

# Air Education and Training Command

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*Sustaining the Combat Capability of America's Air Force*



## Occupational Survey Report AFSC 2A0X1A Avionics Test Station and Components (Avionics Systems, F-15)

**U.S. AIR FORCE**

Mr Leroy Sanchez  
21 April 2004

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*Integrity - Service - Excellence*

# Report Documentation Page

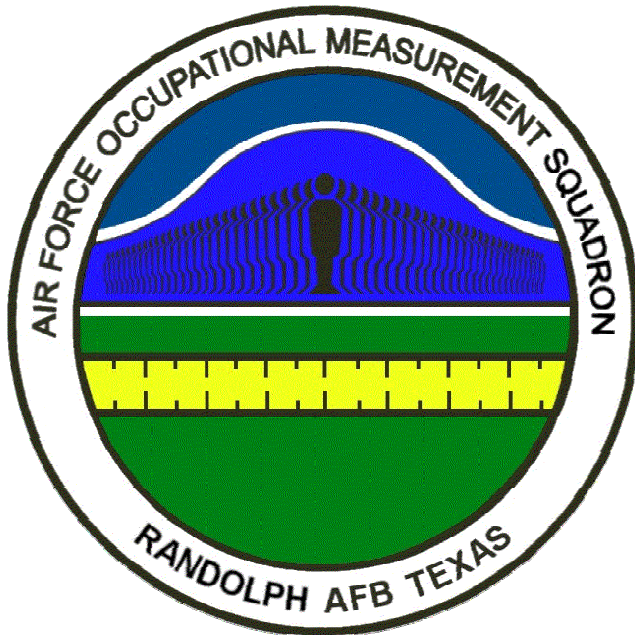
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			19a. NAME OF RESPONSIBLE PERSON

# Air Force Occupational Measurement SQ

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**AFOMS/OA**

1550 Fifth Street East

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DSN 487-6811

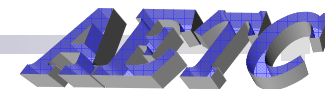
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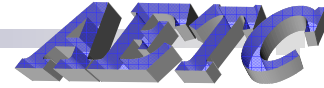
# Overview



- Survey background
- Survey results
- Implications



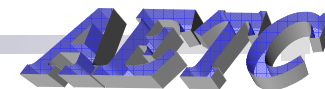
# Executive Summary



- Nine independent jobs (IJs) identified through job structure analysis
- Technical tasks are performed throughout all skill levels with 7-levels performing more management and supervisory tasks
- STS generally supported by survey data but requires review for addition of technical tasks
- Job satisfaction indicators are good



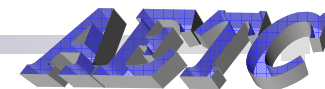
# Work Performed



- Analyzes performance and isolates malfunctions of avionics test equipment, support equipment, and aircraft components
- Inspects, maintains, programs, and calibrates avionics test equipment, support equipment, and aircraft components
- Manages integrated avionics activities and comply with directives, policies, and procedures
- Plans and organizes integrated avionics activities



# Current Training Program

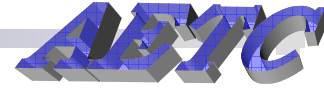


- AFSC-awarding course
  - 365 TRS, Sheppard AFB TX
  - J3ABR2A031A 003 - *F-15 Avionic Test Station and Aircraft Component Apprenticeship*, 74 training days
  - 28 Semester hours for CCAF
  - Programmed TPR

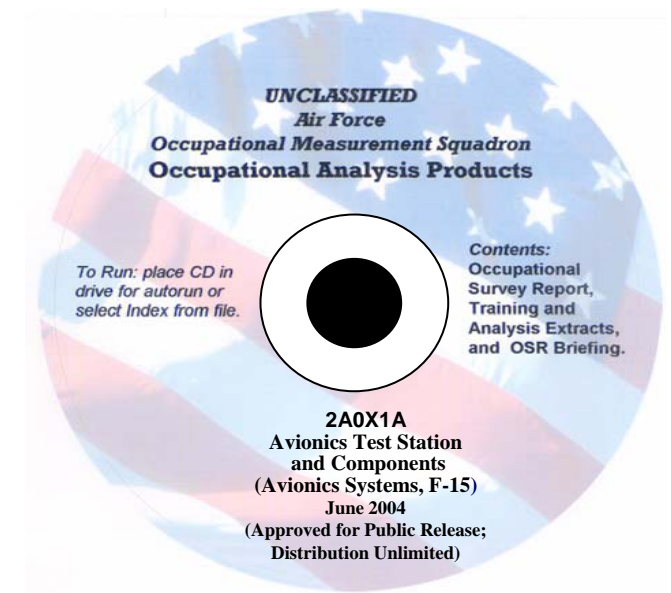
FY04: 117 students	<u>Programmed Elimination Rate</u>
FY05: 120 students	FY04: 4.0%
	FY05: 4.0%



# Survey Background

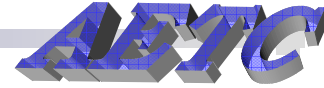


- Last occupational survey report (OSR) – December 1999
- Current survey developed – Mar - Jun 03
- Sheppard AFB (6)
- Nellis AFB (5)
- Tyndall AFB (9)
- Jacksonville ANG (4)
- Langley AFB (4)
- Seymour-Johnson AFB (3)





