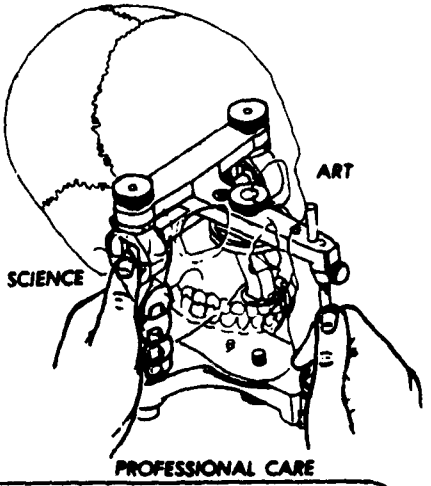
UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT



DENTAL LABORATORY

AFSC 982X0

AFPT 90-981-834

AUGUST 1988

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 the Dental Laboratory career ladder (AFSC 982X0). The project was directed by USAF Program Technical Training, Volume Two, dated May 1987. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument was developed by Second Lieutenant Wendy Sotello, Inventory Development Specialist. Mr Wayne Fruge, Computer Programmer, provided computer support for this project. Administrative support was provided by Ms Linda Cole. First Lieutenant Michael A. Solorio analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Thomas E. Ulrich, Chief, Airman Analysis Branch, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training management personnel (see distribution on page i). Additional copies are available upon request to 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: Survey results are based on responses from 469 Dental Laboratory personnel (AFSC 982X0). This represents 72 percent of all assigned 982X0 airmen. Incumbents were surveyed across various major commands and included 3-, 5-, 7-, and 9-skill level personnel, as well as Chief Enlisted Managers (CEMs).

2. Career Ladder Structure: Overall, seven different jobs are identified in the 982X0 specialty, with most 982X0 airmen working as Base Dental Laboratory or Prosthodontic Service Center Personnel. The organizational structure of the Dental Laboratory specialty is made up of three different sizes of laboratories. These range from only 1 person to over 100 technicians assigned within a particular type of laboratory. Personnel assigned to smaller laboratories perform a wide range of tasks, while airmen assigned to the larger area dental labs specialize in certain functions. Some of the specialized groups relate to removable partial dentures, ceramics, and orthodontics. Most 9-skill level and CEM personnel grouped into one job--Dental Laboratory NCOICs and Managers.

3. Career Ladder Progression: Both 3- and 5-skill level personnel are performing jobs primarily technical in nature, with little responsibility for supervision and management. Seven-skill level airmen performed technical tasks of increased difficulty, while taking on some supervisory functions. The 9-skill level and CEM personnel devoted most of their time to management and supervisory duties.

4. AFR 39-1 Specialty Descriptions: The descriptions in AFR 39-1 for the 982X0 Dental Laboratory career ladder provide a broad and accurate overview of tasks and duties performed.

5. Training Analysis: An evaluation of the 982X0 training documents reveals several areas not supported by survey data. Specifically, 19 elements in the Specialty Training Standard (STS) have less than 20 percent of 982X0 airmen performing related tasks. Likewise, 18 Plan of Instruction (POI) objectives, accounting for 153 out of 866 course hours, have less than 30 percent performing. Overall, survey data suggest that a review of the training documents is necessary.

6. Implications: Overall, analysis indicates that both the STS and POI require review. A possible reason for so many elements not being supported could be the different functions performed between the laboratories. Personnel assigned to either a base dental lab (BDL) or a prosthodontic service center (PSC) perform a significantly different job than airmen assigned to area dental labs (ADL). It appears that channelized training could be useful if airmen were targeted for a specific lab coming out of tech school. Survey data did, however, reveal that 64 percent of first-enlistment personnel go to a BDL or PSC on their first assignment.

OCCUPATIONAL SURVEY REPORT
DENTAL LABORATORY CAREER LADDER
(AFSC 982X0)

INTRODUCTION

This is a report of an occupational survey of personnel in the Dental Laboratory career ladder completed by the Occupational Analysis Division, USAF Occupational Measurement Center, in July 1988. The last occupational survey of this career ladder was conducted in September 1982. The present survey was requested by the Chief of Health Education and Training Division (HQ ATC/SGAT), Randolph AFB Texas. The primary purpose for conducting the survey is to collect current data for use in updating and validating the STS and POI. A secondary reason for surveying the specialty is to gather data on special issues such as special experience identifier (SEI) utilization, laboratory experience and preference, completion of advanced technical school training, instructor duty, and certification.

Background

As described in AFR 39-1 Specialty Descriptions for this AFSC, Dental Laboratory technicians are responsible for fabrication and repair of complete dental prostheses, fixed and removable partial dental prostheses, individual crowns, inlays, pontics, splints, stabilizers, and space maintainers, using precious and nonprecious metals, acrylics, and porcelains. Administrative tasks include maintenance of dental laboratory records, preparation of required laboratory reports, and requisition, storage, and issuance of supplies.

Personnel usually enter the Dental Laboratory career ladder by first attending a 6-month Dental Laboratory Specialist Course (3ABR98230) at the 3790th Medical Service Training Wing (formerly the USAF School of Health Care Sciences), Sheppard AFB, Texas. These personnel may be either "pipeline" students from basic training or personnel cross-training from other specialties. After completing the 3-skill level course, personnel are assigned to either an area dental laboratory (ADL), a prosthodontic service center (PSC), or to one of the base dental laboratories (BDL) located worldwide.

To better understand the functions and responsibilities of Dental Laboratory personnel, some information is presented here on the organizational structure of USAF dental laboratories. Base dental laboratories (BDLs) are responsible for supporting their base dental facilities with the fabrication and repair of complete partial dentures, fixed partial dentures, crowns, inlays, and some removable partial dentures. Some BDLs are larger than others because the clinics they support vary in size. Typically, one to four technicians are located at a base laboratory.

A prosthodontic service center (PSC) is slightly larger and more intricate than a BDL, having about 10 to 15 technicians assigned to the center. They have more complex missions, such as residency training, and they have a prosthodontist assigned as the laboratory officer.

An area dental laboratory (ADL) is a large, centrally located facility that has equipment and personnel to fabricate almost any prostheses a dentist might order. This type of lab might have over 100 982X0 airmen assigned. ADLs support BDLs and PSCs within their geographic area of responsibility. To operate most efficiently, ADL functions are performed by operational sections. The four ADLs are located at Barksdale AFB LA, Lowry AFB CO, Kadena AB, Japan, and Wiesbaden AB, Germany.

Due to equipment and personnel limitations, a base laboratory is not self-sufficient. However, all BDLs do provide full laboratory service by using a combination of their individual capabilities and varying amounts of supplemental assistance from a PSC or an ADL. For this reason, a BDL is said to have a satellite relationship with a PSC and an ADL.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-982-834. A preliminary task list was prepared by the Inventory Developer after carefully reviewing the previous task list, current career ladder publications, training documents, and directives to determine the appropriateness of each task. This tentative task list was refined and validated in the field through personal interviews with subject-matter experts from the 3790th Medical Service Training Wing (formerly the USAF School of Health Care Sciences) and operational dental laboratories. To ensure full coverage of the variety of tasks performed by career ladder members, representative bases were identified according to their uniqueness or diversity of functions performed. Operational units housed at the following bases were visited:

BASE	RATIONALE FOR VISIT
Sheppard AFB TX	Technical Training Center
Barksdale AFB LA	Area Dental Laboratory
Eglin AFB FL	Experienced BDL Technicians
Keesler AFB MS	Prosthodontic Service Center
Lackland AFB TX	Prosthodontic Training Center

Other significant contacts with personnel having career ladder involvement included Air Force Military Personnel Center (AFMPC); classification, functional, and resource managers; Air Force Functional Manager; HQ ATC Training Staff Officer and the training manager.

This process resulted in a final job inventory containing 522 tasks grouped under 15 duty headings. Also included was a background section requesting such information as grade, time in service, job satisfaction, reenlistment intentions, lab assignment, duty title, preference in lab assignment, special experience identifiers (SEIs), additional training, and equipment used.

Survey Administration

From August 1987 through January 1988, Consolidated Base Personnel Offices (CBPO) at operational units worldwide administered the inventory to all eligible DAFSC 982X0 personnel. Members eligible for the survey consisted of the total assigned population, excluding the following: (1) hospitalized personnel; (2) members in transition for a permanent change of station; (3) members retiring during the time inventories were administered to the field; and (4) members in job less than 6 weeks. Participants were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who filled out an inventory booklet first completed an identification and biographical information section, and then checked each task performed in their current job. Next, members rated these tasks on a 9-point scale showing relative time spent on each task as compared to all other tasks checked. Ratings ranged from 1 (very small amount of time spent) to 9 (very large amount of time spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job. The rating for each task is then divided by the sum of all the ratings, then multiplied by 100 to provide a relative percentage of time for each task. This procedure provides the basis for comparing tasks in terms of both percent members performing and average relative time spent.

Survey Sample

Personnel were selected to participate in this survey to ensure accurate representation across major commands (MAJCOM) and paygrade groups. Table 1 displays the MAJCOM distribution of survey respondents corresponding with the percent of assigned personnel as of June 1987. In addition, Table 2 displays survey respondents across paygrade groups. As illustrated in these tables, the survey sample is representative and comprehensive.

TABLE 1

COMMAND REPRESENTATION OF SURVEY SAMPLE
AFSC 982X0

COMMAND	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
SAC	25	21
ATC	23	25
USAFE	13	10
MAC	12	12
TAC	9	11
PACAF	8	9
AFSC	3	3
AFLC	3	3
AF ACADEMY	1	1
ALASKAN AIR CMD	2	2
OTHER	1	3
TOTAL	100%	100%

Total Assigned* - 647
Total Eligible** - 573
Total Sample - 469
Percent of Assigned in Sample - 72%
Percent of Eligible in Sample - 82%

* Assigned strength as of June 1987
** Excludes those in PCS, retirement, discharge, or hospital status; and those with less than 6 weeks on the job

TABLE 2

PAYGRADE DISTRIBUTION OF SURVEY SAMPLE
AFSC 982X0

PAYGRADE	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
AIRMAN	34	32
E-4	29	29
E-5	20	20
E-6	9	10
E-7	7	7
E-8	-	1
E-9	-	-

* Assigned strength as of June 1987
- Less than 1 percent

Task Factor Administration

Selected senior personnel completed a second booklet in addition to the job inventory booklet. This second booklet is used to gather information for either training emphasis (TE) or task difficulty (TD). The TE and TD booklets are processed separately from the job inventories and provide task rating information which is used in a number of different analyses discussed in more detail in the following section of this report.

Task Difficulty (TD). Task difficulty is defined as the length of time an average airman needs to learn a task. Given this definition, 51 senior technicians rated the difficulty of all the inventory tasks on a 9-point scale (from extremely low to extremely high). To ensure the validity of the ratings, each technician's rating was compared to those of every other senior technician's rating. A statistical measurement of their agreement, known as the interrater reliability (as assessed through components of variance of standard group mean), was computed at .95, indicating high agreement among these raters. Task difficulty ratings were adjusted so tasks of average difficulty would have ratings of 5.00. The resulting data are essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Training Emphasis (TE). Training emphasis is a rating of which tasks require structured training for first-term personnel. Experienced technicians (primarily 7-skill level) completing TE booklets were asked to rate tasks on a 10-point scale (from no training emphasis to extremely high training emphasis). Ratings for first-term personnel were independently collected from 52 NCOs. To ensure validity of the ratings, each technician's ratings were compared to those of every other senior technician's ratings. A statistical measurement of their agreement, known as the interrater reliability (as assessed through components of variance of standard group means), was computed at .97, indicating very high agreement among these raters. The average TE rating is 2.67, with a standard deviation of 1.96. These data also provide essentially a rank ordering of tasks whereby those with the highest ratings are perceived as most important for structured training.

TE ratings provide objective information which should be used along with task difficulty and percent members performing data when making training decisions. Percent members performing data provide information on how many personnel perform the tasks, TE and TD ratings provide insights on which tasks need training. Using these factors, in conjunction with appropriate training documents and directives, career field managers can tailor training programs to accurately reflect the needs of the user by more effectively determining when, where, and how to train first-enlistment AFSC 982X0 personnel.

