



Homeland Security Implementation Strategy and Interagency Management Approach for MPAR

Multi-functionality—Agency Needs, Priorities, and
Principles of Operation

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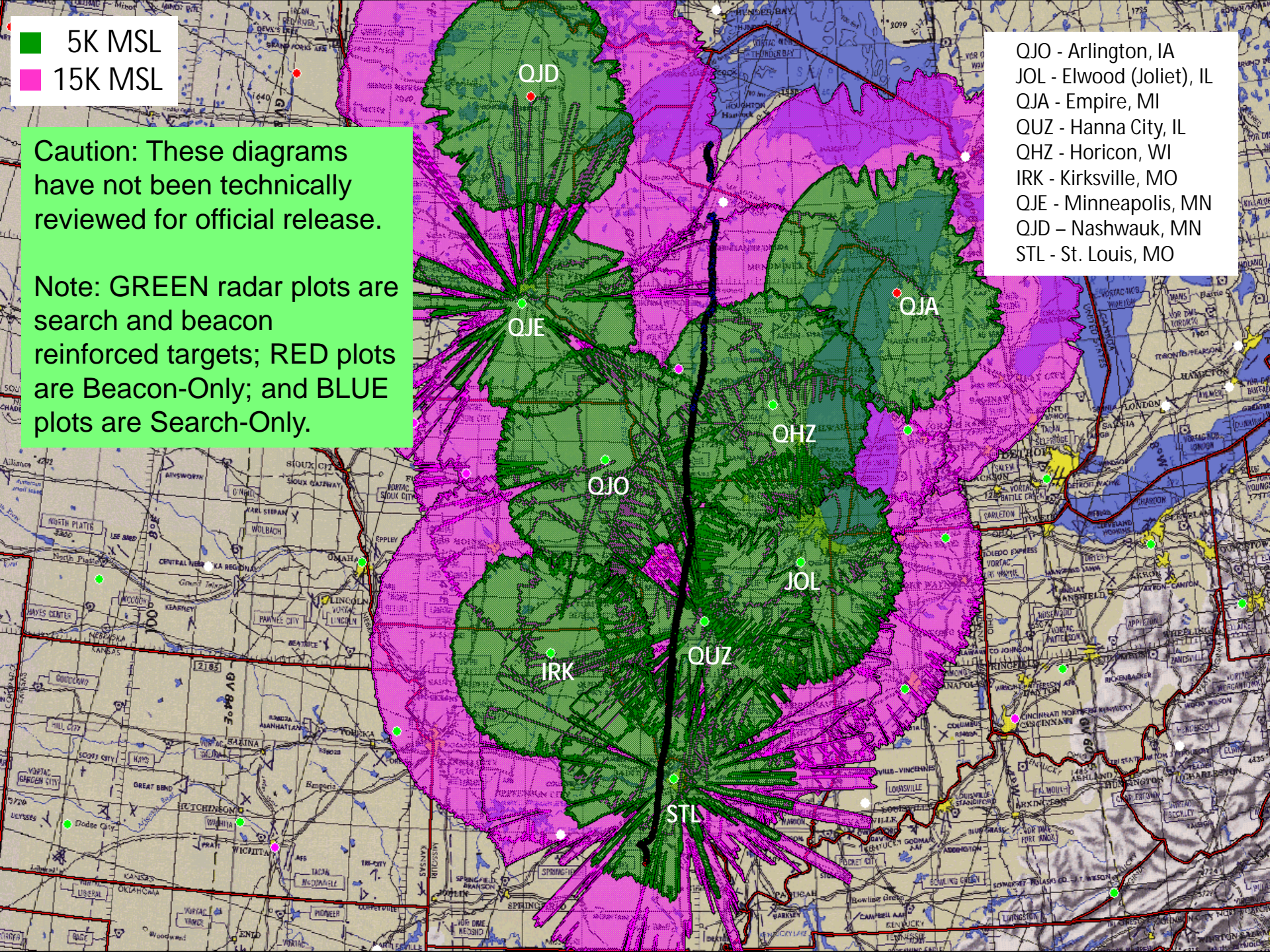
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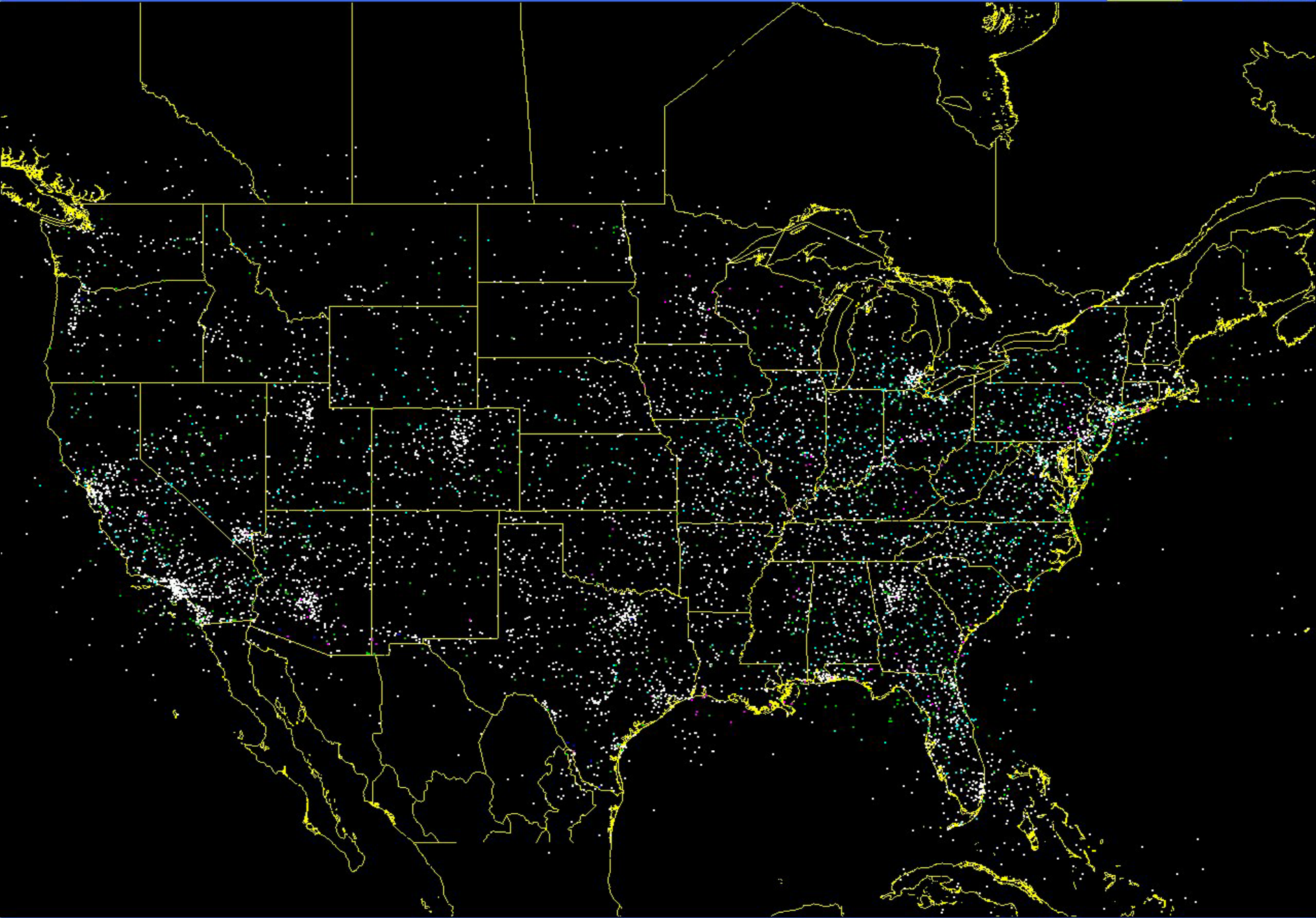
5K MSL
15K MSL

Caution: These diagrams have not been technically reviewed for official release.