# Survey Background

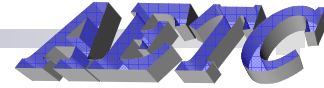


- **Survey initiated to obtain data to:**
  - Evaluate current classification and training documents
  - Support promotion test development
- **Current survey data collected – Sep 03 - Jan 04**
- **Components surveyed:**
  - Active Duty and ANG  
3-, 5-, and 7-Skill Levels





# Survey Sample Characteristics



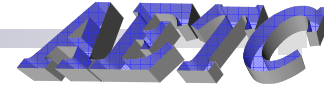
	<u>AD</u>	<u>ANG</u>
Assigned*	654	112
Mailed Out	629	85
Sample	280	39
Usable Returns	45%	46%

- Average time in career field for AD: 6 years 9 months
- Average TAFMS for AD: 7 years 3 months
- Percent of AD in first-enlistment: 43%

\* As of Sep 2003



# Skill & Paygrade Characteristics



## Skill-Level Distribution

	Assigned*	Sample
2A031A	31%	27%
2A051A	45%	47%
2A071A	24%	26%

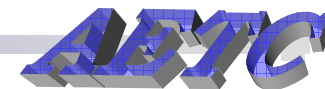
## Paygrade Distribution

	Assigned*	Sample
E-2-E-3	23%	24%
E-4	19%	18%
E-5	29%	33%
E-6	20%	18%
E-7	9%	7%

\*As of Sep 2003



# Command Representation



Command	Assigned %*	Sample %
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ACC

42

38

PACAF

16

17

AETC

13

17

USAFE

11

11

AFMC

3

5

ANG

15

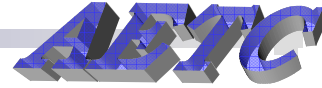
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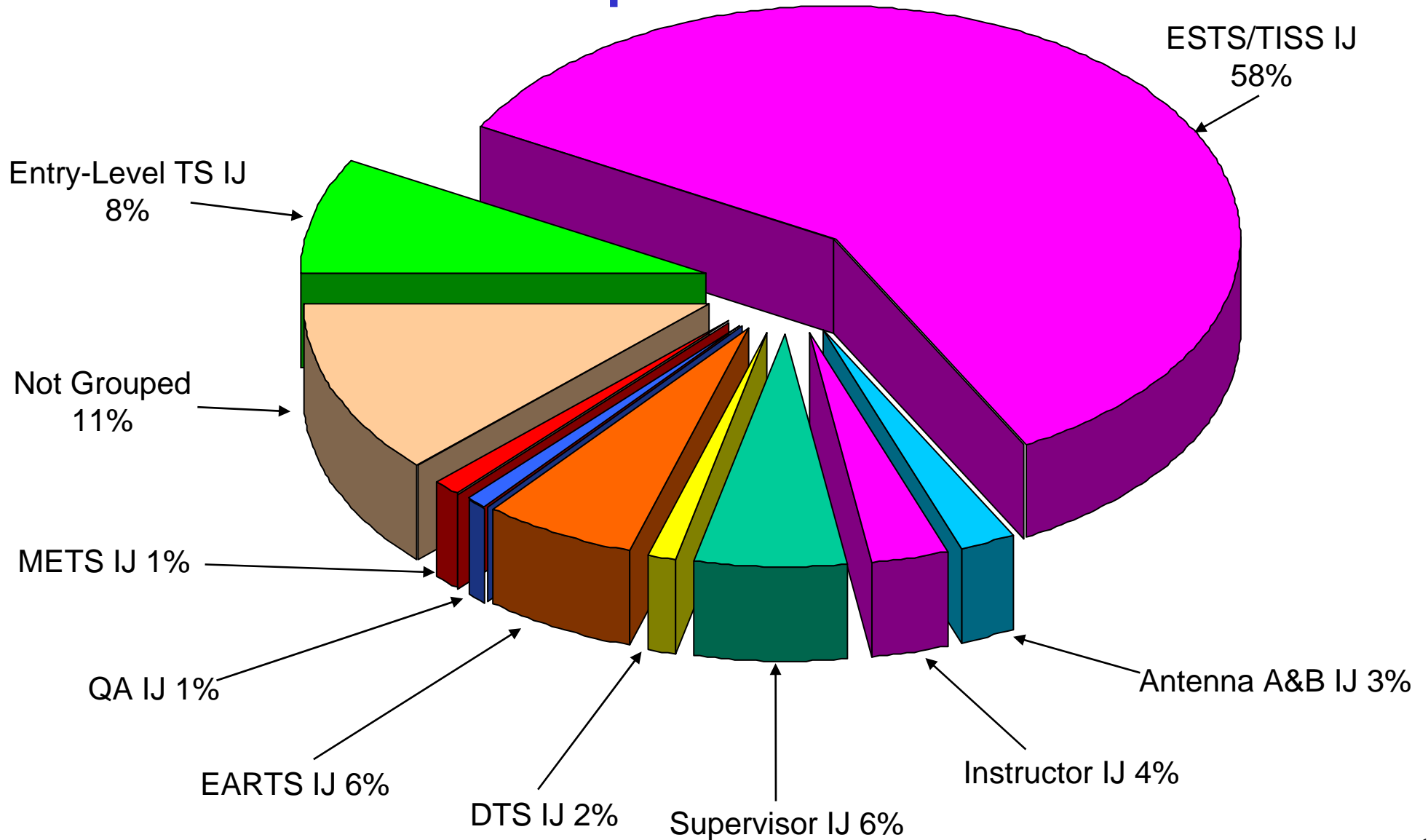
\* Assigned as of Sep 03



