



**Virginia Tech ♦ Montgomery
Executive Airport**

May 15, 2008

MASTER PLAN UPDATE



CAMPELL & PARIS ENGINEERS

MASTER PLAN UPDATE

TABLE OF CONTENTS

Section	Page
I. The Airport Environment and Facility Inventory	
Data Collection	3
The History of Virginia Tech-Montgomery Airport	3
Airport Location and Role	4
Airport Access	6
Weather and Wind Analysis	7
General	
Local Climate	
Crosswind Analysis	
Airport Service Area and Socio-Economic Trends	12
Population	
Employment	
Measurements of Income	
Business Climate	
Zoning and Land Use in Vicinity of Virginia Tech- Montgomery Airport	22
Town of Blacksburg	
Montgomery County	
Zoning and Land Use Summary	
Road Projects	
Airport Facilities	26
Airport Classification and Design Criteria	
Airside Facilities	
Landside Facilities	
Airspace	
Published Approaches	
Airfield Capacity	
Environmental Consideration	42
II. Forecast of Aviation Demand	
National Aviation Trends	1
Historical & Existing Airport Activity	4
Based Aircraft	
Aircraft Operations	
Transient Aircraft	
Forecast Scenarios	10
LOW Forecast Scenario	
MEDIAN/BASE Forecast Scenario	
HIGH Forecast Scenario	
Recommended General Aviation Forecast	
Based Aircraft	12
Based Aircraft By Type (Aircraft Mix)	
Operations by Aircraft Type	
Daily and Peak Hour Operations	
Instrument Approach Forecasts	
Touch and Go Activity	
Itinerant and Local Operations	
Enplanement Forecast	
Automobile Traffic Activity	
Summary of Forecast	

III. Facility Requirements		
Airport Reference Code & Critical Aircraft		2
Instrument Approach Capability		4
Airport Design Standards		5
Runway and Taxiway Planning Factors		10
Runway Configuration		
Runway Length Analysis		
Runway Width Analysis		
Runway Safety Area Analysis		
Runway Protection Zone Analysis		
Runway Obstacle Free Zone Analysis		
Taxiway and Taxilane Analysis		
Pavement Analysis		
Facility Planning Factors		13
T-Hangar Analysis		
Group Storage Hangar Requirements		
	Maintenance Hangar Requirements	
	Administrative and Office Facility Requirements	
	Terminal Building Requirements	
	Automobile Parking Requirements	
	Fuel Facilities and Storage	
	Aircraft Parking/Tie-Down Apron Requirements	
	Fencing Requirements	
	Dedicated Helicopter Areas	
	Airport Access	
	NAVAIDS	
Airspace Protection		23
	Existing Concerns	
	Local Zoning Ordinances	
Land and Easement Acquisition		28
IV. Alternative Development Plans		1
Runway/Taxiway Improvements		
Maintain Existing Runway		
Develop 5,500 ft Runway		
Develop 5,165 ft Runway		
Develop 5,500 ft Runway		
Develop 5,165 ft Runway		
Primary Surface Impacts		
	Terminal Area Improvements	
Maintain Existing Layout		20
New Facility		
Relocate Road		
Hangar Apron Improvements		
Northeast Airfield		25
West Apron, Group Hangar Focus		
West Apron, Flex.		
Off Airport Needs		34
Tech Center Drive		
Huckleberry Trail		
Fuel Farm		
Recommended Alternative		40
Runway - Taxiway		
Terminal Area		
Hangar / Apron		
Off-Airport		

V. Environmental Overview	
Environmental Overview	1
Air Quality	1
Coastal Resources	2
Compatible Land Use	2
Construction Impacts	2
Dept. of Transportation Section 303/4(f)	3
Farmland	3
Fish, Wildlife, and Plants	4
Floodplains	4
Hazardous Materials, Pollution Prevention, and Solid Waste Impacts	4
Historic, Architectural, Archeological and Cultural Resources	
Light Emissions and Visual Impacts	5
Natural Resources and Energy Supply	5
Noise	6
Noise Model Assumptions	7
IMN Model Results	8
Secondary (Induced) Impacts	14
Socioeconomic Impacts, Environmental Justice, and Children’s Environmental Health and Safety risks	14
Water Quality	15
Wetlands	15
Wild and Scenic Rivers	15
Other Considerations	16
Permits and Clearances	16
Environmental Commitments	16
Cumulative Impacts	16
Conclusion	16
VI. Airport Layout Plan Drawings	
Title Sheet	4
Existing Airport Facilities	5
Airport Layout Plan	6
Terminal Area Layout Plan	7
Inner Approach Plans and Profiles	8
Airport Airspace Drawing	9
Part 150 Noise Exposure/ Land Use Map	10
Airport Property Map	11
	12
VII. Cost Estimates and Project Implementation	
Phase 1 Development	2
Terminal Area Development	
West Corporate Area Development	
Runway-Taxiway Development	
Miscellaneous	
Phase 2 Development	4
Terminal Area Development	
West Corporate Area Development	
Runway-Taxiway Development	
Miscellaneous	
Phase 3 Development	7
Potential Ultimate Development	8
Preliminary Cost Estimate Summary	11
Preliminary Revenue & Operations Estimate Summary	12
Regional Economic Impact	13