Data Processing and Analysis

Once job inventories are returned from the field, task responses and background information are optically scanned. Other biographical information (such as name, base, etc.) are typed onto disks and entered directly into the computer. Once both sets of data are in the computer, they are merged to form

a complete case record for each respondent. Computer-generated programs, using Comprehensive Occupational Data Analysis Program (CODAP) techniques, are then applied to the data.

CODAP produces composite job descriptions for respondents based on their ratings of specific inventory tasks. These job descriptions provide information on percent members performing each task, the relative average percent time spent performing tasks, and the cumulative percent time spent by all members performing each task in the inventory. In addition to the job descriptions based upon inventory task data, the program produces summaries that show how members of each group responded to each background item. Background items aid in identifying characteristics of the group, such as DAFSCs represented, time in career field, total active federal military service (TAFMS), experience in various functional areas, equipment operated, and job satisfaction levels.

SPECIALTY JOBS
(Career Ladder Structure)

A key aspect of the USAF occupational analysis program is to examine the job structure of a career ladder. Based on incumbent responses to survey questions, the tasks performed by career ladder personnel are examined and jobs are identified based on the similarity of tasks and the relative time they spent performing the tasks. The resulting job structure is then compared to official career ladder documents. This information can be used to examine the accuracy and completeness of career ladder documents (AFR 39-1 Specialty Descriptions and Specialty Training Standards) and to gain an understanding of current utilization patterns.

For this report, the career ladder structure is described in terms of clusters and independent job types. The job type is the basic unit of job analysis. It represents a specific group of individuals performing basically the same tasks and spending similar amounts of time on those tasks. When job type members perform tasks in common with other groups, they merge to form a larger unit of related jobs termed a cluster. Specialized job types too dissimilar to fit within a cluster are labeled independent job types (IJT).

Structure Overview

The specialty job structure of the Dental Laboratory career field was determined by performing a job type analysis of the survey data provided by the 469 survey respondents. The jobs performed by these airmen separated into three clusters and four independent job types, as shown in Figure 1.

AFSC 982X0 CAREER LADDER STRUCTURE

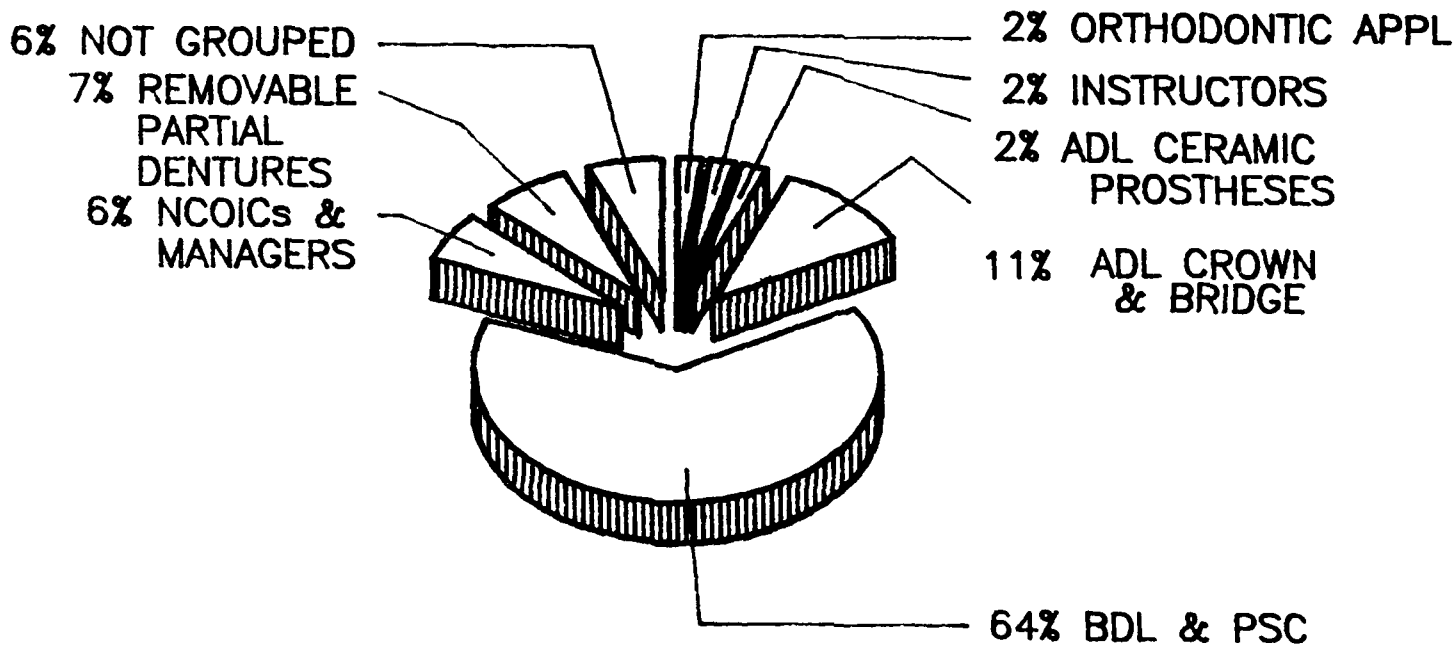

FIGURE 1

The three clusters and four independent job types are listed below by title. The stage (STG) number beside each title is a computer-generated reference number. The letter "N" stands for the number of personnel in each group.

I. ORTHODONTIC APPLIANCE FABRICATORS IJT
(STG116, N=9)

II. BASE DENTAL LAB AND PROSTHODONTIC SERVICE CENTER PERSONNEL CLUSTER
(STG036, N=300)

III. TECHNICAL SCHOOL INSTRUCTORS IJT
(STG050, N=9)

IV. AREA DENTAL LAB CERAMIC PROSTHESES FABRICATORS IJT
(STG059, N=10)

V. AREA DENTAL LAB CROWN AND BRIDGE FABRICATION PERSONNEL CLUSTER
(STG014, N=53)

VI. DENTAL LAB NCOICs AND MANAGERS IJT
(STG032, N=28)

VII. REMOVABLE PARTIAL DENTURE PERSONNEL CLUSTER
(STG007, N=32)

Ninety-four percent of the survey respondents are represented in the above job groups. The remaining 6 percent performed jobs that did not group with any of the defined jobs. Brief descriptions of each cluster and independent job type are presented below. In addition, Table 3 provides selected background information across these jobs, while Appendix A lists common tasks performed by incumbents in these groups.

Descriptions of Career Ladder Jobs

I. ORTHODONTIC APPLIANCE FABRICATORS IJT (STG116, N=9). This small group of nine airmen represents a highly specialized segment of the Dental Laboratory specialty. They perform tasks related to fabrication and repair of orthodontic appliances and perform their duties in either a base dental lab or a prosthodontic service center. Examples of specific functions include fabrication and repair of acrylic and special orthodontic appliances, fixed space maintainers, lingual arches, and night guards. Examples of equipment unique to this group include an electric soldering machine and an orthodontic model trimmer. Comprised mostly of 5-skill level personnel, about half of the group is located overseas. Overall, they have an average TAFMS of 5 years, and are predominantly in paygrade E-4. Of the average 69 tasks performed by these incumbents, typical tasks include:

TABLE 3

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	ORTHO-DONTIC APPL FAB IJT (STG116)	BDL/PSC PERSONNEL CLUSTER (STG036)	TECH SCHOOL INSTRUCTORS IJT (STG050)	ADL CERAMIC PROSTHESES FABRICATORS IJT (STG059)	ADL CROWN AND BRIDGE FABRICATORS CLUSTER (STG014)	DENTAL LAB NCOICs AND MANAGERS IJT (STG032)	REMOVABLE PARTIAL DENTURE PRSNL CLUSTER (STG007)
NUMBER IN GROUP	9	300	9	10	53	28	32
PERCENT OF SAMPLE	2%	64%	2%	2%	11%	6%	7%
PERCENT IN CONUS	44%	79%	100%	70%	77%	75%	72%
DAFSC DISTRIBUTION (PERCENT):							
98230	22%	21%	0	20%	36%	4%	19%
98250	78%	55%	22%	50%	58%	11%	75%
98270	0	23%	78%	30%	6%	71%	6%
98290/00	0	*	0	0	0	14%	0
PREDOMINATE PAYGRADES	E-4	E-3/4/5	E-5	E-4/5/6	E-3/4	E-7/8/9	E-4/5
AVERAGE TICF (MOS)	54	71	92	89	35	164	48
AVERAGE TAFMS (MOS)	58	79	110	92	40	174	55
PERCENT IN 1ST ENL	44%	48%	0	50%	75%	4%	53%
AVERAGE NUMBER OF TASKS PERFORMED	69	156	102	59	40	98	37
AVERAGE NUMBER SUPERVISED	1	3	3	3	2	6	6
PERCENT SUPERVISING	22%	41%	22%	40%	23%	89%	100%

* Less than 1 percent

Pour diagnostic casts
Attach wires to casts for orthodontic appliances
Bend wire for orthodontic appliances
Fabricate acrylic orthodontic appliances
Finish and polish orthodontic appliances
Finish and polish orthodontic diagnostic casts
Pour orthodontic impression using orthodontic base former

II. BASE DENTAL LAB AND PROSTHODONTIC SERVICE CENTER PERSONNEL CLUSTER (STG036 N=300). These 300 airmen formed the largest group, representing 64 percent of the total survey sample. This cluster provides a comprehensive view of work done at the base dental laboratory (BDL) and the prosthodontic service center (PSC). The overall mission of these two types of laboratories is to fabricate and repair dental prostheses to include crowns, inlays, and fixed partial dentures. In addition, these two categories of laboratories are the smaller types within the specialty. Because only a small number of personnel are assigned to each of these laboratories, these airmen must perform a wider variety of tasks. Many of these tasks relate to general laboratory functions, such as articulation using arbitrary mounting techniques, finishing and polishing of acrylic products, and all steps associated with casting. The more intricate tasks are performed at the larger area dental laboratories where more specialization can occur. These airmen perform an average of 156 tasks and typical tasks include:

Articulate using arbitrary mounting techniques
Eliminate positive stone nodules
Finish and polish acrylic products
Key casts for mounting
Pour master casts
Disinfect appliances when leaving lab
Fabricate complete dentures using acrylic teeth
Finish and polish crowns, inlays, or fixed partial dentures
Wax-up patterns for crowns
Cutback substructure wax patterns for porcelain fused to metal restorations

As with the previous group, a majority of these members hold a 5-skill level. Most are in paygrade E-3, E-4, or E-5 and have an average TAFMS of 6 1/2 years. A significant characteristic of this group is that 144 of these airmen are in their first enlistment, accounting for the largest concentration of first-enlistment personnel in the career field.

III. TECHNICAL SCHOOL INSTRUCTORS IJT (STG50, N=9). This independent job type includes personnel who teach resident course classes at the 3790th Medical Service Training Wing at Sheppard AFB. While performing many of the technical tasks associated with their career ladder, they also perform a series of tasks unique to the classroom setting. Representative tasks include:

Conduct resident course classroom training
Evaluate progress of resident course students
Prepare lesson plans
Score tests
Boil out wax from molds
Deflask acrylic processed appliances
Key casts for mounting
Fabricate complete dentures using acrylic teeth

Members in this group predominantly hold a 7-skill level, are in paygrade E-5, and average of almost 9 years TAFMS.

IV. AREA DENTAL LABORATORY CERAMIC PROSTHESES FABRICATORS IJT (STG059, N=10). This small independent job type reflects another highly specialized job within the 982X0 career ladder. Sixty-one percent of these airmen's time is spent on fabricating ceramic prostheses at an area dental laboratory. Typically, these incumbents apply, fabricate, stain, fire, and glaze porcelain to fabricate products such as crowns. Members in this group had the largest percentage of personnel using a vacuum fired porcelain furnace and micro finisher air abrader. Of the average 59 tasks these specialist perform, characteristic tasks include:

Check finished casting on die for accurate fit
Strip crowns or inlays of veneered material
Weigh dental alloys using troy system
Apply and fire over-glaze to ceramic prostheses
Apply body and incisal porcelain
Contour fired porcelain
Fire opaque porcelain
Perform ultrasonic cleaning procedures of contoured porcelain surfaces
Steam clean ceramic restoration prior to add-ons or glazing

These specialists have an average TAFMS of over 7 1/2 years and are mostly 5- or 7-skill level qualified.

