

ANGH 32-1084

DRAFT

Administrative Facilities

Programs & Mobility	2	2	200	
Plans & Scheduling	2	0	180	
Tech Order Distribution Center	1	2	240	
Maintenance Officer (O-4)	1	1	175	
MOC Supervisor (E-9)	0	1	125	
Maintenance Operations Control	5	5	450	
Maintenance Operations	1	7	630	
Classroom / Training Room			715	Sized for 35 pers
Break Room			150	
Personal Lockers (M/F)			175	Sized for 35 pers
Handicapped Restrooms (M/F)			100	
Subtotal	21	32	5,680	
Overhead Factor (30%)			1,704	(Circulation, restrooms, mech., elec.)
Subtotal			7,384	
<b>Total Airlifter Area (rounded)</b>	<b>7,400 SF / 687 SM</b>			

**10.1.6 Category Code 610-142, Traffic Management Facility.** This space requirement is included under Base Supply Administration (category code 610-122) and Base Supply and Equipment Warehouse (category code 442-758).

**10.1.7 Category Code 610-243, Group Headquarters.** This space requirement is usually included under Reserve Forces Operational Training (category code 171-445); however, ANG is not normally authorized this facility.

**10.1.8 Category Code 610-249, Wing Headquarters.** Authorized for large wing units with two or more squadrons (multiple aircraft) or a prescribed personnel strength greater than 1,500.

This 2,000 SF / 186 SM space is normally co-located with Reserve Forces Operational Training (category code 171-445).

**10.1.9 Category Code 610-287, Specified Headquarters.** Space may be provided for ANG military personnel assigned to ANG state headquarters based on the authorized military manning. Such space may be provided at an ANG base or at a consolidated headquarters location, but cannot be duplicated or exceed the maximum total space authorization for this function (the category for state ANG headquarters is specified in ANGI 38-01, *ANG State Headquarters Manpower and Organization Guide*.)

To receive ANG funding, this facility must be located on federal property under ANG control.

State Category	Authorized Space (SF / SM)
A	3,000 / 279
B	3,300 / 307
C	3,700 / 344

**10.1.10 Category Code 610-911, Social Actions.** This space requirement is normally included under Reserve Forces Operational and Training Facility (category code 171-445).

**10.1.11 Category Code 610-913, Disaster Preparedness (aka 'Readiness').** Provides the planning, management, training, and operations to prepare all personnel to protect resources from the effects of attacks and/or disaster situations, restore primary mission assets, and fulfill the humanitarian disaster relief responsibilities of commanders in situations of nuclear, biological, chemical, and/or conventional attack, major peacetime accidents, or large-scale natural disasters.

Add 500 SF / 47 SM more storage and filing area to the authorized space requirement of 3,000 SF / 279 SM in the event of two or more flying squadrons.

Normally co-located with the BCE Maintenance Shop (category code 219-444).

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## Chapter 11. CATEGORY GROUPS 72, 73 DINING HALL AND QUARTERS, PERSONNEL SUPPORT

### 11.1 General Criteria

Category groups 72 and 73 include essentially basic (i.e., minimal) ANG facilities for the feeding of personnel and their temporary/short-term lodging, and a rather comprehensive space authorization for the resident security force.

**11.1.1 Category Code 722-351, Dining Hall.** ANG dining facilities will be consolidated to serve both officer and enlisted personnel at the same location. Space requirements vary according to average authorized strengths of units.

Where active and reserve units are adjacent or co-located, facilities are to be jointly used to the maximum extent possible.

Authorized Personnel	Dining Hall Space ( SF / SM )
501 - 1,000	8,500 / 791 *
1,001 - 1,200	10,300 / 957 *
1,201 - 1,400	12,100 / 1,124 *
1,401 - 1,600	14,900 / 1,386 *

\* Based on 3 seatings.

Food service for geographically separated units (GSUs) is handled through contract feeding operations.

Authorized Personnel	GSU Dining Area ( SF / SM )
up to 150 (Pkg A)	2,000 / 186 *
151 - 300 (Pkg B)	4,000 / 372 **
301 + (Pkg C)	5,400 / 502 **

\* Based on 2 seatings. \*\* Based on 3 seatings.

- Package A**
- 1 – Upright heater box (with wheels)
  - 1 – Upright cooler box (with wheels)
  - 1 – Electric, four-well serving line (with wheels, 220-volt)
  - 1 – Coffee pot, dual 3-gallon (Bunn-O-Brewers)
  - 1 – Microwave oven, commercial grade
  - 2 – Upright, single-door, reach-in coolers (glass front)
  - 1 – Upright, single-door, reach-in freezer (stainless steel front)

- Package B**
- 2 – Upright heater boxes (with wheels)
  - 1 – Upright cooler box (with wheels)
  - 1 – Electric, four-well serving line (with wheels, 220-volt)
  - 1 – Coffee pot, dual 3-gallon (Bunn-O-Brewers)
  - 1 – Microwave oven, commercial grade
  - 1 – Upright, single-door, reach-in cooler (glass front)
  - 2 – Upright, single-door, reach-in freezers (stainless steel front)

- Package C**
- 3 – Upright heater boxes (with wheels)
  - 2 – Upright cooler boxes (with wheels)
  - 1 – Electric, four-well serving line (with wheels, 220-volt)
  - 1 – Coffee pot, dual 3-gallon (Bunn-O-Brewers)
  - 1 – Microwave oven, commercial grade
  - 2 – Upright, single-door, reach-in coolers (glass front)
  - 1 – Upright, single-door, reach-in freezer (stainless steel front)

**11.1.2 Category Code 725-517, Troop Camp (Quarters).** This category is used for combat readiness training centers (CRTCs), professional military education centers (PMECs), training and education centers (TECs), regional training sites (RTSs), and other formal training school sites where economically feasible. These facilities include sleeping rooms, lounges or day rooms, study areas, vending areas, laundries, and bathrooms, depending on classification and need.

Rapid runway repair (RRR) sites are not authorized Troop Camp (Quarters).

Type of Training *	Sleeping Space @ pers ( SF / SM )	Gross Space @ pers ( SF / SM )
CRTC Officers	100 / 9	150 / 14
“ E-7 through E-9	100 / 9	140 / 13
“ E-5 through E-6	90 / 8	120 / 11
“ E-1 through E-4	72 / 7	100 / 9
PMEC	135 / 13	250 / 23

\* Authorization for CRTC/PMEC only; ANG/CEP must approve all other quarters requests.

**11.1.3 Category Code 730-835, Security Forces Operations.** This facility is the command center for the direction of security, law enforcement, crime prevention, investigation, training, and information, as well as for personnel security and resource protection. It also serves as an armory and the site for unit supply.

The facility includes control centers such as Central Security Control (CSC). Offices in the facility include the Installation Chief of Security, Operations Superintendent, Security Forces Manager, other command operations, and support sections.

Adequate parking space must be provided for patrol/security vehicles, visitors, and assigned personnel.

'Typical' Security Forces (SF) Function	Pers Assigned		Auth. Area ( SF )	Remarks
	F/T	UTA		
Commander		1	175	
Commander's Conference Room			225	Sized for 12-15 pers
First Sergeant		1	120	
Orderly Room / Administration	1	5	450	
Lobby / Waiting Area			150	
Admin Processing/Storage Area			100	
Installation Chief of Security	1		150	
Security Forces Manager		1	120	
Operations Superintendent	1	1	150	
Training Manager	1	2 + 1	200	
Testing Rm. Distance/Unit Learning		4 - 2	225	
Quality Control / Standards Eval		2 + 1	180	
Flight Chiefs Area	4	6	300	
Program Management Work Area	5	12	600	
Supply/Mobility Management	1	3	270	
Central Security Control	1	2 + 1	300	
Weapons Vault	2	3 + 1	400	Sized for UTC, CATM, day-to-day weapons
Weapons Cleaning Area	2	20	200	
Guardmount/Trng/Class/Break Rm	31	73	1,440	Sized for 80 pers   1,570 SF for 95 pers *
Personal Lockers (M/F)	31	73	400	Sized for 80 pers   475 SF for 95 pers *
Handicapped Restrooms (M/F)			100	
Subtotal			6,155	
Overhead Factor (30%)			1,845	
Subtotal			8,000	
Mobility Storage			3,500	[ 4,120 SF for 'alert' SF unit * ]
<b>Total 'Typical' SF Area</b>	<b>11,500 SF / 1,068 SM</b>		<b>[ 12,400 SF / 1,152 SM for 'Alert' * ]</b>	

\* 'Alert' locations are authorized 900 SF more of total area (130, multi-purpose room; 75, lockers; 620, mobility storage; etc.).

<b>'Typical' Mobility Storage ( SF )</b>	Mobility bags, 80 pers	450	<b>'Alert' Mobility Storage ( SF )</b>	Mobility bags, 95 pers	540
	Six (6) built-up pallets	1,500		Seven (7) built-up pallets	1,750
	Equipment lockers, 80 pers	800		Equipment lockers, 95 pers	950
	ATVs (4, with trailers)	500		ATVs (5, with trailers)	630
	Miscellaneous	250		Miscellaneous	250
		3,500			4,120

**Note:** A 'typical' Security Forces unit has 31 full-time (F/T) and 73 UTA (plus 10% overage) personnel; an 'alert' Security Forces unit has 41 F/T and 86 UTA (plus 10% overage) personnel. The full-time workforce includes technician, AGR, and state employees. The UTA workforce includes the recent plus-up of 16 personnel (57 to 73). The mobility storage space does not have to be co-located with the admin space, but can be in other available, on-base storage space (base supply, etc.). See category code 171-476 for CATM authorization and notes, code 171-475 for CATS authorization and notes.

'Small' Security Forces (SF) Function	Pers Assigned		Net Area ( SF )	Remarks
	F/T	UTA		
Commander				
Commander's Conference Room				
First Sergeant				
Orderly Room / Administration	1		100	
Lobby / Waiting Area			50	
Admin Processing/Storage Area			70	
Installation Chief of Security	1		250	Includes conference room space
Security Forces Manager				
Operations Superintendent	1		150	

'Small' SF Function (cont'd)	F/T	UTA		Remarks
Training Manager	1		100	
Testing Rm, Distance/Unit Learning				
Quality Control / Standards Eval	1		100	
Flight Chiefs Area	2		150	
Program Management Work Area	1		100	
Supply/Mobility Management	1		100	
Central Security Control	1		100	
Weapons Vault	1		300	Sized for Honor Guard, day-to-day weapons
Weapons Cleaning Area	1		100	
Guardmount/Training/Class Room	18		440	Sized for 20 pers
Break Room	10		100	
Personal Lockers (M/F)	18		100	Sized for 20 pers
Handicapped Restrooms (M/F)			100	
Subtotal			2,310	
Overhead Factor (30%) *			690	
Subtotal			3,000	
Miscellaneous Storage			300	
<b>Total 'Small' SF Area</b>			<b>3,300 SF / 307 SM</b>	

**Note:** A 'small' Security Forces unit has 18 full-time (plus 10% overage) personnel.  
 The full-time workforce includes technician, AGR, and state employees.  
 The storage space does not have to be co-located with the admin space,  
 but can be in other available, on-base storage space (base supply, etc.).  
 See category code 171-476 for CAIM authorization and notes, code 171-475 for CAIS authorization and notes.

'Deployed / Visiting Unit' CRTC Security Forces (SF) Function	Pers Assigned		Net Area (SF)	Remarks
	F/T	UTA		
Commander		1	175	Includes meeting room space
First Sergeant		1	90	
Orderly Room / Administration		2	180	
Admin Processing/Storage Area			100	
Central Security Control		2	150	
Weapons Vault			200	Sized for deployed weapons/ammunition
Weapons Clean/Repair/Clear Area			150	
Guardmount/Meeting Room		73	1,440	Sized for 80 pers
Personal Lockers (M/F)		73	400	Sized for 80 pers
Break Room			100	
Subtotal			2,985	
Overhead Factor (30%)			895	
Subtotal			3,880	
Deployed Storage			2,120	* [see below]
<b>Total 'Deployed/Visit' SF Area</b>			<b>6,000 SF / 557 SM</b>	

\* A IVs (8, with trailers) 1,000 SF / 92.9 SM  
 Equipment lockers, 80 pers 800 SF / 74.4 SM  
 Paintball equipment 120 SF / 11.2 SM  
 General storage 100 SF / 9.3 SM  
 Unit storage 100 SF / 9.3 SM

**Note:** A 'deployed/visiting' CRTC Security Forces unit has 73 UTA (plus 10% overage) personnel.  
 The full-time workforce includes technician, AGR, and state employees.  
 The deployed storage space does not have to be co-located with the admin space,  
 but can be in other available, on-base storage space (base supply, etc.).

**11.1.4 Category Code 730-837, Security Entry Control Facility.** An entry control facility (ECF) is required at all alert aircraft areas, and at other restricted areas as critical mission requirements dictate.

The ECF includes the entry control building and the personnel and vehicle entrapment areas connected to the surrounding security fence. It must accommodate at least two individuals, controls for the mechanically operated gates, exchange badge racks, and controls for pedestrian turnstiles. A minimum area of 300 SF / 27.9 SM is required, and additional space may be authorized to meet mission requirements.

**11.1.5 Category Code 730-839, Gate House.** Controls entry to installations, restricted areas, and selected controlled areas by security police assigned to the facility checking vehicle and pedestrian traffic identification and credentials. Passes may also be issued and visitor logs completed at the traffic check house, and intrusion alarms that might terminate within the facility may be monitored by assigned personnel to control entry to the alarmed activities.

The gate house should be positioned between the entrance and exit lanes of traffic and provide 360° visibility (never less than 180°). The facility should protect assigned personnel from small arms fire and fragmentation of explosive devices. Exterior lighting must illuminate all approaches, turn lanes, intersections, and areas adjacent to the facility, and be positioned to aid the entry controller in recognizing identification credentials without impairing his or her vision by excessive glare.

Additionally, an auto/truck/bus/RV inspection lane (with means to block unauthorized passage) should be provided adjacent to the incoming traffic flow to accommodate the further examination of entering vehicles and occupants beyond the currently posted level of ID review.

Facility Basis	Authorized Space
Flying installation, main gate	300 SF / 28 SM
"    secondary entrance	100 SF / 9 SM (each)
Non-flying installation, main gate *	100 SF / 9 SM
Entry control point (ECP) *	36 SF / 3 SM (per location)

\* If Security Forces personnel are authorized.

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## Chapter 12. CATEGORY GROUPS 74, 75

### MORALE, WELFARE, AND RECREATION FACILITIES

#### 12.1 General Criteria

The requirement for morale, welfare, and recreation (MWR) facilities varies according to the using service. ANG installations rarely require them, and there is no non-appropriated funds (NAF) mechanism available to the Guard for such purposes. However, when MWR facilities are authorized, the following must be observed:

- a. **All projects using appropriated funds** to acquire or develop MWR facilities must be approved as exceptions to DoD criteria under guidance in ANGI 32-8001, *Civil Engineering Programming Policies and Procedures*.
- b. **Guidance** on facility assignment, construction, and alteration appears in ANGI 32-8001, *Civil Engineering Programming Policies and Procedures*.
- c. **Troop labor** shall not be used for maintenance, repair, minor construction, or major construction on non-appropriated funded projects.
- d. **An exercise area** and a running track are authorized at ANG installations when necessary to fulfill the requirements of training evaluation.

**12.1.1 Category Code 740-674, Fitness Center.** This facility is used for the daily physical training and conditioning of authorized customers, including active duty military and Air Reserve members, their family members, retirees, DoD civilians, and contractors (as determined by base agreement).

Fitness Center Function	Authorized Space ( SF )		GSU Space ( SF )
	One-squadron Flying Unit	Two-squadron Flying Unit	
Physical Fitness Room	1,440	1,700	600
Men's Latrine/Locker/Changing Room	300	500	
Women's Latrine/Locker/Changing Room	200	340	
Janitor/Storage Closet	60	60	
<b>Total Fitness Center Area</b>	<b>2,000 SF / 186 SM</b>	<b>2,600 SF / 242 SM</b>	<b>600 SF / 59 SM</b>

- Note:** A fitness center is not authorized for ANG units on active or reserve Air Force bases that have access to a physical fitness center within 2 miles of the ANG cantonment area.
- The physical fitness center is to be co-located with another base function(s) and is not meant to be a stand-alone facility; mechanical room, entryway, and circulation not included.
- If separate latrine/locker/changing rooms are readily available on the base facility, an appropriate portion of that facility's common areas should be charged to this category code (740-674).
- GSUs should use available latrine/locker/changing rooms.
- This authorization is separate from similar authorization provided under Fire Crash/Rescue Station (category code 130-142) and Squadron Operations (category code 141-753).

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## Chapter 13. CATEGORY GROUP 85 ROADS AND STREETS

### 13.1 General Criteria

Roads and streets are authorized in support of ANG functions.

**13.1.1 Category Code 852-261, Vehicle Parking Operations.** Parking space is provided for authorized organizational (military) vehicles.

Number of Authorized Vehicles *	Gross Area ( SY / SM )
50 - 100	3,800 / 3,178
101 - 150	5,825 / 4,870
151 - 250	9,700 / 8,110
251 - 350	13,600 / 11,371
351 - 450	17,500 / 14,632
451 - 650	25,250 / 21,112
651 - 850	32,500 / 27,173
851 - 1,000	41,500 / 34,698

\* Excludes specialty vehicles such as firetrucks, etc.

**13.1.2 Category Code 852-262, Non-Organizational Vehicle Parking.** DoD's policy is to provide off-street parking at military installations, rather than build wider streets to accommodate on-street parking. Where facilities are located near each other, parking areas should be combined and reduced to the extent consistent with normal operations.