# Job Structure



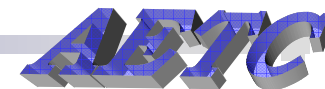
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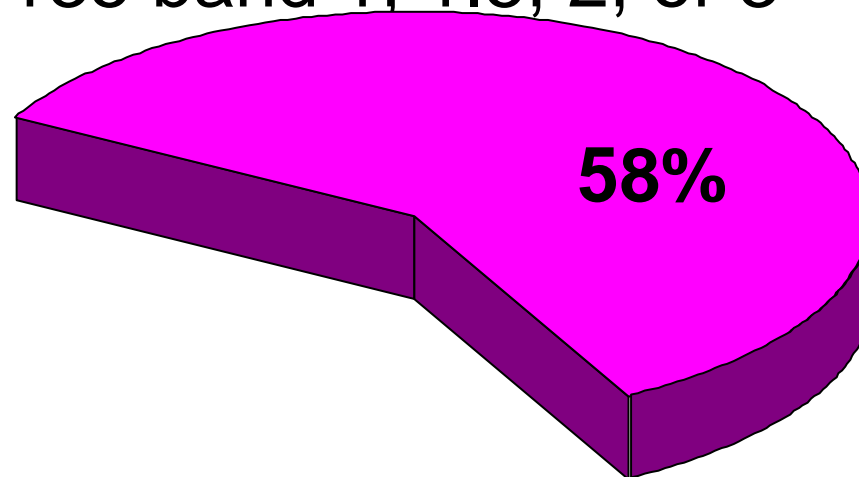


# ESTS/TISS IJ

(N=186)



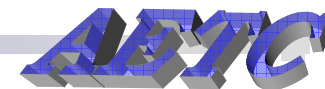
- Operationally check navigation control indicators (NCIs) on ESTS
- Operationally check radar data processors (081s) on ESTS
- Repair 022s on ESTS
- Perform confidence (CNF) tests or internal self tests (ISTs) on TISS
- Operationally check ALQ-135 band 1, 1.5, 2, or 3 RF amplifiers on TISS



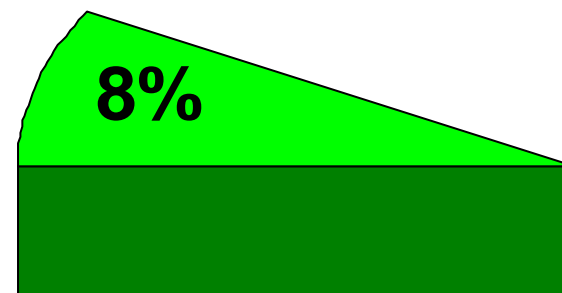


# Entry-Level Test Stations IJ

(N=24)



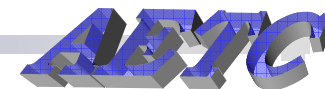
- Perform electrostatic discharge (ESD) procedures
- Perform functional checks of LRUs
- Perform periodic inspections of test stations
- Perform corrosion control on test stations, test equipment, or LRUs
- Clean test stations or test station equipment
- Remove or replace LRU minor hardware
- Perform operational assurance/fault isolation (OA/FI) tests



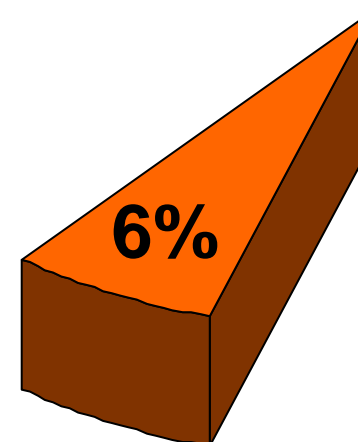


# EARTS IJ

(N=18)



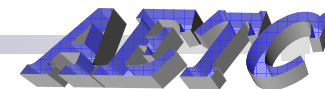
- Operationally check radar transmitters (111s) on EARTS
- Operationally check radar antennas (031s) on EARTS
- Operationally check radar low-voltage power supplies (LVPSs) (610s) on EARTS
- Service antenna mounting fixtures (AMFs) on EARTS
- Troubleshoot 111s on EARTS
- Repair 111s on EARTS
- Repair 031s on EARTS
- Repair 610s on EARTS



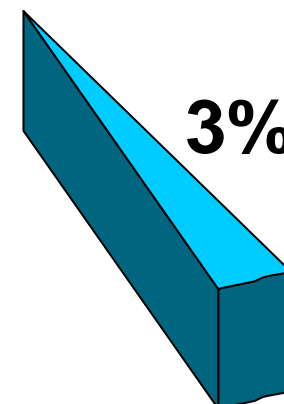


# Antenna A & B IJ

(N=11)



