

Air Education and Training Command

Sustaining the Combat Capability of America's Air Force



U.S. AIR FORCE

Occupational Survey Report AFSC 3E5X1 Engineering

Lt Sabrina Ocampo
May 04

Integrity - Service - Excellence

Report Documentation Page

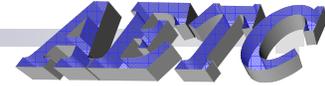
*Form Approved
OMB No. 0704-0188*

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1. REPORT DATE 00 MAY 2004	2. REPORT TYPE N/A	3. DATES COVERED -	
4. TITLE AND SUBTITLE Occupational Survey Report AFSC 3E5X1 Engineering		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Force Occupational Measurement Squadron Randolph AFB, TX		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited			
13. SUPPLEMENTARY NOTES See also ADM001756 Occupational Analysis Products: Engineering - AFSC 3E5X1., The original document contains color images.			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	UU
			18. NUMBER OF PAGES 47
			19a. NAME OF RESPONSIBLE PERSON



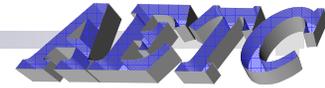
Overview



- AFOMS Mission
- Survey background
- Survey results



Mission

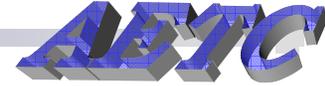


**Provide occupational programs to optimize
United States Air Force
personnel and training decisions**





The Team



Air Education and Training Command
Director of Operations
Brigadier General Gilmary M. Hostage III

First
Sergeant
MSgt Horace Carter

AFOMS
Commander
Lt Col John Gardner

Operations
Officer
Capt Dale Myers

Occupational
Analysis Flight
Mr John Kamrath

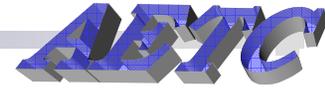
Professional
Development Flight
CMSgt Michael O'Neill

Test Development
Flight
Mr Dwayne Hafer

Resources Flight
Capt Melissa Ablinger



Key Products



Analysis

- Occupational Surveys—3-year shelf life for enlisted AFSCs
- SKT Extracts/Field Surveys—to support every test development team

Guides & Handbooks

- 480K Promotion Study Guides distributed
- Airman Handbook



Promotion Tests

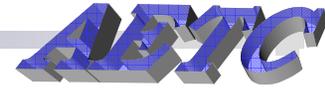
- 320 Promotion Tests
- 600+ SMEs Hosted

Resources

- Corporate Database
- Software Design



Applications of Our Data

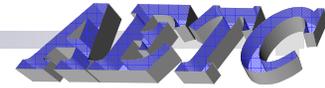


- **Promotion Testing:**
 - Validation of every test question
- **Training:**
 - What...When...Where...To Whom...How??
- **Personnel:**
 - Merge or separate occupations
- **Special Use...Research:**
 - Retention...Force Development....
- **Deployment /Home Station:**
 - Who...What...When...Where??





Test Development Mission



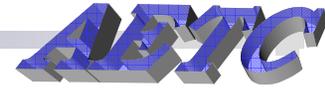
Develop, print, ship all enlisted promotion tests and manage worldwide network of test control officers

... One-stop shopping for promotion tests

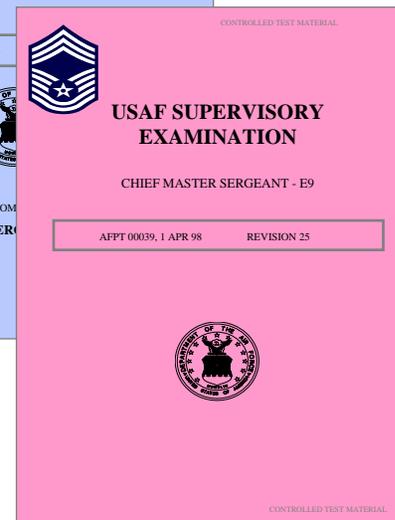
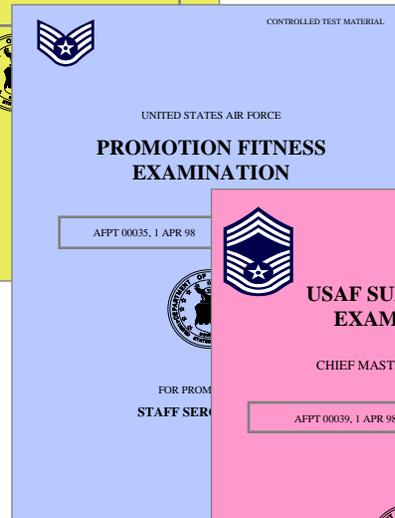
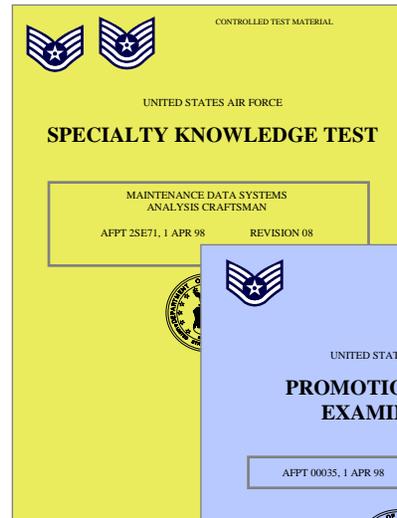