Note: GREEN radar plots are search and beacon reinforced targets; RED plots are Beacon-Only; and BLUE plots are Search-Only.

- QJO - Arlington, IA
- JOL - Elwood (Joliet), IL
- QJA - Empire, MI
- QUZ - Hanna City, IL
- QHZ - Horicon, WI
- IRK - Kirksville, MO
- QJE - Minneapolis, MN
- QJD - Nashauk, MN
- STL - St. Louis, MO

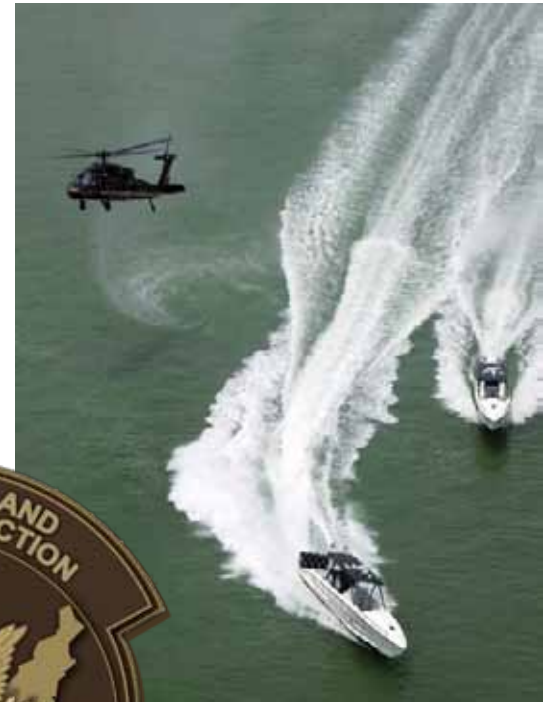




Customs and Border Protection (CBP)



- Detect airborne and maritime terrorist/smuggling events and their associated illegal alien and contraband cargos
- Covert tracking devices
- Enforce borders at Ports of Entry and between Ports of Entry



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Air and Marine Operations Center (AMOC)

