

UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

HISTOPATHOLOGY

AFSC 4T0X2

OSSN 2365

JULY 1999

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**OCCUPATIONAL ANALYSIS PROGRAM
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION AND TRAINING COMMAND
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PREFACE

This report presents the results of an Air Force Occupational Survey of the AFSC 4T0X2, Histopathology career ladder. Authority to conduct occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

Mr. Michael Brosnan, Inventory Development Specialist, developed the survey instrument. Captain Tegwin E. Cain, Occupational Analyst, analyzed the data and wrote the final report. Ms. Jeanie Guesman provided computer-programming support and Ms. Dolores Navarro provided administrative support. This report has been reviewed and approved by Lieutenant Colonel Roger W. Barnes, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS).

Additional copies of this report can be obtained by writing to AFOMS/OMYXI, 1550 5th Street East, Randolph Air Force Base, Texas 78150-4449, or by calling DSN 487-5543. For information on the Air Force occupational survey process or other on-going projects, visit our web site at <http://www.omsq.af.mil>.

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SUMMARY OF RESULTS

1. **Survey Coverage:** The Histopathology career ladder was surveyed to provide current job and task data for use in updating career ladder documents and training programs. Survey results are based on responses from 85 Active Duty (AD) members accounting for 87 percent of the total population surveyed.
2. **Career Ladder Structure:** The Histopathology career ladder structure consists of one large cluster containing three unique jobs. The main job consists of the actual technical histologists. The other two jobs are the supervisors and the laboratory computer technicians.
3. **Career Ladder Progression:** There is a normal career ladder progression in this field. The 3-skill level personnel spend the majority of their time performing the basic technical duties of grossing, fixing, embedding, cutting, and staining tissues. At the 5-skill level, they still do a large amount of the technical work but also become involved in some training and supervision. At the 7-skill level, they do a large amount of supervision and management but are still performing the bench tasks.
4. **Training Analysis:** The current Specialty Training Standard (STS) provides comprehensive coverage of the work performed by career ladder personnel. Some minor revisions will need to be made since the training has been modified with the change in the location of the tech school.
5. **Job Satisfaction Analysis:** Job satisfaction for 4T0X2 personnel is very high for all the personnel in this field. The only low level is the reenlistment intentions for career personnel (97+ months TAFMS). The other two groups have high reenlistment intentions compared to the comparative sample data.
6. **Implications:** Survey results indicate the present classification structure accurately portrays the jobs performed in this career ladder at this time. The career ladder is very simple with one large cluster containing three separate jobs. The main job includes all personnel that are performing the majority of the technical duties in the career field. The other two jobs have only 5 percent of the personnel combined. These are the supervisors and the computer operators. The small number of supervisors is due to the fact that most of the supervisors of these personnel are in the Medical Laboratory career ladder.

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**OCCUPATIONAL SURVEY REPORT (OSR)
HISTOPATHOLOGY
(AFSC 4T0X2)**

INTRODUCTION

This is a report of an occupational survey of the Histopathology career ladder conducted by the Occupational Analysis Flight, Air Force Occupational Measurement Squadron. The survey was conducted to obtain current job and task data. Data collected through this OSR will be utilized by training development personnel to review courses and related training documents in light of equipment and utilization changes that have occurred since the last OSR in 1996.

Background

As described in AFMAN 36-2108 Airman Classification, dated 30 April 1999, Histopathology personnel perform subprofessional duties at autopsies, prepare autopsy and surgical specimens, and supervise histopathology activities. They also receive, process, fix, embed, cut, make slides, and stain tissue. They maintain histopathology records and instruments and perform quality assurance.

Personnel entering the AFSC 4T0X2 career ladder must attend the Histopathology Apprentice Course; Armed Forces Institute of Pathology, Washington DC (36 weeks). This course covers training in the overall operation of a pathology laboratory including processing specimens and slides for histologic study; histochemistry and special tissue stains; assisting in autopsies; and performing histopathology administration. This course includes both Phase I and Phase II. Upon completion of this AFSC awarding course, the graduate is awarded the 3-skill level.

Entry into this career ladder currently requires an Armed Forces Vocational Aptitude Test Battery score of General - 43; a strength factor of "G" (Weight lift of 40 lbs.) is also required.

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SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) Occupational Survey Study Number 2365, dated October 1998. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, pertinent tasks from the previous survey instrument, and data from the last OSR. The preliminary task list was refined and validated through personal interviews with 7 subject-matter experts (SMEs) at the following training location and operational installations:

<u>BASE</u>	<u>UNIT VISITED</u>
Keesler AFB MS	81 MDTS
Lackland AFB TX	859 MDTS

The resulting JI contains a comprehensive listing of 331 tasks grouped under 11 duty headings, and a background section requesting such information as: grade, base, MAJCOM assigned, organizational level, component status, job title, functional area, work schedule, job satisfaction, equipment used, method of staining used, type of medical facility, and status with the American Society of Clinical Pathology.

Survey Administration

From November 1998 through February 1999, base training offices at hospitals and clinics worldwide administered the inventory to eligible AFSC 4T0X2 personnel. Job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Personnel Center, Randolph AFB TX. Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his or her current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point scale, showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount 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 and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and military paygrade groups. All eligible AD AFSC 4T0X2 personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by MAJCOM, of assigned AFSC personnel as of November 1998. The 85 respondents in the final sample represent 76 percent of the total assigned personnel and 87 percent of the total personnel surveyed. Table 2 reflects the paygrade distribution for these AFSC 4T0X2 personnel.

Both Command and paygrade distributions of the survey sample are close to the percent assigned. This indicates the sample is a true representation of the career ladder population.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task Factor information is needed for a complete analysis of the career ladder. To obtain the needed task factor data, selected senior AFSC 4T0X2 personnel (generally E-6 or E-7 craftsmen) also completed a second booklet for training emphasis (TE). These booklets were processed separately from the JIS. This information is used in a number of different analyses discussed in more detail within the report.