Vehicle parking areas shall be lighted, surfaced, and have sufficient slope to control drainage; surfacing may be either flexible or rigid pavement, to be determined by least life-cycle cost.

Parking areas shall be designed for 90-degree alignment whenever practicable, using 35 sy / 29.3 sm per vehicle to provide maneuvering room for parking, as well as space for normal interior lanes. The maximum number of parking spaces shall not exceed 75 percent of authorized UTA strength.

**13.1.3 Category Code 852-269, Refueler Vehicle Parking.** A 100 sf / 9.3 sm shed is normally provided adjacent to the parking area for the storage of equipment and appurtenances related to operator maintenance requirements. The parking area is usually located close to (and considered part of) the jet fuel storage and operations complex.

Allow 600 sy / 501.7 sm of parking space for each authorized refueler or hydrant-servicing vehicle.

**13.1.4 Category Code 852-273, Aircraft Support Equipment (ASE) Storage Yard.** Required for the standby storage of powered and non-powered ASE that has been repaired and is awaiting dispatch, this area is paved; if justified, it can also be fenced and lighted.

See ASE Shop/Storage Facility (category code 218-712) for space authorization.

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## Chapter 14. ABBREVIATIONS, ACRONYMS, REFERENCES

### 14.1 Abbreviations and Acronyms

AAS	aircraft arresting system
ABO	air base operability
A/C	aircraft
AC&W	aircraft control and warning
ACS	air control squadron
ACTS	aircrew combat training system
ADPE	automated data processing equipment
AE	aeromedical evacuation
AFH	Air Force Handbook
AFI	Air Force Instruction
AFM	Air Force Manual
ALCF	airlift control flight
ALS/ULS	ammunition loading system / universal loading system
AME	alternate mission equipment
AMU	aircraft maintenance unit
ANG	Air National Guard
ANG/CEP	Air National Guard Civil Engineering Programs Development
ANGETL	Air National Guard Engineering Technical Letter
ANGH	Air National Guard Handbook
ANGI	Air National Guard Instruction
APOD	aerial port of debarkation
APOE	aerial port of embarkation
ASE	aircraft support equipment
ASOC	air support operations center
ASOS	air support operations squadron
ATCS	air traffic control squadron
ATSO	ability to survive & operate
BAI	backup aircraft inventory
BCE	base civil engineer
BCTF	base central test facility
BDU	bomb, dummy unit
BL	barrel(s) [measurement]
BNCC	base network control center
BOS	base operating support
BRITE	bright radar indicator tower equipment
BSPO	base security police operations
CAS B	combat ammunition system - base
CATM	combat arms training & maintenance
CATS	combat arms training simulator
CCG	combat communications group
CCI	controlled crypto item
CCS	combat communications squadron
CCTV	closed-circuit television

CDK	containerized deployment kitchen
CEMIRT	civil engineer maintenance inspection and repair team
CM	cubic meter(s) [measurement]
CFT	cockpit familiarization training
CFP	communications focal point
CF	cubic foot(feet) [measurement]
COMSEC	communications security
CONUS	continental United States ('lower 48')
COPAR	contractor-operated parts store
CRTC	combat readiness training center
cy	cubic yard(s) [measurement]
DCC	damage control center
DESC	Defense Energy Support Center
DLA	Defense Logistics Agency
DoD	Department of Defense
DP	disaster preparedness
E&I	engineering and installation
ECF	entry control facility
ECM	electronic countermeasures
ECP	entry control point
EIS	engineering installation squadron
EMCS	energy management control system
EOD	explosive ordnance disposal
EPT	egress procedures trainer
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FOD	foreign object damage
FT	foot(feet) [measurement]
GCA	ground-controlled approach
GFE	government-furnished equipment
GL	gallon(s) [measurement]
GOV	government-owned vehicle
GPM	gallons per minute [measurement]
GSU	geographically separated unit
HARM	high-speed anti-radiation missile
HAZMAT	hazardous material
HMP	hazardous materials pharmacy
HQ	headquarters
HVAC	heating, ventilation, and air conditioning
IBDCZ	inhabited building distance clear zone
ID	identification
IFF	identification, friend or foe
IFR	instrument flight rules
JOAP	joint oil-analysis program
LANTIRN	low-altitude night terrain infrared navigation
LF	linear foot(feet) [measurement]
LIN	liquid nitrogen
LM	linear meter(s) [measurement]
LMR	land mobile radio
LOX	liquid oxygen
LT	liter(s) [measurement]

M	meter(s) [measurement]
MAFFS	modular airborne fire-fighting system
MAJCOM	major command
MAPS	mobile aerial port squadron
MCE	mission control element
METNAV	meteorological navigational
MKT	mobile kitchen trailer
MOGAS	motor gas (automotive gasoline)
MRTS	medical readiness training site
MSE	munitions support equipment
MWR	morale, welfare, and recreation
NAF	non-appropriated funds
NCOIC	non-commissioned officer in charge
NDI	non-destructive inspection
O&T	operations and training
OPS	operations
PAI	primary aircraft inventory
PAPI	precision approach path indicator
PLASI	pulsed-light approach slope indicator
PME	professional military education
PMEC	professional military education center
PMI	preventive maintenance inspection
POL	petroleum, oil, and lubricants
PPIF	photo processing and interpretation facility
Prime BEEF	Priority Improved Management Effort – Base Engineer Emergency Force
Prime RIBS	Priority Improved Management Effort – Readiness in Base Services
PT	physical training
RAMS	rapid assembly munitions system
RAPCON	radar approach control
RECCE	reconnaissance
RED HORSE	Rapid Engineers Deployable Heavy Operations Repair Squadron, Engineers
REILS	runway end identifier light system
REOTS	regional equipment operators training site
ROSC	regional operations support center
RRR	rapid runway repair
RSP	readiness spares package
RTS	regional training site
S-Team	staff augmentation team
SAM	surface-to-air missile
SCBA	self-contained breathing apparatus
SF	square foot(feet) [measurement]
SIF	selective identification feature
SM	square meter(s) [measurement]
SOI	statement of intent
SRC	survival recovery center
STEM	systems telecommunications engineering manager
STOL	shortfield takeoff and landing
SY	square yard(s) [measurement]
TACAN	tactical air navigation
TAI	total aircraft inventory
TALCE	tactical airlift control element

TARS	tactical air reconnaissance system
TBD	to be determined
TEC	training and education center
TMO	traffic management office
TO	technical order
TSEC/COMSEC	tactical support element communications / communications security
UDCC/CFP	unit deployment control center / communications focal point
UPS	uninterruptible power supply
UTA	unit training assembly
UTC	unit type code
VASI	visual approach slope indicator
VFR	visual flight rules
VHF	very high frequency
VI	visual information
VOR	VHF omni-directional range
VTC	video teleconferencing
WRM	war readiness material

## 14.2 References

AFH 32-1084	Standard Facility Requirements Handbook
AFI 32-1043	Managing Aircraft Arresting Systems
AFM 91-201	Explosives Safety Standards
ANGI 38-01	ANG State Headquarters Manpower and Organization Guide
NGR(AF) 86-1	Policies and Procedures
UFC 3-260-1	Airfield and Heliport Planning and Design

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Table 1. ANG Combat Readiness Training Center (CRTC) Facility Requirements Programming Guide

Category Code	Nomenclature	Total Req. (SF / SM)	Planning Factors
113-321	Apron		[Contact ANG/CEPD]
121-111	Petroleum Operations Building		See corresponding category code.
123-335	Vehicle Fueling Station		See corresponding category code.
124-135	Jet Fuel Operating Storage		See corresponding category code.
131-111	Communications Facility	10,600 / 985	8,900 SF / 827 SM if ANG a tenant.
134-375	RAPCON Facility		[Contact ANG/CEPD]
141-383	Audio/Visual Facility	2,500 / 232	
141-453	Base Operations	3,000 / 279	
141-753	Squadron Operations	14,400 / 1,338	
171-212	ACME/ACTS (Flight Simulator) Facility		For two facilities, add 2,400 SF / 223 SM for second command post.
171-443	Reserve Forces General Training	6,000 / 557	[Contact ANG/CEPD]
171-445	Reserve Forces Operational Training	22,000 / 2,044	
171-450	Reserve Component Medical Training	3,600 / 335	
171-475	Combat Arms Training Simulator (CATS)	1,000 / 93	
171-476	Combat Arms Training Maintenance (CATM)	1,800 / 167	
179-475	Small Arms Range	21 positions	Five firing positions; single room, not standalone.
179-511	Firefighter Training Facility	1 each	See AFI 32-2226.
211-111	Maintenance Hangar	28,000 / 2,601	Support building (1,600 SF / 149 SM).
211-152	General Purpose Shop	4,000 / 372	Also functions as Fuel Cell / Corrosion Control.
211-153	NDI Shop	400 / 37	
211-154	Aircraft Maintenance Unit (AMU)	4,000 / 372	
214-425	Vehicle Maintenance Shop		See corresponding category code.
214-428	Vehicle Operations Parking Shed		See corresponding category code.
214-467	Refueling Vehicle Shop		See corresponding category code.
216-642	Conventional Munitions Shop	10,120 / 940	
217-712	Avionics Shop	3,000 / 279	
218-712	Aircraft Support Equipment (ASE) Shop		See corresponding category code.
218-852	Survival Equipment Shop	900 / 84	
219-943	CE Pavements & Grounds Facility	8,000 / 743	
219-944	CE Maintenance Facility	7,000 / 650	
219-947	CE Storage Building	8,000 / 743	
422-257	Segregated Storage Magazine	2,400 / 223	Four bays at 600 SF / 56 SM each.
422-264	Storage Igloo	3,600 / 335	

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Table 1. ANG Combat Readiness Training Center (CRTC) Facility Requirements Programming Guide (cont'd)

Category Code	Nomenclature	Total Req. ( SF / SM )	Planning Factors
442-257	Base Hazardous Materials Storage	1,700 / 158	
442-258	LOX / LIN Storage		See corresponding category code.
442-628	Base Supplies & Equipment Shed	8,000 / 743	
442-758	Base Supply & Equipment Warehouse	18,000 / 1,672	Add 7,000 SF / 650 SM for category code 610-122, Base Supply Admin.
610-122	Base Supply Administration	7,000 / 650	
610-129	Weapons Systems Maint Mgt Facility		See corresponding category code.
722-351	Dining Hall		See corresponding category code.
725-517	Troop Camp (Officer)	150 persons	
725-517	Troop Camp (Enlisted)	850 persons	
730-142	Fire Station		See corresponding category code.
730-835	Security Forces Operations		See corresponding category code.
730-837	Security Entry Control Building		See corresponding category code.
730-839	Traffic Check House	200 / 19	
740-674	Physical Fitness Center	2,000 / 186	Full-time CRTC personnel and visiting unit(s) = 1,000 SF / 93 SM each.

[Additional CRTC mission requirements such as ATSO, MRTS, etc., may be tasked to some extent by NGB. These authorizations will be calculated separately.]

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**Table 2. ANG RED HORSE Unit Facility Requirements Programming Guide \***

Category Code	Nomenclature	Total Req. ( SF / SM )	Planning Factors
123-335	Vehicle Fueling Station	1 each	Dispenses mogas and diesel.
131-111	Telecommunications Facility	500 / 46	
171-443	Reserve Forces General Training	3,000 / 279	
171-445	Reserve Forces Operations and Training	11,000 / 1,022	
171-450	Reserve Forces Medical Training	1,500 / 139	
171-476	Combat Arms Training and Maint (CATM)	1,200 / 111	
214-422	Vehicle Wash Rack	1 each	
214-425	Vehicle Maintenance Shop	12,500 / 1,161	See corresponding category code.
214-428	Vehicle Operations Parking Shed	11,000 / 1,022	See corresponding category code.
214-467	Refueling Vehicle Shop	750 / 70	
219-943	BCE Pavement and Grounds Facility	9,000 / 372	
219-944	BCE Maintenance Shop	14,000 / 1,161	
219-947	BCE Storage Shed	4,000 / 372	
442-257	Base Hazardous Materials Storage	1000 / 93	Increased from 600 SF / 56 SM on 18 Jun 1998.
442-628	Base Supplies and Equipment Shed	8,400 / 780	
442-758	Base Supplies and Equipment Warehouse	12,800 / 1,189	
610-122	Base Supply Administration	800 / 74	
610-913	Disaster Preparedness	3,000 / 279	
722-351	Dining Hall	4,600 / 427	See corresponding category code.
730-839	Traffic Check House	100 / 9	
740-674	Physical Fitness Center	600 / 56	
890-197	Weight Scale	1 each	

\* Only for 202-member units (1/2 RED HORSE squadron) with equipment and vehicle packages.

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**Table 3. ANG Civil Engineering Regional Training Site (RTS)**

Category Code	Nomenclature	Total Req. ( SF / SM)	Planning Factors
171-443	General Purpose Training (Classroom)	4,000 / 372	100 persons; includes 1,600 SF / 149 SM for DCC/SRC.
179-371	Airfield Pavements / Rapid Runway Repair Site*	1 each	
179-371	Pad for Prime RIBS MKT or CDK with utilities*	900 / 84	
179-511	Firefighter Training Facility	1 each	
214-422	Vehicle Service Rack / Wash Rack	1 each	
442-628	Base Supplies and Equipment Shed(s)	19,600 / 1,821	Includes space for Vehicle Operations Parking Shed (214-428).
723-392	Sanitary Latrine / Laundry / Pot Sink	1,500 / 139	Combined community facility.
725-517	Troop Camp	1 each	140 persons.

\* training aid

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Table 4. ANG Civil Engineering Regional Equipment Operators Training Site (REOTS)

Category Code	Nomenclature	Total Req. (SF / SM)	Planning Factors
171-445	Reserve Forces Operations and Training	5,700 / 530	
	Commandant	200 / 19	
	Administration	120 / 11	
	Communication/Reproduction	120 / 11	
	Cadre Office Space	1,125 / 105	
	Classrooms (4)	1,600 / 149	
	Conference Room	200 / 19	
	Computer Lab	800 / 74	
	Community Room	150 / 14	
	Restrooms/Lockers/Mudroom	600 / 56	
	Mechanical Room	200 / 19	
	Circulation	585 / 54	
214-425	Vehicle Maintenance Shop	3,041 / 283	
214-428	Vehicle Operations Parking Shed	2,500 / 232	
442-758	Base Supplies and Equipment Warehouse	5,000 / 465	

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# Reference

## Slides #35, 70



# 12 PAA Requirements

## Estimated Cost Overview



OPTION: 1 2

- New apron \$0M \$4.0M\*
  - New taxiway \$0M \$4.5M\*
  - Maintenance Addn \$0M\* \$5.2M\*
- GRAND TOTAL: \$0M \$13.7M

\* Based on BRAC, COBRA costs



# 12 PAA Requirements Civilian Ramp (Option 1)



- 12 PAA apron is 87,875 s.y.
- Civilian Ramp is 30,946 s.y.
- Existing apron is 44,922 s.y.
- Additional authorized 12,007 s.y.

TOTAL = \$0M



# 12 PAA Requirements New Apron NW (Option 2)



- 12 PAA apron is 87,875 s.y.
- Existing apron is 44,922 s.y.
- Additional rqrd. 42,953 s.y.

– BRAC, COBRA costs used

» TOTAL =  $\$94.44/\text{s.y.} \times 42,953 \text{ s.y.} = \$4,056,481.32$   
TOTAL = \$4.0M



# 12 PAA Requirements New Taxiway



- 5,000 ft. x 75 ft. = 375,000 s.f.  
= 42,667 s.y.

