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UNITED STATES AIR FORCE

# OCCUPATIONAL SURVEY REPORT SUPPLEMENT

AIR FORCE RESERVE COMPONENT  
CORROSION CONTROL

AFSC 427X1

AFPT 90-427-777

SEPTEMBER 1988

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OCCUPATIONAL ANALYSIS PROGRAM  
USAF OCCUPATIONAL MEASUREMENT CENTER  
AIR TRAINING COMMAND  
RANDOLPH AFB, TEXAS 78150-5000

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## PREFACE

This report presents the results of an Air Force occupational survey of full-time Air Force Reserve Component personnel in the Corrosion Control career ladder (AFSC 427X1). Personnel assigned to the two Air Force Reserve Component organizations, the USAF Reserve and the Air National Guard, were surveyed and the data collected were analyzed separately. Authority for conducting specialty surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

The Air Force Occupational Survey Program has been in existence since 1956 when initial research was undertaken by the Air Force Human Resources Laboratory (AFHRL) to develop a methodology for gathering and analyzing occupational information. In 1967, an occupational survey program was established within the Air Training Command and surveys were produced annually for 12 enlisted specialties. In 1972, the program was expanded to conduct occupational surveys covering 51 career ladders annually. In late 1976, the program was again expanded to include the survey of officer utilization fields, to permit special management applications projects, and to support interservice or joint service occupational analysis.

Mr William C. Cosgrove, Occupational Analyst, developed the survey instrument, analyzed the survey data, and wrote the final report. Technical Sergeant Joe Seitz provided computer programming support, and Mr Richard G. Ramos provided administrative support. This report has been reviewed and approved for release by Lieutenant Colonel Charles D. Gorman, Chief, Airman Analysis Branch, Occupational Analysis Division, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies may be requested from the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Division (OMY), Randolph AFB, Texas 78150-5000.

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## SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were distributed to full-time Corrosion Control (AFSC 427X1) personnel in the USAF Reserve and the Air National Guard during the summer of 1987. The 47 USAF Reserve respondents in the survey sample represent 51 percent of all full-time USAF Reserve Corrosion Control personnel. The 63 Air National Guard respondents in the survey sample represent 52 percent of all full-time Air National Guard Corrosion Control personnel.

2. Career Ladder Structure: Personnel in both the USAF Reserve and the Air National Guard groups were directly involved with the full range of technical duties within the career ladder. They essentially have the same job as each other and perform basically the same job as active-duty military Corrosion Control personnel.

3. Career Ladder Progression: The 3- and 5-skill level jobs were quite technical in nature, with very limited responsibilities at the 5-skill level for supervision. Seven-skill level members, on the other hand, perform the same technical duties, while reporting increasing responsibility for supervisory and managerial duties.

4. Training Analysis: Due to the planned RIVET WORKFORCE merger of AFSCs 427X1 and 427X5 into AFSC 458X2 in October 1989, two Specialty Training Standards (STS) were analyzed. The USAF Reserve and Air National Guard data were compared to the elements of both STSs. Data for these two groups basically supported both documents, and also supported a number of elements not supported by the active-duty military sample data.

5. Additional Issues: The request by training personnel for information on the performance of sealing functions and advanced composite structure and honeycomb core repair functions was accommodated by two duty sections in the job inventory. Data reflect that a greater percentage of USAF Reserve and Air National Guard personnel perform these tasks than the active-duty military sample. Information requested by the Air Force Corrosion Program Manager on annual industrial physical examinations was gathered by background questions. The data reflect that a lower percentage of USAF Reserve and Air National Guard personnel have had the required examinations than the active-duty military population.

6. Implications: Full-time USAF Reserve and Air National Guard personnel perform essentially the same job as their active-duty military counterparts. USAF Reserve and Air National Guard survey data also support the requirements of the training documents. In addition, these groups are more apt to be satisfied with their jobs than their active-duty counterparts.

SUPPLEMENTAL OCCUPATIONAL SURVEY REPORT  
FULL-TIME USAF RESERVE COMPONENT PERSONNEL  
CORROSION CONTROL CAREER LADDER  
(AFSC 427X1)

INTRODUCTION

← This is a report on the occupational survey of full-time Air Force Reserve Component (USAF Reserve and Air National Guard) personnel in the Corrosion Control career ladder completed by the USAF Occupational Measurement Center in July 1988. This report is a supplement to the Occupational Survey Report of the Corrosion Control career ladder published in July 1988. The survey was requested by the 3700 Technical Training Wing, Sheppard Technical Training Center, to obtain current task and equipment data for use in their review of current training programs.

*Keywords: Job analysis, Personnel development, Air Force Training*

This survey marks the first time that full-time Air Force Reserve Component personnel, to include full-time civilian members of the USAF Reserve and full-time military and civilian members of the Air National Guard, were included in an occupational survey. Full-time Air Force Reserve Component personnel participation was requested by Air Force Logistics Command (AFLC) in conjunction with the Air National Guard Bureau. Headquarters, USAF Reserve Components, approved the inclusion of full-time USAF Reserve civilian personnel in the survey. The rationale for inclusion of Air Force Reserve Component personnel in this occupational survey was to gather data on them as separate groups and to determine whether there are discernible differences between active-duty military personnel and reserve component categories of personnel. Results of this survey and those from two other Air Force specialties where Air Force Reserve and Air National Guard personnel were included will help determine the feasibility and methodology for surveying Reserve and Air National Guard personnel.

*(SDU)*

Both active-duty and Reserve personnel were administered the Corrosion Control job inventory booklets during the summer of 1987. The mailing list for full-time USAF Reserve civilian personnel holding occupational series 4102 was provided by the Office of Civilian Personnel Management, Randolph AFB TX. The National Guard Bureau provided mailing labels for Air National Guard personnel to be surveyed.

Background

AFR 39-1 specialty descriptions state that AFSC 427X1 personnel identify corrosion and apply preservative treatment to metal surfaces of missiles, aircraft, and support equipment to meet requirements for preservation, elimination of deterioration, and effect corrosion control for Air Force equipment.