Training Emphasis (TE): TE is a rating of the amount of emphasis that should be placed on tasks in entry-level training. The 32 senior NCOs who completed a TE booklet were asked to select tasks they felt require some sort of structured training for entry-level personnel and then indicate how much training emphasis these tasks should receive, from 1 (extremely low emphasis) to 9 (extremely high emphasis). Structured training is defined as training provided at resident training schools, field training detachments, mobile training teams, formal on-the-job-training (OJT), or any other organized training method. Interrater agreement for these 32 raters was acceptable. The average TE rating was 2.51 with a standard deviation of 2.22. Any task with a TE rating of 4.73 or above is considered to have a high TE.

When used in conjunction with the primary criterion of percent members performing, TE ratings can provide insight into first-enlistment personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting entry-level jobs.

TABLE 1

DAFSC DISTRIBUTION OF SURVEYED PERSONNEL

DAFSC	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
4T032	20	21
4T052	60	62
4T072	20	17

TOTAL ASSIGNED* = 112

TOTAL SURVEYED** = 98

TOTAL IN SURVEY SAMPLE = 85

PERCENT OF ASSIGNED IN SAMPLE = 76%

PERCENT OF SURVEYED IN SAMPLE = 87%

* Assigned strength as of September 1998

** Excludes personnel in PCS, student, or hospital status, or less than 6 weeks on the job

TABLE 2

PAYGRADE/COMMAND DISTRIBUTION OF SURVEY SAMPLE

PAYGRADE	4T0X2	
	Percent of Assigned	Percent of Sample
E-1 - E-4	58	54
E-5	23	28
E-6	13	13
E-7	6	5
COMMAND	4T0X2	
	Percent of Assigned	Percent of Sample
AETC	40	36
AMC	18	22
ACC	8	12
AFMC	12	11
ELM	11	8
USAFE	6	6
PACAF	5	5

SPECIALTY JOBS

The first step in the analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. The Comprehensive Occupational Data Analysis Program (CODAP) assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on these tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, CODAP either adds new members to this initial group, or forms new groups based on the similarity of tasks and time spent ratings.

The basic group used in the hierarchical clustering process is the Job. When two or more jobs have a substantial degree of similarity, in tasks performed and time spent on tasks, they are grouped together and identified as a Cluster. The structure of the career ladder is then defined in terms of jobs and clusters of jobs.

Overview of Specialty Jobs

Based on the analysis of tasks performed and the amount of time spent performing each task, one main cluster made up of three distinct jobs was identified within the career ladder. Figure 1 illustrates the jobs within this cluster performed by AFSC 4T0X2 personnel.

A listing of these jobs and clusters is provided below. The stage (ST) number shown beside each title references computer printed information, the letter "N" indicates the number of personnel in each group.

- I. General Histopathology Cluster (STG02, N=84)
 - A. General Histopathology Job (ST004, N=79)
 - B. Laboratory Computer Job (ST005, N=2)
 - C. Supervisor Job (ST007, N=3)

Group Descriptions

The following paragraphs contain brief descriptions of the jobs identified in the cluster through career ladder structure analysis. Table 3 presents the relative time spent on duties by members of these specialty jobs. Selected background data for these jobs are provided in Table 4. Representative tasks for all groups are contained in Appendix A. Table 5 shows a job comparison between the current and the 1996 surveys.

AFSC 4T0X2 CAREER LADDER SPECIALTY JOBS

(N=85)

