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OCCUPATIONAL SURVEY REPORT

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INSTRUMENTATION

AFSC 316X3

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OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
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TABLE OF CONTENTS

	<u>PAGE NUMBER</u>
PREFACE.	iii
SUMMARY OF RESULTS	iv
INTRODUCTION	1
Background	1
SURVEY METHODOLOGY	2
Survey Administration.	3
Survey Sample.	3
Data Processing and Analysis	3
Task Factor Administration	5
SPECIALTY JOBS (Career Ladder Structure)	5
Overview	6
Comparison to Previous Survey.	19
Summary.	19
CAREER LADDER PROGRESSION.	19
SKILL-LEVEL DESCRIPTIONS	24
Summary.	24
AFR 39-1 SPECIALTY JOB DESCRIPTIONS ANALYSIS	30
TRAINING ANALYSIS.	30
First-Enlistment Instrumentation Mechanic (AFSC 316X3)	30
Speciality Training Standard	36
Plan of Instruction.	38
Summary.	40
JOB SATISFACTION	40
Summary.	46
IMPLICATIONS	46
APPENDIX A	47
APPENDIX B	48

PREFACE

This report presents the results of an Air Force Occupational Survey of the Instrumentation (AFSC 316X3) career ladder. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

Chief Master Sergeant Anthony O'Flaherty developed the survey instrument, Ms Olga Velez provided computer programming support, and Ms Raquel A. Soliz provided administrative support. Mr Daniel E. Dreher and Squadron Leader Kerry McDonald, Royal Australian Air Force exchange officer, analyzed the data and wrote the final report. Lieutenant Colonel Charles D. Gorman, Chief, Airman Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Squadron, reviewed and approved this report for release.

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

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SUMMARY OF RESULTS

1. Survey Coverage: This report is based on data collected from 353 respondents, comprising 67 percent of the members assigned to this specialty.
2. Career Ladder Structure: Survey data confirm this is a very diverse career ladder, with members performing a variety of jobs. Most of the jobs performed by Instrumentation Mechanics are determined by the mission of the unit to which they are assigned.
3. Career Ladder Progression: Survey data show Instrumentation personnel progress typically through the skill levels, with 3- and 5-skill level personnel spending more time performing purely technical functions, 7-skill level members spending more time on supervisory responsibilities, and 9-skill level and CEM personnel performing the management functions of the career ladder.
4. Specialty Descriptions: AFR 39-1 Specialty Descriptions accurately describe functions and tasks performed by AFSC 316X3 personnel.
5. Training Analysis: Because of the diversity of the career ladder, most portions of the STS dealing with technical topics with tasks matched are not supported by TAFMS and DAFSC data, but are supported using percent members working in the jobs. In addition, only five matched learning objectives in the POI are supported by survey data.

A number of write-in comments suggest the Instrumentation Mechanics portion of the course is not necessary. School personnel also need to review the EPI STS, as there are a number of unsupported objectives in this document.

6. Job Satisfaction: Job satisfaction for respondents in this study and members of similar AFSCs surveyed in 1989 were compared, and data show AFSC 316X3 personnel have somewhat lower satisfaction indicators than their counterparts in the similar AFSCs. Overall, satisfaction has remained fairly stable over the years. Members in most jobs find their work interesting and feel their talents and training are used. Those with the Supply and Missile Systems jobs, however, have the lowest overall indicators.
7. Implications: Survey data show the career ladder has remained essentially the same over the last several years. Members progress typically through the specialty. Survey data suggest the STS and POI for the entry-level course need to be reviewed, as there are some unsupported parts of each. Survey data and write-in comments suggest the 12-week Instrumentation Mechanic portion of the 3ABR31633 course may not be the most cost effective method of training as graduates have to learn their first-assignment jobs by OJT.

OCCUPATIONAL SURVEY REPORT INSTRUMENTATION CAREER LADDER (AFSC 316X3)

INTRODUCTION

This is a report of an occupational survey of the Instrumentation (AFSC 316X3) career ladder completed by the USAF Occupational Measurement Squadron in December 1990. While the last published OSR for this career ladder was in 1979, the specialty was surveyed and a Training Extract prepared in October 1985. The present study was initiated by the USAF Occupational Measurement Squadron, primarily to provide information needed for appropriate agencies to evaluate training for the career ladder.

In 1985, the Air Force decided to convert the 316X3 specialty to a civilian occupation, began deleting military positions, and started looking for qualified civilians to fill the vacant slots. It soon became apparent it would be too expensive to hire civilians with the necessary background, and the planned move to all civilians was not going to be cost effective. As a result, the conversion process was ended, military manning for the career ladder was increased, and technical training for military personnel continued.

Background

The AFR 39-1 Specialty Descriptions state that 3- and 5-skill level AFSC 316X3 personnel assemble, install, and operate instrumentation and telemetry equipment; repair, overhaul, and maintain instrumentation packages; and test and modify instrument components.

Seven-skill level members perform the same technical tasks as 3- and 5-skill level members, but have additional malfunction analysis, supervisory, and quality control responsibilities.

Nine-skill level and CEM members manage the career ladder by planning and organizing instrumentation activities, directing test vehicle and ground support activities, inspecting and evaluating instrumentation activities, and providing technical guidance.

The Instrumentation career ladder is very diverse, as there are many jobs performed by small numbers of AFSC 316X3 personnel. They work on instrumentation packages aboard aircraft, down in missile silos, and on bombing ranges, as well as in a multitude of specialized laboratories across the Air Force. Essentially, the jobs performed by AFSC 316X3 personnel are determined by the mission of the unit to which they are assigned.

Members enter the career ladder by attending a 26-week ABR31633 Instrumentation Mechanic course at Lowry AFB. The first 14 weeks consist of electronic principles, while the remaining 12 weeks cover instrumentation

mechanics and deal with gathering, storing, and reporting data. Most of the 15 percent attrition occurs during the electronic principles portion of the training.

Subject-matter experts (SME) interviewed by the developer, as well as a number of survey respondents, expressed the opinion that only electronics principles should be included in the entry-level course. They feel the 12 weeks of instrumentation mechanics taught in the 3ABR course are not really necessary because graduates have to learn what they are to do in their first assignment by OJT anyway. The SMEs and respondents feel the course cannot realistically prepare students for the extreme diversity of jobs they will encounter following graduation. As will be shown in the TRAINING ANALYSIS section of this report, there is empirical support for this point of view.

SURVEY METHODOLOGY

Data for this survey were collected using USAF Job Inventory AFPT 90-316-884 (July 1990). The Inventory Developer reviewed pertinent career ladder documents, the previous OSR and job inventory, and then prepared a tentative task list. The task list was validated through personal interviews with 55 subject-matter experts at the following locations:

BASE

REASON FOR VISIT

Lowry AFB CO

Technical school

Wright-Patterson AFB OH

Has Advanced Range Instrumentation
Aircraft program

Hill AFB UT

Has the Directorate of Material
Management which tests shelf and
service life of explosive components

Holloman AFB NM

Provides telemetry and instrumenta-
tion for inertial navigation and
guidance components prior to AF
acceptance

Kirtland AFB NM

Provides instrumentation packages
for several development programs

Vandenberg AFB CA

Provides instrumentation packages for monitoring missile firings

Edwards AFB CA

Has a varied mission dealing with a number of different aircraft and systems. Also involved in contract monitoring.

The final inventory contains 877 tasks, standard background questions asking for paygrade, DAFSC, organization of assignment, MAJCOM, TAFMS, time in career ladder, plus additional background questions asking respondents to indicate the area they spend most time working in, instrumentation systems operated and maintained, and equipment items used in their job. School and functional personnel will use responses to these questions to evaluate training.

Survey Administration

From July through September 1990, Consolidated Base Personnel Offices at operational bases worldwide administered the surveys to AFSC 316X3 personnel selected from a computer-generated mailing list provided by the Armstrong Laboratories-Human Resources Directorate. Respondents were asked to complete the identification and biographical information section first, go through the booklet and mark all tasks they perform in their current job, and then go back and rate each task they marked on a 9-point scale reflecting the relative amount of time spent on each task. Time spent ratings range from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent).

The computer calculated the relative percent time spent on all tasks for each respondent by first totaling ratings on all tasks, dividing the rating for each task by this total, and multiplying by 100. The percent time spent ratings from all inventories were then combined and used with percent member performing values to describe various groups in the career ladder.

Survey Sample

The final sample includes responses from 353 AFSC 316X3 members. As shown in Tables 1 and 2, the MAJCOM and paygrade representation of the sample is very close to that of the total AFSC 316X3 population.

Data Processing and Analysis

Once the job inventories were received from the field, the booklets were screened for completeness and accuracy and optically scanned to create a complete case record for each respondent. Comprehensive Occupational Data Analysis Programs (CODAP) then created a job description for each respondent,

TABLE 1
MAJCOM REPRESENTATION IN SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
AFSC	62	66
SAC	9	9
ATC	8	1
AFLC	8	7
TAC	5	5
AFCC	3	4
SPACE	3	4
OTHER	2	4

Total Assigned = 527
 Total Eligible = 431
 Total in Sample = 353
 Percent of Assigned in Sample = 67%
 Percent of Eligible in Sample = 82%

TABLE 2
PAYGRADE DISTRIBUTION OF SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
E-1 to E-3	9	10
E-4	24	25
E-5	27	28
E-6	19	18
E-7	15	14
E-8	4	4
E-9	2	1

as well as composite job descriptions for members of various demographic groups. These job descriptions were used for much of the occupational analysis.

Task Factor Administration

Personnel who make decisions about career ladder documents and training programs use task factor data (training emphasis and task difficulty ratings), as well as job descriptions. The survey process provides these data by asking selected E-6 and E-7 supervisors to complete either a training emphasis (TE) or task difficulty (TD) booklet. These booklets are processed separately from the job inventories, and TE and TD data, when applicable, are considered when analyzing other issues in the study.

Training Emphasis (TE). TE is defined as the amount of structured training that first-enlistment personnel need to perform tasks successfully. Structured training is defined as training provided by resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Thirty-seven experienced AFSC 316X3 supervisors rated tasks in the inventory on a 10-point scale ranging from 0 (no TE required) to 9 (high TE required). Because of the diversity in this career ladder, interrater agreement for the 37 raters is below acceptable limits, and TE data cannot be used with this study.

Task Difficulty (TD). TD is defined as an estimate of the length of time the average airman takes to learn how to perform each task listed in the inventory. Thirty-nine experienced AFSC 316X3 supervisors rated the difficulty of the tasks in the inventory on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Ratings are normally adjusted so tasks of average difficulty have a value of 5.0. Interrater agreement for these 39 raters is acceptable.

SPECIALTY JOBS (Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of jobs performed. CODAP assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the 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, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings. This process continues until all respondents possible are included in a group. The career structure is defined in terms of these groups, or jobs, members perform.

Overview

As stated, this is a very diverse career ladder, with small groups of persons performing unique tasks. Overall, there are 15 separate jobs in the career ladder. The career ladder structure will be discussed in terms of these jobs. Percentages of respondents with the various jobs are shown in Figure 1, the time members in the various jobs spend on duties is presented in Table 3, while background information on these members is presented in Table 4. The Stage (STG) or Group (GRP) number listed beside the job title is a reference number assigned by CODAP, while the letter "N" refers to the number of respondents in the job.

- I. AIRBORNE TELEMETRY SYSTEMS JOB (STG063, N=55)
- II. CIRCUIT CONSTRUCTION JOB (GRP035, N=25)
- III. ANTENNA SYSTEMS JOB (STG186, N=5)
- IV. AIRCRAFT INSTRUMENTATION JOB (STG201, N=8)
- V. CIRCUIT TESTING AND TROUBLESHOOTING JOB (STG205, N=6)
- VI. EQUIPMENT INSTALLATION JOB (STG175, N=15)
- VII. INSTRUMENT TEST PROCEDURES JOB (STG091, N=22)
- VIII. MISSILE SYSTEMS JOB (STG184, N=9)
- IX. PROGRAM MANAGEMENT JOB (STG118, N=5)
- X. CABLING JOB (STG110, N=9)
- XI. SUPPLY JOB (STG019, N=11)
- XII. MUNITIONS TESTING JOB (STG012, N=8)
- XIII. MANAGEMENT JOB (STG109, N=28)
- XIV. SUPERVISORY JOB (STG165, N=13)
- XV. LOGISTICS JOB (STG098, N=5)

I. AIRBORNE TELEMETRY SYSTEMS JOB (STG063, N=55). The 55 members working in this job are aircrew members, in that they all hold the A-Prefix and perform a number of common aircrew tasks. Sixty-eight percent are in pay-grades E-5 and E-6, 44 percent hold the 5-level, and 49 percent the 7-skill level. Overall, members working in this job spend 17 percent of their duty time performing common aircrew functions, 13 percent on tasks related to

DISTRIBUTION OF AFSC 316X3 PERSONNEL ACROSS CAREER LADDER JOBS

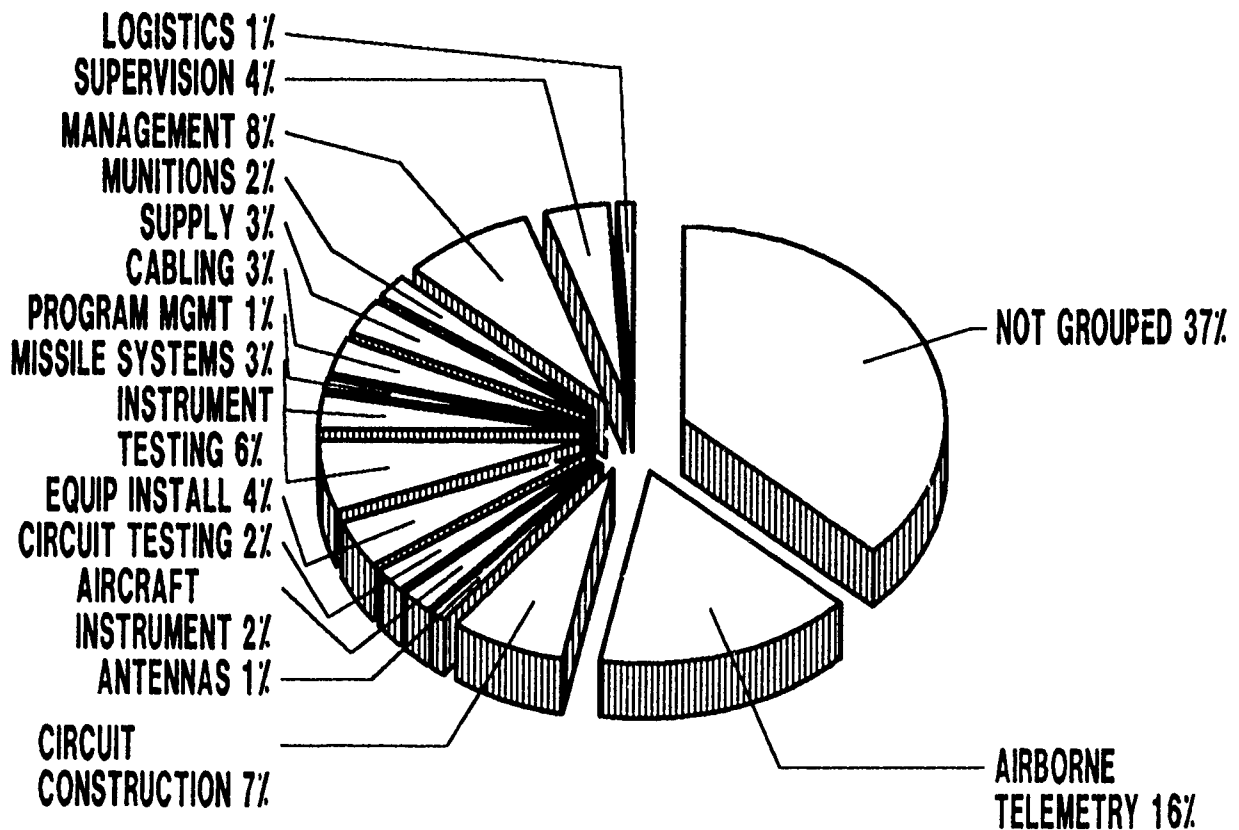


FIGURE 1

TABLE 3

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF CAREER LADDER JOBS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	AIRBORNE TELEMETRY (N=55)	CIRCUIT CONSTRUCT (N=25)	ANTENNA SYSTEMS (N=5)	ACFT INST (N=8)	CIRCUIT TESTING (N=6)
A ORGANIZING AND PLANNING	3	4	2	1	*
B DIRECTING AND IMPLEMENTING	3	3	2	2	2
C INSPECTING AND EVALUATING	5	4	2	2	4
D TRAINING	3	*	3	1	3
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	9	11	15	6	10
F PREPARING, INSTALLING, OR REMOVING INSTRUMENTATION EQUIPMENT FOR PROJECTS	12	13	8	21	12
G INSPECTING INSTRUMENTATION EQUIPMENT	7	4	5	17	7
H ALIGNING AND CALIBRATING INSTRUMENTATION EQUIPMENT	3	3	5	3	8
I PERFORMING INSTRUMENTATION TESTING PROCEDURES	8	5	1	11	*
J REDUCING AND ANALYZING DATA	1	*	*	*	0
K DEVELOPING TECHNICAL DATA	1	*	1	*	*
L TROUBLESHOOTING AND REPAIRING INSTRUMENTATION EQUIPMENT	13	17	30	18	41
M CONSTRUCTING INSTRUMENTATION CIRCUITS OR DEVICES	2	28	4	2	3
N PERFORMING MISCELLANEOUS MISSION SUPPORT FUNCTIONS	3	5	3	4	8
O INSPECTING AND MAINTAINING AIRCRAFT INSTRUMENTATION SYSTEMS	7	*	*	9	0
P DESIGNING, CONSTRUCTING, AND MAINTAINING LASER INSTRUMENTATION SYSTEMS	*	*	0	0	0
Q INSTALLING, CHECKING, AND TESTING MUNITIONS OR ORDNANCE DEVICES	*	*	*	*	0
R INSPECTING AND MAINTAINING ANTENNA INSTRUMENTATION SYSTEMS	3	*	15	2	0
S INSPECTING AND MAINTAINING MISSILE INSTRUMENTATION SYSTEMS	*	*	0	*	0
T PERFORMING COMMON AIRCREW FUNCTIONS	17	*	2	*	*