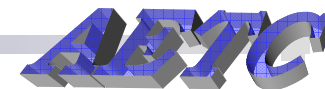
- Perform radio frequency (RF) loss correction chart procedures on antenna A test station
- Perform confidence tests on antenna A test station
- Perform RF loss correction chart procedures on antenna B test station
- Troubleshoot antenna B test station TMFs
- Service antenna B test station transmitter mounting fixtures (TMFs)
- Repair 610s, other than on EARTS
- Service antenna B test station CCPUs with coolant





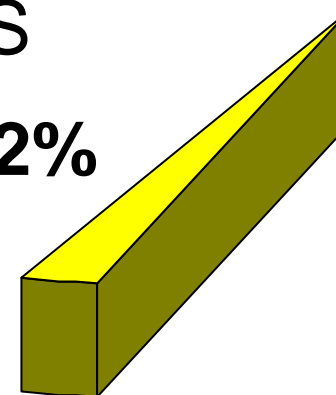
# DTS IJ

(N=6)



- Perform confidence tests on DTS
- Operationally check PSDPs on DTS
- Troubleshoot PACS/CPs on DTS
- Troubleshoot ANMIs on DTS
- Repair MPCDs on DTS
- Troubleshoot IREs on DTS
- Operationally check PACS/CPs on DTS
- Repair PSDPs on DTS

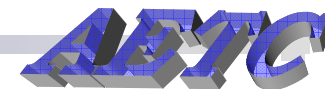
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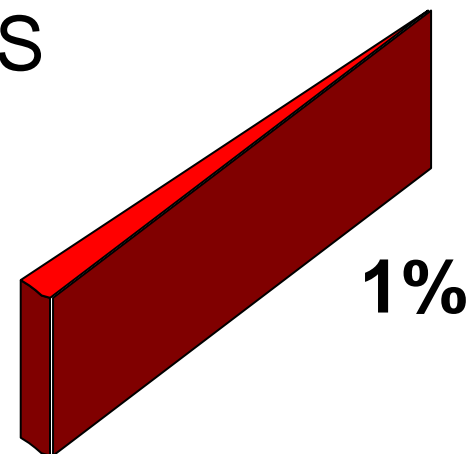


# METS IJ

## (N=3)



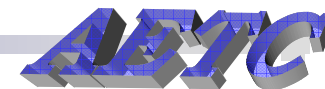
- Troubleshoot UFCPs on METS
- Operationally check AIUs #1 on METS
- Operationally check FCCs on METS
- Operationally check UHF R/Ts on METS
- Operationally check transponder R/Ts on METS
- Operationally check UFCPs on METS
- Troubleshoot UHF R/Ts on METS
- Troubleshoot AIUs #1 on METS



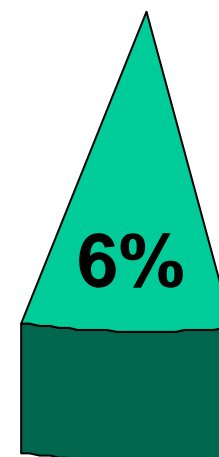


# Supervisor IJ

(N=18)



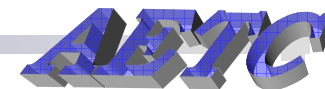
- Write recommendations for awards or decorations
- Determine or establish work assignments or priorities
- Initiate actions required due to substandard performance of personnel
- Counsel subordinates concerning personal matters
- Evaluate personnel for compliance with performance standards
- Conduct supervisory performance feedback sessions



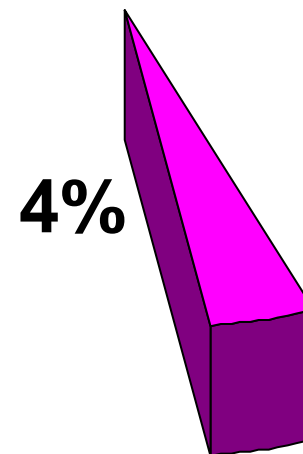


# Instructor IJ

(N=12)

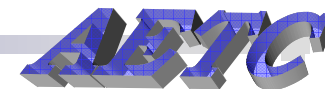


- Evaluate progress of trainees
- Maintain training records or files
- Counsel trainees on training progress
- Brief personnel concerning training programs or matters
- Determine training requirements
- Inspect training materials or aids for operation or suitability
- Administer or score tests

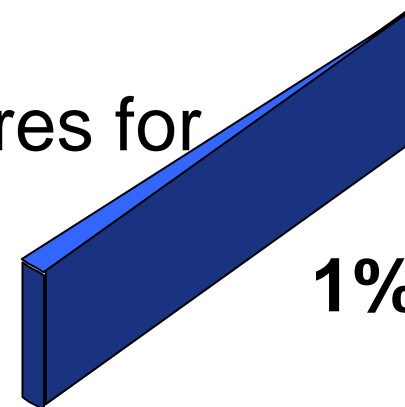




# Quality Assurance (QA) IJ (N=3)

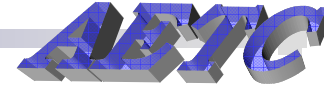


- Evaluate serviceability of equipment, tools, parts, or supplies
- Conduct safety inspections of equipment or facilities
- Evaluate personnel for compliance with performance standards
- Investigate accidents or incidents
- Conduct staff assistance visits, inspections, or audits
- Write inspection reports
- Interpret policies, directives, or procedures for subordinates