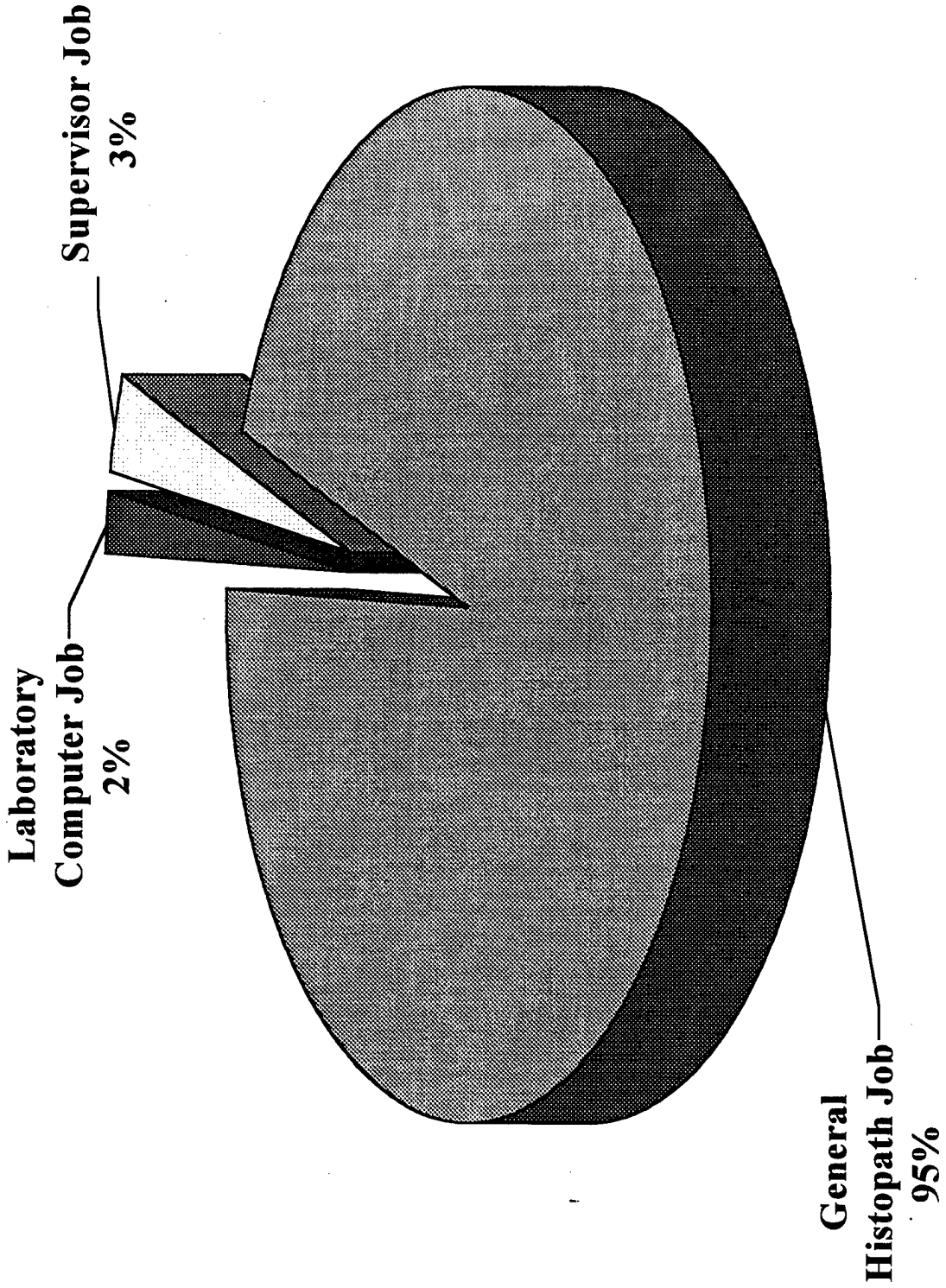


TABLE 3

AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS

DUTIES	GENERAL HISTO PATH CLUSTER (STG02)	GENERAL HISTOPATH JOB (STG04)	LABORATORY COMPUTER JOB (STG05)	SUPERVISOR JOB (STG07)
A PERFORMING LABORATORY ADMINISTRATIVE OR SUPPLY ACTIVITIES	17	17	20	31
B PERFORMING GENERAL LABORATORY ACTIVITIES	15	17	11	5
C PERFORMING LABORATORY COMPUTER ACTIVITIES	3	3	39	11
D PERFORMING RESEARCH PROCEDURES	*	*	0	2
E PERFORMING GENERAL HISTOLOGICAL PROCEDURES	19	20	8	1
F PERFORMING SURGICAL GROSS PROCEDURES	15	14	*	*
G PERFORMING SPECIAL STAINS OR IMMUNOHISTOCHEMISTRY (IHC) PROCEDURES	9	9	5	0
H MAINTAINING MORGUES OR ASSISTING IN AUTOPSIES	9	8	0	*
I PERFORMING MEDICAL READINESS ACTIVITIES	2	2	5	1
J PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	9	8	6	38
K PERFORMING TRAINING ACTIVITIES	2	2	5	11

TABLE 4

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	GENERAL HISTOPATHOLOGY CLUSTER	GENERAL HISTOPATHOLOGY JOB	LABORATORY COMPUTER JOB	SUPERVISOR JOB
NUMBER IN GROUP	84	79	2	3
PERCENT OF SAMPLE	99%	93%	2%	4%
<u>DAFSC DISTRIBUTIONS</u>				
4T032	21%	23%	0%	0%
4T052	62%	62%	100%	33%
4T072	17%	15%	0%	67%
<u>PAYGRADE DISTRIBUTION</u>				
E-1 TO E-3	23%	24%	0%	0%
E-4	32%	34%	0%	0%
E-5	29%	28%	100%	0%
E-6	12%	10%	0%	67%
E-7	5%	4%	0%	33%
AVERAGE MONTHS IN CAREER FIELD	67	58	113	233
AVERAGE MONTHS IN SERVICE	86	80	112	237
PERCENT IN FIRST ENLISTMENT	41%	43%	0%	9%
PERCENT SUPERVISING	32%	32%	100%	67%
AVERAGE NUMBER OF TASKS PERFORMED	105	107	63	90

I. GENERAL HISTOPATHOLOGY CLUSTER (STG02). The 84 airmen that perform this job spend most of their time performing the general histological procedures of Duty E. The average number of tasks performed by this total group is 105. There is an average TAFMS of 86 months. This cluster is broken into the three jobs described below.

A. GENERAL HISTOPATHOLOGY JOB (ST004). The 79 airmen that perform this job spend about 20 percent of their time performing general histological procedures of Duty E, and are evenly split between the Laboratory Administrative or Supply Activities of Duty A, General Laboratory Activities of Duty B, and Performing Surgical Gross Procedures of Duty F (Table 3). The average number of tasks performed by this group is 107. Distinctive tasks performed include:

- ◆ Embedding tissues
- ◆ Performing routine staining procedures
- ◆ Cutting tissue samples
- ◆ Coverslip slides
- ◆ Process tissues
- ◆ Section tissues using a microtome
- ◆ Labeling tissues and slides
- ◆ Replace tissue processor reagents such as xylene or alcohol
- ◆ File tissues, blocks, and slides

The majority of the personnel in this job are at the 5-skill level and 43 percent are in their first enlistment. They have an average TAFMS of 80 months. This job also includes a few first-line supervisors who work right alongside the airmen they supervise.

B. LABORATORY COMPUTER JOB (ST005). The 2 airmen that perform this job spend about 39 percent of their time performing Laboratory Computer Activities of Duty C and spend about 18 percent of their time performing Laboratory Administrative or Supply Activities of Duty A. The average number of tasks performed by this group is 63. Distinctive tasks performed include:

- ◆ Perform data base inquiries, such as requesting test results
- ◆ Initiate or update computer-based instructions
- ◆ Troubleshoot computer stops or malfunctions
- ◆ Write laboratory computer programs
- ◆ Configure computers to interface with laboratory equipment
- ◆ Test new computer hardware or software products
- ◆ Perform systems analyses on laboratory information systems
- ◆ Run computer cables

These two airmen are at different locations but they basically do all the same tasks. Both are at the 5-skill level so neither one is in their first enlistment. There are laboratory computer jobs in all laboratories but the airmen are usually not in this career field. Most of them are in the career ladder with AFSC 4T0X2, Medical Laboratory.

C. SUPERVISOR JOB (ST007). The 3 airmen that perform this job spend about 38 percent of their time performing Management and Supervisory Activities of Duty J and about 31 percent of their time performing Laboratory Administrative or Supply Activities of Duty A. The average number of tasks performed by this group is 90. Distinctive tasks performed include:

- ◆ Counsel subordinates concerning personal matters
- ◆ Draft budget requirements
- ◆ Conduct supervisory performance feedback sessions
- ◆ Inspect personnel for compliance with military standards
- ◆ Conduct general meetings, such as staff meetings, briefings, conferences, briefings, or workshops
- ◆ Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace
- ◆ Interpret policies, directives, or procedures for subordinates

The supervisors are mainly 7-skill level personnel. They are the ones with the experience and the time with 237 months average TAFMS. There are only three supervisors in this career ladder since the majority of the supervisors fall in the career ladder of AFSC 4T0X1, Medical Laboratory.