* Denotes less than 1 percent

TABLE 3 (CONTINUED)

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF CAREER LADDER JOBS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	EQUIP INSTALL (N=15)	INST TEST (N=22)	MISSILE SYSTEMS (N=9)	PROGRAM MGMT (N=5)	CABLING (N=9)
A ORGANIZING AND PLANNING	5	2	1	13	2
B DIRECTING AND IMPLEMENTING	4	2	3	8	3
C INSPECTING AND EVALUATING	6	4	6	8	2
D TRAINING	2	1	*	0	*
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	12	6	19	15	8
F PREPARING, INSTALLING, OR REMOVING INSTRUMENTATION EQUIPMENT FOR PROJECTS	17	25	17	24	15
G INSPECTING INSTRUMENTATION EQUIPMENT	7	6	5	0	2
H ALIGNING AND CALIBRATING INSTRUMENTATION EQUIPMENT	5	6	2	0	2
I PERFORMING INSTRUMENTATION TESTING PROCEDURES	7	15	6	15	9
J REDUCING AND ANALYZING DATA	2	4	*	4	*
K DEVELOPING TECHNICAL DATA	1	*	2	6	*
L TROUBLESHOOTING AND REPAIRING INSTRUMENTATION EQUIPMENT	15	15	14	0	31
M CONSTRUCTING INSTRUMENTATION CIRCUITS OR DEVICES	7	4	1	4	17
N PERFORMING MISCELLANEOUS MISSION SUPPORT FUNCTIONS	5	4	3	3	4
O INSPECTING AND MAINTAINING AIRCRAFT INSTRUMENTATION SYSTEMS	2	0	2	0	*
P DESIGNING, CONSTRUCTING, AND MAINTAINING LASER INSTRUMENTATION SYSTEMS	*	*	0	0	*
Q INSTALLING, CHECKING, AND TESTING MUNITIONS OR ORDNANCE DEVICES	1	5	3	0	*
R INSPECTING AND MAINTAINING ANTENNA INSTRUMENTATION SYSTEMS	*	*	5	0	*
S INSPECTING AND MAINTAINING MISSILE INSTRUMENTATION SYSTEMS	*	0	7	0	*
T PERFORMING COMMON AIRCREW FUNCTIONS	1	0	*	0	*

* Denotes less than 1 percent

TABLE 3 (CONTINUED)

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF CAREER LADDER JOBS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	SUPPLY (N=11)	MUNITIONS (N=8)	MGMT (N=28)	SUPV (N=13)	LOGISTICS (N=5)
A ORGANIZING AND PLANNING	4	*	22	7	17
B DIRECTING AND IMPLEMENTING	4	2	19	8	15
C INSPECTING AND EVALUATING	8	2	24	10	9
D TRAINING	3	3	8	8	*
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	60	6	13	16	52
F PREPARING, INSTALLING, OR REMOVING INSTRUMENTATION EQUIPMENT FOR PROJECTS	12	21	4	8	1
G INSPECTING INSTRUMENTATION EQUIPMENT	*	3	3	6	0
H ALIGNING AND CALIBRATING INSTRUMENTATION EQUIPMENT	*	5	*	5	0
I PERFORMING INSTRUMENTATION TESTING PROCEDURES	3	13	2	3	*
J REDUCING AND ANALYZING DATA	0	*	*	*	0
K DEVELOPING TECHNICAL DATA	0	0	1	2	0
L TROUBLESHOOTING AND REPAIRING INSTRUMENTATION EQUIPMENT	3	13	1	16	0
M CONSTRUCTING INSTRUMENTATION CIRCUITS OR DEVICES	1	1	1	4	1
N PERFORMING MISCELLANEOUS MISSION SUPPORT FUNCTIONS	*	6	*	3	0
O INSPECTING AND MAINTAINING AIRCRAFT INSTRUMENTATION SYSTEMS	*	0	0	1	2
P DESIGNING, CONSTRUCTING, AND MAINTAINING LASER INSTRUMENTATION SYSTEMS	0	0	*	0	0
Q INSTALLING, CHECKING, AND TESTING MUNITIONS OR ORDNANCE DEVICES	0	23	*	*	0
R INSPECTING AND MAINTAINING ANTENNA INSTRUMENTATION SYSTEMS	*	0	*	1	0
S INSPECTING AND MAINTAINING MISSILE INSTRUMENTATION SYSTEMS	0	*	*	*	0
T PERFORMING COMMON AIRCREW FUNCTIONS	*	0	*	*	0

* Denotes less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA ON MEMBERS IN CAREER LADDER JOBS

	AIRBORNE TELEMETRY (SIG063)	CIRCUIT CONSTRUCT (GRO035)	ANTENNA SYSTEMS (SIG186)	AIRCRAFT INST (SIG201)	CIRCUIT TESTING (SIG205)	EQUIP INSTALL (SIG175)	INST TEST (SIG091)	MISSILE SYSTEMS (SIG184)
NUMBER IN GROUP	55	25	5	8	6	15	22	9
PERCENT OF SAMPLE	16%	7%	1%	2%	1%	4%	6%	2%
PERCENT IN CONUS	98%	96%	100%	100%	100%	93%	100%	100%
DAFSC DISTRIBUTION								
31633	2%	0	0	0	17%	0	23%	0
31653	44%	72%	80%	87%	66%	53%	68%	100%
31673	49%	28%	20%	13%	17%	40%	9%	0
31693	5%	0	0	0	0	7%	0	0
31600	0	0	0	0	0	0	0	0
PAYGRADE DISTRIBUTION								
AIRMAN	0	0	20%	12%	0	7%	23%	0
E-4	18%	56%	0	38%	50%	27%	45%	44%
E-5	33%	16%	40%	50%	50%	27%	27%	56%
E-6	35%	28%	40%	0	0	13%	5%	0
E-7	11%	0	0	0	0	20%	0	0
E-8	3%	0	0	0	0	7%	0	0
E-9	0	0	0	0	0	0	0	0
AVERAGE MONTHS TAFMS								
AVERAGE NUMBER OF	137	108	76	112	95	146	75	88
TASKS PERFORMED	98	103	78	107	54	297	105	115
PERCENT IN FIRST	8%	8%	20%	25%	17%	7%	32%	11%
ENLISTMENT	55%	32%	40%	37%	33%	27%	27%	100%
PERCENT SUPERVISING								

TABLE 4 (CONTINUED)

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	PROGRAM MGMT (SIG118)	CABLING (SIG110)	SUPPLY (SIG019)	MUNITIONS TESTING (SIG012)	MGMT (SIG109)	SUPV (SIG165)	LOGISTICS (SIG098)
NUMBER IN GROUP	5	9	11	8	28	13	5
PERCENT OF SAMPLE	1%	2%	3%	2%	8%	4%	1%
PERCENT IN CONUS	100%	100%	91%	100%	96%	100%	100%

DAFSC DISTRIBUTION							
31533	0	0	9%	12%	0	0	0
31553	0	44%	55%	88%	4%	31%	0
31673	80%	56%	36%	0	64%	69%	80%
31693	0	0	0	0	21%	0	20%
31600	20%	0	0	0	7%	0	0

PAYGRADE DISTRIBUTION							
AIRMAN	0	11%	9%	38%	0	0	0
E-4	0	33%	36%	62%	0	8%	0
E-5	0	33%	27%	0	4%	23%	0
E-6	0	22%	9%	0	18%	54%	40%
E-7	80%	0	18%	0	50%	15%	20%
E-8	20%	0	0	0	18%	0	40%
E-9	0	0	0	0	11%	0	0

AVERAGE TAFMS (MOS)	242	111	113	44	221	163	215
AVERAGE NUMBER OF TASKS PERFORMED	36	50	20	28	89	177	40
PERCENT IN FIRST ENLISTMENT	0	11%	18%	39%	0	0	0
PERCENT SUPERVISING	0	56%	36%	25%	89%	100%	0

troubleshooting and repairing instrument equipment, and 12 percent preparing, installing, or removing instrumentation equipment. Members in this job are distinguished by the time they spend performing the following aircrew tasks:

- secure equipment for descent or landing
- load aircrew gear on aircraft
- inspect ramp areas for foreign object damage (FOD)
matter
- order aircrew flight lunches
- perform personal equipment inspections
- perform or practice emergency aircraft egress
procedures

Survey data show there are smaller groups of members working on specific items of instrumentation equipment aboard aircraft. There are eight members who are distinguished by the time they spend aligning, calibrating, and troubleshooting magnetic tape recorders and time code generators. There are another nine who are distinguished by the time they spend working with pulse code modulation units, voltage controlled oscillators, and subcarrier discriminators. Eight others perform the common aircrew tasks, but spend more time maintaining RF receivers and multicouplers. Six are unique because of the time they spend constructing, splicing, and checking cables and harnesses associated with onboard instrumentation. There are 13 more senior personnel who spend more time performing preflight inspections and calibrations and analyzing data during tests. Finally, there are nine aircrew members who spend most of their time maintaining onboard antenna systems.

II. CIRCUIT CONSTRUCTION JOB (GRP035, N=25). Over half the members working in this job are paygrade E-4, and 72 percent hold the 5-skill level. They are distinguished from members in other jobs because they spend 28 percent of their time constructing instrumentation circuits or devices (more time than members of any other function), 17 percent troubleshooting and repairing instrumentation equipment, 13 percent preparing, installing, or removing instrumentation equipment, and 11 percent performing administrative and supply functions. They spend more time performing the following circuit construction tasks:

- construct circuits using integrated circuits
- construct circuits using conventional resistors or
capacitors
- construct circuits using printed circuit boards
- construct circuits using transistors or discrete
components
- test newly constructed circuits
- breadboard circuits
- draw schematics or wiring diagrams

III. ANTENNA SYSTEMS JOB (STG186, N=5). Five respondents were identified with this job because of the time they spend performing tasks related to non-airborne antenna systems. Four hold the 5-skill level, one holds the 7-skill level, they average 76 months TAFMS and 50 months on the job. They indicate they spend 30 percent of their time performing tasks related to troubleshooting and repairing instrumentation equipment, 15 percent inspecting and maintaining antenna instrumentation systems, and 15 percent performing administrative and supply functions. Members working in this job are distinguished by the time they spend performing the following unique antenna system tasks:

- troubleshoot antenna systems
- inspect antenna cabling or waveguides
- inspect antenna gear trains
- align antenna pedestal systems
- maintain antenna gear trains
- install or remove antennas, other than at test sites
- maintain antenna tracking systems

IV. AIRCRAFT INSTRUMENTATION JOB (STG201, N=8). AFSC 316X3 personnel working in this job are not aircrew members, but they do work on equipment that is aboard aircraft. Seven hold the 5-skill level, while one holds the 7-skill level. They perform an average of 107 tasks and indicate they spend 21 percent of their duty time performing tasks related to preparing, installing, or removing instrumentation equipment, 18 percent troubleshooting and repairing instrumentation equipment, 17 percent inspecting instrumentation equipment, and 11 percent performing instrumentation testing procedures. This job is distinguished by the time the eight members spend performing the following tasks:

- perform preflight inspections
- perform preflight system checks
- perform postflight inspections
- perform postflight system checks
- isolate maljobs of aircraft instrumentation packages
- install or remove instrumentation packages in aircraft

V. CIRCUIT TESTING AND TROUBLESHOOTING JOB (STG205, N=6). Personnel working in this job perform an average of 54 tasks. One holds the 3-skill level, four hold the 5-skill level, and one holds the 7-skill level. They spend 41 percent of their duty time on tasks related to troubleshooting and repairing instrumentation equipment, 12 percent preparing, installing, or removing instrumentation equipment, and 10 percent performing administrative and supply functions. What distinguishes this job from the others is the time members spend performing the following tasks:

- test digital integrated circuits
- test analog integrated circuits
- remove or replace chassis or circuit card assemblies
- remove or replace integrated circuits
- remove or replace discrete electronic circuits
- isolate maljobs of discrete electronic circuits

VI. EQUIPMENT INSTALLATION JOB (STG175, N=15). This is the most general job in the career ladder, as the 15 members working in this job perform an average of 297 tasks, more than members of any other job. Eight hold the 3-skill level, six hold the 5-skill level, and one holds the 7-skill level. Members in this job indicate they spend 17 percent of their duty time performing tasks related to preparing, installing, or removing instrumentation equipment, 15 percent trouble shooting and repairing instrumentation equipment, and 12 percent performing administrative and supply functions. What distinguishes this job from the others is the time members spend performing the following tasks:

- install instrumentation cabinets or equipment in trailers, vans, building, or aircraft
- establish setup requirements for instrumentation equipment
- analyze test requirements to determine equipment requirements
- construct interconnecting cabling
- interpret blueprints, cabling, or circuit schematic diagrams
- plan or prepare test projects

VII. INSTRUMENT TEST PROCEDURES JOB (STG091, N=22). Members working in this job are somewhat junior as they average 75 months TAFMS, 68 percent are in paygrades E-1 through E-4, 23 percent hold the 3-skill level, 68 percent hold the 5-skill level, and 32 percent are in their first enlistment. These 22 members indicate they spend 25 percent of their duty time on tasks related to preparing, installing, or removing instrumentation equipment, 15 percent on tasks common to troubleshooting and repairing instrumentation equipment, 15 percent on performing instrumentation testing procedures, and are distinguished by the time they spend performing the following tasks:

- monitor data collection systems during tests
- install or remove sensors or transducers
- perform preinstallation checkouts of sensors or transducers
- shut down instrumentation systems
- assemble or disassemble test equipment or cables for repair operations
- inform test directors of abnormal indications
- verify calibration data of components, such as transducers or transmitters

VIII. MISSILE SYSTEMS JOB (STG184, N=9). Survey data show the nine personnel working in this job perform tasks related to various missile systems. All nine hold the 5-skill level, they average 88 months TAFMS, and they indicate they spend 19 percent of their duty time performing administrative and supply functions, 17 percent preparing, installing, or removing instrumentation equipment, and 14 percent troubleshooting and repairing instrumentation equipment. Those working in this job are distinguished by the time they spend performing the following missile-related tasks:

- set up or tear down partition walls
- perform voltage standing wave ratio (VSWR) or attenuation checks of waveguides, antennas, or coaxial cables
- install or remove command destruct systems
- install or remove transponders
- bench check missile telemetry system components
- bench check missile tracking system components
- bench check command destruct receivers
- mate or demate instrumentation sections to missile guidance sets

IX. PROGRAM MANAGEMENT JOB (STG118, N=5). Members working in this job are the most senior in the study, as they average 242 months TAFMS, four hold the 7-skill level, and one is a CEM. These 5 members report performing an average of 36 tasks and spending 24 percent of their time performing tasks included under preparing, installing, or removing instrumentation, 15 percent on tasks included under performing instrument testing procedures, 15 percent on tasks under performing administrative and supply functions, and 13 percent on tasks related to planning and organizing. What distinguishes members in this job is they spend more time performing the following tasks:

- analyze test requirements to determine agency or user requirements
- analyze test requirements to determine equipment requirements
- analyze test requirements to determine facility requirements
- analyze test requirements to determine personnel requirements
- review test documentation
- analyze data reduction computer printouts
- coordinate work activities with contractor personnel

X. CABLING JOB (STG110, N=9). Four of these members hold the 5-skill level, five hold the 7-skill level, and they average 111 months TAFMS. They perform an average of 50 tasks and report spending 31 percent of their time performing tasks included under troubleshooting and repairing instrumentation equipment, 17 percent on tasks under constructing instrumentation circuits or devices, and 15 percent on tasks under preparing, installing, or removing

instrumentation. What distinguishes personnel working in the Cabling job is they spend most of their time on tasks related specifically to cables and harnesses, including the following:

- construct interconnecting cabling
- troubleshoot installation of electrical harnesses or connectors
- install or remove electrical harnesses or connectors
- fabricate test cables for bench repair operations
- perform continuity checks of electrical harnesses
- splice cabling or wiring
- assemble or disassemble test equipment or cables for repair operations

XI. SUPPLY JOB (STG019, N=11). Members working in this job perform an average of only 20 tasks, fewer than members of any other job. One holds the 3-skill level, six hold the 5-skill level, four hold the 7-skill level, and they average 113 months TAFMS. These members report spending 60 percent of their time performing tasks related to administrative or supply jobs and 12 percent on tasks included in preparing, installing, or removing instrumentation equipment. What distinguishes these AFSC 316X3 personnel is they spend a great deal of time on the following tasks:

