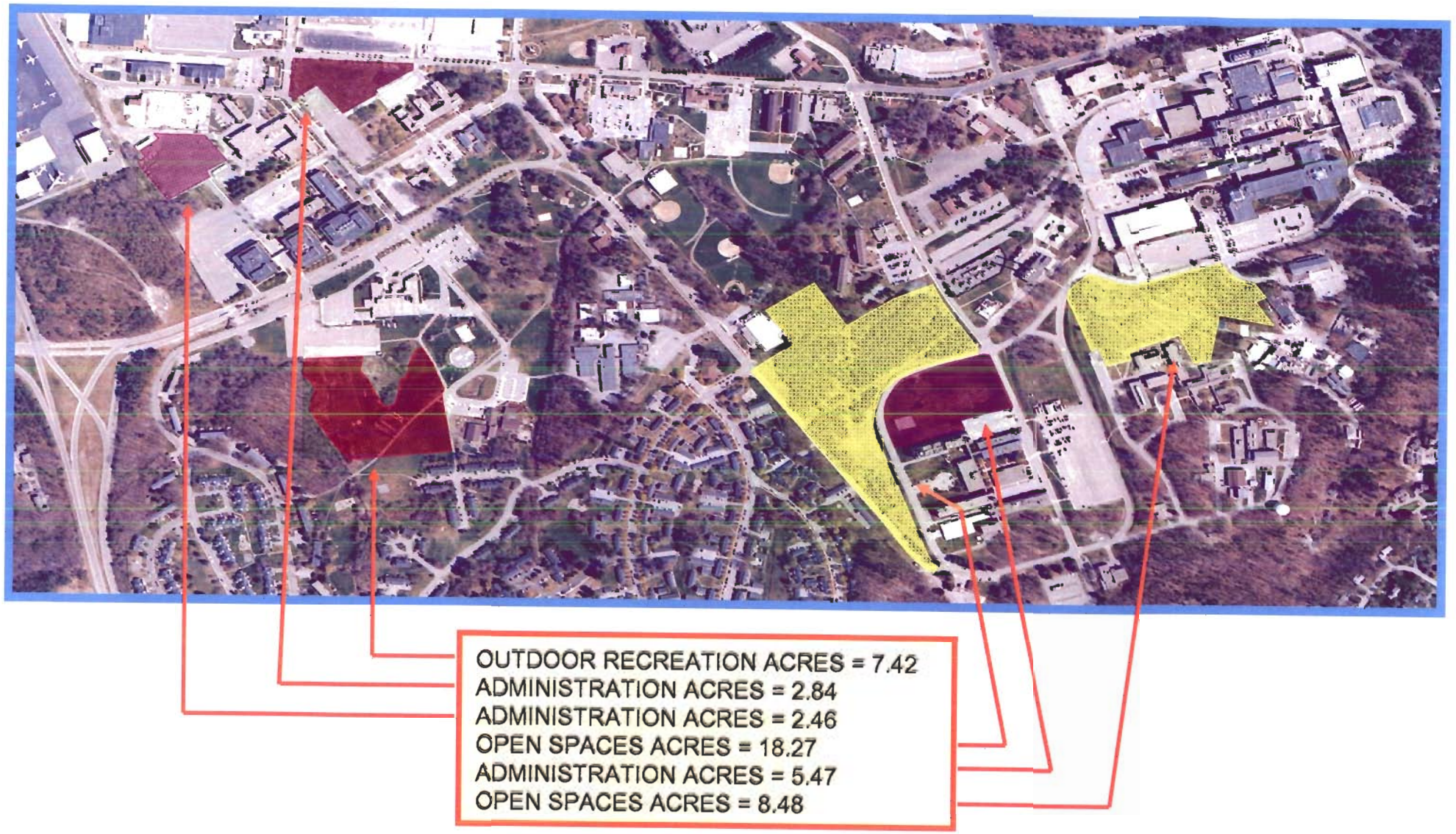
Future Developable Areas



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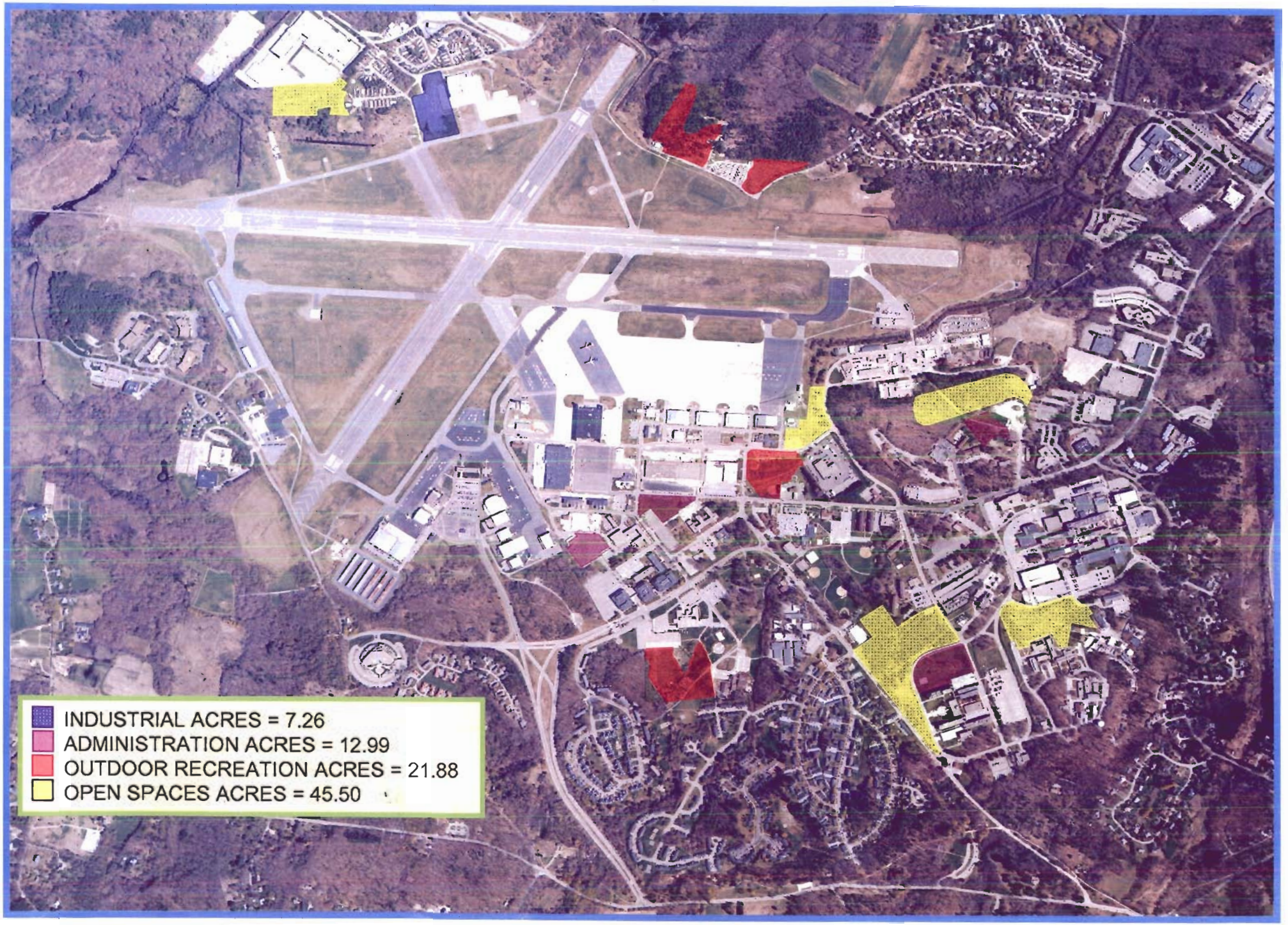
Future Developable Areas



Electronic Systems Center

Welcome to ESC

ESC/CCX

7 July 05

U.S. AIR FORCE

Missions

AFMC Mission

Deliver war-winning…

-- Technology
-- Acquisition Support
-- Sustainment

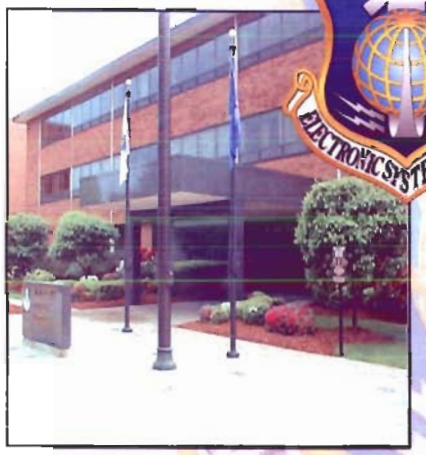
…expeditionary capabilities to the warfighter.

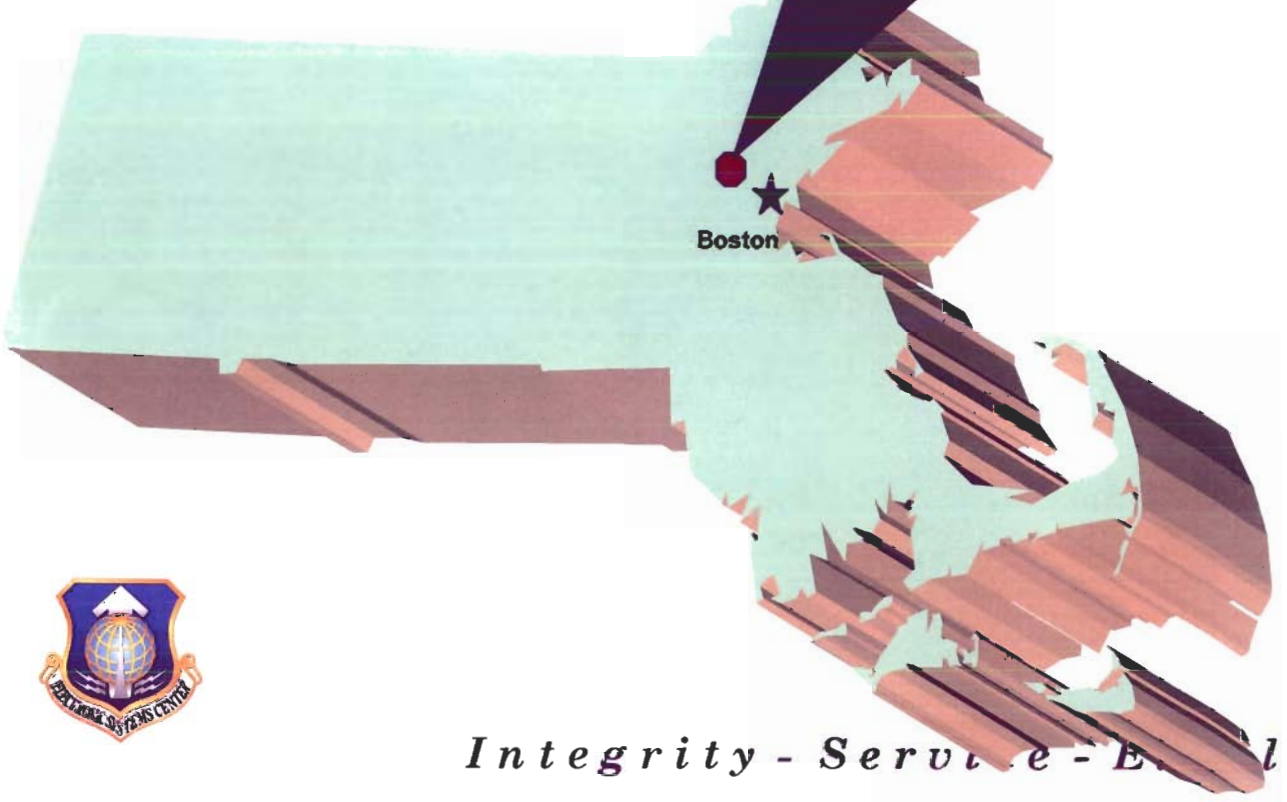
ESC Mission

Electronic Systems Center (ESC) develops, acquires, modernizes, and integrates net-centric electronic command and control, intelligence, surveillance and reconnaissance (C2ISR) capabilities and systems, as well as combat support information systems; provides warfighting commanders with battlefield situational awareness and accurate, relevant, decision-quality information on a global information grid.

Hanscom AFB

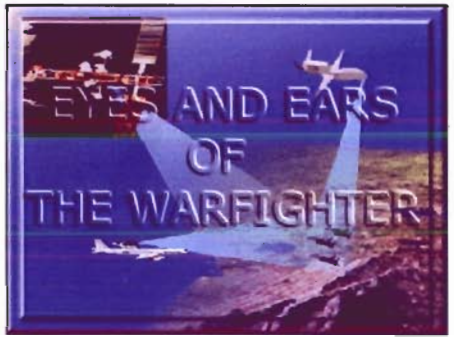
HQ Electronic Systems Center



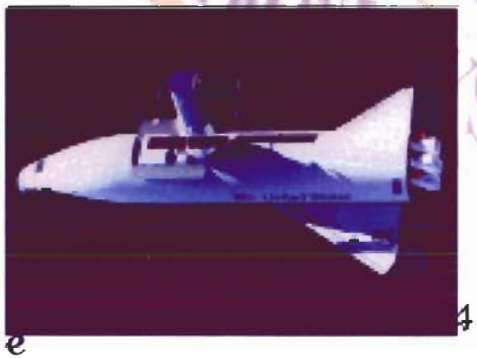


U.S. AIR FORCE

Hanscom AFB



Air Force Research Laboratory



U.S. AIR FORCE

Hanscom AFB

66th Air Base Wing

Hanscom AFB

U.S. AIR FORCE

ESC Mission Overview

Joint Presence

Army

- 94th Regional Support Command
- 402nd Forward Surgical Team
- 468th Fire Fighters
- Recruiters

Navy

- US Atlantic Command Personnel
- USS Constitution
- Graduate Students @ Harvard/MIT
- ESC personnel

Integrity - Service - Excellence

U.S. AIR FORCE

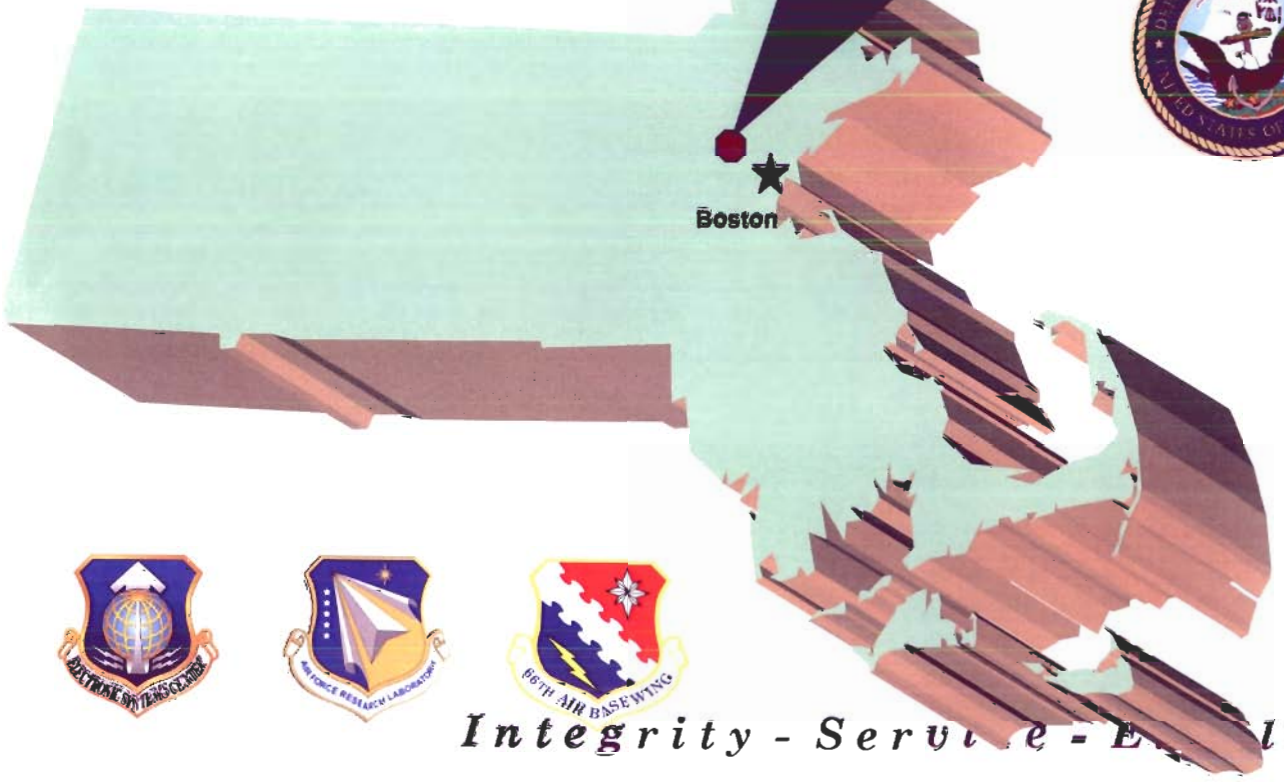
Hanscom AFB

ESC Mission Overview

Army
- 94th Regional Support Command
- 402nd Forward Surgical Team
- 468th Fire Fighters
- Recruiters

Over 8,600 Assigned Personnel

Navy
- US Atlantic Command Personnel
- USS Constitution
- Graduate Students @ Harvard/MIT
- ESC personnel



