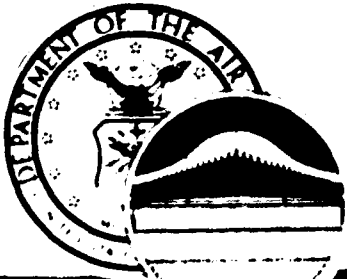


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UNITED STATES AIR FORCE

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OCCUPATIONAL SURVEY REPORT

ELECTRIC POWER LINE CAREER LADDER
(AFSC 542X1)

RELATED CIVILIAN OCCUPATIONAL SERIES
(2805, 2810, AND 5407)

AFPT 90-542-509

MARCH 1985

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PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Electric Power Line career ladder and related civilian occupational series (AFSCs 54231/51/71 and series 2805, 2810, and 5407). The project was directed by USAF Program Technical Training, Volume Two, Section VIII, dated February 1981. Authority for conducting occupational surveys is contained in AFR 35-2. Computer printouts from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by First Lieutenant William Carney, Inventory Development Specialist. Dr. David E. Williams, Occupational Analyst, analyzed the data and wrote the final report. Ms Olga Velez provided computer programming support for the project. This report has been reviewed and approved by Major Charles D. Gorman, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel (see distribution list). Additional copies are available upon request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Branch (OMY), Randolph Air Force Base, Texas 78150-5000.

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SUMMARY OF RESULTS

1. Survey Objectives: This survey was conducted to acquire data for use in the review and update of career ladder documents, such as Specialty Training Standard (STS) and Plan of Instruction (POI), and to identify any training considerations due to electrical system changes.
2. Survey Coverage: Job inventory booklets were administered worldwide to airmen holding DAFSCs 54231, 54251, and 54271 and civilians holding job series 2810, 2805, and 5407.
3. Specialty Jobs (Career Ladder Structure): Based on similarity of tasks performed, 542X1 personnel grouped into three major technical maintenance clusters and three independent job types: Management Cluster, Airfield Lighting Cluster, Installation and Repair Cluster, Junior Power Line Installer Repairer, Linemen, and Technical Training Instructors. Task differences found between job groups were mainly the result of job specialization, such as Airfield Lighting or Installation and Repair. Other differences were the results of increased experience levels, which tended to award greater supervisor responsibilities to the more senior airmen.
4. AFR 39-1 Specialty Descriptions: The AFR 39-1 specialty descriptions provide an accurate overview of AFSC 542X1 Electric Power Line duties and responsibilities. The civilian job series 2810, 2805, and 5407 standards also reflect an accurate overview.
5. Civilian Military Comparisons: Based on technical tasks performed, military and civilian personnel are performing similar jobs. Military personnel perform more contingency tasks than civilians.
6. Training Analysis: Although the POI and STS require review, they appear in generally good order and no major problems were identified.



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**OCCUPATIONAL SURVEY REPORT
ELECTRIC POWER LINE CAREER LADDER
AND RELATED CIVILIAN OCCUPATIONAL SERIES
(AFSC 542X1, SERIES 2805, 2810, AND 5407)**

INTRODUCTION

This is a report of an occupational survey of the Electric Power Line Specialty and related civilian occupational series (AFSC 542X1, Series 2805, 2810 and 5407) conducted by the Occupational Analysis Branch, USAF Occupational Measurement Center. A previous survey of this specialty was conducted in 1977.

Objective

This survey was conducted to provide data for use in the review and update of career field documents, primarily the Specialty Training Standard (STS) and Plan of Instruction (POI), and to identify any training considerations due to electrical system changes. This survey was requested by the 3700 Technical Training Wing, Sheppard Air Force Base, Texas, and by the Air Force Engineering and Services Center (AFESC), which also requested that civilians be surveyed.

History

There have been no major changes in the structure of the Electric Power Line career ladder since its inception in 1964. As currently structured, the ladder has 3-, 5-, and 7-skill levels.

The primary responsibility of personnel in the 542X1 career ladder, as described in the AFR 39-1 Specialty Description, involves constructing, inspecting, maintaining, and modifying energized and de-energized high-voltage electrical distribution systems and related equipment. Additionally, they construct power distribution systems, which involve inspecting, installing, servicing, troubleshooting, repairing, and modifying all high-voltage electrical distribution and utilization equipment, as well as planning and supervising electric power line activities.

Career Ladder Entry

Personnel entering the Electric Power Line career ladder enter technical school after completing basic military training at Lackland AFB, Texas. Initial training for these personnel is conducted at Sheppard Technical Training Center. The basic course is an 8-week course designed to train new 542X1 personnel in the principles of electric power line functions.