- make entries on AFTO Forms 350 (Reparable Item Processing Tag)
- annotate and attach equipment or supply status tags or labels (DD Forms 1574-1577 series)
- make entries on DD Forms 1348-6 (DOD Single Line Item Requisition System Document)
- make entries on AF Forms 1297 (Temporary Issue Receipt)
- make entries on AF Forms 2005 (Issue/Turn in Request)
- inventory supplies, equipment, or components

XII. MUNITIONS TESTING JOB (STG012, N=8). There are eight AFSC 316X3 respondents who reported having this unique job. Seven hold the 5-skill level, while one holds the 3-skill level. These eight average 44 months TAFMS, while three are in their first enlistment. They report performing an average of only 28 tasks and spending 23 percent of their time on tasks related to installing, checking, and testing munitions or ordnance, 21 percent on tasks related to preparing, installing, or removing instrumentation equipment, 13 percent on tasks under performing instrumentation testing procedures, and 13 percent on tasks under troubleshooting and repairing instrumentation equipment. What distinguishes this job is the time members spend on the following specific munitions testing tasks:

- perform static firings of munitions or ordnance devices
- instrument munitions or ordnance devices
- fill sandbags for tests

- install munitions or ordnance devices in test fixtures
- perform operational checks of safe and arm devices
- install or remove thrust measuring systems
- install range safety devices in ordnance items

XIII. MANAGEMENT JOB (STG109, N=28). This second most senior group of AFSC 316X3 personnel are involved in the management of the specialty. Sixty-four percent hold the 7-skill level, 21 percent hold the 9-skill level, and 7 percent are CEMs. Half are in paygrade E-7, and another 29 percent are in paygrades E-8 and E-9. AFSC 316X3 personnel working in the management job spend 24 percent of their time inspecting and evaluating, 22 percent organizing and planning, 19 percent directing and implementing, 13 percent performing administrative or supply functions, and are distinguished by the time they spend on the following tasks:

- participate in meetings, such as staff meetings, briefings, conferences, or workshops
- write recommendations for awards or decorations
- evaluate personnel for compliance with performance standards
- interpret policies, directives, or procedures for subordinates
- analyze workload requirements
- establish performance standards for subordinates

XIV. SUPERVISORY JOB (STG165, N=13). These 13 AFSC 316X3 personnel are first-line supervisors, performing an average of 177 technical and supervisory tasks. Four hold the 5-skill level, 9 hold the 7-skill level, they average 163 months TAFMS, and all 13 report having supervisory responsibility. Their role of first-line supervisor is reflected by time spent on duties: 16 percent on tasks related to performing administrative and supply functions, 16 percent troubleshooting and repairing instrumentation equipment, and 10 percent inspecting and evaluating. Members in the Supervisory Job are distinguished by the time they spend on the following tasks:

- plan or schedule work assignments
- conduct OJT
- determine work priorities
- interpret blueprints, cabling, or circuit schematic diagrams
- adjust voltages or frequencies
- counsel personnel on military-related matters
- write EPRs

XV. LOGISTICS JOB (STG098, N=5). Survey data show there are five senior AFSC 316X3 personnel involved in logistics activities. They average 215 months TAFMS, four hold the 7-skill level, one holds the 9-skill level, and they are in paygrades E-6 through E-8. They report spending 52 percent of their time performing administrative or supply functions, 17 percent

organizing and planning, and 15 percent directing and implementing. They perform an average of 40 tasks and are distinguished by the time they spend on the following logistic-related tasks:

- coordinate available supplies, equipment, or materials with other sections
- direct maintenance of facilities or work areas
- coordinate logistics support with appropriate agencies
- issue or receipt for contractor supplies or equipment
- determine logistics requirements, such as equipment, personnel, or space
- transport parts or supplies
- review surplus equipment resources for usable items

Comparison to Previous Survey

Jobs identified in the present survey were compared to those reported in the 1979 OSR (see Table 5). While the basic structure of the career ladder has not changed over the years, the differences in names shown in Table 5 reflect the organization of tasks in the latest inventory and use of the CODAP task clustering process to identify groups of respondents performing similar tasks.

Summary

Survey data show this is a very diverse career ladder, with small numbers of personnel working in a variety of jobs. The jobs are distinguished by the specific tasks performed and the amount of time spent performing these tasks. The career ladder has remained stable over the last several years, and tasks performed are reflected by the current classification structure.

CAREER LADDER PROGRESSION

Analysis of DAFSC groups, together with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed by members of the various skill level groups, which, in turn, may be used to determine how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what members of the various skill-level groups are doing.

The distribution of skill-level members in the various jobs is displayed in Table 6, while relative amounts of time members of the various skill-level groups spend on duties is shown in Table 7. These data show similar percentages of members of all skill levels are involved with airborne telemetry functions, but that more 3- and 5-skill level members are involved with

TABLE 5
COMPARISON OF CAREER LADDER STRUCTURE FOR
CURRENT AND PREVIOUS SURVEY

<u>JOBS IDENTIFIED IN CURRENT STUDY</u>	<u>JOBS IDENTIFIED IN 1979 OSR</u>
AIRBORNE TELEMETRY JOB	AIRBORNE TELEMETRY MECHANICS AIRBORNE RADIO MECHANICS
MISSILE SYSTEMS JOB	MISSILE INSTRUMENTATION MECHANICS MISSILE SUPPORT TECHNICIANS
CIRCUIT CONSTRUCTION JOB	CIRCUIT CONSTRUCTORS
SUPPLY JOB	SUPPLY AND PROCUREMENT SPECIALISTS SUPPLY MONITORS
SUPERVISORY JOB	FIRST-LINE SUPERVISORS
INSTRUMENT TEST PROCEDURES JOB PROGRAM MANAGEMENT JOB EQUIPMENT INSTALLATION JOB	GENERAL TEST PROJECTS TECHNICIANS
CIRCUIT TESTING JOB	COMPONENTS INSTRUMENTATION TECHNICIANS
CABLING JOB	CONSTRUCTION EQUIPMENT OPERATORS
AIRCRAFT INSTRUMENTATION JOB	AIRBORNE INSTRUMENTATION TECHNICIANS
MUNITIONS JOB	ORDNANCE AND GUIDANCE TEST SPECIALISTS
MANAGEMENT JOB	SUPERVISORS
LOGISTICS JOB	NOT MATCHED
NOT MATCHED	COMPUTER TECHNICIANS
NOT MATCHED	TIMING AND RECORDING INSTRUMENTA- TION TECHNICIANS
NOT MATCHED	LASER SPECIALISTS
NOT MATCHED	TRAINING SPECIALISTS

TABLE 5 (CONTINUED)

COMPARISON OF CAREER LADDER STRUCTURE FOR
CURRENT AND PREVIOUS SURVEY

<u>JOBS IDENTIFIED IN CURRENT STUDY</u>	<u>JOBS IDENTIFIED IN 1979 OSR</u>
NOT MATCHED	CONTRACT MONITORS
NOT MATCHED	MAINTENANCE CONTROL SPECIALISTS
NOT MATCHED	SATELLITE DATA TECHNICIAN
NOT MATCHED	DATA REDUCTION TECHNICIANS
NOT MATCHED	ENGINEERING TECHNICIANS
NOT MATCHED	TEST AND PROJECT MONITORS
NOT MATCHED	INSTRUMENTATION TESTING TECHNICIANS

TABLE 6
DISTRIBUTION OF SKILL-LEVEL MEMBERS
ACROSS CAREER LADDER JOBS
(PERCENT)

<u>FUNCTIONAL AREA</u>	<u>31633/53 (N=193)</u>	<u>31673 (N=140)</u>	<u>31693/00 (N=19)</u>
AIRBORNE TELEMTRY	13	19	16
CIRCUIT CONSTRUCTION	9	5	0
ANTENNA SYSTEMS	2	*	0
AIRCRAFT INSTRUMENTATION	4	*	0
CIRCUIT TESTING	2	*	0
EQUIPMENT INSTALLATION	4	4	11
INSTRUMENT TEST PROCEDURES	10	1	0
MISSILE SYSTEMS	5	0	0
PROGRAM MANAGEMENT	0	3	5
CABLING	2	4	0
SUPPLY	4	3	0
MUNITIONS TESTING	4	0	0
MANAGEMENT	*	13	42
SUPERVISORY	2	6	0
LOGISTICS	0	3	5
NOT GROUPED	38	36	21

* Denotes less than 1 percent

TABLE 7
TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS
(RELATIVE PERCENT OF JOB TIME)

<u>DUTIES</u>	<u>31633/53</u> <u>(N=193)</u>	<u>31673</u> <u>(N=140)</u>	<u>31693/00</u> <u>(N=19)</u>
A ORGANIZING AND PLANNING	2	10	21
B DIRECTING AND IMPLEMENTING	3	9	15
C INSPECTING AND EVALUATING	5	11	21
D TRAINING	3	4	4
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	13	15	12
F PREPARING, INSTALLING, OR REMOVING INSTRUMENTATION EQUIPMENT FOR PROJECTS	15	9	7
G INSPECTING INSTRUMENTATION EQUIPMENT	6	5	3
H ALIGNING AND CALIBRATING INSTRUMENTATION EQUIPMENT	4	3	*
I PERFORMING INSTRUMENTATION TESTING PROCEDURES	9	6	4
J REDUCING AND ANALYZING DATA	1	1	2
K DEVELOPING TECHNICAL DATA	*	1	1
L TROUBLESHOOTING AND REPAIRING INSTRUMENTATION EQUIPMENT	17	11	2
M CONSTRUCTING INSTRUMENTATION CIRCUITS OR DEVICES	6	5	2
N PERFORMING MISCELLANEOUS MISSION SUPPORT FUNCTIONS	4	3	1
O INSPECTING AND MAINTAINING AIRCRAFT INSTRUMENTATION SYSTEMS	2	2	2
P DESIGNING, CONSTRUCTING, AND MAINTAINING LASER INSTRUMENTATION SYSTEMS	*	*	0
Q INSTALLING, CHECKING, AND TESTING MUNITIONS OR ORDNANCE DEVICES	2	*	*
R INSPECTING AND MAINTAINING ANTENNA INSTRUMENTATION SYSTEMS	2	2	*
S INSPECTING AND MAINTAINING MISSILE INSTRUMENTATION SYSTEMS	1	*	*
T PERFORMING COMMON AIRCREW FUNCTIONS	3	4	2

* Denotes less than 1 percent

instrumentation test procedures, and 7- and 9-skill level and CEM personnel are in management functions. Note the high percentage of DAFSC 31633/53 and 31673 members who are not included in the jobs identified. This reflects the very diverse nature of this career ladder.

SKILL-LEVEL DESCRIPTIONS

DAFSC 31633/53. Over half the members of the sample hold the 3- and 5-skill levels. As noted, most work in the Airborne Telemetry and Instrument Test Procedures jobs. Much smaller percentages work in most other jobs, except Program Management and Logistics. As expected, these are the most junior personnel with respect to TAFMS, and most are in paygrades E-4 and E-5. Members perform an average of 71 tasks, a representative sample of which are listed in Table 8.

DAFSC 31673. Seven-skill level personnel constitute 40 percent of the total sample. As shown in Table 6, 19 percent work in the Airborne Telemetry job, 13 percent in the Management job, while 36 percent are not grouped. DAFSC 31673 personnel are obviously first-line supervisors, as they perform a mixture of technical and supervisory tasks, as shown by the representative tasks listed in Table 9 and by tasks which best distinguish between DAFSC 31633/53 and 31673 personnel, listed in Table 10. Figures in the top portion of the table show a greater percentage of 3- and 5-skill level personnel perform purely technical tasks, while figures in the lower half show more 7-skill level members perform supervisory tasks.

DAFSC 31693/00. There are only 19 of these most senior personnel in the sample. Most work in the Management job and spend more time on administrative duties and less time on technical duties than members with the other skill levels (see Table 7). Representative tasks these 9-skill level and CEM members perform are listed in Table 11, while tasks that best distinguish between 7-skill level respondents and members of this senior group are listed in Table 12. Figures in the top portion of the table show a greater percentage of 7-skill level personnel perform technical tasks, while figures in the lower half clearly show more 9-skill level and CEM personnel perform managerial tasks.

Summary

Survey data show Instrumentation personnel progress typically through the skill levels, with 3- and 5-skill level personnel spending more time on purely technical aspects of the career ladder, 7-skill level members spending more time on supervisory responsibilities, and 9-skill level and CEM code personnel performing the management jobs of the career ladder.

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY 31633/53 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=193)
L595 SOLDER OR DESOLDER COMPONENTS	75
L596 SPLICE CABLING OR WIRING	63
L573 ADJUST VOLTAGES OR FREQUENCIES	60
F302 INSTALL OR REMOVE POWER SUPPLIES	56
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	52
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	50
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	49
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	48
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	47
M675 CONSTRUCT INTERCONNECTING CABLING	45
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	42
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	41
L594 REMOVE OR TREAT CORROSION	41
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	39
I534 SHUT DOWN INSTRUMENTATION TEST SYSTEMS	38
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	38
L589 REMOVE OR REPLACE ELECTRONIC UNITS, DRAWERS, OR ASSEMBLIES	38
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	37
F265 INSTALL OR REMOVE ELECTRICAL HARNESSSES OR CONNECTORS	35
N727 ISOLATE EQUIPMENT MALFUNCTIONS DURING OPERATIONS, OTHER THAN DURING TESTING OPERATIONS	35
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	34
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR LABELS (DD FORMS 1574-1577 SERIES)	32
F321 INSTALL OR REMOVE SENSORS OR TRANSDUCERS	27
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	27
E217 SCHEDULE EQUIPMENT FOR PRECISION MEASUREMENT EQUIPMENT LABORATORY (PMEL) CALIBRATION	21

TABLE 9
REPRESENTATIVE TASKS PERFORMED BY 31673 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=140)
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	72
C108 WRITE EPRs	61
A6 DETERMINE WORK PRIORITIES	54
L595 SOLDER OR DESOLDER COMPONENTS	54
C110 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	51
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	49
E172 MAKE ENTRIES ON AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	47
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	46
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	46
A5 DETERMINE LOGISTIC REQUIREMENTS, SUCH AS EQUIPMENT, PERSONNEL, AND SPACE	45
A23 PLAN OR SCHEDULE WORK ASSIGNMENTS	45
B58 SUPERVISE INSTRUMENTATION MECHANICS (AFSC 31653)	44
A13 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	44
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	43
C85 EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	42
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	40
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	40
A18 PLAN EQUIPMENT OR FACILITY MAINTENANCE REQUIREMENTS	39
C84 EVALUATE NEW EQUIPMENT	38
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR OR LABELS (DD FORMS 1574-1577 SERIES)	38
E193 MAKE ENTRIES ON DD FORMS 1348-6 (DOD SINGLE LINE ITEM REQUISITION SYSTEM DOCUMENT)	37
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	37
B54 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	34
B51 IMPLEMENT SAFETY OR SECURITY PROGRAMS	32
C103 PERFORM SAFETY INSPECTIONS	30

TABLE 10

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 31633/53
AND DAFSC 31673 PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>31633/53 (N=193)</u>	<u>31673 (N=140)</u>	<u>DIFFERENCE</u>
L596 SPLICE CABLING OR WIRING	63	36	27
F302 INSTALL OR REMOVE POWER SUPPLIES	56	34	22
I534 SHUT DOWN INSTRUMENTATION TEST SYSTEMS	38	16	22
L595 SOLDER OR DESOLDER COMPONENTS	75	54	21
F321 INSTALL OR REMOVE SENSORS OR TRANSDUCERS	27	6	21
C110 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	11	51	-40
C108 WRITE EPRs	24	61	-37
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	15	49	-34
A6 DETERMINE WORK PRIORITIES	20	54	-34
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	13	46	-33

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY 31693/00 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=19)
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	89
A4 DETERMINE BUDGET REQUIREMENTS	79
C110 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	79
A5 DETERMINE LOGISTIC REQUIREMENTS, SUCH AS EQUIPMENT, PERSONNEL, AND SPACE	79
A6 DETERMINE WORK PRIORITIES	79
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	68
C76 EVALUATE INDIVIDUALS FOR RECOGNITION	68
C108 WRITE EPRs	68
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	68
B32 CONDUCT BRIEFINGS	68
A20 PLAN OR PREPARE BRIEFINGS	63
C85 EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	63
C62 ANALYZE WORKLOAD REQUIREMENTS	63
B55 ORIENT NEWLY ASSIGNED PERSONNEL	63
A10 DEVELOP ORGANIZATIONAL POLICIES, SUCH AS OPERATING INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	58
C72 EVALUATE BUDGET REQUIREMENTS	53
B54 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	53
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	53
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	53
A21 PLAN OR PREPARE MANPOWER JUSTIFICATION PACKAGES	47
A12 ESTABLISH ORGANIZATIONAL POLICIES	42
A19 PLAN LAYOUT OF FACILITIES	37
C73 EVALUATE CONTRACTOR PERFORMANCE	37
B50 IMPLEMENT QUALITY CONTROL STANDARDS	37
C70 EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES	32
A9 DEVELOP ORGANIZATIONAL CHARTS	32
C74 EVALUATE CONTRACTOR PROPOSALS	32

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 31673
AND DAFSC 31693/00 PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>31673 (N=140)</u>	<u>31693/00 (N=19)</u>	<u>DIFFERENCE</u>
L595 SOLDER OR DESOLDER COMPONENTS	54	5	49
L573 ADJUST VOLTAGES OR FREQUENCIES	46	5	41
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	46	5	41
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	39	0	39
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	36	0	36
A4 DETERMINE BUDGET REQUIREMENTS	20	79	-59
C72 EVALUATE BUDGET REQUIREMENTS	14	53	-39
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	26	63	-37
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	16	53	-37
C62 ANALYZE WORKLOAD REQUIREMENTS	26	63	-37

AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS

The current AFR 39-1 Specialty Descriptions for the career ladder were compared to job descriptions for each job identified and for each DAFSC group. Survey data suggest the jobs and tasks included in the current AFR 39-1 Specialty Descriptions accurately reflect the work being performed in the field.