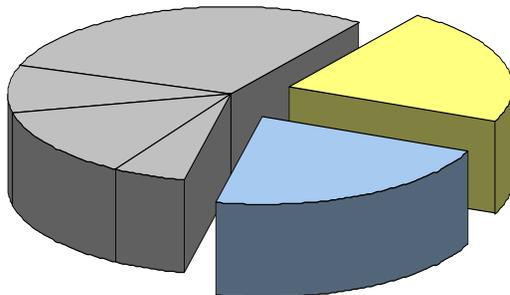
Promotion Testing: Cornerstone of WAPS



Valid, Fair, and Credible Tests



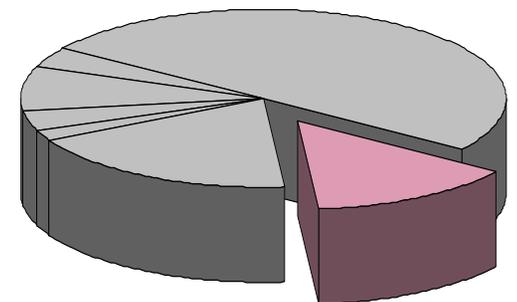
**Weighted Airman
Promotion System**



SKT

PFE

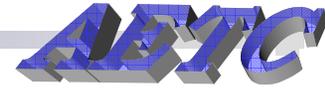
**Senior NCO
Promotion Program**



USAFFE



Professional Development Mission



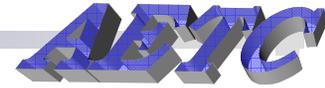
Improve Air Force capabilities by providing high quality reference materials

...Produce enlisted promotion study guides and the Airman Handbook





Professional Development: Shaping the Enlisted Corps

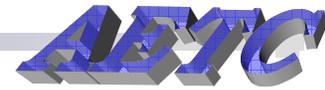


- **Identify common knowledge for all NCOs**
- **Provide single source reference for promotion testing & professional development**





Resources Mission



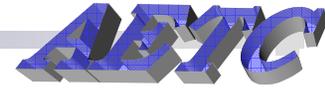
Provide financial / resource stewardship and automation support for the AFOMS mission

...Keep the store open





Occupational Analysis Mission



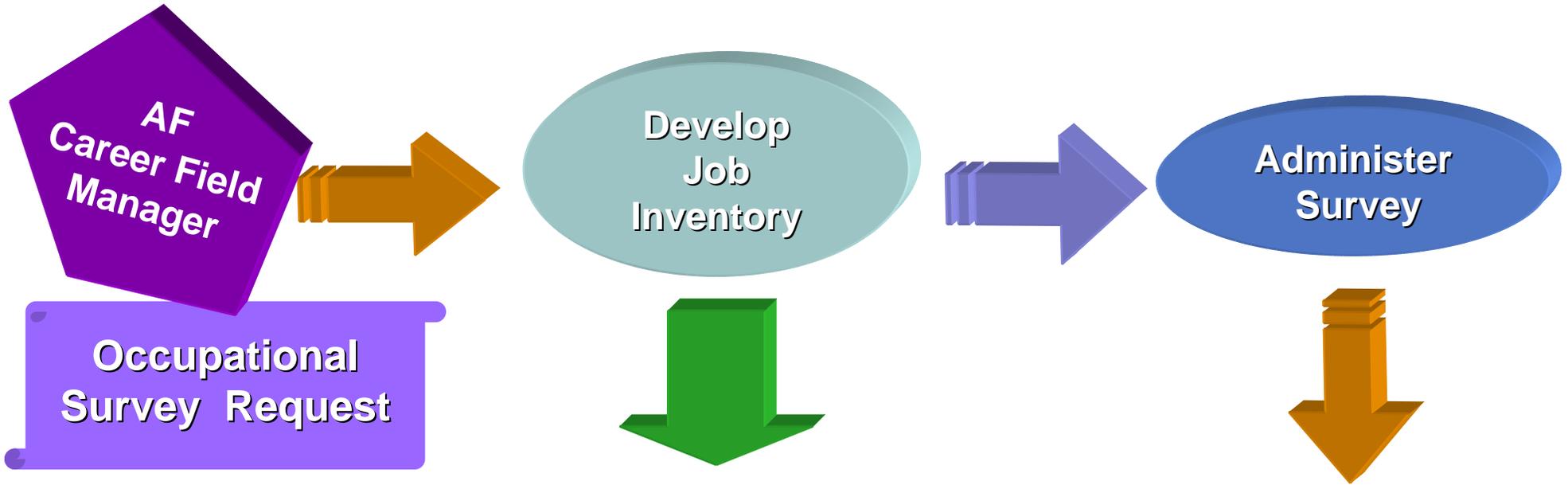
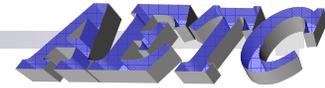
Facilitate decision-making by providing objective information about Air Force occupations

...Find out everything you ever wanted to know about what people do in their Air Force jobs



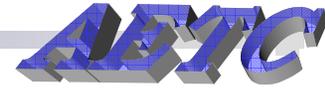


Occupational Analysis Process (1)