Integrity - Service - Excellence

U.S. AIR FORCE

Hanscom AFB

ESC Mission Overview

MITRE

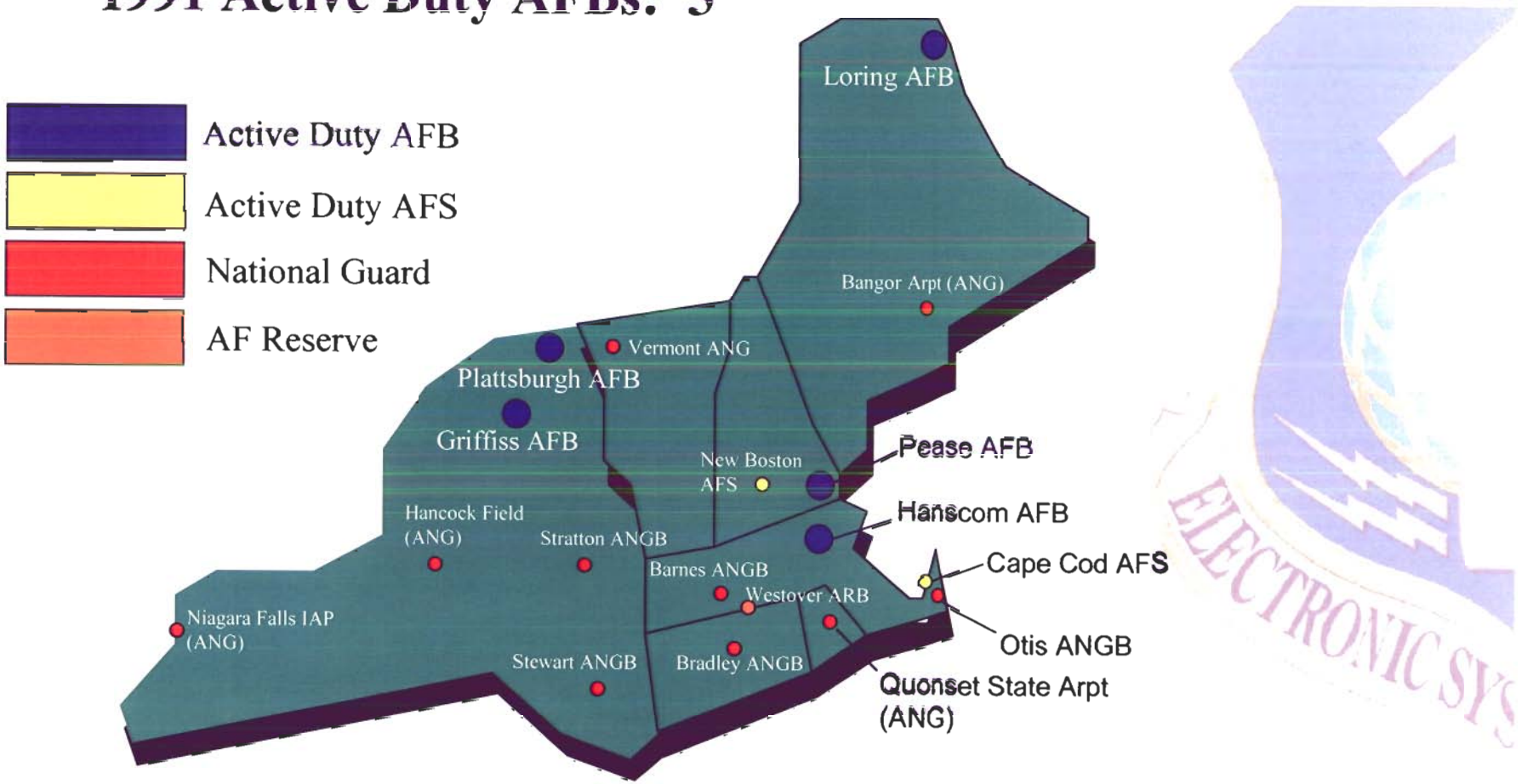
Over 8,600 Assigned Personnel

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Integrity - Service - Excellence

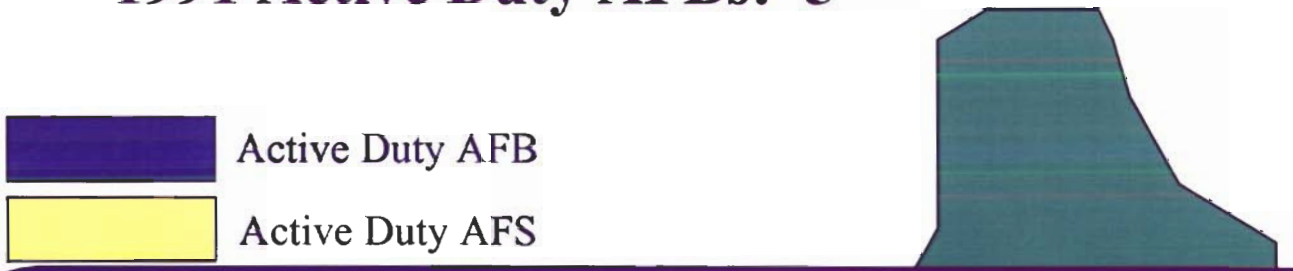
New England Air Force Bases (1991)

1991 Active Duty AFBs: 5



New England Active Duty AFB

1991 Active Duty AFBs: 5



Hanscom's Economic Impact on New England (2002)

Total Estimated Economic Impact: $3.1B

- 10th Largest Business Employer in MA
  - Total Employment Supported: 22,435
    - Primary Hanscom (8,551) + Secondary Jobs Created (13,884)
- Contract Awards to MA Businesses and Universities: $777M
- Total Payroll--Hanscom Complex: $617M
- Construction, Contracts, Materials, Equipment, and Supplies: $612M

U.S. AIR FORCE

Electronic Systems Center

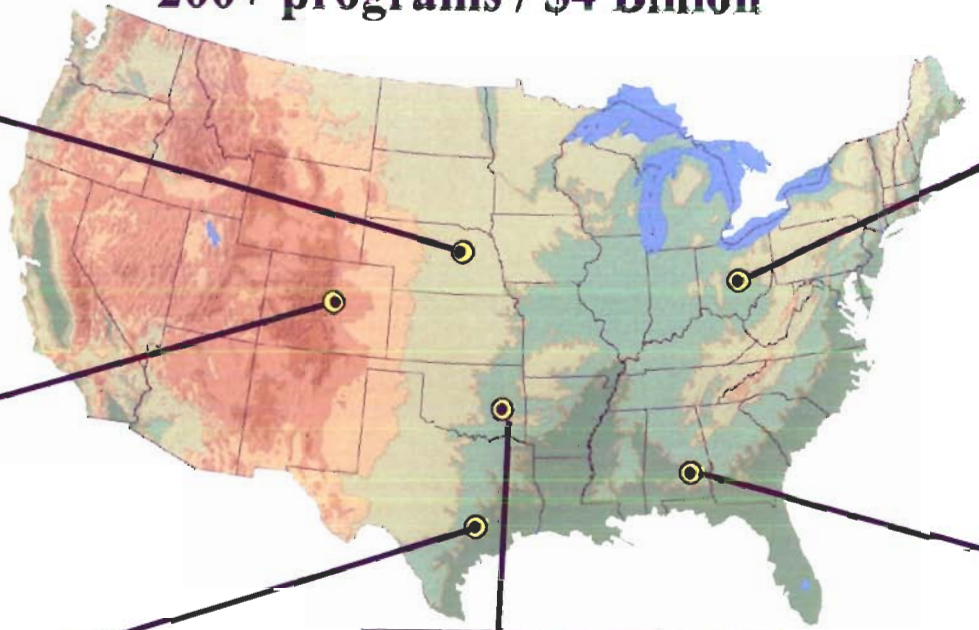
ESC Mission Overview

- 6 Geographically Separated Units
- More than 8,700 personnel
- 200+ programs / $4 Billion

STRATCOM
Operating Location
Offutt AFB NE

ESC Det 5
Peterson AFB CO

Cryptologic Systems Group (CPSG)
Lackland AFB TX



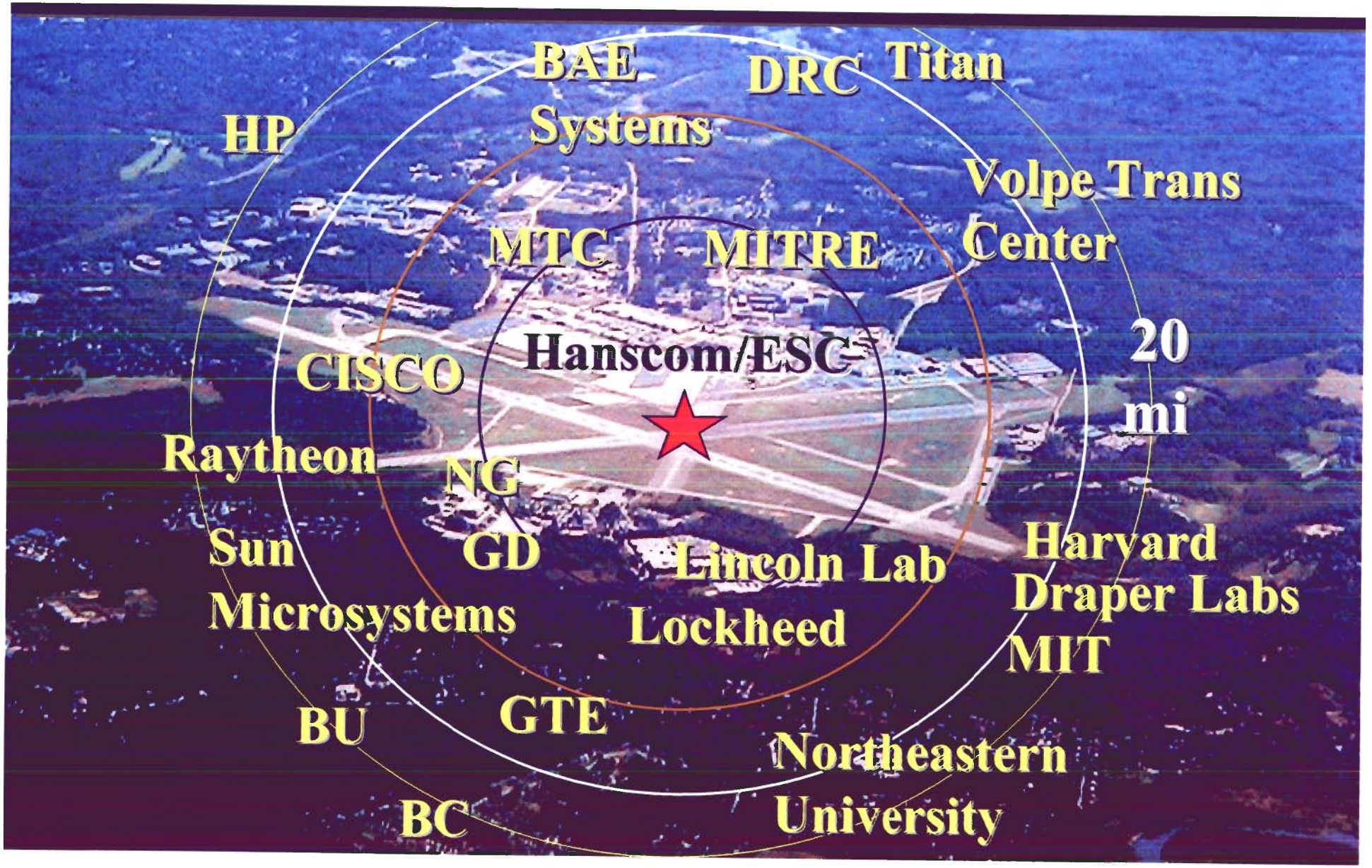
38th Engineering & Installation Group (38EIG) ***Tinker AFB OK***

Materiel Systems Group (MSG)
Wright-Patterson AFB OH

Standard Systems Group (SSG)
Gunter Annex,
Maxwell AFB AL

Center of the Technology Hub

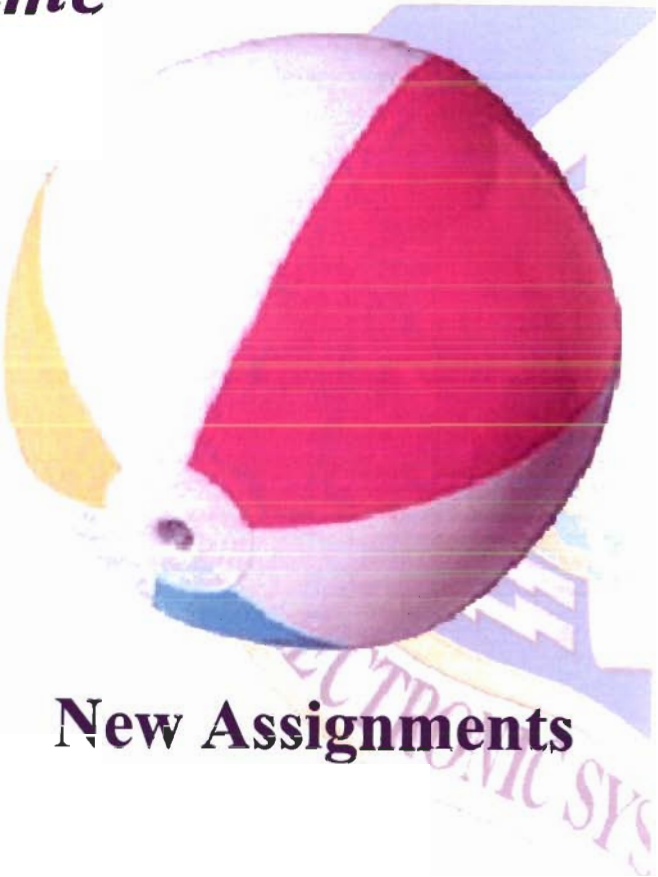
World Class IT Firms & Academia



U.S. AIR FORCE

WORKLOAD
PEO Realignment

A Whole New Ballgame

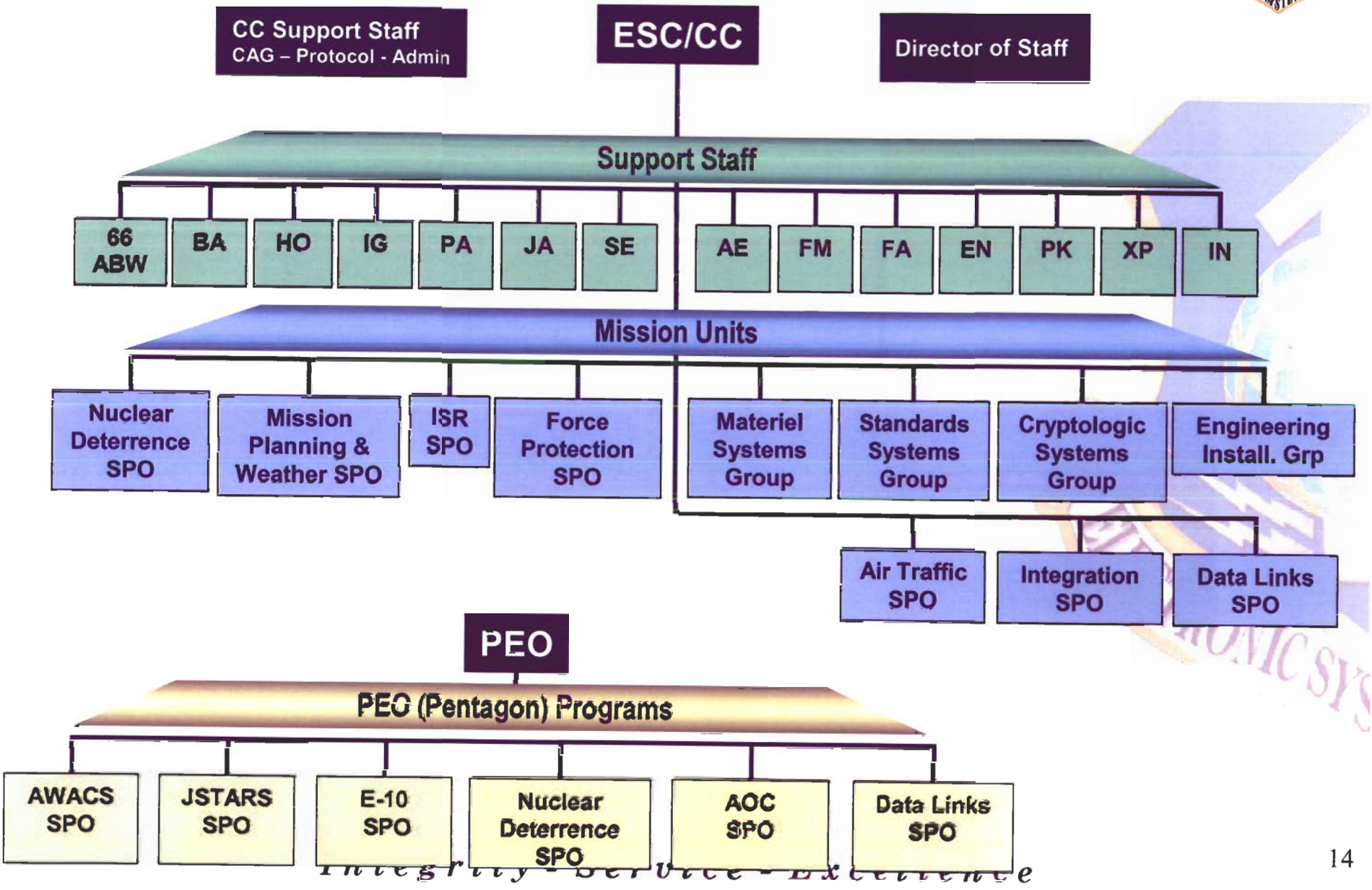


DAC Programs: 44 **PEO Programs: 82** **New Assignments**

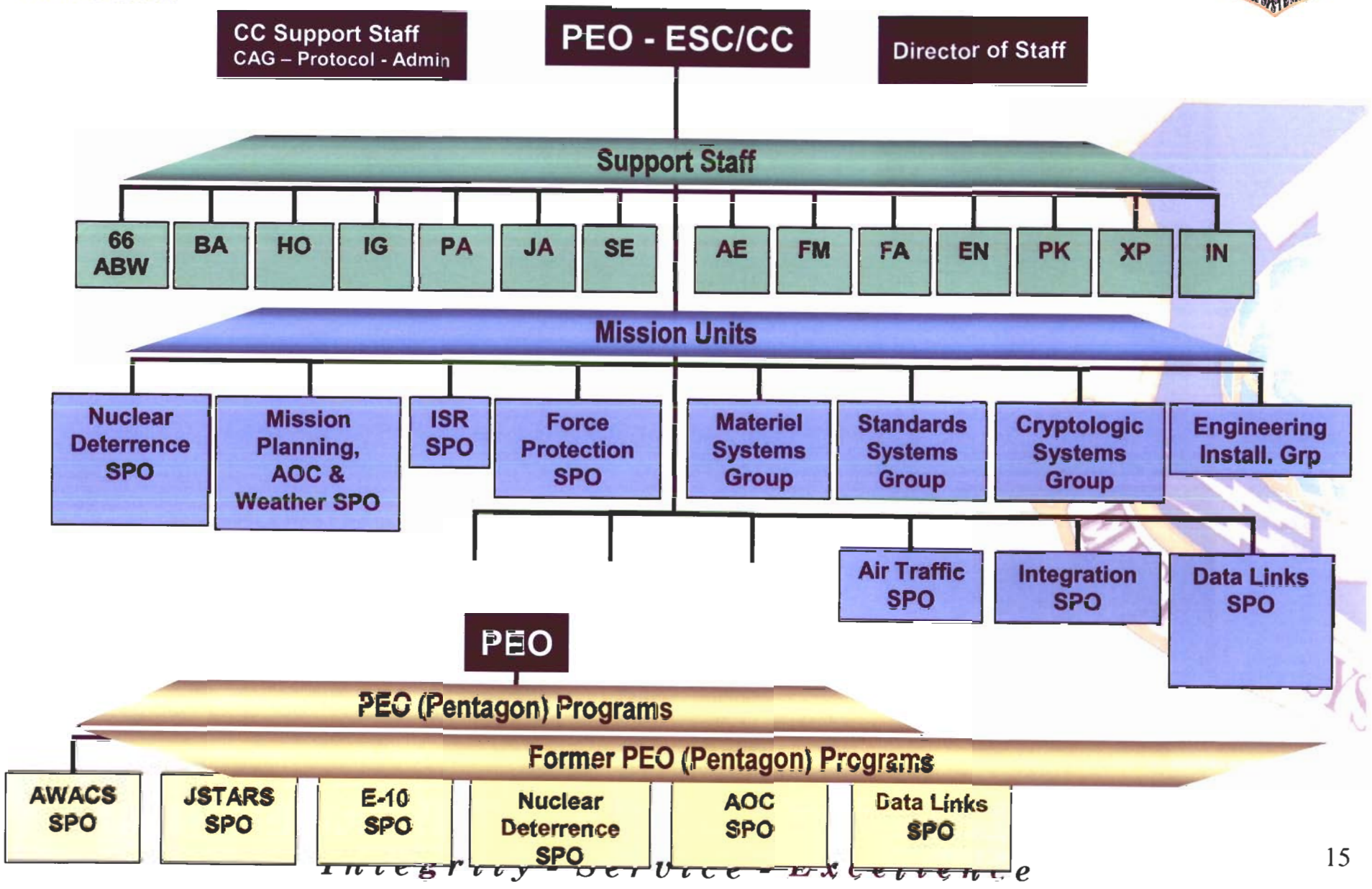
Total Programs: 126 (175?)