V. AREA DENTAL LABORATORY CROWN AND BRIDGE FABRICATORS CLUSTER (STG014, N=53). This job includes 53 specialists performing crown and bridge fabrication in the area dental laboratory. Overall, these incumbents represent a more junior group of personnel performing specialized functions within a

large area dental laboratory. While performing general laboratory tasks common to other job groups, this group spends a a majority of their time (52 percent) fabricating crowns, inlays, fixed partial dentures. Of the average 40 tasks performed by these airmen, representative tasks include:

Bead and box impressions using wax
Lubricate dies
Perform selective grinding procedures on crowns, inlays, and fixed partial dentures
Repair metal crowns using soldering technique
Sprue wax patterns for crowns, inlays, and fixed partial dentures
Wax-up patterns for crowns
Wax-up patterns using wax additive technique
Cutback substructure wax patterns for porcelain fused to metal restorations

Incumbents in this cluster have an average TAFMS of slightly over 3 years, most are in their first enlistment, and 58 percent hold a 5-skill level.

VI. DENTAL LABORATORY NCOICs AND MANAGERS IJT (STG032, N=28). Members in this small group represent the most senior level of personnel in the survey sample. The majority are in paygrades E-7, E-8, or E-9, and most are qualified to a 7- or 9-skill level. With an average of over 14 years TAFMS, these incumbents devote 79 percent of their time performing supervisory, managerial, or administrative functions. Not only do they spend time performing senior-level functions, they also spend one-fifth of their job time performing technical dental laboratory tasks. Representative tasks of the average 98 tasks performed by this group include:

Determine work priorities
Participate in staff meetings
Counsel subordinates on military-related matters
Implement quality control procedures
Interpret policies for subordinates
Supervise civilians
Supervise Dental Lab Specialists (AFSC 98250)
Evaluate compliance with performance standards
Evaluate quality control procedures
Write APR

VII. REMOVABLE PARTIAL DENTURE PERSONNEL CLUSTER (STG007, N=32). Most of these airmen are assigned to an area dental laboratory and are responsible for fabricating removable partial dentures (RPDs). As mentioned previously, Area Dental Laboratory personnel are more likely to specialize because of the large size of their laboratories. These personnel are a perfect example of this specialization, with 53 percent of their time spent on fabrication and repair

of RPDs. Unlike Base Dental Laboratory and Prosthodontic Service Center personnel, who spend a large portion of their time fabricating crowns, inlays, and fixed partial dentures, these airmen spend only 5 percent of their on these duties. Typically, these airmen fabricate RPD framework using a ticomatic casting machine and an electric ticonium soldering machine. RPD fabricators perform an average of 37 tasks and typical tasks include:

Boil out wax from molds
Block out and relieve master casts
Cast partial denture framework
Check finished framework on duplicate master casts for accurate fit
Check occlusion of RPD framework on casts
Finish and polish RPD framework
Finish and polish swing-lock RPD
Sprue wax patterns for RPD
Transfer designs from master casts to refractory casts

Predominantly, these airmen hold the rank of E-4 or E-5, and a 5-skill level. They have an average TAFMS of 4 1/2 years and are mostly stationed in CONUS locations.

Job Structure Comparison to Previous Survey

The results of the specialty job analysis were compared to those of the last occupational survey report completed in September 1982. A review of the 1982 jobs indicates that most of the groups could be matched to similar jobs performed by current sample groups. Only minor variations were noted between the two studies. For example, the School of Health Care Science Instructors grouped separately in this study, but were not identified as a separate group in the 1982 study. Also, the term prosthodontic service center (PSC) was not a title used in 1982; yet, in todays Dental Laboratory specialty, it is a common term used to describe a unit slightly larger than a base dental laboratory (for further explanation, refer back to the INTRODUCTION section of this report). Overall, the basic structure of the Dental Laboratory specialty has remained the same.

ANALYSIS OF DAFSC GROUPS

In addition to the analysis of the career ladder structure, an examination of the jobs and tasks performed at each skill level is helpful in understanding the Dental Laboratory specialty. The DAFSC analysis compares the skill levels to identify differences in task performance. This information may then be used to determine whether personnel are utilized in the manner specified by the Specialty Description (AFR 39-1) and may serve as a basis for considering changes to current utilization policies and training programs.

Comparison of the duty and task performance between DAFSCs 98230 and 98250 indicated that, even though there are some minor differences, the jobs they perform are essentially the same. Therefore, they will be discussed as a combined group in this report. Examples of tasks distinguishing between these airmen include a larger percentage of 5-skill level personnel performing selective grinding procedures on crowns, inlays, and fixed partial dentures, writing APRs, and participating in workshops. The distribution of skill-level groups across specialty jobs is shown in Table 4, while Table 5 lists the relative time spent on each duty. Further discussion of these data is contained below.

Skill Level Descriptions

DAFSC 98230/50: The 349 airmen in the 3- and 5-skill level group (representing 74 percent of the 982X0 survey sample) perform an average of 107 tasks. These airmen are largely concentrated with'n the Base Dental Laboratory and Prosthodontic Service Center Personnel cluster (69 percent) and the Area Dental Laboratory Crown and Bridge Fabrication Personnel cluster (15 percent, see Table 4). Approximately 28 percent of their time is spent performing general laboratory functions, while about 20 percent of their time is spent fabricating crowns, inlays, and fixed partial dentures (see Table 5).

Examples of tasks likely to be performed by 3- and 5-skill level personnel include: articulate using arbitrary mounting techniques, wax-up patterns for crowns, and pour diagnostic casts. A more detailed job description for these journeyman-level airmen is presented in Table 6.

DAFSC 98270: Seven-skill level personnel (24 percent of the 982X0 survey sample) perform an average of 158 tasks, and 66 percent perform as Base Dental Laboratory and Prosthodontic Service Center Personnel and 19 percent as Dental Laboratory NCOICs and Managers (see Table 4). Other 7-skill level personnel account for most of the membership in the School of Health Care Sciences Instructor group. Overall, these airmen supervise an average of three people and spend 39 percent of their time on supervisory and managerial tasks (duties A through E). In addition, they also spend considerable time performing technical duties (see Table 5). Examples of tasks performed by this group include: determine work priorities, finish and polish acrylic products, and participate in staff meetings. A more complete listing of representative tasks for these incumbents can be found in Table 7.

Tasks which best distinguish the 7-skill level personnel from their junior counterparts are presented in Table 8. As expected, the key difference is a greater emphasis on supervisory functions for 7-skill level airmen. Examples of tasks with the greatest difference in members performing include senior-level personnel determining equipment requirements, assigning personnel to duty positions, and establishing supply levels.

DAFSC 98290/00: The six members at this skill level (1 percent of the survey sample) are clearly the managers in this career ladder. They perform an average of 144 tasks and spend approximately 71 percent of their time performing supervisory and managerial tasks (Duties A through E, see Table 5).

TABLE 4

DISTRIBUTION OF 982X0 DAFSC GROUP MEMBERS
ACROSS CAREER LADDER JOBS
(NUMBER AND PERCENT RESPONDING)

CAREER LADDER JOBS	DAFSC 98230/50 (N=349)		DAFSC 98270 (N=114)		DAFSC 98290/00 (N=6)	
	NBR	PCT	NBR	PCT	NBR	PCT
I. ORTHODONTIC APPLIANCE FABRICATORS IJT (STG116, N=9)	9	3%	0	0	0	0
II. BASE DENTAL LAB AND PROSTHODONTIC SERVICE CENTER PERSONNEL CLUSTER (STG036, N=300)	230	69%	68	66%	2	33%
III. TECH SCHOOL INSTRUCTORS IJT (STG050, N=9)	2	*	7	7%	0	0
IV. AREA DENTAL LAB CERAMIC PROSTHESES FABRICATORS IJT (STG059, N=10)	7	2%	3	3%	0	0
V. AREA DENTAL LAB CROWN AND BRIDGE FABRICATION PERSONNEL CLUSTER (STG014, N=53)	50	15%	3	3%	0	0
VI. DENTAL LAB NCOICs AND MANAGERS IJT (STG032, N=28)	4	1%	20	19%	4	67%
VII. REMOVABLE PARTIAL DENTURE PERSONNEL CLUSTER (STG007, N=32)	30	9%	2	2%	0	0
TOTAL	332	100%	103	100%	6	100%

* Less than 1 percent

TABLE 5

AVERAGE PERCENT TIME SPENT PERFORMING DUTIES BY
982X0 DAFSC GROUPS

DUTIES	DAFSC 98230/50 (N=349)	DAFSC 98270 (N=114)	DAFSC 98290/00 (N=6)
A ORGANIZING AND PLANNING	4	9	17
B DIRECTING AND IMPLEMENTING	2	10	19
C INSPECTING AND EVALUATING	2	7	17
D TRAINING	2	9	10
E PERFORMING ADMINISTRATIVE FUNCTIONS	2	4	8
F PERFORMING SUPPLY FUNCTIONS	1	5	1
G PERFORMING GENERAL LABORATORY FUNCTIONS	28	15	6
H PERFORMING INFECTION CONTROL FUNCTIONS	4	3	1
I FABRICATING AND REPAIRING COMPLETE DENTURES	6	4	*
J FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES (RPD)	9	5	3
K FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	20	14	6
L FABRICATING CERAMIC PROSTHESES	8	9	6
M FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	4	2	4
N FABRICATING SPECIAL PROSTHESES	1	*	*
O PERFORMING MEDICAL READINESS FUNCTIONS	6	3	1

* Less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding

TABLE 6

REPRESENTATIVE TASKS PERFORMED BY
DAFSC 98230 AND 98250 PERSONNEL
(N=349)

TASKS		PERCENT MEMBERS PERFORMING
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	85
G207	ARTICULATE USING BITE REGISTRATIONS	76
G232	KEY CASTS FOR MOUNTING	72
G220	ELIMINATE POSITIVE STONE NODULES	70
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	70
G211	BLOCK OUT UNDESIRABLE UNDERCUTS	68
G236	POUR DIAGNOSTIC CASTS	68
G237	POUR MASTER CASTS	68
G258	TRIM DIAGNOSTIC CASTS	68
H263	DISINFECT APPLIANCES WHEN LEAVING LAB	66
G228	FINISH AND POLISH ACRYLIC PRODUCTS	62
K410	WAX-UP PATTERNS FOR CROWNS	62
K394	LUBRICATE DIES	58
0503	DON AND DOFF CHEMICAL WARFARE PROTECTIVE EQUIPMENT	58
E169	MAKE ENTRIES ON DD FORMS 2322 (DENTAL LABORATORY WORK AUTHORIZATION), SUCH AS CLV CODES AND GOLD EXPENDITURES	56
K395	PERFORM PREVENTIVE MAINTENANCE ON CROWN AND FIXED PARTIAL	54
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL	54
K414	WAX-UP PATTERNS USING WAX ADDITIVE TECHNIQUE	51
K392	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING BENCH SET TECHNIQUE	46
K370	CHECK OCCLUSAL CONTACTS OF WAX PATTERNS WITH POWDERED MEDIUM	45
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	45
L457	WAX SUBSTRUCTURE PATTERNS TO FULL CONTOUR PRIOR TO CUTBACK	36

TABLE 7

REPRESENTATIVE TASKS PERFORMED BY
DAFSC 98270 PERSONNEL
(N=114)

TASKS		PERCENT MEMBERS PERFORMING
B38	COUNSEL SUBORDINATES ON MILITARY-RELATED MATTERS	81
A19	PARTICIPATE IN STAFF MEETINGS	79
A3	DETERMINE EQUIPMENT REQUIREMENTS	75
B66	SUPERVISE DENTAL LAB SPECIALISTS (AFSC 98250)	74
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	72
K410	WAX-UP PATTERNS FOR CROWNS	66
D114	COUNSEL TRAINEES ON TRAINING PROGRESS	64
G228	FINISH AND POLISH ACRYLIC PRODUCTS	64
C85	EVALUATE QUALITY CONTROL PROCEDURES	62
C75	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	60
K396	PERFORM SELECTIVE GRINDING PROCEDURES ON CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	60
K413	WAX-UP PATTERNS FOR VARIOUS TYPES OF PONTICS	60
K389	FINISH AND POLISH CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	58
L436	GLAZE PORCELAIN NATURALLY	57
B60	INTERPRET DIRECTIVES FOR SUBORDINATES	55
L428	CUTBACK SUBSTRUCTURE WAX PATTERNS FOR PORCELAIN FUSED TO METAL RESTORATIONS	55
L457	WAX SUBSTRUCTURE PATTERNS TO FULL CONTOUR PRIOR TO	54
I284	FABRICATE COMPLETE DENTURES USING ACRYLIC TEETH	53
C91	INDORSE AIRMAN PERFORMANCE REPORTS (APR)	52
L438	OXIDIZE METAL SUBSTRUCTURES	49
B52	DRAFT CORRESPONDENCE	45

TABLE 8

REPRESENTATIVE TASK DIFFERENCES BETWEEN
DAFSC 98230/50 AND DAFSC 98270 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		DAFSC 98230/50 (N=349)	DAFSC 98270 (N=114)	DIFFERENCE
A3	DETERMINE EQUIPMENT REQUIREMENTS	16	75	59
B39	COUNSEL SUBORDINATES ON PERSONAL MATTERS	24	79	55
A30	SCHEDULE LEAVES	8	60	52
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	6	56	50
D115	DETERMINE OJT REQUIREMENTS	8	58	50
B54	IMPLEMENT QUALITY CONTROL PROCEDURES	19	68	49
B63	ORIENT NEWLY ASSIGNED PERSONNEL	22	70	48
B61	INTERPRET POLICIES FOR SUBORDINATES	16	63	47
C85	EVALUATE QUALITY CONTROL PROCEDURES	15	62	47
A16	ESTABLISH WORK SCHEDULES	10	56	46
A12	ESTABLISH OFFICE INSTRUCTIONS (OI)	8	51	43
F180	ESTABLISH SUPPLY LEVELS	14	55	41

They supervise an average of six people and they perform primarily as Dental Laboratory NCOICs and Managers or Base Dental Laboratory and Prosthodontic Service Center Personnel. Examples of tasks performed by this group include developing management objectives, establishing office instructions, and evaluating inspection report findings. A more comprehensive description of these airmen can be found in Table 9.