# Career Ladder Progression

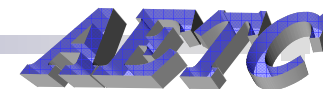


- 3- and 5-skill-level personnel
  - Work in the most technical jobs in the career field
  - Spend most of their time on technical tasks
- 7-skill-level personnel
  - Continue to perform technical tasks
  - However, take on supervisory, training, and administrative duties



# Percent Across Specialty Jobs

## DAFSC

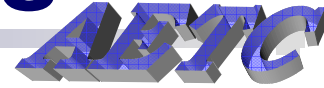


	DAFSC 2A031A (N=86)	DAFSC 2A051A (N=149)	DAFSC 2A071A (N=84)
Entry-Level Test Stations IJ	71	29	0
ESTS/TISS IJ	30	49	21
EARTS IJ	6	78	16
Antenna A/B IJ	18	55	27
DTS IJ	33	50	17
METS IJ	33	67	0
Supervisor IJ	0	0	100
Instructor IJ	0	42	58
Quality Assurance IJ	0	0	100
Not Grouped	23	21	22



# Career Ladder Progression

## Percent Time Spent on Duties



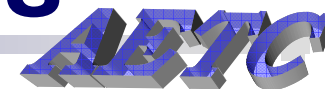
DUTY AREAS	DAFSC 2A031A (N=86)	DAFSC 2A051A (N=149)	DAFSC 2A071A (N=84)
A. General Avionics Maintenance Activities	31	25	15
B. Manual Test Sets, Mock-ups, and Assigned Line Replacement Units (LRUs)	2	2	1
C. Data Link Pod Test Sets	*	*	*
D. Electronic Systems Test Sets and Assigned LRUs	20	18	9
E. F-15 Displays Test Stations and Assigned LRUs	7	5	4
F. F-15 Microwave Test Stations and Assigned LRUs	1	1	*
G. F-15 Antenna A and Antenna B Test Stations, Enhanced Aircraft Radar Test Stations, and Assigned LRUs	8	7	5

\* Indicates less than 1%



# Career Ladder Progression

## Percent Time Spent on Duties



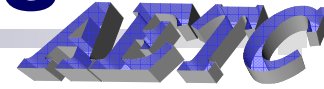
DUTY AREAS	DAFSC 2A031A (N=86)	DAFSC 2A051A (N=149)	DAFSC 2A071A (N=84)
H. Tactical Electronic Warfare System (TEWS) Intermediate Support System (TISS) and Assigned LRUs	14	11	8
I. Mobile Electronic Test Sets and Assigned LRUs	2	3	1
J. F-15 Computer Test Stations and Assigned LRUs	*	1	1
K. F-15 Communication, Navigation, and Identification Test Stations and Assigned LRUs	2	2	3
L. F-15 Indicators and Control Test Stations and Assigned LRUs	*	*	*
M. Maintenance Management Activities	5	6	9

\* Indicates less than 1%



# Career Ladder Progression

## Percent Time Spent on Duties

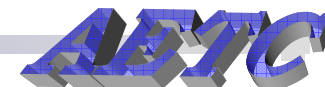


DUTY AREAS	DAFSC 2A031A (N=86)	DAFSC 2A051A (N=149)	DAFSC 2A071A (N=84)
N. General Administrative and Technical Order (TO) System Activities	3	3	6
O. General Supply and Equipment Activities	2	3	5
P. General Aircraft or Cross Utilization Training (CUT) Activities	*	*	*
Q. Mobility and Contingency Activities	1	1	2
R. Training Activities	1	6	8
S. Management and Supervisory Activities	*	5	22