- BRAC, COBRA costs used

- Per l.f. cost of lighting = \$92.49 l.f.
- Per s.y. cost = \$94.44 s.y.
  - » Subtotal = \$94.44/s.y. x 42,667 s.y. = \$4,029,471.48
  - » Subtotal = \$92.49/l.f. x 5000l.f. = \$463,450.00
  - » Total Sum = \$4,491,921.48

TOTAL = \$4.5M



# COBRA Scenario

## Milcon Cost Comparison



Toledo	\$0.3M
Louisville	\$0.6M
Little Rock AFB	\$4.8M
<u>Maxwell</u>	<u>\$15.9M</u>
<b>Mansfield</b>	<b>\$13.7M</b>

# Reference Slide #39

NAME	RANK	TOTAL NUMBER	YEARS OF SERVICE	[REDACTED]		
Brooks	MSG	1.0	36.7	6824.3	391.4	\$344,173
Eyster	CMS	1.0	35.5	10190.6	206	\$344,173
Gremling	SMS	1.0	25.5	5448.1	181.9	\$344,173
Krupa	MSG	1.0	15	3265.4	296.2	\$344,173
Swihart	MSG	1.0	31	6253.5	281.6	\$344,173
Thomas D.	SMS	1.0	27.3	5215.5	281.2	\$344,173

TOTALS: 6.0 171.0 37197.4 1638.3 \$2,065,038

	Initial Cost	FTU Hours	Home Hours	\$/hour	Grand Total*		
Assumptions:						40737.3	2002.4
Flight Engineer	34,173	N/A	50	5,000	\$284,173	171.0	37197.4
Instructor Flight Engineer	0	12	0	5,000	\$344,173	138.2	30347.6

Assumes \$34,173 + (Total Hours x \$5,000 per flight hour)

N A M E	R A N K	T O T A L N U M B E R	Y E A R S O F S E R V I C E			
Adams	TSG	1.0	10.5	1803.5	614.0	\$344,173
Bowser	TSG	1.0	9.5	1269.4	107.5	\$344,173
Brill	TSG	1.0	13	385.3	0	\$284,173
Brooks	MSG	1.0	36.7	6824.3	391.4	\$344,173
Buffington	SSG	1.0	10	1431.3	375.6	\$284,173
Bulanda	SRA	1.0	3.8	132.2	0	\$284,173
Eyster	CMS	1.0	35.5	10130.6	206	\$344,173
Ftuner	MSG	1.0	19	2706.5	218.0	\$284,173
Groning	SMS	1.0	25.5	5448.1	181.9	\$344,173
Hasty	SSG	1.0	8.5	83.5	0	\$284,173
Hudson	TSG	1.0	13.9	452.5	119.4	\$284,173
Karl	TSG	1.0	5	445.1	134.8	\$284,173
Klotzbach	SRA	1.0	4.9	123.5	0	\$284,173
Krupa	MSG	1.0	15	3265.4	296.2	\$344,173
Stratton	MSG	1.0	22.8	1648.3	301	\$284,173
Swihart	MSG	1.0	31	6253.5	281.6	\$344,173
Thomas D	SMS	1.0	27.3	5215.5	281.2	\$344,173

TOTALS: 17.0 291.9 47678.5 3 508.6 \$5,510,941

Initial Cost FTU Hours Home Hours \$/hour Grand Total\*

Assumptions:

Flight Engineer 34,173 N/A 50 5,000 \$284,173

Instructor Flight Engineer 0 12 0 5,000 \$344,173

\*Assumes \$34,173 - (Total Hours x \$5,000 per flight hour)

NAME	RANK	TOTAL NUMBER	YEARS OF SERVICE	[REDACTED]		
Barretta	CMS	1.0	35.5	7409.8	401.4	\$150,372
Cyphert	SMS	1.0	32.8	6871.1	226.4	\$150,372
Hunt	MSG	1.0	21.2	3001.1	437.0	\$150,372
Morehead	MSG	1.0	21.9	4614.7	372.8	\$150,372
Weidner	MSG	1.0	26.8	8450.9	467.2	\$150,372

TOTALS: 5.0 138.2 30347.6 1904.8 \$751,860

	Initial Cost	FTU Hours	Home Hours	\$/hour	Grand Total*		
Assumptions:						40737.3	2002.4
Load Master	30,372 N/A		12	5.000	\$90,372	18315.4	689.7
Instructor Load Master	0	12	0	5.000	\$150,372	171	37197.4
						138.2	30347.6
							1904.8

Assumes \$34,173 + (Total Hours x \$5,000 per flight hour)

N A M E	R A N K	T O T A L N U M B E R	Y E A R S O F S E R V I C E			
Barretta	CMS	1.0	35.5	7409.8	401.4	\$150,372
Bergman, M	SSG	1.0	8.7	635.2	87.4	\$90,372
Blakley	SSG	1.0	11	539.7	235.0	\$90,372
Boling	MSG	1.0	20.1	5202.0	154.1	\$90,372
Brake	TSG	1.0	20.9	283.5	118.6	\$90,372
Cyphert	SMS	1.0	32.8	6871.1	226.4	\$150,372
Eblen	SRA	1.0	2.8	272.1	33.7	\$90,372
Folk	MSG	1.0	18.9	6222.2		\$150,372
Hass	SSG	1.0	9.3	1356.3	342.6	\$90,372
Hess	SSG	1.0	9.9	1771.7	481.2	\$90,372
Hunt	MSG	1.0	21.2	3001.1	437.0	\$150,372
Keller	SSG	1.0	7.6	999.4	561.0	\$90,372
Lawrence	MSG	1.0	24.9	3426.0	538.8	\$0
Leitenberger, D.	SMS	1.0	33	6489.0	425.2	\$90,372
McNellis	SSG	1.0	9.3	1093.7	323.4	\$90,372
Morehead	MSG	1.0	21.9	4614.7	372.8	\$150,372

	40737.3	2002.4
	18315.4	689.7
171	37197.4	1638.3
138.2	30347.6	1904.8

NAME	RANK	TOTAL NUMBER	YEARS OF SERVICE	[REDACTED]		
O'Brien	SSG	1.0	5.9	109.5	0.0	\$90,372
Patterson	TSG	1.0	16.7	1755.4	294.8	\$90,372
Pitroff	MSG	1.0	22.5	4297.4	248.8	\$90,372
Raby	MSG	1.0	29.5	8373.0	373.9	\$150,372
Roney	TSG	1.0	23	3101.3	76.7	\$90,372
Rumel	TSG	1.0	22.3	3713.8	129.1	\$90,372
Sloan	SRA	1.0	5.5	70.8	0.0	\$90,372
Weidner	MSG	1.0	26.8	8450.9	467.2	\$150,372
White	MSG	1.0	39	7208.1	515.2	\$90,372
Yost	SSG	1.0	11.5	1734.9	407.9	\$90,372
Zieber	SSG	1.0	9	1568.6	354.1	\$90,372

TOTALS: 27.0 499.5 90571.2 7606.3 \$2,769,672

Initial Cost FTU Hours Home Hours \$/hour Grand Total\*

Assumptions:

Load Master	30,372	N/A	12	5,000	\$90,372
Instructor Load Master	0		12	0	\$150,372

Assumes \$34,173 + (Total Hours x \$5,000 per flight hour)

179th AIRLIFT WING / 164th AIRLIFT SQUADRON  
MANSFIELD, OHIO

SUMMARY OF FULL TIME EXPERIENCE

SECTION	TOTAL MEMBERS	YAS EVE AIR RAV STIC OOE FN	AOS VFE E R RAV AVI GIC EAE T YE OAN RS	TH OO TU AR LS FLYING	AF VL EY RI ANG GG E H TOU TR AS L	C O M B A T H O U R S	AC VO EM RB AA GT E H O U R S	FTI LRN YAV IIE NNS GIT M GEN T
PILOTS	9	156	17	40,737	4,526	2,002	222	\$16,335,000
NAVIGATORS	4	68	17	18,315	4,579	690	172	\$6,520,000
FLIGHT ENGINEERS	6	171	29	37,197	6,200	1,638	273	\$2,065,038
LOAD MASTERS	5	138	28	30,348	6,070	1,905	381	\$751,860
TOTAL	24	534	22	126,598	5,275	6,235	260	\$25,671,898

179th AIRLIFT WING / 164th AIRLIFT SQUADRON  
MANSFIELD, OHIO

SUMMARY OF TOTAL EXPERIENCE

SECTION	TOTAL MEMBERS	YAS EVE AIR RAV STI IC OOE FN	AOS VFE R RAV AVI GIC EAE T YI EO ANS	TH OO TU AR LS  F L Y I N G	AF VL EY RI AN GG E H TO UR AS L	C O M B A T  H O U R S	AC VO EM RB AA GT E H O U R S	FTI LRN YAV IIE NNS GIT NM G E N T
PILOTS	39	531	14	115,473	2,961	10,054	258	\$66,800,000
NAVIGATORS	19	292	15	60,101	3,163	4,731	249	\$29,815,000
FLIGHT ENGINEERS	17	292	17	47,679	2,805	3,509	206	\$5,310,941
LOAD MASTERS	27	500	19	90,571	3,354	7,606	282	\$2,769,672
<b>TOTAL</b>	<b>102</b>	<b>1,615</b>	<b>16</b>	<b>313,824</b>	<b>3,077</b>	<b>25,900</b>	<b>254</b>	<b>\$104,695,613</b>



# Reference

## Slide # 40

## Unit Strength Sheet

UNIT	UNIT	Strength			Retention		
		Sept 2003	Sept 2004	Current	Sept 2003	Sept 2004	Current
179AW	179th - MANSFIELD, OH	105.6	106.0	105.4	90.0	90.3	95.3
<b>Units Gaining Aircraft C-130 (ANG)</b>							
163AW	Chesapeake, VA	87.3	88.7	87.6	88.5	91.4	94.8
143AW	Chorley State, PA	89.2	88.7	88.3	90.1	90.3	93.9
185AW	Savannah, GA	88.3	91.9	89.3	87.6	91.9	93.3
A82AW	Greater Peoria, IL	97.4	97.7	95.6	89.5	91.2	93.2
145AW	Charlotte, NC	95.9	97.4	95.7	86.8	90.1	93.6
146AW	Channel Islands, CA	95.8	95.1	95.9	87.7	88.4	95.1
139AW	Rosecrans, MO	94.3	96.4	97.0	90.6	91.6	94.9
123AW	Louisville, KY	93.2	96.9	97.4	88.4	90.9	93.1
	Average	92.7	93.4	92.6	88.4	90.7	94.0
<b>Units Losing Aircraft C-130 (ANG)</b>							
166AW	New Castle, DE	85.1	85.9	85.9	86.3	91.9	91.8
176AW	Killebuck, AK	88.4	88.1	88.3	88.4	88.9	91.8
116AW	Wainwright, TX	82.5	84.1	83.9	85.0	88.1	92.0
109AW	Schenectady, NY	92.3	91.3	92.3	87.7	90.5	95.8
124AW	Boise, ID	91.7	92.2	93.3	89.4	92.5	95.6
175AW	Baltimore, MD	96.8	97.0	95.4	85.7	88.1	93.5
152AW	Reno, NV	92.8	94.1	97.0	88.6	91.7	92.8
137AW	Oklahoma City, OK	98.2	97.0	100.5	84.9	88.9	94.2
127AW	Selkridge, MI	100.4	102.1	101.0	89.6	91.4	94.8
130AW	Charleston, WV	98.0	103.0	103.0	89.1	93.4	95.0
179AW	Mansfield, OH	105.6	106.0	105.4	90.0	90.3	95.3
	Average	94.8	95.8	95.5	87.6	90.7	94.1
<b>Units Losing Aircraft KC-135 (ANG)</b>							
117ARW	Birmingham, AL	92.9	91.5	87.2	86.2	88.8	90.0
101ARW	Key Field, MS	93.5	90.6	91.1	91.3	88.8	95.4
184ARW	McConnell AFB (ANG), KS	93.4	95.8	95.8	92.1	92.7	94.6
163ARW	Marrich ARB, CA	100.0	101.1	98.1	87.0	88.2	92.9
141ARW	Fairchild ANG, WA	99.5	107.0	99.2	89.6	90.0	95.5
<b>Units Losing Aircraft Fighters (ANG)</b>							
102FW	Old AGS, MA (F-15)	78.2	79.7	79.6	85.2	91.0	94.9
103FW	Brdley, CT (A-10)	82.8	89.9	86.7	86.9	87.5	92.8
181FW	Huffman International, IL (F-16)	92.2	100.6	88.6	88.5	88.8	93.8
147FW	Elmendorf, AK (F-16)	88.2	86.0	88.7	88.7	88.2	90.0
120FW	Great Falls, MT (F-16)	92.9	92.7	91.9	91.0	91.5	94.8
131FW	Lambert, MO (F-15C)	94.4	95.4	93.2	83.1	89.8	93.6
142FW	Portland, OR (F-15c)	94.3	94.9	95.4	87.5	90.7	94.8
111FW	Willow Grove, PA (A-10)	99.2	100.5	97.9	87.3	90.6	92.2
183FW	Capital City, IL (F-16)	101.2	99.6	99.1	90.3	90.9	94.2
192FW	Richmond, VA (F-16)	100.9	98.3	99.8	88.7	88.3	93.7
110FW	Kellogg AGS, MI (A-10)	100.9	101.9	102.0	87.7	91.1	94.9
148FW	Duluth, MN (F-16)	101.7	102.7	103.6	89.0	89.8	95.4

# Reference

## Slide #41

	AW HQ	MSG & MDG	MXG	OG	TOTAL
Members:					
Full Time	15	108	92	24	239
Traditional	35	458	133	78	704
Years of Experience:					
Full Time	303	1901	1748	534	4486
Traditional	473	4580	1330	1081	7464
Avg Yrs of Exp:					
Full Time	20.2	17.6	19.0	22.3	18.8
Traditional	13.5	10.0	10.0	13.9	10.6
Avg Years of Exp:					
TOTAL					12.67

# Reference

## Slide # 47

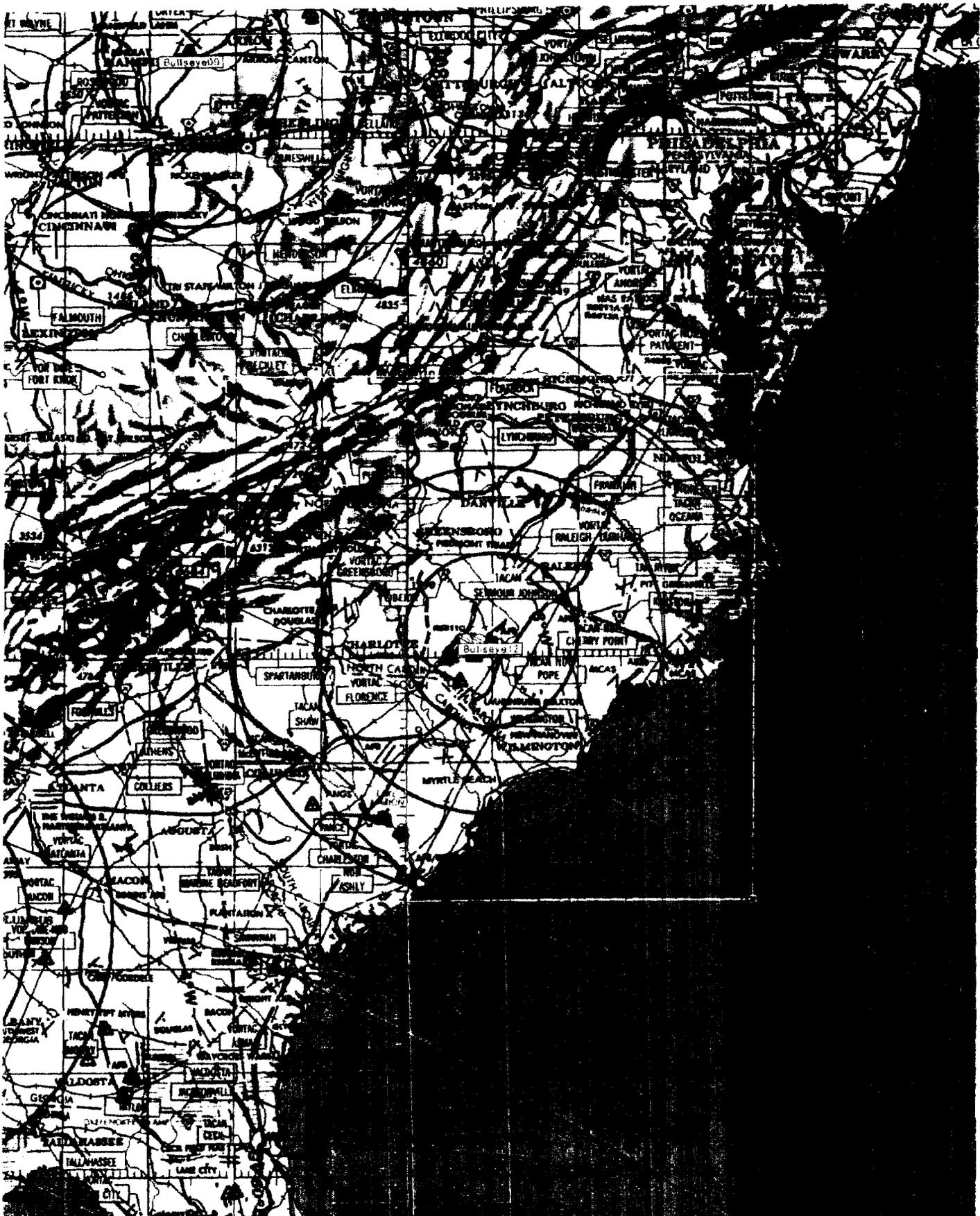
Skill Level	AW	%	OPS	MXG	MSG	MDG	Total ECS	Total Wing
3	6	15.8%	5	44	124	9	21.5%	188
5	11	28.9%	9	117	246	20	43.0%	403
7	19	50.0%	55	84	174	23	31.8%	355
9	2	5.3%	7	9	21	2	3.7%	41
Total	38		76	254	565	54		987
Top 3 (5,7,9)		84.2%					78.5%	81.0%
Top 2 (7,9)		55.3%					35.5%	40.1%