Tasks which best distinguish 9-skill level and CEM personnel from 7-skill level personnel are presented in Table 10. As expected, the key difference is a greater emphasis on top supervisory functions for 9-skill level and CEM airmen. Examples of tasks with the greatest difference in members performing include 7-skill level personnel eliminating positive stone nodules, performing preventive maintenance on dental ceramic equipment, and weighing and measuring dental laboratory materials using the metric system. In contrast, more senior level NCOs write military job descriptions, conduct briefings, and maintain manpower authorization documents.

Summary

Career ladder progression within the 982X0 career ladder is typical of most ladders. Three-, 5-, and 7-skill level personnel spend the majority of their job time performing technical tasks. As skill levels increase, additional emphasis on supervisory and management responsibilities also increase.

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

The results of the skill level and job structure analysis were compared with the AFR 39-1 Specialty Descriptions, dated 1 February 1988, for the Dental Laboratory specialty. The descriptions in AFR 39-1 describe in broad terms the tasks and duties performed by members of the various skill-level groups of a career ladder.

These broad descriptions for 982X0 personnel are well supported by the findings of this survey. While depicting the technical aspect of the job, it also describes the increase in supervisory responsibilities previously described in the DAFSC analysis.

TRAINING ANALYSIS

Occupational survey data provide one of several sources of information which can be used to make training programs more relevant and meaningful to students. The three most commonly used types of occupational survey information are: (1) the percent of first-enlistment personnel performing tasks covered in the job inventory, (2) ratings of relative difficulty of tasks, and (3) the ratings of relative emphasis which should be placed on tasks for

TABLE 9

REPRESENTATIVE TASKS PERFORMED BY
DAFSC 98290 AND 98200 PERSONNEL
(N=6)

TASKS		PERCENT MEMBERS PERFORMING
B34	CONDUCT BRIEFINGS	100
A7	DEVELOP MANAGEMENT OBJECTIVES	83
A12	ESTABLISH OFFICE INSTRUCTIONS (OI)	83
A17	PARTICIPATE IN BRIEFINGS	83
A33	WRITE MILITARY JOB DESCRIPTIONS	83
B54	IMPLEMENT QUALITY CONTROL PROCEDURES	83
B60	INTERPRET DIRECTIVES FOR SUBORDINATES	83
B68	SUPERVISE DENTAL LAB TECHNICIANS (AFSC 98270)	83
C70	ANALYZE WORKLOAD REQUIREMENTS	83
C75	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	83
C87	EVALUATE SAFETY PROGRAMS	83
A15	ESTABLISH STANDARD OPERATING PROCEDURES (SOP)	67
A32	WRITE CIVILIAN POSITION DESCRIPTIONS	67
B55	IMPLEMENT RESOURCE PROTECTION PROGRAMS	67
C79	EVALUATE INSPECTION REPORT FINDINGS	67
C99	WRITE SPECIAL REPORTS, OTHER THAN TRAINING REPORTS	67
D103	APPLY FOR TRAINING QUOTAS	67
A4	DETERMINE SUPPLY REQUIREMENTS	50
A8	DEVELOP ORGANIZATIONAL CHARTS	50
C81	EVALUATE MAINTENANCE OF FACILITIES	50
D130	EVALUATE TRAINING METHODS OR TECHNIQUES	50

TABLE 10

REPRESENTATIVE TASK DIFFERENCES BETWEEN
DAFSC 98270 AND DAFSC 98290/00 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		DAFSC 98270 (N=114)	DAFSC 98290/00 (N=6)	DIFFERENCE
E173	MAKE ENTRIES ON SAFE SECURITY FORMS	56	0	56
G220	ELIMINATE POSITIVE STONE NODULES	71	17	54
B064	SUPERVISE APPRENTICE DENTAL LAB SPECIALISTS (AFSC 98230)	52	0	52
I299	PERFORM PREVENTIVE MAINTENANCE ON EQUIPMENT USED ON COMPLETE DENTURES	49	0	49
L439	PERFORM PREVENTIVE MAINTENANCE ON DENTAL CERAMIC EQUIPMENT	47	0	47
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	61	17	44
G261	WEIGH AND MEASURE DENTAL LABORATORY MATERIALS USING METRIC SYSTEM	59	17	42
E152	COMPLETE ACCIDENT REPORT FORMS	20	83	63
A33	WRITE MILITARY JOB DESCRIPTIONS	22	83	61
B34	CONDUCT BRIEFINGS	39	100	61
E168	MAKE ENTRIES ON CIVILIAN TIMECARDS	10	67	57
A32	WRITE CIVILIAN POSITION DESCRIPTIONS	11	67	56
B68	SUPERVISE DENTAL LAB TECHNICIANS (AFSC 98270)	27	83	56
E160	MAINTAIN MANPOWER AUTHORIZATION DOCUMENTS	13	67	54
C86	EVALUATE RESOURCE PROTECTION PROGRAMS	30	83	53
D103	APPLY FOR TRAINING QUOTAS	14	67	53

first-enlistment training. These data can be used in evaluating training documents, such as the Specialty Training Standard (STS) and the Plan of Instruction (POI).

To aid in the evaluation of the 982X0 Specialty Training Standard (STS) and Plan of Instruction (POI), technical school personnel at the 3790th Medical Service Training Wing matched job inventory tasks to appropriate sections of the STS and POI. With these matchings, comparisons to the training documents were accomplished. A complete computer listing displaying percent members performing tasks, training emphasis, and task difficulty ratings for each task, along with STS and POI matchings, has been forwarded to the technical school for its use in further detailed reviews of training documents. Summaries of these data and information are given below, preceded by an analysis of jobs performed by first-enlistment personnel.

Training Emphasis and Task Difficulty

Training Emphasis (TE) and Task Difficulty (TD) ratings are factors that can assist tech school personnel in deciding what tasks should be emphasized in entry-level training. TE ratings provided by career ladder subject-matter experts yielded an average rating of 2.67, with a standard deviation of 1.96. Therefore, tasks having a rating of 4.63 (average TE + 1 standard deviation) or better are considered highly recommended for structured training. TD ratings were adjusted to an average of 5.00 and a standard deviation of 1.00. Tasks with ratings of 3.00 or better are perceived as difficult enough to warrant centralized training. For a complete discussion of TE and TD, please refer back to the Task Factor Administration section of this report.

Tasks having the highest TE ratings are listed in Table 11. Included for each task are also the percentage of first-job and first-enlistment personnel performing and the TD rating. As illustrated in Table 11, these tasks pertain to a variety of technical functions within the specialty. A majority of these tasks fell into the general laboratory category, with others relating to fabrication of crowns and removable partial dentures. In addition, these tasks are performed by substantial percentages of first-enlistment personnel, and have modest to average TD ratings.

Table 12 lists the tasks having the highest TD ratings. The percentage of first-enlistment, 5-, and 7-skill level personnel performing and the TE rating are also included for each task. Most of these tasks relate to fabricating special prostheses. These tasks are not performed by many airmen and have very low TE ratings, but are recognized as the most difficult to learn.

While reviewing this section of the report, note that tasks receiving high ratings on both task factors accompanied by moderate to high percentages of members performing (30 percent or better) in the first-enlistment group may justify resident training. Training decisions such as these are not only weighed against these three factors, but also take into account command concerns, safety standards, and the criticality of the task.

TABLE 11

TASKS RATED HIGHEST IN TRAINING EMPHASIS (TE) FOR 982XO PERSONNEL
(GREATER THAN 1 STANDARD DEVIATION ABOVE THE AVERAGE)

TASKS		PERCENT MEMBERS PERFORMING			
		TNG EMPH*	1ST JOB (N=98)	1ST ENL (N=255)	TASK DIFF**
G237	POUR MASTER CASTS	7.14	70	65	4.46
G228	FINISH AND POLISH ACRYLIC PRODUCTS	6.83	62	56	4.45
I284	FABRICATE COMPLETE DENTURES USING ACRYLIC TEETH	6.77	48	44	5.38
I283	FABRICATE COMPLETE DENTURES OPPOSING NATURAL DENTITION	6.54	44	42	5.58
G229	FLASK PROSTHETIC APPLIANCES FOR PROCESSING	6.52	52	48	4.99
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	6.50	28	39	6.11
I304	RELINE COMPLETE DENTURES USING SELF-CURED (JIG) METHOD	6.48	48	46	4.75
K410	WAX-UP PATTERNS FOR CROWNS	6.48	57	61	5.60
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	6.44	91	85	3.70
G236	POUR DIAGNOSTIC CASTS	6.44	72	65	3.62
G243	PREPARE IMPRESSIONS FOR POURING MASTER CASTS	6.44	60	55	3.53
G259	TRIM MASTER CASTS	6.44	72	65	3.99
I300	PERFORM SELECTIVE GRINDING PROCEDURES ON COMPLETE DENTURES	6.31	51	45	5.17
G235	PACK MOLDS WITH ACRYLIC	6.27	53	49	3.87
J346	SETUP ARTIFICIAL TEETH FOR RPD	6.27	49	50	4.91
K396	PERFORM SELECTIVE GRINDING PROCEDURES ON CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	6.27	41	50	4.90

* Average Training Emphasis = 2.67 with SD of 1.96 (High = 4.63)
** Average Task Difficulty = 5.00 with SD of 1.00

TABLE 12

TASKS RATED HIGHEST IN TASK DIFFICULTY (TD) FOR 982X0 PERSONNEL
(GREATER THAN 1 STANDARD DEVIATION ABOVE THE AVERAGE)

TASKS		TASK DIFF*	PERCENT MEMBERS PERFORMING 1st ENL (N=255)	98250 (N=251)	98270 (N=114)	TNG EMPH**
N485	FABRICATE EAR, NOSE, OR EXTREMITY PROSTHESES	7.56	2	1	3	0.23
N487	FABRICATE GLOSSECTOMY APPLIANCES	7.55	0	0	0	0.23
N496	FABRICATE PLASTIC SURGERY IMPLANTS (SILICONE)	7.53	1	0	0	0.40
J327	FABRICATE SWING-LOCK RPD	7.46	4	4	1	1.65
D118	DEVELOP CAREER DEVELOPMENT COURSE (CDC) MATERIALS	7.34	0	1	1	0.21
D120	DEVELOP RESIDENT COURSE CURRICULUM MATERIALS	7.32	0	3	8	0.25
C097	WRITE CIVILIAN PERFORMANCE APPRAISALS	7.30	1	1	15	0.25
N495	FABRICATE PECTUS-EXCAVATUM IMPLANTS	7.26	0	0	0	0.23
G221	FABRICATE APPLIANCES USING PRECISION ATTACHMENTS	7.24	17	21	19	2.65
B67	SUPERVISE DENTAL LAB SUPERINTENDENTS (AFSC 98290)	7.15	0	0	2	0.12
N497	FABRICATE RADIATION STENTS	7.10	1	1	0	0.44
D116	DETERMINE RESIDENT COURSE TRAINING REQUIREMENTS	7.10	0	2	6	0.25
C100	WRITE STAFF STUDIES	7.10	2	0	1	0.15
N493	FABRICATE OBSTETRICS/GYNECOLOGY (OB/GYN) STENTS	7.03	0	0	0	0.23
N494	FABRICATE PALATAL LIFTS	7.00	1	0	0	0.29

* Average Task Difficulty = 5.00 with SD of 1.00
** Average Training Emphasis = 2.67 with SD of 1.96 (High = 4.63)

Analysis of First-Enlistment Personnel

In this study, there are 225 airmen in their first enlistment, representing 48 percent of all 982X0 personnel. These airmen are qualified at either the 3- or 5-skill level. Figure 2 reflects the distribution of these first-enlistment airmen across career ladder jobs. As shown in Figure 2, most first-enlistment airmen are members of the Base Dental Laboratory and Prosthodontic Service Center Personnel cluster, accounting for 64 percent of all 1-48 months TAFMS respondents. Other job groups with moderate percentages of first-enlistment personnel include the Area Dental Laboratory Crown and Bridge Fabrication cluster (18 percent), and the Removable Partial Denture cluster (8 percent).