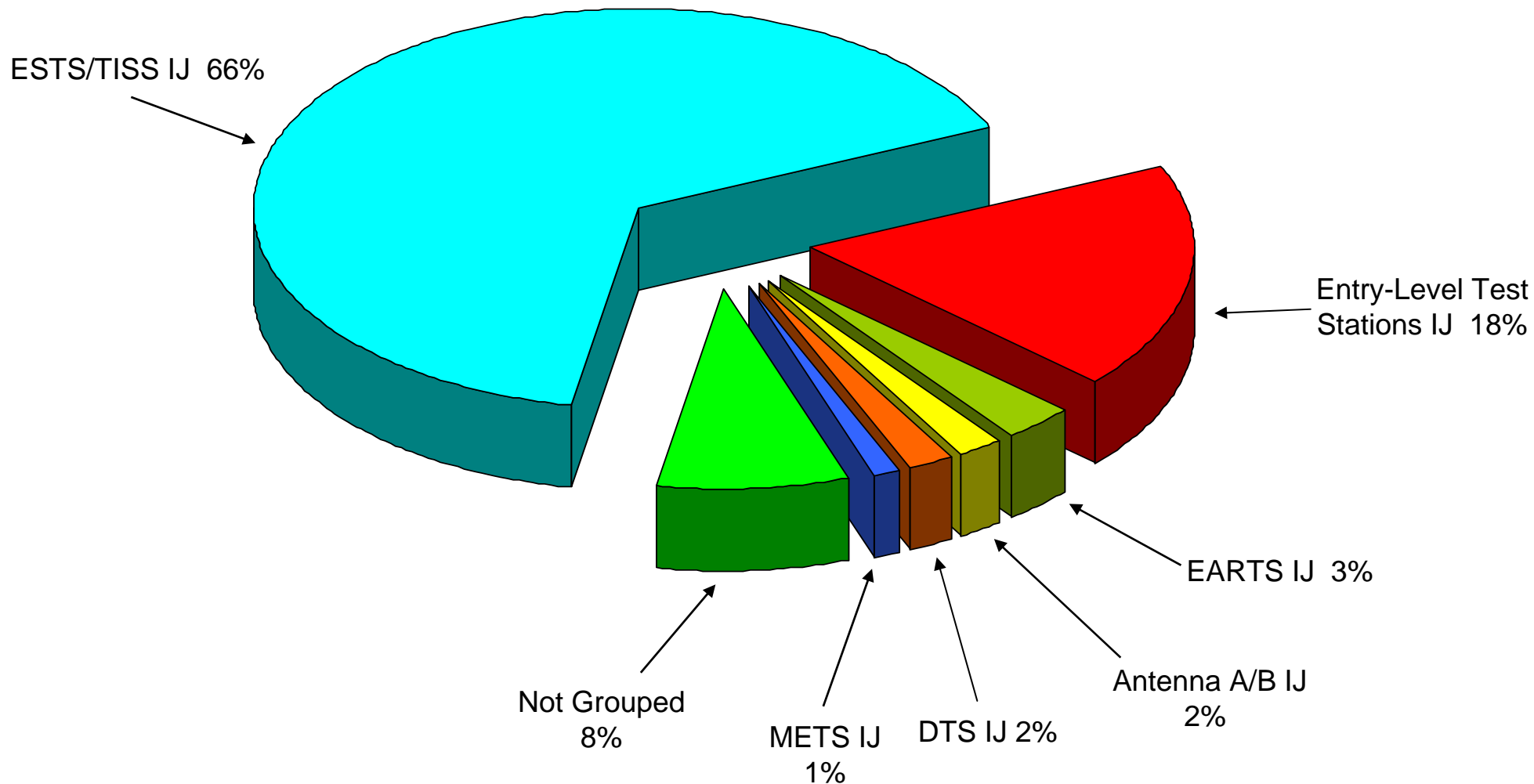
\* Indicates less than 1%



# First-Enlistment Job Structure

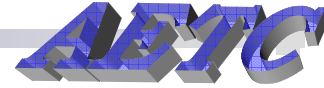


Sample size: 111





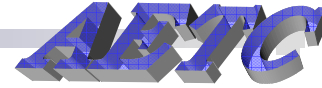
# First-Enlistment Personnel Representative Tasks



TASKS	Percent Members Performing (N=111)
Perform functional checks of LRUs	93
Perform periodic inspections of test stations	91
Perform electrostatic discharge (ESD) procedures	89
Clean test stations or test station equipment	89
Perform operational assurance/fault isolation (OA/FI) test	87
Clean shop facilities	85
Perform corrosion control on test stations, test equipment, or LRUs	84
Remove or replace LRU minor hardware	82
Solder components	74



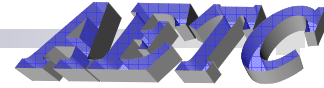
# First-Enlistment Personnel Support Equipment



	Percent Members Performing (N=111)
<u>SUPPORT EQUIPMENT</u>	
Multimeters, Digital	94
Oscilloscopes, Digital	86
Torque Wrenches	85
Analyzers, Spectrum	83
Counters, Frequency	83
Generators, Signals	80
Radio Frequency (RF) Detectors	78
Power Supplies	77
Portable Auto Test Equip Calibrators (PATECs)	75
Soldering Stations, other than PACE	74
Attenuators	73
Meters, Power RF	72



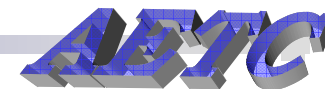
# Specialty Training Standard (STS) Analysis



- STS is generally supported by survey data
- Many STS items require proficiency code review
- Numerous technical tasks performed by 20 percent or more of members were not referenced to STS
  - These should be reviewed for possible inclusion in STS



# Unsupported STS Elements



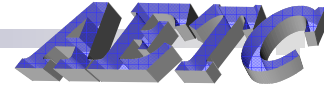
## Examples

Unit	Learning Objective	Prof Code	Percent Members Performing		Tng Emp	Tsk Dif	ATI
			1st Job	1st Enl			
A3.6.2.3. Task	Service Refrgeration G0452 Service antenna B test station coolant conditioning	2b	6	10	4.33	5.75	11
A3.8.3.2 Task	Operational Check (011s) G0420 Operationally check 011s, other than on EARTS	2b	11	16	4.25	6.02	11
A3.12.5.2 Task	Operational Check (022s) F0394 Operationally check 022s on MTS	2b	4	3	2.08	4.79	7

Mean TE Rating is 1.87, Standard Deviation is 1.70 (HIGH TE= 3.57)  
 Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