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Entry into the career ladder for military personnel is from Basic Military Training School (BMTS) through a Category A, 6-week and 1-day formal training course (J3ABR42731) conducted at Sheppard AFB TX. A score of 51 on the mechanical portion of the Armed Services Vocational Aptitude Battery (ASVAB) is currently required to enter the career ladder. Entry for civilian personnel is on a "fully qualified" basis, meaning they are hired as having had previous experience in the corrosion control field and are qualified to perform at the level hired.

## SURVEY METHODOLOGY

### Inventory Development

Data for this survey were collected using USAF Job Inventory AFPT 90-427-777 (April 1987). The Inventory Developer reviewed pertinent career ladder documents, the previous OSR, and previous inventory, and then prepared a tentative task list. This preliminary task list was then refined and validated through personal interviews with 81 subject-matter experts assigned to 14 operational locations selected to cover a variety of major commands (MAJCOM) and varying functions. Interviewees included USAF Reserve civilian personnel. The list of bases visited can be found in the Inventory Development section of the Occupational Survey Report for active-duty personnel.

The inventory contained a comprehensive list of 918 tasks grouped into 21 duty headings. There were standard background questions asking for grade, duty title, functional level, duty AFSC, time in service, and time in career ladder. In addition, there were questions requesting such information as tools and equipment used, corrosion control materials used, job satisfaction, intent to reenlist, and a number of questions concerning annual industrial physical examinations. Specific questions asking if individuals are members of a Reserve Component were included to help identify these personnel for this supplemental report.

### Survey Administration

From May through October 1987, Consolidated Base Personnel Offices at operational units worldwide administered the surveys to Corrosion Control active-duty military personnel. USAF Reserve personnel received their surveys from base points of contact that had been provided by AFLC. Air National Guard personnel were mailed surveys to their organizations from a mailing list provided by the Air National Guard Bureau.

All individuals who filled out an inventory first completed an identification and biographical information section. Next, they answered questions in the background portion of the inventory. They were then directed to go through the booklet and check each task performed in their current job. Finally, they were asked to go back and rate each task they had checked using a 9-point scale reflecting relative time spent on each task compared to all

other tasks. Ratings ranged from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent). The relative percent time spent on tasks was computed by first totaling all rating values on the inventory. Then the rating value for each task was divided by this total and the result multiplied by 100. The percent time spent ratings were used with the percent member performing values to help describe the various groups in the career ladder.

### Survey Sample

Survey booklets for all eligible Reserve Component personnel were provided to the points of contact for distribution or to the individual at his or her organization. The participants in the survey represent approximately 51 percent of the USAF Reserve and 52 percent of the Air National Guard eligible personnel. Table 1 shows the percentage of survey respondents by command. Table 2 provides selected background data for the two groups. The paygrade distribution of the survey sample shows that USAF Reserve personnel are all civilians, while the Air National Guard personnel were 55 percent military and 45 percent civilian.

### SPECIALTY JOBS (Career Ladder Structure)

A USAF occupational analysis begins with an examination of the career ladder structure. The structure of jobs within the Corrosion Control career ladder was examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of other specialty background factors.

Each individual in the sample performs a set of tasks called a job. For the purpose of organizing individual jobs into similar units of work, an automated job clustering program is used. This hierarchical grouping program is a basic part of the Comprehensive Occupational Data Analysis Program (CODAP) system for job analysis. Each individual job description (all the tasks performed by that individual and the relative amount of time spent on those tasks) in the sample is compared to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system is designed to locate the two job descriptions with the most similar tasks and percent time ratings and combine them to form a composite job description. In successive stages, new members are added to initial groups or new groups are formed based on the similarity of tasks performed and similar time ratings in the individual job descriptions.

The basic identifying group used in the hierarchical job structuring process is the job type. When there is a substantial degree of similarity between job types, they are grouped together and identified as a cluster. Specialized job types too dissimilar to fit within a cluster are labeled

TABLE 1

COMMAND DISTRIBUTION SURVEY SAMPLE  
RESERVE COMPONENT AFSC 427X1 PERSONNEL  
(PERCENT OF SAMPLE)

<u>COMMAND</u>	<u>USAF RESERVE</u>	<u>AIR NATIONAL GUARD</u>
TAC	14	49
SAC	6	14
MAC	47	31
ATC	4	
OTHER	13	11

Total USAF Reserve in Sample = 47  
 Total Air National Guard in Sample = 63  
 Total USAF Reserve Eligible for Survey = 93  
 Total Air National Guard Eligible for Survey = 121  
 Percent of USAF Reserve Eligible in Sample = 51%  
 Percent of Air National Guard Eligible in Sample = 52%

TABLE 2  
 SELECTED BACKGROUND DATA FOR MEMBERS OF SURVEY SAMPLE

	<u>USAF RESERVE</u>	<u>AIR NATIONAL GUARD</u>
NUMBER IN GROUP	47	63
<hr/>		
GRADE (PERCENT OF SAMPLE)		
E-1 THRU E-3	0	2
E-4	0	3
E-5	0	6
E-6	0	39
E-7	0	5
WG-07	4	0
WG-09	64	41
WG-10	28	0
WG-13	0	2
WS-06	0	2
WS-07	4	0
<hr/>		
PERCENT SUPERVISING	40%	59%
<hr/>		
AVERAGE NUMBER OF TASKS PERFORMED	325	321

independent job types. The job structure information resulting from this grouping process (the various jobs within the career ladder) can be used to evaluate the accuracy of career ladder documents (AFR 39-1 Specialty Descriptions and Specialty Training Standards) and to gain a better understanding of current utilization patterns. The above terminology will be used in the discussion of the AFSC 427X1 career ladder structure.

### Overview of Specialty Jobs

Responses from both USAF Reserve and Air National Guard AFSC 427X1 personnel in the survey sample indicate a career ladder where most people perform a rather large number of common tasks. Both USAF Reserve and Air National Guard personnel in this survey provide the full-time corrosion control support for their organizations. They perform the day-to-day corrosion control on the aircraft and equipment of their units. Table 3 shows the relative time spent on each duty for each group. Total active duty sample results are included for comparison purposes. The following paragraphs contain brief descriptions of the job types for the two groups.

