

# Air Education and Training Command

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



## Occupational Survey Report AFSC 2M0X1 Missile and Space Systems Electronic Maintenance

**U.S. AIR FORCE**

Lt Joshua Smalley  
Jun 04

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*Integrity - Service - Excellence*

# Report Documentation Page

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# Overview



- Survey background
- Survey results
- Implications and way ahead



# Executive Summary



- Heterogeneous job structure with eleven independent jobs identified
- Career ladder progression typical with emphasis on technical tasks at lower skill levels
- Career ladder documents well supported by survey data
- Job satisfaction indicators are good



# Work Performed



- Maintain, operate, and supervise maintenance on ground and air missiles, unmanned aerial vehicles (UAVs), spacelift boosters, payload guidance and control systems
- Monitor, operate, and supervise operation of consoles, fault display panels, and checkout equipment
- Perform or assist malfunction analysis and repair of missile, UAV, booster, and payload systems and subsystems
- Perform laboratory research and development activities



# Current Training Program



- AFSC-awarding course
  - 532 TRS, Vandenberg AFB CA
  - V3ABR2M031A-005, Missile and Space Systems Electronic Maintenance Apprentices Course, 63 days
    - 21 Semester hours for CCAF
  - Programmed TPR

FY04: 94 students	<u>Programmed Elimination Rate</u>
FY05: 104 students	FY04: 4%
	FY05: 4%



# Current Training Program



- AFSC-awarding course
  - 532 TRS, Vandenberg AFB CA
  - V3ABR2M031B-002, Missile and Space Systems Electronic Maintenance Apprentice (ALCM/ACM) Course, 92 days
    - 30 Semester hours for CCAF
  - Programmed TPR

FY04: 74 students	<u>Programmed Elimination Rate</u>
FY05: 89 students	FY04: 8%
	FY05: 8%



# Survey Background



- Last Occupational Survey Report (OSR) – September 2000
- Current survey developed – Mar - May 2003
  - Vandenberg AFB CA (Tech School) (4)
  - Vandenberg AFB CA (7)
  - FE Warren AFB WY (6)
  - Malmstrom AFB MT (5)
  - Minot AFB ND (5)
  - Cape Canaveral AFS FL (8)
  - Barksdale AFB LA (4)
  - Randolph AFB TX (6)





# Survey Background



- Survey initiated to obtain data to:
  - Evaluate current classification and training documents
  - Support promotion test development
- Current survey data collected - Aug - Dec 2003
- Active Duty
  - 3-, 5-, and 7-Skill Levels





# Survey Sample Characteristics



	<u>AD</u>
Assigned*	1006
Mailed Out	817
Sample	434
Usable Returns	53%

- Average TAFMS: 9 yrs 1 month
- Percent in first enlistment: 33%

\* Assigned as of Aug 03



# Paygrade Characteristics



## Paygrade Distribution



Assigned\* Sample

	Assigned*	Sample
E-1 - E-2 -	3%	1%
E-3 -	27%	21%
E-4 -	16%	16%
E-5 -	25%	32%
E-6 -	17%	17%
E-7 -	12%	13%
E-8 -	**	0%



\* Assigned as of Aug 03

\*\* Indicates less than 1%



# Command Representation



Command	Assigned %*	Sample %
AFSPC	53	55
ACC	35	35
AETC	7	7
AFMC	2	3
PACAF	2	0
OTHER	1	0