Once initial training is completed and 542X1 personnel are assigned to operating bases, they receive more job-related training through the OJT program and five advanced courses as needed. These five advanced courses are taught at Sheppard Technical Training Center and are available to all user commands. Advanced courses include:

J3AZR54251-000	AIRFIELD APPROACH LIGHTING, CONDENSER DISCHARGE
J3AZR54251-001	ELECTRICAL DISTRIBUTION SYSTEM MAINTENANCE
J3AZR54251-002	CABLE TESTING
J3AZR54251-003	CABLE TESTING
J3AZR54271-000	POWER LINE SAFETY REQUIREMENTS

The advanced courses cover more specific power line functions. Their purpose is to give in-depth training on power line functions to be worked on by airmen once on the job.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument used for this occupational survey was USAF Job Inventory AFPT 90-542-509. A tentative task list was formulated during visits with technical school personnel at Sheppard Air Force Base, to include tasks resulting from the use of specialty training standards and other career ladder documents, as well as the task list from a previous occupational survey, as a guide. The tentative task list was refined and validated by subsequent visits to operational units that have 542X1 personnel assigned. From this process, a final inventory consisting of 502 tasks grouped under 16 duty headings was developed.

The 542X1 inventory consisted of three sections: (1) biographical information, which included items such as name, SSAN, number of months on current job, and number of months of military service; (2) a background information section which included questions about such items as job satisfaction, equipment used, type of organization, job title, and training courses completed; and (3) a task section listing all tasks performed by career ladder personnel. In completing this last section, respondents first checked the tasks they performed and then rated each task checked on a 9-point scale showing relative time spent on that task as compared to all other tasks checked. The rating

scale ranged from one (very small amount of time spent) to nine (very large amount of time spent), with a rating of five representing an average amount of time spent performing a task. To determine the relative amount of time spent on each task, all of the individual's ratings were assumed to account for 100 percent of his or her time on the job. The ratings were then summed, and each rating was divided by that sum and multiplied by 100. This procedure provides a basis for comparing tasks, not only in terms of percent members performing, but also in terms of average percent time spent.

Survey Administration

From February 1984 to April 1984, job inventories were administered by local consolidated base personnel offices to all DAFSC 542X1 personnel at the 3-, 5- and 7-skill levels and by civilian personnel offices to all civilians holding job civilian series 2805, 2810, and 5407, who were eligible to participate in the survey. Union authorities coordinated on the requirement for civilians to participate. They did so on a voluntary basis. This included 796 members assigned to operational units. Military members eligible to participate in the survey were selected from Uniform Airman Record (UAR) data tapes generated by the Air Force Human Resources Laboratory (AFHRL). Eligible civilian participants were selected from civilian record data tapes generated by the Office of Civilian Personnel Operations (OCPO).

Data Processing and Analysis

Once job inventories are returned from the field, they are prepared so task responses and background information can be optically scanned. Biographical information (such as name, base, and AUTOVON extension) are keypunched onto discs and entered directly into the computer. Once both sets of data are entered into the computer, the task, background, and biographical information are merged to form a complete case record for each respondent. Computer-generated programs, using Comprehensive Occupational Data Analysis Program (CODAP) techniques, are then applied to the data.

Computer-generated job descriptions are available for DAFSC, TAFMS, and CONUS and Overseas groups, and include such information as percent members performing each task, the average percent time spent performing each task, and the cumulative average percent time spent by all members for each task in the inventory.

Task Factor Administration

Selected senior DAFSC 542X1 personnel holding 7-skill level were asked to complete a second booklet for either training emphasis (TE) or task difficulty (TD). The TE and TD booklets are processed separately from the job inventories. The rating information is then used in a number of different analyses discussed in more detail within this report. TE and TD raters were representative of the senior technicians in the field.

Task Difficulty. Each individual completing a task difficulty booklet was asked to rate all tasks on a 9-point scale (from extremely low to extremely high) as to the relative difficulty of each task in the inventory. Difficulty is defined as the length of time required by the average member to learn to do the task. Task difficulty data were independently collected from 33 experienced DAFSC 542X1 personnel. The interrater reliability (as assessed through components of variance of standard group means) for these raters was .95. The ratings were adjusted by the computer program so tasks of average difficulty have ratings of 5.00 and a standard deviation of 1.00. The resulting data essentially provide a rank ordering of tasks indicating the relative degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing task difficulty for each task item, it is possible to compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. An equation using number of tasks performed and the average difficulty per unit time spent (ADPUTS) as variables is the basis for the JDI. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so average JDI is 13.0. Thus, the more time a group spends on difficult tasks and the more tasks members perform, the higher the JDI.