I. USAF RESERVE JOB DESCRIPTION: Personnel in this group perform a wide variety of tasks, averaging 325, that comprise the full range of technical career ladder functions. They compose a single job type of corrosion control personnel with no clusters or independent job types. More than 65 percent of their relative job time is devoted to tasks associated with applying protective coating to surfaces, performing general corrosion control functions, maintaining corrosion control equipment, removing corrosion and protective coatings, and performing maintenance on safety equipment. This group has an average civilian grade of WG-09. Sixty percent of these individuals do not supervise anyone, while the 40 percent that do supervise have up to 15 subordinates. Representative tasks performed by USAF Reserve personnel are listed in Table 4. Tools or equipment used by more than 50 percent of USAF Reserve personnel are listed in Table 5, while the materials they use are in Table 6.

II. AIR NATIONAL GUARD JOB DESCRIPTION: As with the previous group, individuals of the Air National Guard comprise a single job type of corrosion control personnel. They average 321 tasks covering a wide spectrum of the technical career ladder functions. The average grade for the 55 percent of the sample that is military is E-6. The average grade for the 45 percent of the sample that is civilian is WG-09. Forty-one percent of all individuals report that they do not supervise anyone, while 59 percent indicate they supervise up to 8 people. More than 63 percent of their relative job time is devoted to tasks associated with applying protective coating to surfaces, performing general corrosion control functions, maintaining corrosion control equipment, removing corrosion and protective coatings, and performing maintenance on safety equipment. Table 4 lists representative tasks for Air National Guard personnel. Tools or equipment used by more than 50 percent of air National Guard personnel are listed in Table 5, while the materials they use are in Table 6.

TABLE 3  
AVERAGE PERCENT TIME SPENT  
PERFORMING DUTIES

DUTIES	ACTIVE DUTY MILITARY (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
A ORGANIZING AND PLANNING	5	4	4
B DIRECTING AND IMPLEMENTING	3	3	2
C INSPECTING AND EVALUATING	5	3	5
D TRAINING	2	3	2
E PERFORMING ADMINISTRATIVE FUNCTIONS	4	3	3
F PERFORMING GENERAL SUPPLY FUNCTIONS	2	3	2
G PERFORMING GENERAL CORROSION CONTROL FUNCTIONS	17	15	16
H INSPECTING AIRCRAFT, SUPPORT EQUIPMENT, AND MISSILES	4	4	5
I TREATING AIRCRAFT AND SUPPORT EQUIPMENT	3	5	3
J REMOVING CORROSION AND PROTECTIVE COATING	9	11	12
K TREATING AND PREPARING METAL SURFACES	5	5	2
L APPLYING PROTECTIVE COATING TO SURFACES	19	18	18
M MAINTAINING CORROSION CONTROL EQUIPMENT	11	11	11
N PERFORMING MISSILE DISPATCH FUNCTIONS	*	*	*
O PERFORMING MINUTEMAN CORROSION CONTROL FUNCTIONS	*	*	*
P PERFORMING TITAN MISSILE CORROSION CONTROL FUNCTIONS	*	*	*
Q PERFORMING MAINTENANCE ON SAFETY EQUIPMENT	9	8	9
R PERFORMING SEALING FUNCTIONS	1	1	1
S PERFORMING ADVANCED COMPOSITE STRUCTURE AND HONEYCOMB CORE REPAIR FUNCTIONS	*	*	1
T PERFORMING AND PRACTICING DISASTER PREPAREDNESS FUNCTIONS	1	*	1
U PERFORMING CROSS UTILIZATION TRAINING (CUT) FUNCTIONS	*	*	*

\* Denotes less than 1 percent

TABLE 4  
 REPRESENTATIVE TASKS PERFORMED  
 BY 427X1 PERSONNEL  
 (PERCENT MEMBERS PERFORMING)

TASKS	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
G297 REMOVE MASKING MATERIALS FROM SURFACES	98	98
H323 DETERMINE SEVERITY OF CORROSION	98	90
G294 PREPARE SURFACES USING PNEUMATIC SANDERS	96	100
J370 DETERMINE CORROSION REMOVAL LIMITS	96	81
L585 MIX PAINTS	96	98
M619 CLEAN EQUIPMENT AFTER APPLYING PROTECTIVE COATINGS	96	94
M640 INSPECT AIR HOSE FITTINGS	96	95
G239 APPLY MASKING MATERIALS TO SURFACES	94	100
G275 PAINT SIGNS	94	94
H325 IDENTIFY CAUSES OF PROTECTIVE COATING FAILURES	94	84
J395 REMOVE CORROSION USING ABRASIVE MATS	94	71
J396 REMOVE CORROSION USING ABRASIVE PAPER OR CLOTH	94	89
J445 REMOVE PROTECTIVE COATINGS USING PAINT REMOVERS	94	89
K503 WIPE DOWN METAL SURFACES WITH THINNERS PRIOR TO PAINTING	94	92
L591 PREPARE POLYURETHANE COATINGS FOR APPLICATION	94	98
H331 INSPECT AREAS FOR CORROSION USING HAND EQUIPMENT, SUCH AS FLASHLIGHTS, PROBES, OR MIRRORS	91	94
L511 APPLY CAMOUFLAGE COATINGS TO AIRCRAFT	91	86
L592 PREPARE PRIMERS FOR APPLICATION	91	98
M641 INSPECT AIR HOSES	91	95
J452 REMOVE PROTECTIVE COATINGS USING PNEUMATIC SANDERS	89	94
L603 STRAIN PAINTS	89	97
A12 COORDINATE MAINTENANCE ACTIVITIES WITH DOCK CHIEFS	87	87
I352 MIX ALODINE SOLUTIONS	87	83
K497 SCUFF UP PAINTED SURFACES	87	95
C124 PERFORM INSPECTIONS USING TECHNICAL ORDERS (TO)	81	68
L558 APPLY PRIMERS TO SURFACES USING SUCTION FEED SPRAY GUNS	81	95
M626 CLEAN SUCTION FEED SPRAY EQUIPMENT	81	92
G278 PERFORM MAINTENANCE USING TO	73	95
B59 DIRECT UTILIZATION OF CORROSION CONTROL SHOP EQUIPMENT	57	73