# Proficiency Codes Requiring Review

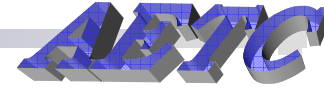


Unit	Learning Objective	Prof Code	Percent Members Performing		Tng Emp	Tsk Dif	ATI
			1st Job	1st Enl			
A2.9.2 Task	Safety Wire A0067 Perform safety wiring	--	57	63	5.75	5.82	18
A2.9.8 Task	Identify Calibration A0026 Identify calibration requirements	--	53	55	5.83	2.92	13
A2.9.9 Task	Calibrate test equipment A0016 Calibrate test equipment	--	40	48	3.83	6.33	12

Mean TE Rating is 1.87, Standard Deviation is 1.70 (HIGH TE= 3.57)  
 Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



# Tasks not Referenced to STS



## Examples

Tasks	Percent Members Performing				
	1st Job	1st Enl	Tng Emp	Tsk Dif	ATI
A0025 Fabricate or rebuild cables	53	65	5.33	5.18	18
A0030 Interpret block diagrams or schematics	47	60	7.08	5.29	18
A0033 Load or reload operational flight programs (OFPs)	55	61	3.92	4.57	18
D0186 Operationally check radar receivers (022s) on ESTS	49	50	5.25	5.10	18
D0216 Operationally check navigation control indicators (NCIs) on ESTS	45	51	4.75	4.42	18

Mean TE Rating is 1.87, Standard Deviation is 1.70 (HIGH TE= 3.57)  
 Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



# Job Satisfaction Indicators (AFSC 2A0X1A vs. Comparative Sample)

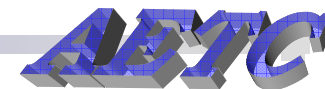


	1-48 Months Comp		49-96 Months Comp		97+ Months Comp	
	2004 (N=111)	Sample* (N=2250)	2004 (N=71)	Sample* (N=1034)	2004 (N=96)	Sample* (N=2311)
Job interesting	<b>52</b>	<b>66</b>	58	67	76	74
Talents well utilized	<b>72</b>	<b>81</b>	83	85	89	89
Training well utilized	90	91	85	90	87	87
Sense of accomplishment	<b>59</b>	<b>69</b>	59	69	78	74
Plan to reenlist	<b>40</b>	<b>54</b>	65	70	<b>80</b>	<b>64</b>

\*Comparative sample of AFSCs surveyed in the last 18 months include: 2A3X1, 2A6X1A/C/D/E, 2A6X1B, 2A6X2, 2A6X3, and 2A6X4



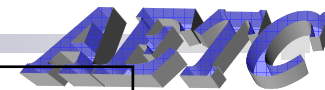
# Job Satisfaction Indicators (Current vs. Previous Study)



	1-48 Months		49-96 Months		97+ Months	
	2004 (N=111)	1999 (N=117)	2004 (N=71)	1999 (N=84)	2004 (N=96)	1999 (N=171)
Job interesting	<b>52</b>	<b>79</b>	<b>58</b>	<b>67</b>	76	73
Talents well utilized	<b>72</b>	<b>85</b>	83	77	89	82
Training well utilized	90	84	85	78	87	76
Sense of accomplishment	<b>59</b>	<b>76</b>	59	65	78	69
Plan to reenlist	40	37	65	61	<b>80</b>	<b>69</b>



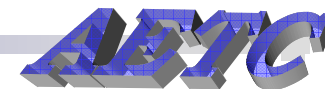
# Job Satisfaction Indicators (AD) (Across Specialty Jobs)



	ESTS/TISS IJ (N=186)	Entry-Lvl IJ (N=24)	EARTS IJ (N=18)	Antenna A/B IJ (N=11)
Job interesting	63	65	56	73
Talents well utilized	79	82	78	90
Training well utilized	96	87	95	100
Sense of accomplishment	67	68	56	82
Plan to reenlist	54	65	72	55



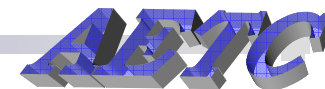
# Job Satisfaction Indicators (AD) (Across Specialty Jobs)



	DTS IJ (N=6)	<b>METS IJ (N=3)</b>	Supervisor IJ (N=18)	Instructor IJ (N=12)	QA IJ (N=3)
Job interesting	67	<b>0</b>	89	50	100
Talents well utilized	83	<b>33</b>	94	75	100
Training well utilized	100	<b>67</b>	89	75	100
Sense of accomplishment	50	<b>33</b>	94	67	67
Plan to reenlist	50	<b>33</b>	61	83	67



# Job Satisfaction Indicators (Across AD and ANG)

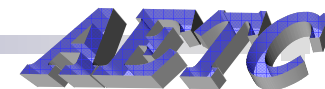


	<u>AD</u> (N=280)	<u>ANG</u> (N=39)
JOB INTERESTING	62	85
TALENTS WELL UTILIZED	81	92
TRAINING WELL UTILIZED	87	94
SENSE OF ACCOMPLISHMENT	66	85