Comparison to Previous Study

It is difficult to do a comparison since the Histopathology career ladder was grouped with the Medical Laboratory career ladder in the last survey done in 1996. Basically, nothing has really changed. Histopathology was identified as a separate job in the 1996 study. Since the studies have been separated, the Histopathology career ladder now is one big cluster with three different jobs within that cluster.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as AFMAN 36-2108 *Airman Classification*, Specialty Description and the Career Field Education and Training Plan, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across the career ladder jobs is displayed in Table 5, while Table 6 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups. This career field shows a somewhat typical pattern of progression. Personnel at the 3- and 5-skill levels work in the technical jobs of the career ladder and spend most of their time on technical tasks. As incumbents move up to the 7-skill level they begin to perform more supervisory and management tasks.

Skill-Level Descriptions

DAFSC 4T032. These 18 AD Airmen represent 21 percent of the survey sample. They perform an average of 84 tasks. They all work in the General Histopathology Job. Table 6 reflects the time spent on duties by the different skill levels. At the 3-skill level, their time is distributed among the technical tasks of duties A, B, E, and F. Representative tasks performed by these members are listed in Table 7.

DAFSC 4T052. These 53 members of this group account for 62 percent of the survey sample and represent the core of the career ladder. Ninety-six percent work in the General Histopathology Job. The two airmen performing the Laboratory Computer Job are both 5-skill-levels.

Table 6 shows that this skill-level also spends the majority of their time on the technical tasks of duties A, B, E, and F. Representative tasks are shown in table 8. Table 9 shows the tasks that differentiate the 3-skill level from the 5-skill level personnel.

DAFSC 4T072. These 14 airmen account for the remaining 17 percent of the survey sample. They perform an average of 158 tasks. Eighty-six percent of these airmen work in the General Histopathology Job.

Table 6 shows that this skill level spends most of their time performing the management and supervisory tasks of duties A and J. Table 10 shows the representative tasks for this skill-level while Table 11 shows the tasks which best differentiate the 5-skill level job from the 7-skill level job. This table clearly shows the much higher devotion to management and supervisory tasks at the 7-skill level.

TABLE 5

DISTRIBUTION ON 3, 5, AND 7-SKILL LEVEL DAFSC GROUPS ACROSS SPECIALTY JOBS
(PERCENT RESPONDING)

SPECIALTY JOBS	4T032 (N=18)	4T052 (N=52)	4T072 (N=14)
A. GENERAL HISTOPATHOLOGY JOB	100%	94%	86%
B. LABORATORY COMPUTER JOB	0%	4%	0%
C. SUPERVISOR JOB	0%	2%	14%

TABLE 6

RELATIVE PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTIES	4T0X2 (N=84)	4T032 (N=18)	4T052 (N=52)	4T072 (N=14)
A PERFORMING LABORATORY ADMINISTRATIVE OR SUPPLY ACTIVITIES	16	12	17	20
B PERFORMING GENERAL LABORATORY ACTIVITIES	16	17	17	11
C PERFORMING LABORATORY COMPUTER ACTIVITIES	3	2	3	4
D PERFORMING RESEARCH PROCEDURES	*	*	*	*
E PERFORMING GENERAL HISTOLOGICAL PROCEDURES	19	23	20	10
F PERFORMING SURGICAL GROSS PROCEDURES	15	21	14	10
G PERFORMING SPECIAL STAINING OR IMMUNOHISTOCHEMISTRY (IHC) PROCEDURES	9	12	9	5
H MAINTAINING MORGUES OR ASSISTING WITH AUTOPSIES	8	9	8	8
I PERFORMING MEDICAL READINESS ACTIVITIES	2	2	2	3
J PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	9	1	8	23
K PERFORMING TRAINING ACTIVITIES	2	1	2	6

TABLE 7

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4T032
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>4T032 (N=18)</u>
E0149 Embed tissues	100
E0152 File tissues, blocks, or slides	100
E0162 Section tissues	100
F0181 Replace tissue processor reagents, such as alcohol or xylene	100
E0148 Distribute completed slides to the pathologist	100
F0180 Process tissues	100
E0157 Perform QC of sectioning instruments	100
E0147 Cut tissue samples	94
E0154 Label tissues or slides	94
F0174 Perform specimen accessioning procedures	94
E0156 Perform routine staining procedures	94
E0146 Coverslip tissues	94
F0166 Complete QC sheets	94
FO182 Store wet tissues	94
E0158 Perform QC of stainline reagents	94
F0171 Perform frozen sections	94
G0194 Perform special stains to identify amyloids in tissues	94
E0161 Reprocess unacceptable samples	94
FO165 Clean and disinfect gross rooms	89
E0153 Identify tissues macroscopically	89
G0193 Perform special stains to identify pigments and minerals	89
G0189 Perform special stains to identify connective tissues	89
G0190 Perform special stains to identify infectious agents	89
F0170 Perform decalcification procedures	89
G0195 Perform special stains to identify fats and lipids in tissues	89
H0204 Disinfect autopsy area	89
H0200 Clean and disinfect morgue instruments	89

Average number of tasks performed - 84

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4T052
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>4T052 (N=53)</u>
E0154 Label tissues or slides	94
E0156 Perform routine staining procedures	92
E0148 Distribute completed slides to the pathologist	89
E0147 Cut tissue samples	89
E0149 Embed tissues	89
E0146 Coverslip tissues	87
E0152 File tissues, blocks, or slides	87
F0181 Replace tissue processor reagents, such as alcohol or xylene	83
E0158 Perform QC of stainline reagents	83
B0105 Store hazardous chemicals, such as acids or carcinogens	83
F0166 Complete QC sheets	83
E0157 Perform QC of sectioning instruments	83
E0160 Repair slides	83
B0069 Clean laboratory facilities or work areas, other than gross rooms or autopsy rooms	81
E0162 Section tissues	81
F0180 Process tissues	81
G0194 Perform special stains to identify amyloids in tissues	79
F0170 Perform decalcification procedures	79
F0174 Perform specimen accessioning procedures	77
B0106 Store reagents or standards, other than hazardous chemicals	77
B0075 Mix stains	77
F0168 Dispose of wet tissues	77
B0098 Remove or dispose of hazardous waste materials	77
F0171 Perform frozen sections	77
E0161 Reprocess unacceptable samples	77