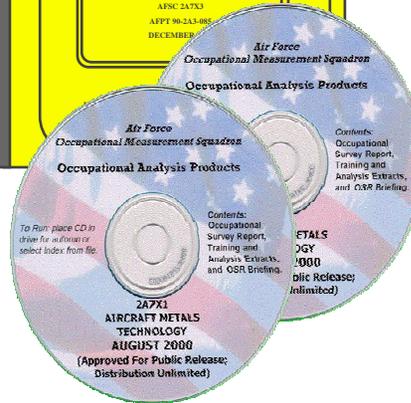
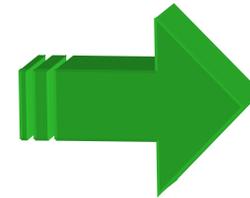
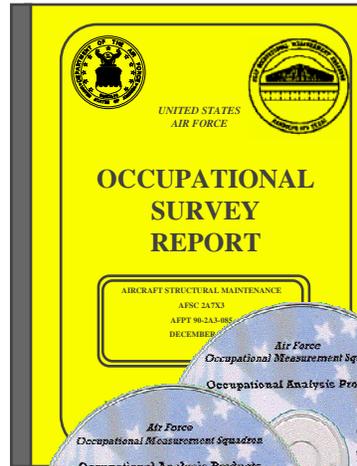
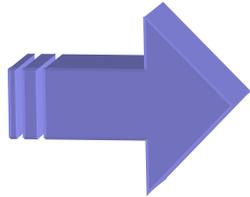
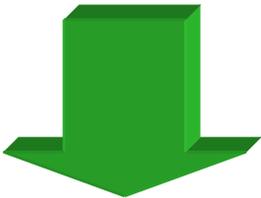




Occupational Analysis Process (2)

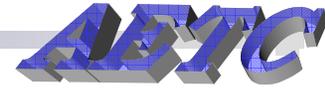


Analyze Data





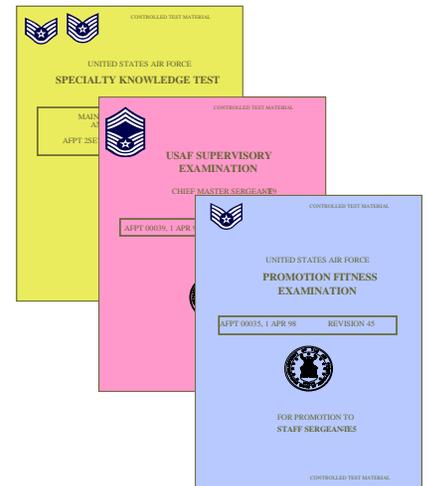
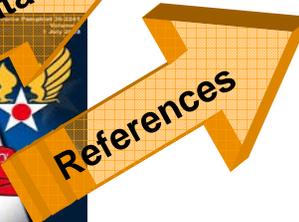
Program Integration



Occupational Analysis



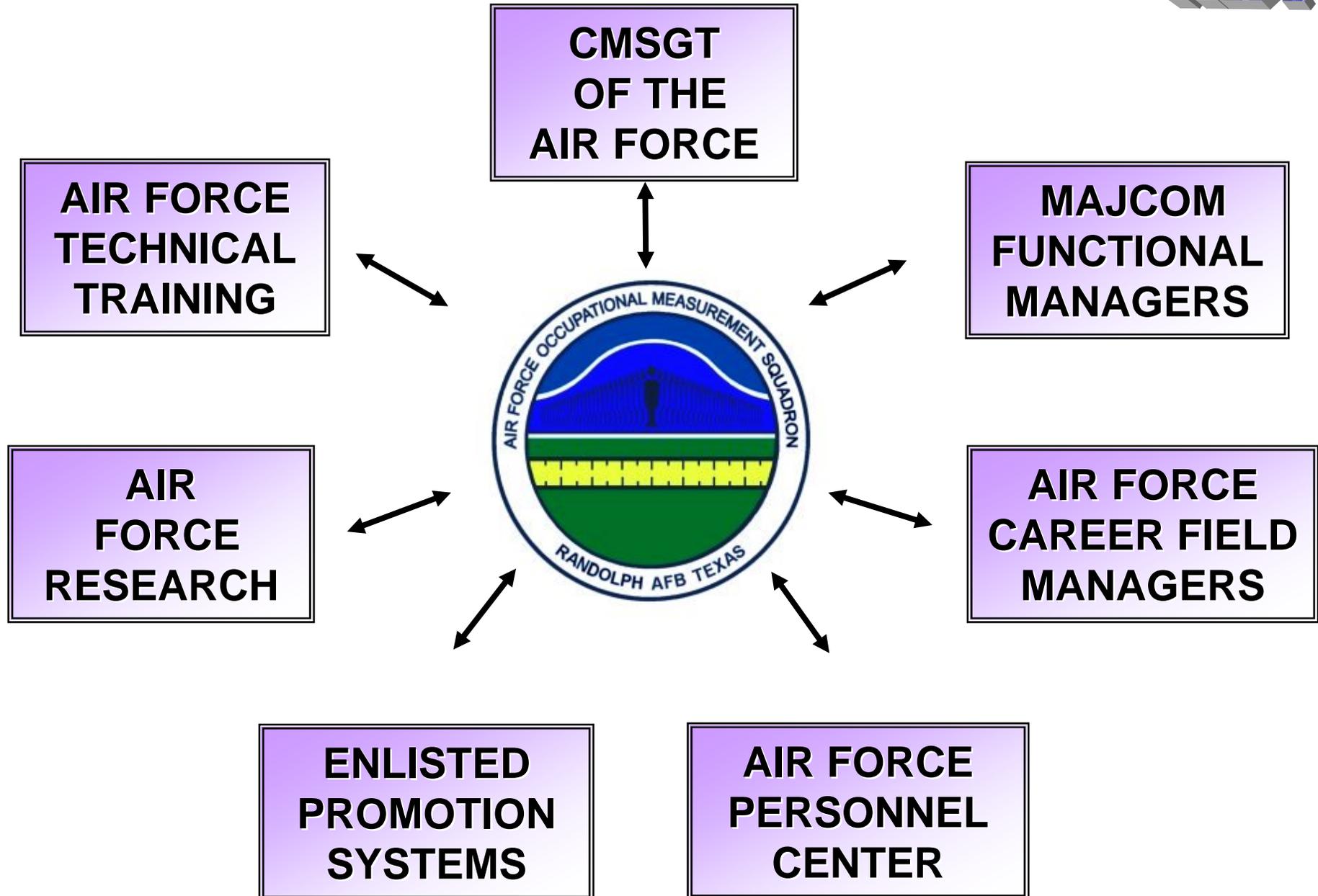
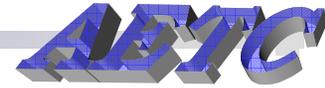
Study Guides