# Reference

## Slides # 50, 53



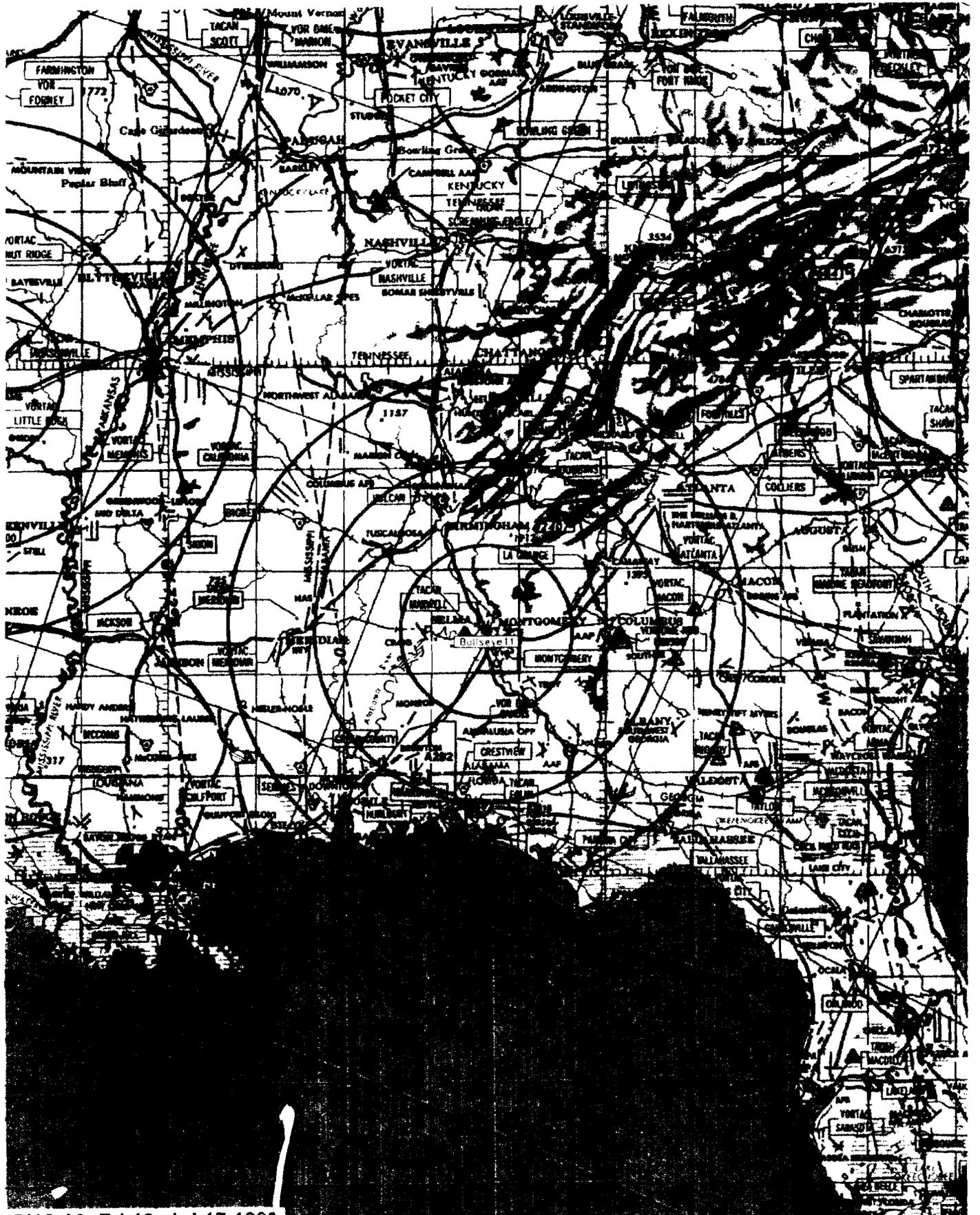




GNC 02, Ed 12, Jul 17 1997

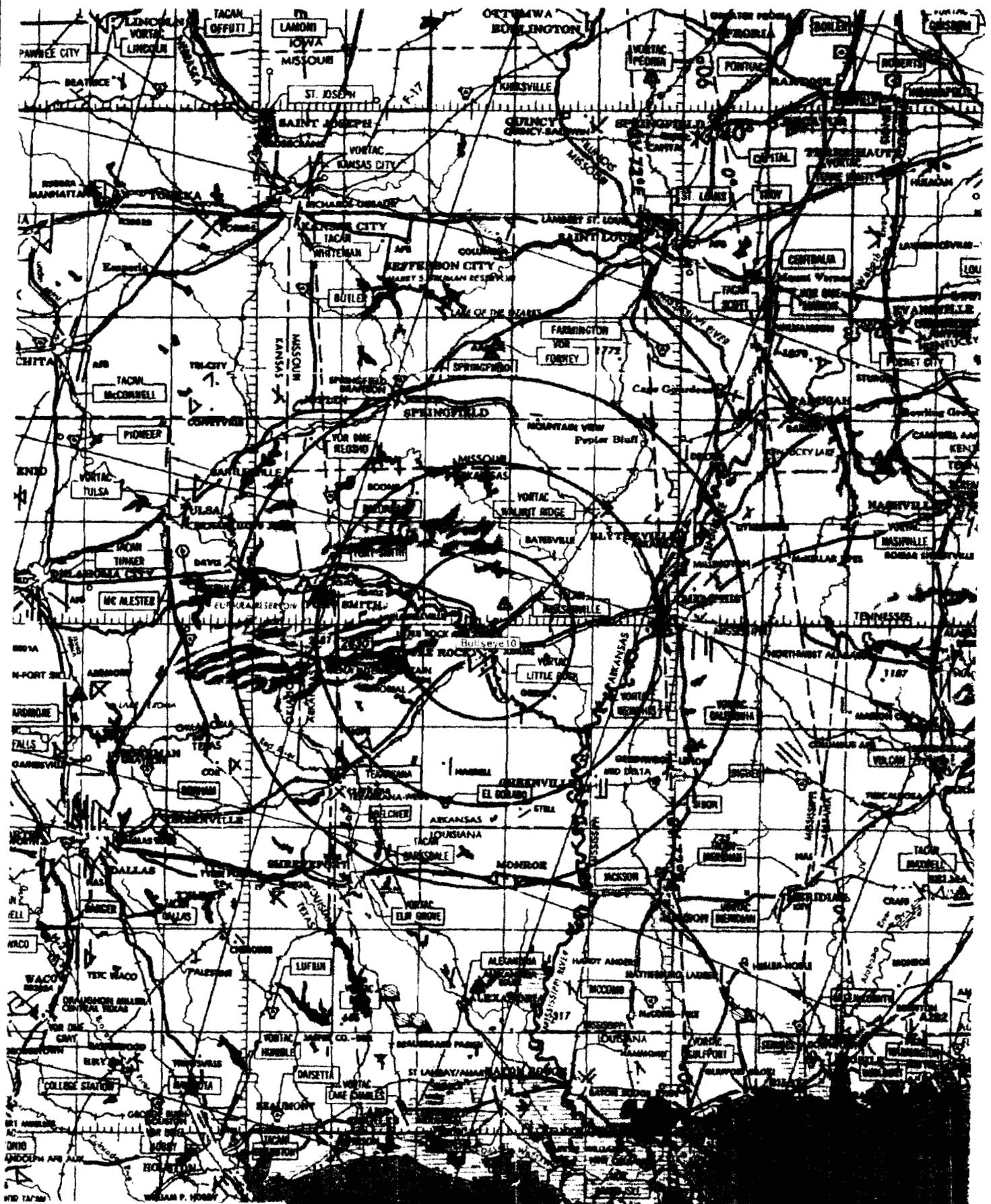
GNC 09, Ed 13, Apr 09 1990

DAFIF current through Jul 06 2005



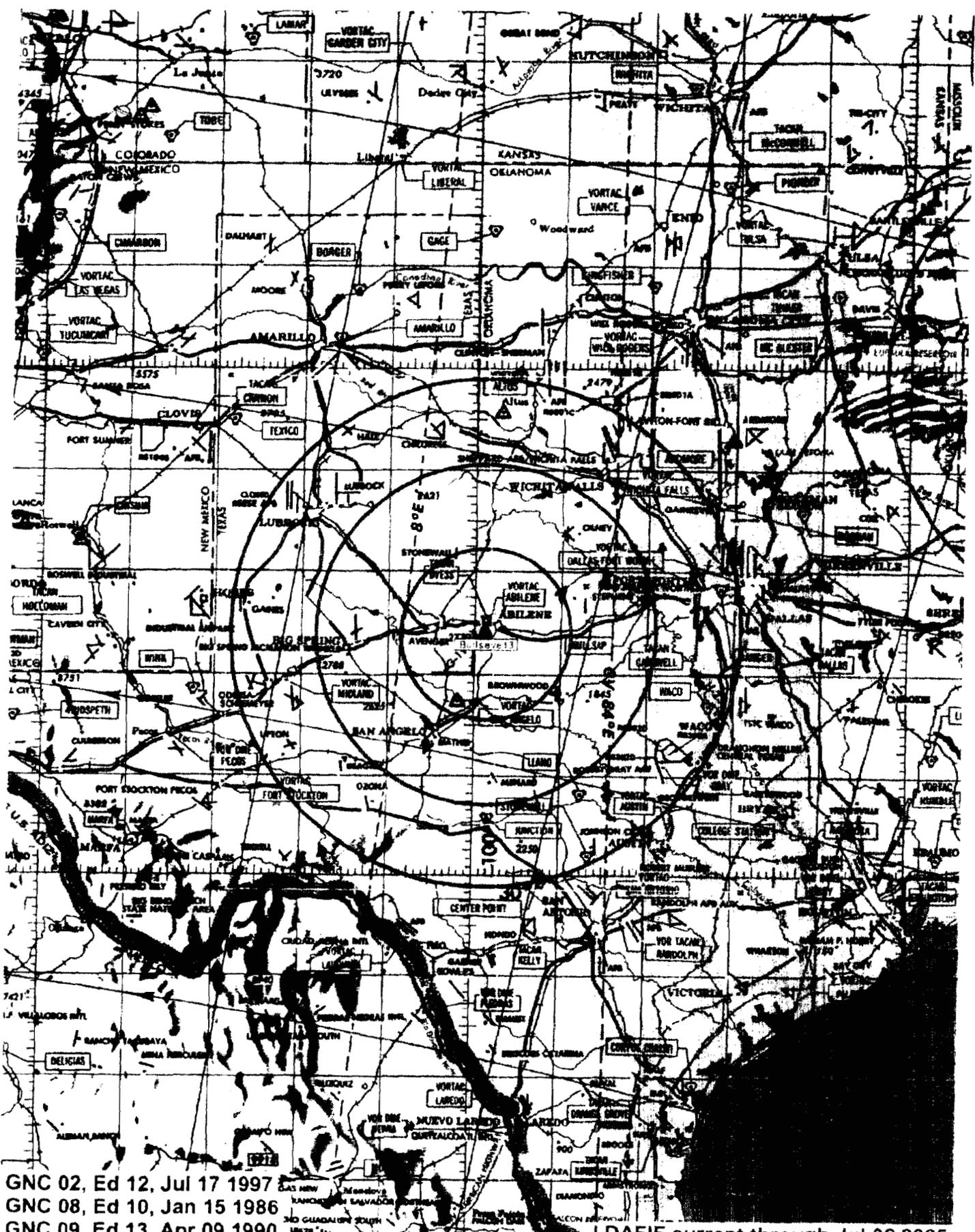
GNC 02, Ed 12, Jul 17 1997  
GNC 09, Ed 13, Apr 09 1990

DAFIF current through Jul 06 2005



GNC 02, Ed 12, Jul 17 1997  
GNC 09, Ed 13, Apr 09 1990

DAFIF current through Jul 06 2005



GNC 02, Ed 12, Jul 17 1997  
 GNC 08, Ed 10, Jan 15 1986  
 GNC 09, Ed 13, Apr 09 1990

DAFIF current through Jul 06 2005

# Reference

## Slide # 51

## Instrument Operations: Ranking Report

From 2004 To 2004: CLT LIT MFD MSP SDF: (Calendar Year)

Rank By Total Operations

RANK	FACILITY	AC	AT	GA	MIL	TOTAL
1	CLT	214912	241898	139013	4882	600705
2	MSP!	268350	114400	37411	1735	421896
3	SDF	82694	91820	90855	5342	270711
4	LIT	25605	39491	124624	48044	237764
5	MFD	169	10377	34326	2019	46891
<b>Total</b>		<b>323380</b>	<b>383586</b>	<b>388818</b>	<b>60287</b>	<b>1156071</b>

(!) - NonAdd Values

## TOWERS: Ranking Report

From 2004 To 2004: CLT LIT MFD MSP SDF: (Calendar Year)

Rank By Total Operations

RANK	RANKING FACTOR	FACILITY	ITINERANT				LOCAL		TOTAL
			AC	AT	GA	MIL	GA	MIL	
1	540727	MSP	354008	151462	32982	2249	26	0	540727
2	467676	CLT	213800	213983	37982	1877	31	3	467676
3	184998	LIT	25524	35894	70985	10551	10300	31744	184998
4	165589	SDF	75124	70245	17114	2533	567	6	165589
5	35009	MFD	20	4176	21589	2361	5277	1586	35009
<b>Total</b>			<b>668476</b>	<b>475760</b>	<b>180652</b>	<b>19571</b>	<b>16201</b>	<b>33339</b>	<b>1393999</b>

# Reference Slide # 52

## Chapter 2

# VFR MILITARY TRAINING ROUTES (VR)

I. **General.** FAA Order 7610.4 (Special Military Operations) has specific guidance on Military Training Routes. FAA Order 7610.4 is applicable to all DoD personnel including the Reserve Forces and National Guard. The Order is available from the FAA's website at <http://www.faa.gov/atpubs>. Pilots should be familiar with this Order. VR MTRs are mutually developed by DoD and the FAA to provide for military training/RDT&E requirements that cannot be met under the terms of FAR 91.117 (Aircraft Speed). Accordingly, the FAA has issued a speed authorization to DoD to permit aircraft to exceed 250 knots IAS (below 10,000' MSL) within the lateral and vertical confines of published VR MTRs. Each service component (USAF, USN, USMC, USA, and USCG) issues written guidance, procedures, regulations, or instructions (OPNAVINST 3710.5 by the USN for example), which cover MTR flying. Pilots are expected to comply with FARs, FAA Order 7610.4, and applicable service guidance when flying VR MTRs. FAA Regional Air Traffic Division Managers may authorize deviations from the provisions of FAA Order 7610.4. These deviations meet an appropriate level of safety and will be explained in the Route Description, Remarks, or Special Operating Procedures.

II. **Route Development.** VR Routes shall be developed using the procedures and criteria specified in FAA Order 7610.4. VR MTRs that include one or more segments above 1500 feet AGL shall be identified by three number characters, (for example VR-XXX). VR MTRs with no segment above 1500 feet AGL shall be identified by four number characters, (for example VR-XXXX). Developers/Route Originators will ensure that all VR MTRs are displayed on VFR Sectionals, VFR Terminal Area Charts and Area Planning AP/1B Military Training Route Charts (IR routes 1500 feet and above should be charted on Enroute Low and Area Charts). Route originators will review VR MTR data published in AP/1B and will immediately inform the appropriate authorities when a disparity exists. Route Developers should specify route entry windows in the Remarks/Special Operating Procedures (for example, plus or minus five minutes) in order to ensure aircraft enter on time and provide maximum route deconfliction for other military and civilian pilots.

### III. Scheduling and Coordination.

A. Routes shall not be flown unless properly scheduled through the designated originating/scheduling activity listed for that MTR. Normally, a minimum of 2 hours notice is required to ensure civilian and other military users are notified of MTR activation. When scheduling a VR MTR, Automated Flight Service Stations (AFSS) within 100 NM (in some cases more than 100 NM) of the scheduled MTR are notified to provide information to civilian pilots affording the opportunity to avoid the scheduled VR MTR. Military pilots can benefit from this information by contacting the servicing AFSS to view routes that have been activated. On a daily basis and to the maximum extent possible, the MTR Scheduler will confirm (via the tie-in AFSS) the planned utilization of the route. The AFSS handling the flight planning function for the military base where the scheduling unit is located will confirm that FAA Order 7110.10 (Tie-in AFSS) is complied with. Route Schedulers will provide an

hourly schedule for each MTR (route number, aircraft type and number, proposed entry/exit times, and altitude) and pass changes to the tie-in AFSS if a route closes or aircraft cancellations occur. Schedulers/Originators of VR MTRs will ensure that users are knowledgeable of route procedures. Pilots are ultimately responsible for compliance with route procedures.

B. Pilots will consult FLIP Area Planning and AP/1B Military Training Route Charts to view route conflicts. This chart is the single source document (IR, VR, SR routes) depicting potential route conflicts. Pilots may consult VFR Sectionals for additional planning information (SR not displayed). Routes displayed on the MTR Chart and Sectionals are "route centerline" only and route widths are not to scale. Enroute low IFR charts do not show 4 digit MTRs or SRs; therefore, do not use enroute IFR charts to deconflict VR MTRs. Pilots should be aware of other MTR users (that pose a hazard to the VR MTR) and associated route times to ensure deconfliction. Pilots will make every effort to contact the Originating/Scheduling Activity for routes that conflict with the planned route. If unable to properly plan/deconflict the VR MTR, **DO NOT FLY THE ROUTE.**

### IV. Flight Plans.

A. Operations to and from VR MTRs should be conducted on an IFR flight plan. Pilots must have an IFR or VFR flight plan filed to fly a VR MTR (the VFR flight plan must include the specific VR Route).

1. Pilots operating on an IFR flight plan to a VR MTR shall file to the fix/radial/distance (FRD) of the published entry/alternate entry point. Pilots transitioning to IFR upon exiting a VR MTR shall file the FRD of the published exit/alternate exit point.

Example: SAT191036 VR140 STV111017

2. The remarks portion (Field 11) of the flight plan shall contain the VR designator, the letter E and a four digit group indicating the Zulu entry time, the letter X and a four digit group indicating the Zulu exit time, and remarks (if applicable). Use no spaces on the first group.

Example: VR140E1520X1555 Exiting Echo

### V. In Flight.

A. Entry/Exit.

1. All entries and exits shall be accomplished at published entry/exit points or alternate entry/exit points.

2. Pilots shall inform the ATC facility if any action on the part of the controller compromises entry procedures for the route. For example, if unable to enter the route within established time limits, it shall be the

## Chapter 2

# VFR MILITARY TRAINING ROUTES (VR)

**I. General.** FAA Order 7610.4 (Special Military Operations) has specific guidance on Military Training Routes. FAA Order 7610.4 is applicable to all DoD personnel including the Reserve Forces and National Guard. The Order is available from the FAA's website at <http://www.faa.gov/atpubs>. Pilots should be familiar with this Order. VR MTRs are mutually developed by DoD and the FAA to provide for military training/RDT&E requirements that cannot be met under the terms of FAR 91.117

(Aircraft Speed). Accordingly, the FAA has issued a speed authorization to DoD to permit aircraft to exceed 250 knots IAS (below 10,000' MSL) within the lateral and vertical confines of published VR MTRs. Each service component (USAF, USN, USMC, USA, and USCG) issues written guidance, procedures, regulations, or instructions (OPNAVINST 3710.5 by the USN for example), which cover MTR flying. Pilots are expected to comply with FARs, FAA Order 7610.4, and applicable service guidance when flying VR MTRs. FAA Regional Air Traffic Division Managers may authorize deviations from the provisions of FAA Order 7610.4. These deviations meet an appropriate level of safety and will be explained in the Route Description, Remarks, or Special Operating Procedures.

