

General Aviation Cost Workshop Out briefing

25 August 2006



Overview

- Objective of Cost Estimation is to inform decision-making – want to look at both the benefit and cost equation
- ConOps and Acquisition Plans for GA operations is not currently defined; presented a constraint to developing cost estimates but an opportunity for definition of a plan that really addresses GA objectives
- This sector (GA) provides JPDO a great opportunity for innovation and collaboration in early adoption of NGATS!



General Aviation Group #1 Personal, Recreational and Business Operations



NGATS ConOps Current Version

- Focused on airline scheduled operations
 - Very limited consideration of / discussion about GA
 - Defining costs and benefits difficult
- VFR not adequately addressed
 - ConOps needs to be enhanced with VFR operations identified as a core capability that is clearly articulated
- Concern that ConOps will result in restricted access and increased equipage requirements
- Costs shifted from government to operators



Cost Impacts

- Increased equipment costs for equivalent operations today
- Certification costs and schedule
- Increased recurring direct operating costs (maintenance, training, etc.)
- Retrofits may be cost prohibitive
- Less access to airports
 - Concern that more metropolitan GA airports will become subject to super density airspace and less accessible
- Less access to airspace



Theoretical Benefits

- Tighter containment of IFR traffic could free up airspace for VFR
- Potential for direct routing although not spelled out in ConOps
 - High density areas, i.e. Northeast and So Cal
- Potential access to SUA / TFRs
- More approaches to lower weather minima for small airports
- Reducing the impact of one-in-one-out
 - Virtual towers may not be the answer



Transition Issues

- Many advertised NGATS benefits already available
 - Perception that NGATS mandates not necessary
- Capstone showed benefits of government / industry cooperation
- Any widely installed capabilities require early and stable standards, and a firm commitment to the roadmap
- Lessons learned
 - MLS
 - NEXCOM
 - LAAS
 - CPDLC



Policy Issues

- Currently NGATS is airline and ATO focused
- Need for clear definition of operating rules and equipage/performance standards before manufacturers and operators make investment
- FAA needs to commit that there will be no discrimination for equivalent performance levels (fundamental incentive for NGATS)



Break-Out Group #2

Business, Corporate, and On-Demand Charter Operators

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GENERAL AVIATION SEGMENTS

Business Flying – Pilot(s) Not Compensated
Corporate Flying – Compensated Pilot(s)
On-Demand (Air Taxi) Operations

Any Type of Aircraft



BREAK-OUT GROUP #2

Participants

- Corporate Aviation Operators
- "Air Taxi" Operators:
 - ✓ Emergency Medical Service Operators
 - ✓ "Per Seat" Charter Operators
- Avionics Manufacturers
- Business Jet Manufacturers
- Helicopter Manufacturers
- Flight-Crew Training Companies
- Navigation Data Providers
- Academic Community
- Non-Government Research Organizations
- Aviation Associations:
 - ✓ GA Manufacturers
 - ✓ Rotorcraft Operators



BREAK-OUT GROUP #2 SUMMARY OF RESULTS

Ten Major Focus Areas /
Recommendations



GENERAL COMMENTS

- **CONOPS Lacks Sufficient Detail For Estimating \$Costs Or \$Benefits For Business, Corporate or Air Taxi Operators**
 - ✓ No Regulatory Timelines Or Concepts-of-Regulation Described
 - ✓ Current Version– Omits Plans For Security, Safety And Airports
- **Scheduled Airlines Drive Equipage And Operational Requirements at Larger Airports**
 - ✓ Business/Corporate/Air Taxi Operators Will Install New Avionics And Adopt New Operational Procedures On The Same Timeline As Scheduled Airlines
 - ✓ Some Operators From This Segment Will Be Early Adopters Of Advanced Technologies

GENERAL COMMENTS

(Continued)

➤ **The CONOPS Should Clearly Identify Operational “Principles”**

- ✓ Aircraft/Operations Operating With A Given Performance Level (For CNS) Will Receive Impartial And Improved Access To Airspace And Airports



“Business, Corporate and Air Taxi Operators Would Be More Likely To Equip Or Transition to NGATS If: ”

1. Costs Of Equipping Are Reduced Through Financial Incentives
2. Benefits Are Increased By Operational Advantages
3. The User-Benefits Of Equipping Were Better Described
4. FAA Committed To A Firm Schedule
5. We Had Global Harmonization
6. Air Traffic (ATO) Plans & Aviation Safety (AVS) Schedules Were Better Coordinated
7. Essential Elements Of The CONOPS Are Maintained
8. Technical Requirements Were Stable
9. Intermodal Access To Smaller Airports Was Enhanced
10. Public Awareness & Support For NGATS Is Increased