Integrity - Service - Excellence

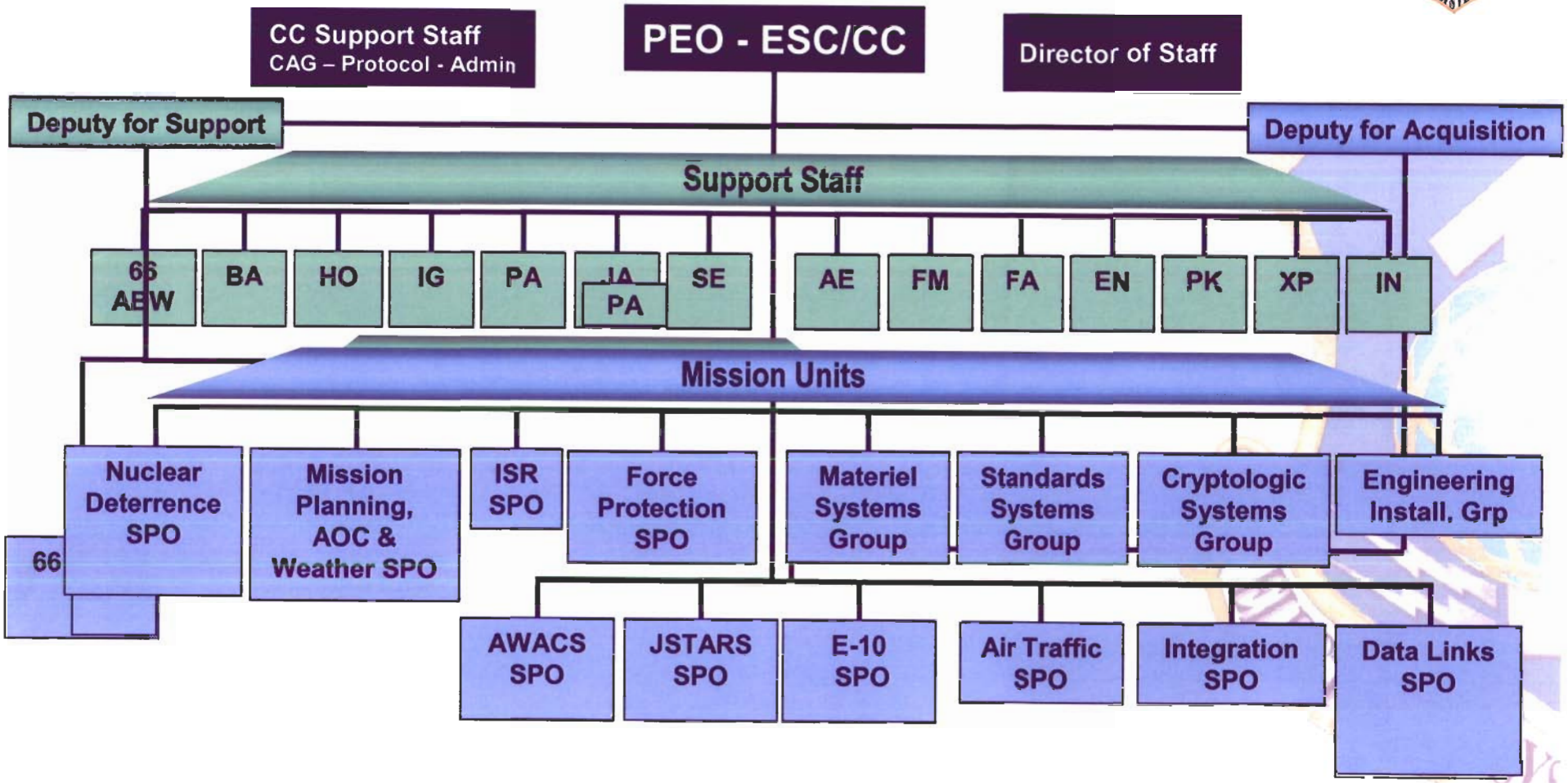
ESC Before


CC Support Staff
CAG – Protocol - Admin
ESC/CC
Director of Staff
Support Staff
66 ABW
BA
HO
IG
PA
JA
SE
AE
FM
FA
EN
PK
XP
IN
Mission Units
Nuclear Deterrence SPO
Mission Planning & Weather SPO
ISR SPO
Force Protection SPO
Materiel Systems Group
Standards Systems Group
Cryptologic Systems Group
Engineering Install. Grp
Air Traffic SPO
Integration SPO
Data Links SPO
PEO
PEO (Pentagon) Programs
AWACS SPO
JSTARS SPO
E-10 SPO
Nuclear Deterrence SPO
AOC SPO
Data Links SPO

ESC PEO Restructure

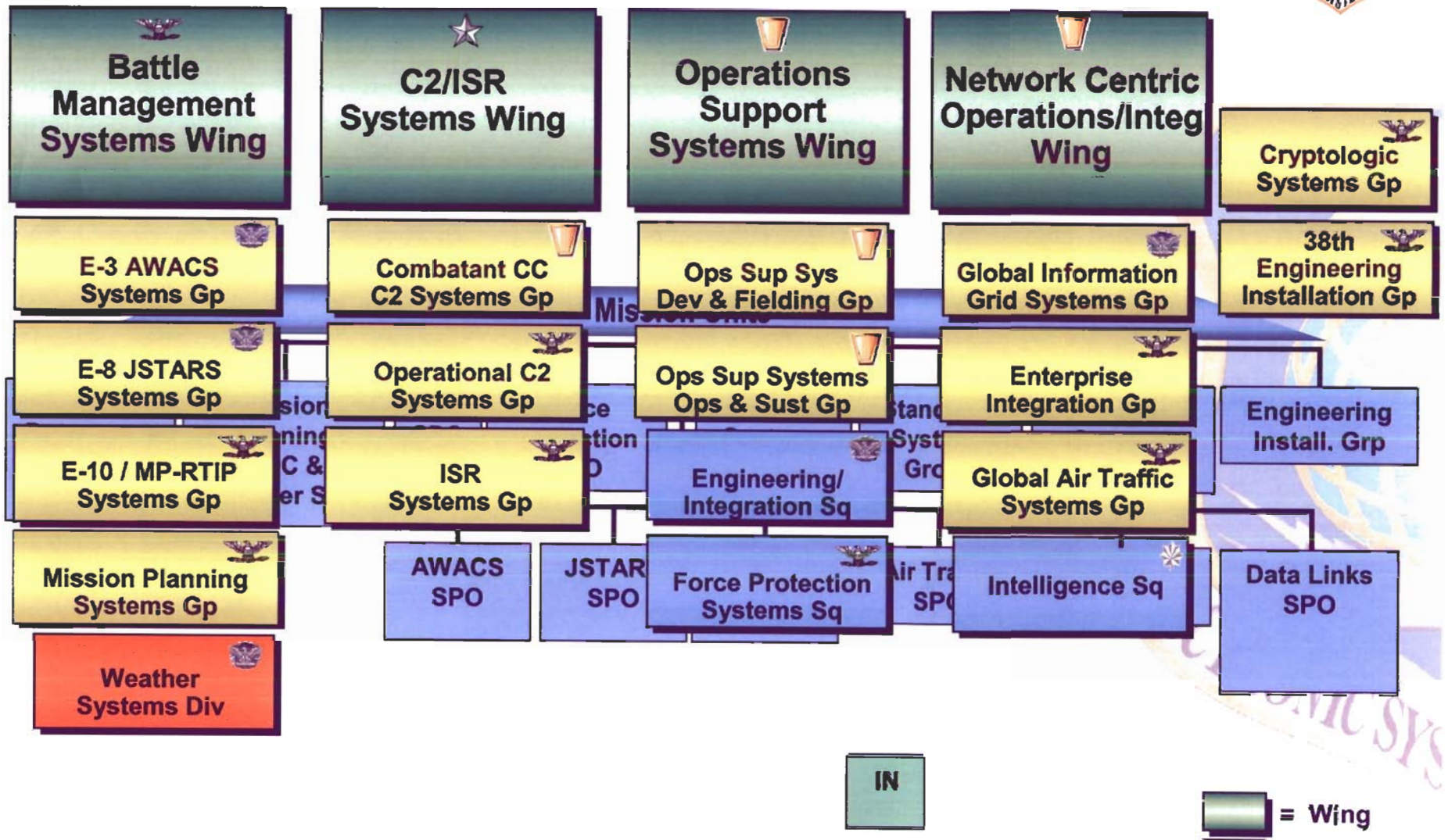


Center Restructure



U.S. AIR FORCE

Wing-Group-Squadron



Integrity - Service - Excellence

U.S. AIR FORCE

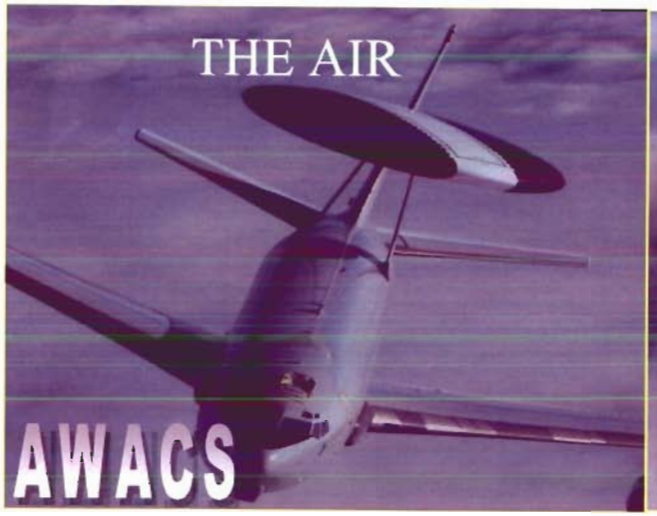
ESC Programs

U.S. AIR FORCE

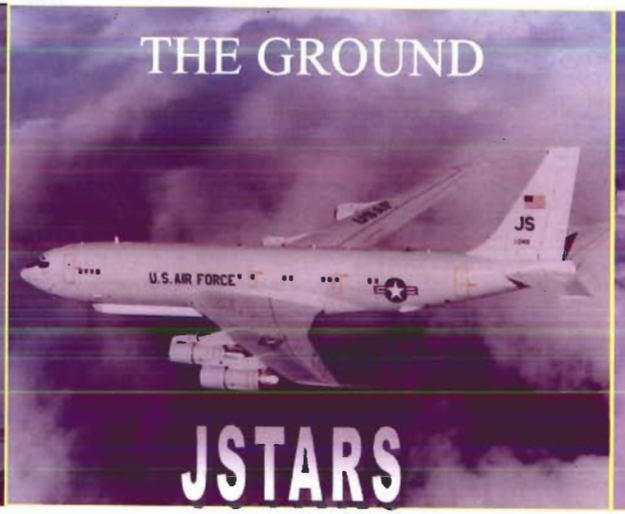
Command & Control Aircraft

ESC Mission Overview

Providing the Battle Picture for:



Air surveillance, weapons control, & battle management 250 mi. in all directions



Long endurance, all weather, near-real time surveillance, Moving Target Indicator and Synthetic Aperture Radar Images

Next Gen Surveillance, Surface Target Engagement & Battle Management, Cruise Missile Defense, Onboard Combat Ops & ISR Management For Time Critical Targeting

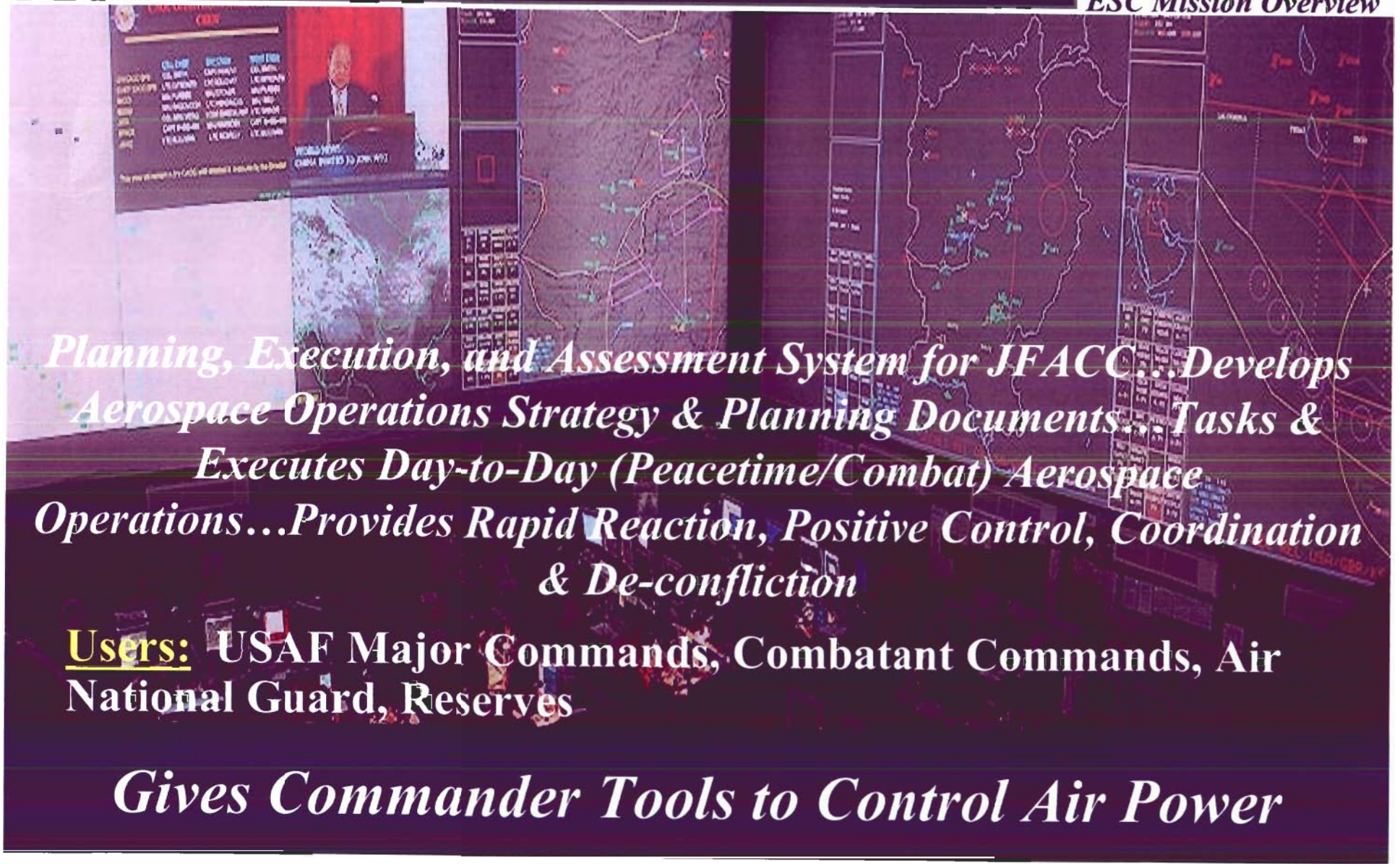
Users: US, NATO, UK, France, Japan, Saudi Arabia, Australia, Turkey

Global Awareness

U.S. AIR FORCE

Air & Space Operations Center

ESC Mission Overview



Planning, Execution, and Assessment System for JFACC…Develops Aerospace Operations Strategy & Planning Documents…Tasks & Executes Day-to-Day (Peacetime/Combat) Aerospace Operations…Provides Rapid Reaction, Positive Control, Coordination & De-confliction

Users: **USAF Major Commands, Combatant Commands, Air National Guard, Reserves**

Gives Commander Tools to Control Air Power

U.S. AIR FORCE

Security Systems Force Protection

ESC Mission Overview

Using the latest in technology

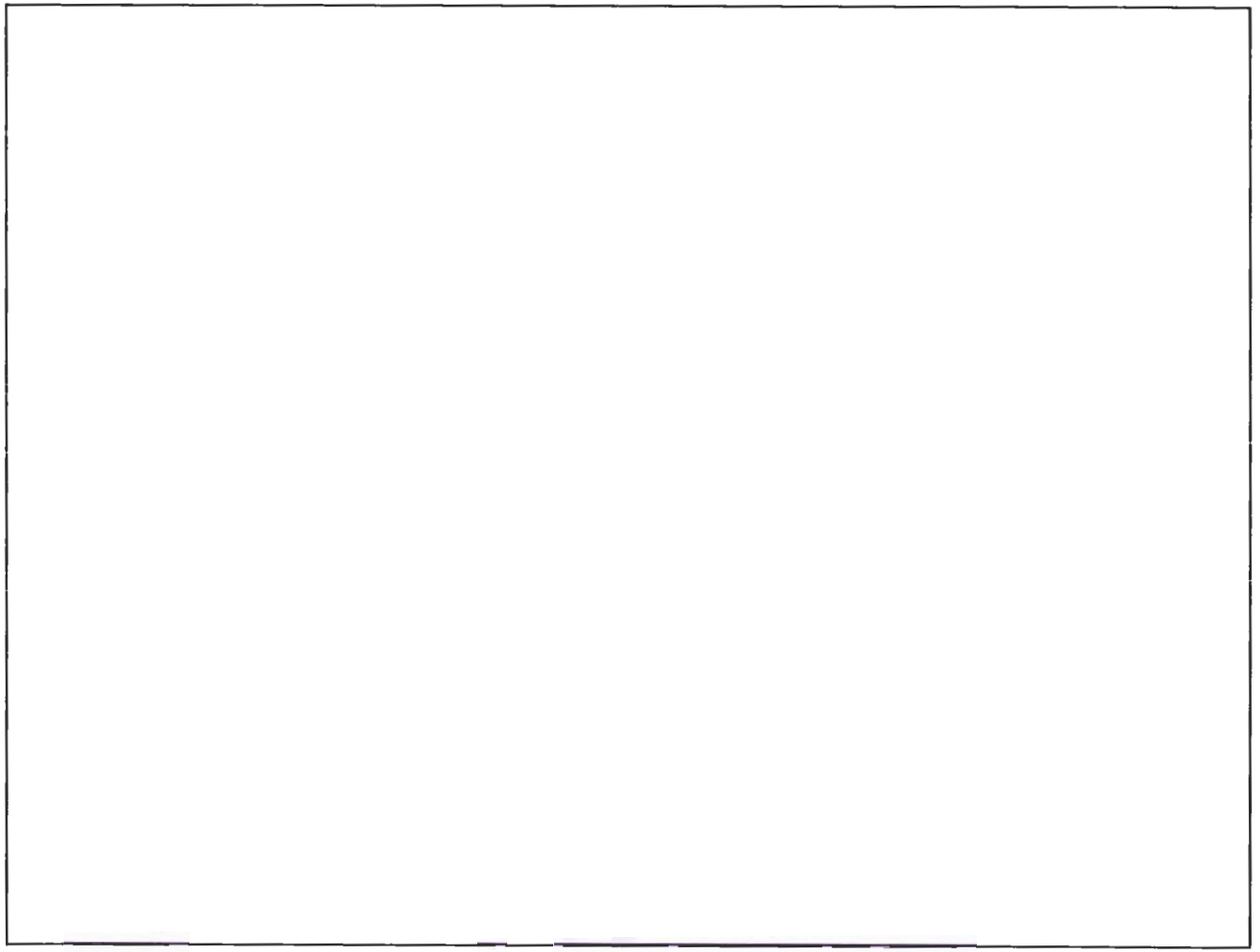
- *Unmanned Aerial Vehicles*
- *Infrared cameras*
- *Microwave sensors*
- *Automated entry control*