Table 13 presents a list of representative tasks performed by first-enlistment personnel. Most of the tasks pertain to general laboratory functions and fabrication of crowns, inlays, and fixed partial dentures. Likewise, these airmen spend the largest portion of their time performing these duties (see Table 14).

It is interesting to note that when looking at the relative time spent on duties across first-enlistment Base Dental Laboratory and Prosthodontic Service Center personnel and area dental laboratory personnel, the focus of the work is quite different. Thirty-four percent of an area dental laboratory technician's job time is devoted to fabrication of crowns, inlays, and fixed partial dentures, versus approximately 16 percent for Base Dental Laboratory and Prosthodontic Service Center personnel (see Table 14). Overall, as discussed in the CAREER LADDER STRUCTURE section of this report, base and prosthodontic service center personnel perform substantially different tasks than those performed by area laboratory personnel. Table 15 lists examples of tasks performed by first-enlistment personnel assigned to base laboratories and prosthodontic service centers, while Table 16 displays the top tasks for airmen assigned to area dental laboratories.

In summary, these findings indicate that entry-level training should place a substantial degree of emphasis on tasks characteristic of the Base Dental Laboratory and the Prosthodontic Service Center group due to their large representation of the specialty. However, tasks descriptive of the smaller area dental laboratory jobs (ADL Crown and Bridge Fabrication, and Removable Partial Denture) also should be considered for basic course instruction since these jobs represent 28 percent of all first-enlistment personnel.

Review of Specialty Training Standard

A comprehensive review of STS 982X0, Dental Laboratory specialty, dated October 1984, was made by comparing STS elements to survey data. STS elements with performance objectives were reviewed in terms of training emphasis, task difficulty, and percent members performing information as stipulated in ATCR 52-22, dated 8 December 1986. STS elements containing general career ladder knowledge and information were not reviewed. Typically, tasks performed by 20 percent or more of personnel in appropriate experience or skill-level groups, such as first-enlistment (1-48 months TAFMS), and 5- and 7-skill level groups, should be considered for inclusion in the STS. On the contrary, tasks with

DISTRIBUTION OF FIRST-ENLISTMENT PERSONNEL ACROSS SPECIALTY JOB GROUPS

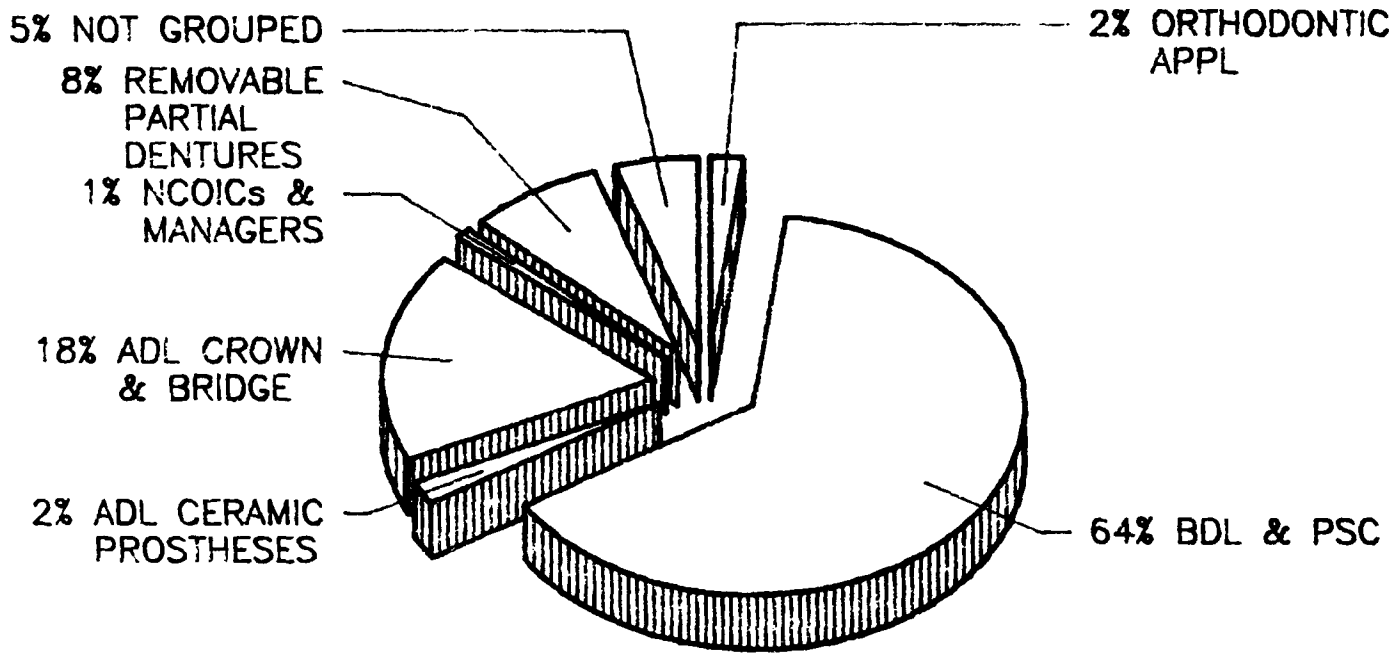

FIGURE 2

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY AFSC 982X0
FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

TASKS		PERCENT MEMBERS PERFORMING (N=225)
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	85
G207	ARTICULATE USING BITE REGISTRATIONS	77
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	71
G220	ELIMINATE POSITIVE STONE NODULES	68
G232	KEY CASTS FOR MOUNTING	68
G211	BLOCK OUT UNDESIRABLE UNDERCUTS	65
G236	POUR DIAGNOSTIC CASTS	65
G237	POUR MASTER CASTS	65
G259	TRIM MASTER CASTS	65
G258	TRIM DIAGNOSTIC CASTS	64
H263	DISINFECT APPLIANCES WHEN LEAVING LAB	63
K410	WAX-UP PATTERNS FOR CROWNS	61
G245	PREPARE SLURRY WATER	60
K394	LUBRICATE DIES	57
G261	WEIGH AND MEASURE DENTAL LABORATORY MATERIALS USING METRIC SYSTEM	55
K395	PERFORM PREVENTIVE MAINTENANCE ON CROWN AND FIXED PARTIAL DENTURE EQUIPMENT	54
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	52
K414	WAX-UP PATTERNS USING WAX ADDITIVE TECHNIQUE	49
K392	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING BENCH SET TECHNIQUE	47
K370	CHECK OCCLUSAL CONTACTS OF WAX PATTERNS WITH POWDERED MEDIUM	44
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	39
K413	WAX-UP PATTERNS FOR VARIOUS TYPES OF PONTICS	39
L457	WAX SUBSTRUCTURE PATTERNS TO FULL CONTOUR PRIOR TO CUTBACK	36

TABLE 14

RELATIVE TIME SPENT ON DUTIES
BY 982X0 FIRST-ENLISTMENT PERSONNEL

DUTIES	1-48 MONTHS TAFMS			
	ALL (N=225)	BASE (N=73)	PSC (N=87)	AREA (N=65)
A ORGANIZING AND PLANNING	3	3	3	3
B DIRECTING AND IMPLEMENTING	2	2	1	2
C INSPECTING AND EVALUATING	*	*	*	*
D TRAINING	1	*	*	2
E PERFORMING ADMINISTRATIVE FUNCTIONS	2	2	2	2
F PERFORMING SUPPLY FUNCTIONS	1	1	1	*
G PERFORMING GENERAL LABORATORY FUNCTIONS	29	38	33	15
H PERFORMING INFECTION CONTROL FUNCTIONS	4	6	6	*
I FABRICATING AND REPAIRING COMPLETE DENTURES	6	10	8	*
J FABRICATING AND REPAIRING REMOVABLE PARTIAL DENTURES (RPD)	9	6	5	18
K FABRICATING CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	22	15	17	34
L FABRICATING CERAMIC PROSTHESES	8	5	10	9
M FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3	4	5	*
N FABRICATING SPECIAL PROSTHESES	1	*	2	*
O PERFORMING MEDICAL READINESS FUNCTIONS	7	0	6	0

* Less than 1 percent

NOTE: Column may not add to 100 percent due to rounding

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY AFSC 982X0
BASE DENTAL LABORATORY AND PROSTHODONTIC SERVICE CENTER
FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

TASKS		PERCENT MEMBERS PERFORMING (N=162)
G237	POUR MASTER CASTS	96
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	95
G236	POUR DIAGNOSTIC CASTS	93
G207	ARTICULATE USING BITE REGISTRATIONS	92
G245	PREPARE SLURRY WATER	92
G211	BLOCK OUT UNDESIRABLE UNDERCUTS	90
G224	FABRICATE CUSTOM IMPRESSION TRAYS	90
G228	FINISH AND POLISH ACRYLIC PRODUCTS	90
G258	TRIM DIAGNOSTIC CASTS	89
H263	DISINFECT APPLIANCES WHEN LEAVING LAB	88
N478	FABRICATE ATHLETIC VACUUM FORMED SOFT MOUTH GUARDS	84
G212	BOIL OUT WAX FROM MOLDS	82
G235	PACK MOLDS WITH ACRYLIC	82
G238	PREPARE CASTS FOR DENTURE REPAIRS	78
K410	WAX-UP PATTERNS FOR CROWNS	67
K389	FINISH AND POLISH CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	66
I276	ARRANGE ARTIFICIAL TEETH IN WAX FOR BALANCED ECCENTRIC OCCLUSION	64

TABLE 16

TOP TASKS PERFORMED BY
AFSC 982X0 AREA DENTAL LABORATORY
FIRST-ENLISTMENT PERSONNEL
(1-48 MONTHS TAFMS)

TASKS		PERCENT MEMBERS PERFORMING (N=65)
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	66
K410	WAX-UP PATTERNS FOR CROWNS	62
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	60
K392	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING BENCH SET TECHNIQUE	57
K394	LUBRICATE DIES	57
K395	PERFORM PREVENTIVE MAINTENANCE ON CROWN AND FIXED PARTIAL DENTURE EQUIPMENT	55
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL	49
K370	CHECK OCCLUSAL CONTACTS OF WAX PATTERNS WITH POWDERED MEDIUM	43
K414	WAX-UP PATTERNS USING WAX ADDITIVE TECHNIQUE	43
0506	PERFORM BASIC CARDIAC LIFE SUPPORT	43
K413	WAX-UP PATTERNS FOR VARIOUS TYPES OF PONTICS	38
A17	PARTICIPATE IN BRIEFINGS	38
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	33
G261	WEIGH AND MEASURE DENTAL LABORATORY MATERIALS USING METRIC SYSTEM	31
L457	WAX SUBSTRUCTURE PATTERNS TO FULL CONTOUR PRIOR TO CUTBACK	31
K389	FINISH AND POLISH CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	26
J312	BLOCK OUT AND RELIEVE MASTER CASTS	17
J316	CHECK OCCLUSION OF RPD FRAMEWORK ON CASTS	14
J349	SPRUE WAX PATTERNS FOR RPD	14

less than 20 percent performing in any of these groups, should be considered for deletion from the STS.