Average number of tasks performed - 96

TABLE 9

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC
4T032 AND 4T052 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 4T032	DAFSC 4T052	DIFFERENCE
B0107 Unpack biological specimens	78	49	29
B0099 Remove or dispose of infectious waste material	78	53	25
E0153 Identify tissues macroscopically	89	64	25
F0182 Store wet tissues	94	74	20
G0198 Set up IHC protocols	33	13	20
B0077 Monitor temperatures of morgues	11	53	-42
J0273 Conduct safety inspections of equipment or facilities	0	40	-40
A0037 Maintain or update workload data	6	43	-37
A0022 Inventory controlled substances	17	53	-36
J0298 Inspect personnel for compliance with military standards	0	36	-36
B0076 Monitor alarm systems, such as refrigerator or freezer alarms	11	43	-32
A0046 Prepare requisitions for local purchase of equipment or supplies	11	42	-31
A0027 Maintain activity issue, back order, or issue turn-in lists of equipment or supplies	11	42	-31
J0275 Counsel subordinates concerning personal matters	0	30	-30
A0054 Turn in equipment or supplies	17	45	-29
B0090 Perform morgue discharges	11	40	-29
A0005 Complete accident or incident reports	11	40	-29
A0049 Prepare worklists	0	28	-28

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY DAFSC 4T072
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>4T072 (N=14)</u>
E0150 Evaluate histological procedures	100
A0006 Complete quality assurance inspection checklist procedures	100
A0004 Compile data for records, reports, logs, or trend analyses	93
J0291 Evaluate job hazards or compliance with Air Force Occupational Safety and Health (AFOSH) program	93
A0014 Identify and report equipment or supply problems	93
F0174 Perform specimen accessioning procedures	86
J0310 Write or indorse military performance reports	86
J0275 Counsel subordinates concerning personal matters	86
F0165 Clean and disinfect gross rooms	86
J0292 Evaluate personnel for compliance with performance standards	86
J0272 Conduct supervisory performance feedback sessions	86
E0147 Cut tissue samples	86
E0149 Embed tissues	86
F0181 Replace tissue processor reagents, such as alcohol or xylene	86
E0146 Coverslip tissues	86
H0204 Disinfect autopsy area	86
F0180 Process tissues	86
J0277 Determine or establish work assignments or priorities	86
E0162 Section tissues	86
E0156 Perform routine staining procedures	86
B0069 Clean laboratory facilities or work areas, other than gross rooms or Autopsy areas	86
J0295 Implement safety or security programs	86
A0044 Prepare paraffin blocks for shipment	86
A0043 Prepare microscopic slides for shipment	86
E0154 Label tissues or slides	86
H0199 Assist pathologist in removal of body organs	86

Average number of tasks performed - 158

TABLE II

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4T052 AND 4T072 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC		DIFFERENCE
	4T032	4T052	
J0305	9	86	-77
J0311	17	86	-69
K0319	13	79	-66
J0296	8	71	-63
J0293	23	86	-63
J0290	9	71	-62
K0329	17	79	-62
J0272	25	86	-61
J0310	25	86	-61
J0299	19	79	-60
J0291	34	93	-59
J0284	6	64	-58
J0295	28	86	-58
J0307	8	64	-56
J0275	30	86	-56
A0006	45	100	-55

TRAINING ANALYSIS

Occupational survey data are one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel in their first enlistment. Factors which may be used in evaluating training include the overall description of the work being performed by first-enlistment personnel and their overall distribution across career ladder jobs, percentages of first-enlistment (1-48 months TAFMS) members performing specific tasks, as well as TE ratings (previously explained in the SURVEY METHODOLOGY section).

First-Enlistment Personnel

In this study, there are 34 members in their first-enlistment (1-48 months TAFMS), representing 40 percent of the total survey sample. All the first-enlistment personnel are in the General Histopathology Job and most of their duty time is spent on the technical activities of Duties B, E, and F, (Table 12). Table 13 shows the most commonly performed tasks for first-enlistment personnel. The majority of these tasks are from Duty E, General Histological Procedures. Table 14 is a list of equipment that is commonly used by first-enlistment personnel.

TABLE 12

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES
BY FIRST-ENLISTMENT AFSC 4T0X2 PERSONNEL

<u>TASKS</u>		<u>PERCENT TIME SPENT</u>
A	PERFORMING LABORATORY ADMINISTRATIVE OR SUPPLY ACTIVITIES	10
B	PERFORMING GENERAL LABORATORY ACTIVITIES	17
C	PERFORMING LABORATORY COMPUTER ACTIVITIES	2
D	PERFORMING RESEARCH PROCEDURES	*
E	PERFORMING GENERAL HISTOLOGICAL PROCEDURES	25
F	PERFORMING SURGICAL GROSS PROCEDURES	19
G	PERFORMING SPECIAL STAINING OR IMMUNOHISTOCHEMISTRY (IHC) PROCEDURES	12
H	MAINTAINING MORGUES OR ASSISTING WITH AUTOPSIES	10
I	PERFORMING MEDICAL READINESS ACTIVITIES	1
J	PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	2
K	PERFORMING TRAINING ACTIVITIES	*