# Retention Dimensions

## First-Term Airmen (N=111)

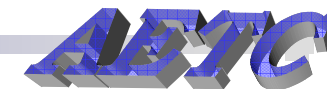


	Percent Responding	Average
<b>Planning to Reenlist (N=44)</b>		
<b>Pay and Allowances</b>	<b>82</b>	<b>2.44</b>
<b>Job Security</b>	<b>73</b>	<b>2.78</b>
<b>Retirement Benefits</b>	<b>64</b>	<b>2.61</b>
Medical/Dental Care for AD Member	56	2.50
Military–Related Edu & Trng Opportunities	56	2.38
<b>Planning to Separate (N=67)</b>		
Military Lifestyle	58	2.46
Pay and Allowances	51	2.32
<b>Civilian Job Opportunities</b>	<b>40</b>	<b>2.41</b>
Recognition of Efforts	33	2.32
Location of Present Assignment	30	2.25

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



# Retention Dimensions Second-Term Airmen (N=70)

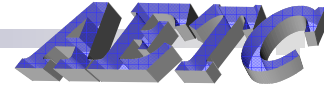


	Percent Responding	Average
<b>Planning to Reenlist (N=46)</b>		
<b>Job Security</b>	<b>70</b>	<b>2.09</b>
<b>Pay and Allowances</b>	<b>70</b>	<b>2.09</b>
<b>Retirement Benefits</b>	<b>63</b>	<b>2.31</b>
Off-duty Education and Training Opportunities	54	2.33
Medical/Dental Care for AD Member	54	2.39
<b>Planning to Separate (N=23)</b>		
Esprit de Corps/Morale	65	2.33
Recognition of Efforts	61	2.43
Pay and Allowances	61	2.36
Military Lifestyle	57	2.54
<b>Civilian Job Opportunities</b>	<b>52</b>	<b>2.67</b>

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



# Retention Dimensions Career Airmen (N=96)

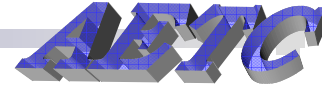


	Percent Responding	Average
<b>Planning to Reenlist (N=77)</b>		
<b>Retirement Benefits</b>	<b>66</b>	<b>2.65</b>
<b>Job Security</b>	<b>56</b>	<b>2.60</b>
<b>Pay and Allowances</b>	<b>52</b>	<b>2.33</b>
Medical/Dental Care for Family Members	51	<b>2.67</b>
Military Lifestyle	44	2.32
<b>Planning to Separate (N=2)</b>		
Retirement Benefits	50	3.00
Medical/Dental Care for AD Member	50	3.00
Additional Duties	50	3.00
Promotion Opportunities	50	3.00
<b>Civilian Job Opportunities</b>	<b>50</b>	<b>2.00</b>

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



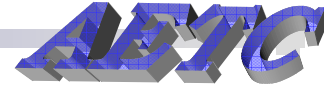
# Summary of Results



- Career ladder progression typical
  - Highly technical at 3-skill level progressing to more managerial at 7-skill level
- Career ladder documents well-supported by survey data
  - STS provides comprehensive coverage of work performed by career ladder
  - Review of some items warranted
- Job satisfaction indicators
  - Job interest, talent utilization, and sense of accomplishment were significantly lower for first-term members compared to previous study.
  - However, second-term and career member TAFMS groups showed similar indicators when compared to previous study



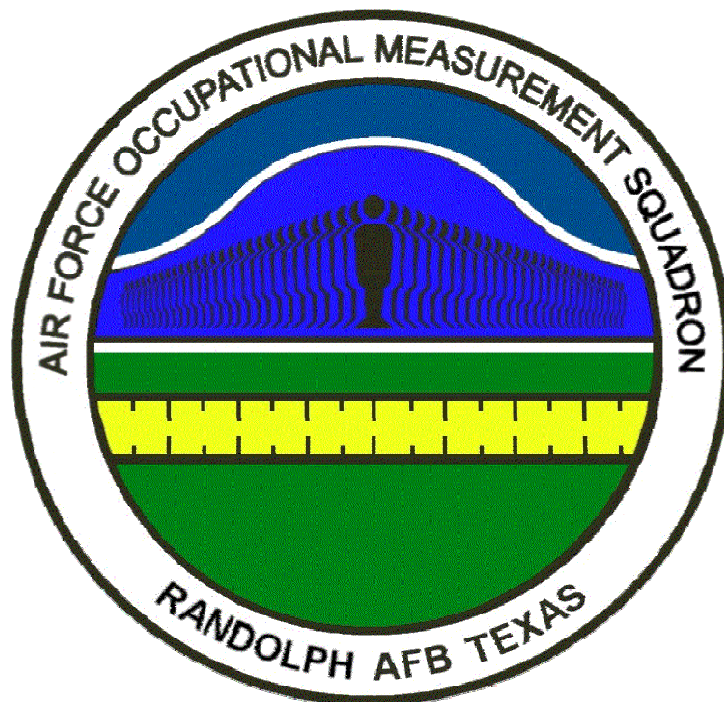
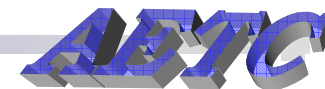
# Way Ahead



- Utilization and Training Workshop (U&TW) –  
Attended 8-11 Mar 04 at Sheppard AFB
  - Successful trip for AFOMS
- OSR Delivery Trip – N/A
- Next SKT rewrite (major) - scheduled for Aug 04



# Questions?



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