AVERAGE NUMBER OF TASKS PERFORMED USAF RESERVE - 325  
 AVERAGE NUMBER OF TASKS PERFORMED AIR NATIONAL GUARD - 321

TABLE 5  
 TOOLS OR EQUIPMENT USED BY 50 PERCENT  
 OR MORE PERSONNEL  
 (PERCENT MEMBERS RESPONDING)

<u>TOOLS OR EQUIPMENT USED</u>	<u>USAF RESERVE (N=47)</u>	<u>AIR NATIONAL GUARD (N=63)</u>
ABRASIVE DISCS	100	97
ABRASIVE PAPERS	100	92
COVENTIONAL PAINT SPRAY GUNS	100	98
PAPER CUTTERS	100	94
PAINT BRUSHES	100	95
PAINT SHAKERS	100	97
STENCIL CUTTING MACHINES	100	99
AEROSOL SPRAY CANS	98	97
AIR COMPRESSORS	96	98
CARTRIDGE RESPIRATORS	98	87
FLASHLIGHTS	98	87
HAND WIRE BRUSHES	98	95
INSPECTION MIRRORS	96	92
MAINTENANCE STANDS	96	97
PNEUMATIC SANDERS	96	92
STRAIGHT EDGES	96	98
STRAINERS	96	98
AEROSOL SPRAY POWER PACKS	94	65
STRIPPING TANKS	94	62
ABRASIVE BLASTERS	91	76
ABRASIVE MATS	91	84
PAINT SCRAPERS	91	76
RAZORS	91	81
STENCIL KNIVES	91	79
ABRASIVE WHEELS	87	83
CHEESECLOTH	87	75
MAGNIFYING GLASSES	87	89
PAINT ROLLERS	85	51
PNEUMATIC DRILLS	85	87
SCRIBES	85	68
AIR SUPPLY RESPIRATORS	83	89
DISPOSABLE RESPIRATORS	83	84
ZAHN CUPS	83	62
PAINT ROLLING PANS	81	51
CHERRY PICKERS	79	*
PHENOLIC SCRAPERS	77	60
ROTARY FILES	74	67

\* Less than 50 percent members responding

TABLE 5 (CONTINUED)  
 TOOLS OR EQUIPMENT USED BY 50 PERCENT  
 OR MORE PERSONNEL  
 (PERCENT MEMBERS RESPONDING)

<u>TOOLS OR EQUIPMENT USED</u>	<u>USAF RESERVE (N=47)</u>	<u>AIR NATIONAL GUARD (N=63)</u>
PNEUMATIC GRINDERS	73	79
TACK RAGS	72	84
VACUUM CLEANERS	72	68
HAND FILES	70	81
LITE-ALLS NF-2	70	*
PORTABLE SANDBLASTERS	70	56
DIAL INDICATORS	68	*
METAL WOOLS	68	*
WIRE BRUSH ATTACHMENTS	68	70
PRESSURE POTS	67	67
AIRCRAFT MARKING PENCILS	64	61
DROP CLOTHES	64	63
AIRCRAFT WASHING HAND BRUSH	62	81
CARBIDE TIP SCRAPERS	62	54
MAGNETS	62	65
MICROFICHE VIEWERS	62	70
MOTOR COMPRESSORS	60	62
BARREL PUMPS	57	60
PORTABLE AIR BREATHING COMPRESSORS	57	68
PORTABLE VACUUM BLASTERS	57	*
STATIONARY SANDBLASTERS	55	60
DROP LIGHTS	53	*
DRY SPRAY BOOTHS	53	54
POURING SPOUTS	53	60
BLASTING CABINETS	51	51
HOT DIP TANKS	51	*
FORK LIFTS	*	70
AIRCRAFT SURFACE MOPS	*	54
PAPER MASKING MACHINES	*	54
PNEUMATIC BUFFERS	*	52
AIR-MIX SPRAY SYSTEMS	*	51

\* Less than 50 percent members responding

TABLE 6

CORROSION CONTROL MATERIALS USED BY 50 PERCENT  
OR MORE PERSONNEL  
(PERCENT MEMBERS RESPONDING)

<u>CORROSION CONTROL MATERIALS USED</u>	<u>USAF RESERVE (N=47)</u>	<u>AIR NATIONAL GUARD (N=63)</u>
ENAMELS	100	94
METHYL-ETHYL-KEYTONE (MEK)	100	92
POLYURETHANE COATINGS	100	98
PRIMERS	100	95
THINNERS	100	98
LACQUERS	96	98
WALKWAY COATINGS	98	86
ZINC-CHROMATE PRIMER	98	97
CORROSION PREVENTING COMPOUNDS (CPC)	94	79
EPOXY	94	97
NAPHTHA	79	65
RED OXIDE PRIMER	77	60
SEALANTS	77	67
DRY CLEANING SOLVENT P-D 680, TYPE II	72	71
POLYSOLFIDE PRIMER	72	54
RAIN EROSION RESISTANT POLYURETHANE	72	83
SOLVENTS	72	86
ALKALINE WATER BASE CLEANERS	70	79
PAINT REMOVER, MIL-R-25134	70	70
PAINT REMOVER, MIL-R-89396	68	57
SOIL BARRIER MATERIALS	66	52
TOLUOL, TOLUENE	66	81
ELECTROMETRIC COATINGS	60	*
PASSIVATING SOLUTIONS, ALUMINUM	60	54
BAKING SODA	57	*
WASH PRIMERS	57	65
EDGE SEALERS	55	65
ETHYL ALCOHOL	53	*
ISOPROPYL ALCOHOL	53	62
LUBRICANTS	53	52

\* Less than 50 percent members responding

## Active and Reserve Component Comparison

One of the major reasons to include USAF Reserve and Air National Guard personnel in the survey was to determine if they are doing the same work as each other and if both are doing the same types of jobs as the active-duty military. Based on task similarity and relative time spent, the jobs performed by USAF Reserve personnel and the Air National Guard personnel are the same, with minor differences. The two groups have an 86 percent time-spent overlap on commonly performed tasks, which supports the premise that they have the same job. The survey data also indicate that, even though personnel in the USAF Reserve and the Air National Guard average more tasks performed, they and the personnel in the active-duty military sample perform essentially the same job. The USAF Reserve data show an 82 percent time-spent overlap on commonly performed tasks with the active-duty military sample and the Air National Guard reflects an 84 percent overlap. This validates the position that all three groups perform essentially the same basic job.