SUMMARY

Working Closely With This
Community, JPDO Must
Identify And Quantify The
Costs And Benefits Of NGATS



OUTBRIEF

Group 3

NGATS Institute

Public Use Work Group

August 25, 2006



Public Use Working Group

- Participant Representation
 - Rotorcraft Operators
 - EMS
 - Law Enforcement (Local/State/Federal)
 - DHS
 - UAS Community
 - Manufacturers
 - Operators
 - DOD
 - Other Government Agencies
- Fixed Wing Community Not Represented



Attributes of These User Communities

- Rotorcraft - Primarily Public Service
 - 750 EMS airframes in operation
 - 400 DHS airframes in fleet
- UAS
 - DOD \$2B est.
 - Other Government Agencies (\$25M est.)
 - Worldwide Commercial Market by 2025 (\$50-100B est.)
 - From 12lb to 20,000lb; 50kts - 500kts



Where / How Sector Operates

- All Airspace Classes
- Rural to High Density
- Maritime
- Often Non-Scheduled Access
- Loiter-Type Missions



Rotorcraft EMS Near-Term Messages

- Insufficient Infrastructure for Current Missions in Some Locations
 - Weather
 - Surveillance
 - Communications
 - Navigation
- Move Forward on Current Initiatives



UAS Community Near-Term Message

- UAS Are Advancing Technologies Required For Key NGATS Capabilities
 - Autonomous Operations
 - Self Deconfliction
 - Netcentric Communications
 - Sense & Avoid
 - High Spectrum/Bandwidth/Communications Requirements
- Current Certification Process Appears Inconsistent With NGATS Timeline
- Recommendations
 - Use UAS as a showcase & testbed for NGATS
 - Activate a government-industry partnership to overcome key hurdles



Policy Issues

- CONOPS and Roadmap Must Include Our Communities
 - NGATS appears airline and large airport centric
 - Impact on our community needs better definition
- Limitation on NAS Access a Concern
 - Availability and affordability of required equipage
- Given Novelty and Complexity of Aircraft and Missions, Certification Process Unlikely To Keep Pace
- Dynamic Airspace Reconfiguration
 - Who decides priority?
 - Advance warning?



Cost Issues

- Certification Is A Big Concern
- Industry Investment Restrained By Regulatory Risk and Uncertainty
- Need For Very Light Weight, Low Power, Affordable Avionics



Drivers To Invest/Equip

- Enhanced Safety
- Airspace Access
- Affordability
- Ability to Support New/Expanded Missions
- Evidence of FAA Commitment to NGATS
- Defined Certification Standards
 - Unconventional, emerging technologies present challenges



Desired Benefits

- Increased Access
- Increased Safety
- Improved Situational Awareness
- Improved Mission Effectiveness
- Self Separation Benefits All Users and Providers



Incentives

- Financial
 - Cost share
 - Tax incentives & low cost financing
 - Grants to public entities
 - Capstone-type programs
- Economic Incentives for R&D
 - R&D tax credit
 - Accelerated depreciation
- Shorten Time Between Investment & Benefits
 - Private sector business case does not work
- Streamline the Certification Process



Major Takeaways

- Fix Today's Problems
 - Rotary wing
 - UAS
- Address Certification Timeline
 - Historical timelines don't work for NGATS
 - Process improvement required
 - Adequate resources required
- Validate NGATS Using Operational Demos
 - Rotary wing (extend GOM to Public Service)
 - UAS



Questions?



Key Question:

“Operators Would Be
More Likely To Equip Or
Transition to NGATS If”



Supporting Material

-Working Group 2-



Operators Would Be More Likely To Equip Or Transition to NGATS If: **Costs Are Reduced Through Financial Incentives, Such as:**

- Increase R&D Tax Credits For Manufacturers
- Operators Can Accelerate Depreciation Of Newly Installed Equipment
- Aviation Fuel Taxes Refunded For Business and Corporate Operators
- Aviation Ticket-Taxes Exempted For On-Demand Charter Operators
- Issue Discount Coupons That Are "Cashed" By The Purchaser After Equipment Is Installed
- FAA Buys Avionics – Leases It To Operators



**Operators Would Be More Likely To Equip Or Transition to NGATS If:
Benefits Are Increased By Operational Advantages**

- **Equipped Aircraft Enjoy A Less Restricted / Less Complex Operating Environment, Thus Reducing Operational Costs**
 - ✓ Priority During National Flow Control Programs
 - ✓ Priority Access To Direct Routings
- **Reduced Delay Over Congested Airports and Routes**



Operators Would Be More Likely To Equip Or Transition to NGATS If: **Benefits Are Increased By Operational Advantages**

(Continued)