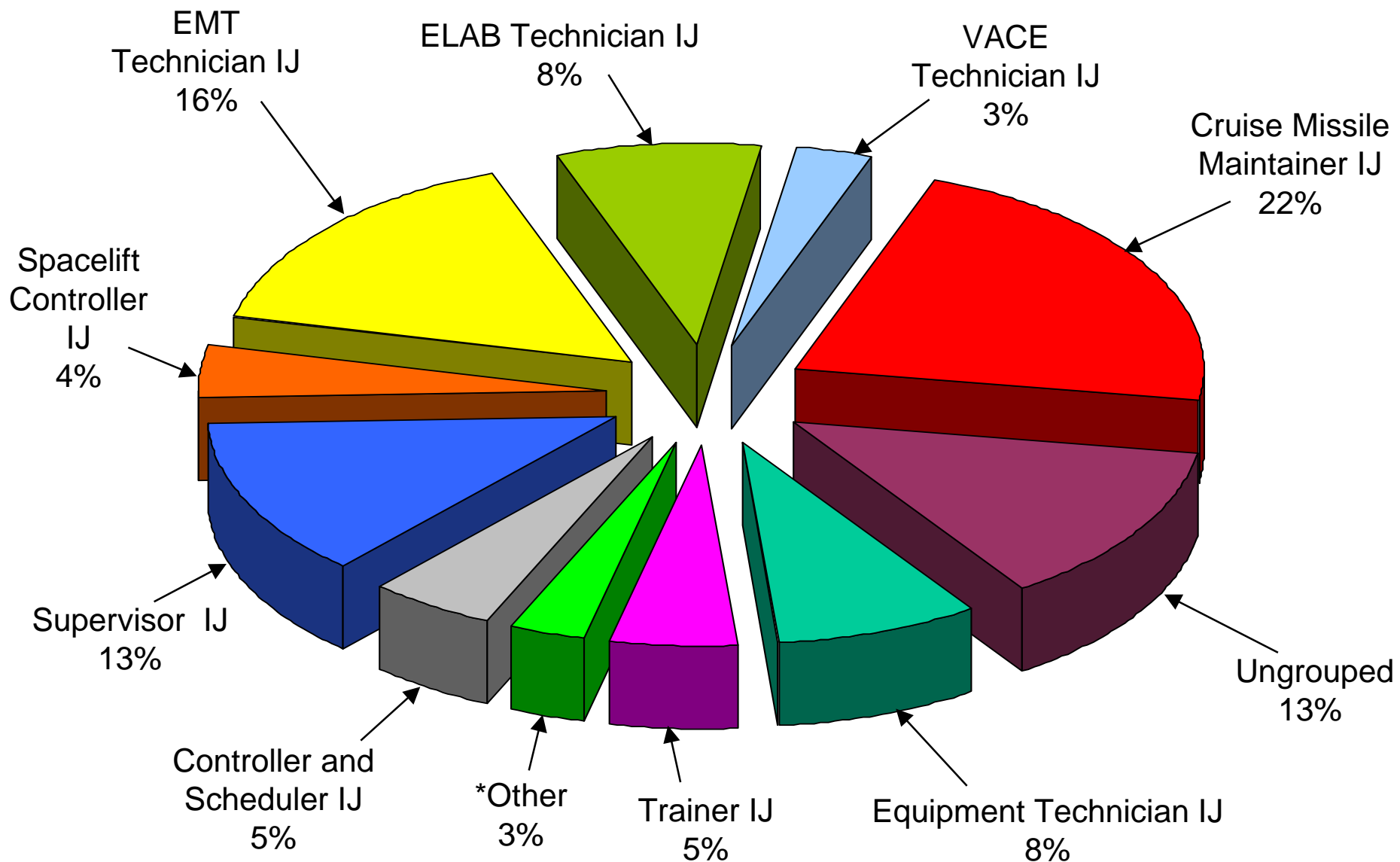
\* Assigned as of Aug 03



# Job Structure



Sample size: 434

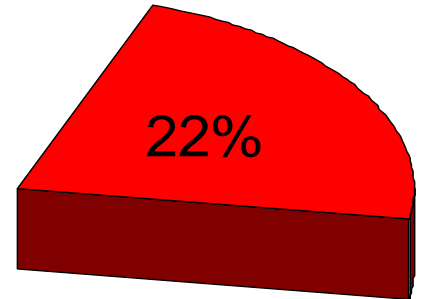




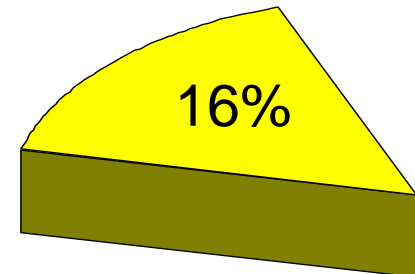
# Independent Jobs



- Cruise Missile Maintainer IJ (N=97)
  - Perform cruise missile safe status checks
  - Perform cruise missile Level 1 checkouts
  - Deploy or stow cruise missile aerosurfaces
  - Remove or install cruise missile INEs