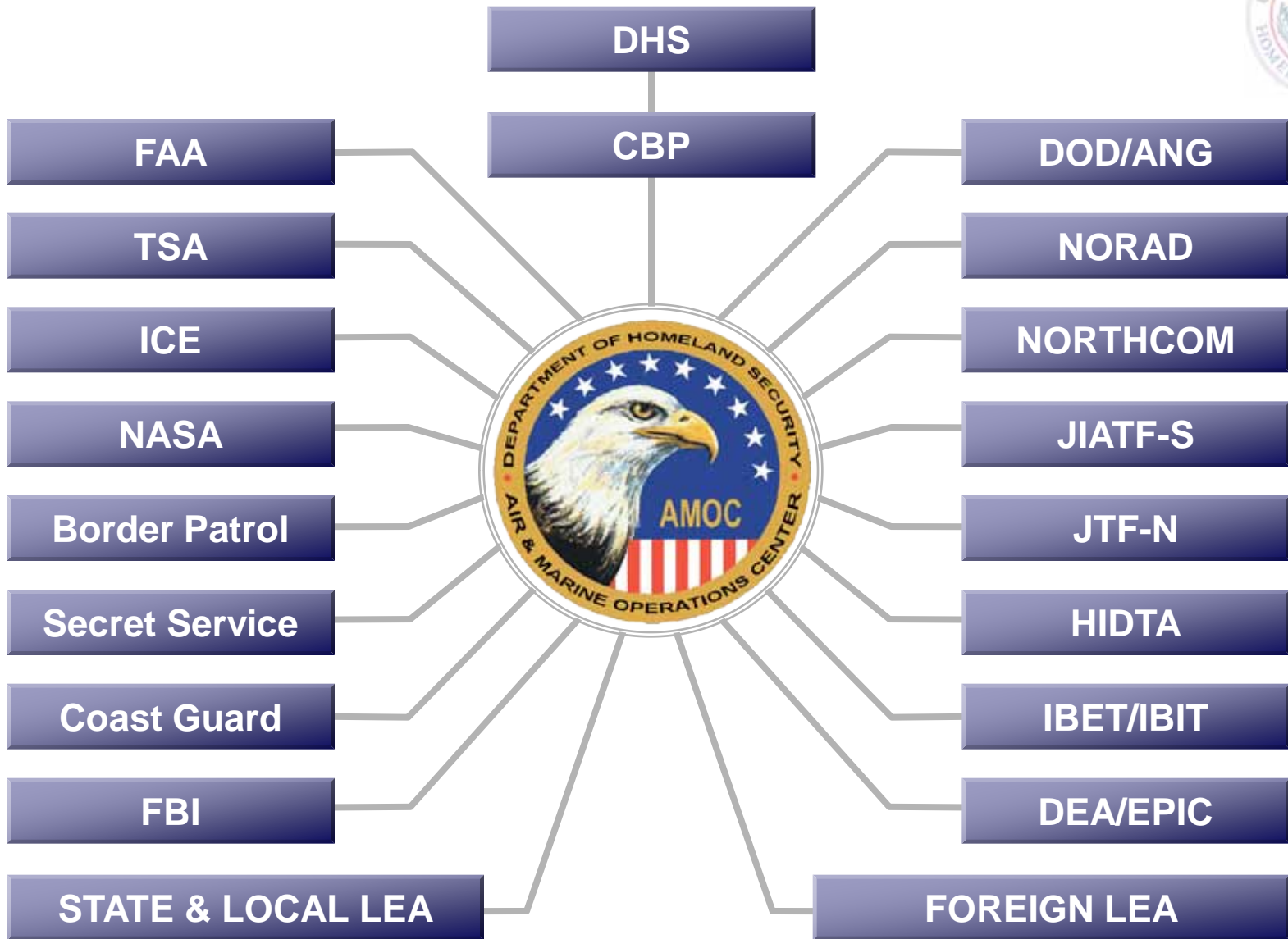


- 24-hour multi-agency operations center
- Provide direct support to Homeland Security in protecting the American people and our national borders through the detection and identification of transnational threats and coordination of law enforcement air and marine forces.



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AMOC Partners



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Domestic Air Defense and Security Problem Space



	Point Defense	Border Defense
Conventional Threats	<ul style="list-style-type: none">• NCR Defense<ul style="list-style-type: none">– Suicide aircraft	<ul style="list-style-type: none">• Legacy CONUS Defense<ul style="list-style-type: none">– Foreign aircraft attack• Counter-smuggling<ul style="list-style-type: none">– Narcotics / terrorism
Advanced Threats	<ul style="list-style-type: none">• NCR Advanced Defense<ul style="list-style-type: none">– Cruise missile	<ul style="list-style-type: none">• National Cruise Missile Defense



- Diversity of air defense and security problems; architectures and technologies needs differ
- Assessment objective to guide DHS air security investments

DHS Needs and Roadmap Summary



DHS Need	Roadmap Addressing	Comment
Border Surveillance	Siting, HW testing, M&S, environmental measurements. Signal processing.	View to remote northern borders. Sig. Pro. to reject noise from urban areas.
Inland aircraft tracking	Improving sensitivity, accuracy and height finding	Height finding is significant issue
Maritime domain awareness	Improve ability to track slow targets by improving clutter rejection	Could be lower cost system if focus is here rather than CM
Cost	System Engineering, M&S, signal processing	How big does it have to be to be effective?