TRAINING ANALYSIS

Occupational survey data are a source of information used to review training documents for the specialty. The three most commonly used types of data are: (1) percent of first-enlistment personnel performing tasks, (2) ratings of how much training emphasis tasks should receive in the basic resident course, and (3) ratings of relative task difficulty. Only percent members performing and TD data were used in this study because of low TE interrater agreement.

Table 13 lists tasks with the highest TD ratings, with accompanying percent first-job (1-24 months TAFMS), first-enlistment (1-48 months TAFMS), 5- and 7-skill level percent members performing shown. It is interesting to note many of the tasks with highest TD ratings are related to lasers. These and the other more general tasks with high TD are either not performed or are performed by very few AFSC 316X3 personnel.

The Training Extract contains a listing of tasks sorted in descending order of TD as well as listings of the STS and POI, with accompanying tasks matched to elements and learning objectives, percent first-job, first-enlistment, and 5- and 7-skill level members performing each matched task. Copies of the extract have been forwarded to technical school personnel for their use in reviewing training documents. A summary of this information is presented below.

First-Enlistment Instrumentation Mechanic (AFSC 316X3)

Fifty-two respondents indicated they are in their first enlistment. As shown by Figure 2, the largest percentage (13 percent) work in the Test Procedures job, with the next largest percentage (10 percent) working in the Airborne Telemetry job. The time members working in these jobs spend on duties is shown in Table 14. They spend 21 percent of their time performing tasks related to troubleshooting and repairing instrumentation equipment, 16 percent preparing, installing, or removing instrumentation equipment for projects, 12 percent performing instrumentation test procedures, and 11 percent performing administrative or supply functions. Representative tasks first-enlistment members perform are listed in Table 15.

TABLE 13

SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

TASKS	TASK DIFF	PERCENT MEMBERS PERFORMING		
		1-24 TAFMS	1-48 TAFMS	31653 31673
P775 DESIGN LASER ELECTRON GUNS	8.28	0	2	1
R822 DESIGN ANTENNA SYSTEMS	7.94	0	0	2
P772 DESIGN LASER DIAGNOSTIC SOFTWARE	7.86	0	2	1
P773 DESIGN LASER DIAGNOSTIC SYSTEMS	7.86	0	0	0
P779 DESIGN LASER MODULATOR SYSTEMS	7.86	0	0	0
P782 DESIGN LASER POINTING AND TRACKING SYSTEMS	7.86	0	0	0
P776 DESIGN LASER GAS FLOW SYSTEMS	7.85	0	2	1
M691 DEVELOP COMPUTER SOFTWARE	7.73	0	0	6
J544 DEVELOP COMPUTER PROGRAMS FOR DATA REDUCTION	7.70	0	4	9
P769 DESIGN LASER BEAM PROPAGATION SYSTEMS, OTHER THAN POINTING AND TRACKING	7.67	0	2	1
M683 DESIGN MICROPROCESSOR TEST CONTROLLERS	7.66	0	0	2
P770 DESIGN LASER CAVITIES	7.64	0	0	0
Q798 DESIGN FUSES	7.63	0	0	0
P774 DESIGN LASER DISCHARGE SYSTEMS	7.61	0	2	1
P777 DESIGN LASER HIGH VOLTAGE SYSTEMS	7.61	0	0	0
P783 DESIGN LASER VACUUM SYSTEMS	7.61	0	0	0
P780 DESIGN LASER OPTICAL SYSTEMS	7.56	0	2	0
P781 DESIGN LASER PLASMA SYSTEMS	7.54	0	2	1
P778 DESIGN LASER MIRROR COOLING SYSTEMS	7.35	0	2	1
P771 DESIGN LASER COOLING SYSTEMS	7.35	0	2	1
M681 DESIGN COMPUTER INTERFACE CIRCUITS	7.27	0	0	5
Q800 EVALUATE EXPENDED FUSES	7.09	0	4	3
M682 DESIGN ELECTRONIC CIRCUITS	7.09	14	8	14
H491 ALIGN OR CALIBRATE X-RAY EQUIPMENT	6.97	0	2	1

TD Mean = 5.00 S.D. = 1.00

TABLE 13 (CONTINUED)

SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

TASKS	TASK DIFF	PERCENT MEMBERS PERFORMING			
		1-24 TAFMS	1-48 TAFMS	31653	31673
Q809 PERFORM DROP TESTS ON MUNITIONS	6.83	0	8	3	0
A22 PLAN OR PREPARE TEST PROJECTS	6.75	0	12	16	24
S854 MODIFY AIRBORNE INSTRUMENTATION SYSTEMS	6.75	7	6	7	1
N728 MANUALLY MODIFY AUTOMATIC DATA PROCESSING PROGRAMS	6.74	0	0	5	5
Q799 DETONATE OR TEST MUNITIONS OR ORDNANCE DEVICES	6.73	0	8	6	1
M696 FABRICATE DIGITAL MICROPROCESSOR SYSTEMS	6.71	0	0	3	3
M686 DESIGN SENSOR SYSTEMS	6.68	0	0	3	1
L617 TROUBLESHOOT ENCRYPTION SYSTEMS	6.67	0	6	5	4
J546 PERFORM REALTIME DATA REDUCTION ANALYSES	6.65	7	12	13	14
M688 DESIGN TRANSDUCER SYSTEMS	6.65	0	2	5	1
P759 CONSTRUCT OPTICAL SYSTEMS	6.64	0	0	2	1
H468 ALIGN OR CALIBRATE RF RECEIVERS	6.62	7	8	12	11

TD Mean = 5.00 S.D. = 1.00

DISTRIBUTION OF FIRST-ENLISTMENT AFSC 316X3 PERSONNEL ACROSS CAREER LADDER JOBS

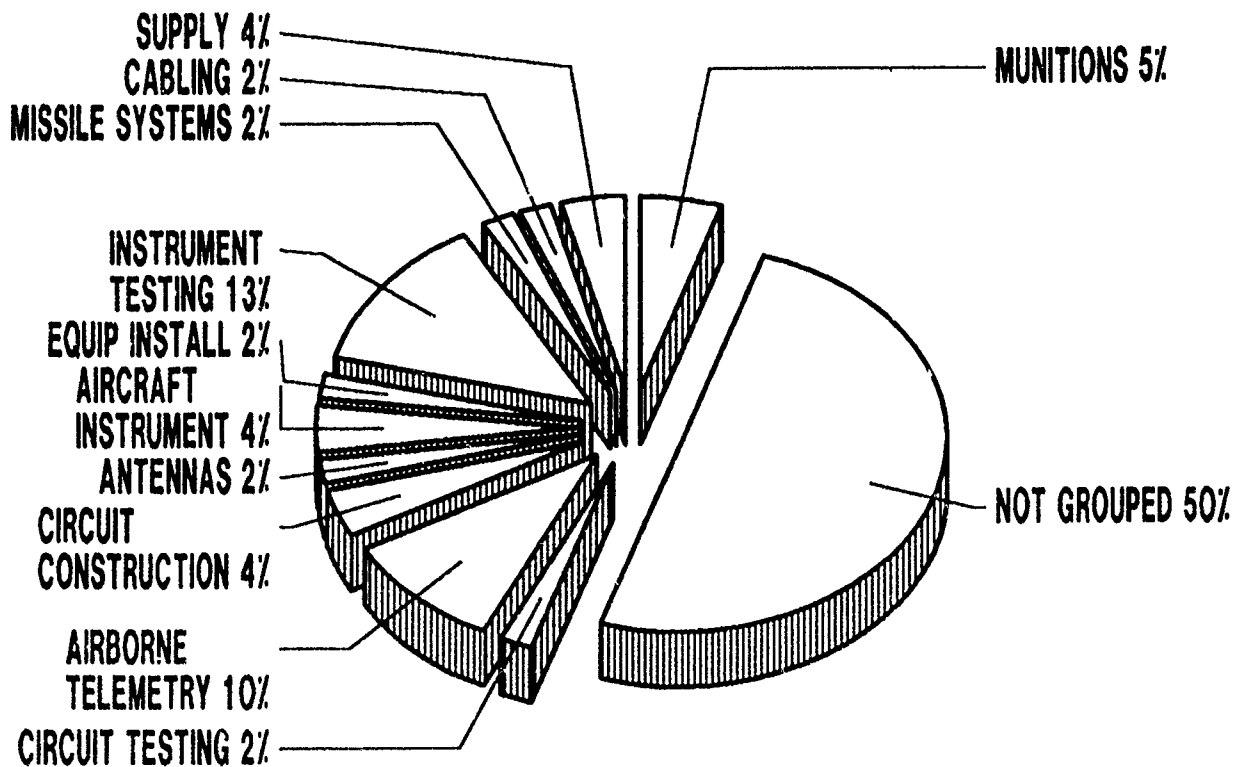


FIGURE 2

TABLE 14

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY
FIRST-ENLISTMENT AFSC 316X3 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=52)
A ORGANIZING AND PLANNING	2
B DIRECTING AND IMPLEMENTING	1
C INSPECTING AND EVALUATING	2
D TRAINING	*
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	11
F PREPARING, INSTALLING, OR REMOVING INSTRUMENTATION EQUIPMENT FOR PROJECTS	16
G INSPECTING INSTRUMENTATION EQUIPMENT	6
H ALIGNING AND CALIBRATING INSTRUMENTATION EQUIPMENT	5
I PERFORMING INSTRUMENTATION TESTING PROCEDURES	12
J REDUCING AND ANALYZING DATA	2
K DEVELOPING TECHNICAL DATA	*
L TROUBLESHOOTING AND REPAIRING INSTRUMENTATION EQUIPMENT	21
M CONSTRUCTING INSTRUMENTATION CIRCUITS OR DEVICES	4
N PERFORMING MISCELLANEOUS MISSION SUPPORT FUNCTIONS	4
O INSPECTING AND MAINTAINING AIRCRAFT INSTRUMENTATION SYSTEMS	2
P DESIGNING, CONSTRUCTING, AND MAINTAINING LASER INSTRUMENTATION SYSTEMS	1
Q INSTALLING, CHECKING, AND TESTING MUNITIONS OR ORDNANCE DEVICES	3
R INSPECTING AND MAINTAINING ANTENNA INSTRUMENTATION SYSTEMS	2
S INSPECTING AND MAINTAINING MISSILE INSTRUMENTATION SYSTEMS	1
T PERFORMING COMMON AIRCREW FUNCTIONS	2

* Denotes less than 1 percent

TABLE 15
REPRESENTATIVE TASKS PERFORMED BY
FIRST-ENLISTMENT AFSC 316X3 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=52)
L595 SOLDER OR DESOLDER COMPONENTS	75
L596 SPLICE CABLING OR WIRING	67
L573 ADJUST VOLTAGES OR FREQUENCIES	60
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	54
F302 INSTALL OR REMOVE POWER SUPPLIES	52
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	48
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	46
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	42
L594 REMOVE OR TREAT CORROSION	42
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	42
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	38
I534 SHUT DOWN INSTRUMENTATION TEST SYSTEMS	38
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	38
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	37
M675 CONSTRUCT INTERCONNECTING CABLING	35
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	33
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	33
F321 INSTALL OR REMOVE SENSORS OR TRANSDUCERS	31
I524 PROGRAM PATCH PANELS	31
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	29
L576 CHARGE OR DISCHARGE BATTERIES	29
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	29
I526 REMOVE INSTRUMENTATION SUPPORT ITEMS FROM TEST STANDS OR FIXTURES	27
E217 SCHEDULE EQUIPMENT FOR PRECISION MEASUREMENT EQUIPMENT LABORATORY (PMEL) CALIBRATION	25
I515 PERFORM PREINSTALLATION CHECKOUTS OF SENSORS OR TRANSDUCERS	23

Table 16 lists equipment items used by more than 30 percent of all first-enlistment AFSC 316X3 personnel. These are general test and maintenance equipment items.

Specialty Training Standard

For the purposes of reviewing the Specialty Training Standard (STS), USAFOMS personnel met with 3420th Technical Training Group personnel at Lowry AFB and matched tasks listed in the job inventory to line items of the STS that do not deal with electronic principles. The end product of the match was used to produce a listing of the STS with job inventory tasks matched, percent members performing the tasks, and TD ratings for each matched task. This listing is included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13, AFR 8-13/ATC Supplement 1 (Attachment 1, paragraph A1-3c(4)), and ATCR 52-22 Attachment 1, were used to review the relevance of each STS element that had an inventory task matched.

The portions of the STS dealing with electronic principles are included in the Electronic Principles Inventory (EPI) administered to AFSC 31653 personnel between September 1987 and April 1988. Listings of these portions of the STS were produced showing EPI statements matched to individual STS line items and percent AFSC 31653 personnel responding. This listing is included in a separate Electronic Principles extract.

AFSC 316X3 STS. Paragraphs 1 through 12 deal with general topics of career ladder progression, security, AFOSH, publications, graduate evaluation, maintenance management, inspection systems and forms, supply discipline, electronic principles, digital principles, corrosion control, and tools, and were not reviewed. The technical aspects of the career ladder are included in paragraphs 13 through 25. There are 139 line items in these paragraphs, 79 of which have tasks matched.

Using AFR 8-13 criteria, only 33 of the 79 matched line items are supported by survey data, meaning tasks matched are performed by more than 20 percent of first-job, first-enlistment, 5-, or 7-skill level members. This is due to the diversity in the career ladder and small groups of AFSC 316X3 personnel performing tasks related to the specific jobs listed in the STS.

Because of this diversity, percent members in the various jobs were used to review the matched line items. Using these data, all 79 matched line items are supported. School personnel are directed to the Training Extract which contains STS listings with both TAFMS and DAFSC and functional group data. In addition, school personnel are directed to AFR 8-13/ATC Sup 1, paragraph A1-3(c)(4) which provides for lowering the percent member performing criteria in very diverse specialties, such as Instrumentation Mechanic, to provide support for the STS. School personnel may either establish a more realistic cut-off point and use the TAFMS and DAFSC data or use the functional group data to review the STS.

TABLE 16

EQUIPMENT ITEMS USED BY MORE THAN 30 PERCENT
OF FIRST-ENLISTMENT AFSC 316X3 PERSONNEL

<u>EQUIPMENT ITEMS</u>	<u>PERCENT MEMBERS USING (N=52)</u>
DIGITAL MULTIMETERS	87
SOLDERING IRONS	81
FREQUENCY COUNTERS	71
ANALOG OSCILLOSCOPES	71
ANALOG MULTIMETERS	67
MAGNETIC TAPE RECORDERS	62
BENCH POWER TOOLS	58
POWER SUPPLIES	56
ELECTRONIC COUNTERS	50
DIGITAL OSCILLOSCOPES	48
AMMETERS	46
TIME CODE GENERATORS	46
PATCHBOARDS	46
FUNCTION GENERATORS	44
POWER METERS	42
SPECTRUM ANALYZERS	38
DIFFERENTIAL VOLTMETERS	37
POWER AMPLIFIERS	37
ANTENNAS	37
COUNTDOWN CLOCKS	37
DIGITAL TO ANALOG CONVERTERS	33
INSTRUMENTATION AMPLIFIERS	31
LIGHT BEAM RECORDERS	31

There are a number of technical tasks performed by more than 20 percent of criterion group members that are not matched to STS elements (Table 17). These tasks were reviewed to determine if they deal with a particular function. Most are general instrumentation tasks and have fairly low TD. These do not appear to represent any job that should be included in the STS.

Electronic Principles STS. Responses of the 237 AFSC 31653 personnel who completed the EPI were matched to the AFSC 316X3 Electronic Principles/Applications portion of the STS. There are many line items that are unsupported by EPI survey data, meaning less than 20 percent of the respondents indicated they used the principle, skill, or equipment listed. The unsupported line items taught to either a knowledge or to a skill level are listed in Appendix B, Table B1. Because there are so many, they will not be discussed in this report. School personnel need to review the table and the Electronics Principles Extract to determine if there are topics that are not appropriate for the entry-level EPI course.

Plan of Instruction

The same 3420 TCHTG personnel matched inventory tasks to learning objectives of the skill-level awarding Plan of Instruction (POI), dated April 1990. A computer product was created for the POI listing each learning objective, tasks matched, percent first-job and first-enlistment members performing and TD ratings. Learning objectives with tasks matched were reviewed using criteria found in ATCR 55-22, Attachment 1 (Feb 89). Any objective matched to tasks performed by 30 percent or more first-job or first-enlistment members is considered supported and should be part of the skill-level awarding course.