- EMT Technician IJ (N=68)
  - Inspect or maintain security pit vault doors
  - Inspect or maintain LF distribution boxes
  - Perform normal LF entry or exit procedures
  - Inspect or maintain LF storage batteries

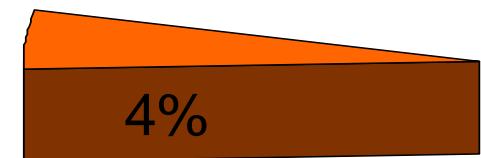
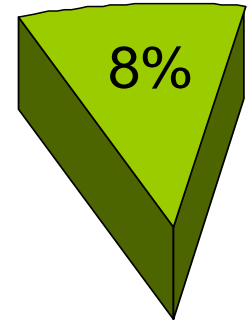




# Independent Jobs



- ELAB Technician IJ (N=36)
  - Troubleshoot electronic components
  - Perform functional checks on electronic drawers
  - Inspect or maintain electronic drawers
  - Clean electronic equipment or test equipment
- Spacelift Controller IJ (N=17)
  - Verify compliance with launch countdown activities
  - Verify compliance with anomaly resolution or troubleshooting procedures
  - Verify compliance with systems tests, such as combined, ground, or integrated
  - Verify compliance with individual acceptance tests



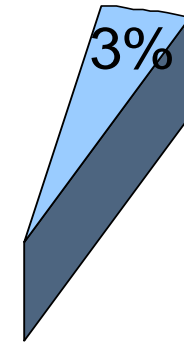


# Independent Jobs



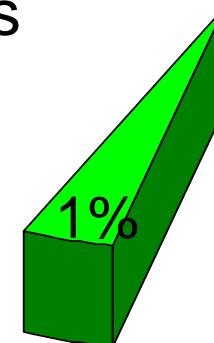
- VACE Technician IJ (N=13)

- Inspect or maintain ESTSs
- Calibrate cooling control units (CCUs)
- Perform functional checks on CCUs
- Perform fault isolations on ESTSs
- Perform ESTS calibration certification tests



- Research and Development Technician IJ (N=5)

- Remove or install cables
- Remove or install experimental support equipment
- Remove or install control system components
- Analyze experimental results

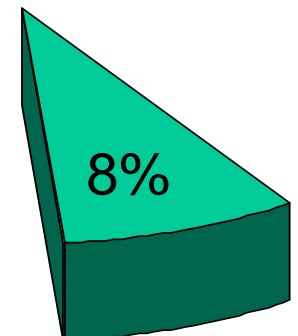
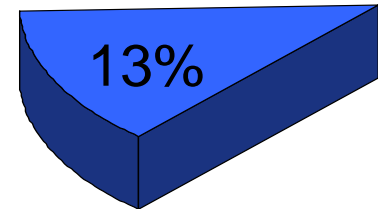




# Independent Jobs



- Supervisor IJ (N=57)
  - Evaluate personnel for compliance with performance standards
  - Write recommendations for awards or decorations
  - Conduct supervisory performance feedback sessions
  - Establish performance standards for subordinates
- Equipment Technician IJ (N=35)
  - Inventory equipment, tools, parts, or supplies
  - Evaluate serviceability of equipment, tools, parts, or supplies
  - Pick up, deliver, or store equipment, tools, parts, or supplies
  - Issue or log turn-ins of equipment, tools, parts, or supplies