- **Reduced Operational Weather Minima Using New Instrument Procedures**
 - ✓ Retention of Airports and Improved Accessibility Through Adoption Of Innovative Concepts, Such As Virtual Towers
- **Less Aircrew Training Needed For New Equipment**
 - ✓ Enhanced Human-Factors Designs



Operators Would Be More Likely To Equip Or Transition to NGATS If: **The User-Benefits Of Equipping Were Better Described**

➤ **The CONOPS Should Clearly Answer The Following Types Of Questions:**

- ✓ Will NGATS Equipage Reduce Operating Costs For Operators. How?
- ✓ Will Equipage For NGATS Reduce Delays And Improve The Ability To Fly Under More Adverse Weather Conditions?
- ✓ Will Equipage Be Mandated To Fly In Airspace That Is Already Being Accessed?
- ✓ Will Equipage In Accordance With NGATS Reduce The Pilot Workload In Single-pilot IFR Operations?



Operators Would Be More
Likely To Equip Or Transition to NGATS If:
**FAA Committed To A Firm
Schedule**

- **FAA Must Establish And Adhere To A Stable NGATS Implementation Schedule**
 - ✓ Enables Early Establishment Of Standards - Followed By Manufacturer Development, Operator Selection, And Business-Manager Analysis Of Costs/Benefits
- **An NGATS Implementation Schedule Without A Commitment For Appropriate Government Funding Will Not Be Credible**



Operators Would Be More Likely To Equip Or Transition to NGATS If: **We Had Global Harmonization**

- NGATS Implementation Must Include International Harmonization of Air Traffic Procedures, Equipment Requirements and Aircraft Component Certification Standards and Processes
 - ✓ Example: NGATS and SESAR must be compatible



Operators Would Be More Likely To Equip Or Transition to NGATS If:
Air Traffic (ATO) Plans & Aviation Safety (AVS) Schedules Have Better Coordination

- **FAA Must Carefully Coordinate Implementation Schedules Proposed By The ATO With Standards and Rulemaking Activities Needed From AVS**
 - ✓ Required "CNS" Capabilities For NGATS Must Be Agreed And Stable Before Avionics Technical Standards Can Be Finalized
 - ✓ Manufacturers Are Unlikely To Develop or Market Avionics Until Technical Standards Are Stable
- **Enhancements To Aircraft And Component Certification Processes Must Be Added To CONOPS (Or Other Appropriate Document)**
 - ✓ Certification-Process Improvements Must Be Synchronized To Achieve Desired Avionics Equipage Dates



Operators Would Be More Likely To Equip Or Transition to NGATS If: Essential Elements Of The CONOPS Are Maintained. For Example:

- **NGATS Implementation Plan Must Benefit FAA And Operators**
- **Methods Of Reducing Operator Costs Must Be Well Understood**
 - ✓ Agreed By Operators
 - ✓ Implementation Not Delayed
- **NGATS Must Safely and Efficiently Accommodate Aircraft With Diverse Performance Characteristics And A Variety Of Operational Needs**



Operators Would Be More
Likely To Equip Or Transition to NGATS If:
**Essential Elements Of The CONOPS Are
Maintained. For Example:**

(Continued)

- **NGATS Must Readily Accommodate
In-Flight Changes to "4D" Trajectory
Agreements**



Operators Would Be More Likely to Equip or Transition to NGATS If: **Technical Requirements Are Stable**

- **Prior To Establishing Equipage Requirements, Technical Requirements And Certification Criteria Needed To Implement NGATS Must Be Mature And Well-Defined, Both Within The FAA and Between Other Government Agencies**
 - ✓ Standards Must Be Able to Accommodate Evolving NGATS Operations, Such As:
 - ADS-B (DO-260, DO-260A)
 - RNP, RNAV
 - Requirement To Install Single or Dual Avionics Systems
 - ✓ Avionics Costs Will Be Highly Dependent on the Efficiency of the Certification Process



Operators Would Be More
Likely To Equip Or Transition to NGATS If:
**Intermodal Access To Smaller Airports
Was Enhanced**

- **NGATS Implementation Should Include Plans That Enhance Intermodal Access To GA And Reliever Airports**



Operators Would Be More Likely To Equip Or Transition to NGATS If: **Public Awareness & Support For NGATS Is Increased**

➤ **Develop A “National Will” To Transform The U.S. Air Transportation System – Make NGATS A Reality**

- ✓ FAA And Industry Should Educate The Public And Congress About Why NGATS Must Be Promptly Developed And Fully Implemented
 - Many Benefits For The Traveling Public
 - Enhanced Safety, Efficiency and Security
 - Lower Costs For Operators - And Taxpayers
 - Avoid Handicapping the U.S. Economy
 - Foster U.S. Economic Growth