Overall, 19 elements of the STS (out of 165 matched elements) were not supported, in that they had matched tasks performed by less than 20 percent of any of the above career ladder groups. Generally, the majority of unsupported STS elements related to paragraphs 15 (Removable Partial Dentures) and 17 (Fabrication of Dental Ceramics). Examples of elements within these paragraphs, with percent members performing data, are displayed in Table 17.

Additionally, several tasks from the job inventory were not matched to the STS. Examples of technically oriented tasks performed by greater than 20 percent of 982X0 airmen and not referenced to the STS are listed in Table 18. Some of these tasks relate to general laboratory functions, such as shell blasting appliances, fabricating surgical splints, and key casts for mounting. Usually, such tasks not referenced should be covered by some existing element, or a new item could be added to the STS.

Review of Plan of Instruction (POI)

Based on assistance from technical school subject-matter experts in matching job inventory tasks to tentative POI J3ABR98230-003, dated September of 1987, occupational survey data were matched to related training objectives. A similar method to that of the STS analysis was used to review the POI. The specific data examined included percent members performing data for 1-48 months TAFMS personnel and TE ratings.

Of the 72 POI objectives that were matched with survey data, 18 were not supported, having fewer than 30 percent of 1-48 months TAFMS personnel indicating performing the matched tasks. This equates to 153 out of 866 total course hours. Overall, the majority of areas not supported include sections in Block III (removable partial dentures and special prostheses) and Block IV (porcelain application, firing procedures, contouring and repairing, and jacket crowns). These 18 objectives, along with performance data, are listed in Table 19.

In accordance with ATCR 52-22, and in the interest of cost-effectiveness, objectives where the probability of first-enlistment performance is less than 30 percent should not be taught in a resident training course without further justification. Training personnel should evaluate these 18 objectives for continued inclusion in the resident 3ABR course.

Many technical tasks performed by over 30 percent of first-enlistment personnel were not matched to the POI. Examples of these tasks with survey data are listed in Table 20. Some of these tasks deal with general laboratory tasks and infection control functions. In addition to many members performing these functions, several of these tasks are rated high in terms of training emphasis, and task difficulty. Training personnel should carefully review these unreferenced tasks to determine the necessity for training and the most effective method of accomplishing it.

TABLE 17

LOW PERFORMANCE 982X0 STS ELEMENTS
DUE TO LESS THAN 20 PERCENT MEMBERS PERFORMING
(ACROSS ALL CAREER LADDER GROUPS)

STS ELEMENT		PERCENT MEMBERS PERFORMING
2c(3).	Read and record blood pressure	19
2i(2).	Use field communication systems and techniques	19
7a.	Use diagnostic nomenclature to complete laboratory records and reports	16
9e.	Recommend personnel for training	18
14b(4)(c).	Arrange artificial teeth for bilateral balanced occlusion - metal occlusion	6
15a	Fabrication of removable partial dentures	
	15a(2). - transfer design to master casts	6
	15a(5). - relieve master casts	18
	15a(7). - dehydrate and seal investment casts	7
	15a(8). - wax framework on refractory investment casts	6
	15a(9). - sprue and invest wax-ups for casting	8
	15a(10). - burn out invested wax-ups and cast framework	5
	15a(13). - finish and polish metalic frameworks	16
	15a(14). - seat framework on duplicate cast	14
17a	Dental ceramics	
	17a(2). - adapt platinum matrix	7
	17a(3). - decontaminate platinum matrix	5
	17a(5). - apply, condense, and fire core porcelain	5
	17a(9). - inspect restoration for color, form, and surface characteristics	5
	17a(12). - remove platinum matrix	5
19a(3).	Preventive maintenance of lab equipment - removable partial dentures	12

NOTE: Percent shown is the highest percent reported for an appropriately matched task to the STS element

TABLE 18

EXAMPLES OF TASKS PERFORMED BY 20 PERCENT OR MORE
AFSC 982X0 GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS		PERCENT MEMBERS PERFORMING				
		1ST ENL (N=225)	DAFSC 98250 (N=251)	DAFSC 98270 (N=114)	TNG EMP*	TASK DIFF**
I283	FABRICATE COMPLETE DENTURES OPPOSING NATURAL DENTITION	49	62	63	6.54	5.58
I277	ARRANGE ARTIFICIAL TEETH IN WAX FOR CENTRIC RELATION OCCLUSION ONLY	5.90	40	46	45	5.90
H266	MIX DISINFECTANT SOLUTIONS, SUCH AS CIDEX, IODOPHOR, AND SODIUM HYPO-CHLORIDE	46	51	46	4.98	3.01
G253	SHELLBLAST APPLIANCES	52	53	54	4.65	3.18
G220	ELIMINATE POSITIVE STONE NODULES	68	71	71	4.46	3.18
I280	DUPLICATE MASTER CASTS USING ALGINATE IMPRESSION MATERIAL	36	40	39	4.40	4.22
K390	FIT (SEAT) CASTINGS USING A DISCLOSING MEDIUM	37	47	49	4.13	4.64
G226	FABRICATE SURGICAL SPLINTS	41	42	36	4.08	4.60
G233	MAKE ADJUSTMENTS TO IMPRESSION TRAYS, SUCH AS STRENGTHENING OR PERFORATING	37	39	32	3.81	3.04

* Average Training Emphasis = 2.67 with SD of 1.96 (high = 4.63)
** Average Task Difficulty = 5.00 with SD of 1.00

TABLE 19

LOW PERFORMANCE POI OBJECTIVES SUGGESTED FOR REVIEW
DUE TO LESS THAN 30 PERCENT MEMBERS PERFORMING
(1-48 MONTHS TAFMS)

POI 3ABR98230-003 OBJECTIVES			PERCENT MEMBERS PERFORMING
I	25a.	Perform a clinical denture remount	14
III	3a.	Transfer the designs from the diagnostic casts to the master casts	1
III	4a.	Relieve master casts and complete preparations for cast duplication	16
III	5a.	Duplicate prepared master casts in refractory investment	20
III	6a.	Dehydrate and wax-dip investment casts	5
III	7a.	Wax-up a partial denture framework	5
III	8a.	Sprue and invest the waxed-up partial denture	6
III	9a.	Burn out the invested wax-up and cast a chrome cobalt partial denture framework	4
III	10a.	Fabricate a fixed space maintainer	18
III	13a.	Fabricate a partial denture framework	6
III	18a.	Restore the vertical dimensions of occlusion to the cast frameworks	21
III	24a.	Fabricate a treatment removable partial denture	20
III	25a.	Perform preventive maintenance procedures on a selected piece of equipment	10
IV	8a.	Apply and fire dental porcelains	28
IV	10a.	Contour and repair the restorations	25
IV	12a.	Construct a platinum matrix for a porcelain jacket crown	5
IV	12b.	Construct a porcelain jacket crown	4
IV	18a.	Perform preventive maintenance procedures on a selected piece of equipment	23

NOTE: Percent shown is the highest percent reported for an appropriately matched task to the POI objective

TABLE 20

EXAMPLES OF TECHNICAL TASKS WITH GREATER THAN 30 PERCENT MEMBERS PERFORMING AND NOT REFERENCED TO POI 98230-003

TASKS		TNG EMP*	TASK DIFF**	1-48 MONTHS TAFMS (N=225)
H270	PREPARE TO RECEIVE HIGH RISK PATIENT APPLIANCES AND IMPRESSIONS	6.17	4.69	33
G232	KEY CASTS FOR MOUNTING	4.92	2.57	68
H265	MAINTAIN SPECIFIED LEVELS OF DISINFECTANT SOLUTION	4.75	3.00	47
K386	FABRICATE SURVEYED CROWNS	4.73	6.09	36
M476	REPAIR BROKEN ORTHODONTIC APPLIANCES (ACRYLIC)	4.23	4.59	34
G226	FABRICATE SURGICAL SPLINTS	4.08	4.60	41
G233	MAKE ADJUSTMENTS TO IMPRESSION TRAYS, SUCH AS STRENGTHENING OR PERFORATING	3.81	3.04	37

* Average Training Emphasis = 2.67 with SD of 1.96 (high = 4.63)
** Average Task Difficulty = 5.00 with SD of 1.00

Due to the distinct differences in area dental laboratories versus base dental laboratories and prosthodontic service centers, a channelized method of training could be beneficial. Personnel could be targeted for a specific laboratory or job and then trained in tasks relating to that job. However, because the Dental Laboratory specialty is small, this type of channelized training may not be possible. (Another possibility could be that all graduates be initially assigned to a base dental lab or prosthodontic service center performing some of the less specialized tasks. After completing upgrade training, these airmen could be reassigned to more difficult jobs.

JOB SATISFACTION ANALYSIS

Comparisons of job satisfaction across various groups provide career ladder managers with a means toward understanding some of the factors affecting job performance of today's airmen. These perceptions are gathered from incumbents' responses to five job satisfaction questions covering job interest, perceived utilization of talents, perceived utilization of training, sense of accomplishments, and reenlistment intentions. The responses of the current survey sample are then analyzed by making several comparisons: (1) across specialty job groups identified in the SPECIALTY JOBS section of this report, (2) among TAFMS groups of a comparative sample of personnel from other Medical specialties surveyed in 1987 (AFSCs 90XXX, 91XXX, 92XXX), and (3) between current and previous survey TAFMS groups.

A view of job satisfaction data across first-enlistment (1-48 months TAFMS), second-enlistment (49-96 months TAFMS), and career (97+ months TAFMS) groups are displayed in Table 21, together with data for a comparative sample of Medical ASFCs surveyed in 1987. These data can give a relative measure of how the job satisfaction of AFSC 982X0 personnel compares with that of other similar AF specialties. With only one exception, Dental Laboratory personnel satisfaction is much higher in all categories when compared with other Medical AFSCs. Only the first-enlistment job interest is lower for the 982X0 specialty.

An indication of how job satisfaction perceptions within the career ladder have changed over time is provided in Table 22, where TAFMS group data for 1988 survey respondents is presented, along with data from respondents to the last occupational survey report of the career ladder, published in 1982. In the first-enlistment category, today's airmen responded more positively across three of the four factors. Only job interest for current 1-48 month TAFMS personnel is slightly lower. Overall, job satisfaction levels for second-enlistment and career airmen are about equal in both surveys. And, on a positive note, the reenlistment rate for all TAFMS groups is higher in the 1988 survey.