### ANALYSIS OF DAFSC GROUPS

DAFSC analysis identifies similarities and differences in duty and task performance at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the STS, reflect what career ladder personnel are actually doing in the field.

Comparison of the duty and task performance among DAFSC 3-, 5-, and 7-skill level personnel is normally accomplished. Since all USAF Reserve and 45 percent of the Air National Guard personnel are civilians, this analysis was limited to the 35 military members of the Air National Guard.

Only one individual in the Air National Guard holds a DAFSC of 42731, with a total of only 12 percent of the Air National Guard at the 3- and 5-skill levels. The 3- and 5-skill level personnel perform essentially the same job as the 7-skill level individuals, with the main difference being found in those supervisory-type duties a 7-skill level person would be expected to perform. Table 7 provides a breakout for the 3-/5-skill level and 7-skill level personnel on supervisory and technical duties, with the percent time spent on each duty. The 7-skill level personnel spend about 11 percent more of their time on supervisory duties and a corresponding lower percentage on technical tasks than do the 3-/5-skill level airman. This is not a great difference when compared to the active-duty military sample, where the difference is 31 percent.

Career progression for Air National Guard personnel is not as clear cut as for their active-duty counterparts. They do progress from the 3-skill level through the 5-skill level to the 7-skill level, but the Air National Guard 7-skill level individual spends less time on supervisory and administrative functions than his or her active duty counterpart. Air National

TABLE 7

AIR NATIONAL GUARD  
DAFSC DUTY COMPARISON  
(AVERAGE PERCENT TIME SPENT)

<u>SUPERVISORY DUTIES</u>	<u>3/5-SKILL LEVEL (N=8)</u>	<u>7-SKILL LEVEL (N=27)</u>
A ORGANIZING AND PLANNING	3	5
B DIRECTING AND IMPLEMENTING	2	4
C INSPECTING AND EVALUATING	2	4
D TRAINING	1	4
E PERFORMING ADMINISTRATIVE FUNCTIONS	3	4
F PERFORMING GENERAL SUPPLY FUNCTIONS	2	3
<b>TOTALS</b>	<b>13</b>	<b>24</b>
	<u>3/5-SKILL LEVEL (N=8)</u>	<u>7-SKILL LEVEL (N=27)</u>
<u>TECHNICAL DUTIES</u>		
G PERFORMING GENERAL CORROSION CONTROL FUNCTIONS	14	13
H INSPECTING AIRCRAFT, SUPPORT EQUIPMENT, AND MISSILES	4	5
I TREATING AIRCRAFT AND SUPPORT EQUIPMENT	4	4
J REMOVING CORROSION AND PROTECTIVE COATING	11	10
K TREATING AND PREPARING METAL SURFACES	5	5
L APPLYING PROTECTIVE COATING TO SURFACES	22	17
M MAINTAINING CORROSION CONTROL EQUIPMENT	12	10
Q PERFORMING MAINTENANCE ON SAFETY EQUIPMENT	11	8
<b>TOTALS</b>	<b>83</b>	<b>72</b>

Guard 7-skill level personnel do the same job as the 3-/5-skill level personnel, which involves predominately technical duties of the career ladder, with some added supervisory and administrative functions.

### TRAINING ANALYSIS

Occupational survey data are one of the many sources of information that can be used to assist in the development of a training program which is relevant to the needs of a specific career ladder. The data for USAF Reserve and Air National Guard personnel were used to evaluate the Speciality Training Standards (STS) for the present AFSC (427X1) and the future AFSC (458X2). The Plan of Instruction (POI) was not compared because of the lack of first-enlistment data for the USAF Reserve and Air National Guard personnel.

To assist specifically in the review of the STS, technical school personnel from Sheppard Technical Training Center matched job inventory tasks to appropriate sections and subsections of the 427X1 STS and the 458X2 proposed draft STS. It was this matching upon which comparison to those documents was based.

Overall, survey data for the USAF Reserve and Air National Guard groups support all of the STS elements for the 427X1 STS. Surprisingly, those elements not supported by active-duty military data were supported when matched to USAF Reserve and Air National Guard data. These elements are listed in Table 8. As for the 458X2 STS, of the 21 elements not supported by active-duty military data, only six found additional support when compared to Reserve and Guard data (see Table 9).

In summary, the 427X1 STS clearly covers the training needs of both the USAF Reserve and Air National Guard personnel. For the most part, very few differences were noted between training needs of these groups and those of the active-duty force.

### JOB SATISFACTION ANALYSIS

Examination of the job satisfaction indicators gives career ladder managers a better understanding of some of the factors which may impact on job performance of airmen in the career ladder. Attitude questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work and reenlistment intentions were included in the survey booklet. The information from these questions is provided in Table 10. The active-duty military data is provided to allow a comparison among the different components. USAF Reserve and Air National Guard personnel responded more favorably in these areas than the active-duty military sample.