ABR31633 POI. Block I of the course covers general information such as safety, tools, technical orders and publications, maintenance management, security, and corrosion control and was not reviewed. Blocks II through XII include 63 technical learning objectives, most of which are taught to the knowledge level, which only requires identifying facts, principles, or procedures. Because of the diversity in the career ladder, only 23 objectives had tasks matched, and of these 23, only the following 5 are supported by survey data: II 1a - Select statements which describe procedures for circuit design and layout, VI 2b - Select statements which describe procedures for installation/removal of transducers and use of dead weights, VII 3a - Select statements which describe purposes and operating procedures of magnetic tape recorders, X 6a - Select statements which describe alignment/calibration procedures of a PAM demultiplexing system, and XII 3a - Select statements which describe basic logical troubleshooting and repair of instrumentation equipment. Unsupported objectives, with survey data, are listed in Appendix B, Table B2. School personnel should review the entire POI listed in the Training Extract.

TABLE 17

TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT CRITERION GROUP
MEMBERS NOT MATCHED TO AFSC 316X3 STS

TASKS	PERCENT MEMBERS PERFORMING					TASK DIFF
	1ST JOB	1ST ENL	5- LVL	7- LVL		
F246	21	19	18	8	4.57	
F277	7	27	18	11	4.19	
F293	21	23	30	20	3.33	
F302	36	52	58	34	4.00	
F340	21	23	28	17	3.52	
G361	21	19	24	17	4.92	
G385	29	29	26	28	4.93	
G399	21	35	36	28	4.46	
G415	21	23	23	19	4.18	
I496	14	33	32	29	4.56	
I497	14	31	39	36	6.21	
I498	29	38	39	37	5.08	
I524	36	31	23	18	4.69	
I526						
FIXTURES						
I534	21	27	27	17	4.03	
L573	21	38	38	16	3.54	
L576	36	60	61	46	4.14	
L581	0	29	28	25	3.29	
L583	21	25	32	31	6.41	
L586	36	38	47	39	3.71	
L588	29	46	51	46	3.74	
L590	36	37	37	32	4.51	
L591	36	42	38	35	4.51	
BATTERIES						
L592	0	27	36	24	3.18	
L595	14	33	38	23	2.79	
L597	50	75	75	54	4.11	
L598	29	25	24	19	5.42	
L620	29	19	23	21	5.41	
CONNECTORS						
L636	21	23	34	26	4.94	
POWER SUPPLIES	21	37	38	27	5.23	

TD Mean = 5.00 S.D. = 1.00

Several write-in comments addressed the Instrumentation Mechanic course. The consensus was that this course is really not needed, as graduates have to learn their jobs by OJT anyway. Survey data tend to support this position by the few tasks that could be matched to the POI and low percentages of graduates performing those tasks matched.

There are only a few tasks performed by more than 30 percent first-job or first-enlistment personnel not matched to the POI (Table 18). Most have low TD and do not suggest any particular area that should be included in the skill-level awarding course.

Summary

Because of the diversity of the career ladder, less than half of the matched STS line items are supported by percent TAFMS or DAFSC criteria group members. All matched STS line items are supported, however, using percent functional group members data. The diversity is also apparent in the POI match, where only five of the matched learning objectives are supported by survey data. School personnel need to carefully review the STS and consider whether or not the instrumentation mechanics portion of the course is necessary for this career ladder.

JOB SATISFACTION

Respondents were asked to indicate how interested they are in their jobs, if they feel their talents and training are being used, and if they intend to reenlist. Satisfaction indicators for TAFMS groups in the present study were compared to those of members of similar AFSCs surveyed in 1989 (Table 19). First- and second-enlistment AFSC 316X3 personnel have lower overall indicators than their counterparts in related AFSCs. The most senior AFSC 316X3 personnel find their jobs interesting and feel their talents are used, but less feel their training is used.

Satisfaction indicators for TAFMS groups in the present study were compared to satisfaction data collected in the 1985 survey of the career ladder (see Table 20). Overall satisfaction indicators are quite similar for both studies. Second-enlistment personnel have lower overall indicators in the present study. A lower percentage feel their training is used than those in the other TAFMS groups for both studies.

Satisfaction indicators for members in the various jobs are shown in Table 21. Personnel working in the Supply and Missile Systems jobs have the lowest overall indicators, finding their jobs least interesting and feeling their talents and training are not being used. Those working in the Circuit Testing job also do not have high job interest, but feel their talents and training are used. Overall reenlistment intentions vary somewhat between the functions, with the more senior members working in the Logistics and Program Management jobs planning on retiring.

TABLE 18

TASKS PERFORMED BY MORE THAN 30 PERCENT CRITERION
GROUPS NOT MATCHED TO 3ABR31633 POI

<u>TASKS NOT REFERENCED</u>	<u>PERCENT MEMBERS PERFORMING</u>		<u>TASK DIFF</u>
	<u>1ST JOB</u>	<u>1ST ENL</u>	
F302 INSTALL OR REMOVE POWER SUPPLIES	36	52	4.00
L573 ADJUST VOLTAGES OR FREQUENCIES	36	60	4.14
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSES	36	38	3.71
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	36	37	4.51
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	36	42	4.51
L595 SOLDER OR DESOLDER COMPONENTS	50	75	4.11
L596 SPLICE CABLING OR WIRING	50	67	3.81

TD Mean = 5.00 S.D. = 1.00

TABLE 19

COMPARISON OF JOB SATISFACTION INDICATORS FOR 316X3 TAFMS GROUPS
IN CURRENT STUDY TO A COMPARATIVE SAMPLE
(PERCENT MEMBERS RESPONDING)

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>		<u>97+ MONTHS TAFMS</u>	
	<u>316X3</u>	<u>COMP</u>	<u>316X3</u>	<u>COMP</u>	<u>316X3</u>	<u>COMP</u>
	<u>(N=52)</u>	<u>SAMPLE</u>	<u>(N=98)</u>	<u>SAMPLE</u>	<u>(N=193)</u>	<u>SAMPLE</u>
		<u>(N=2,658)</u>		<u>(N=1,930)</u>		<u>(N=2,575)</u>
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	60	76	75	76	83	77
SO-SO	21	15	15	16	10	14
DULL	19	8	10	8	7	8
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO GOOD	71	75	72	86	87	85
LITTLE OR NOT AT ALL	29	24	28	14	13	15
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO GOOD	62	84	47	84	67	82
LITTLE OR NOT AT ALL	38	15	53	16	33	18
<u>REENLISTMENT INTENTIONS:</u>						
WILL REENLIST	56	61	66	72	70	74
WILL NOT REENLIST	42	37	33	26	6	10
WILL RETIRE	0	2	1	1	24	14

Comparative data are from AFSCs 362X4, 411X2A, 454X0A/B, and 451X4 surveyed in 1989

TABLE 20

COMPARISON OF JOB SATISFACTION INDICATORS FOR AFSC 316X3 TAFMS GROUPS
IN CURRENT AND PREVIOUS STUDY
(PERCENT MEMBERS RESPONDING)

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>		<u>97+ MONTHS TAFMS</u>	
	1990 (N=52)	1985 (N=116)	1990 (N=98)	1985 (N=139)	1990 (N=193)	1985 (N=255)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	60	59	75	77	83	80
SO-SO	21	14	15	14	10	11
DULL	19	17	10	9	7	9
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO GOOD	71	67	72	81	87	79
LITTLE OR NOT AT ALL	29	33	28	19	13	21
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO GOOD	62	52	47	66	67	63
LITTLE OR NOT AT ALL	38	48	53	34	33	37
<u>REENLISTMENT INTENTIONS:</u>						
WILL REENLIST	56	51	66	65	70	68
WILL NOT REENLIST	42	49	33	35	6	10
WILL RETIRE	0	0	1	0	24	22

TABLE 21

COMPARISON OF JOB SATISFACTION INDICATORS FOR MEMBERS OF 316X3 JOBS
(PERCENT MEMBERS RESPONDING)

	AIRBORNE TELEMETRY (N=55)	CIRCUIT CONST (N=25)	ANTENNA SYSTEMS (N=5)	ACFT INST (N=8)	CIRCUIT TEST (N=6)	EQUIP INSTALL (N=15)	TEST PROC (N=22)	MISSILE SYSTEMS (N=9)
<u>EXPRESSED JOB INTEREST:</u>								
INTERESTING	89	96	100	87	67	93	81	45
SO-SO	9	4	0	13	33	0	14	22
DULL	2	0	0	0	0	7	5	33
<u>PERCEIVED USE OF TALENTS:</u>								
FAIRLY WELL TO GOOD	95	92	80	100	100	100	91	67
LITTLE OR NOT AT ALL	5	8	20	0	0	0	9	33
<u>PERCEIVED USE OF TRAINING:</u>								
FAIRLY WELL TO GOOD	78	64	80	87	100	87	32	44
LITTLE TO NOT AT ALL	22	36	20	13	0	13	68	56
<u>REENLISTMENT INTENTIONS:</u>								
WILL REENLIST	69	76	100	74	50	73	82	67
WILL NOT REENLIST	11	16	0	13	50	7	18	33
WILL RETIRE	20	8	0	13	0	20	0	0

TABLE 21 (CONTINUED)

COMPARISON OF JOB SATISFACTION INDICATORS FOR MEMBERS OF 316X3 JOBS
(PERCENT MEMBERS RESPONDING)

	PROGRAM MGMT (N=5)	CABLING (N=9)	SUPPLY (N=11)	MUNITIONS (N=8)	MANAGEMENT (N=28)	SUPV (N=13)	LOGISTICS (N=5)
<u>EXPRESSED JOB INTEREST:</u>							
INTERESTING	100	78	28	74	82	84	80
SO-SO	0	22	27	13	11	8	20
DULL	0	0	45	13	7	8	0
<u>PERCEIVED USE OF TALENTS:</u>							
FAIRLY WELL TO GOOD	100	78	36	62	82	92	80
LITTLE OR NOT AT ALL	0	22	64	38	18	8	20
<u>PERCEIVED USE OF TRAINING:</u>							
FAIRLY WELL TO GOOD	80	44	9	25	75	85	60
LITTLE TO NOT AT ALL	20	56	91	75	25	15	40
<u>REENLISTMENT INTENTIONS:</u>							
WILL REENLIST	40	56	55	87	61	69	20
WILL NOT REENLIST	0	33	36	13	7	8	0
WILL RETIRE	60	11	9	0	32	23	80

Summary

Overall satisfaction of AFSC 316X3 personnel is slightly lower than that of members of similar AFSCs surveyed in 1989, but has remained stable over the last 5 years. Members working in the Supply and Missile System jobs have the lowest overall indicators. In addition, members working in the Circuit Testing job report lower job interest than many other jobs, but feel their talents and training are being used.

IMPLICATIONS

Overall, there have been few changes in the structure of the career ladder over the last 5 years. Personnel progress typically through the career ladder, with 3- and 5-skill level members performing the general instrumentation tasks, 7-skill level members performing a mixture of technical and supervisory functions, and 9-skill level and CEM code members performing more career ladder management tasks. Survey data show AFR 39-1 Specialty Descriptions are accurate.

Job satisfaction indicators for this specialty are somewhat lower than those of related AFSCs surveyed in 1989. Overall satisfaction has remained stable over the years. Members in most jobs report they find their job interesting and feel their talents and training are used, however, those in the Supply and Missile Systems jobs have the lowest satisfaction indicators.

Survey data show, that because of the diversity of the career ladder, the STS and POI need to be reviewed because of the number of unsupported parts of each. In addition, survey data and write-in comments suggest the 12 week Instrumentation Mechanic portion of the 3ABR31633 course may not be the most cost effective method of training since graduates generally learn their first-assignment jobs by OJT.

APPENDIX A

SELECTED REPRESENTATIVE TASKS PERFORMED BY
MEMBERS OF CAREER LADDER JOBS

TABLE A1

AIRBORNE TELEMETRY SYSTEMS JOB
(STG063)

NUMBER IN GROUP: 55
PERCENT OF SAMPLE: 16%

AVERAGE TIME IN JOB: 75 MONTHS
AVERAGE TAFMS: 137 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
T875 SECURE EQUIPMENT FOR DESCENT OR LANDING	96
T874 REVIEW AFTO FORMS 781 SERIES FOR PALLET DISCREPANCIES	91
T862 INSPECT RAMP AREAS FOR FOREIGN OBJECT DAMAGE (FOD) MATTER	91
T870 PERFORM OR PRACTICE EMERGENCY AIRCRAFT EGRESS PROCEDURES	89
T871 PERFORM OR PRACTICE LAND AND WATER SURVIVAL TRAINING PROCEDURES	89
T864 LOAD CREW GEAR ON AIRCRAFT	85
T872 PERFORM PERSONAL EQUIPMENT INSPECTIONS	85
T869 PERFORM HIGH ALTITUDE PROCEDURES IN ALTITUDE CHAMBER	85
T866 OPERATE ENTRY OR EMERGENCY ESCAPE HATCHES	84
T867 ORDER AIRCREW FLIGHT LUNCHES	80
E188 MAKE ENTRIES ON AFTO FORMS 781 (AFORM AIRCREW/MISSION FLIGHT DATA DOCUMENT)	71
L573 ADJUST VOLTAGES OR FREQUENCIES	69
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	67
T865 MONITOR RADIO COMMUNICATION TRANSMISSIONS	67
0746 PERFORM IN-FLIGHT OPERATION OF TEST SYSTEMS	65
0745 PERFORM IN-FLIGHT CALIBRATION OF AIRCRAFT INSTALLED INSTRUMENTATION PACKAGES	64
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	64
T876 VISUALLY INSPECT SPARE LIFE SUPPORT EQUIPMENT	64
I497 ISOLATE EQUIPMENT MALFUNCTIONS DURING TESTS	64
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	62
0749 PERFORM PREFLIGHT CALIBRATIONS	60
T863 INSTRUCT CREW MEMBERS OR PASSENGERS ON IN-FLIGHT OR GROUND EMERGENCY PROCEDURES	60
0750 PERFORM PREFLIGHT INSPECTIONS	56
I524 PROGRAM PATCH PANELS	55
L589 REMOVE OR REPLACE ELECTRONIC UNITS, DRAWERS, OR ASSEMBLIES	53
0747 PERFORM POSTFLIGHT CALIBRATIONS	44

TABLE A2

CIRCUIT CONSTRUCTION JOB
(GRP035)

NUMBER IN GROUP: 25
PERCENT OF SAMPLE: 7%

AVERAGE TIME IN JOB: 57 MONTHS
AVERAGE TAFMS: 108 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
M672 CONSTRUCT CIRCUITS USING INTEGRATED CIRCUITS	100
M671 CONSTRUCT CIRCUITS USING CONVENTIONAL RESISTORS OR CAPACITORS	96
M674 CONSTRUCT CIRCUITS USING TRANSISTORS OR DISCRETE COMPONENTS	92
M673 CONSTRUCT CIRCUITS USING PRINTED CIRCUIT BOARDS	88
M667 BREADBOARD CIRCUITS	88
M675 CONSTRUCT INTERCONNECTING CABLING	88
M670 CONSTRUCT CIRCUIT CHASSIS OR BOXES	88
M710 TEST NEWLY CONSTRUCTED CIRCUITS	84
L595 SOLDER OR DESOLDER COMPONENTS	84
M693 DRAW CIRCUIT SCHEMATICS OR WIRING DIAGRAMS	76
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	76
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	76
L596 SPLICE CABLING OR WIRING	72
M682 DESIGN ELECTRONIC CIRCUITS	68
M680 DESIGN CIRCUIT CHASSIS OR BOXES	68
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	68
M668 COMPUTE VALUES OF CIRCUIT COMPONENTS	68
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	64
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	64
L598 TEST DIGITAL INTEGRATED CIRCUITS	64
L597 TEST ANALOG INTEGRATED CIRCUITS	64
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	64
M679 CONSTRUCT WIREWRAP CIRCUIT BOARDS	60
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	60
L599 TEST DISCRETE ELECTRONIC COMPONENTS, OTHER THAN INTEGRATED CIRCUITS	60
M692 DRAFT SCALE LAYOUTS FOR PRINTED CIRCUIT BOARDS	52
M702 FABRICATE TEST CABLES FOR BENCH REPAIR OPERATIONS	52
M685 DESIGN PRINTED CIRCUIT BOARDS	48
M694 ETCH OR CUT PRINTED CIRCUIT BOARDS	36

TABLE A3

ANTENNA SYSTEMS JOB
(STG186)

NUMBER IN GROUP: 5
PERCENT OF SAMPLE: 4%

AVERAGE TIME IN JOB: 50 MONTHS
AVERAGE TAFMS: 76 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
L603 TROUBLESHOOT ANTENNA SYSTEMS	100
R823 INSPECT ANTENNA CABLING OR WAVEGUIDES	100
R825 INSPECT ANTENNA GEAR TRAINS	100
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	100
R820 ALIGN ANTENNA PEDESTAL SYSTEMS	100
R832 MAINTAIN ANTENNA GEAR TRAINS	100
L581 ISOLATE MALFUNCTIONS OF DISCRETE ELECTRONIC CIRCUITS	100
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	100
L595 SOLDER OR DESOLDER COMPONENTS	100
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	80
L620 TROUBLESHOOT INSTALLATION OF ELECTRICAL HARNESSSES OR CONNECTORS	80
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	80
F244 INSTALL OR REMOVE ANTENNAS, OTHER THAN AT TEST SITES	80
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	80
L594 REMOVE OR TREAT CORROSION	80
R835 MAINTAIN ANTENNA TRACKING SYSTEMS	80
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	80
L636 TROUBLESHOOT POWER SUPPLIES	80
L596 SPLICE CABLING OR WIRING	80
L597 TEST ANALOG INTEGRATED CIRCUITS	80
L598 TEST DIGITAL INTEGRATED CIRCUITS	80
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR LABELS (DD FORMS 1574-1577 SERIES)	80
H430 ALIGN OR CALIBRATE ANTENNA SYSTEMS	80
R834 MAINTAIN ANTENNA PREAMPLIFIERS	80
R841 PERFORM PREOPERATIONAL CHECKS OF TELEMETRY ANTENNAS	60
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	60
L573 ADJUST VOLTAGES OR FREQUENCIES	60
R826 INSPECT ANTENNA PREAMPLIFIERS	60