Promotion Tests



“Sphere” of Influence





Occupational Measurement...



AETC



...Combat-Ready Air Force

**Our success rooted in our objective orientation –
“No dog in the fight”**



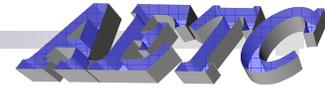
AETC



U.S. AIR FORCE



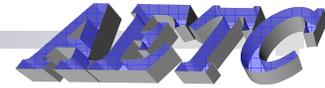
Executive Summary



- Heterogeneous job structure with four clusters and one independent job (IJ) identified
- Technical tasks are performed at the 3-, 5, and 7-skill levels; however, 7- and 9-skill levels are performing management and supervisory activities
- Career ladder documents are supported by survey data
- Job satisfaction indicators are good



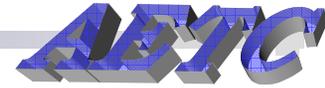
Work Performed



- Develop engineering designs, use CAD software
- Prepare cost estimates, performance work statements, and specifications for existing and proposed facilities
- Perform drafting duties, Interpret rough engineering sketches to produce working drawings using manual and CAD techniques
- Perform GIS duties, create and populate codes, link graphical data for civil engineering projects, maintain equipment
- Perform surveying and contract management duties
- Perform standardized and expedient test on soils, asphalts, and concrete



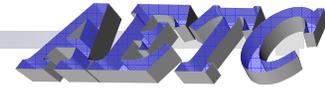
Current Training Program



- AFSC-awarding course
 - 366 TRS, Fort Leonard Wood MO
 - J3ABP3E531-001, Air Force Unique, AB Course
 - 17 days, 3 CCAF credit hours
 - J5AQA3E531, ITRO, Engineering Apprentice Course
 - 54 days, 15 CCAF credit hours



Survey Background

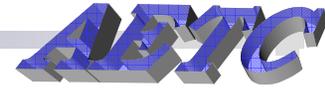


- Last Occupational Survey Report (OSR):
November 1999
- Current survey developed: May - July 2003
 - Fort Leonard Wood MO
 - Nellis AFB NV
 - 820th RHS/CE
 - 99TH CES
 - Hurlburt Field FL
 - Eglin AFB FL





Survey Background

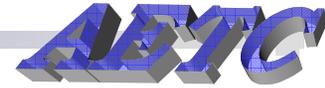


- Survey initiated to obtain data to:
 - Evaluate current classification and training documents
 - Support promotion test development
- Current survey data collected – Nov 03 – Feb 04
- Components surveyed:
 - Active Duty: 3-, 5-, 7- and 9-Skill Levels
 - Guard: 5-, 7- and 9-Skill Levels
 - Reserve: 5-, 7- and 9-Skill Levels





Survey Sample Characteristics



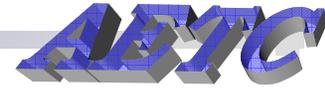
	<u>AD</u>	<u>AFRC</u>	<u>ANG</u>	<u>Total</u>
Assigned*	942	216	426	1,584
Mailed Out	806	168	375	1,349
Sample	497	36	109	642
Usable Returns	61%	22%	29%	48%

- Average time in career field for AD: 7 yrs 5 mos
- Average TAFMS for AD: 9 yrs 3 mos
- Percent of AD in first enlistment: 27%