Training Emphasis. Individuals completing training emphasis booklets were asked to rate tasks on a 10-point scale ranging from no training required to extremely heavy training required. Training emphasis is a rating of which tasks, in the opinion of the rater, require structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 33 experienced DAFSC 542X1 personnel. The interrater reliability (as assessed through the components of variance of standard group means) for these raters was .91, which indicated there was a high degree of agreement among raters as to which tasks required some form of structured training and which did not. Tasks rated highest in training emphasis had ratings of 4.87 and above. The average training emphasis rating was 3.27 and the standard deviation (SD) was 1.60.

When used in conjunction with other factors, such as percent members performing, task difficulty and training emphasis ratings can provide an insight into training requirements. This may help validate the lengthening or shortening of specific units of instruction in various training programs.

Survey Sample

Personnel were selected to participate in this survey to ensure an accurate representation across all MAJCOM and paygrade groups. In this study, all eligible personnel holding DAFSC 542X1 with 3-, 5-, and 7-skill levels and related civilian occupational series 2805, 2810, and 5407, were solicited for

their responses. Tables 1 and 1A reflect the major command distribution of personnel assigned to the specialty and civilian job series, respectively, as of November 1982. Table 2 reflects the percentage distribution by military paygrade. Table 3 reflects the distribution of the military survey sample in terms of TAFMS groups. Overall, a representative sample was obtained, with 581 (73%) of the eligible 542X1 personnel participating in the survey. Civilian representation was lower than military, since civilians participated on a strictly voluntary basis.

TABLE 1
COMMAND REPRESENTATION OF MILITARY SAMPLE
(AFSC 542X1)

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
SAC	23	27
TAC	18	16
MAC	13	11
ATC	11	13
USAFE	8	7
PACAF	8	9
AFLC	8	9
AFSC	6	4
AAC	3	2
USAFA	2	2

Total 542X1 Personnel Assigned - 933
 Total 542X1 Personnel Eligible for Survey* - 798
 Total in Sample - 581
 Percent of Assigned in Sample - 62%
 Percent of Eligible in Sample - 73%

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

NOTE: Manning figures as of November 1982

TABLE 1A
COMMAND REPRESENTATION OF SURVEY SAMPLE (CIVILIAN)

<u>COMMAND</u>	<u>PERCENT OF SURVEYED</u>	<u>PERCENT OF SAMPLE (215)</u>
AFLC	25	21
SAC	18	25
ATC	16	15
MAC	13	14
TAC	12	13
AFSC	7	8
USAFA	1	2
OTHERS	-	2

Total Civilian Personnel Surveyed - 308
 Total in Sample - 215
 Percent of Surveyed in Sample - 70%

* Denotes less than 1 percent

TABLE 2
PAYGRADE DISTRIBUTION OF MILITARY SURVEY SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
AIRMEN	31	27
E-4	35	33
E-5	20	24
E-6 & E-7	14	16

NOTE: Manning figures are as of March 1983

TABLE 3
TAFMS DISTRIBUTION OF MILITARY SURVEY SAMPLE

	<u>MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE</u>					
	<u>1-48</u>	<u>49-96</u>	<u>97-144</u>	<u>145-192</u>	<u>193-240</u>	<u>241+</u>
NUMBER ASSIGNED	579	172	76	62	37	10
NUMBER IN SAMPLE	266	164	64	33	44	10
PERCENT OF TOTAL SAMPLE	46%	28%	10%	6%	8%	2%

SPECIALTY JOBS (Career Ladder Structure)

One of the most important functions of an occupational survey is to examine the variety of jobs in the career ladder on the basis of what people are actually doing in the field, rather than how official career ladder documents say they are employed. The analysis of actual job structure is enhanced by the use of the Comprehensive Occupational Data Analysis Program (CODAP). By using CODAP, job functions are identified on the basis of similarity in tasks performed and relative time spent performing the tasks.

The specialty structure analysis process consists of determining the functional job structure of career ladder personnel in terms of job types, clusters, and independent job types. A job type is a group of individuals who perform many of the same tasks and also spend similar amounts of time performing them. When there is a substantial degree of similarity between different job types, they are grouped together and labeled as clusters. Finally, there are often cases of specialized job types too dissimilar to be grouped into any cluster. These unique groups are labeled independent job types.

Specialty Structure Overview

The job structure of the Electric Power Line career ladder was determined by performing a job type analysis of the 796 survey respondents (581 military and 215 civilians). Based on task similarity and the amount of time spent performing each task, the jobs performed by 542X1 personnel separated into 13 job groups. Of the 13 job groups, all but 3 grouped into 1 of 3 functional clusters. The three remaining job groups were independent job types which included Junior Power Line Installer Repair Personnel, Technical Training Instructors, and Linemen. No one technical duty made up a majority of a job incumbent's time in any cluster group. Rather, job time was spread over several technical areas, with the mix of duties and amount of time spent varying slightly among 542X1 personnel. A majority (67 percent) of these incumbents worked as Installation and Repair personnel. The job groups found within this survey are listed below and illustrated in Figure 1. The group (GRP) number shown beside each title is a reference to computer printouts provided to selected users. The letter "N" stands for the number of people in the group*.