**II. Route Development.** VR Routes shall be developed using the procedures and criteria specified in FAA Order 7610.4. VR MTRs that include one or more segments above 1500 feet AGL shall be identified by three number characters, (for example VR-XXX). VR MTRs with no segment above 1500 feet AGL shall be identified by four number characters, (for example VR-XXXX). Developers/Route Originators will ensure that all VR MTRs are displayed on VFR Sectionals, VFR Terminal Area Charts and Area Planning AP/1B Military Training Route Charts (IR routes 1500 feet and above should be charted on Enroute Low and Area Charts). Route originators will review VR MTR data published in AP/1B and will immediately inform the appropriate authorities when a disparity exists. Route Developers should specify route entry windows in the Remarks/Special Operating Procedures (for example, plus or minus five minutes) in order to ensure aircraft enter on time and provide maximum route deconfliction for other military and civilian pilots.

### III. Scheduling and Coordination.

A. Routes shall not be flown unless properly scheduled through the designated originating/scheduling activity listed for that MTR. Normally, a minimum of 2 hours notice is required to ensure civilian and other military users are notified of MTR activation. When scheduling a VR MTR, Automated Flight Service Stations (AFSS) within 100 NM (in some cases more than 100 NM) of the scheduled MTR are notified to provide information to civilian pilots affording the opportunity to avoid the scheduled VR MTR. Military pilots can benefit from this information by contacting the servicing AFSS to view routes that have been activated. On a daily basis and to the maximum extent possible, the MTR Scheduler will confirm (via the tie-in AFSS) the planned utilization of the route. The AFSS handling the flight planning function for the military base where the scheduling unit is located will confirm that FAA Order 7110.10 (Tie-in AFSS) is complied with. Route Schedulers will provide an

hourly schedule for each MTR (route number, aircraft type and number, proposed entry/exit times, and altitude) and pass changes to the tie-in AFSS if a route closes or aircraft cancellations occur. Schedulers/Oriators of VR MTRs will ensure that users are knowledgeable of route procedures. Pilots are ultimately responsible for compliance with route procedures.

B. Pilots will consult FLIP Area Planning and AP/1B Military Training Route Charts to view route conflicts. This chart is the single source document (IR, VR, SR routes) depicting potential route conflicts. Pilots may consult VFR Sectionals for additional planning information (SR not displayed). Routes displayed on the MTR Chart and Sectionals are "route centerline" only and route widths are not to scale. Enroute low IFR charts do not show 4 digit MTRs or SRs; therefore, do not use enroute IFR charts to deconflict VR MTRs. Pilots should be aware of other MTR users (that pose a hazard to the VR MTR) and associated route times to ensure deconfliction. Pilots will make every effort to contact the Originating/Scheduling Activity for routes that conflict with the planned route. If unable to properly plan/deconflict the VR MTR, **DO NOT FLY THE ROUTE.**

### IV. Flight Plans.

A. Operations to and from VR MTRs should be conducted on an IFR flight plan. Pilots must have an IFR or VFR flight plan filed to fly a VR MTR (the VFR flight plan must include the specific VR Route).

1. Pilots operating on an IFR flight plan to a VR MTR shall file to the fix/radial/distance (FRD) of the published entry/alternate entry point. Pilots transitioning to IFR upon exiting a VR MTR shall file the FRO of the published exit/alternate exit point.

Example: SAT191036 VR140 STV111017

2. The remarks portion (Field 11) of the flight plan shall contain the VR designator, the letter E and a four digit group indicating the Zulu entry time, the letter X and a four digit group indicating the Zulu exit time, and remarks (if applicable). Use no spaces on the first group.

Example: VR140E1520X1555 Exiting Echo

### V. In Flight.

A. Entry/Exit.

1. All entries and exits shall be accomplished at published entry/exit points or alternate entry/exit points.

2. Pilots shall inform the ATC facility if any action on the part of the controller compromises entry procedures for the route. For example, if unable to enter the route within established time limits, it shall be the

## Chapter 1

# IFR MILITARY TRAINING ROUTES (IR)

**I. General.** FAA Order 7610.4 (Special Military Operations) has specific guidance on Military Training Routes. FAA Order 7610.4 is applicable to all DoD personnel including the Reserve Forces and National Guard. The Order is available from the FAA's website at <http://www.faa.gov/atpubs>. Pilots should be familiar with this Order. IR MTRs are mutually developed by DoD and the FAA to provide for military training/RDT&E requirements that cannot be met under the terms of FAR 91.117 (Aircraft Speed). Accordingly, the FAA has issued a speed authorization to DoD to permit aircraft to exceed 250 knots IAS (below 10,000' MSL) within the lateral and vertical confines of published IR MTRs. Each service component (USAF, USN, USMC, USA, and USCG) issues written guidance, procedures, regulations, or instructions (OPNAVINST 3710.5 by the USN for example), which cover MTR flying. Pilots are expected to comply with FARs, FAA Order 7610.4, and applicable service guidance when flying IR MTRs. FAA Regional Air Traffic Division Managers may authorize deviations from the provisions of FAA Order 7610.4. These deviations meet an appropriate level of safety and will be explained in the Route Description, Remarks, or Special Operating Procedures.

**II. Route Development.** IR Routes shall be developed using the procedures and criteria specified in FAA Order 7610.4. IR MTRs that include one or more segments above 1500 feet AGL shall be identified by three number characters, (for example IR-XXX). IR MTRs with no segment above 1500 feet AGL shall be identified by four number characters, (for example IR-XXXX). Developers/Route Originators will ensure that all IR MTRs are displayed on VFR Sectionals, VFR Terminal Area Charts and Area Planning AP/1B Military Training Route Charts (IR routes 1500 feet and above should be charted on Enroute Low and Area Charts). Route Originators will review IR MTR data published in AP/1B and will immediately inform the appropriate authority when a disparity exists. Route Developers should specify route entry windows in the Remarks/Special Operating Procedures (for example, plus or minus five minutes) in order to ensure aircraft enter on time and provide maximum route deconfliction for other military and civilian pilots.

### III. Scheduling and Coordination.

A. Routes shall not be flown unless properly scheduled through the designated originating/scheduling activity listed for that MTR. Normally, a minimum of 2 hours notice is required to ensure civilian and other military users are notified of MTR activation. When scheduling an IR MTR, Automated Flight Service Stations (AFSS) within 100 NM (in some cases more than 100 NM) of the scheduled MTR are notified to provide information to civilian pilots affording the opportunity to avoid the scheduled IR MTR. Military pilots can benefit from this information by contacting the servicing AFSS to view routes that have been activated. On a daily basis and to the maximum extent possible, the MTR Scheduler will confirm (via the tie-in AFSS) the planned utilization of the route. Route Schedulers will confirm that FAA Order 7110.10 (Tie-in AFSS) is complied with. Route Schedulers will provide an hourly schedule for each MTR (route number, aircraft type and number, proposed

entry/exit times, and altitude) and pass changes to the tie-in AFSS if a route closes or aircraft cancellations occur. Route Schedulers shall maintain records of IR MTR usage for the preceding calendar year. Schedulers/Originators of IR MTRs will ensure that users are knowledgeable of route procedures. Pilots are ultimately responsible for compliance with route procedures.

B. Pilots will consult FLIP Area Planning and AP/1B Military Training Route Charts to view route conflicts. This chart is the single source document (IR, VR, SR routes) depicting potential route conflicts. Pilots may consult VFR Sectionals for additional planning information (SR not displayed). Routes displayed on the MTR Chart and Sectionals are "route centerline" only and route widths are not to scale. Enroute low IFR charts do not show 4 digit MTRs or SRs; therefore, do not use enroute IFR charts to deconflict IR MTRs. Pilots should be aware of other MTR users (that pose a hazard to the IR MTR) and associated route times to ensure deconfliction. Pilots will make every effort to contact the Originating/Scheduling Activity for routes that conflict with the planned route. If unable to properly plan/deconflict the IR MTR, **DO NOT FLY THE ROUTE.**

### IV. Flight Plans.

A. All IR MTR operations shall be conducted on IFR flight plans or an approved altitude reservation (ALTRV) regardless of weather conditions.

B. Unless agreed to by the ARTCC area where the route originates, each flight plan shall include the following specific information:

1. The published entry/alternate entry fix in terms of fix/radial/distance (FRD), route designator, the published exit/alternate exit fix in terms of FRD, followed by the balance of the route of flight

Example: SAT263043 IR149 LRD040028

2. The remarks portion (Field 11) of the flight plan shall contain the IR designator, the letter E and a four digit group indicating the Zulu entry time, the letter X and a four digit group indicating the Zulu exit time, and remarks (if applicable). Use no spaces on the first group.

Example: IR149E1520X1600 Exiting Golf

C. When filing IFR flight plans, only place "MARSA" in the remarks section (Field 11) if proper authorization has been received and aircrews intend to accept reduced separation criteria on the route (pre-planning with another aircraft). Base Operations personnel will not add "MARSA" unless requested by the aircrew.

Example: IR148E1617X1705 MARSA

L A T N  
 0 4 7  
 " + 3  
 3

## IFR MILITARY TRAINING ROUTES (IR)

**I. General.** FAA Order 7610.4 (Special Military Operations) has specific guidance on Military Training Routes. FAA Order 7610.4 is applicable to all DoD personnel including the Reserve Forces and National Guard. The Order is available from the FAA's website at <http://www.faa.gov/atpubs>. Pilots should be familiar with this Order. IR MTRs are mutually developed by DoD and the FAA to provide for military training/RDT&E requirements that cannot be met under the terms of FAR 91.117 (Aircraft Speed). Accordingly, the FAA has issued a speed authorization to DoD to permit aircraft to exceed 250 knots IAS (below 10,000' MSL) within the lateral and vertical confines of published IR MTRs. Each service component (USAF, USN, USMC, USA, and USCG) issues written guidance, procedures, regulations, or instructions (OPNAVINST 3710.5 by the USN for example), which cover MTR flying. Pilots are expected to comply with FARs, FAA Order 7610.4, and applicable service guidance when flying IR MTRs. FAA Regional Air Traffic Division Managers may authorize deviations from the provisions of FAA Order 7610.4. These deviations meet an appropriate level of safety and will be explained in the Route Description, Remarks, or Special Operating Procedures.

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entry/exit times, and altitude) and pass changes to the tie-in AFSS if a route closes or aircraft cancellations occur. Route Schedulers shall maintain records of IR MTR usage for the preceding calendar year. Schedulers/Originators of IR MTRs will ensure that users are knowledgeable of route procedures. Pilots are ultimately responsible for compliance with route procedures.

B. Pilots will consult FLIP Area Planning and AP/1B Military Training Route Charts to view route conflicts. This chart is the single source document (IR, VR, SR routes) depicting potential route conflicts. Pilots may consult VFR Sectionals for additional planning information (SR not displayed). Routes displayed on the MTR Chart and Sectionals are "route centerline" only and route widths are not to scale. Enroute low IFR charts do not show 4 digit MTRs or SRs; therefore, do not use enroute IFR charts to deconflict IR MTRs. Pilots should be aware of other MTR users (that pose a hazard to the IR MTR) and associated route times to ensure deconfliction. Pilots will make every effort to contact the Originating/Scheduling Activity for routes that conflict with the planned route. If unable to properly plan/deconflict the IR MTR, **DO NOT FLY THE ROUTE**

### IV. Flight Plans.

A. All IR MTR operations shall be conducted on IFR flight plans or an approved altitude reservation (ALTRV) regardless of weather conditions.

B. Unless agreed to by the ARTCC area where the route originates, each flight plan shall include the following specific information.

1. The published entry/alternate entry fix in terms of fix/radial/distance (FRD), route designator, the published exit/alternate exit fix in terms of FRD, followed by the balance of the route of flight.

Example: SAT263043 IR149 LRD040028

2. The remarks portion (Field 11) of the flight plan shall contain the IR designator, the letter E and a four digit group indicating the Zulu entry time, the letter X and a four digit group indicating the Zulu exit time, and remarks (if applicable). Use no spaces on the first group.

Example: IR149E1520X1600 Exiting Golf

C. When filing IFR flight plans, only place "MARSAs" in the remarks section (Field 11) if proper authorization has been received and aircrews intend to accept reduced separation criteria on the route (pre-planning with another aircraft). Base Operations personnel will not add "MARSAs" unless requested by the aircrew.

Example: IR148E1617X1705 MARSAs

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**MIDWEST FLYER MAGAZINE**

Contents

**Still Free To Fly!***by Daniel McDowell - Minnesota DOT, Office of Aeronautics*

The Air National Guard and the Air Force Reserve, as part of the "Total Force," handles a continually growing portion of the active duty Air Force missions and workload on a global scale. Today, the men and women of the nation's Air Guard and Air Reserve frequently work side by side with active duty personnel, supporting the Air Force mission across the nation and worldwide.

They are required to train to the same standards as the active Air Force, and that fact continues to take on even more importance every day. It is a dividend of "peace" in our society that is effectively shown by the reduction or removal of large portions of our military forces, bases, and strategic and tactical systems. This dividend does not eliminate the necessity to continue training our military personnel to be ready for any contingency.

With continued reductions in force personnel and resources, the Air National Guard and Air Force Reserve must rely on current training facilities to maintain and improve their vitally important skills. To do this requires "special-use airspace" reserved for military pilots and support personnel to simulate combat conditions.

**The Where, What and Why**

General Aviation pilots are likely to encounter one or more different types of special-use airspace when flying cross-country, and therefore need to be aware of the location of that airspace along their planned routes of flight, and an understanding of what takes place there.

Most often, the special-use airspace is associated with military training and is called a MOA, or Military Operations Area. Military Training Routes (MTRs), Restricted Areas (RAs), and Low Altitude Tactical Navigation Areas (LATNs), are also part of special-use airspace. But military pilots are not the only ones who can fly through that airspace.

MOAs provide an area where military pilots can train in a more realistic scenario. By definition, a MOA can exist from the surface to, but not including, 18,000 feet. Anything above FL 180 is in the ATCAA (Air Traffic Control Assigned Airspace), which places it in Positive Controlled Airspace.

The speed of the aircraft in a MOA may vary from 250 to over 650 mph, but always subsonic. Besides the possibility of an abrupt change of speed, military aircraft can very quickly change altitude - from several hundred feet above ground level (AGL), to over 18,000 feet mean sea level (MSL). These changes can, and often do take place in a matter of seconds.

MTRs are identified on the IFR Low Altitude Enroute Chart, VFR Planning Chart, sectional, Area Planning Chart, and Flight Information Publication (or FLIP) as instrument routes (IR) or visual (VR) routes. Routes at or below 1,500 feet AGL are identified by a four digit number such as IR 1003, or VR 1008. Routes above 1,500 feet AGL are identified by a three digit number like VR 004 or IR 007, etc. MTRs encountered along your route of flight may be associated with a MOA.

IRs are designed for low-altitude navigation and tactical training below 10,000 feet and at airspeeds in excess of 250 kts at night and in IMC. VRs are designed for low-altitude navigation and tactical training below 10,000 feet at airspeeds in excess of 250 kts under visual flight rules.

Along these routes, military aircraft can be flown at high speed (up to 650 mph) and low altitude. To the maximum extent possible, MTRs are flown under instrument flight rules (IFR) above 1,000 AGL. Routes below 1,000 feet AGL were designed to be flown under visual flight rules (VFR). It should be remembered that both routes have the same minimum altitude (usually 500 feet AGL), with the main difference being the IFR route is under ATC guidance.

The Department of Defense (DoD) and Federal Aviation Administration (FAA) have worked out rules for low-altitude, high-speed training to ensure as much safety as possible for both the military and General Aviation. In addition to following its own rules, the military also follows Federal Aviation Regulations (FARs) under FAR 91.79.

→ There are other types of routes that may also be encountered. They are SR (Slow Routes) and LATN (Low Altitude Tactical Navigation Areas). Slow Routes are designed for use at or below 1,000 feet AGL, with airspeeds at or below 250 kts. LATN areas are different in that they have specific North, East, South, and West boundaries. Bases of LATN routes can extend to 300 feet AGL and are flown at speeds not to exceed 250 kts. LATN areas are designed to allow crews to practice tactical navigation and flying in areas of simulated and varied threat potential, without being limited to flying a standardized, published route. LATNs are not published on aeronautical charts!

#### Not Just For Military Pilots

MOAs are not restricted to only military air traffic as are Restricted Areas. VFR traffic can transit a MOA, while IFR traffic may be cleared through the area if Air Traffic Control can provide IFR separation with coordination by the military. If they cannot provide adequate separation, non-participating aircraft will be rerouted or restricted. An exception to this is if the non-participating aircraft is a medical emergency or humanitarian flight.

If you plan to transit an MOA, check NOTAMS for "hot" MOAs and MTRs. Also contact the Flight Service Station (FSS) when you are 100 miles out from the MOA. Identify yourself to FSS and request MOA information. Be sure to advise them of your position, route of flight, destination and current altitude.

#### More Awareness!

Exercise extreme caution when near special-use airspace approach areas (entry and exit points), as well as in and around MOAs, MTRs and LATN areas. Be consistently vigilant while watching for military traffic, and traffic in general. Remember, when you see one military aircraft, keep looking! It is very likely that one or more additional aircraft are in the vicinity. It is also important to keep in mind that most military aircraft are painted in a low visibility camouflaged paint scheme or color. This makes these aircraft very difficult to see at any time. Add to that the fact they are changing speed and direction rapidly, and it is easily understood how difficult it can be to visually locate them.