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Example Cross Border DHS Threats



Slow, low flying aircraft



**Rapid, Remote
Cargo Transfer**



~ 5 minutes (AMOC)

**Non-descript
Escape vehicle**



Architecture required combining air detection, intercept, and ground tracking



The Slash

- The Northern Border Slash provides a unique window for detection of illegal crossings/activity
- Rough terrain and diverse environmental conditions present unique challenges to sensor mix decisions



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Air Surveillance Needs



- **Wide area, persistent, low altitude surveillance coverage**
 - 200 ft over most terrain
 - 50 ft over large flat areas
- **Detect small general aviation aircraft**
 - 0 dBsm radar cross section
- **Surveillance reach across border**
 - Sufficient to allow scramble / intercept at border
- **Track accuracy sufficient for interceptor handover**
- **Surveillance coverage sufficient to permit threat conditioning**

- **Air surveillance architecture has significant requirements.**
 - Low altitude, persistent coverage providing warning and intercept handover.
- **OTHR potentially attractive option for Northern Border surveillance; challenges remain.**



Air Surveillance Options



Look-up Sensors

- FAA Radars (ARSR, ASR)
- Military Radars (Sentinel, SPY-3)
- **Multiple Use Radars (MPAR, LSTAR)**
- Passive (Silent Sentry, Acoustic)

Look-down Sensors

- Aerostats (TARS, JLENS)
- Manned Airborne (AWACS, P-3)
- Unmanned Airborne
- Over-the-horizon Radar (ROTHR)

Not Considered

- Space Based Radar - Cost and coverage issues
- Surface wave radar - Over water applications



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DHS Remote Sensing Goals



- **Augment other sensors at borders and interior to the US**
- **Track to the ground at borders**
 - **Limited target masking by terrain features (high grazing angles)**
 - **May require site(s) north of Texas to keep grazing angles high**
- **Step-scan plus wide-area surveillance modes**
 - **Rapid revisit rate/ track while scan**
 - **Perhaps 2-3 wide area dwells to cover region during good propagation conditions**
- **Robust detection & track independent of ionospheric propagation**
 - **Unpredictable daily, annual and solar cycle variations in performance.**
 - **Revisit rate can be compromised during poor conditions**
- **Absolute accuracy to support fusion and relative accuracy for interdiction**
- **Track through maneuvers/poor geometry**
- **Provide target classification**
- **Limited number of large sites**



Northern Border Coverage

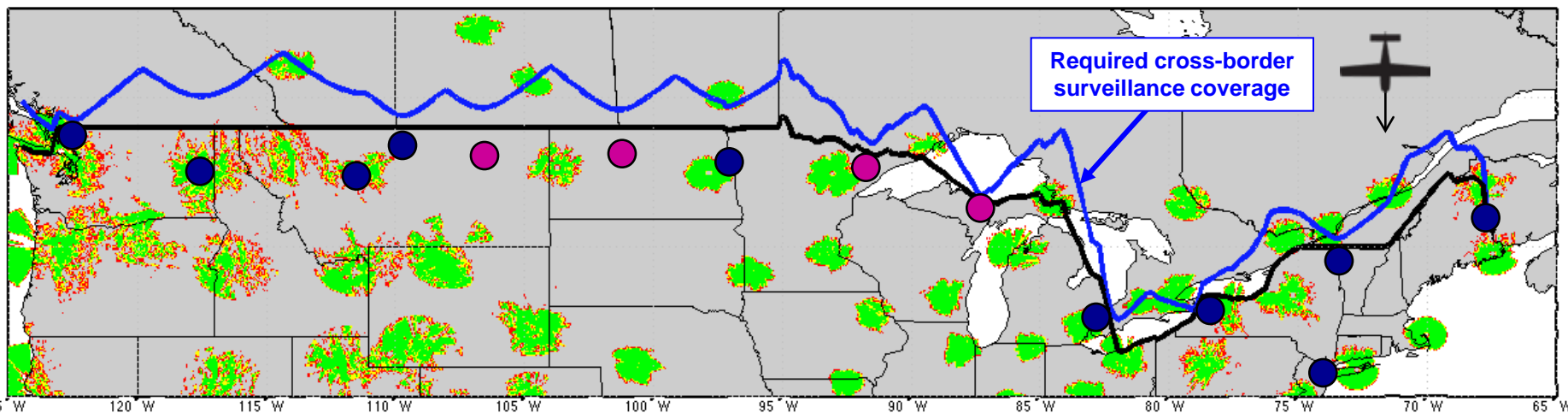


Northern Border Challenges

- Poor low altitude coverage
- Few air stations
- Dense air traffic
- Very long border
- Mountainous terrain