TABLE A4

AIRCRAFT INSTRUMENTATION JOB
(STG201)

NUMBER IN GROUP: 8
PERCENT OF SAMPLE: 2%

AVERAGE TIME IN JOB: 20 MONTHS
AVERAGE TAFMS: 112 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
0750 PERFORM PREFLIGHT INSPECTIONS	100
I514 PERFORM PREFLIGHT SYSTEMS CHECKS	100
0748 PERFORM POSTFLIGHT INSPECTIONS	100
I510 PERFORM POSTFLIGHT SYSTEMS CHECKS	100
0743 ISOLATE MALFUNCTIONS OF AIRCRAFT INSTRUMENTATION PACKAGES	100
F282 INSTALL OR REMOVE MAGNETIC DATA TAPE RECORDERS	100
0742 INSTALL OR REMOVE INSTRUMENTATION PACKAGES IN AIRCRAFT	100
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	100
G415 INSPECT TIME CODE GENERATORS	100
G380 INSPECT INSTRUMENTATION AMPLIFIERS	100
L595 SOLDER OR DESOLDER COMPONENTS	100
G385 INSPECT MICROPROCESSOR TEST CONTROLLERS	88
L596 SPLICE CABLING OR WIRING	88
L620 TROUBLESHOOT INSTALLATION OF ELECTRICAL HARNESSSES OR CONNECTORS	88
F340 INSTALL OR REMOVE TIME CODE GENERATORS	88
0744 MODIFY OR DEMODIFY AIRCRAFT INSTRUMENTATION SYSTEMS	88
L591 REMOVE OR REPLACE NICKEL CADMIUM, LEAD ACID, OR ALKALINE BATTERIES	88
L576 CHARGE OR DISCHARGE BATTERIES	88
F318 INSTALL OR REMOVE RF RECEIVERS	88
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	88
G358 INSPECT AND VERIFY INSTRUMENTATION DOCUMENTATION	88
0749 PERFORM PREFLIGHT CALIBRATIONS	75
F348 INSTALL OR REMOVE VIDEO MAGNETIC TAPE RECORDERS	75
F265 INSTALL OR REMOVE ELECTRICAL HARNESSSES OR CONNECTORS	75
L656 TROUBLESHOOT TIME CODE GENERATORS	75
L573 ADJUST VOLTAGES OR FREQUENCIES	75
L601 TROUBLESHOOT ANALOG SIGNAL CONDITIONING EQUIPMENT	75
I494 EVALUATE CONDITION OF INSTRUMENTATION PACKAGES AFTER TESTS	75
0747 PERFORM POSTFLIGHT CALIBRATIONS	50

TABLE A5

CIRCUIT TESTING AND TROUBLESHOOTING JOB
(STG205)NUMBER IN GROUP: 6
PERCENT OF SAMPLE: 1%AVERAGE TIME IN JOB: 31 MONTHS
AVERAGE TAFMS: 95 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
L595 SOLDER OR DESOLDER COMPONENTS	100
L598 TEST DIGITAL INTEGRATED CIRCUITS	100
L597 TEST ANALOG INTEGRATED CIRCUITS	100
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	100
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	100
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	100
L573 ADJUST VOLTAGES OR FREQUENCIES	100
F282 INSTALL OR REMOVE MAGNETIC DATA TAPE RECORDERS	100
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	83
H447 ALIGN OR CALIBRATE MAGNETIC DATA TAPE RECORDERS	83
L624 TROUBLESHOOT MAGNETIC DATA TAPE RECORDERS	83
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	83
L581 ISOLATE MALFUNCTIONS OF DISCRETE ELECTRONIC CIRCUITS	83
G385 INSPECT MICROPROCESSOR TEST CONTROLLERS	83
L599 TEST DISCRETE ELECTRONIC COMPONENTS, OTHER THAN INTEGRATED CIRCUITS	83
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	83
L596 SPLICE CABLING OR WIRING	83
L592 REMOVE OR REPLACE PLUG-IN UNITS, SUCH AS FILTERS	83
N726 INTERPRET LOGIC DIAGRAMS	67
L626 TROUBLESHOOT MIXER AMPLIFIERS	67
M666 APPLY CONFORMAL COAT TO ELECTRONIC PRINTED CIRCUIT BOARDS	67
L591 REMOVE OR REPLACE NICKEL CADMIUM, LEAD ACID, OR ALKALINE BATTERIES	67
G415 INSPECT TIME CODE GENERATORS	67
N727 ISOLATE EQUIPMENT MALFUNCTIONS DURING OPERATIONS, OTHER THAN DURING TESTING OPERATIONS	50
H460 ALIGN OR CALIBRATE POWER SUPPLIES	50
G399 INSPECT PRIME FREQUENCY STANDARDS	50
L576 CHARGE OR DISCHARGE BATTERIES	50

TABLE A6

EQUIPMENT INSTALLATION JOB
(STG175)NUMBER IN GROUP: 15
PERCENT OF SAMPLE: 4%AVERAGE TIME IN JOB: 57 MONTHS
AVERAGE TAFMS: 146 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
L595 SOLDER OR DESOLDER COMPONENTS	100
M675 CONSTRUCT INTERCONNECTING CABLING	100
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	100
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	100
I497 ISOLATE EQUIPMENT MALFUNCTIONS DURING TESTS	100
L574 ASSEMBLE OR DISASSEMBLE EQUIPMENT, PARTS, OR SUPPLIES FOR REMOTE SITES	100
F238 INSTALL INSTRUMENTATION CABINETS OR EQUIPMENT IN TRAILERS, VANS, BUILDINGS, OR AIRCRAFT	93
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	93
G380 INSPECT INSTRUMENTATION AMPLIFIERS	93
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	93
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	93
L596 SPLICE CABLING OR WIRING	93
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	93
M676 CONSTRUCT MECHANICAL DEVICES	93
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	93
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	93
F234 ESTABLISH SETUP REQUIREMENTS FOR INSTRUMENTATION EQUIPMENT	87
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	87
B45 DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT	87
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	80
A6 DETERMINE WORK PRIORITIES	80
C95 INSPECT INSTALLATION OF TEST COMPONENTS	80
E144 COORDINATE AVAILABLE SUPPLIES, EQUIPMENT, OR MATERIALS WITH OTHER SECTIONS	80
A22 PLAN OR PREPARE TEST PROJECTS	73
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	73
E151 INVENTORY SUPPLIES, EQUIPMENT, OR COMPONENTS	73

TABLE A7

INSTRUMENT TEST PROCEDURES JOB
(STG091)

NUMBER IN GROUP: 22
PERCENT OF SAMPLE: 6%

AVERAGE TIME IN JOB: 44 MONTHS
AVERAGE TAFMS: 75 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
I498 MONITOR DATA COLLECTING SYSTEMS DURING TESTS	91
L595 SOLDER OR DESOLDER COMPONENTS	91
F321 INSTALL OR REMOVE SENSORS OR TRANSDUCERS	86
I534 SHUT DOWN INSTRUMENTATION TEST SYSTEMS	86
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	86
F302 INSTALL OR REMOVE POWER SUPPLIES	82
F224 ANALYZE REALTIME DATA OF INSTRUMENTATION SYSTEMS DURING TEST PREPARATION	77
I496 INFORM TEST DIRECTORS OF ABNORMAL INDICATIONS	77
F328 INSTALL OR REMOVE TEMPERATURE MEASUREMENT SYSTEMS	77
L596 SPLICE CABLING OR WIRING	77
I497 ISOLATE EQUIPMENT MALFUNCTIONS DURING TESTS	77
I515 PERFORM PREINSTALLATION CHECKOUTS OF SENSORS OR TRANSDUCERS	73
I526 REMOVE INSTRUMENTATION SUPPORT ITEMS FROM TEST STANDS OR FIXTURES	73
H444 ALIGN OR CALIBRATE INSTRUMENTATION AMPLIFIERS	73
M675 CONSTRUCT INTERCONNECTING CABLING	73
I492 ANALYZE AND REPORT REALTIME DATA OF INSTRUMENTATION SYSTEMS DURING OPERATIONS OR TESTING	68
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	68
L573 ADJUST VOLTAGES OR FREQUENCIES	68
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	68
F265 INSTALL OR REMOVE ELECTRICAL HARNESSSES OR CONNECTORS	64
F277 INSTALL OR REMOVE INSTRUMENTATION AMPLIFIERS	64
I536 VERIFY CALIBRATION DATA OF COMPONENTS, SUCH AS TRANSDUCERS OR TRANSMITTERS	59
F329 INSTALL OR REMOVE TEST FIXTURES	59
F234 ESTABLISH SETUP REQUIREMENTS FOR INSTRUMENTATION EQUIPMENT	59
J538 ANALYZE DATA REDUCTION COMPUTER PRINTOUTS	59
I518 PERFORM PRETEST R&D SYSTEMS CHECKS OR CALIBRATIONS	50
F303 INSTALL OR REMOVE PRESSURE MEASUREMENT SYSTEMS	50
H461 ALIGN OR CALIBRATE PRESSURE MEASUREMENT SYSTEMS	50

TABLE A8

MISSILE SYSTEMS JOB
(STG184)

NUMBER IN GROUP: 9
PERCENT OF SAMPLE: 2%

AVERAGE TIME IN JOB: 52 MONTHS
AVERAGE TAFMS: 88 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E198 PREPARE EQUIPMENT OR COMPONENTS FOR SHIPMENT	100
N732 PERFORM VOLTAGE STANDING WAVE RATIO (VSWR) OR ATTENUATION CHECKS OF WAVEGUIDES, ANTENNAS, OR COAXIAL CABLES	100
F250 INSTALL OR REMOVE COMMAND DESTRUCT SYSTEMS	100
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	100
F341 INSTALL OR REMOVE TRANSPONDERS	100
S847 BENCH CHECK MISSILE TELEMETRY SYSTEM COMPONENTS	100
L594 REMOVE OR TREAT CORROSION	100
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR LABELS (DD FORMS 1574-1577 SERIES)	100
L595 SOLDER OR DESOLDER COMPONENTS	100
Q804 INSTALL OR REMOVE SAFE AND ARM DEVICES	100
N736 SET UP OR TEAR DOWN PARTITIONS OR WALLS	89
S848 BENCH CHECK MISSILE TRACKING SYSTEM COMPONENTS	89
S843 BENCH CHECK COMMAND DESTRUCT RECEIVERS	89
F278 INSTALL OR REMOVE INSTRUMENTATION CABLES ON TEST VEHICLES	89
E151 INVENTORY SUPPLIES, EQUIPMENT, OR COMPONENTS	89
Q815 PERFORM STRAY VOLTAGE CHECKS	89
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	89
L573 ADJUST VOLTAGES OR FREQUENCIES	78
E191 MAKE ENTRIES ON DD FORMS 1149 (REQUISITION AND INVOICE/ SHIPPING DOCUMENT)	78
L576 CHARGE OR DISCHARGE BATTERIES	78
E185 MAKE ENTRIES ON AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	78
R841 PERFORM PREOPERATIONAL CHECKS OF TELEMETRY ANTENNAS	78
S853 MATE OR DEMATE INSTRUMENTATION SECTIONS TO MISSILE GUIDANCE SETS	78
L591 REMOVE OR REPLACE NICKEL CADMIUM, LEAD ACID, OR ALKALINE BATTERIES	78
F309 INSTALL OR REMOVE RANGE SAFETY SUBSYSTEMS	78
Q805 INSTALL RANGE SAFETY DEVICES IN ORDNANCE ITEMS	78
E193 MAKE ENTRIES ON DD FORMS 1348-6 (DOD SINGLE LINE ITEM REQUISITION SYSTEM DOCUMENT)	67

TABLE A9

PROGRAM MANAGEMENT JOB
(STG118)

NUMBER IN GROUP: 5
PERCENT OF SAMPLE: 1%

AVERAGE TIME IN JOB: 52 MONTHS
AVERAGE TAFMS: 242 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	100
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	100
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	100
F227 ANALYZE TEST REQUIREMENTS TO DETERMINE FACILITY REQUIREMENTS	100
F228 ANALYZE TEST REQUIREMENTS TO DETERMINE PERSONNEL REQUIREMENTS	100
C106 REVIEW TEST DOCUMENTATION	80
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	80
J538 ANALYZE DATA REDUCTION COMPUTER PRINTOUTS	80
F229 COORDINATE INSTRUMENTATION CHECKOUTS WITH OTHER TEST TEAMS	80
I535 VALIDATE CONTRACTOR TEST PLANS	60
I496 INFORM TEST DIRECTORS OF ABNORMAL INDICATIONS	60
F231 COORDINATE TEST PARAMETERS WITH TEST DIRECTORS	60
F230 COORDINATE TEST DIRECTIVES WITH OTHER AGENCIES	60
F234 ESTABLISH SETUP REQUIREMENTS FOR INSTRUMENTATION EQUIPMENT	60
I494 EVALUATE CONDITION OF INSTRUMENTATION PACKAGES AFTER TESTS	60
F232 COORDINATE TEST SUPPORT WITH BASE SUPPORT AGENCIES	60
I530 RESEARCH TEST DIRECTIVES FOR TEST SPECIFICATIONS	60
B36 COORDINATE TECHNICAL PLANS WITH OTHER AGENCIES OR HIGHER HEADQUARTERS	60
A4 DETERMINE BUDGET REQUIREMENTS	60
E219 TRACK PROJECT FUNDS EXPENDITURES	40
A22 PLAN OR PREPARE TEST PROJECTS	40
C91 EVALUATE TEST CONFIGURATIONS	40
K562 VERIFY OR VALIDATE PRELIMINARY EDITIONS OF TECHNICAL DATA	40
K561 PROOFREAD TECHNICAL DATA	40
I533 SERVE ON PROBLEM ANOMALY TEAMS DURING LAUNCHES	40

TABLE A10

CABLING JOB
(STG110)

NUMBER IN GROUP: 9
PERCENT OF SAMPLE: 2%

AVERAGE TIME IN JOB: 27 MONTHS
AVERAGE TAFMS: 111 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
L620 TROUBLESHOOT INSTALLATION OF ELECTRICAL HARNESSSES OR CONNECTORS	100
M675 CONSTRUCT INTERCONNECTING CABLING	89
L596 SPLICE CABLING OR WIRING	89
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	89
M671 CONSTRUCT CIRCUITS USING CONVENTIONAL RESISTORS OR CAPACITORS	89
F265 INSTALL OR REMOVE ELECTRICAL HARNESSSES OR CONNECTORS	78
M702 FABRICATE TEST CABLES FOR BENCH REPAIR OPERATIONS	78
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	78
L573 ADJUST VOLTAGES OR FREQUENCIES	78
F302 INSTALL OR REMOVE POWER SUPPLIES	78
L591 REMOVE OR REPLACE NICKEL CADMIUM, LEAD ACID, OR ALKALINE BATTERIES	67
M667 BREADBOARD CIRCUITS	67
L583 PERFORM CONTINUITY CHECKS OF ELECTRICAL HARNESSSES	56
I526 REMOVE INSTRUMENTATION SUPPORT ITEMS FROM TEST STANDS OR FIXTURES	56
M677 CONSTRUCT MOUNTING DEVICES FOR INSTRUMENTATION SYSTEMS	56
M676 CONSTRUCT MECHANICAL DEVICES	56
L563 ADJUST COOLING SYSTEMS	56
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	56
I527 REMOVE TEST ITEMS FROM TEST STANDS OR FIXTURES	44
F278 INSTALL OR REMOVE INSTRUMENTATION CABLES ON TEST VEHICLES	44
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	44
N727 ISOLATE EQUIPMENT MALFUNCTIONS DURING OPERATIONS, OTHER THAN DURING TESTING OPERATIONS	44
G380 INSPECT INSTRUMENTATION AMPLIFIERS	44