Finally, Table 23 presents job satisfaction data for the specialty jobs. An examination of these data suggest how overall job satisfaction may be influenced by the type of job performed. Of the specialty jobs discussed earlier, most incumbents find their job interesting, with very high levels in the base dental laboratory and prosthodontic service center groups, and the

TABLE 21

COMPARISON OF JOB SATISFACTION DATA BY 982X0
AND COMPARATIVE SAMPLE GROUPS*
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	982X0 (N=225)	1987 COMP SAMPLE (N=618)	982X0 (N=107)	1987 COMP SAMPLE (N=181)	982X0B (N=137)	1987 COMP SAMPLE (N=375)
JOB INTERESTING	84	86	85	78	89	76
TALENTS WELL UTILIZED	90	87	88	83	89	82
TRAINING WELL UTILIZED	94	90	90	83	88	82
SATISFIED WITH ACCOMPLISHMENTS	87	77	80	72	79	65
LIKELY TO REENLIST	68	60	79	67	77	70

* Comparative Sample of Medical career ladders surveyed in 1987
(includes AFSC 90XXX, 91XXX, 92XXX, 98XXX)

TABLE 22

COMPARISON OF 982X0 JOB SATISFACTION DATA
FOR CURRENT AND PREVIOUS SURVEY
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	1988 982X0 (N=225)	1982 982X0 (N=205)	1988 982X0 (N=107)	1982 982X0 (N=139)	1988 982X0 (N=137)	1982 982X0 (N=153)
JOB INTERESTING	84	89	85	85	89	89
TALENTS WELL UTILIZED	90	86	88	90	91	88
TRAINING WELL UTILIZED	94	88	90	91	88	94
LIKELY TO REENLIST	68	53	79	66	77	76

TABLE 23

JOB SATISFACTION DATA BY CAREER LADDER JOBS
(PERCENT MEMBERS RESPONDING)

	ORTHO-DONTIC APPL FAB IJT (N=9)	BDL/PSC PERSONNEL CLUSTER (N=300)	TECH SCHOOL INSTRUCTORS IJT (N=9)	ADL CERAMIC PROSTHESES FABRICATORS IJT (N=10)	ADL CROWN AND BRIDGE FABRICATORS CLUSTER (N=53)	DENTAL LAB NCOICs AND MANAGERS IJT (N=28)	REMOVABLE PARTIAL DENTURE PRSNL CLUSTER (N=32)
EXPRESSED JOB INTEREST:							
INTERESTING	78	91	78	80	79	89	66
SO-SO	11	5	11	10	13	7	22
DULL	0	3	0	10	8	4	3
PERCEIVED USE OF TALENTS:							
FAIRLY WELL TO PERFECTLY	89	95	56	90	74	86	75
LITTLE OR NOT AT ALL	0	5	33	10	26	14	22
PERCEIVED USE OF TRAINING:							
FAIRLY WELL TO PERFECTLY	67	96	67	90	92	82	78
LITTLE OR NOT AT ALL	22	3	22	10	8	18	19
SENSE OF ACCOMPLISHMENT FROM WORK:							
SATISFIED	78	90	56	90	75	75	66
NEUTRAL	11	3	0	0	6	4	9
DISSATISFIED	0	7	33	10	19	21	22
REENLISTMENT INTENTIONS:							
YES, OR PROBABLY YES	100	75	78	80	70	75	78
NO, OR PROBABLY NO	9	21	22	10	30	4	19
PLAN TO RETIRE	0	4	0	10	0	1	0

NOTE: Columns may not add to 100 percent due to nonresponse and rounding

NCOICs and managers group. Utilization of talents is also positive across the board, with Base Dental Laboratory and Prosthodontic Service Center personnel again topping the scales. Perceived use of training for all groups ranged from 67 percent responding positively to a high of 96 percent. Responses pertaining to sense of accomplishment are positive for most groups, with the low of 56 percent coming from the Tech School Instructors. Finally, reenlistment intentions across all specialty jobs are high, with 70 percent or more of the respondents in each group indicating they will reenlist.

SPECIAL ISSUES

During the survey process, information was gathered to address several items of concern to career ladder training managers. These items covered special experience identifiers (SEIs), laboratory experience and preference, instructor duty, certification, and supplemental training among 982X0 personnel. A summary of data regarding these issues follows.

There are four SEIs which can be awarded to airmen in the 982X0 career ladder. An airmen may have SEI 482 Advanced Chrome Technician, SEI 483 Advanced Ceramist/Ceramo Metal Technician, SEI 484 Advanced Partial Denture Technician, or SEI 485 Independent Duty Technician. Inventory respondents were asked what SEIs they currently hold and what SEIs they qualify for but have not yet received. Table 24 displays the responses by skill-level groups. Overall, more 7- and 9-skill level personnel hold SEIs, with the largest percentage of 7-skill level personnel holding SEI 485 Independent Duty Technician. Table 25 shows SEIs awarded across the jobs described in the CAREER LADDER STRUCTURE section of this report. Once again, the largest percentage of personnel with SEIs are the more senior-level groups in the Tech School Instructors, and the Dental Laboratory NCOICs and Managers groups.

AFSC 982X0 airmen were also asked to provide information on which type of dental laboratory they are assigned to, had the most experience in, and preferred to work in. Table 26 displays their responses. The majority of airmen are stationed at either a base dental laboratory or a prosthodontic service center (PSC). Likewise, most of their experience is also in the base dental laboratory and PSC. When asked which laboratory assignment is preferred, 60 percent of 3- and 5-skill level airmen chose the base dental laboratory. At the 7-skill level, most airmen also chose the base dental laboratory (48 percent), followed closely by the PSC (40 percent). In contrast, 9-skill level personnel preferred the larger area dental laboratories, with 50 percent indicating this assignment.

Personnel expressed modest interest in instructor duty (see Table 26). Table 26 also displays information pertaining to personnel who are certified dental laboratory technicians (CDT). Overall, few 3- and 5-skill level personnel are CDTs, while 27 percent of 7-skill level and 50 percent of 9-skill level personnel are CDTs. Finally, technical school courses completed by AFSC 982X0 personnel are listed in Table 27. As expected, almost all personnel indicated completion of the basic Course 3ABR98230 Dental Laboratory

TABLE 24

SPECIAL EXPERIENCE IDENTIFIERS (SEIs)
AMONG 982X0 PERSONNEL

	DUTY AFSC		
SEI AWARDED	98230/50 (N=349)	98270 (N=114)	98290/00 (N=6)
482 ADVANCE CHROME TECHNICIAN	2%	25%	17%
483 ADVANCED CERAMIST/CERAMO METAL TECHNICIAN	3%	30%	50%
484 ADVANCED FIXED PARTIAL DENTURE TECHNICIAN	7%	38%	33%
485 INDEPENDENT DUTY TECHNICIAN	23%	64%	0%
SEI QUALIFIED BUT NOT AWARDED			
482 ADVANCE CHROME TECHNICIAN	3%	11%	33%
483 ADVANCED CERAMIST/CERAMO METAL TECHNICIAN	8%	18%	0%
484 ADVANCED FIXED PARTIAL DENTURE TECHNICIAN	15%	26%	33%
485 INDEPENDENT DUTY TECHNICIAN	12%	16%	50%

TABLE 25

SPECIAL EXPERIENCE IDENTIFIERS (SEIs)
HELD BY JOB GROUP MEMBERS

		ORTHO-DONTIC APPL FAB IJT (STG116)	BDL/PSC PERSONNEL CLUSTER (STG036)	TECH SCHOOL INSTRUCTORS IJT (STG050)	ADL CERAMIC PROSTHESES FABRICATORS IJT (STG059)	ADL CROWN AND BRIDGE FABRICATORS CLUSTER (STG014)	DENTAL LAB NCOICs AND MANAGERS IJT (STG032)	REMOVABLE PARTIAL DENTURE PRSNL CLUSTER (STG007)
482	ADVANCE CHROME TECHNICIAN	0%	6%	0%	30%	2%	18%	6%
483	ADVANCED CERAMIST/ CERAMO METAL TECH	0%	10%	11%	10%	0%	43%	0%
484	ADVANCED FIXED PARTIAL DENTURE TECH	0%	15%	44%	20%	6%	39%	6%
485	INDEPENDENT DUTY TECHNICIAN	33%	36%	67%	20%	23%	46%	19%

TABLE 26

ASSIGNMENT, EXPERIENCE,
PREFERENCE, AND CERTIFICATION DATA

	DUTY AFSC			
PRESENT LABORATORY ASSIGNMENT	98230/50 (N=349)	98270 (N=114)	98290/00 (N=6)	All 982X0 (N=469)
BASE DENTAL LABORATORY	38%	36%	0%	37%
AREA DENTAL LABORATORY	26%	21%	33%	25%
PROSTHODONTIC SERVICE CENTER	35%	33%	67%	35%
OTHER	3%	12%	0%	5%
MOST EXPERIENCE				
BASE DENTAL LABORATORY	38%	47%	50%	41%
AREA DENTAL LABORATORY	25%	28%	17%	26%
PROSTHODONTIC SERVICE CENTER	34%	27%	33%	31%
OTHER	4%	0%	0%	2%
LABORATORY PREFERENCE				
BASE DENTAL LABORATORY	60%	48%	17%	56%
AREA DENTAL LABORATORY	11%	12%	50%	12%
PROSTHODONTIC SERVICE CENTER	25%	40%	33%	29%
OTHER	5%	0%	0%	3%
INTEREST IN INSTRUCTOR DUTY				
WOULD VOLUNTEER FOR DENTAL LABORATORY INSTRUCTOR DUTY	38%	30%	0%	35%
CERTIFIED DENTAL LAB TECHNICIANS				
CURRENTLY A CERTIFIED DENTAL LAB TECHNICIAN (CDT)	5%	27%	50%	11%

TABLE 27

TECHNICAL SCHOOL COURSES COMPLETED

COURSES NUMBER AND TITLE	DUTY AFSC 98230/50 (N=349)	98270 (N=114)	98290/00 (N=6)
3ABR98230 DENTAL LABORATORY SPECIALIST	97%	90%	83%
3AZR98270-4 COMPLETE DENTURE PROSTHETICS	7%	40%	50%
3AZR98270-6 REMOVABLE PARTIAL DENTURE PROSTHETICS	7%	34%	17%
3AZR98270-7 DENTAL CERAMICS	10%	53%	67%
3AZR98270-8 CROWN/FIXED PARTIAL DENTURE PROSTHETICS	14%	61%	50%
3AZR98270-9 COMPLETE DENTURE PROSTHETICS	5%	21%	17%
3AZR98270-10 REMOVABLE PARTIAL DENTURES	1%	11%	17%
3AZR98270-11 REMOVABLE PROSTHODONTICS	11%	13%	0%
3AZR98270-12 FUNCTIONAL AND ESTHETIC FIXED PROSTHODONTICS	11%	14%	0%
3AZR98270-13 ADVANCED PORCELAIN TECHNIQUES	1%	15%	17%
HAVE NOT COMPLETED ANY OF THE ABOVE	2%	2%	17%

Specialist. Some of the other courses attended by most personnel include 61 percent of 7-skill level airmen in the Crown and Fixed Partial Denture course, and 67 percent of 9-skill level and CEM personnel in the Dental Ceramics course.

IMPLICATIONS

This survey was requested by training personnel to obtain current task data to assist in evaluating training programs. Overall analysis indicates that both the STS and POI require review.

A possible reason for so many elements not being supported could be attributed to the different functions performed between the laboratories. Personnel assigned to either a base dental lab (BDL) or a prosthodontic service center (PSC) perform a significantly different job than airmen assigned to area dental labs (ADL). Area dental labs, by their nature, take a first-enlistment airman and specialize him. BDLs and PSCs must diversify and use their newcomers to perform various functions. It appears that channelized training could be useful if airmen were targeted for a specific lab coming out of tech school. Survey data did, however, reveal that 64 percent of first-enlistment personnel go to a BDL or PSC on their first assignment. Because this specialty is fairly small, channelized training may not be possible.

APPENDIX A

SELECTED REPRESENTATIVE TASKS PERFORMED BY CAREER LADDER JOB GROUPS

TABLE I

ORTHODONTIC APPLIANCE FABRICATORS
STG116

TASKS		PERCENT MEMBERS PERFORMING
M461	FABRICATE ACRYLIC ORTHODONTIC APPLIANCES	100
M469	FINISH AND POLISH ORTHODONTIC APPLIANCES	100
M459	BEND WIRE FOR ORTHODONTIC APPLIANCES	100
M472	PERFORM ORTHODONTIC TRIM OF DIAGNOSTIC CASTS	100
M471	INSPECT ORTHODONTIC APPLIANCES	100
M458	ATTACH WIRES TO CASTS FOR ORTHODONTIC APPLIANCES	100
M473	PERFORM SOLDERING PROCEDURES ON ORTHODONTIC APPLIANCES	100
G236	POUR DIAGNOSTIC CASTS	100
G258	TRIM DIAGNOSTIC CASTS	100
M474	POUR ORTHODONTIC IMPRESSION USING ORTHODONTIC BASE FORMER	100
M462	FABRICATE FIXED SPACE MAINTAINERS	100
M476	REPAIR BROKEN ORTHODONTIC APPLIANCES (ACRYLIC)	100
M460	DESIGN ORTHODONTIC APPLIANCES ACCORDING TO DD FORMS 2322 (DENTAL LABORATORY WORK AUTHORIZATION	89
G220	ELIMINATE POSITIVE STONE NODULES	89
H252	DISINFECT APPLIANCES UPON ARRIVAL TO LAB	89
M468	FABRICATE SPECIAL ORTHODONTIC APPLIANCES, SUCH AS HABIT-BREAKERS AND OCCLUSAL STABILIZERS	78
G242	PREPARE IMPRESSIONS FOR POURING DIAGNOSTIC CASTS	67
M477	REPAIR BROKEN ORTHODONTIC APPLIANCES (METAL PORTIONS)	67
0506	PERFORM BASIC CARDIAC LIFE SUPPORT	67
N482	FABRICATE CRANIAL IMPLANTS	67
G253	SHELLBLAST APPLIANCES	67
H265	MAINTAIN SPECIFIED LEVELS OF DISINFECTANT SOLUTION	67