TABLE 8

427X1 STS ELEMENTS NOT SUPPORTED BY ACTIVE-DUTY MILITARY DATA  
SUPPORTED BY USAF RESERVE AND AIR NATIONAL GUARD DATA

STS ITEM (WITH SELECTED SAMPLE TASKS)	3LVL PROF CODE	PERCENT MEMBERS PERFORMING		
		ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
3a. USE INDEX TYPE PUBLICATIONS TO LOCATE NUMBERS AND TITLES OF STANDARD/SPECIALIZED PUBLICATIONS	1b			
E183 LOCATE AF PUBLICATION NUMBERS AND TITLES USING AFR 0-2		19	23	27
E184 LOCATE DEPARTMENTAL FORMS USING AFR 0-9		9	9	19
3d. INITIATE TECHNICAL ORDER IMPROVEMENTS	b			
E203 PREPARE AFTO FORMS 22 (TECHNICAL ORDER SYSTEM PUBLICATION)		15	19	21
E209 REVIEW AFTO FORMS 22		8	23	11
8c(2). (DETERMINE TYPES OF METALS) MECHANICAL TESTS	b			
K481 IDENTIFY METALS USING MAGNETIC TESTS		14	55	52
K482 IDENTIFY METALS USING SPARK TESTS		5	13	16
8c(3). (DETERMINE TYPES OF METALS) CHEMICAL TESTS	1a			
K476 IDENTIFY METALS USING ACID TESTS		6	15	25
K477 IDENTIFY METALS USING ALKALINE TESTS		2	11	10
8c(5). (DETERMINE TYPES OF METALS) STANDARD CODES	b			
K483 IDENTIFY METALS USING STANDARD CODES		11	28	32
14d. PREPARE COMPOSITE SURFACES BEFORE APPLYING PROTECTIVE COATINGS	2b			
S843 PREPARE COMPOSITE SURFACES BEFORE APPLYING PROTECTIVE COATINGS		12	19	27

TABLE 9

458X2 STS ELEMENTS NOT SUPPORTED BY ACTIVE-DUTY MILITARY DATA  
SUPPORTED BY USAF RESERVE AND AIR NATIONAL GUARD DATA

STS ITEM (WITH SELECTED SAMPLE TASKS)	3LVL PROF CODE	PERCENT MEMBERS PERFORMING		
		ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
5a USE INDEX TYPE PUBLICATIONS TO LOCATE STANDARD PUBLICATIONS	2b			
E183 LOCATE AF PUBLICATION NUMBERS AND TITLES USING AFR 0-2		19	23	27
E184 LOCATE DEPARTMENTAL FORMS USING AFR 0-9		9	9	19
5d(3) (USE TECHNICAL PUBLICATIONS WHEN PERFORMING REPAIRS	2b			
S853 RESEARCH -3 TECHNICAL ORDER FOR EXACT REPAIR PROCEDURES ON ADVANCED COMPOSITES		2	4	3
5f REPORT TECHNICAL ORDER DEFICIENCIES	a			
E203 PREPARE AFTO FORMS 22 (TECHNICAL ORDER SYSTEM PUBLICATION)		15	19	21
E209 REVIEW AFTO FORMS 22		8	23	11
11c(2) (IDENTIFY METAL TYPES) MECHANICAL TESTS	2b			
K481 IDENTIFY METALS USING MAGNETIC TESTS		14	55	55
K482 IDENTIFY METALS USING SPARK TESTS		8	23	11
11c(3) (IDENTIFY METAL TYPES) CHEMICAL TESTS	2a			
K476 IDENTIFY METALS USING ACID TESTS		6	15	25
K477 IDENTIFY METALS USING ALKALINE TESTS		3	11	10

TABLE 9 (CONTINUED)

458X2 STS ELEMENTS NOT SUPPORTED BY ACTIVE-DUTY MILITARY DATA  
SUPPORTED BY USAF RESERVE AND AIR NATIONAL GUARD DATA

STS ITEM (WITH SELECTED SAMPLE TASKS)	3LVL PROF CODE	PERCENT MEMBERS PERFORMING		
		ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
11c(5) (IDENTIFY METALS TYPES) STANDARD CODES	2b			
K483 IDENTIFY METALS USING STANDARD CODES		11	28	32
12c(2) (REPAIR AND REPLACE: FIBERGLASS) CLASSIFY DAMAGE	-			
S831 COIN TAP FIBERGLASS TO DETERMINE DEFECTS		5	17	25
12c(5) (REPAIR AND REPLACE: FIBERGLASS) REPAIR BINDED HONEYCOMB COMPONENTS	-			
S851 REPAIR DAMAGED HONEYCOMB CORE WITH SPECIAL HONEYCOMB STRUCTURE REPAIR KIT		0	2	2
12d(2) (REPAIR AND REPLACE: BONDED METAL HONEYCOMB) CLASSIFY DAMAGE	-			
S832 COIN TAP HONEYCOMB CORES TO DETERMINE DEFECTS		4	19	17
12e(2) (REPAIR AND REPLACE: ARAMID BONDED HONEYCOMB) CLASSIFY DAMAGE	-			
S829 CLASSIFY DAMAGED COMPOSITE AREAS		3	4	13
12e(3) (REPAIR AND REPLACE: ARAMID FIBER COMPOSITES) REPAIR SOLID LAMINATE COMPONENTS	a			
S840 PERFORM COMPOSITE PLY-TO-CORE DELAMINATION REPAIRS		0	2	0

TABLE 9 (CONTINUED)

458X2 STS ELEMENTS NOT SUPPORTED BY ACTIVE-DUTY MILITARY DATA  
SUPPORTED BY USAF RESERVE AND AIR NATIONAL GUARD DATA

STS ITEM (WITH SELECTED SAMPLE TASKS)	3LVL PROF CODE	PERCENT MEMBERS PERFORMING		
		ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
12e(4) (REPAIR AND REPLACE: ARAMID FIBER COMPOSITES) REPAIR BONDED HONEYCOMB COMPONENTS	-			
S850 REPAIR DAMAGED COMPOSITE MATERIALS WITH SPECIAL COMPOSITE MATERIALS REPAIR KITS		0	2	3
12e(5) (REPAIR AND REPLACE: ARAMID FIBER COMPOSITES) REPLACE COMPONENTS	-			
S852 REPLACE COMPLETE COMPOSITE STRUCTURES		1	0	0
12f(2) (REPAIR AND REPLACE: GRAPHITE COMPOSITES) CLASSIFY DAMAGE	a			
S842 PERFORM EVALUATION AND CLASSIFICATION OF DAMAGED COMPOSITE AREAS		1	2	2
12f(3) (REPAIR AND REPLACE: GRAPHITE COMPOSITES) REPAIR SOLID LAMINATE COMPONENTS	1b			
S840 PERFORM COMPOSITE PLY-TO-CORE DELAMINATION REPAIRS		0	2	0
12f(4) (REPAIR AND REPLACE: GRAPHITE COMPOSITES) REPAIR BONDED HONEYCOMB COMPONENTS	-			
S850 REPAIR DAMAGED COMPOSITE MATERIALS WITH SPECIAL COMPOSITE MATERIALS REPAIR KITS		0	2	3