#### Enhance Your Safety

Pilots should thoroughly brief their passengers before flight. Your safety can be greatly enhanced by using your passengers' eyes to help you seek out traffic. Brief them on what they may see. In addition, by making frequent clearing turns, you can confirm that the area around is clear and you make your aircraft more visible to the fast moving military traffic.

# Reference

## Slide # 58



Reference  
Slide # 63



# City of Mansfield, Ohio

*Lydia J. Reid, Mayor*

30 N. Diamond Street  
Mansfield, Ohio 44902

419-755-9626  
FAX 755-9627

April 23, 2004

Col. Mark L. Stephens, Commander  
179<sup>th</sup> Airlift Wing - OANG  
1947 Harrington Memorial Road  
Mansfield, Ohio 44903-0179

RE: Land Acquisition/Lease Modification

Dear Col. Stephens:

Please be advised that the City of Mansfield concurs with your proposed acquisition of 160 acres (±) to facilitate base expansion and, further, to incorporate said 160 acres (±) into a modification of the existing Cantonment Area Lease (#DACA27-5-90-163).

The 160 acres (±) parcel is bounded on the east by Airport North Road (Twp. Rd. 13A), on the south by Crall Road (Twp. Rd. 237), and is known as Airport Parcel Number 50.

Should you have any questions or need additional information, please contact Michael McKee at the City Engineer's Office (419-755-9702).

Very truly yours,

Lydia J. Reid  
Mayor

LJR:jvh

c: Public Works Director Fisher  
Project Planner McKee  
Airport Operations Supervisor Daugherty  
Councilman Utt  
Clerk of Council Grove  
File

# Reference Slide #66

**ECONOMIC IMPACT ANALYSIS**  
**179AW - FY 04**

(Version 1.4)

**TABLE I**  
**PERSONNEL BY CLASSIFICATION AND HOUSING LOCATION**

As of: 31-May-05

CLASSIFICATION	LIVING ON BASE	LIVING OFF BASE	TOTAL
<b>1. APPROPRIATED FUND MILITARY</b>			
Active Duty	0	1	1
Air Force Reserve/Air National Guard	0	63	63
Non-Extended Active Duty Reserve/ANG	0	964	964
Trainees/Cadets	0	0	0
	-	-	-
TOTAL:	0	1,028	1,028
<b>2. ACTIVE DUTY MILITARY DEPENDENTS</b>			
	0	0	0
<b>3. APPROPRIATED FUND CIVILIANS</b>			
General Schedule			94
Federal Wage Board			79
Other "State Employess"			57
		-	-
		TOTAL:	230
<b>4. NON-APPROPRIATED FUND CONTRACT CIVILIANS AND PRIVATE BUSINESS</b>			
Civilian NAF			0
Civilian BX			1
Contract Civilians (not elsewhere included)			0
Private Businesses On Base, By Type:			1
Branch Banks/Credit Union			0
Other Civilians (not elsewhere included)			1
		-	-
		TOTAL:	2

TOTAL PERSONNEL: 1,260

ECONOMIC IMPACT ANALYSIS  
179AW - FY 04

TABLE 2  
ANNUAL PAYROLL BY CLASSIFICATION AND HOUSING LOCATION

As of: 31-May-05

CLASSIFICATION	LIVING ON BASE (\$)	LIVING OFF BASE (\$)	TOTAL (\$)
<b>1. APPROPRIATED FUND MILITARY</b>			
Active Duty	\$0	\$73,857	\$73,857
ANG/Reserve	\$0	\$2,321,682	\$2,321,682
Trainees/Cadets	\$0	\$0	\$0
Non-Extended Active Duty ANG/Reserve	\$0	\$10,626,046	\$10,626,046
	-	-	-
TOTAL:	\$0	\$13,021,585	\$13,021,585
<b>2. APPROPRIATED FUND CIVILIANS</b>			
General Schedule			\$5,057,839
Federal Wage Board			\$5,057,839
Other State Payrolls			\$2,445,010
		-	-
		TOTAL:	\$12,560,688
<b>3. NON-APPROPRIATED FUND CONTRACT CIVILIANS AND PRIVATE BUSINESS</b>			
Civilian NAF			\$0
Civilian BX			\$42,000
Contract Civilians (not elsewhere included)			\$0
Private Businesses On Base, By Type:			\$48,000
Branch Banks/Credit Union			\$0
Other Civilians (not elsewhere included)			\$48,000
		-	-
		TOTAL:	\$90,000

**TOTAL ANNUAL PAYROLL: \$25,672,273**

**179AW**

GRADE	NUMBER	Active Duty		Guard	
		Rate w/o PCS	Sub Totals	Ave Rate Off	Sub Totals
2LT	8	60,062	480,496	29,131	233,048
1LT	13	73857	960,141	29,131	378,703
CPT	25	96472	2,411,800	29,131	728,275
MAJ	39	122,134	4,763,226	29,131	1,136,109
LTC	37	139,808	5,172,896	29,131	1,077,847
COL	5	163,281	816,405	29,131	145,655
AB	2	32,429	64,858	11,367	22,734
AMN	1	35,145	35,145	11,367	11,367
A1C	82	37,594	3,082,708	11,367	932,094
SRA	243	45,104	10,960,272	11,367	2,762,181
SSG	176	55,063	9,691,088	11,367	2,000,592
TSG	175	64,445	11,277,875	11,367	1,989,225
MSG	152	74,344	11,300,288	11,367	1,727,784
SMS	44	84,116	3,701,104	11,367	500,148
CMS	19	98,107	1,864,033	11,367	215,973
<b>TOTAL</b>	<b>1021</b>	<b>78,797</b>	<b>80,452,145</b>	<b>11,367</b>	<b>11,605,707</b>

Mansfield	# Employees	Data From FY 04 EIA	
Civ-Pay	173	10,115,678	
AGR Officer	3		
AGR Enlisted	60	2,321,682	
ANG Drill Pay	968	10,626,046	80,452,145 AD
State Workers	57	2,445,010	<u>25,672,273</u> 179AW
AD 1LT	1	73,857	<b>54,779,872</b> Difference
Other Employees	2	90,000	
<b>1264</b>		<b>25,672,273</b>	<b>Total Annual Payroll</b>

**Source Information:**

AFI 65-503 Attachment A27-1 Civilian Standard Composite Rates, Major Categories  
 AFI 65-503 Attachment A19-1 Military Standard Composite Pay  
 179AW/FM FY 04 EIA

**Assumptions:**

Mil-Pay calculations average rate w/o pcs for both Officer & Enlisted  
 Mil-Pay calculations average rate w/o pcs for both Officer & Enlisted

# Reference

## Slide #67

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	AuthorSub Totals
P10C0	Commander	OG/CC		\$18,000.00		\$3,000,000.00	\$316.55	1	\$3,018,316.55
3A0X1	Info Mgt		\$18,000.00		13.8	\$15,573.00		1	\$33,573.00
1A291	Loadmaster	Stan Eval	\$18,000.00		18	\$30,372.00	\$201.71	1	\$30,573.71
14N3	Intelligence	IN		\$18,000.00	31.4	\$47,145.00		3	\$195,435.00
1N071	Intell Cman		\$18,000.00		29.1	\$30,031.00		5	\$240,155.00
11M3	Evaluator Pilot	Stan Eval		\$18,000.00		\$3,000,000.00	\$316.55	2	\$6,036,633.10
1A191	Flight Engineer	Stan Eval	\$18,000.00		19.6	\$34,173.00	\$672.35	1	\$34,845.35
1A291	Loadmaster	Stan Eval	\$18,000.00		18	\$30,372.00	\$201.71	1	\$30,573.71
20C0	MXG/CC	CC		\$18,000.00				4	
3A071	Info Mgt	CC	\$18,000.00					1	
33S3	Exec Officer	CCQ		\$18,000.00	12.8	\$23,534.00		1	\$41,534.00
21A3	QA OIC	MXQ		\$18,000.00	14	\$25,476.00		1	\$43,476.00
2A300	QA Supt	MXQ	\$18,000.00						
2A571	Aerospace Maint Cman	MXQ	\$18,000.00		19.4	\$25,024.00		1	\$43,024.00
2A573A	Avionics Sys Cman	MXQ	\$18,000.00		31	\$37,190.00		1	\$55,190.00
2A671B	Turboprop/shaft Cman	MXQ	\$18,000.00		20	\$23,523.00		1	\$41,523.00
2A675	Actl Hydraulics Cman	MXQ	\$18,000.00		16.2	\$18,635.00		1	\$36,635.00
3A071	Info Mgt	MXQ	\$18,000.00		19.2	\$20,817.00		1	\$38,817.00
1C700	Chief, Airfield Mgt 1C3X1	OSA	\$18,000.00		12.3	\$13,378.00		1	\$31,378.00
1C771	Airfield Mgt		\$18,000.00		12.3	\$13,378.00		1	\$31,378.00
1C791	Airfield Mgt Supt		\$18,000.00		12.3	\$13,378.00		1	\$31,378.00
1C092	Operation Resource Mgt	OSF	\$18,000.00		11.8	\$14,551.00		1	\$32,551.00
11M3	C-130H Instruct Pilot	OST		\$18,000.00		\$3,000,000.00		1	\$3,018,000.00
11M3B	Tactics Officer	OSK		\$18,000.00		\$3,000,000.00		2	\$3,018,000.00
11M3S	Tactics Officer			\$18,000.00		\$3,000,000.00		1	\$3,018,000.00
12M3B	Navigator			\$18,000.00		\$3,000,000.00		1	\$3,018,000.00
11M3B	Evaluator Pilot	OSO		\$18,000.00		\$3,000,000.00		1	\$3,018,000.00
12M3B	Navigator			\$18,000.00		\$3,000,000.00		1	\$3,018,000.00
11M3B	C-130H Pilot	DOLA/A Fit				\$3,000,000.00		11	\$33,000,000.00
12M3B	Navigator					\$3,000,000.00		6	\$18,000,000.00
1A100	Flight Engineer		\$18,000.00		19.6	\$34,173.00		6	\$313,038.00
1A2X1	Loadmaster		\$18,000.00		18	\$30,372.00		10	\$483,720.00
11M3B	C-130H Pilot	DOLB/B Fit		\$18,000.00		\$3,000,000.00		11	\$33,198,000.00
12M3B	Navigator			\$18,000.00		\$3,000,000.00		5	\$15,090,000.00
1A1X1	Flight Engineer		\$18,000.00		19.6	\$34,173.00		5	\$260,865.00
1A2X1	Loadmaster		\$18,000.00		18	\$30,372.00		11	\$532,092.00

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Author Sub Totals
11M3B	C-130H Pilot	DOLCB/C Fit		\$18,000.00		\$3,000,000.00		10	\$30,180,000.00
12M3B	Navigator			\$18,000.00		\$3,000,000.00		5	\$15,090,000.00
1A1X1	Flight Engineer		\$18,000.00		19.6	\$34,173.00		5	\$260,865.00
1A2X1	Loadmaster		\$18,000.00		18	\$30,372.00		11	\$532,092.00
C21A3	AMXS/CC	AMXS							
2A300	Aircraft Gen Supt		\$18,000.00					1	\$18,000.00
3A071	Info Mgt		\$18,000.00		13.8	\$15,573.00		1	\$33,573.00
8F000	First Sergeant		\$18,000.00					1	\$18,000.00
2A5X1	Aerospace Maint Cman	MXAA	\$18,000.00		24.2	\$29,206.00		1	\$47,206.00
2A590	Aerospace Maint Supt		\$18,000.00		24.2	\$29,206.00		1	\$47,206.00
2A551J	Crew Chiefs Aero Maint	MXAAA	\$18,000.00		24.2	\$29,206.00		41	\$1,935,446.00
2A571	Airlift Support	MAXBF	\$18,000.00		24.2	\$29,206.00		5	\$236,030.00
C21A3	MOF/CC			\$18,000.00	14	\$25,476.00		1	\$43,476.00
3A071	Info Mgt		\$18,000.00		13.8	\$15,573.00		1	\$33,573.00
2A300	MOF SUPT		\$18,000.00					1	\$18,000.00
2R0X1	Maint Data Sys Analysis	MXOOA	\$18,000.00		17.6	\$20,093.00		1	\$38,093.00
2A5X1	Maint Ops Center	MXOOM	\$18,000.00		24.2	\$29,206.00		4	\$188,824.00
2R1X1	Maint Scheduling	MXOOP	\$18,000.00		12.7	\$19,921.00		2	\$75,842.00
3S271	Training MNGR		\$18,000.00		13.7	\$19,148.00		1	\$37,148.00
C21B3	MXS/CC	MXS		\$18,000.00	14	\$25,476.00		1	\$43,476.00
8F000	First Sergeant		\$18,000.00					1	\$18,000.00
3A071	Info Mgt		\$18,000.00		13.8	\$15,573.00		1	\$33,573.00
3S071	Personnel CMAN		\$18,000.00		12.1	\$14,007.00		1	\$32,007.00
2A600	Equipment Branch SUPT		\$18,000.00					1	\$18,000.00
C21B3	MXS OFFICER	MXS		\$18,000.00	14	\$25,476.00		2	\$86,952.00
2A690	ACFT Systems Super		\$18,000.00					1	\$18,000.00
2A6X6	Acft Elec Env	MXMCE	\$18,000.00		25.3	\$27,913.00		13	\$596,869.00
2A6X4	Acft Fuels Sys	MXMCF	\$18,000.00		13.8	\$15,488.00		7	\$234,416.00
2A6X5	Pneudraulics Svcs	MXMCP	\$18,000.00		16.2	\$18,635.00		6	\$219,810.00
2A5X1J	Repair reclamation	MXMCR	\$18,000.00		24.2	\$29,206.00		6	\$283,236.00
2A7X4	Fabrication Parachute	MXMFE	\$18,000.00		19.7	\$22,258.00		5	\$201,290.00
2A7X1	Aircraft Metals	MXMFM	\$18,000.00		26.4	\$30,364.00		4	\$193,456.00
2A7X2	Nondestruct Inspections	MXMFS	\$18,000.00		16.7	\$19,668.00		3	\$112,998.00
2A7X3	Acft Struc Maint	MXMFS	\$18,000.00		22.7	\$23,996.00		9	\$377,964.00
2A6X2	AGE	MXMG	\$18,000.00		28.5	\$29,932.00		11	\$527,252.00

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Author Sub Totals
2A891	Propulsion	MXMP	\$18,000.00		20.5	\$23,523.00		1	\$41,523.00
2A6X1B	Turboprop test cell	MXMPT	\$18,000.00		20.5	\$23,523.00		27	\$1,121,121.00
2A551J	Aircraft Inspection	MXMTC	\$18,000.00		24.2	\$29,206.00		11	\$519,266.00
2A590	Aerospace MAINT SUPT		\$18,000.00					1	\$18,000.00
2A553A	Integrated Avionics	MXMVC	\$18,000.00		31	\$37,190.00		18	\$993,420.00
2A553C	EW	MXMVE	\$18,000.00		27.5	\$32,731.00		5	\$253,655.00
2A553B	Guid and control	MXMVG	\$18,000.00		31	\$33,763.00		11	\$569,393.00
2W0X1	Munitions Sys	MXMW	\$18,000.00		15.2	\$17,139.00		1	\$35,139.00
									\$184,414,894.42

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Authr	Sub Totals
Enlisted	AFSCs									
C21R3	LRS/CC	CC		\$18,000.00		\$31,182.00	\$0.00		1	\$49,182.00
3A071	Info Mgt		\$18,000.00		13.8	\$15,573.00	\$0.00		1	\$15,573.00
3S051	Personnel Jman		\$18,000.00		12.1	\$14,007.00	\$0.00		1	\$14,007.00
3S271	Training Cman		\$18,000.00		13.7	\$19,148.00	\$0.00		1	\$19,148.00
8F000	First Sgt	CCF	\$18,000.00							
21R3	Log Readiness Officer	LGRD		\$18,000.00	18	\$31,182.00	\$0.00		1	\$49,182.00
2S000	Chief Enlistment Mgr		\$18,000.00		13.2	\$14,931.00	\$0.00		1	\$32,931.00
2T0X1	Traffic Mgt	LGRDC	\$18,000.00		17.3	\$18,296.00	\$0.00		7	\$254,072.00
2S0X1	Suppy Mgt Cman	LGRDM	\$18,000.00		13.2	\$14,931.00			13	\$428,103.00
2F071	Fuels Cman	LGRF	\$18,000.00		12.6	\$15,693.00			16	\$539,088.00
21R3	Log Plans	LGRRP		\$18,000.00	18	\$31,182.00			3	\$147,546.00
2G071	Log Plans Cman	LGRRP	\$18,000.00		11.1	\$16,168.00			4	\$136,672.00
2S0X1	Suppy Mgt Cman	LGRSP	\$18,000.00		13.2	\$14,931.00			24	\$790,344.00
2T3X1	Vehicle Equip Maint	LGRVM	\$18,000.00		12.3	\$13,378.00			5	\$156,890.00
2T3X2A	Vehicle Equip Maint		\$18,000.00		23.6	\$27,206.00			1	\$45,206.00
2T3X2B	Vehicle Equip Maint		\$18,000.00		21.5	\$24,505.00			1	\$42,505.00
2T370	Vehicle Equip Maint		\$18,000.00		21.5	\$24,505.00			3	\$127,515.00
2T171	Vehicle Operations		\$18,000.00		12.3	\$14,609.00			12	\$391,308.00
34M3	Services Officer			\$18,000.00	6	\$13,057.00			2	\$62,114.00
3M0X1	Services		\$18,000.00		12.6	\$15,314.00			38	\$1,265,932.00
30C0	MSG/CC			\$18,000.00					2	\$18,000.00
30C0	MSG/CCV			\$18,000.00					2	\$18,000.00
3A071	Info Mgt		\$18,000.00		13.8	\$15,573.00	\$0.00		1	\$15,573.00
3S051	Personnel Jman		\$18,000.00		12.1	\$14,007.00	\$0.00		1	\$14,007.00
8F000	First Sergeant		\$18,000.00						1	\$18,000.00
6C0X1	Contracting		\$18,000.00		14.4	\$19,018.00			4	\$148,072.00
36M3	Personnel Officer			\$18,000.00	5	\$11,151.00			1	\$29,151.00
3S071	Personnel Sys		\$18,000.00		12.1	\$14,007.00			15	\$480,105.00
8R0X0	Recruiter		\$18,000.00		13.1	\$19,939.00			3	\$113,817.00
36M3	Personnel Officer	DPMP		\$18,000.00	5	\$11,151.00			1	\$29,151.00
3S2X1	Education and Training	DPMT	\$18,000.00		13.7	\$19,148.00			3	\$111,444.00
33S3	Comm and Info	SC		\$18,000.00	12.8	\$23,534.00			1	\$41,534.00
3A0X1	Info Mgt		\$18,000.00		13.8	\$15,573.00			4	\$134,292.00
3C0X1	Computer Sys		\$18,000.00		19.2	\$20,817.00			10	\$388,170.00
3C2X1	CS Control Sys		\$18,000.00		23.3	\$24,402.00			6	\$254,412.00
2E1X3	Ground Radio		\$18,000.00		38.8	\$44,425.00			4	\$249,700.00
2E1X4	Television Intrusion Sys		\$18,000.00		39.6	\$46,854.00			1	\$64,854.00