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY AFSC 4T0X2
FIRST-ENLISTMENT PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	4T0X2 (N=34)	
E0152	File tissues, blocks, or slides	100
E0148	Distribute completed slides to the pathologist	100
F0181	Replace tissue processor reagents, such as alcohol or xylene	97
E0149	Embed tissues	97
E0154	Label tissues or slides	94
E0147	Cut tissue samples	94
E0156	Perform routine staining procedures	94
E0146	Coverslip tissues	94
E0157	Perform QC of sectioning instruments	94
E0162	Section tissues	91
F0180	Process tissues	91
F0171	Perform frozen sections	91
G0194	Perform special stains to identify amyloids in tissues	91
E0158	Perform QC of stainline reagents	88
F0166	Complete QC sheets	88
H0200	Clean and disinfect morgue instruments	88
H0207	Label and store autopsy specimens	88
F0174	Perform specimen accessioning procedures	85
F0168	Dispose of wet tissues	85
F0182	Store wet tissues	85
H0204	Disinfect autopsy area	85
G0190	Perform special stains to identify infectious agents	85
F0170	Perform decalcification procedures	85
E0161	Reprocess unacceptable samples	85
F0165	Clean and disinfect gross rooms	82
G0189	Perform special stains to identify connective tissues	82
G0195	Perform special stains to identify fats and lipids in tissues	82

Average number of tasks performed - 78

TABLE 14

EQUIPMENT USED BY FIRST-ENLISTMENT PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>EQUIPMENT</u>	<u>4T0X2 (N=34)</u>
Tissue Processor	100
Laboratory Glassware	97
Microtome	97
Cryostat	94
Embedding Center	94
Water Bath	94
Automated Slide Stainer	91
Fume Hood	88
Refrigerator	88
Acid Cabinet	82
Hotplate with Magnetic Stirrer	82
Autopsy Table	79
Bone Saw	79
Drying Oven	79
Surgical Instruments	76
Thermometer, Manual	74
Slide Label Printer	74
Pipette, Manual	71

Training Emphasis (TE) Data

TE data is a secondary factor that can assist technical school personnel in deciding which tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks in the JI considered important for first-enlistment personnel training (see Table 15 for the top-rated tasks). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on training emphasis, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

Table 15 presents tasks with the highest TE ratings for AFSC 4T0X2 first-enlistment airmen. For example, TE raters (refer to Table 15) reported that tasks such as coverslipping tissues and performing frozen sections require a high degree of training emphasis and, from the data, most airmen in their first job and within their first enlistment are performing these tasks. The task of performing special stains on frozen tissue has a high TE but a low number of members performing, therefore, this may be a candidate for on-the-job training.

Various lists of tasks, accompanied by TE ratings are contained in the TRAINING EXTRACT package and should be reviewed in detail by training school personnel. (For a more detailed explanation of TE ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report.)

Specialty Training Standard (STS)

A comprehensive review of STS 4T0X2, dated September 1995, compared STS items to survey data (based on the previously mentioned assistance from SMEs in matching JI tasks to STS elements). STS elements containing general knowledge information, mandatory entries, subject-matter-knowledge-only requirements, or basic supervisory responsibilities were not examined. Task knowledge and performance elements of the STS were compared against the standard set forth in AETCI 36-2601 and AFI 36-2201 (i.e., include tasks performed or knowledge required by 30 percent or more of the personnel in a skill level [criterion group] of the AFS).

Overall, the STS provides very comprehensive coverage of the work performed by personnel in this career ladder at this time, with survey data supporting all of the essential elements. There are still some revisions that need to be done. Table 16 reflects STS elements that warrant review by training personnel to ensure inclusion in the training course is justified. Table 17 shows tasks not referenced to the STS that should be.

TABLE 15

DAFSC 4T0X2 TASKS WITH HIGHEST TE RATINGS

TASKS	TNG EMP	PERCENT MEMBERS PERFORMING	
		1 ST JOB	1 ST ENL
E0146 Coverslip tissues	7.73	90	94
F0171 Perform frozen sections	7.57	80	91
E0147 Cut tissue samples	7.50	80	94
F0180 Process tissues	7.47	80	91
E0156 Perform routine staining procedures	7.40	100	94
E0162 Section tissues	7.33	90	91
G0193 Perform special stains to identify pigments and minerals	7.27	70	79
E0149 Embed tissues	7.17	90	97
G0189 Perform special stains to identify connective tissues	7.17	70	82
G0192 Perform special stains to identify nerve tissues	7.10	60	74
G0188 Perform special stains on frozen sections	7.10	30	50
G0195 Perform special stains to identify fats and lipids in tissues	7.07	70	82
G0191 Perform special stains to identify mucopolysaccharides	7.00	70	79
G0194 Perform special stains to identify amyloids in tissues	6.93	90	91
B0075 Mix stains	6.90	80	79
E0154 Label tissues or slides	6.87	90	97
G0190 Perform special stains to identify infectious agents	6.83	80	85
E0153 Identify tissues macroscopically	6.77	70	74
F0181 Replace tissue processor reagents, such as alcohol or xylene	6.73	100	100
F0170 Perform decalcification procedures	6.70	70	85
H0199 Assist pathologists in removal of body organs	6.70	100	79

TABLE 15 (CONTINUED)

DAFSC 4T0X2 TASKS WITH HIGHEST TE RATINGS

TASKS	TNG EMP	PERCENT MEMBERS PERFORMING	
		1 ST JOB	1 ST ENL
F0174 Perform specimen accessioning procedures	6.67	70	85
F0163 Assist physicians in surgical gross procedures	6.43	70	71
H0200 Clean and disinfect morgue instruments	6.37	100	88
G0186 Perform QC on special staining procedures	6.37	50	76
E0161 Reprocess unacceptable samples	6.33	60	85
E0157 Perform QC of sectioning instruments	6.30	80	94
H0212 Prepare bodies for postmortem examinations	6.27	80	79
B0105 Store hazardous chemicals, such as acids or carcinogens	6.27	80	79
F0179 Prepare tissue fixatives	6.27	40	59
B0106 Store reagents or standards, other than hazardous chemicals	6.23	80	76
E0152 File tissues, blocks, or slides	6.20	100	100
H0204 Disinfect autopsy areas	6.13	90	85
H0207 Label and store autopsy specimens	6.10	100	88
E0158 Perform QC of stainline reagents	6.10	80	88
F0165 Clean and disinfect gross rooms	5.90	70	82
G0183 Identify tissues microscopically	5.90	70	74
F0168 Dispose of wet tissues	5.87	80	85
F0182 Store wet tissues	5.80	70	85
G0187 Perform special stains on cytological specimens	5.77	40	56
H0213 Prepare bodies for release	5.73	70	68
E0148 Distribute completed slides to pathologists	5.67	100	100