* Assigned as of Oct 03



Command Representation



Command	Assigned %*	Sample %
---------	-------------	----------



AETC

7

7

AMC

9

13

ACC

16

19

AFMC

3

3

USAFE

6

8

PACAF

11

15

AFSOC

1

3

AFRC

14

6

ANG

27

17

OTHER

2

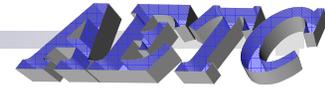
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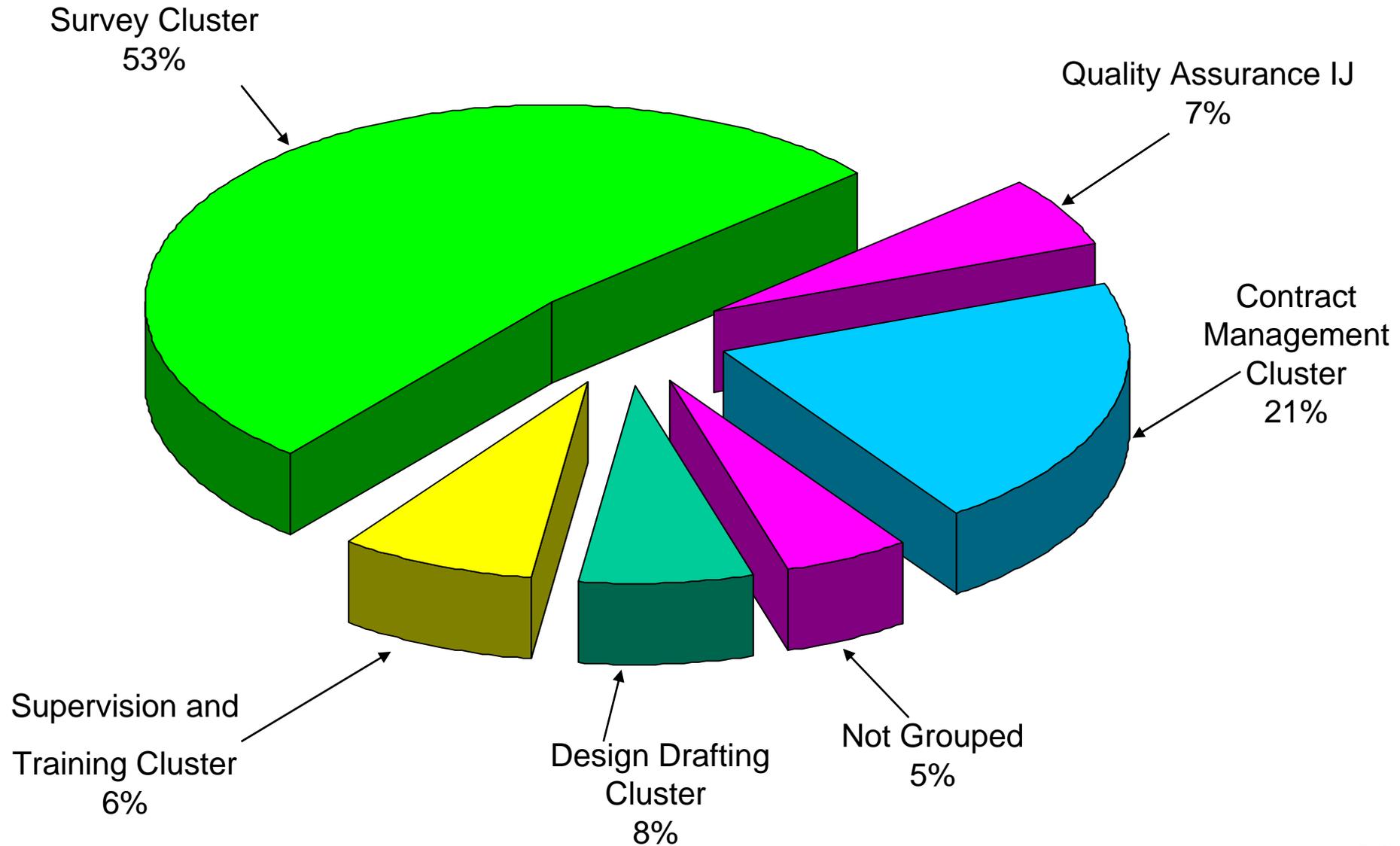
* Assigned as of Oct 03



Job Structure

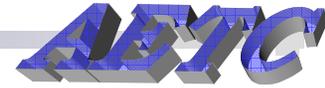


Sample size: 642





Survey Cluster (N=338)

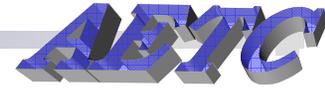


- Plot drawings from CAD systems
- Set up or tear down surveying equipment
- Maintain computer drawing files
- Update as-built drawings in CAD systems
- Communicate using standardized surveying hand signals or radio
- Collect and download electronic data into computer-aided design (CAD)

GIS Job	Mobility and Contingency Job
Survey Job	Mobility Flight Supt Job
NCOIC Job	Force Protection Engineering Job



Contract Management Cluster (N=137)



- Conduct daily on-site visits
- Conduct contract final acceptance inspections
- Inspect construction projects for compliance with plans and specifications
- Identify contractor performance discrepancies
- Coordinate construction with appropriate agencies
- Inspect construction activities for compliance with safety regulations or procedures
- Document construction activities

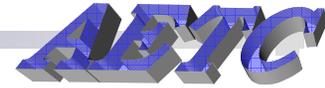
Contract Plans Management Job

Contract Management Job

Construction Inspection Job



Design Drafting Cluster (N=53)



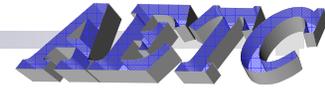
- Plot drawings from CAD systems
- Update as-built drawings in CAD systems
- Maintain computer drawing files
- Reproduce drawings
- Set up or tear down surveying equipment
- Collect and download electronic data into computer-aided design (CAD) systems
- Develop modifications from existing drawings in CAD systems

CADD Systems Job

Manual Drafting Job



Supervision and Training Cluster (N=37)