Users: USAFE, Air Force Security Forces, US Army, US Navy, Marines, and other Govt. agencies

Protecting Air Force Assets

"The Buzzword is Integration"

General John P. Jumper, Chief of Staff, United States Air Force



War Winning Success

– Hanscom Programs

1. **Sensors that can accurately locate and correctly identify the targets**
   - *AWACS, JSTARS, Eagle Vision, DCGS, MP-RTIP, IBS…*
2. **Command centers that can plan missions and assign weapons/aircraft to targets**
   - *Air Operations Centers, AFMSS, TBMCS, BCS…*
3. **Communications that can relay the target coordinates to the selected aircraft**
   - *Link 16, SADL, Milsatcom, TDC, COT…*
4. **Navigation systems that can provide precise location of the aircraft, the weapon and the target**
   - *GPS, M-Code, GPS Anti-Jam, FDIS…*

ESC Is Building the Global Information Grid

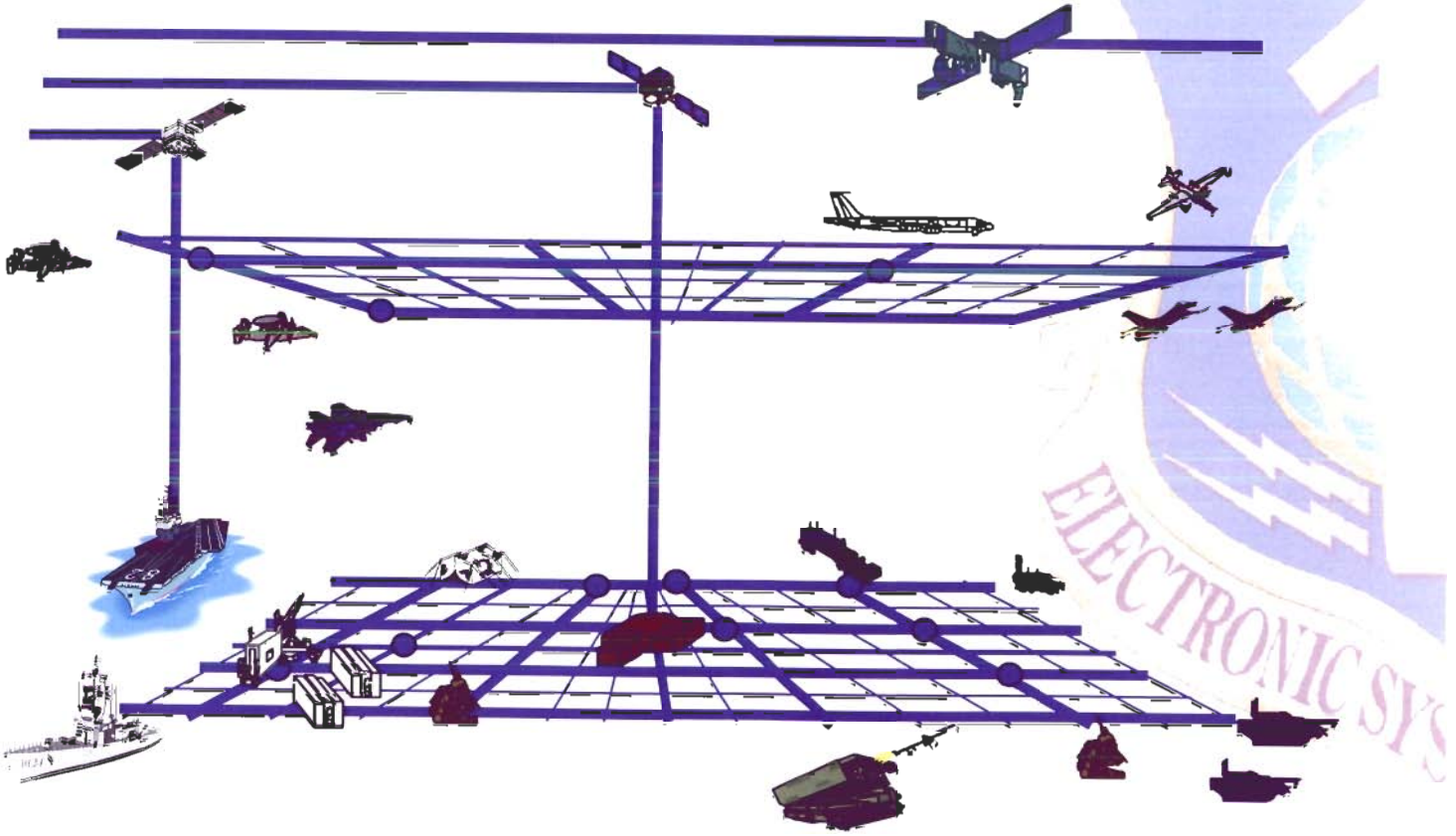
U.S. AIR FORCE

SPACE
FAB-T, GMT,
Lasercom

AIR
JTRS, Link16

GROUND
CITS, TDC

Transformational



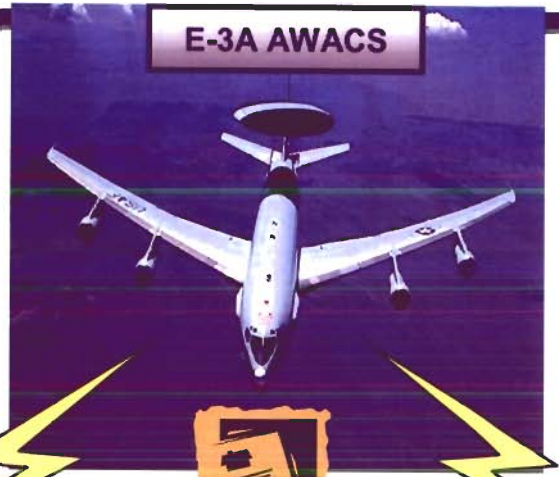
Network Centric Operations

Integrity - Service - Excellence

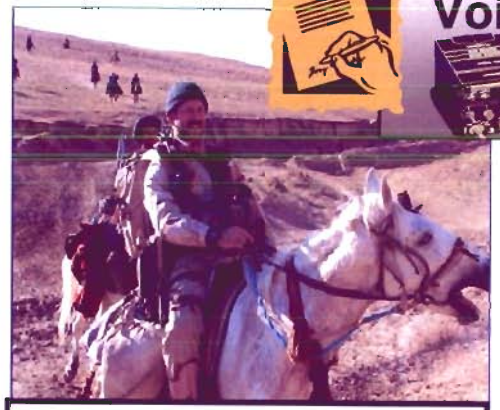
U.S. AIR FORCE

Time Critical Targeting

ESC Mission Overview



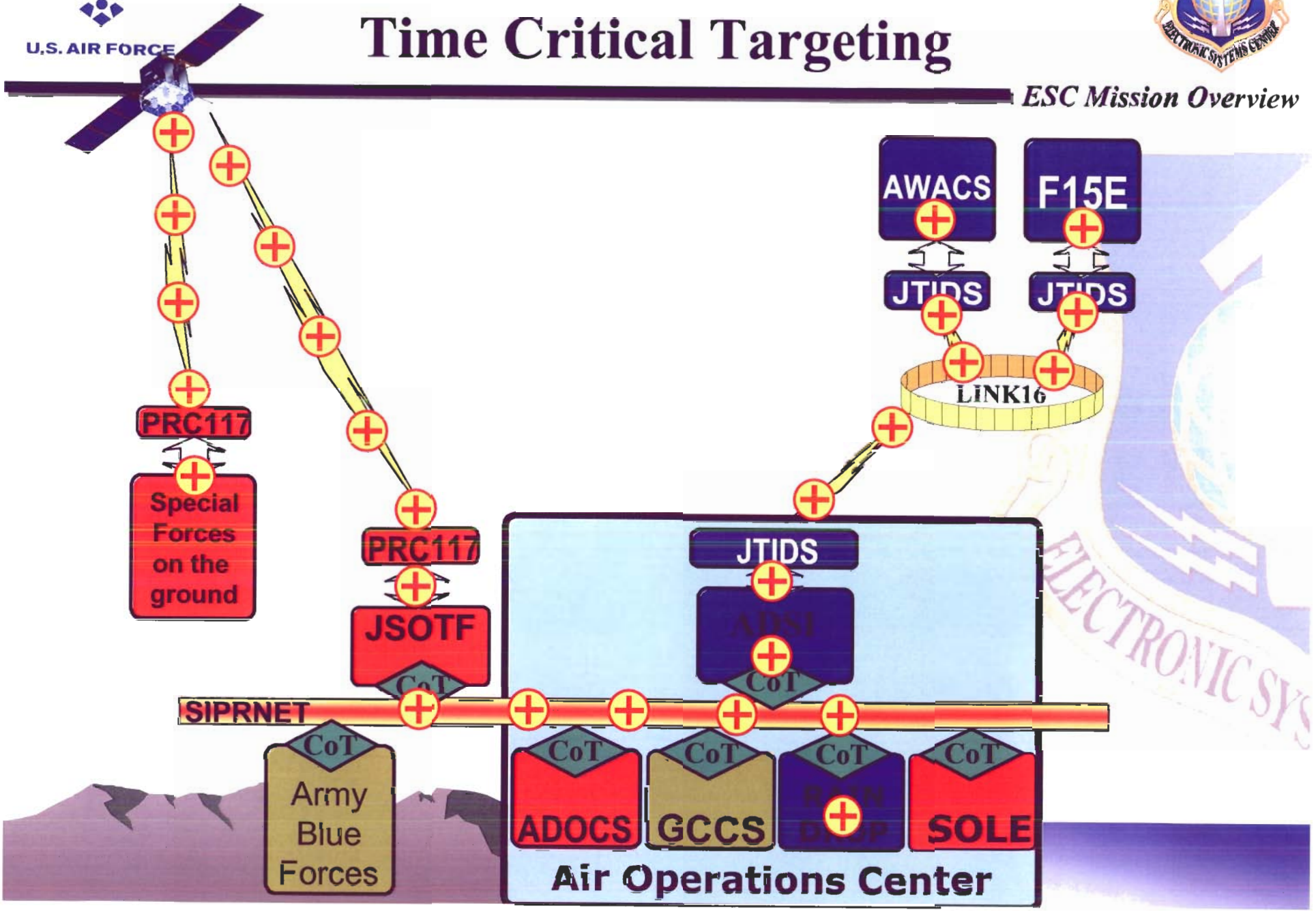
Secure Voice



Requires three (3) perfect voice read-backs to pass a target

Machine-to-Machine Time Critical Targeting

ESC Mission Overview



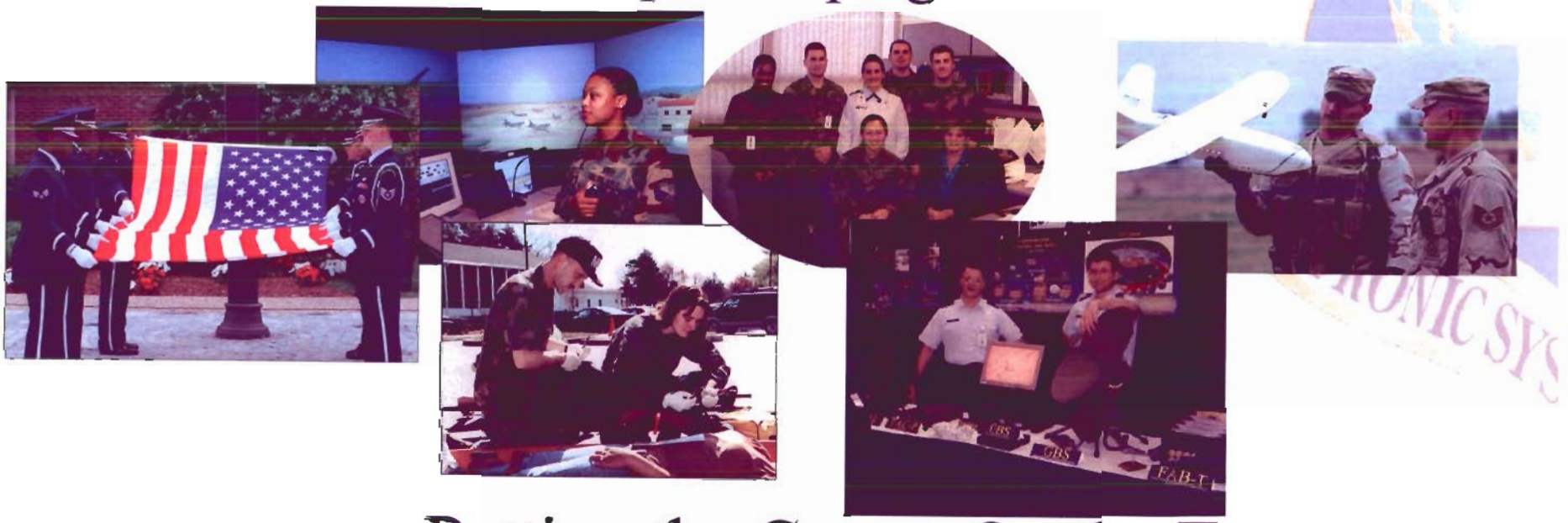
U.S. AIR FORCE

ESC & Hanscom AFB

ESC Mission Overview

A Rich Heritage…

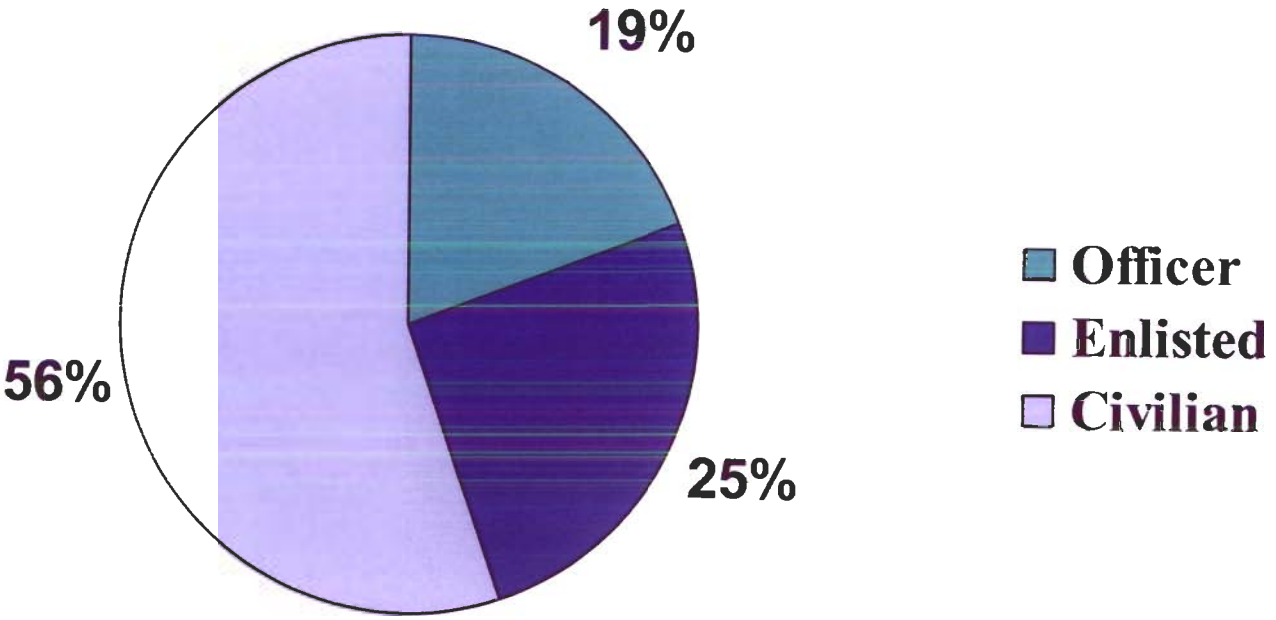
Incredible Air Force People Shaping the Future…

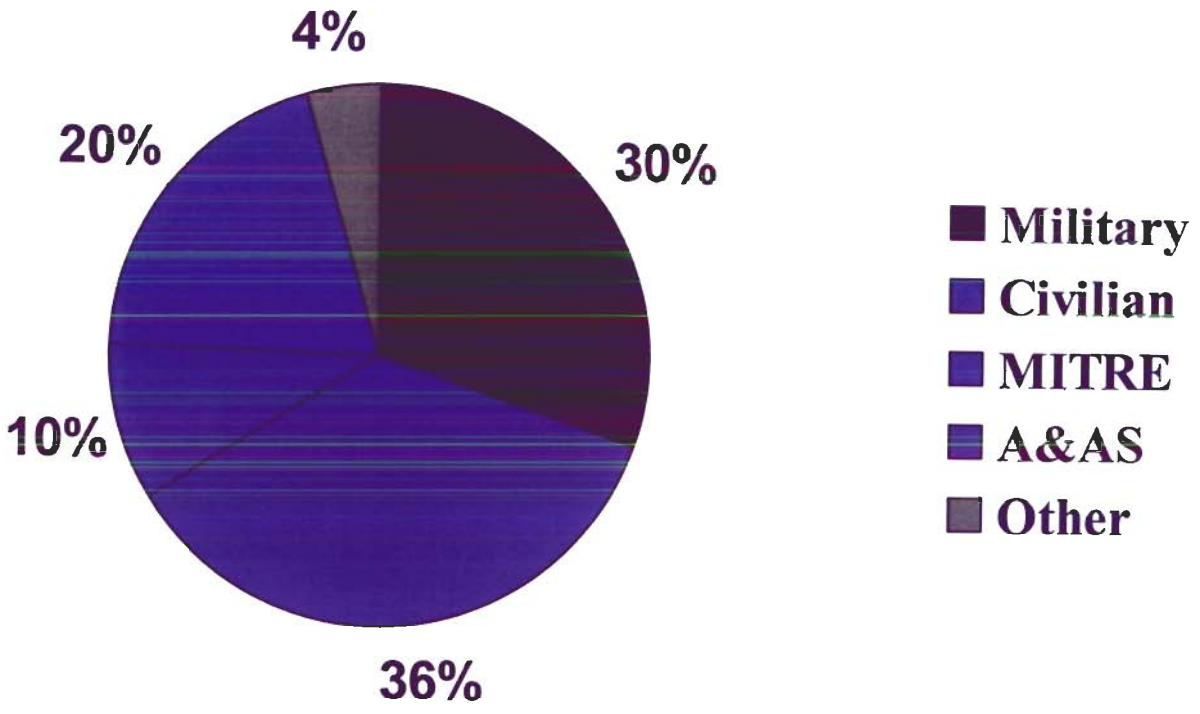


…Putting the Cursor On the Target

No One Comes Close

AUTHORIZATIONS
Greater ESC




4%
20%
30%
10%
36%
Military
Civilian
MITRE
A&AS
Other

U.S. AIR FORCE

Battle Control System-Fixed (BCS-F) Spiral 1

ESC Mission Overview

- Replaces 1970's legacy C2 system & interim interior FAA solution for Homeland Defense
  - Playstation 2 has more capacity than legacy system
- BCS-F is a open architecture system providing NORAD/CC with a Joint Battle Management Command and Control system for Homeland Defense
  - Contractor independently assessed Capability Maturity Model (CMM) Level 5
  - Capable of integrating with civil systems in the National Capitol Region to provide protection from acts of terrorism

BCS-F is NORAD's Homeland Air Defense node for the Global War on Terrorism

Force Protection

- Smart Gate Technology
- Active Denial Systems

Summary of Scenario Environmental Impacts - Criterion 8

Scenario ID#: TECH0042C

General Environmental Impacts	
Environmental Resource Area	**Edwards**
Air Quality	The base is in non-attainment for ozone (maintenance). An initial conformity analysis indicated that a conformity determination is not required. No air permit revision is necessary. A critical air quality region is located within 100 miles of the installation, but it does not restrict operations.
Cultural/ Archeological/ Tribal Resources	There are 2989 archaeological sites, and there is a native American tribe interested in burial sites on the installation but they do not impact operations. There are also 7 historic properties and 4 historic districts making up 8,461 acres. Additional operations may impact these areas which may impact operations.
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	No impact to land use from scenario
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No increase in off-base noise is expected
Threatened& Endangered Species/ Critical Habitat	T&E species and critical habitats already restrict operations (use of high explosives on the range) with a Biological Opinion. Additional operations may impact T&E species and/or critical habitats. In addition, the Biological Opinion will need to be evaluated to ensure the scenario conforms to it.
Waste Management	No impact
Water Resources	No impact
Wetlands	Wetlands do not exist. No impact.