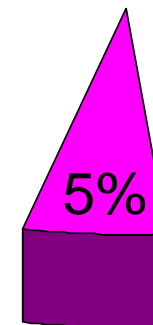
# Independent Jobs



**AETC**

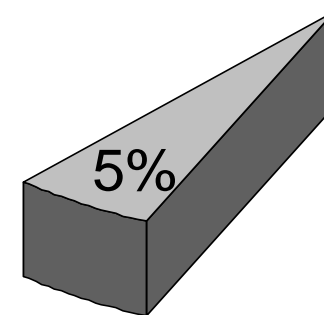
- Trainer IJ (N=23)

- Administer or score tests
- Personalize lesson plans
- Brief personnel concerning training programs or matters
- Conduct formal course classroom training



- Controller and Scheduler IJ (N=22)

- Operate IMMEDIATE systems
- Coordinate or document cannibalization procedures with appropriate agencies
- Maintain reports from LFs or MAFs
- Brief daily operations status

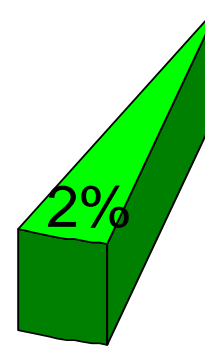




# Independent Jobs



- Quality Assurance Evaluator IJ (N=7)
  - Review TO changes
  - Evaluate serviceability of equipment, tools, parts, or supplies
  - Evaluate personnel for compliance with performance standards
  - Write inspection reports





# 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 2M031A (N=46)	DAFSC 2M031B (N=59)	DAFSC 2M051 (N=136)	DAFSC 2M071 (N=193)
Cruise Missile Maintainer IJ	0	95	23	5
EMT Technician IJ	37	0	24	10
ELAB Technician IJ	17	0	15	4
Spacelift Controller IJ	0	0	1	8
VACE Technician IJ	0	0	5	3
R&D Technician IJ	0	0	0	3
Supervisor IJ	0	0	1	29
Equipment Technician IJ	30	2	7	6
Trainer IJ	0	0	8	6
Controller and Scheduler IJ	0	0	7	6
Quality Assurance Evaluator IJ	0	0	2	3
Not Grouped	16	3	7	17



# Career Ladder Progression

## Percent Time Spent on Duties



DAFSC 2M031A (N=46)	DAFSC 2M031B (N=59)	DAFSC 2M051 (N=136)	DAFSC 2M071 (N=193)
---------------------------	---------------------------	---------------------------	---------------------------

Performing General Missile Maintenance Activities	31	28	25	12
Performing Launch Facility (LF) Maintenance Activities	19	*	8	3
Performing Launch Control Center (LCC) Maintenance Activities	7	*	4	2
Performing Operational Test Launch Activities	1	*	2	1
Performing ICBM Electronic Laboratory (ELAB) Activities	17	*	8	3
Performing Cruise Missile Maintenance Activities	0	53	12	3
Performing Missile Electric or Electronic Support Equipment Maintenance Activities	*	3	4	2
Performing Aircraft Pylon or Rotary Launcher Maintenance Activities	0	11	3	1

\* Less than 1%



# Career Ladder Progression

## Percent Time Spent on Duties



DAFSC 2M031A (N=46)	DAFSC 2M031B (N=59)	DAFSC 2M051 (N=136)	DAFSC 2M071 (N=193)
---------------------------	---------------------------	---------------------------	---------------------------

Performing Spacelift Activities	*	*	1	7
Performing Research and Development (R&D) Activities	*	*	*	1
Performing General Administrative and Technical Order (TO) System Activities	3	1	7	13
Performing General Supply and Equipment Activities	21	1	9	7
Performing Training Activities	*	2	10	14
Performing Management and Supervisory Activities	*	*	6	31