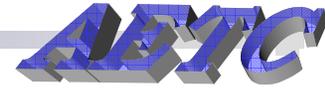
- Counsel subordinates concerning personal matters
- Conduct on-the-job training (OJT)
- Determine or establish work assignments or priorities
- Counsel trainees on training progress
- Evaluate progress of trainees
- Write recommendations for awards or decorations
- Brief personnel concerning training programs or matters
- Write or endorse military performance reports
- Determine training requirements

Supervision Job

Training Job



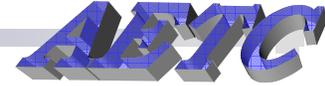
Independent Job



- Quality Assurance IJ (N=48)
 - Conduct service contract inspections
 - Document service contract activities
 - Request contract services
 - Analyze provisions of service contracts
 - Complete surveillance or random sampling documents for service contracts
 - Evaluate quality assurance surveillance plans (QASPs) for service contracts
 - Develop performance work statements (PWSs)
 - Review PWSs
 - Prepare QASPs for service contracts



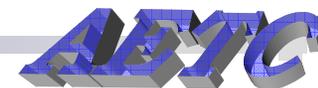
Career Ladder Progression



- 3- and 5-skill-level personnel
 - Work in the most technical jobs in the career field
 - Spend most of their time on technical tasks
- 7- and 9-skill-level personnel
 - Continue to perform some technical tasks
 - However, take on supervisory, training, and administrative duties



Career Ladder Progression Percent Time Spent on Duties

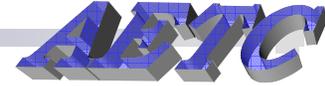


DUTIES	DAFSC	DAFSC	DAFSC	DAFSC
	3E531 (N=118)	3E551 (N=292)	3E571 (N=210)	3E591 (N=22)
A PERFORMING SURVEYING ACTIVITIES	25	16	11	8
B PERFORMING GEOGRAPHIC INFORMATION SYSTEM (GIS) ACTIVITIES	8	5	2	*
C PERFORMING MANUAL DRAFTING ACTIVITIES	6	5	3	1
D PERFORMING COMPUTER-AIDED DESIGN (CAD) SYSTEM ACTIVITIES	30	17	9	5
E PERFORMING ENGINEERING DESIGN OR PROJECT PLANNING ACTIVITIES	3	6	9	6
F PERFORMING CONTRACT MANAGEMENT OR SIMPLIFIED ACQUISITION OF BASE ENGINEER REQUIREMENTS (SABER) ACTIVITIES	7	16	18	12
G PERFORMING MAINTENANCE ENGINEERING OR SERVICE CONTRACT ACTIVITIES	1	6	2	*
H PERFORMING MATERIAL TESTING	1	1	2	2
I PERFORMING GROUND RADAR EVALUATIONS	*	*	*	*
J PERFORMING ENGINEERING-SPECIFIC MOBILITY AND CONTINGENCY ACTIVITIES	8	7	8	8
K PERFORMING GENERAL MOBILITY AND CONTINGENCY ACTIVITIES	4	5	6	9
L PERFORMING GENERAL ADMINISTRATIVE ACTIVITIES	2	3	3	7
M PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	3	3	4
N PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1	5	8	8
O PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1	6	16	30