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... [30]

Impacts of Costs	
	Edwards
Environmental Restoration	DERA money spent through FY03 ($K): 277868 Estimated CTC ($K): 645215 DO NOT ENTER IN COBRA
Waste Management	None
Environmental Compliance	FY07 Air Conformity Analysis: $50K

General Environmental Impacts	
Environmental Resource Area	**Eglin**
Air Quality	No impact
Cultural/ Archeological/ Tribal Resources	No impact
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	No impact
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No impact
Threatened& Endangered Species/ Critical Habitat	No impact
Waste Management	No impact
Water Resources	No impact
Wetlands	No impact

Impacts of Costs	
	Eglin
Environmental Restoration	DERA money spent through FY03 ($K): 72200 Estimated CTC ($K): 35142 DO NOT ENTER IN COBRA
Waste Management	No impact
Environmental Compliance	No impact

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General Environmental Impacts	
Environmental Resource Area	**Hanscom**
Air Quality	An initial air conformity analysis indicated that a conformity determination is not needed. Carpooling initiatives are used as an emission reduction technique.
Cultural/ Archeological/ Tribal Resources	One archaeological site is present but does not constrain operations. A native American tribe is in contact, but not formally, with the base regarding cultural land. Additional operations may impact these sites, which may constrain operations.
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	The scenario requires roughly 40 acres; Hanscom reported it's largest parcel is 18.27 acres, and only 8.4 unconstrained acres are zoned for industrial ops. This scenario may require building on constrained acreage. Sensitive resource areas exist but do not constrain operations. Additional operations may impact these areas, which may constrain operations.
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No impact
Threatened& Endangered Species/ Critical Habitat	No T&E species or critical habitats exist. No impact to T&E species is expected.
Waste Management	The hazardous waste program will need modification.
Water Resources	The state requires a permit for withdrawal of groundwater.
Wetlands	Wetlands restrict 5% of the base. Wetlands do not currently restrict operations. Additional operations may impact wetlands, which may restrict operations.

Impacts of Costs	
	Hanscom
Environmental Restoration	DERA money spent through FY03 ($K): 41797 Estimated CTC ($K): 10461 DO NOT ENTER IN COBRA
Waste Management	FY07 Hazardous Waste Program Modification: $100K
Environmental Compliance	FY06 NEPA cost: $336K FY07 Air Conformity Analysis $50K

General Environmental Impacts	
Environmental Resource Area	**Lackland**
Air Quality	No impact
Cultural/ Archeological/ Tribal Resources	No impact
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	No impact
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No impact
Threatened& Endangered Species/ Critical Habitat	No impact
Waste Management	No impact
Water Resources	No impact
Wetlands	No impact

Impacts of Costs	
	Lackland
Environmental Restoration	DERA money spent through FY03 ($K): 50297 Estimated CTC ($K): 200559 DO NOT ENTER IN COBRA
Waste Management	No impact
Environmental Compliance	No impact

General Environmental Impacts	
Environmental Resource Area	**Maxwell**
Air Quality	No impact
Cultural/ Archeological/ Tribal Resources	No impact
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	No impact
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No impact
Threatened& Endangered Species/ Critical Habitat	No impact
Waste Management	No impact
Water Resources	No impact
Wetlands	No impact

Impacts of Costs	
	Maxwell
Environmental Restoration	DERA money spent through FY03 ($K): 19123 Estimated CTC ($K): 7713 DO NOT ENTER IN COBRA
Waste Management	No impact
Environmental Compliance	No impact

General Environmental Impacts	
Environmental Resource Area	**Wright-Patterson**
Air Quality	No impact
Cultural/ Archeological/ Tribal Resources	No impact
Dredging	No impact
Land Use Constraints/ Sensitive Resource Areas	No impact
Marine Mammals/ Marine Resources/ Marine Sanctuaries	No impact
Noise	No impact
Threatened& Endangered Species/ Critical Habitat	No impact
Waste Management	No impact
Water Resources	No impact
Wetlands	No impact

Impacts of Costs	
	Wright-Patterson
Environmental Restoration	DERA money spent through FY03 ($K): 156972 Estimated CTC ($K): 34261 DO NOT ENTER IN COBRA
Waste Management	No impact
Environmental Compliance	No impact

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Criterion 8 JPAT Report

Purpose

This report summarizes and documents the approach and process used by the Base Realignment and Closure (BRAC) 2005 Selection Criterion 8 Joint Process Action Team (JPAT).

Criterion 8

"The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities."

Executive Summary

The Office of the Secretary of Defense (OSD)-authorized JPAT was established to develop a Department of Defense (DoD)-wide approach to application of

BRAC Final Selection Criterion 8. The JPAT was tasked to define the aspects of the criterion and develop a process that would appropriately analyze the environmental impacts specified in the criterion. The JPAT would also develop a process for arraying the certified environmental data gathered for use by the Military Departments (MilDeps) and Joint Cross-Service Groups (JCSGs) in their analyses.

Authority

The BRAC statute requires that the foundation for Secretary of Defense base realignment and closure recommendations be "the force structure plan and infrastructure inventory prepared by the Secretary under section 2912 and the final selection criterion prepared by the Secretary under section 2913." As such, the JCSGs and MilDeps need to ensure that all eight final selection criteria are considered in developing the recommendations that will be forwarded to the Secretary of Defense.

Establishment

Exercising authority provided by the BRAC 2005 Infrastructure Steering Group (ISG), the OSD BRAC Director and the MilDep Deputy Assistant Secretaries responsible for the BRAC process (known as the "BRAC DASs"), established a JPAT for Selection Criterion 8, commonly known as "Environmental Impact." The Department of the Navy (DON) was designated the lead MilDep for the effort.

Direction

The BRAC DASs directed the JPAT to develop a DoD-wide approach to application of

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BRAC Selection Criterion 8.

Mission and Concept

The JPAT was tasked to define the aspects of the criterion and identify a process for decision makers to appropriately consider environmental impact as required under Criterion 8. As to defining the criterion aspects, the fundamental difference between BRAC 1995 and BRAC 2005 is that additional language was added in the Defense Base Closure and Realignment Act of 1990, as amended through FY04 Authorization Act (Statute) to Criterion 8. In BRAC 1995, by DoD policy, Criterion 8 simply required

Page 1: [4] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

that the decision makers consider "the environmental impact" with no further definition or clarification. For BRAC 2005, the Criterion 8 Final Selection Criteria language,

Page 1: [5] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

the Statute, requires that the decision makers consider, "the environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities." This criterion, in these terms, is not specifically defined in the statute. The JPAT's

mission was therefore to establish the parameters of these terms for analysis and consideration by the decision makers. It was agreed that the terms "environmental impact", "environmental restoration", "waste management" and "environmental compliance" would be used and considered in the same context as they are defined in existing federal environmental laws and regulations, as well as in DoD and MilDep implementing policies

Page 1: [6] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

The JPAT was also tasked with developing a process for meeting the requirements of Criterion 8. In this regard, the JPAT developed three primary deliverables:

A template for the Installation Environmental Profiles (Appendix 1 draft) to be compiled by the host MilDeps or host Defense Agency no later than 1

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August 2004, from the certified data call responses to the environmental questions

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and encroachment portion of the Capacity Data Call

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. The final template for Appendix 1 will be completed by the JPAT no later than 2 June 2004;

A template for the Summary of Scenario Environmental Impacts (Appendix 2) to be

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JCSG proposing the scenario and then finalized by the

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host MilDep upon receipt of a specific, viable scenario from the JCSG.

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The draft Summary provided by JCSG to the host MilDep or Defense Agency should include all pertinent information on the scenario and any environmental impacts anticipated by the JCSG.

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This Summary will only be required for viable scenarios

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that the JCSG and /or MilDep decide warrants a

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they want to pursue further after they have completed all

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COBRA analysis. The Summary

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on that particular scenario), and

Page 1: [18] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

will be based on the impacted installation(s) Profile(s) as described above, and the environmental data contained in the first Data Call and the particular scenario data call; and,

A template for the Summary of Cumulative Scenarios' Environmental Impacts (Appendix 3) which will document consideration of the cumulative environmental impacts of the final group of scenarios (namely, those scenarios that will be formally forwarded as recommendations) on a

Page 1: [19] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

particular gaining installation.

Organization and Responsibilities

The Deputy Assistant Secretary of the Navy (Infrastructure Strategy and Analysis) DASN (IS&A) was designated the

Executive Agent for the JPAT. In that role, she was responsible for:

a. Overseeing the work of the JPAT
b. Presenting an approach and suggested data questions to the ISG for approval

The DASN (IS&A) subsequently identified the DON Infrastructure Analysis Team (IAT) Environmental Lead as the Executive Agent Functional Representative to provide day-to-day guidance and support to the JPAT.

The JPAT was composed of members from each of the MilDeps, along with members from the Office of the Secretary of Defense (Acquisition, Technology and Logistics). Representatives from the Defense Logistics Agency were added to the JPAT April 2004. The DoD IG, General Accounting Office, and the Naval Audit Service were process observers.

JPAT members were responsible for the following:

a. Developing a process to support Criterion 8 requirements.

b. Reviewing the BRAC 2005 Public Law, existing DoD policy and guidance to ensure compliance.

c. Providing a draft report on the process, including recommended integration of the environmental questions from the first

Data Call.

d. Developing suggested templates for displaying data and assessing impacts for MilDep and JCSG consideration.

Process Development Approach

Prior to the formal establishment of the JPAT, MilDep environmental experts worked together from September through December of 2003 to develop data call questions with deliberate focus on how the data gathered by these questions could be used by the decision makers and to meet the legal requirements under Criterion 8. The goal was also to create a common set of environmental questions that were not duplicative, overlapping or inconsistent. These joint MilDep environmental questions, once synthesized through the DoD Question Review Team (QRT) process, became the environment and encroachment questions (Appendix 4) in the first

Page 1: [21] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

Data Call, which was approved by the Infrastructure Steering Group (ISG). The JPAT subsequently agreed that the answers to most of these questions provide sufficient data for use in the Profile portion of the Criterion 8 process.

It is important to note that the Criterion 8 process is not an Environmental Assessment or Impact Study under National Environmental Policy Act (NEPA). Per the BRAC statute (Section 2905(c) of the Defense Base Closure and Realignment Act of 1990,

Page 1: [22] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

s amended through FY04 Authorization Act), the NEPA process is not triggered until the implementation of the BRAC recommendations. This Criterion 8 process is rather an effort to efficiently package and analyze the certified environmental data, thus making it easily accessible to the JCSGs and MilDeps for integration into their scenario formulation and recommendation development and analysis process.

The JPAT formed officially in January 2004 and met approximately every other week from inception. The initial tasks were to review process suggestions proposed by the MilDep representatives and develop consensus on the process between the services. After

Page 1: [23] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

evaluation of numerous approaches proposed by the MilDep and OSD representatives, the JPAT reached consensus. The ISG was briefed generally on April 23, 2004 on the process.

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more specifically outlined in this report

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. The general philosophy of the analysis process is to gather sufficient comprehensive environmental data in key environmental resource areas and effectively array that data to allow the decision maker to integrate environmental considerations into the scenario and recommendation making process, and consider any impact of costs associated with

Page 1: [26] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

potential, scenario-triggered environmental restoration, waste management, or environmental compliance costs.

The JPAT will conduct a mock scenario run in the May/June 2004 timeframe to exercise the Criterion 8 process and develop guidelines for compiling Appendices 1 and 2.

Criterion 8 Aspects Defined

Environmental Impact - Environmental Resource Areas

In order to assist the JCSGs' and MilDeps' analysis of the environmental impact of scenarios per Criterion 8, the JPAT developed a template (Appendix 1) that arrayed the environment and encroachment data from the first

Page 1: [27] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

Data Call into ten environmental resource areas. The ten environmental resource areas represent the primary

environmental media areas that are regulated under federal environmental law. They also encompass the important aspects of environmental restoration, waste management, and environmental compliance. Based on the opinions of MilDep environmental experts, these ten areas provide BRAC decision makers

Page 1: [28] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

with crucial environmental data needed to consider environmental impact under Criterion 8. These ten resource areas align with the questions in the environment/encroachment portion of the first

Page 1: [29] Deleted Standard Integrated Desktop 6.0 7/28/2004 2:49:00 PM

Data Call:

Air Quality (DoD Question #210-225):

The Clean Air Act (CAA) establishes national standards for air quality. A major limiting factor is whether the installation is in an area designated nonattainment or maintenance and is therefore subject to the CAA General Conformity Rule. The criteria pollutants of concern include: CO, O3 (1 hour & 8 Hour), and PM (PM10, and PM2.5). Installations in attainment areas are not restricted, while activities for installations in non-attainment areas may be restricted. Non-attainment areas are classified as to the degree of non-attainment: Marginal, Moderate, Serious, and in the case of O3, Severe and Extreme. State Implementation Program (SIP) Growth Allowances and Emission Reduction Credits are tools that can be used to accommodate future growth in a manner that conforms to a state's SIP.

Cultural/Archeological/Tribal Resources (DoD Question #229-237):

Many installations have historical, archeological, cultural and Tribal sites of interest. These sites and access to them often

must be maintained, or consultation is typically required before changes can be made. The sites and any buffers surrounding them may reduce the quantity or quality of land or airspace available for training and maneuvers or even construction of new facilities. The presence of such sites needs to be recognized, but the fact that restrictions actually occur is the overriding factor the data call is trying to identify. A programmatic agreement with the State Historic Preservation Office facilitates management of these sites.

Dredging (DoD Question # 226-228):

Dredging allows for free navigation of vessels through ports, channels, and rivers. Identification of sites with remaining capacity for the proper disposal of dredge spoil is the primary focus of the profile. However, the presence of unexploded ordnance or any other impediment that restricts the ability to dredge is also a consideration.

Land Use Constraints/Sensitive Resource Areas (DoD Question #198-201, 238, 240-247, 254-256, 273):

Land use can be encroached from both internal and external pressures. This resource area combines several different types of possible constraints. It captures the variety of constraints not otherwise covered by other areas that could restrict operations or development. The areas include electromagnetic radiation or emissions, environmental restoration sites (on and off installation), military munitions response areas, explosive safety quantity distance arcs, treaties, underground storage tanks, sensitive resource areas, as well as policies, rules, regulations, and activities of other federal, state, tribal and local agencies. This area also captures other constraining factors from animals and wildlife that are not endangered but cause operational restrictions. This resource area specifically includes information on known environmental restoration

costs through FY03 and the projected cost-to-complete the restoration.

Marine Mammal/Marine Resources/Marine Sanctuaries (DoD Question #248-250, 252-253):

This area captures the extent of any restrictions on near shore or open water testing, training or operations as a result of laws protecting Marine Mammals, Essential Fish Habitat, and other related marine resources.

Noise (DoD Question # 202-209, 239):

This resource area addresses incompatible land use within various noise contours off the installation. With respect to the noise questions the identification of acres in the higher noise contours were thought to be the most important indicator of capacity. Noise abatement procedures are also a concern.

Threatened and Endangered Species/Critical Habitat (DoD Question #259-264)

The presence of threatened and endangered species (TES) can result in restrictions on training, testing and operations. They serve to reduce buildable acres and maneuver space. The data in this section reflects listed TES as well as candidate species, designated critical habitat as well as proposed habitat, and restrictions from Biological Opinions. The legally binding conditions in Biological Opinions are designed to protect TES, and critical habitat. The data call seeks to identify the presence of the resource, TES, candidate or critical habitat, even if they don't result in restrictions, as well places where restrictions do exist.

Waste Management (DoD Question # 265-272):

This resource area identifies whether the installation has existing waste treatment and/or disposal capabilities, whether there is additional capacity, and in some case whether the waste facility can accept off-site waste. This area includes Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal facilities, solid waste disposal facilities,

RCRA Subpart X (open/burning/open detonation) and operations.

Water Resources (DoD Question # 258, 274-299):

This section asks about the condition of ground and surface water, and the capacity of water resources and water related utilities, including Industrial Wastewater Treatment plants, non-potable water systems, potable water systems, pretreatment units and sanitary sewage treatment capacity.

Wetlands (DoD Question # 251, 257):

The existence of jurisdictional wetlands poses restraints on the use of land for training, testing or operations. In the data call the installations were asked to report the presence of jurisdictional wetlands and compare the percent of restricted acres to the total acres. The presence of jurisdictional wetlands may reduce the ability of an installation to assume new or different missions, even if they do not presently pose restrictions, by limiting the availability of land.

How the Impact of Costs Related to Environmental Restoration

e Considered

The impact of costs related to potential

Overview

Dr. Steven Mittleman, Deputy Chief
Electromagnetics Technology Division
Sensors Directorate
Air Force Research Laboratory
Hanscom AFB, MA

Sensors Directorate

Mission and Vision

(from 2004 AFRL Deputies Mtg)

Our Mission

To lead the discovery, development, and integration of affordable sensor and countermeasure technologies for our warfighters.

Our Vision

Sensor and countermeasure technology enabling complete freedom of air and space operations for our warfighters, no sanctuary for our adversaries, and homeland security.

The SNH contribution to the Sensors Directorate is in Discovery and Development.