TABLE 9 (CONTINUED)

458X2 STS ELEMENTS NOT SUPPORTED BY ACTIVE-DUTY MILITARY DATA  
SUPPORTED BY USAF RESERVE AND AIR NATIONAL GUARD DATA

STS ITEM (WITH SELECTED SAMPLE TASKS)	PERCENT MEMBERS PERFORMING			
	3LVL PROF CODE	ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
12f(5) (REPAIR AND REPLACE: GRAPHITE COMPOSITES) REPLACE COMPONENTS	-	0	0	0
S852 REPLACE COMPLETE COMPOSITE STRUCTURES				
12g(2) (REPAIR AND REPLACE: BORON COMPOSITES) CLASSIFY DAMAGE	-	3	4	13
S829 CLASSIFY DAMAGED COMPOSITE AREAS				
12g(3) (REPAIR AND REPLACE: BORON COMPOSITES) REPAIR SOLID LAMINATE COMPONENTS	-	0	2	2
S841 PERFORM COMPOSITE PLY-TO-PLY DISBOND REPAIRS				
12g(4) (REPAIR AND REPLACE: BORON COMPOSITES) REPAIR BONDED HONEYCOMB COMPONENTS	b	0	4	11
S838 PERFORM MINOR SURFACE DAMAGE REPAIRS WITH STRUCTURAL ADHESIVE				
12g(5) (REPAIR AND REPLACE: BORON COMPOSITES) REPLACE COMPONENTS	-	0	0	0
S852 REPLACE COMPLETE COMPOSITE STRUCTURES				

TABLE 10  
 COMPARISONS OF JOB SATISFACTION INDICATORS  
 (PERCENT MEMBERS RESPONDING)

<u>VARIABLE INFORMATION</u>	<u>ACTIVE MILITARY SAMPLE (N=1,097)</u>	<u>USAF RESERVE (N=47)</u>	<u>AIR NATIONAL GUARD (N=63)</u>
<u>PERCEIVED JOB:</u>			
INTERESTING	52	75	84
SO-SO	26	11	11
DULL	21	11	5
<u>PERCEIVED USE OF TALENT:</u>			
FAIRLY WELL TO PERFECTLY	73	87	94
LITTLE OR NOT AT ALL	27	11	6
<u>PERCEIVED USE OF TRAINING:</u>			
FAIRLY WELL TO PERFECTLY	78	79	94
LITTLE OR NOT AT ALL	22	19	6
<u>SENSE OF ACCOMPLISHMENT FROM WORK:</u>			
SATISFIED	60	77	89
NEUTRAL	15	6	9
DISSATISFIED	25	13	2
<u>REENLISTMENT INTENTIONS:</u>			
WILL/PROBABLY WILL REENLIST	70	13	94
WILL NOT/PROBABLY WILL NOT REENLIST	23	*	*
WILL RETIRE	5	*	3
NO COMMENT	*	87	3

\* Denotes less than .5 percent

USAF Reserve personnel were more apt to find their jobs more interesting, feel they use their talents well, and get a good sense of accomplishment from their work than their active-duty military counterparts. They perceived their use of training about the same as active-duty military personnel. The USAF Reserve personnel, as civilians employees, were not asked to answer the question dealing with reenlistment. They are, however, military members of the Reserve unit where they work and 13 percent responded to the question, indicating they plan to reenlist in the USAF Reserve.

Of the three groups compared in Table 10, Air National Guard personnel responded most favorably to all questions. They indicate a high degree of job satisfaction in all areas. As with the USAF Reserve personnel, Air National Guard personnel were not asked to answer the reenlistment question if they were civilian employees. All but two individuals answered the question, with 94 percent indicating they plan to reenlist in the Air National Guard.

#### ADDITIONAL ISSUES

Technical training personnel requested data concerning the performance by corrosion control personnel of sealing functions and advanced composite structure and honeycomb core repair functions. Indications at that time were that the performance of these functions was widespread and data were sought to confirm or refute the indications. Rather than use a background question to gather data, tasks were written on each area and placed in the survey instrument under two separate duty sections, Duty R (Performing Sealing Functions) and Duty S (Performing Advanced Composite Structure and Honeycomb Repair Functions). As shown in Table 3, the survey reveals that relative time spent on the performance of these duties is not large. USAF Reserve personnel spend approximately 1 percent of their relative time performing sealing functions (Duty R) and less than 1 percent of their relative time performing advanced composite structure and honeycomb core repair functions (Duty T). Air National Guard personnel spent approximately 1 percent of their relative time in each of the two duties.

Another indication of the performance of these duties is shown in Tables 11 and 12, which list the tasks found in Duties R and S with percent members performing each task for the USAF Reserve, Air National Guard, and the active-duty military sample. Greater percentages of USAF Reserve and Air National Guard personnel report performing Duty R tasks than were reported by active-duty personnel. In Duty S, USAF Reserve and Air National Guard personnel report performing more tasks than the active-duty military and have higher percentages performing on the commonly performed tasks.

The Air Force Corrosion Program Manager requested data be gathered on four areas concerning annual industrial physical examinations and one on cardiopulmonary resuscitation (CPR) training. The technical training personnel were interested in the proliferation of Combat Oriented Maintenance Organization (COMO) procedures. Table 13 provides the data for the active-duty

TABLE 11

DUTY R: PERFORMING SEALING FUNCTIONS  
(PERCENT MEMBERS PERFORMING)

TASKS	ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
R812 APPLY FASTNER SEALS	2	23	10
R813 APPLY FILLET SEALS	1	19	21
R814 APPLY INJECTION SEALS	*	4	10
R815 APPLY PERMANENT FAYING SURFACE SEALS	2	15	22
R816 APPLY PROTECTIVE COATING TO SEALED AREAS	22	51	57
R817 APPLY REMOVABLE FAYING SURFACE SEALS	1	15	14
R818 APPLY RUBBER SEALS	2	13	11
R819 APPLY TOP COATING TO SEALED AREAS	22	57	57
R820 APPLY WINDOW SEALS	1	4	6
R821 INJECT SEALANTS	2	9	13
R822 INSPECT FOR DEFECTIVE SEALS	9	28	14
R823 INSPECT FOR DETERIORATED SEALANTS	12	43	44
R824 INSPECT FOR MISSING SEALANTS	12	40	33
R825 PREPARE SEALANT COMPOUNDS	10	47	48
R826 PREPARE SURFACES FOR SEALANT APPLICATION	12	55	49
R827 WEIGH SEALANT AND EXCELLERATOR PARTS FOR MIXING	2	9	14