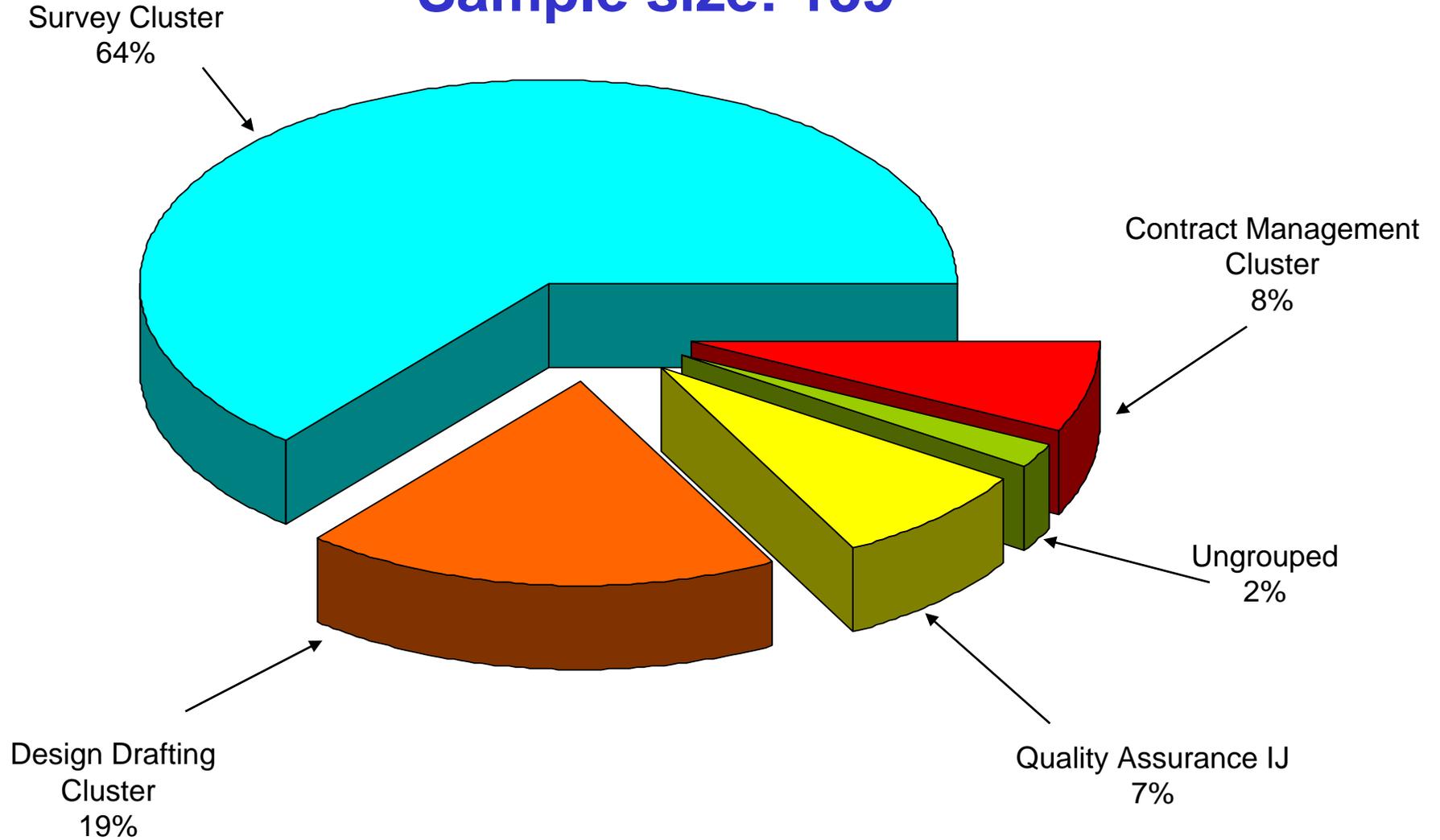
* Less than 1%



First-Enlistment Job Structure

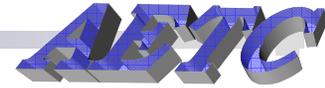


Sample size: 139





First-Enlistment Personnel Representative Tasks



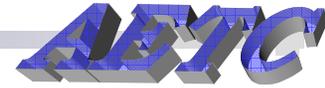
Percent
Members
Performing
(N=139)

Tasks

Plot drawings from CAD systems	81
Update as-built drawings in CAD systems	70
Maintain computer drawing files	69
Set up or tear down surveying equipment	68
Collect and download electronic data into computer-aided design systems	62
Complete architectural plans in CAD systems	58
Create CAD drawing file directories	57
Perform topographic surveys	56
Scan drawings into CAD systems	55



First-Enlistment Personnel Equipment & Systems



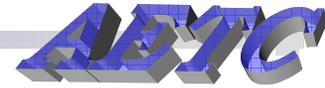
Percent
Members
Performing
(N=139)

Equipment or Systems

Auto CAD	96
Calculators	82
Scales, Architectural	71
Auto Level	71
GPS Equipment	68
Scales, Engineering	68
Geodimeter	66
Geodimeter Total Station	65
Tape Measures	65
Prisms	60
Total Station with Data Recorder	57
Plotters	57



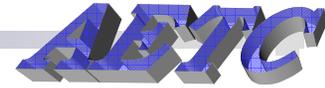
Specialty Training Standard (STS) Analysis



- **STS matches to AD and Deployed population by TAFMS/DAFSC**
- **STS is generally well supported by survey data**
 - AD: 11 of 93 performance coded STS items were unsupported
 - Deployed: 5 of 93 performance coded STS items were unsupported
 - Unsupported items concentrated in paragraphs 13 and 15
- **Some STS items may need proficiency code review**
 - 11 matched items were uncoded but performed by more than 20% of members in both AD and Deployed population
- **AD: 96 technical tasks performed by 20% or more of members were not referenced to STS**
- **Deployed: 87 tasks performed by 20% or more members but not referenced to STS**
 - These should be reviewed for possible inclusion in STS



Unsupported STS Elements



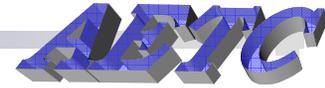
Examples

UNIT	STS ELEMENT	PROF CODE	PERCENT MEMBERS PERFORMING		TNG EMP*
			1st ENL (N=139)	3-LVL (N=117)	
13.1.10 Task	Compute and layout horizontal curve data A0012. Compute horizontal-curve data	2b	15	18	3.76
13.1.11 Task	Compute and layout vertical curve data A0016. Compute vertical curves	2b	6	7	3.86
13.1.21 Task	Perform field tests on an auto level A0024. Field adjust and test surveying equipment	2b	12	11	4.24
15.1 Task	Perform fundamental drafting practices C0062. Manually develop modifications from existing drawings C0065. Manually draw charts C0067. Manually draw electrical plans	2b	3 3 3	7 4 4	1.97 1.45 2.55
15.3 Task	Hand letter drawings C0057. Hand letter drawings	2b	3	4	2.00

*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)



Proficiency Codes Requiring Review



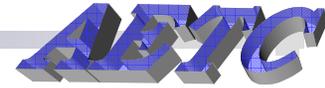
Examples

UNIT	STS ELEMENT	PROF CODE	PERCENT MEMBERS PERFORMING		TNG EMP*
			1st ENL (N=139)	3-LVL (N=117)	
16.1. Task	CAD Fundamentals D0089. Develop modifications from existing drawings in CAD systems D0098. Measure irregular lines in CAD systems, such as broken lines or curves D0106. Revise BCPs in CAD systems	--	54 44 24	40 29 22	6.21 5.10 5.62
18.10. Task	Review projects specifications E0142. Review project specifications	--	5	23	1.55
20.11. Task	Mobile Aircraft Arresting Systems (MASS) procedures J0302. Lay out aircraft arresting systems	--	17	23	4.90
21.1.5.4	Mobility Bags K0345. Inspect mobility bags or kits	--	9	23	2.41