The WPAFB contribution is primarily in the Development and Integration

Electromagnetics Technology Division

- **Outstanding in-house Science and Technology supporting AF needs:**
  - Product-oriented to support needs in antennas, scattering, optoelectronics and IR Sensors
  - Significant publications, presentations, and patents
  - Technology Transfers/Transitions
    - To warfighter
    - To defense industrial base and COTS
- **AF and DoD Connections:**
  - Contractual programs when funding is available (SBIR, customers)
  - Air Force collaborations with AFSCN, AF/SMC, AFSC
  - AFRL cross-directorate collaborations with MNG, MLP, VSB, VSS
  - Defense Reliance – Chaired E-O, Antenna, Electronic Materials TARA Panels
  - Past participants on NATO and TTCP Panels
  - Close DARPA links in antenna technology, E-O components, IR sensors
- **Connections to the Technical Community:**
  - Close collaborations with local universities, small businesses, and large corporations
  - Professional society fellows and officers
  - Numerous honors and awards, including:
    - National Academy of Engineering
    - IEEE Harry Diamond Awards (Federal Electrical Engineer of the Year)
  - Referees for major journals

Strong Support to AF and Other DOD Users

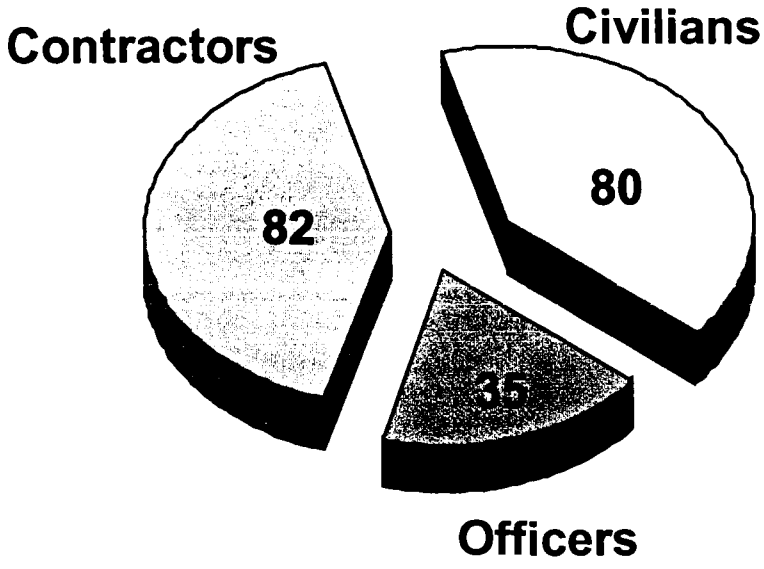
- **AFSCN (Air Force Satellite Control Network) and Space Battle Laboratory**
  - Working jointly to transition SNHA phased array technology concept
- **AF/SMC and ESC/MC**
  - EHF Satcom Antennas for MILSTAR and GBS airborne terminals and supporting FAB-T (Family of Advanced Beyond-Line-of-Sight Terminals)
- **VSSW**
  - Developed new concept for clutter cancellation in multi-satellite radar
  - Provided analysis and computer codes for antenna model incorporated into the "virtual payload simulation validation"
- **AFSC (Air Force Space Command)**
  - Member of working group assessing 2002 PAVE PAWS environmental health hazard
- **BMDO and Army**
  - Guided contractual development of Lightweight X-band surveillance array with MEMS Control

Strong Support to AF and Other DOD Users (continued)

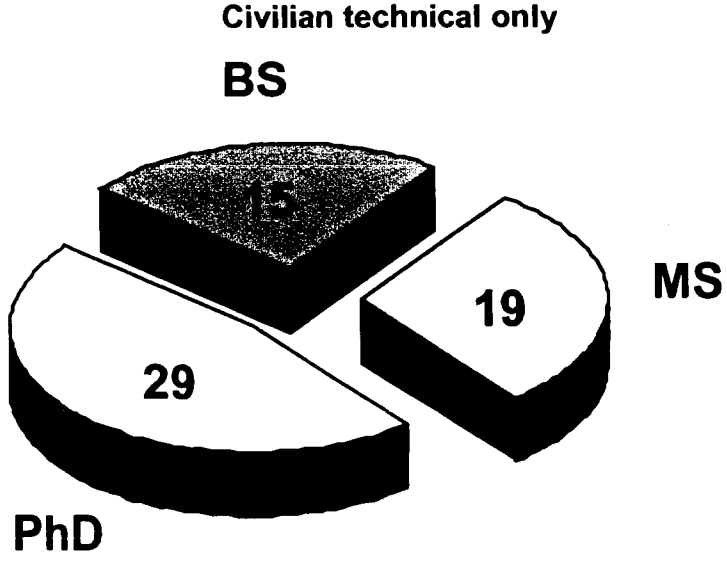
- NRO
  - Member of convened "Red Team" assessing phased array options
  - Director's Innovative Initiative supporting SNHI CTHIS
- DARPA/TTO
  - Planning Multi-Beam Antenna-Receiver for Bistatic UCAV (Unmanned Combat Aircraft Vehicle)
- DARPA/SPO
  - FOPEN experiments & modeling of ground-based targets at VHF/UHF
  - Funding in-house fabrication of model demonstrating AFRL scanning concept
- DARPA/SPO and ATO:
  - Consultants to DARPA, recommending low profile UHF antenna configurations for battlefield and aircraft communications
- DARPA/MTO
  - Consultants, Researchers, & Monitors -- Solar Blind Detector, Semiconductor UV Optical Sources, Antimonide Based Compound Semiconductor, High Power Wide Bandgap Electronics, and other Programs

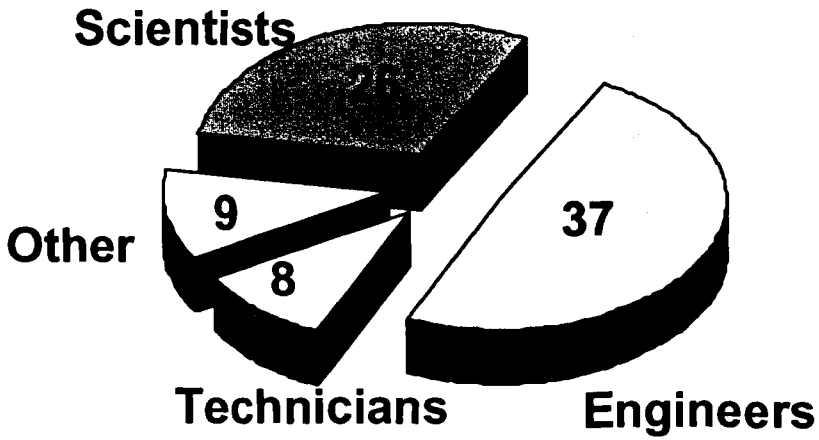
Electromagnetics Technology Division

Demographics



Civilian technical only



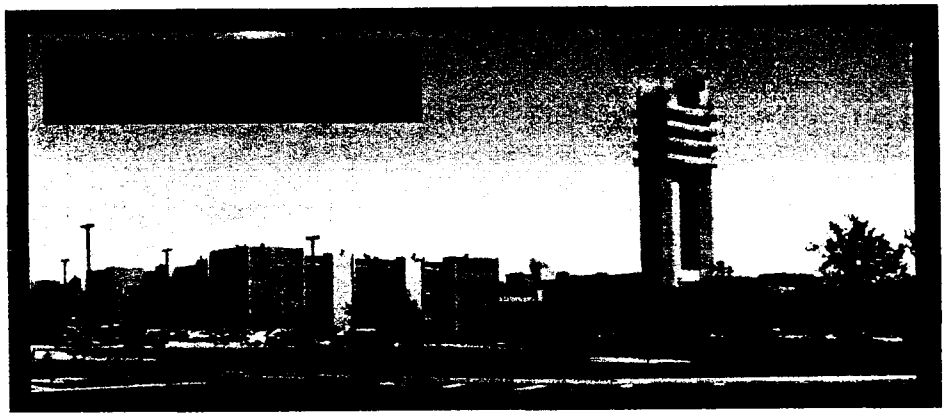


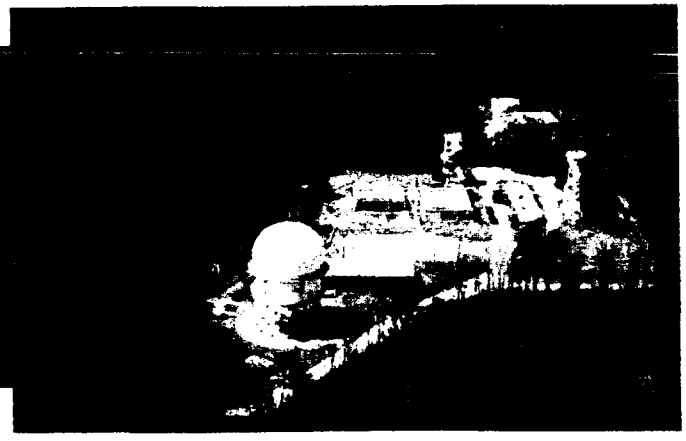
The 80 civilians are all technical except for some admin functions. Site support (network, maintenance, LMCA…) is contracted with VS-Hanscom. We have a high percentage of technical people with advanced degrees

Core Program Thrusts & Facilities

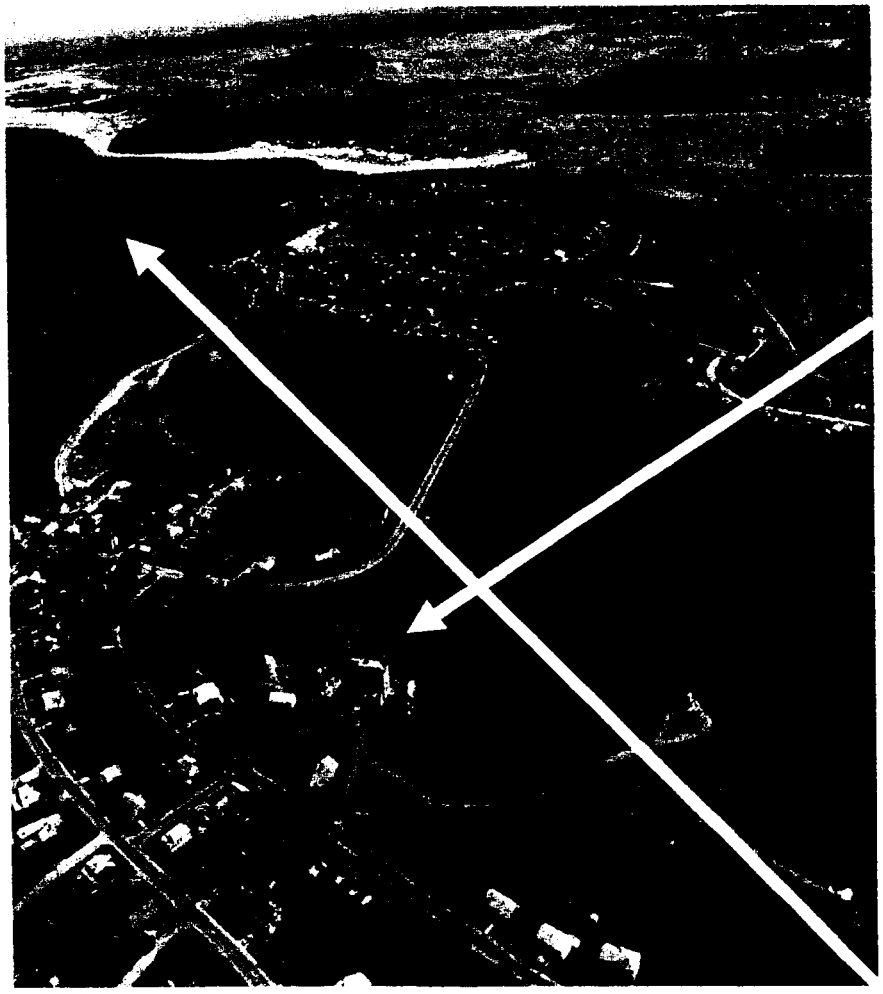
Sensors & CM Research Sites

(from 2004 Deputies Mtg)





Ipswich Antenna Test Range



- Antenna measurements from 100 MHz to 100 GHz
- 2506' elevated far-field antenna measurement range (overland)
- Radar Cross Section Measurements
- Planar near-field scanners
- 325' UHF/VHF ground reflection range
- Over-water 8.8 Mile Range

Scattering Radar Range
Sudbury, MA

- Terrain clutter measurements over a variety of grazing angles for both monostatic and bistatic anti-stealth radar geometries
- Measurements can be made from fixed or relocatable transmitting and receiving platforms.

SNH Total Bldg List

Name	GSF			NSF			People	
SN Occupied, HRS								
1128	18,336			9,569			21	
1123	16,591			11,044			15	
1138	20,886			14,874			36	
1122	5,025			3,813			22	
1124	8,588			6,020			30	
1140	12,287			7,877			22	
1141	11,670			9,280			20	
1142	10,602	103,985		5,251	67,728		10	176
SN Owned, SN Occupied, Ipswich								
2	2,627			2,127				
3	4,970			4,970			5	
5	998			998				
14	1,250			1,250				
15	1,440	11,285		1,440	10,785			5
SN Owned, SN Occupied, Sudbury								
1	5,272			4,472			2	
2	225			225				
4	3,900	9,397	124,667	3,900	8,597	87,110		2

Electromagnetics Technology Division
Major Research Areas

- **Spectral Temporal Sensing (STS)**
  - Muzzle flash, rocket plume ID
  - Laser threat warning
  - Near real-time Dynamic bomb damage assessment
- **Optoelectronics**
  - Semiconductor detectors and imaging arrays
  - Quasi-phasematched gallium arsenide (freq. agile lasers for IRCM)
  - Wide bandgap semiconductors
- **Scattering Phenomena of Radar Signals**
  - Targets under trees scattering phenomenology
  - Bistatic near-field measurement techniques (anti-stealth)
  - Slow moving target detection in SAR images
- **Antennas Technology (DoD lead lab for antenna research)**
  - Conformal antennas and digital beamforming
  - Small antennas (efficient, small, UAV applicatiions)
  - Front end components (incl metamaterials and MEMS)

Some explanations for the previous chart

The STS, with its many applications (only three are shown) is an outgrowth of our IR camera and Hyperspectral work. The STS technology captured the attention of DDR&E, resulting in a QRSP (quick response special program) to develop a specific STS implementation to a fielded system

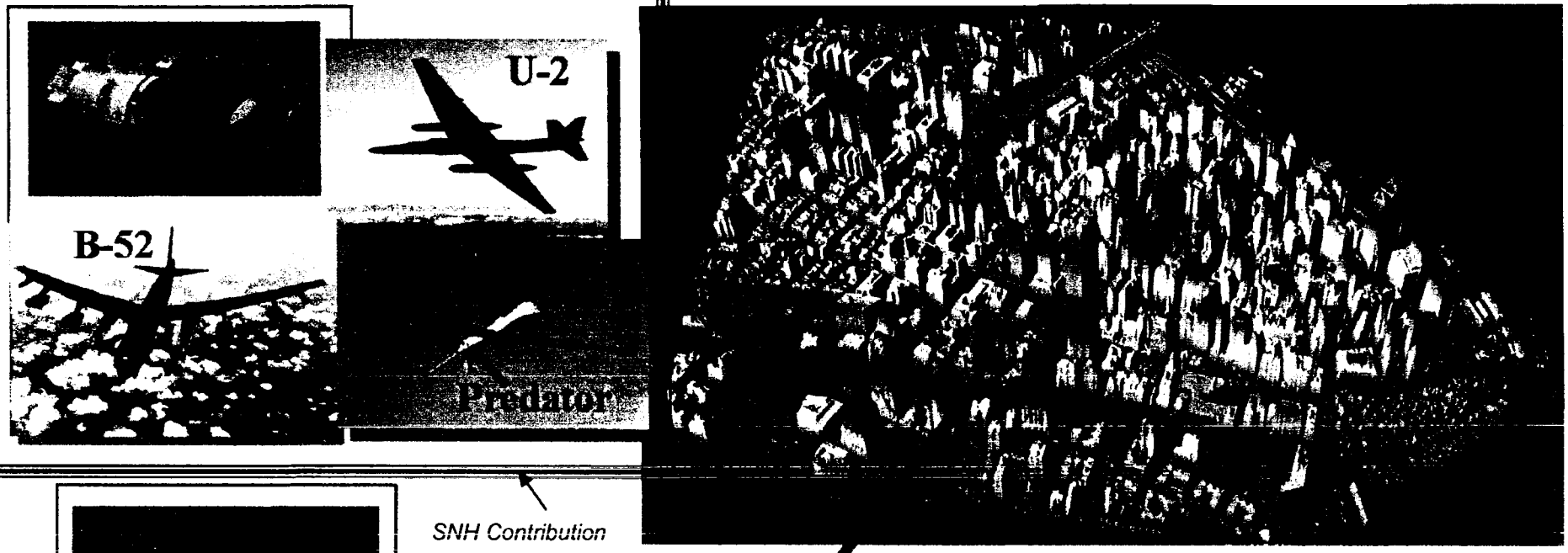
Wide bandgap semiconductor research is aimed at high power radar and UV detection for chem-bio

MEMS – greater sensitivity, lower power consumption, lower weight. Applications in homeland security and cruise missile detection

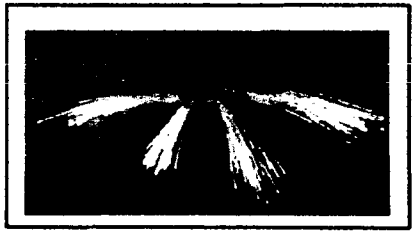
SN Core Program Thrusts & Facilities

EO Sensors & CM Technology

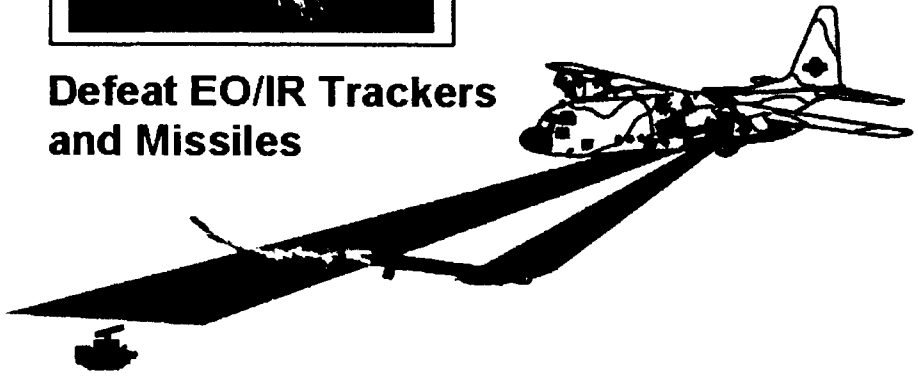
(from AFRL 2004 Deputies Mtg)



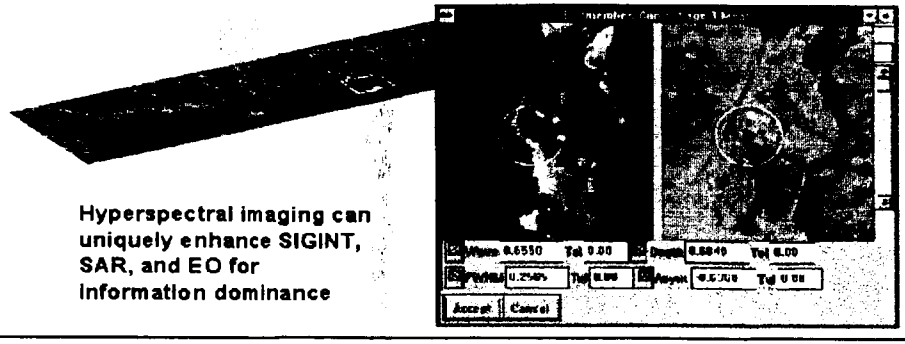
SNH Contribution



Ground Zero



Defeat EO/IR Trackers and Missiles



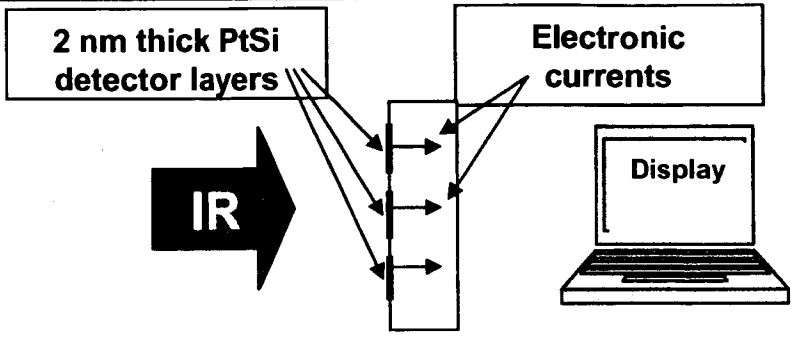
Hyperspectral imaging can uniquely enhance SIGINT, SAR, and EO for information dominance