TABLE A11

SUPPLY JOB
(STG019)NUMBER IN GROUP: 11
PERCENT OF SAMPLE: 3%AVERAGE TIME IN JOB: 51 MONTHS
AVERAGE TAFMS: 113 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
E151 INVENTORY SUPPLIES, EQUIPMENT, OR COMPONENTS	73
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR LABELS (DD FORMS 1574-1577 SERIES)	64
E193 MAKE ENTRIES ON DD FORMS 1348-6 (DOD SINGLE LINE ITEM REQUISITION SYSTEM DOCUMENT)	64
E172 MAKE ENTRIES ON AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	64
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	55
E217 SCHEDULE EQUIPMENT FOR PRECISION MEASUREMENT EQUIPMENT LABORATORY (PMEL) CALIBRATION	55
E175 MAKE ENTRIES ON AF FORMS 2005 (ISSUE/TURN IN REQUEST)	45
E162 MAINTAIN FILES OF TECHNICAL ORDERS	36
E157 MAINTAIN CUSTODY AUTHORIZATION/CUSTODY RECEIPT LISTINGS (CA/CRL)	36
B61 SUPERVISE PERSONNEL WITH AFSCs OTHER THAN 316X3	36
F255 INSTALL OR REMOVE COMPUTER SYSTEMS	36
E147 COORDINATE SUPPLY REQUIREMENTS WITH LOGISTIC MATERIAL CONTROL ACTIVITY (LMCA)	36
E179 MAKE ENTRIES ON AF FORMS 601 (EQUIPMENT ACTION REQUEST)	36
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	36
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	36
E154 MAINTAIN AF FORMS 126 (CUSTODIAN REQUEST LOG)	36
C103 PERFORM SAFETY INSPECTIONS	36
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	36
E144 COORDINATE AVAILABLE SUPPLIES, EQUIPMENT, OR MATERIALS WITH OTHER SECTIONS	36
F254 INSTALL OR REMOVE COMPUTER INTERFACE CIRCUITS	27
E168 MAINTAIN OR REVIEW PRECISION MEASUREMENT EQUIPMENT COMPUTER LISTINGS	27
E155 MAINTAIN AF FORMS 2413 (SUPPLY CONTROL LOG)	18

TABLE A12

MUNITIONS TESTING JOB
(STG012)NUMBER IN GROUP: 8
PERCENT OF SAMPLE: 2%AVERAGE TIME IN JOB: 31 MONTHS
AVERAGE TAFMS: 44 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
Q814 PERFORM STATIC FIRINGS OF MUNITIONS OR ORDNANCE DEVICES	75
Q806 INSTRUMENT MUNITIONS OR ORDNANCE DEVICES	75
N717 FILL SANDBAGS FOR TESTS	75
Q801 INSTALL MUNITIONS OR ORDNANCE DEVICES IN TEST FIXTURES	63
F302 INSTALL OR REMOVE POWER SUPPLIES	63
D115 CONDUCT OJT	63
Q816 SOLDER DETONATOR DEVICES	50
F265 INSTALL OR REMOVE ELECTRICAL HARNESSSES OR CONNECTORS	50
Q811 PERFORM OPERATIONAL CHECKS OF SAFE AND ARM DEVICES	38
I515 PERFORM PREINSTALLATION CHECKOUTS OF SENSORS OR TRANSDUCERS	38
F338 INSTALL OR REMOVE THRUST MEASURING SYSTEMS	38
F329 INSTALL OR REMOVE TEST FIXTURES	38
L573 ADJUST VOLTAGES OR FREQUENCIES	38
F241 INSTALL OR REMOVE ANALOG SIGNAL CONDITIONING EQUIPMENT	38
E173 MAKE ENTRIES ON AF FORMS 1800 (OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT (GENERAL PURPOSE VEHICLES)	38
F278 INSTALL OR REMOVE INSTRUMENTATION CABLES ON TEST VEHICLES	25
I526 REMOVE INSTRUMENTATION SUPPORT ITEMS FROM TEST STANDS OR FIXTURES	25
Q799 DETONATE OR TEST MUNITIONS OR ORDNANCE DEVICES	25
N727 ISOLATE EQUIPMENT MALFUNCTIONS DURING OPERATIONS, OTHER THAN DURING TESTING OPERATIONS	25
I524 PROGRAM PATCH PANELS	25
F328 INSTALL OR REMOVE TEMPERATURE MEASUREMENT SYSTEMS	25
L601 TROUBLESHOOT ANALOG SIGNAL CONDITIONING EQUIPMENT	25
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	25
H428 ALIGN OR CALIBRATE ANALOG SIGNAL CONDITIONING EQUIPMENT	25

TABLE A13

MANAGEMENT JOB
(STG109)NUMBER IN GROUP: 28
PERCENT OF SAMPLE: 8%AVERAGE TIME IN JOB: 33 MONTHS
AVERAGE TAFMS: 221 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	93
C110 WRITE RECOMMENDATIONS FOR AWARDS OR DECORATIONS	93
A6 DETERMINE WORK PRIORITIES	93
B54 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	89
B55 ORIENT NEWLY ASSIGNED PERSONNEL	86
C85 EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	82
C108 WRITE EPRs	82
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	82
A5 DETERMINE LOGISTIC REQUIREMENTS, SUCH AS EQUIPMENT, PERSONNEL, AND SPACE	82
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	82
A2 ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	82
A13 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	79
A11 DEVELOP SELF-INSPECTION PROGRAMS	79
B32 CONDUCT BRIEFINGS	79
C62 ANALYZE WORKLOAD REQUIREMENTS	75
A23 PLAN OR SCHEDULE WORK ASSIGNMENTS	75
A20 PLAN OR PREPARE BRIEFINGS	75
A30 SCHEDULE LEAVES, PASSES, OR TEMPORARY DUTY	75
C76 EVALUATE INDIVIDUALS FOR RECOGNITION	71
A10 DEVELOP ORGANIZATIONAL POLICIES, SUCH AS OPERATING INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	71
B52 IMPLEMENT SELF-INSPECTION PROGRAMS	68
B51 IMPLEMENT SAFETY OR SECURITY PROGRAMS	68
C94 INDORSE ENLISTED PERFORMANCE REPORTS (EPR)	68
A4 DETERMINE BUDGET REQUIREMENTS	68
E144 COORDINATE AVAILABLE SUPPLIES, EQUIPMENT, OR MATERIALS WITH OTHER SECTIONS	68
C104 PERFORM SELF-INSPECTIONS	64
C88 EVALUATE SELF-INSPECTION PROGRAMS	64
C78 EVALUATE JOB DESCRIPTIONS	61
A21 PLAN OR PREPARE MANPOWER JUSTIFICATION PACKAGES	54
B50 IMPLEMENT QUALITY CONTROL STANDARDS	50

TABLE A14

SUPERVISORY JOB
(STG165)NUMBER IN GROUP: 13
PERCENT OF SAMPLE: 4%AVERAGE TIME IN JOB: 64 MONTHS
AVERAGE TAFMS: 163 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
A23 PLAN OR SCHEDULE WORK ASSIGNMENTS	100
N725 INTERPRET BLUEPRINTS, CABLING, OR CIRCUIT SCHEMATIC DIAGRAMS	100
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	100
E150 DRAW PARTS OR SUPPLIES FROM BENCH STOCK	100
E142 ANNOTATE AND ATTACH EQUIPMENT OR SUPPLY STATUS TAGS OR LABELS (DD FORMS 1574-1577 SERIES)	100
D115 CONDUCT OJT	92
A6 DETERMINE WORK PRIORITIES	92
L573 ADJUST VOLTAGES OR FREQUENCIES	92
C85 EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	92
C108 WRITE EPRs	92
B58 SUPERVISE INSTRUMENTATION MECHANICS (AFSC 31653)	92
D133 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	92
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	92
L594 REMOVE OR TREAT CORROSION	92
L575 ASSEMBLE OR DISASSEMBLE TEST EQUIPMENT OR CABLES FOR REPAIR OPERATIONS	92
E186 MAKE ENTRIES ON AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	92
L586 REMOVE OR REPLACE CHASSIS OR CIRCUIT CARD ASSEMBLIES	92
L595 SOLDER OR DESOLDER COMPONENTS	92
L588 REMOVE OR REPLACE DISCRETE ELECTRONIC CIRCUITS	85
A13 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	85
C96 INSPECT RACK-MOUNTED EQUIPMENT	85
L590 REMOVE OR REPLACE INTEGRATED CIRCUITS	85
D119 DETERMINE OJT REQUIREMENTS	85
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	77
C80 EVALUATE MAINTENANCE DATA OR EQUIPMENT RECORDS	77
E201 PREPARE MAINTENANCE SCHEDULES	54
E209 REVIEW MAINTENANCE DATA COLLECTION RECORDS	54

TABLE A15

LOGISTICS JOB
(STG098)

NUMBER IN GROUP: 5
PERCENT OF SAMPLE: 1%

AVERAGE TIME IN JOB: 23 MONTHS
AVERAGE TAFMS: 215 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
E144 COORDINATE AVAILABLE SUPPLIES, EQUIPMENT, OR MATERIALS WITH OTHER SECTIONS	100
B43 DIRECT MAINTENANCE OF FACILITIES OR WORK AREAS	100
E145 COORDINATE LOGISTICS SUPPORT WITH APPROPRIATE AGENCIES	100
E153 ISSUE OR RECEIPT FOR CONTRACTOR SUPPLIES OR EQUIPMENT	100
A5 DETERMINE LOGISTIC REQUIREMENTS, SUCH AS EQUIPMENT, PERSONNEL, AND SPACE	80
E220 TRANSPORT PARTS OR SUPPLIES	80
E151 INVENTORY SUPPLIES, EQUIPMENT, OR COMPONENTS	80
E213 REVIEW SURPLUS EQUIPMENT RESOURCES FOR USABLE ITEMS	80
E172 MAKE ENTRIES ON AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	80
B45 DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT	80
E146 COORDINATE SUPPLY REQUIREMENTS WITH BASE SUPPLY OR MATERIEL CONTROL	80
E157 MAINTAIN CUSTODY AUTHORIZATION/CUSTODY RECEIPT LISTINGS (CA/CRL)	60
B55 ORIENT NEWLY ASSIGNED PERSONNEL	60
B37 COORDINATE WORK ACTIVITIES WITH CONTRACTOR PERSONNEL	60
B39 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	60
E148 COORDINATE SUPPLY REQUIREMENTS WITH VENDORS OR ITEM MANAGERS	60
E208 REVIEW CUSTODY AUTHORIZATION/CUSTODY RECEIPT LISTINGS (CA/CRL)	60
E147 COORDINATE SUPPLY REQUIREMENTS WITH LOGISTIC MATERIAL CONTROL ACTIVITY (LMCA)	60
A18 PLAN EQUIPMENT OR FACILITY MAINTENANCE REQUIREMENTS	60
E204 RESEARCH PARTS, SUPPLIES, OR EQUIPMENT IDENTIFYING DATA FROM MANUFACTURERS CATALOGS	60
A16 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	60
A8 DEVELOP INSPECTION SCHEDULES	60
E178 MAKE ENTRIES ON AF FORMS 332 (BCE WORK REQUEST)	40
B54 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	40
E193 MAKE ENTRIES ON DD FORMS 1348-6 (DOD SINGLE LINE ITEM REQUISITION SYSTEM DOCUMENT)	40

APPENDIX B

ELECTRONIC FUNDAMENTALS/APPLICATIONS STS AND
3ABR31633 POI ANALYSIS TABLES

TABLE B1

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

6. INDUCTORS	

6C. CALCULATIONS	B
A1-22 DO YOU CALCULATE VALUES OF CIRCUIT TOTAL INDUCTANCE	14
A1-23 DO YOU CALCULATE VALUES OF CIRCUIT OR COMPONENT INDUCTIVE REACTANCE	15
A1-24 DO YOU CALCULATE VALUES OF CIRCUIT VOLTAGE OR CURRENT IN CIRCUITS CONTAINING INDUCTORS	17

7. CAPACITORS	

7D. COLOR CODE	B
A1-34 DO YOU USE CAPACITOR COLOR CODES IN YOUR PRESENT JOB	18

10. DC MOTORS	

10C. TROUBLESHOOT MOTORS	2B
A2-3 DO YOU TROUBLESHOOT DC MOTOR COMPONENT PARTS	12

11. AC MOTORS	

11C. TROUBLESHOOT MOTORS	2B
A2-7 DO YOU TROUBLESHOOT AC MOTOR COMPONENT PARTS	11

15. SYNCHRO/SERVOS	

15C. TROUBLESHOOT SYNCHRO/SERVOS	2B
A2-23 DO YOU TROUBLESHOOT SYNCHRO OR SERVO COMPONENT PARTS	14

16. CHOPPERS (SYNCHRONOUS VIBRATORS)	

16A. THEORY OF OPERATION	B
A2-25 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING CHOPPERS	7

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

16B. ISOLATE FAULTY CHOPPERS	2B	
A2-26 DO YOU TROUBLESHOOT CIRCUITS TO ISOLATE A FAULTY CHOPPER		6
A2-27 DO YOU MEASURE CHOPPER COIL EXCITATION FREQUENCY		3
A2-28 DO YOU MEASURE CHOPPER COIL VOLTAGE-CURRENT PHASE RELATIONSHIP		3
19. SOLID STATE DIODES		
19D. COLOR CODE	B	
A3-6 DO YOU USE DIODE COLOR CODES		13
23. ELECTRON TUBES		
23A. THEORY OF OPERATION	B	
A4-1 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING ELECTRON TUBES		9
A4-2 DO YOU TRACE SCHEMATIC DIAGRAMS OF ELECTRON TUBE CIRCUITS		9
24. CATHODE RAY TUBES (CRT)		
24A. THEORY OF OPERATION	B	
A4-16 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING CATHODE RAY TUBES (CRT)		13
A4-17 DO YOU TRACE SCHEMATIC DIAGRAMS OF CRT CIRCUITS		12
A4-19 DO YOU ADJUST OR CALIBRATE CIRCUITS THAT CONTROL CRT OPERATIONS		15
24B. ISOLATE FAULTY CRTS	2B	
A4-18 DO YOU TROUBLESHOOT TO ISOLATE A FAULTY CRT		12

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

27. USE TEST EQUIPMENT USAGE		

27Q. REFLECTOMETER	2B	
B4-14 DO YOU USE REFLECTOMETERS		14
28. TRANSISTOR AMPLIFIER CIRCUITS (COMMON EMITTER, COMMON COLLECTOR, COMMON BASE)		

28A. THEORY OF OPERATION		

28A(2). STABILIZATION CIRCUITS	B	
C2-1 DO YOU TRACE SCHEMATIC DIAGRAMS OF AMPLIFIER STABILIZATION CIRCUITS		14
C2-6 DO YOU PERFORM TASKS ON DIODE STABILIZATION AMPLIFIERS		15
35. RESISTIVE/CAPACITIVE/INDUCTIVE (RCL) CIRCUITS		

35A. BASIC OPERATION	B	
E1-1 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING RESISTIVE CAPACITIVE INDUCTIVE (RCL) CIRCUITS		19

35B. RESONANT OPERATION	B	
E1-3 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING RESONANT RCL CIRCUITS		15

35C. TROUBLESHOOT CIRCUITS	2B	
E1-2 DO YOU TROUBLESHOOT RCL CIRCUITS TO CIRCUIT LEVEL COMPONENTS		15
E1-4 DO YOU TROUBLESHOOT RESONANT RCL CIRCUITS TO CIRCUIT LEVEL COMPONENTS		12

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

35D. CALCULATIONS	B	
E1-5 DO YOU CALCULATE VALUES OF IMPEDANCE, VOLTAGE, OR CURRENT IN RCL CIRCUITS		8
E1-6 DO YOU CALCULATE PHASE ANGLE OF RCL CIRCUITS		4
E1-7 DO YOU CALCULATE VALUES OF POWER IN RCL CIRCUITS		5
<hr/>		
36. FREQUENCY SENSITIVE FILTERS (LOW PASS, HIGH PASS, BAND PASS, BAND REJECT)		
<hr/>		
36B. ISOLATE FAULTY FREQUENCY SENSITIVE FILTERS	2B	
E2-2 DO YOU TROUBLESHOOT CIRCUITS TO ISOLATE A FAULTY FREQUENCY SENSITIVE FILTER		19
<hr/>		
36C. TROUBLESHOOT CIRCUITS	2B	
E2-3 DO YOU TROUBLESHOOT FREQUENCY SENSITIVE FILTERS TO CIRCUIT LEVEL COMPONENTS		13
<hr/>		
37. WAVE GENERATING CIRCUITS		
<hr/>		
37A(3). WAVESHAPING CIRCUITS (SCHMITT TRIGGER, SAWTOOTH, RC INTEG/DIFF)	B	
F3-1 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING WAVESHAPING CIRCUITS (WSC)		11
F3-2 DO YOU TRACE SCHEMATIC DIAGRAMS OF WSC		11
F3-12 DO YOU PERFORM TASKS ON SQUARE WAVE GENERATOR WSC		16
<hr/>		
38. LIMITER CIRCUITS (DIODE, ZENER DIODE, TRANSISTOR)		
<hr/>		
38A. THEORY OF OPERATION	B	
F4-1 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING LIMITERS		8
F4-2 DO YOU TRACE SCHEMATIC DIAGRAMS OF LIMITER CIRCUITS		8

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

38B. ISOLATE FAULTY LIMITERS	2B	
F4-5 DO YOU TROUBLESHOOT TO ISOLATE A FAULTY LIMITER CIRCUIT		7

38C. TROUBLESHOOT CIRCUITS	2B	
F4-6 DO YOU TROUBLESHOOT LIMITERS TO CIRCUIT LEVEL COMPONENTS		5

39. CLAMPER CIRCUITS		

39A. THEORY OF OPERATION	B	
F4-3 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING CLAMPERS		6
F4-4 DO YOU TRACE SCHEMATIC DIAGRAMS OF CLAMPER CIRCUITS		6