Estimated Coverage

- 200 ft target
- 250 Kt target
- Cessna 550 interceptor
- 9 minute scramble
- 0 dBsm target
- ARSR and estimated Canadian radar coverage



- CBP Air Station
- Additional CBP Air Station

Target Visibility †

- > 90 Percent
- 50-90 Percent
- < 50 Percent
- No Detection

† Single Look

- Required persistent low altitude surveillance compatible with border geography and air traffic



Summary

- **Effective border air security requires integrated architecture**
 - Improved air surveillance enabling warning and at-border intercept one element
- **MPAR has a potential role in meeting DHS surveillance needs**
- **Improved MPAR models required to more quantitatively assess performance & improvements from proposed advanced sensing technologies**



Information Sharing/Collaboration



So you think you're collaborating...*

Collaboration = Collaborative Information Environments

Two or more *humans* cooperating in such a way that the result is a mutual *creation* reflecting notable insight, skill, or intellect

- Requires *human* interaction (so far)
- A *creative* process resulting in something that did not exist previously

Collaboration is an “*enhanced*” form of interaction, whereas information sharing, cooperation, or coordination are enablers, important but not sufficient

Coordination

The regulation of diverse elements into an integrated & harmonious operation

- A control process designated to achieve cooperation

Cooperation

Working together on a common goal or task

- Possible to cooperate while maintaining ultimately separate interests

Information Sharing

The basic act of providing information to others

- Independent of how others will use that information
- Requires no cooperation or shared objectives

e.g., NetMeeting, Groove, E-Team ...