The following two charts are examples of significant research accomplishments conceived and developed in AFRL/SNH (Electromagnetics Technology Division)

Nanotechnology before the term was invented:

Platinum Silicide NanoLayers Lead to IR Camera

- Platinum Silicide (PtSi) Infrared Detectors
  - Paul Pellegrini, AFRL/SNHI, 781-377-3699,
- Accomplishment
  - In-house research – Invented new staring infrared imaging technology in silicon, with AFOSR support
  - Photo-active layer 2 to 10 nanometers thick, to maximize quantum efficiency
  - Invented passivation methods, to achieve needed ultra-clean surfaces
  - Ultra-stability: no measurable drift in the sensors
- Impact/Application
  - Transitioned from elemental detectors to large, staring 2 dimensional arrays. First group to make large staring sensors in the infrared (300,000-cell arrays 5 years ahead of anyone else)
  - Transferred nano-fabrication and other manufacturing methods to silicon industry
  - Transitioned infrared imaging products to AF inventory, U2 and B-52
- Background Information
  - Reliability of sensor on B-52 platform improved 50x
  - Warning/Detection range increased by 3x
  - Maintenance reduced – Saves AF $12M per year
  - All 94 platforms in B-52 fleet currently use this sensor
  - Basic research was funded and supported by AFOSR



Science

Technology

(shown above: B-52 prototype camera incorporating PtSi focal plane array

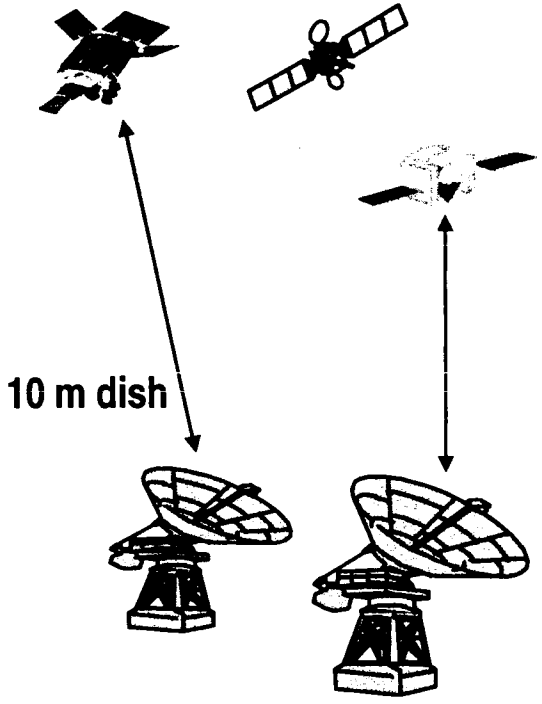
Transition to Entire B-52 fleet

Geodesic Dome Phased Array Antenna
SN Envisioned ATD for Technology Transition

Deficiency

Air Force Satellite Control Network -AFSCN

1 Contact per Antenna

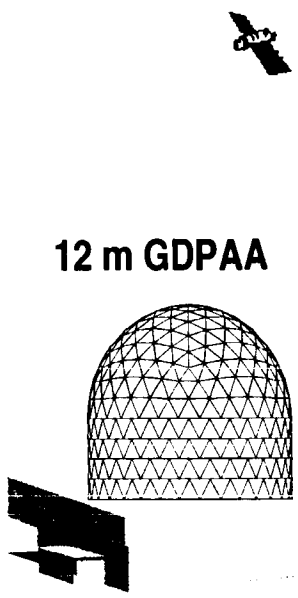


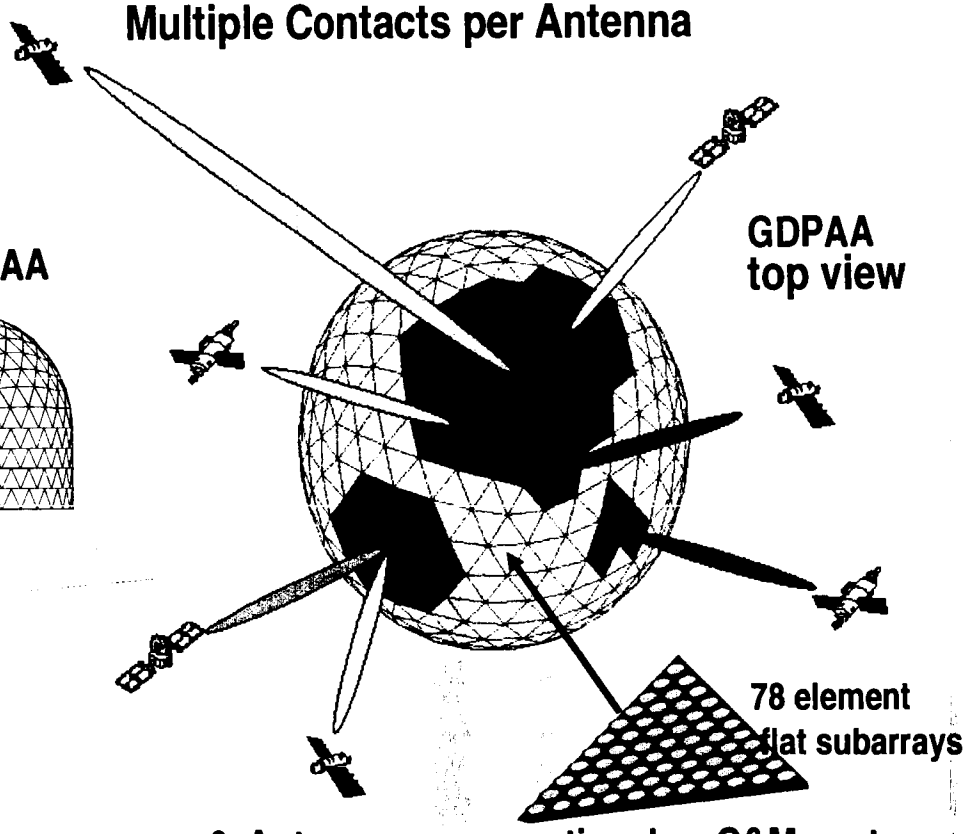
- Operator intensive, high O&M cost
- Slow satellite link switching –key hole & cable wrap
- Unable to support new SATOPS concepts

SNH Solution

Integrated Satellite Control Network ISCN

Multiple Contacts per Antenna





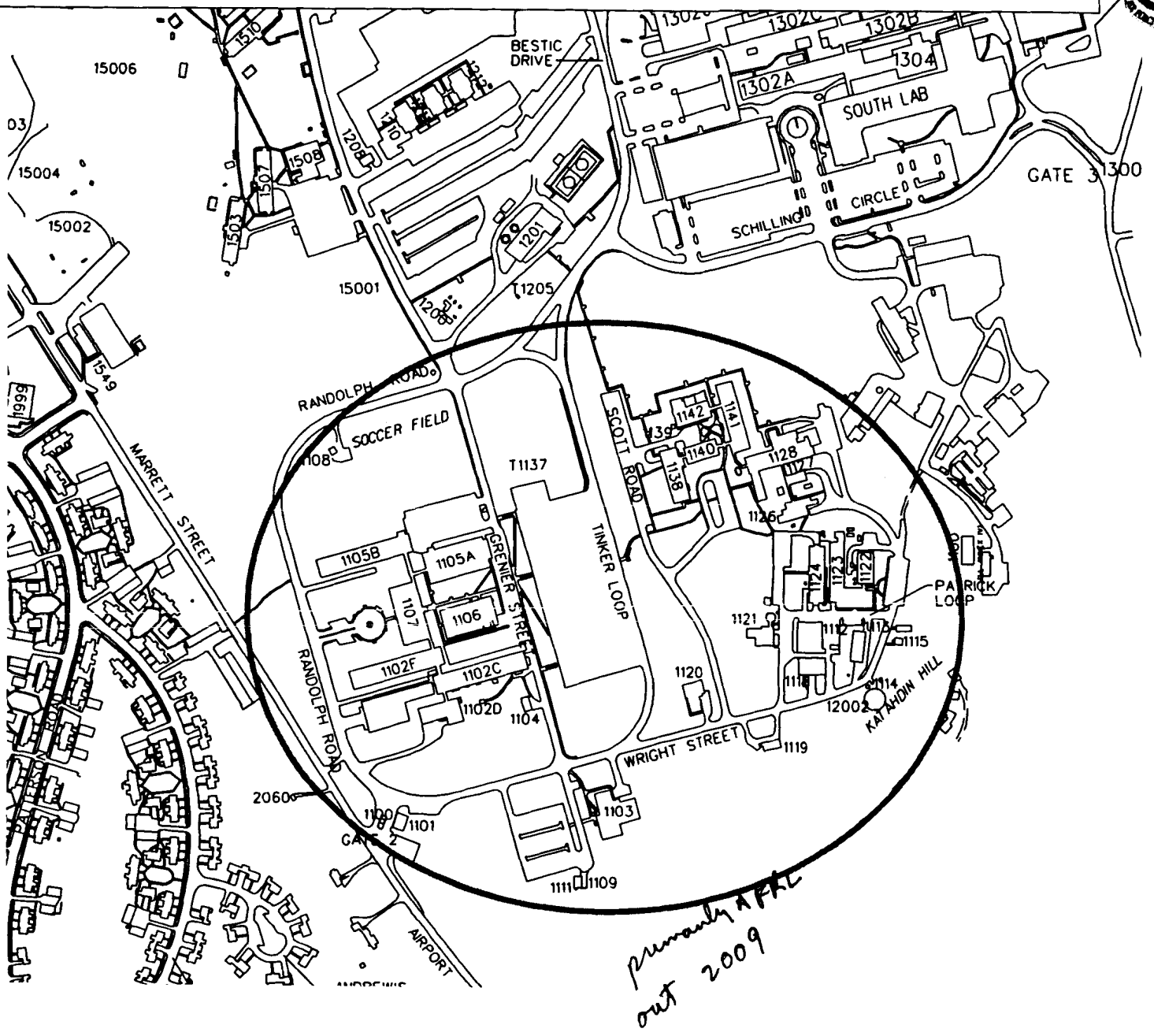
- Autonomous operation, low O&M cost,
- Antenna resource management and scheduling for optimal SATOPS
- Network centric remote operation and control

Electromagnetics Technology Division

Summary

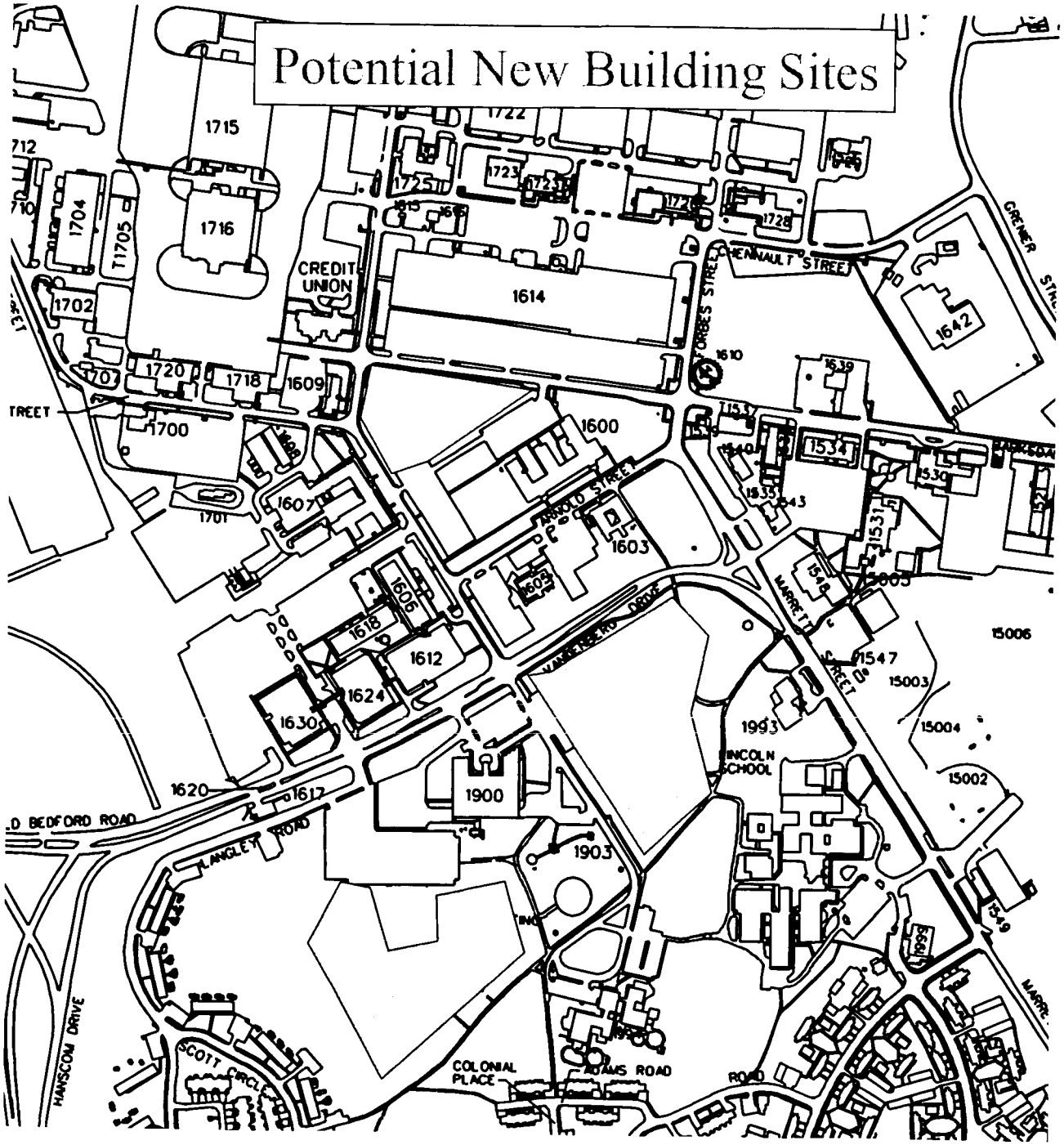
- Primarily 6.1 and 6.2 research in optics and electromagnetics for sensor applications, within the SN technology thrusts
- Strong in-house program
- Contracts to supplement in-house research as budget permits
- Strongly coupled to local industry and universities
- Extensive connections with AF and DOD organizations
- Important technology transfers and transitions