*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)



Tasks not Referenced to STS



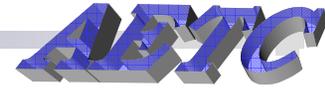
Examples

TASK		PERCENT MEMBERS PERFORMING		TNG EMP'
		1ST ENL (N=139)	3-LVL (N=117)	
A0004	Communicate using standardized surveying hand signals or radio	50	38	4.17
A0002	Collect reconnaissance information on sites to be surveyed	38	34	4.10
A0034	Perform as-built surveys	37	29	5.03
J0295	Develop bare base plans	22	29	6.10
M0406	Inventory equipment, tools, or supplies	26	32	2.62

*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)



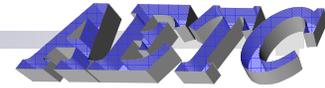
Job Satisfaction Indicators (Across AD, ANG, AFRC)



	<u>AD</u> (N=497)	<u>ANG</u> (N=109)	<u>AFRC</u> (N=36)
JOB INTERESTING	75	87	78
TALENTS WELL UTILIZED	83	86	91
TRAINING WELL UTILIZED	78	81	86
SENSE OF ACCOMPLISHMENT	72	73	72
REENLISTMENT INTENTIONS	59	70	67



Retention Dimensions First-Term Airmen (N=136)

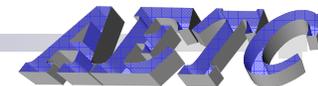


PLANNING TO REENLIST (N=61)	PERCENT	
	RESPONDING	AVERAGE
Off-duty edu or training opportunities	77	2.63
Military-related edu & training opportunities	73	2.56
Pay and allowances	63	2.45
Medical or dental care for family members	62	2.53
Job security	59	2.64
PLANNING TO SEPARATE (N=75)		
Military lifestyle	65	2.27
Pay and Allowance	45	2.12
Civilian job opportunities	39	2.40
Number/duration of TDYs or deployments	36	2.41
Location of present assignment	35	2.50

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



Retention Dimensions Second-Term Airmen (N=135)



PLANNING TO REENLIST (N=85)	PERCENT	AVERAGE
	RESPONDING	
Retirement benefits	68	2.58
Pay and allowances	64	2.53
Medical or dental care for family members	60	2.76
Off-duty education and training opportunities	59	2.78
Military lifestyle	57	2.19

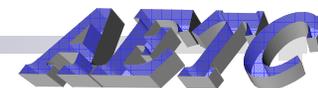
PLANNING TO SEPARATE (N=50)

Civilian job opportunities	54	2.44
Recognition of efforts	50	2.20
Leadership at unit level	42	2.33
Number/duration of TDYs or deployments	40	2.60
Military lifestyle	40	2.25

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



Retention Dimensions Career Airmen (N=166)

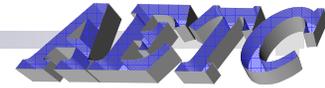


	PERCENT RESPONDING	AVERAGE
PLANNING TO REENLIST (N=149)		
Retirement benefits	72	2.68
Job security	56	2.49
Pay and allowances	54	2.46
Military lifestyle	52	2.37
Off-duty edu or training opportunities	50	2.45
PLANNING TO SEPARATE (N=17)		
Military lifestyle	58	2.50
Civilian job opportunities	41	2.57
Esprit de corps/morale	41	2.29
Additional duties	36	2.00
Spouse's career	35	2.67

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence

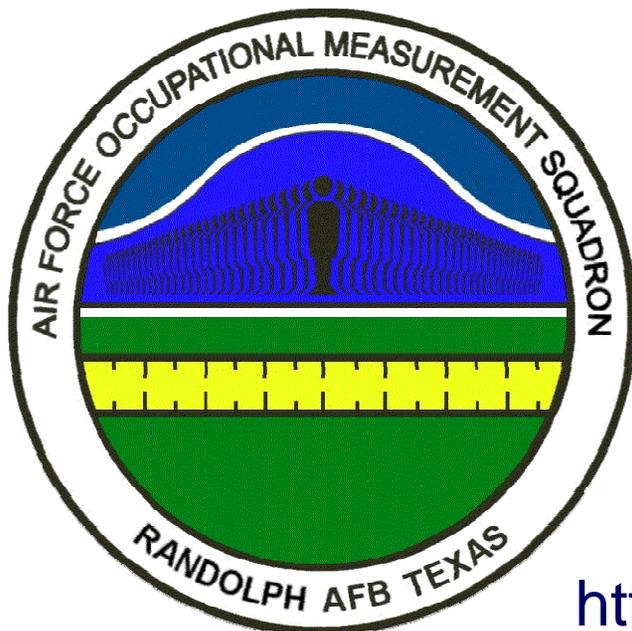


Summary of Results



- Career ladder progression typical
 - Technical at 3-skill level progressing to more managerial at 9-skill level
- Career ladder documents generally well supported by survey data
- Job satisfaction indicators
 - Higher for ANG and AFRC members than AD
 - AD job satisfaction is great

Questions?



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