39B. ISOLATE FAULTY CLAMPERS	2B	
F4-7 DO YOU TROUBLESHOOT TO ISOLATE A FAULTY CLAMPER CIRCUIT		4

39C. TROUBLESHOOT CIRCUITS	2B	
F4-8 DO YOU TROUBLESHOOT CLAMPERS TO CIRCUIT LEVEL COMPONENTS		3

42. BOOLEAN EQUATIONS		

42A. DIAGRAM TO EQUATION	B	
G1-47 DO YOU DEVELOP BOOLEAN EQUATIONS FROM LOGIC CIRCUITS OR DIAGRAMS		9

42B. EQUATION TO DIAGRAM		
G1-48 DO YOU DEVELOP LOGIC DIAGRAMS FROM BOOLEAN EQUATIONS		8

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

43. COMPUTERS

43C. WRITE/DEBUG PROGRAMS

2B

G2-3 DO YOU WRITE OR DEBUG PROGRAMS

19

G2-7 DO YOU USE COMPUTER FLOW CHARTS OR DIAGRAMS

17

43E. CIRCUIT TROUBLESHOOTING

2B

G2-6 DO YOU TROUBLESHOOT COMPUTER SUBASSEMBLY OR CIRCUIT CARD TO
CIRCUIT LEVEL COMPONENTS OR IC

8

44. MICROPROCESSOR CONTROLLED SYSTEMS

44A. THEORY OF OPERATION

B

G2-39 DO YOU TRACE BLOCK OR SCHEMATIC DIAGRAMS OF MICROPROCESSOR
CONTROLLED SYSTEMS

17

44B. ISOLATE FAULTY MICROPROCESSORS

2B

G2-40 DO YOU TROUBLESHOOT MICROPROCESSOR CONTROLLED SYSTEMS TO A
SUBASSEMBLY OR CIRCUIT CARD

13

G2-41 DO YOU TROUBLESHOOT MICROPROCESSOR CONTROLLED SYSTEMS TO
ISOLATE A FAULTY MICROPROCESSOR

9

45. LOGIC CIRCUITS

45A. THEORY OF OPERATION

45A(2). REGISTERS (SHIFT AND STORAGE)

B

G3-11 DO YOU TRACE LOGIC DIAGRAMS OF CIRCUITS CONTAINING REGISTERS

17

G3-14 DO YOU PERFORM TASKS ON SHIFT REGISTERS IN LOGIC CIRCUITS

19

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

45A(3). COMBINATIONAL LOGIC CIRCUITS	B	
(HALF-ADDER, FULL-ADDER, ENCODER, DECODER, MULTIPLEXER, DEMULTIPLEXER, COUNT DETECT)		
G3-16 DO YOU TRACE DATA FLOW THROUGH COMBINATIONAL LOGIC CIRCUITS		16
G3-19 DO YOU PERFORM TASKS ON ENCODERS		16
G3-20 DO YOU PERFORM TASKS ON DECODERS		15
G3-21 DO YOU PERFORM TASKS ON MULTIPLEXERS		18

45B. ISOLATE FAULTY CIRCUITS	2B	
G3-2 DO YOU TROUBLESHOOT COUNTER CIRCUITS TO ISOLATE A FAULTY COUNTER		19
G3-12 DO YOU TROUBLESHOOT CIRCUITS CONTAINING REGISTERS TO ISOLATE A FAULTY REGISTER		16

48. WAVEGUIDES		

48A. THEORY OF OPERATION	B	
H1-14 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING WAVEGUIDES		8
H1-16 DO YOU PRESSURIZE OR PURGE WAVEGUIDE ASSEMBLIES		2
H1-17 DO YOU MEASURE STANDING WAVE RATIO FOR WAVEGUIDE ASSEMBLIES		3

48B. ISOLATE FAULTY WAVEGUIDES	2B	
H1-15 DO YOU TROUBLESHOOT CIRCUITS TO ISOLATE A FAULTY WAVEGUIDE ASSEMBLY		4

49. MICROWAVE OSCILLATORS & AMPLIFIERS		

49A. THEORY OF OPERATION	B	
H2-1 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING MICROWAVE OSCILLATORS OR AMPLIFIERS		6
H2-7 DO YOU PERFORM TASKS ON TRAVELING WAVE TUBE MICROWAVE OSCILLATORS AND AMPLIFIERS		2

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

49B. TUNE OR ADJUST	2B	
H2-3 DO YOU TUNE OR ADJUST MICROWAVE OSCILLATORS OR AMPLIFIERS		4

49C. ISOLATE FAULTY MICROWAVE OSCILLATORS OR AMPLIFIERS	2B	
H2-2 DO YOU TROUBLESHOOT CIRCUITS TO ISOLATE A FAULTY MICROWAVE OSCILLATOR OR AMPLIFIER		5

50. RESONANT CAVITIES		

50A. THEORY OF OPERATION	B	
H3-1 DO YOU TRACE SCHEMATIC OR BLOCK DIAGRAMS OF CIRCUITS CONTAINING RESONANT CAVITIES		2
H3-6 DO YOU PERFORM TASKS ON PROBE RESONANT CAVITIES		1

50B. ISOLATE FAULTY RESONANT CAVITIES	2B	
H3-2 DO YOU TROUBLESHOOT CIRCUITS TO ISOLATE A FAULTY RESONANT CAVITY		1
H3-5 DO YOU MEASURE FREQUENCY OF RESONANT CAVITIES		2

50C. TUNE/ADJUST	2B	
H3-3 DO YOU TUNE OR ADJUST RESONANT CAVITIES ELECTRICALLY		1
H3-4 DO YOU TUNE OR ADJUST RESONANT CAVITIES PHYSICALLY		3

53. TRANSMISSION POWER		

53B. CALCULATIONS	B	
I2-1 DO YOU CALCULATE RF APPARENT POWER		5
I2-2 DO YOU CALCULATE RF TRUE POWER		8
I2-3 DO YOU CALCULATE RF POWER LOSS OR GAIN IN DB		17

TABLE B1 (CONTINUED)

AFSC 316X3 ELECTRONIC FUNDAMENTALS/APPLICATIONS STS ELEMENTS
WITH KNOWLEDGE OR PERFORMANCE CODES AND LESS THAN
20 PERCENT MEMBERS RESPONDING "YES"

31653
(N=237)

57. PHOTOSENSITIVE DEVICES

57A. THEORY OF OPERATION

B

J2-1 DO YOU TRACE BLOCK DIAGRAMS OF CIRCUITS CONTAINING
PHOTOSENSITIVE DEVICES

14

J2-2 DO YOU TRACE SCHEMATIC DIAGRAMS OF PHOTOSENSITIVE DEVICE
CIRCUITS

13

J2-4 DO YOU ADJUST OR CALIBRATE PHOTOSENSITIVE DEVICES

11

57B. ISOLATE FAULTY PHOTOSENSITIVE
DEVICES

2B

J2-3 DO YOU TROUBLESHOOT TO ISOLATE A FAULTY PHOTOSENSITIVE DEVICE

14

TABLE B2

UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
II 2a. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE PRINTED CIRCUIT CONSTRUCTION. -----		
M671 CONSTRUCT CIRCUITS USING CONVENTIONAL RESISTORS OR CAPACITORS	21	32
M672 CONSTRUCT CIRCUITS USING INTEGRATED CIRCUITS	7	8
M673 CONSTRUCT CIRCUITS USING PRINTED CIRCUIT BOARDS	7	10
M674 CONSTRUCT CIRCUITS USING TRANSISTORS OR DISCRETE COMPONENTS	7	10
V 1a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY IDENTIFY THE PRINCIPLES, STANDARDS, AND APPLICATIONS OF IRIG DOCUMENTS. -----		
F224 ANALYZE REALTIME DATA OF INSTRUMENTATION SYSTEMS DURING TEST PREPARATION	7	19
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	7	10
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	7	15
V 2a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY IDENTIFY THE PRINCIPLES, STANDARDS, AND APPLICATIONS OF IRIG STANDARDS TO TEST REANGES. -----		
F224 ANALYZE REALTIME DATA OF INSTRUMENTATION SYSTEMS DURING TEST PREPARATION	7	19
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	7	10
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	7	15
V 3a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSE AND OPERATING PRINCIPLES OF BASIC TELEMETRY SYSTEMS, AS THEY APPLY TO IRIG. -----		
F224 ANALYZE REALTIME DATA OF INSTRUMENTATION SYSTEMS DURING TEST PREPARATION	7	19
F225 ANALYZE TEST REQUIREMENTS TO DETERMINE AGENCY OR USER REQUIREMENTS	7	10
F226 ANALYZE TEST REQUIREMENTS TO DETERMINE EQUIPMENT REQUIREMENTS	7	15

TABLE B2

UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
VI 3a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSE AND OPERATING PRINCIPLES OF ANALOG SIGNAL CONDITIONERS. -----		
F241 INSTALL OR REMOVE ANALOG SIGNAL CONDITIONING EQUIPMENT	21	17
VI 4a. GIVEN TRAINERS, TEST EQUIPMENT, AND PROCEDURES, PERFORM OPERATIONAL CHECKS AND ALIGNMENT/CALIBRATION OF TRANSDUCERS AND ANALOG SIGNAL CONDITIONERS. -----		
H428 ALIGN OR CALIBRATE ANALOG SIGNAL CONDITIONING EQUIPMENT	14	15
H461 ALIGN OR CALIBRATE PRESSURE MEASUREMENT SYSTEMS	7	8
VII 1a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSE AND OPERATING PRINCIPLES OF OSCILLOGRAPHIC RECORDERS. -----		
F290 INSTALL OR REMOVE OSCILLOGRAPH RECORDERS	0	15
H452 ALIGN OR CALIBRATE OSCILLOGRAPH RECORDERS	7	12
VII 1b. GIVEN OSCILLOGRAPHIC RECORDERS, TEST EQUIPMENT AND PROCEDURES, OPERATE AND ALIGN/CALIBRATE THREE DIFFERENT OSCILLOGRAPHIC RECORDERS. -----		
H446 ALIGN OR CALIBRATE LIGHT BEAM RECORDERS	0	15
H452 ALIGN OR CALIBRATE OSCILLOGRAPH RECORDERS	7	12
VII 2a. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSE AND OPERATING PRINCIPLES OF DIGITAL RECORDERS/PRINTERS. -----		
F242 INSTALL OR REMOVE ANALOG-TO-DIGITAL CONVERSION EQUIPMENT	14	19
F259 INSTALL OR REMOVE DIGITAL RECORDERS OR PRINTERS	14	19
F261 INSTALL OR REMOVE DIGITAL-TO-ANALOG CONVERSION EQUIPMENT	7	19

TABLE B2 (CONTINUED)
UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
VII 2b. USING TEST EQUIPMENT AND THE DIGITAL RECORDER, OPERATE THE RECORDER. -----		
N716 EVALUATE CONDITION AND QUALITY OF INSTRUMENTATION RECORDINGS	0	6
VII 3b. GIVEN A MAGNETIC TAPE RECORDER, TEST EQUIPMENT AND PROCEDURES, PERFORM OPERATION. -----		
N716 EVALUATE CONDITION AND QUALITY OF INSTRUMENTATION RECORDINGS	0	6
VII 3b. GIVEN A MAGNETIC TAPE RECORDER, TEST EQUIPMENT AND PROCEDURES, PERFORM ALIGNMENT/CALIBRATION. -----		
H435 ALIGN OR CALIBRATE DIGITAL RECORDERS OR PRINTERS	0	6
H447 ALIGN OR CALIBRATE MAGNETIC DATA TAPE RECORDERS	21	25
VIII 1b. FROM A SERIES OF STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY IDENTIFY THE OPERATING PRINCIPLES OF RADIO FREQUENCY TRANSMITTERS. -----		
F311 INSTALL OR REMOVE REFERENCE OSCILLATOR MIXERS	0	2
VIII 2. TRANSMISSION LINES AND ANTENNAS. -----		
F243 INSTALL OR REMOVE ANTENNAS AT TEST SITES	7	21
F244 INSTALL OR REMOVE ANTENNAS, OTHER THAN AT TEST SITES	14	15
F245 INSTALL OR REMOVE BORESIGHT SYSTEMS AT TEST SITES	0	2
R840 PERFORM PREOPERATIONAL CHECKS OF MICROWAVE ANTENNAS	14	6
R841 PERFORM PREOPERATIONAL CHECKS OF TELEMETRY ANTENNAS	0	10
VIII 3a. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH DESCRIBE THE PURPOSE AND OPERATING PRINCIPLES OF RADIO FREQUENCY (RF) RECEIVERS. -----		
F257 INSTALL OR REMOVE DEMODULATORS, OTHER THAN TIME-CODE	0	8
F318 INSTALL OR REMOVE RF RECEIVERS	7	12

TABLE B2 (CONTINUED)

UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
VIII 3b. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH DESCRIBE THE PURPOSE AND ALIGNMENT/CALIBRATION PROCEDURES OF RADIO FREQUENCY (RF) RECEIVERS. -----		
F313 INSTALL OR REMOVE RF ATTENUATORS	7	21
VIII 4a. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH DESCRIBE THE PURPOSES AND OPERATING PRINCIPLES OF AUXILIARY -----		
F348 INSTALL OR REMOVE VIDEO MAGNETIC TAPE RECORDERS RECEIVING EQUIPMENT		
H472 ALIGN OR CALIBRATE SPECTRUM DISPLAY UNITS	0	2
IX 1b. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE OPERATION AND ALIGNMENT/CALIBRATION PROCEDURES OF SCOs AND ISOLATION AMPLIFIERS. -----		
H470 ALIGN OR CALIBRATE SCOs	0	12
H487 ALIGN OR CALIBRATE VCOs	14	13
IX 2a. FROM STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSES AND OPERATING PRINCIPLES OF SUBCARRIER DISCRIMINATORS. -----		
F256 INSTALL OR REMOVE DATA COMMUNICATION SYSTEMS	0	6
F320 INSTALL OR REMOVE SCDs	7	15
IX 2c. FROM STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE OPERATING PRINCIPLES OF AN FM CALIBRATOR. -----		
H469 ALIGN OR CALIBRATE SCDs	14	19

TABLE B2 (CONTINUED)

UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
X 6b. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE OPERATIONAL CHECKS AND OPERATION OF A TIME DIVISION MULTIPLEXING AND DEMULTIPLEXING SYSTEM.		

F257 INSTALL OR REMOVE DEMODULATORS, OTHER THAN TIME-CODE	0	8
F291 INSTALL OR REMOVE PULSE AMPLITUDE MODULATION (PAM)		
DECOMMUTATION UNITS	0	2
H455 ALIGN OR CALIBRATE PCM DECOMMUTATION UNITS	7	10

XI 6b. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE OPERATION OF THE DIGITAL TIME DIVISION DEMULTIPLEXING SYSTEM.		

F253 INSTALL OR REMOVE COMPUTER CONTROLLED SYSTEMS	14	10
F254 INSTALL OR REMOVE COMPUTER INTERFACE CIRCUITS	7	8
F255 INSTALL OR REMOVE COMPUTER SYSTEMS	14	12
F257 INSTALL OR REMOVE DEMODULATORS, OTHER THAN TIME-CODE	0	8
F260 INSTALL OR REMOVE DIGITAL SIGNAL CONDITIONING EQUIPMENT	0	12

XI 6c. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE ALIGNMENT/CALIBRATION PROCEDURES OF THE FOLLOWING ITEMS: PAM AND PCM.		

H453 ALIGN OR CALIBRATE PAM DECOMMUTATION UNITS	0	0
H455 ALIGN OR CALIBRATE PCM DECOMMUTATION UNITS	7	10
H456 ALIGN OR CALIBRATE PCM SIGNAL SIMULATORS	7	4

XII 1a. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSES AND OPERATING PRINCIPLES OF TIMING SYSTEMS.		

N734 READ AND DECODE INTERRANGE INSTRUMENTATION GROUP (IRIG) TIMING FORMATS	14	8

TABLE B2 (CONTINUED)

UNSUPPORTED ABR31633 POI LEARNING OBJECTIVES

<u>LEARNING OBJECTIVE AND MATCHED TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>	
	<u>1ST JOB</u>	<u>1ST ENL</u>
XII 1b. USING A TYPICAL TIMING SYSTEM, AN OSCILLOSCOPE AND PROVIDED PROCEDURES, PERFORM OPERATIONAL CHECKS AND ALIGN/CALIBRATE THE TIMING SYSTEM.		

H479 ALIGN OR CALIBRATE TIME CODE GENERATORS	14	15
N730 PERFORM COORDINATED UNIVERSAL TIME SYNCHRONIZATION PROCEDURES	7	8
N738 SET UP TIMING SYSTEMS	0	8
XII 2a. FROM STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY IDENTIFY THE PURPOSES AND OPERATING PRINCIPLES OF LASERS.		

F235 EVALUATE LASER SAFETY PROCEDURES	0	2
F28C INSTALL OR REMOVE LASER SYSTEMS	0	4
XII 3b. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE PROPER TROUBLESHOOTING TECHNIQUES ON A RECEIVER TRAINER.		

F327 INSTALL OR REMOVE TELEVISION (TV) SYSTEMS AT TEST SITES	0	4
F342 INSTALL OR REMOVE TV CAMERAS	14	6
F343 INSTALL OR REMOVE TV OR VIDEO MONITORS	7	12
XII 4a. GIVEN STATEMENTS, SELECT WITH 70 PERCENT ACCURACY THOSE WHICH CORRECTLY DESCRIBE THE PURPOSES AND OPERATING PRINCIPLES OF CLOSED CIRCUIT VIDEO SYSTEMS.		

F246 INSTALL OR REMOVE CABLE DISTRIBUTION JUNCTIONS	21	19
F299 INSTALL OR REMOVE PHOTOGRAPHIC INSTRUMENTATION SUPPORT CAMERAS	14	12