460,978 SF of existing Base, AFRL VS & SN facilities to be vacated

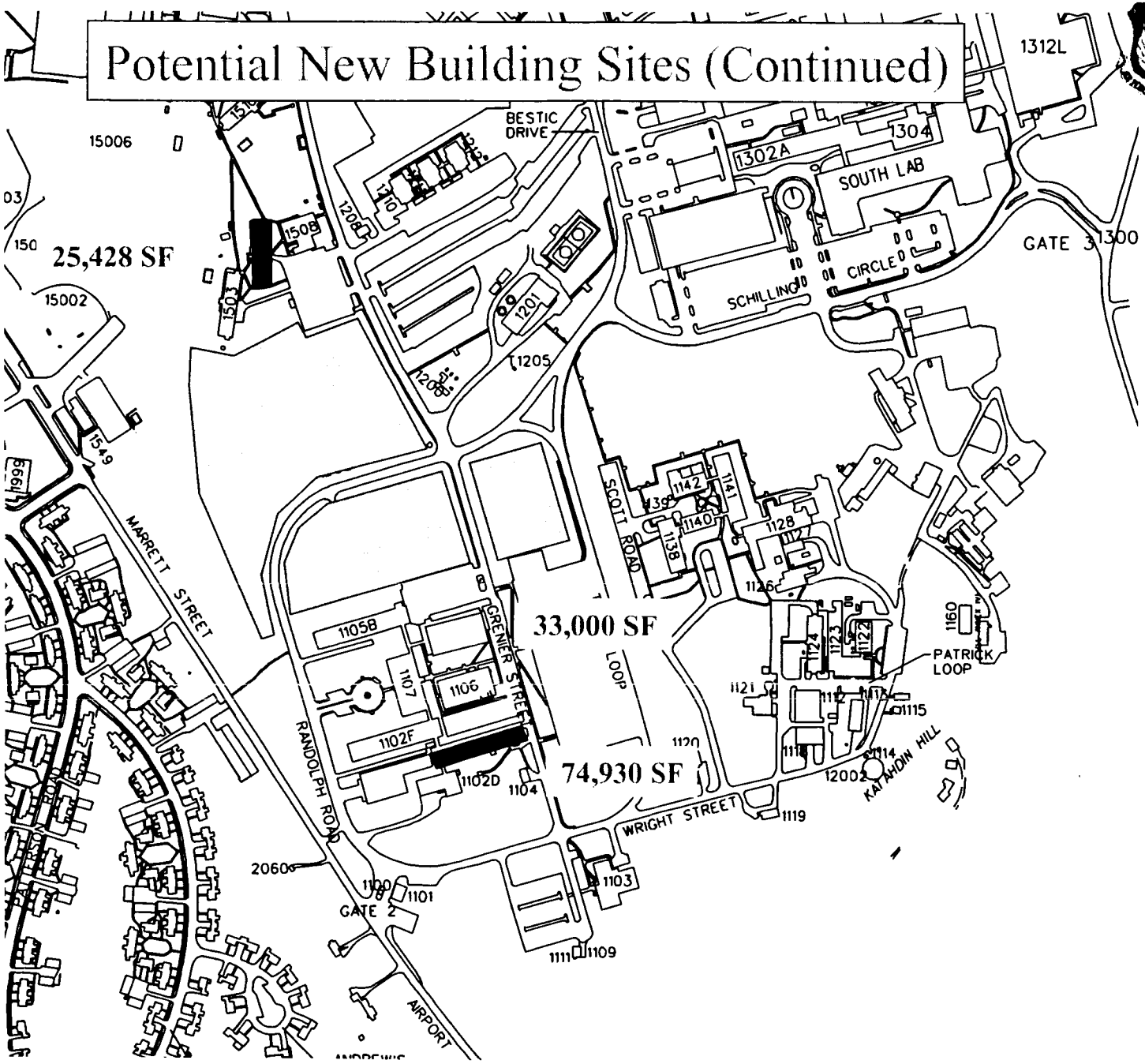


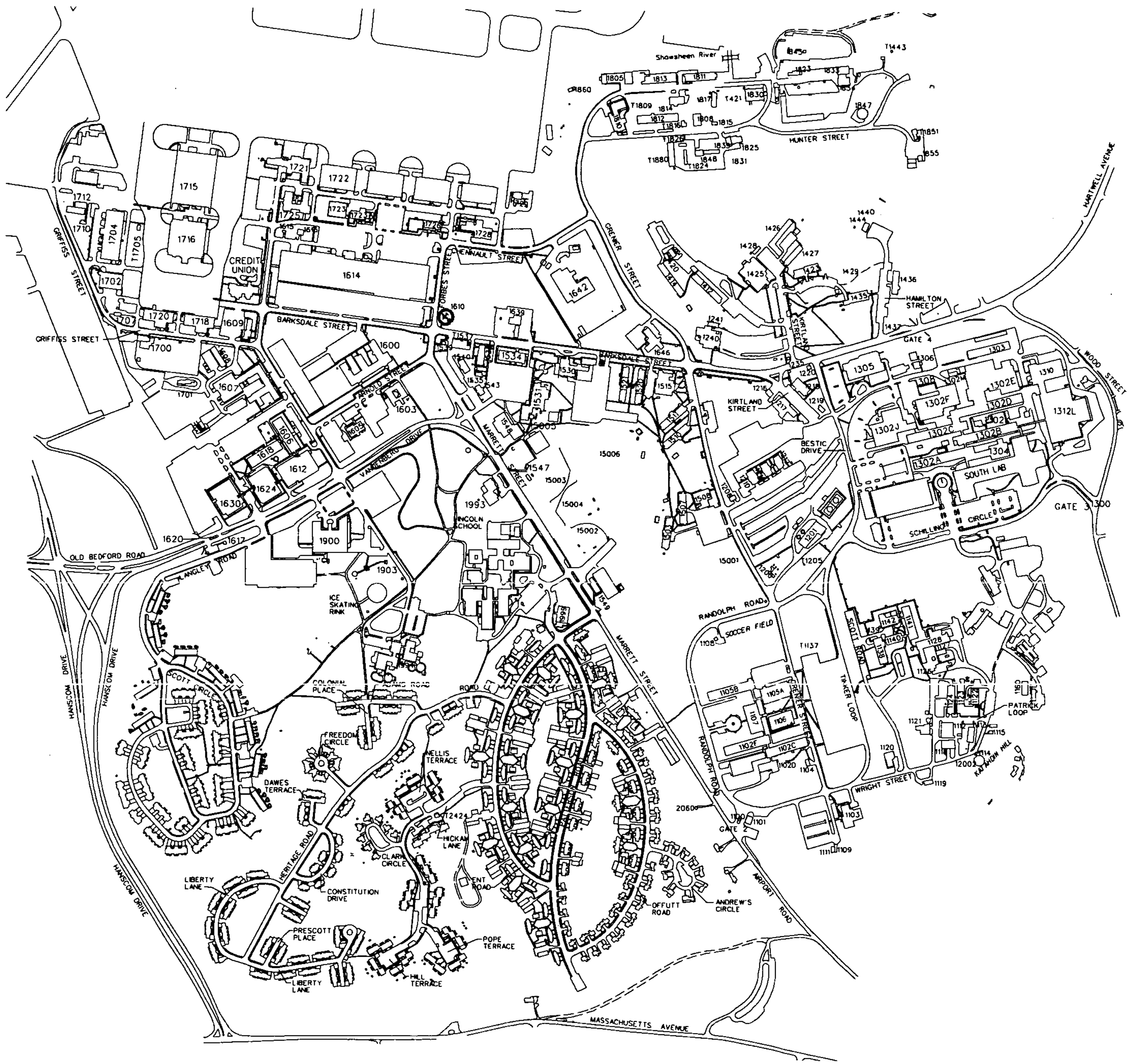
primarily AFRL
out 2009

Potential New Building Sites



Potential New Building Sites (Continued)





Shawsheen River
HUNTER STREET
HARTWELL AVENUE
GRENIER STREET
CHENNAULT STREET
FORBES STREET
BARKSDALE STREET
GRIFFISS STREET
CREDIT UNION
ARNOLD STREET
VANDENBERG DRIVE
MARRETT STREET
KIRTLAND STREET
HAMILTON STREET
GATE 4
WOOD STREET
BESTIC DRIVE
SOUTH LAB
SCHILLING CIRCLE
GATE 3
LINCOLN SCHOOL
OLD BEDFORD ROAD
LANGLEY ROAD
ICE SKATING RINK
RANDOLPH ROAD
SOCCER FIELD
TAKER LOOP
PATRICK LOOP
WRIGHT STREET
HANSCOM DRIVE
SCOTT CIRCLE
COLONIAL PLACE
FREEDOM CIRCLE
NELLIS TERRACE
DAWES TERRACE
HERITAGE ROAD
CLARK CIRCLE
HICKAM LANE
LIBERTY LANE
CONSTITUTION DRIVE
PRESCOTT PLACE
POPE TERRACE
HILL TERRACE
OFFUTT ROAD
ANDREW'S CIRCLE
AIRPORT ROAD
GATE
MASSACHUSETTS AVENUE
1614
1642
1715
1716
1722
1900
1903
1993
1305
1312L
1302F
1106
1300

Headquarters Air Force Materiel Command

War-Winning Capabilities ... On Time, On Cost

2005 Base Realignment and Closure (BRAC) Briefing to Mr Farrington (Hanscom AFB MA)

Col Dave Temple
AFMC/BR

29 July 2005

This Briefing is:
UNCLASSIFIED
PREDECISIONAL - FOUO

Overview

- **BRAC Actions**
- **Functional Area Challenges (Manpower/Comm/Facilities)**
- **Phasing/Beddown Options**
- **Questions / Comments**

BRAC Recommendations

- Inbound
  - AFRL Information (AFRL/IF) from Wright-Patterson AFB (FY09)
  - Air & Space Info Systems Research and Dev & Acq (FY07)
    - Development and Fielding Systems Group (DFSG) from Wright-Patterson AFB*
    - Operations & Sustainment Systems Group (OSSG) from Maxwell-Gunter AFB*
    - Cryptologic Systems Group (CPSG--Dev & Acq) from Lackland AFB*
- Outbound
  - AFRL Space (AFRL/VS) to Kirtland AFB (FY09)
  - AFRL Sensors (AFRL/SN) to Wright-Patterson AFB (FY09)

•Organizations not specifically identified in SecDef recommendations, but assumed to move per Tech Report 0042C7

Functional Area Challenge Manpower

- **Manpower numbers being updated to reflect Feb 05 Unit Manning Document info vs validated BRAC data from Oct 03 Baseline (includes CMEs)**
  - **Initial assessment—inbound #s for Hanscom will be slightly higher than indicated by COBRA**
  - **Conversion of 393 Central Design Activity and 109 Netcentric Ops C4ISR (Gunter) authorizations to CMEs is key "watch" item for Hanscom to perform the mission**

Functional Area Challenge Communications

- **Significant Comm footprint (growth) required for incoming mission at Hanscom (COBRA=$8.97M)**
  - **AFNOC and other systems require 24/7 ops**
  - **DFSG requires large Wide Area Network (WAN) reachback to WPatt not currently available at Hanscom**
  - **OSSG requires large WAN reachback to Gunter (DISA MegaCenter) not currently available at Hanscom**
  - **CPSG requires special networks to link w/ customers/Lackland/Robins/Tobyhanna**

Functional Area Challenge Facilities

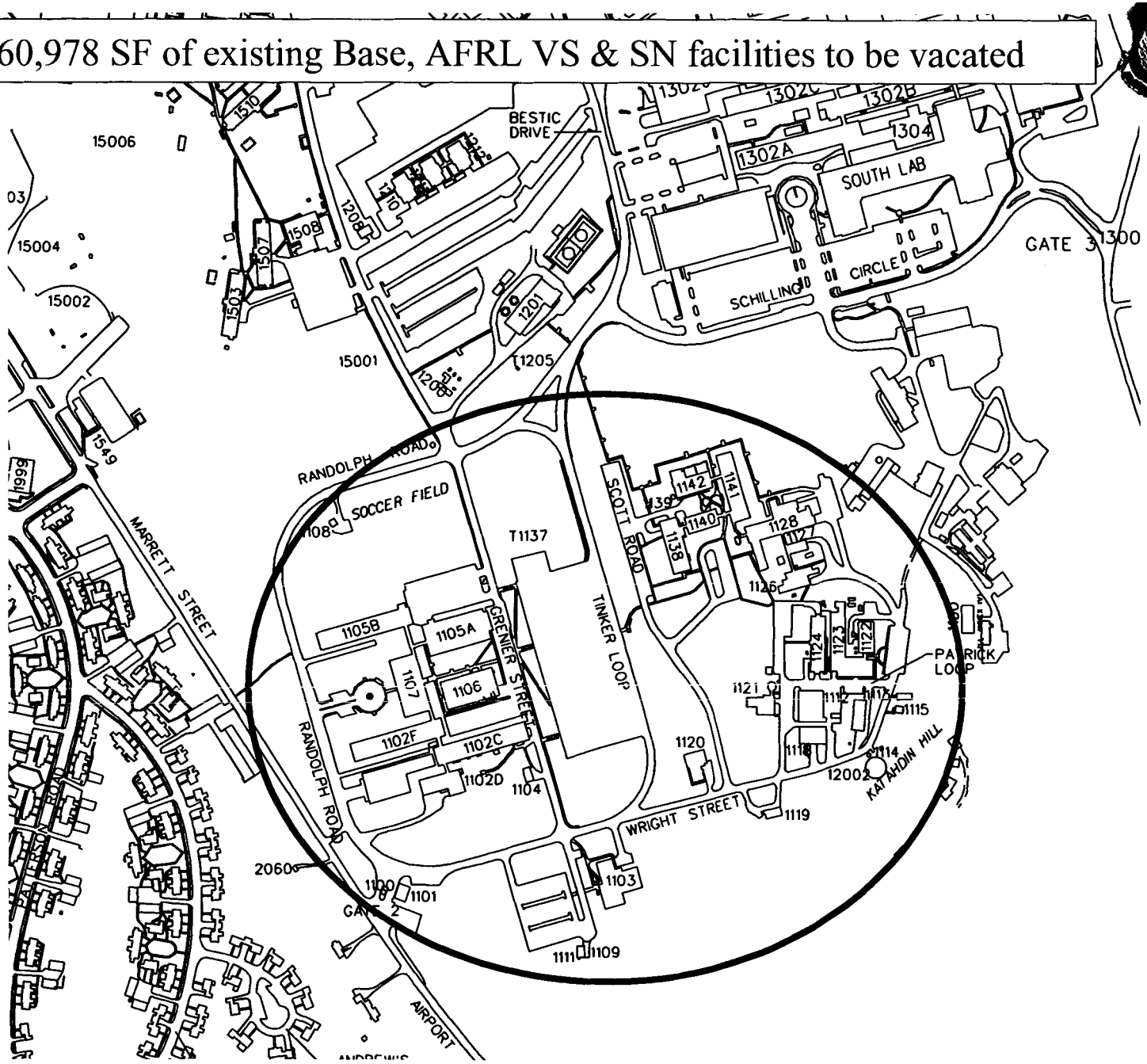
- **Difficult reconciling COBRA Data in terms of info other than direct MILCON (parking, infrastructure, Quality of Life improvements)**
- **Working with command to specify exact shortfall between COBRA and AF estimate (Site Survey week of 25 Jul cancelled)**

Phasing/Beddown Options

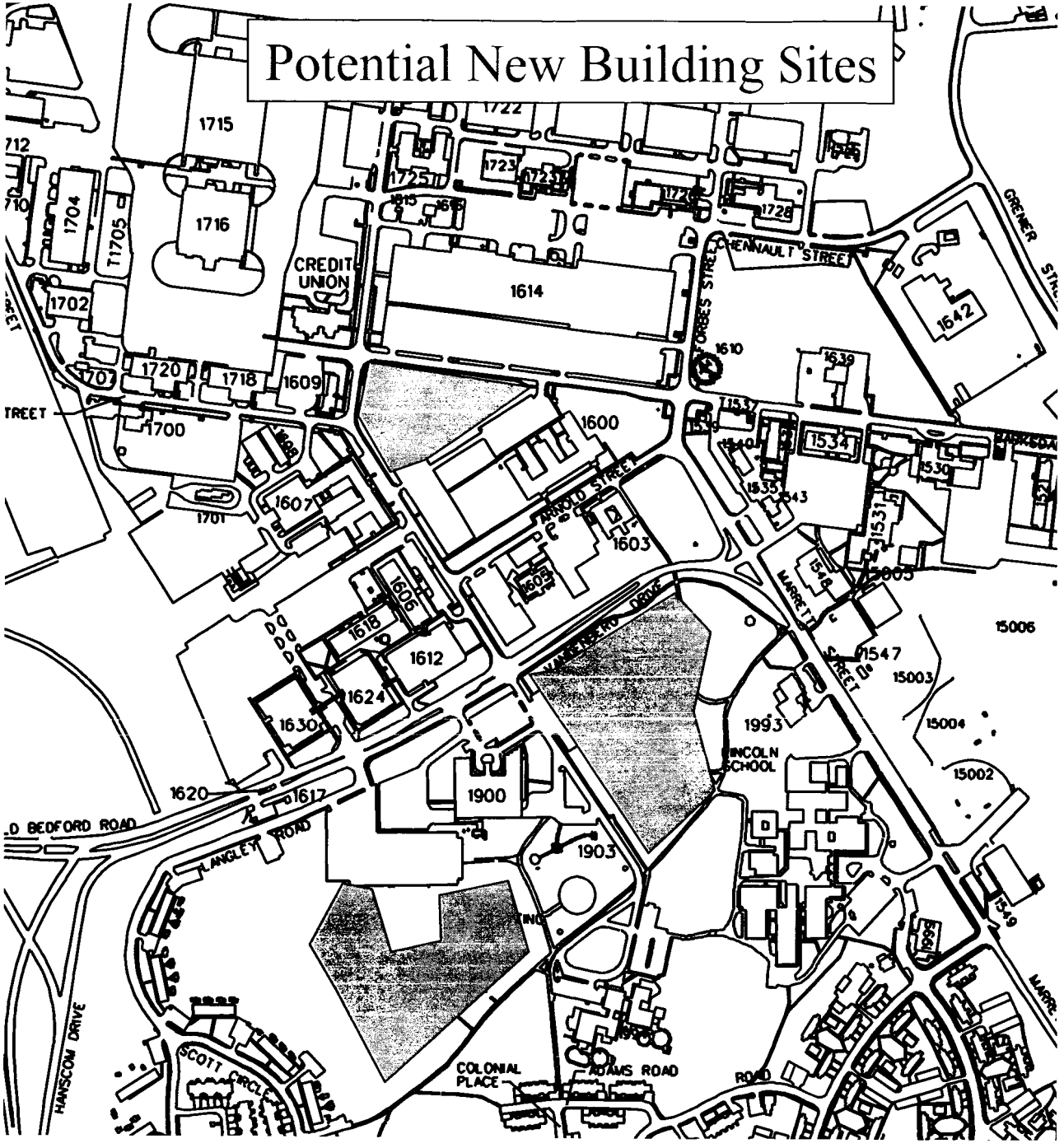
- AFRL moves are on critical path
  - Facilities at Kirtland/WPatt postured unavailable (new MILCON) until FY09
  - DFSG/OSSG/CPSG transitions expected to begin in FY07
- Reviewing temporary Beddown Options for early C4ISR transitions pending Hanscom MILCON completion

Hanscom does have capacity (infrastructure) to support new workload/personnel

460,978 SF of existing Base, AFRL VS & SN facilities to be vacated



Potential New Building Sites



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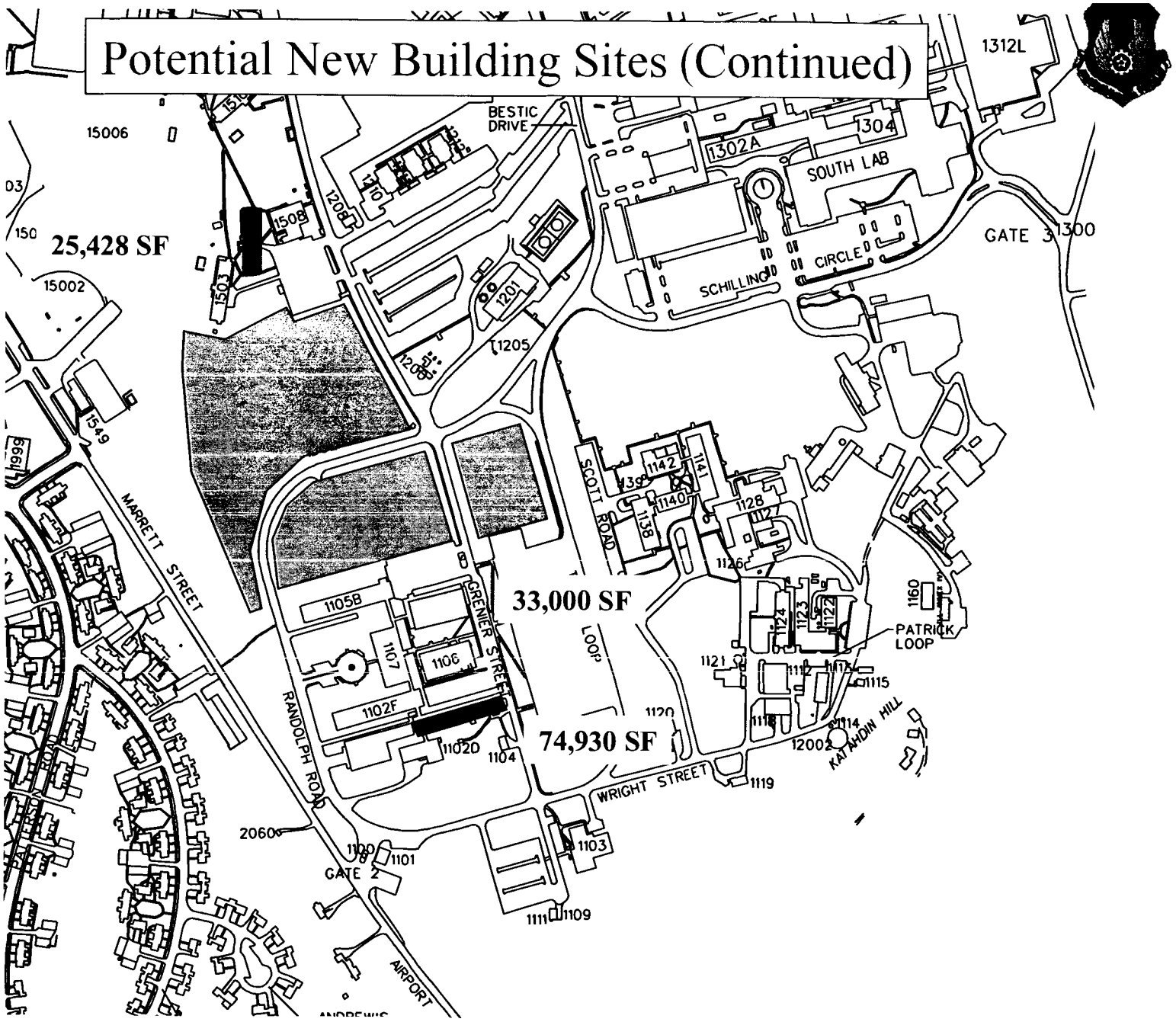

Questions / Comments ???