*...when you're really just sharing information



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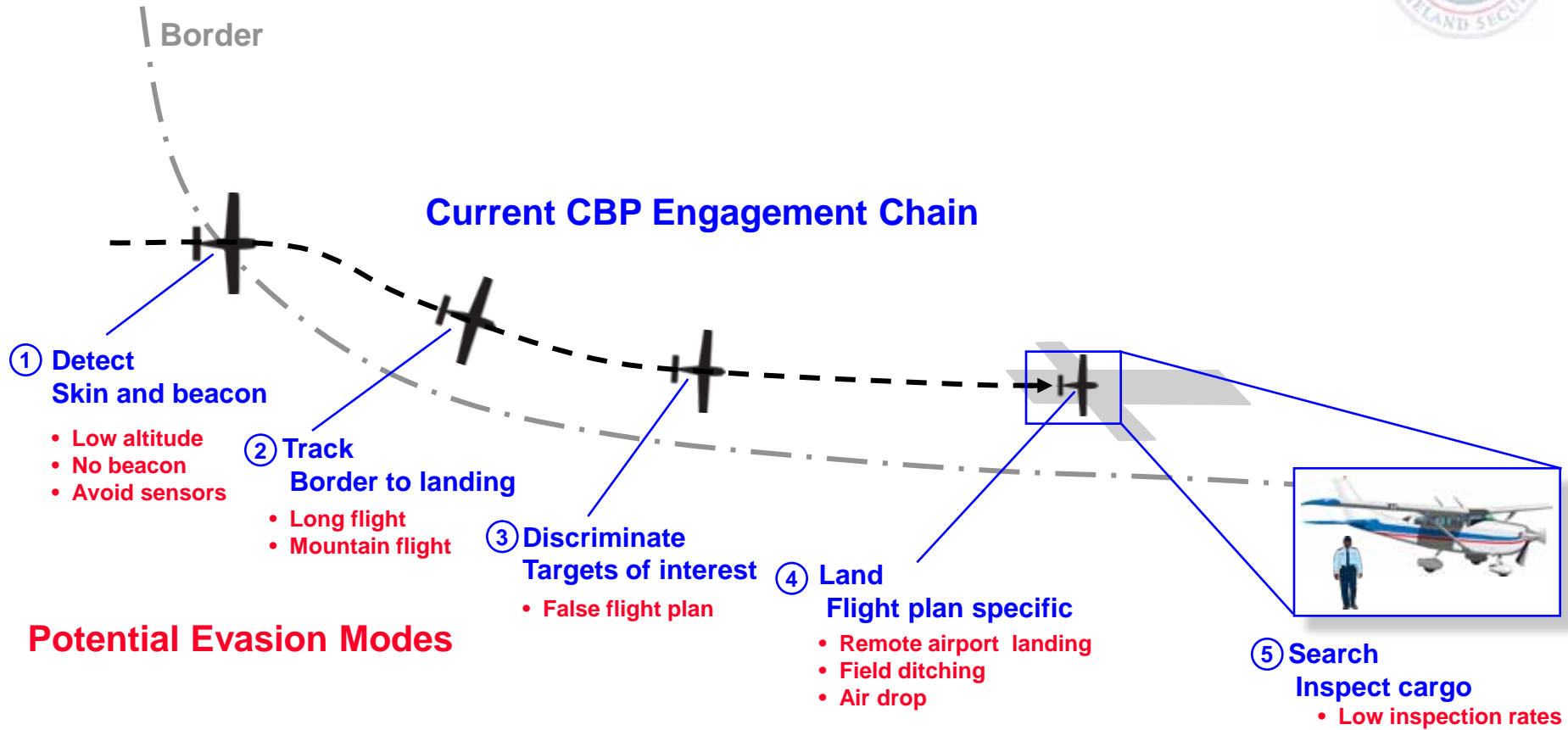


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Questions - Discussion

Current CONOPS for DHS Engagement

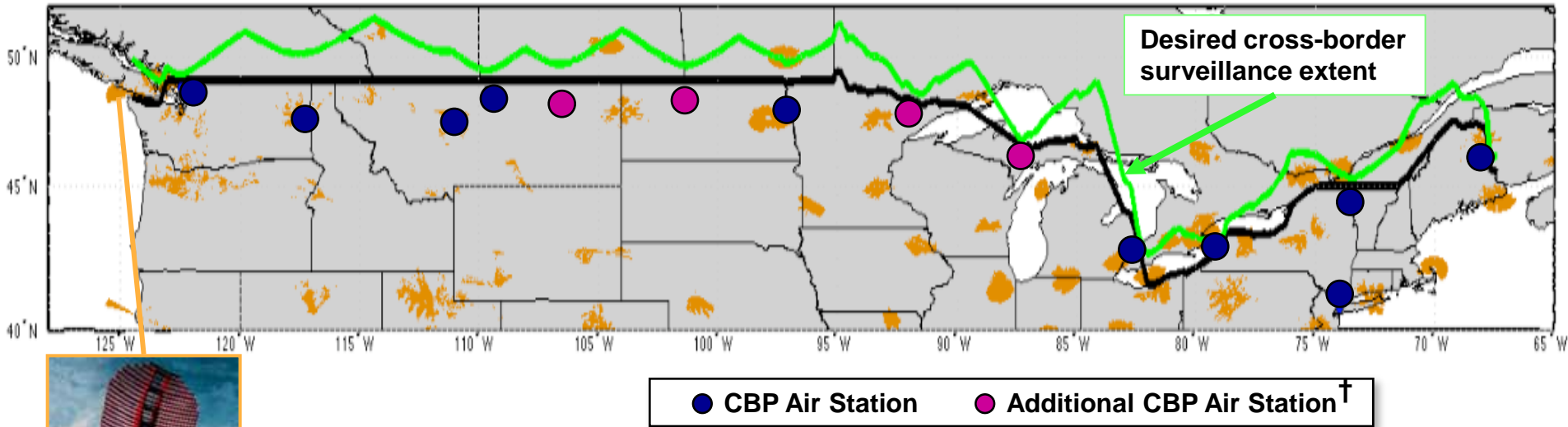


Current air security architecture is being defeated at multiple steps.