\* Denotes less than .5 percent

TABLE 12

DUTY 5: PERFORMING ADVANCED COMPOSITE STRUCTURE  
AND HONEYCOMB REPAIR FUNCTIONS  
(PERCENT MEMBERS PERFORMING)

TASKS	ACTIVE MILITARY SAMPLE (N=1,097)	USAF RESERVE (N=47)	AIR NATIONAL GUARD (N=63)
S828 APPLY PROTECTIVE COATINGS TO COMPOSITE SURFACES	21	38	38
S829 CLASSIFY DAMAGED COMPOSITE AREAS	3	4	13
S830 COIN TAP COMPOSITE SURFACES TO DETERMINE DEFECTS	4	17	11
S831 COIN TAP FIBERGLASS TO DETERMINE DEFECTS	5	17	22
S832 COIN TAP HONEYCOMB CORES TO DETERMINE DEFECTS	4	19	17
S833 COORDINATE DAMAGE INSPECTION WITH NDI SECTION FOR ADVANCED COMPOSITE REPAIR	4	15	3
S834 CURE ADVANCED COMPOSITE REPAIRS USING HEAT-BLANKET-STACKED METHOD	*	*	*
S835 CURE ADVANCED COMPOSITE REPAIRS USING HEAT-BLANKET-VACUUM METHOD	*	*	*
S836 PATCH SURFACED DAMAGE AREA WITH GRAPHITE-EPOXY PRE-PREG FABRIC	*	2	2
S837 PATCH SURFACED DAMAGE AREA WITH TITANIUM FOIL PATCH PLATES	*	*	*
S838 PERFORM MINOR SURFACE DAMAGE REPAIRS WITH STRUCTURAL ADHESIVE	*	4	11
S839 PERFORM MINOR SURFACE DENT REPAIRS WITH STRUCTURAL ADHESIVE	1	9	14
S840 PERFORM COMPOSITE PLY-TO-CORE DELAMINATION REPAIRS	*	2	*
S841 PERFORM COMPOSITE PLY-TO-PLY DISBOND REPAIRS	*	2	2
S842 PERFORM EVALUATION AND CLASSIFICATION OF DAMAGED COMPOSITE AREAS	1	2	2
S843 PREPARE COMPOSITE SURFACES BEFORE APPLYING PROTECTIVE COATINGS	12	19	27
S844 REMOVE COMPLETE COMPOSITE STRUCTURES	*	*	2
S845 REMOVE DAMAGED COMPOSITE AREAS WITH DIAMOND CUTTERS	*	*	*
S846 REMOVE DAMAGED COMPOSITE AREAS WITH HIGH SPEED ROUTERS	*	*	2
S847 REMOVE DAMAGED COMPOSITE MATERIALS WITH SPECIAL COMPOSITE MATERIALS REPAIR KITS	*	2	*
S848 REMOVE DAMAGED HONEYCOMB CORE WITH SPECIAL HONEYCOMB STRUCTURE REPAIR KITS	*	2	2
S849 REMOVE PROTECTIVE COATINGS FROM COMPOSITE SURFACES	13	21	19
S850 REPAIR DAMAGED COMPOSITE MATERIALS WITH SPECIAL COMPOSITE MATERIALS REPAIR KITS	*	2	3
S851 REPAIR DAMAGED HONEYCOMB CORE WITH SPECIAL HONEYCOMB STRUCTURE REPAIR KIT	*	2	2
S852 REPLACE COMPLETE COMPOSITE STRUCTURES	*	*	*
S853 RESEARCH -3 TECHNICAL ORDER FOR EXACT REPAIR PROCEDURES ON ADVANCED COMPOSITES	2	4	3
S854 RESEARCH -3 TECHNICAL ORDER FOR EXACT REPAIR PROCEDURES ON HONEYCOMB CORES	2	4	5

\* Denotes less than .5 percent

TABLE 13  
 SPECIAL DATA REQUESTED  
 (PERCENT MEMBERS RESPONDING POSITIVELY)

<u>VARIABLE INFORMATION REQUESTED</u>	<u>ACTIVE MILITARY SAMPLE (N=1,097)</u>	<u>USAF RESERVE (N=47)</u>	<u>NATIONAL GUARD (N=63)</u>
INDUSTRIAL PHYSICAL WITHIN LAST YEAR	81	72	65
PHYSICAL INCLUDED AUDIO EXAM	84	85	94
PHYSICAL INCLUDED BLOOD EXAM	76	96	95
PHYSICAL INCLUDED RESPIRATORY EXAM	85	79	89
CPR TRAINING COMPLETED	62	98	60
UNIT OPERATES UNDER COMO PROCEDURES	31	40	29

military, USAF Reserve, and Air National Guard samples. The data reflect that Air Force Reserve Component personnel are not satisfying the annual industrial physical requirement to the same degree as the active-duty military. In some cases, the percent of personnel having a part of the industrial physical examination, such as an audio exam, exceeds the percent members actually reporting having taken the physical examination. This can be accounted for by the fact that those reporting positive on an audio exam, for instance, are indicating they had that exam as part of their last physical no matter when they had taken the physical, while positive response on the physical examination question indicates that the physical itself had been taken within the last year.

### IMPLICATIONS

Full-time USAF Reserve and Air National Guard personnel were included in this survey to determine if they perform the same job as their active duty military counterparts. The data support the proposition that they do perform the same job, although on a broader base. The training documents reviewed meet the needs of the USAF Reserve and Air National Guard and are supported by the survey data. Members of the USAF Reserve and the Air National Guard indicate they are more satisfied with their jobs. This is further supported by the extremely high percentage of Air National Guard personnel indicating positive enlistment intentions.