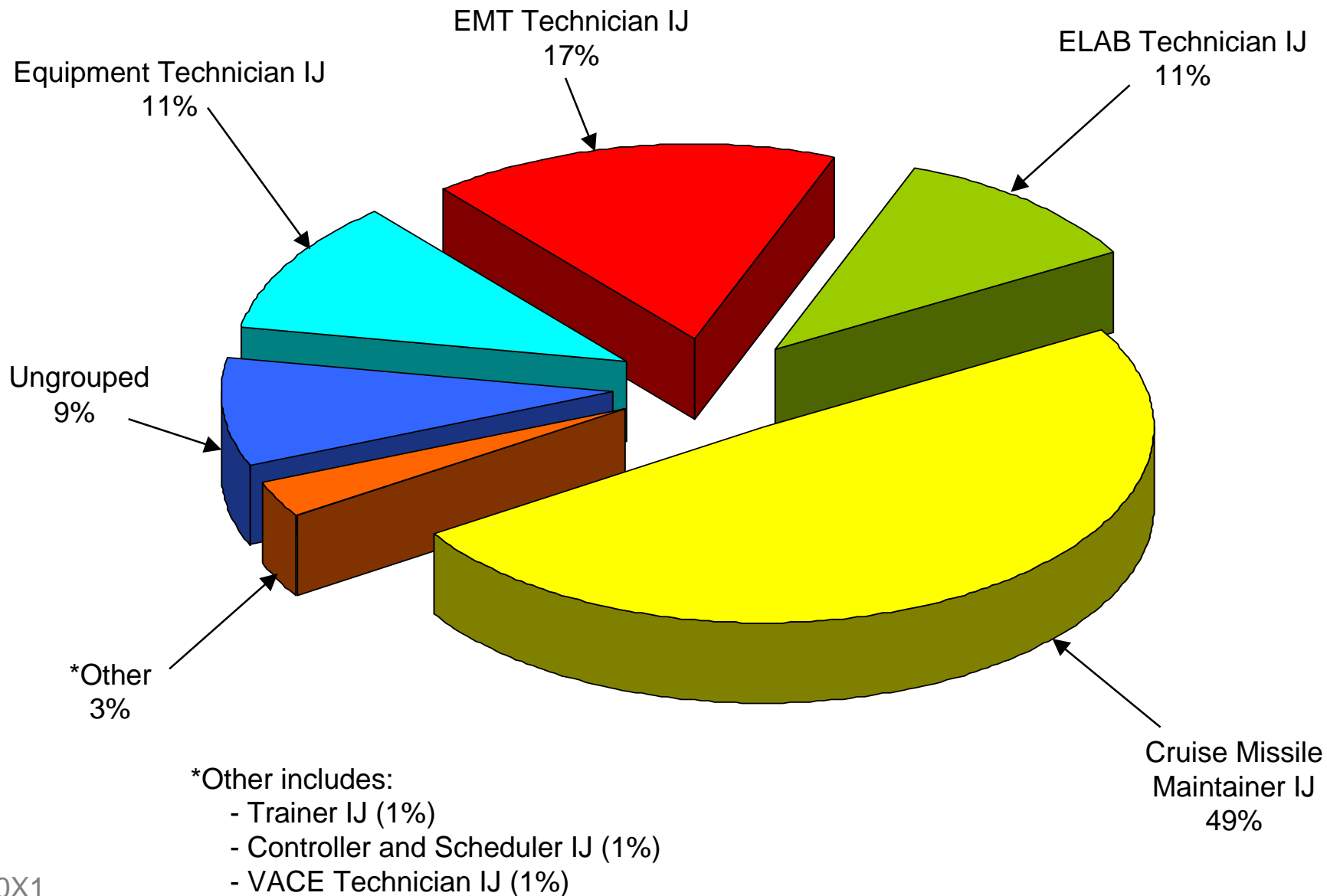
\* Less than 1%



# First-Enlistment Job Structure



Sample size: 142





# First-Enlistment Personnel Representative Tasks



Percent  
Members  
Performing  
(N=142)