TABLE II

BASE DENTAL LAB & PROSTHODONTIC SERVICE CENTER PERSONNEL
STG036

	TASKS	PERCENT MEMBERS PERFORMING
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	97
B59	INITIATE PERSONNEL ACTION REQUESTS, SUCH AS AF FORMS 20	95
G237	POUR MASTER CASTS	94
G207	ARTICULATE USING BITE REGISTRATIONS	94
H263	DISINFECT APPLIANCES WHEN LEAVING LAB	92
G232	KEY CASTS FOR MOUNTING	92
G236	POUR DIAGNOSTIC CASTS	91
G259	TRIM MASTER CASTS	91
G220	ELIMINATE POSITIVE STONE NODULES	89
G258	TRIM DIAGNOSTIC CASTS	88
G262	DISINFECT APPLIANCES UPON ARRIVAL TO LAB	88
G228	FINISH AND POLISH ACRYLIC PRODUCTS	86
G243	PREPARE IMPRESSIONS FOR POURING MASTER CASTS	84
G241	PREPARE FRACTURED AREAS OF DENTURES TO RECEIVE NEW ACRYLIC MATERIAL	83
G224	FABRICATE CUSTOM IMPRESSION TRAYS	82
N478	FABRICATE ATHLETIC VACUUM FORMED SOFT MOUTH GUARDS	82
G242	PREPARE IMPRESSIONS FOR POURING DIAGNOSTIC CASTS	82
E169	MAKE ENTRIES ON DD FORMS 2322 (DENTAL LABORATORY WORK	79
E169	AUTHORIZATION), SUCH AS CLV CODES AND GOLD EXPENDITURE	79
G231	IDENTIFY REMOVABLE APPLIANCES WITH NAME AND SOCIAL SECURITY NUMBER	78
K410	WAX-UP PATTERNS FOR CROWNS	75
I304	RELINE COMPLETE DENTURES USING SELF-CURED (JIG) METHOD	75
I284	FABRICATE COMPLETE DENTURES USING ACRYLIC TEETH	75
K396	PERFORM SELECTIVE GRINDING PROCEDURES ON CROWNS, INLAYS AND FIXED PARTIAL DENTURES	74
K368	CHECK FINISHED CASTING ON DIE FOR ACCURATE FIT	73
K389	FINISH AND POLISH CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	73
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	70
K393	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING HYGRO-SCOPIC TECHNIQUE	69
K414	WAX-UP PATTERNS USING WAX ADDITIVE TECHNIQUE	65
L428	CUTBACK SUBSTRUCTURE WAX PATTERNS FOR PORCELAIN FUSED TO METAL RESTORATIONS	54

TABLE III

TECHNICAL SCHOOL INSTRUCTORS
STG050

TASKS		PERCENT MEMBERS PERFORMING
A19	PARTICIPATE IN STAFF MEETINGS	100
G239	PREPARE CASTS FOR FLASKING	100
G216	DEFLASK ACRYLIC PROCESSED APPLIANCES	100
G232	KEY CASTS FOR MOUNTING	100
G214	CLEAN AND PREPARE MOLDS FOR PROCESSING	89
I284	FABRICATE COMPLETE DENTURES USING ACRYLIC TEETH	89
D134	MAINTAIN TRAINING AIDS	89
D150	WRITE TEST QUESTIONS	89
D102	ADMINISTER TESTS	89
D143	PREPARE LESSON PLANS	89
I299	PERFORM PREVENTIVE MAINTENANCE ON EQUIPMENT USED ON COMPLETE DENTURES	78
I298	PERFORM LABORATORY REMOUNT PROCEDURES	78
B38	COUNSEL SUBORDINATES ON MILITARY-RELATED MATTERS	78
G238	PREPARE CASTS FOR DENTURE REPAIRS	78
D114	COUNSEL TRAINEES ON TRAINING PROGRESS	78
D126	EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	78
I294	FABRICATE REMOUNT CASTS	68
D129	EVALUATE TRAINING MATERIALS	68
B62	INTERPRET PROCEDURES FOR SUBORDINATES	68
D120	DEVELOP RESIDENT COURSE CURRICULUM MATERIALS	67
G240	PREPARE COMPLETE OR PARTIAL DENTURES FOR WAX TRY-IN	67

TABLE IV

AREA DENTAL LAB CERAMIC PROSTHESES FABRICATORS
STG059

TASKS		PERCENT MEMBERS PERFORMING
L441	PERFORM ULTRASONIC CLEANING PROCEDURES OF METAL SUBSTRUCTURES	100
L440	PERFORM ULTRASONIC CLEANING PROCEDURES OF CONTOURED PORCELAIN SURFACES	100
L435	FIRE PORCELAIN TO BISQUE BAKE	100
L434	FIRE OPAQUE PORCELAIN	100
L438	OXIDIZE METAL SUBSTRUCTURES	100
L433	FIRE BODY AND INCISAL PORCELAIN	100
L422	APPLY OPAQUE PORCELAIN	100
L420	APPLY BODY AND INCISAL PORCELAIN	100
L427	CONTOUR FIRED PORCELAIN	100
L454	STEAM CLEAN METAL FRAMEWORKS PRIOR TO APPLYING PORCELAIN	90
L450	STAIN PORCELAIN RESTORATIONS USING EXTRINSIC STAINS (SURFACE)	90
L437	GLAZE PORCELAIN SYNTHETICALLY USING MANUFACTURED GLAZE	90
L430	FABRICATE COLLARLESS CROWNS USING SHOULDER PORCELAINS	90
L453	STEAM CLEAN CERAMIC RESTORATION PRIOR TO ADD-ONS OR GLAZING	90
L442	POLISH PORCELAIN SURFACES TO HIGH LUSTER	80
L419	APPLY AND FIRE OVER-GLAZE TO CERAMIC PROSTHESES	80
K368	CHECK FINISHED CASTING ON DIE FOR ACCURATE FIT	80
L429	FABRICATE ACID ETCH FIXED PARTIAL DENTURES (MARYLAND BRIDGE)	70
L449	STAIN PORCELAIN RESTORATIONS USING BODY MODIFIERS	70
K407	STRIP CROWNS OR INLAYS OF VENEERED MATERIAL	70
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	60
L452	STAIN PORCELAIN RESTORATIONS USING OPAQUE MODIFIERS	50
K389	FINISH AND POLISH CROWNS, INLAYS, OR FIXED PARTIAL DENTURES	50
G251	SANDBLAST APPLIANCES	40
D139	MAKE ENTRIES ON AF FORMS 623 AND 623A (ON-THE-JOB TRAINING RECORD)	40
E169	MAKE ENTRIES ON DD FORMS 2322 (DENTAL LABORATORY WORK AUTHORIZATION), SUCH AS CLV CODES AND GOLD EXPENDITURES	40
A5	DETERMINE WORK PRIORITIES	30

TABLE V

AREA DENTAL LAB CROWN AND BRIDGE FABRICATION PERSONNEL
STG014

TASKS		PERCENT MEMBERS PERFORMING
K410	WAX-UP PATTERNS FOR CROWNS	85
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	79
K395	PERFORM PREVENTIVE MAINTENANCE ON CROWN AND FIXED PARTIAL DENTURE EQUIPMENT	77
K394	LUBRICATE DIES	75
K392	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING BENCH SET TECHNIQUE	74
K370	CHECK OCCLUSAL CONTACTS OF WAX PATTERNS WITH POWDERED MEDIUM	64
K414	WAX-UP PATTERNS USING WAX ADDITIVE TECHNIQUE	64
K406	SPRUE WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	62
K413	WAX-UP PATTERNS FOR VARIOUS TYPES OF PONTICS	58
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	57
G207	ARTICULATE USING BITE REGISTRATIONS	53
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	53
0517	TRANSPORT LITTER PATIENTS	51
K393	INVEST WAX PATTERNS FOR CROWNS, INLAYS, AND FIXED PARTIAL DENTURES USING HYGRO-SCOPIC TECHNIQUE	45
K396	PERFORM SELECTIVE GRINDING PROCEDURES ON CROWNS, INLAYS, AND FIXED PARTIAL DENTURES	43
A17	PARTICIPATE IN BRIEFINGS	42
K368	CHECK FINISHED CASTING ON DIE FOR ACCURATE FIT	42
K386	FABRICATE SURVEYED CROWNS	42
K412	WAX-UP PATTERNS FOR INLAYS	40
L457	WAX SUBSTRUCTURE PATTERNS TO FULL CONTOUR PRIOR TO CUTBACK	38
K366	CHECK CASTING AFTER FITTING USING OPTICAL MICROSCOPE	36
G261	WEIGH AND MEASURE DENTAL LABORATORY MATERIALS USING METRIC SYSTEM	28
L428	CUTBACK SUBSTRUCTURE WAX PATTERNS FOR PORCELAIN FUSED TO METAL RESTORATIONS	25

TABLE VI

DENTAL LAB NCOICs AND MANAGERS
STG032

TASKS		PERCENT MEMBERS PERFORMING
B38	COUNSEL SUBORDINATES ON MILITARY-RELATED MATTERS	100
B39	COUNSEL SUBORDINATES ON PERSONAL MATTERS	96
C91	INDORSE AIRMAN PERFORMANCE REPORTS (APR)	96
A19	PARTICIPATE IN STAFF MEETINGS	93
B61	INTERPRET POLICIES FOR SUBORDINATES	89
B66	SUPERVISE DENTAL LAB SPECIALISTS (AFSC 98250)	89
C96	WRITE APR	89
B54	IMPLEMENT QUALITY CONTROL PROCEDURES	82
C70	ANALYZE WORKLOAD REQUIREMENTS	82
C75	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	82
A13	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	79
C85	EVALUATE QUALITY CONTROL PROCEDURES	75
D115	DETERMINE OJT REQUIREMENTS	71
B52	DRAFT CORRESPONDENCE	68
C90	EVALUATE WORK SCHEDULES	64
E169	MAKE ENTRIES ON DD FORMS 2322 (DENTAL LABORATORY WORK AUTHORIZATION), SUCH AS CLV CODES AND GOLD EXPENDITURES	64
B36	CONDUCT STAFF MEETINGS	61
C77	EVALUATE INDIVIDUALS FOR PROMOTION	54
B65	SUPERVISE CIVILIANS	50
E159	MAINTAIN LOCAL QUALITY ASSURANCE FORMS	46
K411	WAX-UP PATTERNS FOR FIXED PARTIAL DENTURES	25

TABLE VII

REMOVABLE PARTIAL DENTURE PERSONNEL
STG007

TASKS		PERCENT MEMBERS PERFORMING
J316	CHECK OCCLUSION OF RPD FRAMEWORK ON CASTS	66
J350	TI-LECTRO POLISH CASTINGS	66
J312	BLOCK OUT AND RELIEVE MASTER CASTS	63
J328	FINISH AND POLISH RPD FRAMEWORK	63
G251	SANDBLAST APPLIANCES	59
G261	WEIGH AND MEASURE DENTAL LABORATORY MATERIALS USING METRIC SYSTEM	56
J315	CHECK FINISHED FRAMEWORK ON DUPLICATE MASTER CASTS FOR ACCURATE FIT	53
J347	SOLDER METAL FRAMEWORKS OF RPD ELECTRICALLY	53
J334	PERFORM PREVENTIVE MAINTENANCE ON RPD EQUIPMENT	50
J351	TRANSFER DESIGNS FROM MASTER CASTS TO REFRACTORY CASTS	50
J355	WAX DIP REFRACTORY CASTS	50
J349	SPRUE WAX PATTERNS FOR RPD	47
J354	WAX AND ADAPT COMPONENTS OF FRAMEWORK PATTERNS ON REFRACTORY CASTS	47
G211	BLOCK OUT UNDESIRABLE UNDERCUTS	44
J320	FABRICATE AND ADAPT WROUGHT WIRE CLASPS	44
0504	LOAD OR UNLOAD PATIENTS ON PATIENT TRANSPORTATION VEHICLES	44
G206	ARTICULATE USING ARBITRARY MOUNTING TECHNIQUES	41
J314	CAST PARTIAL DENTURE FRAMEWORK	41
J336	PERFORM SELECTIVE GRINDING PROCEDURES ON RPD WHILE FINISHING	41
J331	INVEST WAX PATTERNS FOR RPD	38