LIST OF FIGURES

Figure	Page
1-1: Location of Airport within Town of Blacksburg	2
1-2: NPIAS Airports in Virginia	6
1-3: Wind Rose	8
1-4: Average Temperatures	9
1-5: Runway 12-30 Wind Coverage	10
1-6: Recorded Wind Observations by FAA Weather Classifications	10
1-7: Reported Wind Velocities	11
1-8: Runway 12-30 Wind Coverage	12
1-9: Approach Availability with Various Tailwind Components	12
1-10: Airport Service Area	14
1-11: Population Growth of ASA Localities	15
1-12: Population Growth of ASA	16
1-13: Unemployment Rates	17
1-14: Labor Force	18
1-15: Population Growth by ASA Municipality	19
1-16: Measurements of Income	20
1-17: Median Family Income	21
1-18: Business Sectors	22
1-19: Current Zoning within Far Part 77 Approach Surfaces to BCB Executive Airport	25
1-20: Planned Road Projects Adjacent to BCB	26
1-21: Airport Reference Code Designations	28
1-22: Existing Facility	29
1-23: Pavement Thickness and Strengths	30
1-24: Pavement Sections	31
1-25: 2005 Terminal Apron Rehab and 2006 Apron Expansion	33
1-26 Sectional Chart	40

Figure	Page
1-27: Published Instrument Approaches to Virginia Tech-Montgomery Executive Airport	41
2-1: Tie-Down Line on Old 8-26	4
2-2: Based Aircraft	5
2-3: Market Share of Based Aircraft	6
2-4: Citation on Terminal Apron	6
2-5: Based Aircraft by Type	7
2-6: Annual Operations	8
2-7: 2005 Gameday	8
2-8: 2005 Gameday	9
2-9: “Low” Forecast of Based Aircraft	10
2-10: “MedianBase” Forecast of Based Aircraft	11
2-11: “High” Forecast of Based Aircraft	11
2-12: Summary of Forecasts	12
2-13: Forecast of Based Aircraft Fleet Mix	13
2-14: Operations per Based Aircraft	14
2-15: Transient Aircraft Distribution by Aircraft Type	14
2-16: Forecast of Operations by Aircraft Type	15
2-17: Event Traffic by Aircraft Type	15
2-18: Baseline + Event Traffic Forecast	16
2-19: Peak Period Forecasts	17
2-20: Instrument Approaches	18
2-21: Touch & Go Activity Forecast	18
2-22: Distribution of Local vs Itinerant Operations	19
2-23: Forecast of Local vs Itinerant Operations	19
2-24: Summary of Forecast	20

3-1: Typical ARC B-II & C-II Business Use Aircraft	3
3-2: Existing Conditions vs C-II Airfield Standards	6 & 7
3-3: FAA Runway Length Wet & Dry Pavement Conditions	9
3-4: Aircraft Specific Runway Length Calculations	10
3-5: Demand/ Capacity & Facility Requirements	20
3-6: Forecast and Demand/ Capacity Assumptions	21 & 22
3-7: Existing Part 77 Penetrations, Runway 12	25
3-8: Existing Part 77 Penetrations, Runway 30	26
4-1A: Alternative 1	4
4-1B: Alternative 2	7
4-1C: Alternative 3	10
4-1D: Alternative 4	13
4-1E: Alternative 5	16
4-2: Summary of Runway Alternatives	17
4-3: 1,000ft Primary Surface Impacts	19
4-4: Alternative 1, Existing Layout	21
4-5: Alternative 2, New Maintenance Facility	22
4-6: Alternative 3, Relocate Road & Expand East Area	24
4-7: Summary of Terminal Area Alternatives	24
4-8: Alternative 1, Northeast Airfield	27
4-9: Alternative 2, West Apron Group Hangar Focus	28
4-10: Alternative 3, West Apron Flex	29
4-11: Comparison of Alternatives, Group Hangar Space	32
4-12: Comparison of Alternatives, Apron Parking Space	33
4-13: Comparison of Alternatives, T-Hangar Space	33
4-14: Summary of Hangar/ Apron Alternatives	34
4-15: Summary of Tech Center Drive Relocation	35
4-16: Tech Center Drive Relocation	36
4-17: Summary of Huckleberry Trail Relocation	37
4-18: Huckleberry Trail Relocation	37

4-19: Fuel Farm Locations	39
4-20: BCB Airport	41
4-21: Part 77 for Future Runway 12	43
4-22: Part 77 for Future Runway 30	44
4-23: Estimated Cost	47
5-1: Key INM Inputs	7
5.1: 2005 Contours	10
5.2: 2010 Contours	11
5.3: 2015 Contours	12
5.4: 2025 Contours	13
5.5: 2005-2025 60 LDNs	14
7-1: Phase 1 Projects	3
7-2: Phase 2 Projects	6
7-3: Phase 4 Projects	7
7-4: Preliminary Cost Estimates by Phase	8
7-5: Preliminary Development Budgets	9 & 10
7-6: Preliminary Revenue Estimates by Phase	11
7-7: Preliminary Operations and Debt Service Estimates	12
7-8: Preliminary Net Cash Flow Estimate by Phase	13
7-9: Estimated Induced Regional Economic Impact	14

APPENDICES

Glossary	A
Approach Plates	B
Environmental Overview, Supplemental Information	C
2007 FAA Runway 12 RPZ Land Use Determination	D
Proposed Runway Grades and Pavement Strength	E