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## Tasks

Perform electrostatic discharge procedures	58
Troubleshoot electronic components	58
Clean electronic equipment or test equipment	51
Perform cruise missile Level 1 checkouts	49
Perform cruise missile safe status checks	49
Deploy or stow cruise missile aerosurfaces	49
Perform AGM-86B/C/D inertial navigation element (INE) autocalibrations (ACALs)	49
Operate hot-air guns	49
Remove or install cruise missile INEs	48
Perform cruise missile forward ECS leak checks	48
Perform cruise missile fuel primings	48
Interpret missile, launcher, or pylon diagrams	48
Remove or install cruise missile engines	47
Remove or install cruise missile desiccant assemblies	47



# First-Enlistment Personnel Launch Systems & Missiles



Percent  
Members  
Performing  
(N=142)

## Launch Systems/Missiles

AGM-86B, Air Launched Cruise Missile (ALCM)

48

AGM-129A, Advanced Cruise Missile (ACM)

41

WS-133AM/CDB

29

WS-133B/CDB

20

AGM-86C/D, Conventional Air Launched Cruise Missile (CALCM)

18

Launcher

17

Pylon

17

WS-118

7

Atlas V

1



# Specialty Training Standard (STS) Analysis



- STS is generally supported by survey data
  - Very few STS items were unsupported
- Many 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	A-ATI	B-ATI
			3A-LVL	3B-LVL				
I.13b.	Checkout (Missile Guidance Set Cooling Systems)	3b						
Task	E0260. Inspect or maintain MGS cooling systems		11	0	5.70	.89	2	N/A
II.7c(5).	Inspect RFI/EMI gaskets	3c						
Tasks	A0024. Inspect or maintain gaskets, seals, or packing		28	17	4.06	3.31	11	11
	A0111. Remove or install RFI gaskets		30	19	4.12	3.91	12	11

Mean TE Rating is 1.28, Standard Deviation is 1.18 (HIGH TE= 2.46)  
 Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



# Tasks not Referenced to STS



## Examples

<u>Tasks</u>	Percent Members Performing		<u>Tng Emp</u>	<u>Tsk Dif</u>	<u>A- ATI</u>	<u>B- ATI</u>
	<u>3A- LVL</u>	<u>3B- LVL</u>				
B0141 Inspect or maintain security pits	33	0	4.94	4.00	12	N/A
F0338 Inspect radar antenna surfaces	0	90	4.72	2.57	N/A	18
F0370 Remove or install cruise missile engine inlet flexible ducts	0	49	5.62	1.54	N/A	15
F0393 Rig AGM-86B/C/D elevons or fins	0	76	6.20	2.29	N/A	17

Mean TE Rating is 1.28, Standard Deviation is 1.18 (HIGH TE= 2.46)  
 Mean TD Rating is 5.00, Standard Deviation is 1.00 (HIGH TD= 6.00)



# Job Satisfaction Indicators (Current vs. Previous Study)



	1-48 Months		49-96 Months		97+ Months	
	2004 (N=142)	2000 (N=154)	2004 (N=100)	2000 (N=78)	2004 (N=192)	2000 (N=311)
Job interesting	54	67	68	72	83	78
Talents well utilized	71	73	78	81	86	86
Training well utilized	87	86	83	83	81	71
Sense of accomplishment	55	68	60	64	79	74
Plan to reenlist	54	60	73	72	73	68



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



	Cruise Missile Maintainer IJ (N=97)	EMT Technician IJ (N=68)	ELAB Technician IJ (N=36)	Spacelift Controller IJ (N=17)	VACE Technician IJ (N=13)	R&D Technician IJ (N=5)
Job interesting	50	80	78	88	77	100
Talents well utilized	69	90	86	82	100	80
Training well utilized	90	97	97	82	92	80
Sense of accomplishment	52	78	73	76	77	80
Plan to reenlist	61	63	78	59	85	20