TABLE 16

EXAMPLES OF STS ITEMS NOT SUPPORTED BY SURVEY DATA
(LESS THAN 30 PERCENT MEMBERS PERFORMING)

TASKS	HISTOTECHNOLOGY	PERCENT MEMBERS PERFORMING	PERCENT MEMBERS PERFORMING		
			3-SKL LVL (N=18)	5-SKL LVL (N=53)	7-SKL LVL (N=14)
11	HISTOTECHNOLOGY				
11.b	Use equipment				
11.b.(6)	B0067	Calibrate thermometers	22	11	29
		a 2b			
11.b.(11)	B0065	Calibrate pH meters	22	25	21
		2b 2b			
	B0066	Calibrate pipettes	17	8	0
12	PERFORM HISTOTECHNOLOGY PROCEDURES				
12.1	Plastic techniques				
	E0155	Perform plastic techniques	17	4	0
		a - -			

TABLE 17

EXAMPLES OF TASKS PERFORMED BY 30 PERCENT OR MORE 4T0X2 GROUP MEMBERS AND NOT REFERENCED TO THE STS (PERCENT MEMBERS PERFORMING)

TASKS	TNG	1 ST		3-Skill		5-Skill		7-Skill	
		EMP	ENL (N=34)	LVL (N=18)	LVL (N=53)	LVL (N=14)			
B0106	6.23	76	83	77	64				
E0159	5.47	59	61	55	43				
E0160	5.50	76	78	83	86				
F0182	5.80	85	94	74	79				
H0201	5.30	44	44	55	43				
H0202	5.33	32	33	49	57				
H0207	6.10	88	89	74	86				
H0208	5.33	62	56	64	79				
H0214	5.23	41	33	55	86				

Store reagents or standards, other than hazardous chemicals
 Prepare sectioning adhesives
 Repair slides
 Store wet tissues
 Collect bacteriological specimens
 Collect toxicology specimens
 Label and store autopsy specimens
 Make entries on autopsy logs
 Record body cooler temperatures

JOB SATISFACTION ANALYSIS

An examination of the job satisfaction indicators of various groups can give career ladder managers a better understanding of some of the factors which may affect the 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 disk to provide indications of job satisfaction.

Table 18 presents job satisfaction data for AFSC 4T0X2 TAFMS groups, together with TAFMS data for a comparative sample of Medical career ladders surveyed in 1998. All TAFMS groups showed high satisfaction in all areas in relation to the comparative sample. A very high 62 percent of the first-enlistment personnel and 70 percent of the second-enlistment personnel indicate they will reenlist. The reenlistment intention category of the career group at 45 percent was the only category that was low in comparison to the comparative sample. Normally, we also compare the present survey to previous surveys. Since this is the first time that Histopathology was surveyed separately from the Medical Laboratory career field, there was no valid way to make a comparison with the previous survey.

Table 19 shows a review of the job satisfaction ratings for the specialty jobs identified in this survey. All the jobs showed high satisfaction ratings in this career field. The Laboratory Computer job and the Supervisor jobs may look like they have low ratings due to the small number of personnel in each of these jobs, but overall, the ratings are very positive.

IMPLICATIONS

This survey was initiated to provide current job and task data for use in evaluating the AFMAN 36-2108 *Specialty Description* and appropriate training documents.

Survey results clearly indicate that the present classification structure, as described in the latest specialty description, accurately portrays the jobs performed in this career ladder. Career ladder training documents appear, on the whole, to be well supported by survey data, but require further review to ensure appropriate proficiency coding. The training documents still need some revision done since they have changed the location and the method of training. The career ladder progression is similar to other career fields. Job satisfaction is high for first-enlistment personnel and stays high with time in service. Additionally, this career ladder has very high reenlistment intentions for all first-enlistment and second-enlistment groups.

TABLE 18

JOB SATISFACTION INDICATORS FOR AFSC 4T0X2 TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	1999 4T0X2 (N=34)	COMP SAMP (N=359)	1999 4T0X2 (N=20)	COMP SAMP (N=217)	1999 4T0X2 (N=31)	COMP SAMP (N=428)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	85	71	75	65	84	73
SO-SO	6	15	15	19	13	16
DULL	9	14	10	16	3	11
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO PERFECT	89	83	90	77	84	82
NONE TO VERY LITTLE	11	17	10	23	16	18
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO PERFECT	94	88	100	85	84	87
NONE TO VERY LITTLE	6	12	0	15	16	13
<u>SENSE OF ACCOMPLISHMENT FROM JOB:</u>						
SATISFIED	91	69	80	58	84	69
NEUTRAL	3	14	5	17	3	11
DISSATISFIED	6	17	15	25	13	20
<u>REENLISTMENT INTENTIONS:</u>						
YES OR PROBABLY YES	62	47	70	54	45	62
NO OR PROBABLY NO	38	53	30	46	26	14
WILL RETIRE	0	0	0	0	29	24

TABLE 19

JOB SATISFACTION INDICATORS FOR AFSC 4T0X2 JOB GROUPS
(PERCENT MEMBERS RESPONDING)

	ALL AD HISTOPATH (N=85)	GENERAL HISTOPATH JOB (N=79)	LABORATORY COMPUTER JOB (N=2)	SUPERVISOR JOB (N=3)
<u>EXPRESSED JOB INTEREST:</u>				
INTERESTING	82	82	50	100
SO-SO	11	10	50	0
DULL	7	8	0	0
<u>PERCEIVED USE OF TALENTS:</u>				
FAIRLY WELL TO PERFECT	88	89	100	67
NONE TO VERY LITTLE	12	11	0	33
<u>PERCEIVED USE OF TRAINING:</u>				
FAIRLY WELL TO PERFECT	92	94	100	67
NONE TO VERY LITTLE	8	6	0	33
<u>SENSE OF ACCOMPLISHMENT FROM JOB:</u>				
SATISFIED	86	86	100	100
NEUTRAL	4	3	0	0
DISSATISFIED	11	11	0	0
<u>REENLISTMENT INTENTIONS:</u>				
YES OR PROBABLY YES	58	59	50	0
NO OR PROBABLY NO	32	33	50	0
WILL RETIRE	11	8	0	100