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Authr Sub Totals	
2E2X1	Computer Switch Sys		\$18,000.00		31.2	\$35,213.00			4	\$212,852.00
2E6X3	Voice Network Sys		\$18,000.00		30.3	\$33,275.00			3	\$153,825.00
3V0X3	Visual Info Production		\$18,000.00		20.7	\$36,098.00			1	\$54,098.00
3V0X2	Still Photo		\$18,000.00		19.9	\$31,361.00			2	\$98,722.00
3V0X1	Visual Info		\$18,000.00		21	\$30,580.00			2	\$97,160.00
3C3X1	CS Plan & Imp		\$18,000.00		12.2	\$14,861.00			2	\$65,722.00
32E3G	Civil Engineer			\$18,000.00	8	\$16,236.00			3	\$102,708.00
3E9X1	Readiness		\$18,000.00		16.9	\$23,629.00			6	\$249,774.00
3E5X1	Engineering Apprentice		\$18,000.00		19.1	\$23,581.00			4	\$166,324.00
3E7X1	Fire Protection		\$18,000.00		20.1	\$28,247.00			27	\$1,248,669.00
2S0X1	Supply Mgt		\$18,000.00		13.2	\$14,931.00			2	\$65,862.00
3F0X1	Electrical Systems		\$18,000.00		33.4	\$38,239.00			5	\$281,195.00
3E0X2	Elec Power Pro		\$18,000.00		18	\$20,506.00			5	\$192,530.00
3E1X1	HVAC Refrigeration		\$18,000.00		28.3	\$31,976.00			6	\$299,856.00
3E2X1	Pavment & Constr Equip		\$18,000.00		48.4	\$35,383.00			7	\$373,681.00
3E3X1	Structural		\$18,000.00		25.1	\$30,081.00			7	\$336,567.00
3E4X1	Utilities Systems		\$18,000.00		10.5	\$12,743.00			5	\$153,715.00
3E4X2	Liquid Fuel Systems		\$18,000.00		14.9	\$16,728.00			3	\$104,184.00
3E4X3	Environmental		\$18,000.00		13	\$15,002.00			2	\$66,004.00
3E6X1	Force Management		\$18,000.00		11.9	\$16,254.00			2	\$68,508.00
31P3	Security Forces	SF		\$18,000.00	12	\$22,068.00			1	\$40,058.00
3P0X1B	Combat Arms				15.5	\$25,426.00			5	\$127,130.00
3P0X1	Security Forces				17.4	\$19,359.00			65	\$1,258,335.00
2T2X1	Air Transportation		\$18,000.00		12.1	\$14,542.00			90	\$2,928,780.00
41A3	Med Admin Off	SGA		\$18,000.00					1	\$18,000.00
47G3	Dental	SGD		\$18,000.00					1	\$18,000.00
4Y0X1	Dental Assl		\$18,000.00		15.1	\$17,931.00			2	\$71,862.00
3S2X1	Training Mgr		\$18,000.00		12.1	\$14,007.00	\$0.00		1	\$32,007.00
8F000	First Sergeant		\$18,000.00						1	\$18,000.00
46A3	Nurse Admin	SGN		\$18,000.00					1	\$18,000.00
46N3	Nurse Clinical			\$18,000.00					7	\$126,000.00
4N051	Med Services		\$18,000.00		27.6	\$32,127.00			15	\$751,905.00
44M3	Internal Medicine	SGOE		\$18,000.00					1	\$18,000.00
46N3E	Nurse Clinical			\$18,000.00					7	\$126,000.00
4H071	Cardio Lab		\$18,000.00		53.7	\$61,017.00			15	\$1,185,255.00
44E3A	Emcy Services	SGOPI		\$18,000.00					1	\$18,000.00
45A3	Anesthesiologist	SGOSB		\$18,000.00					1	\$18,000.00
45B3	Orthopedic Surgeon			\$18,000.00					1	\$18,000.00
45S3	Orthopedic Surgeon			\$18,000.00					2	\$36,000.00
46M3	Orthopedic Surgeon			\$18,000.00					1	\$18,000.00

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Tng \$	Officer Tng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Auth	Sub Totals
46S3	Orthopedic Surgeon			\$18,000.00					2	
4N1X1	Surgical Services		\$18,000.00		21.5	\$26,723.00			2	\$89,446.00
48R3	Aerospace Medicine	SGP		\$18,000.00					2	
43E3A	Bioenvironmental	SGPB		\$18,000.00					2	
4B0X1	Bioenvironmental En		\$18,000.00		21.1	\$26,723.00			2	\$89,446.00
C42F3	Flight Mission Med	SGPF		\$18,000.00					2	
42G3	Physician Assistant			\$18,000.00					2	
48G3				\$18,000.00					2	
48R3				\$18,000.00					2	
4N0X1	Medical Services		\$18,000.00		27.6	\$32,127.00			2	\$100,254.00
4V0X1	Optometry Apprentice		\$18,000.00		17.1	\$25,303.00			1	\$43,303.00
43H3	Public Health	SGPM		\$18,000.00					2	
4E0X1	Public Health		\$18,000.00		20	\$27,849.00			2	\$91,698.00
4A000	Support Services	SGS	\$18,000.00		13.7	\$15,791.00			2	\$67,582.00
4T0X1	Medical Lab		\$18,000.00		61.3	\$70,978.00			2	\$177,956.00
4P0X1	Pharmacy	SGSAP	\$18,000.00		22.4	\$26,662.00			1	\$44,662.00
4R0X1	Radiology	SGSAR	\$18,000.00		60.5	\$66,150.00			1	\$84,150.00
4D0X1	Diet Therapy	SGSD	\$18,000.00		17.7	\$21,367.00			1	\$39,367.00
4P0X1	Pharmacy	SGSAP	\$18,000.00		22.4	\$26,662.00			1	\$44,662.00
4A1X1	Medical Material	SGSL	\$18,000.00		11.3	\$13,724.00			2	\$63,448.00
4A2X1	Biomedical Equipment	SGSD	\$18,000.00		49	\$66,503.00			2	\$169,006.00
4A0X1	Support Services	SGST	\$18,000.00		13.7	\$15,791.00			2	\$67,582.00
41A3	Medical Administration	SGX		\$18,000.00						
2T291	Historian	CC	\$18,000.00		9.9	\$14,493.00			1	\$32,493.00
3A0X1	Information Mgt	CC	\$18,000.00		13.8	\$15,573.00			1	\$33,573.00
9E000C	Command Chief	CC	\$18,000.00						1	\$18,000.00
91W0	Wing Commander	CC		\$18,000.00					2	\$36,000.00
3S0X2	Training	CC	\$18,000.00		13.7	\$19,148.00			1	\$37,148.00
11M3	Command Post Officer	DOC		\$18,000.00		\$3,000,000.00			1	\$3,018,000.00
1C3X1	Command and Control	DOC	\$18,000.00		12.3	\$13,378.00			7	\$219,646.00
3A0X1	Info Mgt		\$18,000.00		13.8	\$15,573.00			1	\$33,573.00
65F3	Comptroller	FM		\$18,000.00	12.2	\$22,410.00			2	\$80,820.00
6F0X1	Financial Service	FMF	\$18,000.00		18	\$18,924.00			10	\$369,240.00
52R3	Chaplain	HC		\$18,000.00					3	\$54,000.00
5R0X1	Chaplain Assistant	HC	\$18,000.00		11.9	\$14,500.00			3	\$97,500.00
3H0X1	Historian Cman		\$18,000.00		9.9	\$14,493.00			1	\$32,493.00
87G0	Inspector General	IG		\$18,000.00					1	\$18,000.00

ANG Career Field Managers (CFMs)

AFSC	TITLE	Office	Basic Enlisted Trng \$	Officer Trng \$	Course Length	Technical Training \$	Follow-on Training \$	Bonus	Auth: Sub Totals
51J3	Judge Advocate	JA		\$18,000.00					2
5J0X1	Paralegal		\$18,000.00		12.7	\$20,697.00			2
36P3	Military Equal Opp	ME		\$18,000.00					2
3S1X1	Military Equal Opp		\$18,000.00		21.3	\$12,961.00			1
39P3	Public Affairs	PA		\$18,000.00	8.6	\$16,660.00			1
3A0X1	Information Mgt		\$18,000.00		13.8	\$15,373.00			1
3NDX1	Military Equal Opp		\$18,000.00		18.3	\$27,803.00			1
11M3	Safety	SE		\$18,000.00			\$3,000,000.00		1
150X1	Ground Safety		\$18,000.00		13.3	\$18,466.00			3
12M3	Operations Plans	XP		\$18,000.00			\$3,000,000.00		1
									<b>\$29,571,535.00 Grand Total</b>

Reference  
Slide # 68

## **Aircraft Dissimilarities (Maxwell vs. Mansfield)**

Maxwell has 1985 planes (H2s)  
Mansfield has 1990 planes (H2.5s)  
There are extremely big differences between the two.

Maxwell has C-12 Compass System.  
Mansfield has dual Inertial Navigation Units (INU).

Maxwell has AN/APN-59 Radar.  
Mansfield has AN/APN-241 Low Power Color Radar.  
This is a very big difference once again, and a totally different configuration.

Maxwell has regular, older ADI, HSI and SKE indicators as flight instruments.  
Mansfield has Electronic Flight Indicators (EFI) for HSI and ADI display.

Circuit breaker locations are also in different places – a Safety of Flight issue when aircrews have in-flight emergencies.

Maxwell has marker beacon lights on the pilot's instrument panel.  
Mansfield has them on the pilots Electronic Flight Indicator ADI.

Maxwell's Pilot's Intercommunication Set Control is on the center pedestal.  
Mansfield's Pilot's Intercommunication Set Control is on the left side.

Maxwell has ADF control boxes on their aircraft still. This makes the forward center console very different from Mansfield's.

Navigator's Station is totally different. The Maxwell aircraft have AN/APN-59 Radar, associated pressurization gauges and the C-12 Compass System.  
Mansfield has the AN/APN-241 Low Power Color Radar.

Mansfield planes have a SCNS Annunciator panel, SCNS Power Panel on the Navigator's Station and a SCNS Power Panel on the center pedestal. - The Maxwell planes do not.

The Navigator's Station also has ADF control boxes, which the Mansfield planes do not have.

Mansfield has the ALQ-157 Infrared Countermeasures System  
Maxwell does not!

Mansfield has the ALR-69 Missile Warning System  
Maxwell does not have this System on all their aircraft

INTEGRATION HOURS FOR AVIONICS UPGRADE			
		# of Hours	Cost per hour
Mechanical Engineer	Aircraft Survey	8	130
	Integration Design/Engineering Support	80	130
Electrical Engineer	Aircraft Survey	8	130
	Integration Design/Engineering Support	80	130
Analyst	Aircraft Survey	8	80
Manager	Scheduling/Planning	40	110
	Engineering Support	16	110
<b>Total Cost</b>	<b>\$29,680.00</b>		
This is a rough estimate of how much support and integration design it would take to compensate for Maxwell's aircraft.			
This does not include travel and per diem costs.			

## System: Autopilot

NSN	WUC	Auth 8PAA	Auth 12PAA	Unit Price	Total 8PAA	Total 12PAA	
6615-01-38-7294	526AA	2	3	\$38,325.39	\$76,650.78	\$114,976.17	
6615-01-038-7297	526AG	3	5	\$21,024.30	\$63,072.90	\$94,609.35	
6615-01-038-7299	526AM	3	5	\$7,534.34	\$22,603.02	\$33,904.53	
6615-01-037-7780	526AQ	4	6	\$6,264.60	\$25,058.40	\$37,587.60	
6615-01-038-7298	526BA	3	5	\$6,264.60	\$18,793.80	\$28,190.70	
6615-01-040-0126	526BD	2	3	\$31,628.19	\$63,256.38	\$94,884.57	
6615-01-038-7295	526BP	4	6	\$3,873.80	\$15,495.20	\$23,242.80	
6615-01-043-2763	526CB	2	3	\$4,141.15	\$8,282.30	\$12,423.45	
6615-01-092-0363	526CD	3	5	\$26,059.94	\$78,179.82	\$117,269.73	
5826-01-065-9132	526DC	3	5	\$6,573.92	\$19,721.76	\$29,582.64	
6610-01-487-3794	526DE	2	3	\$57,267.64	\$114,535.28	\$171,802.92	
5945-00-075-4925	526DF	6	9	\$1,030.79	\$6,184.74	\$9,277.11	
					\$511,834.38	\$767,751.57	Subtotal

## System: SCNS

NSN	WUC	Auth 8PAA	Auth 12PAA	Unit Price	Total 8PAA	Total 12PAA	
6605-01-357-8976	71GAO	2	3	\$130,377.00	\$260,754.00	\$391,131.00	Subtotal

## System: Low Power Color Radar

NSN	WUC	Auth 8PAA	Auth 12PAA	Unit Price	Total 8PAA	Total 12PAA	
5841-01-447-1279	72KAO	1	2	\$470,381.12	\$470,381.12	\$705,571.68	
5841-01-433-9450	72KAG	1	2	\$1,293.31	\$1,293.31	\$1,939.97	
5998-01-433-9518	72KAJ	1	2	\$4,299.15	\$4,299.15	\$6,448.73	
5975-01-433-9460	72KAR	2	3	\$24,595.88	\$49,191.76	\$73,787.64	
5985-01-431-7448	72KBO	1	2	\$142,353.00	\$142,353.00	\$213,529.50	
5895-01-396-4258	72KEO	1	2	\$2,170.85	\$2,170.85	\$3,256.28	
5841-01-396-6995	72KFO	1	2	\$7,088.15	\$7,088.15	\$10,632.23	
5841-01-413-6850	72KGO	1	2	\$10,118.42	\$10,118.42	\$15,177.63	
5841-01-393-3630	72KHO	1	2	\$51,456.90	\$51,456.90	\$77,185.35	
5895-01-433-6909	72KAA	2	3	\$32,634.81	\$65,269.62	\$97,904.43	
5841-01-433-9457	72KAC	2	3	\$41,435.71	\$82,871.42	\$124,307.13	
5841-01-433-9455	72KAD	4	6	\$76,878.86	\$307,515.44	\$461,273.16	
6130-01-433-9452	72KAF	2	3	\$76,878.86	\$153,757.72	\$230,636.58	
5998-01-469-2144	72K99	1	2	\$1,625.88	\$1,625.88	\$2,438.82	
5844-01-433-9450	72KAG	3	5	\$1,293.31	\$3,879.93	\$5,819.90	
5895-01-433-6969	72KAH	1	2	\$9,101.61	\$9,101.61	\$13,652.42	
5998-01-469-6517	72KAK	2	3	\$13,578.65	\$27,157.30	\$40,735.95	
5895-01-433-9451	72KAL	3	5	\$2,901.35	\$8,704.05	\$13,056.08	
5998-01-433-9516	72KAM	4	6	\$6,632.21	\$26,528.84	\$39,793.26	
5998-01-433-9517	72KAN	2	3	\$3,804.76	\$7,609.52	\$11,414.28	
5998-01-469-6516	72KAP	2	3	\$8,178.27	\$16,356.54	\$24,534.81	
5841-01-396-4257	72KCO	1	2	\$26,558.15	\$26,558.15	\$39,837.23	
5841-01-433-2212	72KDO	2	3	\$12,329.16	\$24,658.32	\$36,987.48	
					\$1,499,947.00	\$2,249,920.50	Subtotal

## System: AN/ALR-69 RWR

NSN	WUC	Auth 8PAA	Auth 12PAA	Unit Price	Total 8PAA	Total 12PAA
5865-01-442-0545	76BAO	3	5	\$105,361.00	\$316,083.00	\$474,124.50
5865-01-110-6043	76BBO	2	3	\$59,548.46	\$119,096.92	\$178,645.38
5865-01-386-7812	76BCO	1	2	\$76,452.00	\$76,452.00	\$114,678.00
5865-01-080-5675	76BDO	2	3	\$15,419.72	\$30,839.44	\$46,259.16
5895-01-154-9125	76BEO	4	6	\$8,038.93	\$32,155.72	\$48,233.58
5895-01-490-4753	76BFO	2	3	\$10,670.99	\$21,341.98	\$32,012.97
5865-01-436-0619	76BGO	2	3	\$5,648.87	\$11,297.74	\$16,946.61
					\$607,266.80	\$910,900.20 Subtotal