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



	Supervisor IJ (N=57)	Equipment Technician IJ (N=35)	Trainer IJ (N=23)	Controller and Scheduler IJ (N=22)	Quality Assurance Evaluator IJ (N=7)
Job interesting	86	46	69	68	86
Talents well utilized	88	63	96	64	100
Training well utilized	79	60	78	64	86
Sense of accomplishment	80	49	70	64	71
Plan to reenlist	69	65	78	81	86



# Retention Dimensions First-Term Airmen (N=137)



	Percent Responding	Average
<hr/>		
<b>Planning to Reenlist (N=77)</b>		
<b>Job security</b>	<b>62</b>	<b>2.56</b>
Military-related education/training opportunities	57	2.45
<b>Pay and allowances</b>	<b>53</b>	<b>2.49</b>
<b>Off-duty education and training opportunities</b>	<b>52</b>	<b>2.78</b>
Medical or dental care for AD members	49	2.55
<hr/>		
<b>Planning to Separate (N=60)</b>		
<b>Military lifestyle</b>	<b>60</b>	<b>2.33</b>
Location of present assignment	55	2.48
<b>Civilian job opportunities</b>	<b>43</b>	<b>2.38</b>
Pay and allowances	33	2.30
Esprit de corps/morale	28	2.71

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



# Retention Dimensions Second-Term Airmen (N=100)



	Percent Responding	Average
<hr/>		
<b>Planning to Reenlist (N=73)</b>		
<b>Job security</b>	<b>70</b>	<b>2.59</b>
Retirement benefits	63	2.54
Medical or dental care for AD member	60	2.39
<b>Pay and allowances</b>	<b>60</b>	<b>2.32</b>
<b>Off-duty education and training opportunities</b>	<b>59</b>	<b>2.28</b>
<hr/>		
<b>Planning to Separate (N=27)</b>		
<b>Military lifestyle</b>	<b>44</b>	<b>2.08</b>
Esprit de corps/morale	37	2.60
<b>Civilian job opportunities</b>	<b>37</b>	<b>2.40</b>
Location of present assignment	37	2.20
Recognition of efforts	33	2.22

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



# Retention Dimensions Career Airmen (N=147)



	Percent Responding	Average
<hr/>		
Planning to Reenlist (N=140)		
Retirement benefits	71	2.67
<b>Job security</b>	<b>57</b>	<b>2.54</b>
<b>Pay and allowances</b>	<b>56</b>	<b>2.39</b>
Medical or dental care for family members	41	2.62
<b>Off-duty education and training opportunities</b>	<b>41</b>	<b>2.38</b>
<hr/>		
Planning to Separate (N=7)		
<b>Civilian job opportunities</b>	<b>57</b>	<b>2.50</b>
Pay and allowances	29	3.00
Number of PCS moves	14	3.00
Additional duties	14	3.00
<b>Military lifestyle</b>	<b>14</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
  - Similar when compared to previous study across all TAFMS groups
  - Lower in the areas of expressed job interest and sense of accomplishment for first-enlistment members



# Way Ahead



- OSR Delivery Trip - scheduled for 14 Jun 04
- Utilization and Training Workshop (U&TW) - scheduled for Nov 04 at Vandenberg AFB
- Next SKT rewrite (major) - scheduled for Jan 05



# Questions?



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<https://www-r.omsq.af.mil/OA/oaproducts.htm>

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



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# Back-Up Slide



# Predictive Retention Indicators



- Military lifestyle
- Pay and allowances
- Bonus or special pay
- Retirement benefits
- Military-related education/training opportunities
- Off-duty education and training opportunities
- Medical or dental care for active duty member
- Medical or dental care for family members
- Base housing
- Base services
- Childcare needs
- Spouse's career
- Civilian job opportunities
- Equal employment opportunities
- Number of PCS moves
- Location of present assignment
- Number/duration of TDYs or deployments
- Work schedule
- Additional duties
- Job security
- Enlisted Evaluation System
- Promotion opportunities
- Training/experience of unit personnel
- Unit manning
- Unit resources
- Unit readiness
- Recognition of efforts
- Esprit de corps/morale
- Leadership of immediate supervisor
- Senior Air Force leadership