Current Northern Border Coverage

- ARSR coverage
- 200 ft target
- 250 Kt target
- Cessna 550 interceptor
- 9 minute scramble
- Canadian radar estimated coverage



ARSR

• Current low altitude coverage is very limited and does not support intercept at border.

[†] Potential station needed for Northern border air security



Homeland Security

S&T Divisions: Customers & Portfolios

Detect & Defend Against WMD		National Culture of Preparedness	Control Our Borders	Strengthen Screening of Travelers	Secure Critical Infrastructure
Department of Justice Federal Law Enforcement Training Center Transportation Security Administration Customs and Border Protection FEMA U.S. Secret Service U.S. Coast Guard	Department of Agriculture Department of HHS Department of Justice DHS CMO Federal Law Enforcement Training Center TSA Customs and Border Protection FEMA U.S. Secret Service U.S. Coast Guard	AS Cyber and Telecommunications Department of Justice DHS Office of Intelligence and Analysis Federal Law Enforcement Training Citizenship and Immigration Services Customs and Border Protection State/Local/Tribal First Responders U.S. Coast Guard FEMA	Customs & Border Protection TSA Citizenship and Immigration Services U.S. Secret Service U.S. Coast Guard ICE	AS Grants and Training Federal Law Enforcement Training Center Director of Counternarcotics TSA Customs & Border Protection Citizenship & Immigration Services U.S. Secret Service U.S. Coast Guard ICE	AS Infrastructure Protection Department of Justice TSA Customs and Border Protection U.S. Secret Service U.S. Coast Guard FEMA
Explosives	Chem/ Bio	Command, Control & Interoperability	Borders/ Maritime	Human Factors	Infrastructure/ Geophysical
Transportation Security Program Counter-MANPADS	Chem/Bio R&D Chem/Bio Transition to Ops Agro-Defense	Interoperability and Compatibility State/Local Preparedness and Response Cyber and Information Security Threat Characterization Joint Risk Assessment Program	Border Security Program	Psychology of Terrorism, Human Response, etc. Human Systems Integration Technology Development	Critical Infrastructure Protection Preparedness Response

Awareness – Prevention – Protection – Response - Recovery

DHS S&T Directorate: Customers

Federal

- DHS Office of Intelligence and Analysis
- Director of Counternarcotics Enforcement
- Federal Law Enforcement Training Center
- Domestic Nuclear Detection Office
- Transportation Security Administration
- Customs and Border Protection
- Immigration Customs Enforcement
- Citizenship and Immigration Services
- Federal Emergency Management Administration
- U.S. Secret Service
- U.S. Coast Guard

State, Local and Tribal

- First Responders
- Law Enforcement



Air and Marine Operations Center (AMOC)

- **24-hour multi-agency operations center**
- **Provide direct support to Homeland Security in protecting the American people and our national borders through the detection and identification of transnational threats and coordination of law enforcement air and marine forces.**



Primary Discussion Areas for Consensus

- Ø **Sufficient Feasibility to Establish Risk Reduction Program**
 - Ø Surveillance mission- need compelling operational application demo

- Ø **Implementation Strategy:**

- Initial Priority Risk Reduction Areas:**

- Technology Demonstration & Testing
 - Multi-functionality and Testing
 - System Costs – Business Case
 - Trade Studies

- Demonstration Points & Early Results?**

Primary Discussion Areas for Consensus

∅ Interagency Management Approach

-- Format:

--- OMB/OFCM past NEXRAD process (OMB/OFCM-NPC/JSPO)

--- Multi-Lateral Agency

--- PD/Congressional Mandated

-- Address Urgency Issues