## System: AN/ALQ-157 IRCMS

NSN	WUC	Auth 8PAA	Auth 12PAA	Unit Price	Total 8PAA	Total 12PAA
5850-01-3887440	76RAO	1	2	\$100,758.00	\$100,758.00	\$151,137.00
6130-01-388-7479	76RBO	3	5	\$104,118.00	\$312,354.00	\$468,531.00
5895-01-247-9829	76RDO	1	2	\$10,895.30	\$10,895.30	\$16,342.95
					\$424,007.30	\$636,010.95 Subtotal
					\$3,303,809.48	\$4,955,714.22 Grand total



# Wiring Schematic Diagrams

CARA	1
FLIGHT DIRECTOR	5
APN-169	4
TCAS	1
ALQ-157	1
INU NO. 2	3
SCNS	6
GCAS	1
ESSENTIAL AC	1
MAIN AC	1
NAV INSTR SWITCHING	2
VOR/ILS	1
PILOT'S INSTR PANEL LIGHTS	1
NAV INSTR PANEL LIGHTS	1
APN-218 DOPPLER	1
LPCR	3
INS DC POWER BATTERY BUS	1
 Total Wiring Diagram Pages	 34

16 engineering hours/page  
 Electrical Engineer=\$130/page  
 70720

Analyst=\$2 hours/page  
 Analyst=\$80/hour  
 5440

Manager/Review=\$1/page  
 Manager/Review=\$110/hour  
 3740

Drafter hours/page=4 hours/page  
 Drafter=\$110/hour  
 14960

Total cost to do Wiring Diagram Updates \$94,860.00

ESTIMATED COST OF UNITS PRINTING PAGES	COST
Change Package =Estimated 108 pages	
Estimated 57 C-130 Units	
\$0.50/page (take toner/in into this price)	
5 shops/unit	
Estimated Price for Units to print Technical Order Updates	\$15,390.00
<b>ESTIMATED COST OF DOING UPDATES TO THE FAULT ISOLATION (FI)</b>	
<b>TECHNICAL ORDERS</b>	
Quick Estimate by Rock Mendenhall would just be to double the price of doing the regular Tos	FI Update Cost
which is (\$108,100+\$94,860+\$15,930)*2. The Fault Isolation Guides take a lot more research	\$437,780.00
a lot more reviewers to make sure the procedures read correctly. Plus, you have to	
update a fault isolation book for each affected system. This does not even include a lot of the	
people involved in the C-130 SPO other than drafters.	
<b>Total Technical Order update costs</b>	<b>\$671,520</b>
So, a quick estimate to update the Technical Orders would be (\$233,740+\$437,780)=\$671,520.	
<b>Note: This is primarily contractor costs, other than drafters from the C-130 SPO. Management,</b>	
<b>TOMA, and other C-130 SPO personnel are not included.)</b>	
<b>So, in reality it would easily be around \$1 million dollars or more estimated to update Technical Orders.</b>	

### Training Calculations

	Comm/Nav	ECM	Guidance/Control	Pilot	Navigator	Engineer	Loadmaster
Additional Manning Requirements	7	2	3	16	8	8	16
Basic Training / AMS Cost Total	\$126,000.00	\$36,000.00	\$54,000.00	\$288,000.00	\$144,000.00	\$144,000.00	\$288,000.00
AFSC Total	\$260,330.00	\$65,462.00	\$101,289.00	\$16,000,000.00	\$8,000,000.00	\$273,384.00	\$546,768.00
OJT required to become qualified (in days)	5	21.8	4	1.5	1.5	5	1.5
OJT Cost Total Per member	\$672.35	\$2,931.45	\$537.88	\$316.55	\$316.55	\$672.35	\$201.71
Total OJT Cost	\$4,706.45	\$5,862.89	\$1,613.64	\$15,194.16	\$7,597.08	\$10,219.72	\$3,227.28
<b>Grand Total per section</b>	<b>\$391,036.45</b>	<b>\$107,324.89</b>	<b>\$156,902.64</b>	<b>\$16,303,194.16</b>	<b>\$8,151,597.08</b>	<b>\$427,603.72</b>	<b>\$837,995.28</b>
36 Hours of AC operation (\$5000.00 per hr)							<b>\$180,000.00</b>

**Legend:**

Training cost per day: Enlisted \$134.47, Officer \$211.03

Enlisted basic training cost is \$18,000 each

Technical AFSC training Cost is (per member):

Comm/Nav	\$37,190.00
Guidance/Control	\$33,763.00
ECM	\$32,731.00
Loadmaster	\$30,372.00
Engineer	\$34,173.00
Aircrew Officer	\$1,000,000.00

**Note: Training cost do not include Travel or Per-Diem**

System	TCTO #	Kit Cost	LRU Cost	Manhours	Manhour cost @ \$34.00 hr	Total cost per Aircraft	Total Per Fleet
ALQ-157	1C-130H-549	\$123,075.50	\$320,324.00	200	\$6,800.00	\$450,199.50	\$3,601,596.00
ALR-69	1C-130-1479	\$268,000.00	\$0.00	1000	\$34,000.00	\$302,000.00	\$1,208,000.00
LCPR	1C-130H-548	\$15,578.00	\$563,107.03	342	\$11,628.00	\$590,313.03	\$4,722,504.24
DUAL INU	1C-130-1486	\$240,000.00	\$130,983.00	600	\$20,400.00	\$391,383.00	\$3,131,064.00
DUAL EFI	1C-130-551	\$13,815.00	\$229,070.56	93	\$3,162.00	\$246,047.56	\$1,968,380.48
						<b>Total</b>	<b>\$14,631,544.72</b>

**Line Repairable Units (LRU) not included with the TCTO Kit**

LCPR LRU	INU LRU	EFI LRU	ALQ-157 IRCM LRU
\$32,634.81	\$130,000.00	\$57,267.64	\$200,000.00
\$25,881.55	\$983.00		\$104,000.00
\$41,435.71			\$5,324.00
\$76,878.86			\$11,000.00
\$11,473.00			
\$16,823.26			
\$1,625.88			
\$1,293.31			
\$9,101.61			
\$4,299.15			
\$13,578.15			
\$2,901.36			
\$6,632.21			
\$3,804.76			
\$8,178.27			
\$29,894.01			
\$24,595.88			
\$142,353.62			
\$26,558.15			
\$12,329.16			
\$2,170.85			
\$7,088.15			
\$10,118.42			
\$51,456.90			
<b>\$563,107.03</b>	<b>\$130,983.00</b>	<b>\$229,070.56</b>	<b>\$320,324.00 Total per aircraft</b>

Reference  
Slide #69

**Net Present Value:**  $P = FVy [ 1/(1+i)^n ]$

$FV = \$54,779,872$

$y = 20$  years

$n = n-.05$  (COBRA Data)

$i = .03$

$P = \$54,779,872 \times 20 [1/(1=.03)20]$

$P = \$1,095,597,440 [.55367574]$

$P = \$ 615,637,586.66$

# Reference Slide #74

City	County	Count	County Tot	STATE	Count
LIMA	ALLEN	1			
ASHLAND	ASHLAND	43		FL	3
HAYESVILLE	ASHLAND	2		GA	5
JEROMESVILLE	ASHLAND	3		KY	5
LOUDONVILLE	ASHLAND	15		TX	2
PERRYSVILLE	ASHLAND	8		NC	1
SAVANNAH	ASHLAND	1	72	NM	1
ASHTABULA	ASHTABULA	1		MI	4
AUSTINBURG	ASHTABULA	1		TN	2
WINDSOR	ASHTABULA	1	3	PA	5
ATHENS	ATHENS	1		AR	1
NEW KNOXVILLE	AUGLAIZE	1		IL	1
HAMILTON	BUTLER	1		IN	2
OXFORD	BUTLER	1	2	NY	1
CARROLLTON	CARROLL	1		NV	1
DELLROY	CARROLL	1		MS	1
MALVERN	CARROLL	2			
MINERVA	CARROLL	1		TOTAL	35
SHERRODSVILLE	CARROLL	1	6		
URBANA	CHAMPAIGN	3			
AMELIA	CLAREMONT	1			
SPRINGFIELD	CLARK	3			
HEMEWORTH	COLUMBIANA	1			
SALEM	COLUMBIANA	1			
SALINEVILLE	COLUMBIANA	1			
WINONA	COLUMBIANA	1	4		
COSHOCTON	COSHOCTON	1			
BUCYRUS	CRAWFORD	9			
CRESTLINE	CRAWFORD	14			
GALION	CRAWFORD	34			
NEW WASHINGTON	CRAWFORD	1			
TIRO	CRAWFORD	1	59		
BEACHWOOD	CUYAHOGA	1			
BEREA	CUYAHOGA	1			
BROADVIEW HTS	CUYAHOGA	2			
BROOK PARK	CUYAHOGA	1			
BRUNSWICK HILLS	CUYAHOGA	2			
CHAGRIN FALLS	CUYAHOGA	1			
CLEVELAND	CUYAHOGA	8			
CLEVELAND HEIGHTS	CUYAHOGA	2			
CLEVELAND HGTS	CUYAHOGA	1			
COLUMBIA STATION	CUYAHOGA	1			
EUCLID	CUYAHOGA	1			
FAIRPORT HARBOR	CUYAHOGA	1			
FAIRVIEW PARK	CUYAHOGA	3			
GARFIELD HEIGHTS	CUYAHOGA	2			
GARFIELD HTS	CUYAHOGA	1			
LAKWOOD	CUYAHOGA	3			
MAPLE HEIGHTS	CUYAHOGA	3			
MIDDLEBURG HEIGHTS	CUYAHOGA	1			
MIDDLEBURG HTS	CUYAHOGA	1			

NORTH OLMSTED	CUYAHOGA	1	
NORTH ROYALTON	CUYAHOGA	3	
OAKWOOD	CUYAHOGA	1	
PARMA	CUYAHOGA	3	
SHAKER HEIGHTS	CUYAHOGA	1	
SOLOM	CUYAHOGA	1	
SOUTH EUCLID	CUYAHOGA	3	
STRONGSVILLE	CUYAHOGA	4	
UNIVERSITY HEIGHTS	CUYAHOGA	1	
WESTLAKE	CUYAHOGA	3	60
HICKSVILLE	DEFIANCE	1	
ASHLEY	DELAWARE	1	
BLACKLICK	DELAWARE	1	
DELAWARE	DELAWARE	3	
OSTRANDER	DELAWARE	2	
POWELL	DELAWARE	6	13
SANDUSKY	ERIE	2	
VERMILION	ERIE	4	6
AMANDA	FAIRFIELD	1	
BALTIMORE	FAIRFIELD	1	
PICKERINGTON	FAIRFIELD	1	
REYNOLDSBURG	FAIRFIELD	3	6
COLUMBUS	FRANKLIN	46	
DUBLIN	FRANKLIN	5	
GAHANNA	FRANKLIN	6	
GALENA	FRANKLIN	2	
GRANVILLE	FRANKLIN	1	
GROVEPORT	FRANKLIN	1	
HILLIARD	FRANKLIN	4	
WESTERVILLE	FRANKLIN	12	
WORTHINGTON	FRANKLIN	4	81
CHARDON	GEAUGA	1	
BEAVERCREEK	GREENE	1	
FAIRBORN	GREENE	1	
XENIA	GREENE	3	5
CAMBRIDGE	GUERNSEY	1	
CINCINNATI	HAMILTON	7	
LOVELAND	HAMILTON	1	
NEW HAVEN	HAMILTON	1	
NORWOOD	HAMILTON	1	10
FINDLAY	HANCOCK	2	
FOREST	HARDIN	1	
MOUNT VICTORY	HARDIN	1	2
TIPPECANOE	HARRISON	2	
LOGAN	HOCKING	2	
BIG PRAIRIE	HOLMES	1	
GLENMONT	HOLMES	1	
HOLMESVILLE	HOLMES	1	
KILLBUCK	HOLMES	1	
LAKEVILLE	HOLMES	1	
NASHVILLE	HOLMES	1	
WINESBURG	HOLMES	1	7

GREENWICH	HURON	7	
MONROEVILLE	HURON	2	
NEW LONDON	HURON	3	
NORWALK	HURON	5	
WILLARD	HURON	3	20
TORONTO	JEFFERSON	1	
CENTERBURG	KNOX	4	
DANVILLE	KNOX	2	
FREDERICKTOWN	KNOX	8	
HOWARD	KNOX	1	
MOUNT VERNON	KNOX	2	
MT VERNON	KNOX	4	21
MADISON VILLAGE	LAKE	1	
MENTOR	LAKE	1	
PERRY	LAKE	1	
WILLOUGHBY	LAKE	2	5
HANOVERTON	LICKING	1	
JOHNSTOWN	LICKING	1	
PATASKALA	LICKING	2	4
AMHERST	LORAIN	3	
AVON	LORAIN	2	
AVON LAKE	LORAIN	2	
ELYRIA	LORAIN	1	
GRAFTON	LORAIN	1	
LAGRANGE	LORAIN	1	
LORAIN	LORAIN	9	
NORTH RIDGEVILLE	LORAIN	5	
SHEFFIELD	LORAIN	1	
SHEFFIELD LAKE	LORAIN	1	
SHEFFIELD VILLAGE	LORAIN	1	
WEST LIBERTY	LORAIN	1	28
MAUMEE	LUCAS	1	
OREGON	LUCAS	1	
SYLVANIA	LUCAS	1	
TOLEDO	LUCAS	7	
WATERVILLE	LUCAS	1	11
MT STERLING	MADISON	1	
PLAIN CITY	MADISON	1	
SOUTH VIENNA	MADISON	1	3
BOARDMAN	MAHONING	2	
CANFIELD	MAHONING	2	
LAKE MILTON	MAHONING	1	
STRUTHERS	MAHONING	1	
YOUNGSTOWN	MAHONING	3	9
MARION	MARION	2	
NEW BLOOMINGTON	MARION	1	3
BRUNSWICK	MEDINA	8	
LITCHFIELD	MEDINA	2	
LODI	MEDINA	3	
MEDINA	MEDINA	12	
SPENCER	MEDINA	1	
WADSWORTH	MEDINA	3	29

HUBER HEIGHTS	MIAMI	1	
TROY	MIAMI	1	2
DAYTON	MONTOMERY	6	
MIAMISBURG	MONTOMERY	1	
RIVERSIDE	MONTOMERY	1	
TROTWOOD	MONTOMERY	1	9
CARDINGTON	MORROW	1	
EDISON	MORROW	1	
MARENGO	MORROW	1	
MOUNT GILEAD	MORROW	1	
MT GILEAD	MORROW	4	8
ZANESVILLE	MUSKINGUM	3	
MARBLEHEAD	OTTAWA	1	
PORT CLINTON	OTTAWA	1	2
ATWATER	PORTAGE	1	
KENT	PORTAGE	4	
MOGADORE	PORTAGE	2	
RAVENNA	PORTAGE	1	
SILVER LAKE	PORTAGE	1	
STREETSBORO	PORTAGE	1	10
CONCORD	PUTNAM	1	
FT JENNINGS	PUTNAM	2	3
BELLVILLE	RICHLAND	18	
BUTLER	RICHLAND	7	
LEXINGTON	RICHLAND	45	
LUCAS	RICHLAND	6	
MANSFIELD	RICHLAND	197	
ONTARIO	RICHLAND	1	
PLYMOUTH	RICHLAND	3	
SHELBY	RICHLAND	39	
SHILOH	RICHLAND	7	323
FREMONT	SANDUSKY	1	
BLOOMVILLE	SENECA	4	
FOSTORIA	SENECA	1	
TIFFIN	SENECA	2	7
ALLIANCE	STARK	2	
BEACH CITY	STARK	1	
BREWSTER	STARK	2	
CANAL FULTON	STARK	5	
CANTON	STARK	11	
HARTVILLE	STARK	2	
MASSILLON	STARK	4	
N CANTON	STARK	8	
N LAWRENCE	STARK	2	
NAVARRE	STARK	11	
PARIS	STARK	1	
UNIONTOWN	STARK	2	50
AKRON	SUMMIT	20	
BARBERTON	SUMMIT	3	
CUYAHOGA FALLS	SUMMIT	5	
HIRAM	SUMMIT	1	
HUDSON	SUMMIT	1	

MUNROE FALLS	SUMMIT	2	
NORTHFIELD	SUMMIT	1	
NORTON	SUMMIT	2	
STOW	SUMMIT	5	
TALLMADGE	SUMMIT	1	41
NEWTON FALLS	TRUMBLE	1	
WARREN	TRUMBLE	2	3
DENNISON	TUSCARAWAS	1	
DOVER	TUSCARAWAS	3	
NEW PHILADELPHIA	TUSCARAWAS	1	
TUSCARAWAS	TUSCARAWAS	1	6
MARYSVILLE	UNION	1	
LEBANON	WARREN	1	
SPRINGBORO	WARREN	2	3
LOWELL	WASHINGTON	1	
BURBANK	WAYNE	1	
CLINTON	WAYNE	1	
DOYLESTOWN	WAYNE	1	
ORRVILLE	WAYNE	2	
SHREVE	WAYNE	2	
WEST SALEM	WAYNE	2	
WOOSTER	WAYNE	4	13
BOWLING GREEN	WOOD	5	
HASKINS	WOOD	1	
PERRYSBURG	WOOD	1	7
UPPER SANDUSKY	WYANDOT	3	