APPENDIX A

**SELECTED REPRESENTATIVE TASKS PERFORMED BY
CAREER LADDER STRUCTURE GROUPS**

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TABLE A1

REPRESENTATIVE TASKS PERFORMED BY THE GENERAL HISTOPATHOLOGY
CLUSTER (ST002)

TASKS	PERCENT MEMBERS PERFORMING	
E0154	Label tissues or slides	93
E0149	Embed tissues	92
E0156	Perform routine staining procedures	92
E0148	Distribute completed slides to pathologists	92
E0147	Cut tissue samples	90
E0152	File tissues, blocks, or slides	90
F0181	Replace tissue processor reagents, such as alcohol or xylene	90
E0146	Coverslip tissues	86
E0157	Perform QC of sectioning instruments	88
E0162	Section tissues	87
F0180	Process tissues	87
E0158	Perform QC of stainline reagents	87
F0166	Complete QC sheets	86
E0161	Reprocess unacceptable samples	83
E0160	Repair slides	83
F0174	Perform specimen accessioning procedures	82
B0105	Store hazardous chemicals, such as acids or carcinogens	82
F0171	Perform frozen sections	82
G0194	Perform special stains to identify amyloids in tissues	82
F0170	Perform decalcification procedures	82
B0069	Clean laboratory facilities or work areas, other than gross rooms or autopsy areas	81
B0098	Remove or dispose of hazardous waste materials	81
G0193	Perform special stains to identify pigments and minerals	81
F0165	Clean and disinfect gross rooms	80
F0182	Store wet tissue	80
H0204	Disinfect autopsy areas	80
H0200	Clean and disinfect morgue instruments	80
H0207	Label and store autopsy specimens	80

TABLE A2

REPRESENTATIVE TASKS PERFORMED BY THE GENERAL HISTOPATHOLOGY
JOB (ST004)

TASKS	PERCENT MEMBERS PERFORMING	
E0149	Embed tissues	97
E0154	Label tissues or slides	97
E0156	Perform routine staining procedures	96
F0181	Replace tissue processor reagents, such as alcohol or xylene	96
E0147	Cut tissue samples	95
E0152	File tissues, blocks, or slides	95
E0148	Distribute completed slides to pathologists	95
E0146	Coverslip tissues	94
F0180	Process tissues	92
E0157	Perform QC of sectioning instruments	92
E0162	Section tissues	91
E0158	Perform QC of stainline reagents	91
F0166	Complete QC sheets	90
E0161	Reprocess unacceptable samples	89
F0174	Perform specimen accessioning procedures	87
F0171	Perform frozen sections	87
G0194	Perform special stains to identify amyloids in tissues	87
F0170	Perform decalcification procedures	87
E0160	Repair slides	87
F0165	Clean and disinfect gross rooms	85
B0105	Store hazardous chemicals, such as acids or carcinogens	85
F0182	Store wet tissue	85
H0204	Disinfect autopsy areas	85
H0200	Clean and disinfect morgue instruments	85
H0207	Label and store autopsy specimens	85

TABLE A3

REPRESENTATIVE TASKS PERFORMED BY THE LABORATORY COMPUTER JOB
(STG005)

TASKS		PERCENT MEMBERS PERFORMING
C0120	Perform data base inquiries, such as requesting test results	100
A0015	Identify and report suspected security compromises	100
C0113	Initiate or update computer-based instructions	100
C0128	Troubleshoot computer stops or malfunctions	100
C0125	Prepare jobs or run sheets	100
C0114	Isolate causes of computer stops or malfunctions	100
C0122	Perform preventative maintenance on ADPE	100
C0112	Enter or update computerized data, such as patient, quality control (QC), or supply data	100
C0129	Write laboratory computer programs	100
C0111	Distribute or deliver computer-generated products	100
C0109	Configure computers to interface with laboratory equipment	100
C0121	Perform minor repairs of ADPE	100
C0127	Test new computer hardware or software products	100
B0069	Clean laboratory facilities or work areas, other than gross rooms or autopsy areas	100
C0116	Maintain lists of unauthorized software	100
C0123	Perform systems analyses on laboratory information systems	100
C0126	Run computer cables	100
C0118	Maintain work order logs for ADPE	50
C0115	Maintain access lists of personnel authorized to use automated data processing equipment (ADPE)	50
A0013	Evaluate serviceability of equipment or supplies	50
E0148	Distribute completed slides to pathologists	50
B0102	Review laboratory request slips	50
E0154	Label tissues or slides	50
J0291	Evaluate job hazards or compliance with Air Force Occupational Safety and Health (AFOSH) program	50
E0158	Perform QC of stainline reagents	50

TABLE A4

REPRESENTATIVE TASKS PERFORMED BY THE SUPERVISOR JOB
(STG007)

TASKS	PERCENT MEMBERS PERFORMING	
J0299	Interpret policies, directives, or procedures for subordinates	100
J0275	Counsel subordinates concerning personal matters	100
K0314	Brief personnel concerning training programs or matters	100
J0269	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	100
J0276	Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace	100
J0284	Draft budget requirements	100
J0302	Review budget requirements	100
A0003	Brief supervisors concerning purchases of equipment, supplies, or reagents	100
J0272	Conduct supervisory performance feedback sessions	100
A0004	Compile data for records, reports, logs, or trend analysis	100
J0270	Conduct self-inspections or self-assessments	100
C0128	Troubleshoot computer stops or malfunctions	100
K0317	Conduct on-the-job training (OJT)	100
KO318	Counsel trainees on training progress	100
C0114	Isolate causes of computer stops or malfunctions	100
J0290	Evaluate inspection report findings or inspection procedures	100
C0113	Initiate or update computer-based instructions	100
A0026	Maintain accreditation regulations	100
J0297	Initiate actions required due to substandard performance of personnel	100
A0056	Write staff studies, surveys, or special reports, other than training reports	100
A0031	Maintain organizational equipment or supply records	67
A0002	Annotate shopping guides	67
A0034	Maintain supply stock levels	67
D0130	Collect and analyze research data	67
A0032	Maintain property custodian authorization/custody receipt listings (CA/CRLs)	67
J0298	Inspect personnel for compliance with military standards	67