* The N for a cluster will not always equal the sum of the groups within it, since individuals may not have grouped with any specific job type

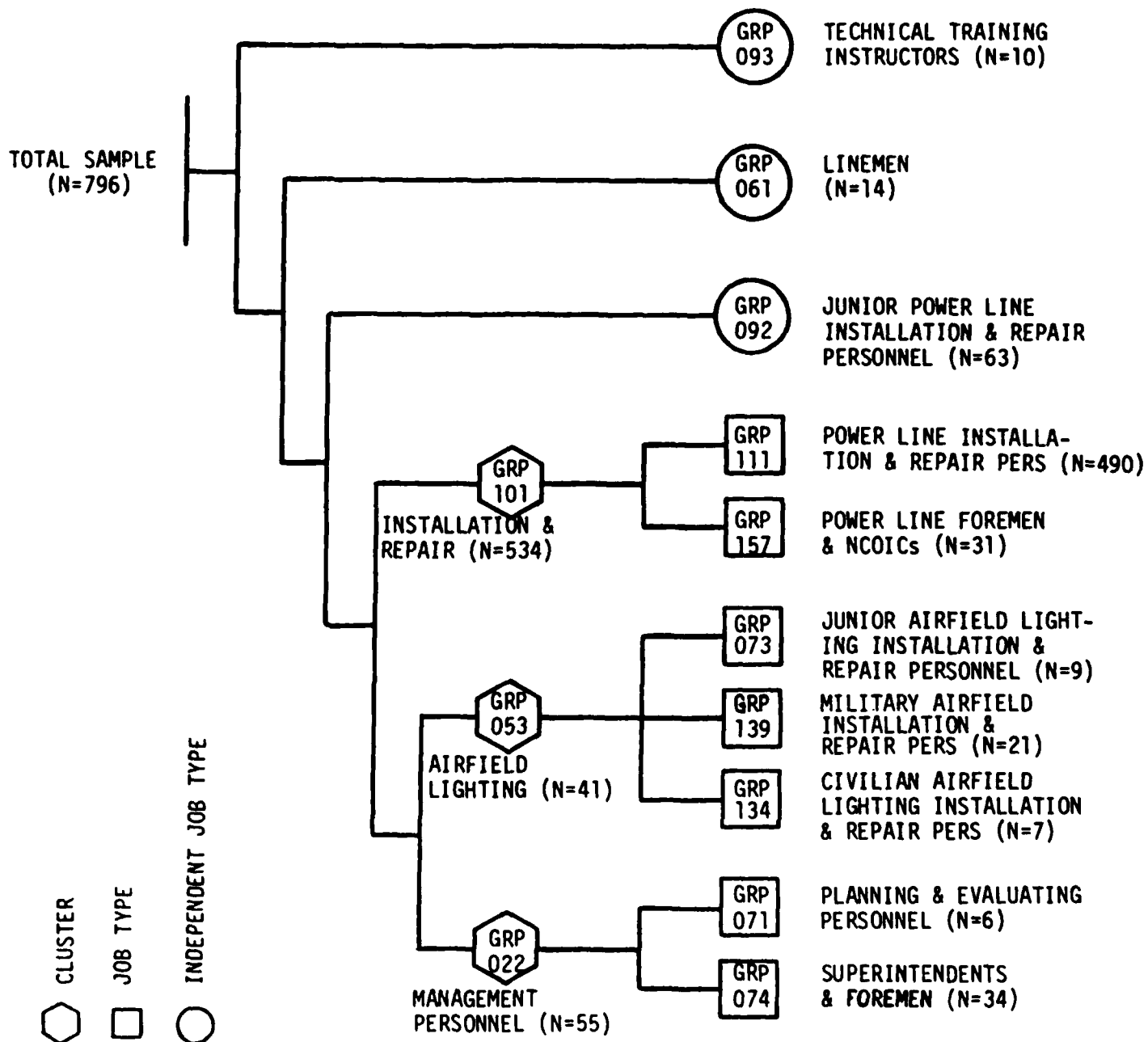
- I. MANAGEMENT PERSONNEL CLUSTER (GRP022, N=55)
 - A. Superintendents and Foremen Job Type (GRP074, N=34)
 - B. Planning and Evaluating Personnel Job Type (GRP071, N=6)
- II. AIRFIELD LIGHTING CLUSTER (GRP053, N=41)
 - A. Civilian Airfield Lighting Installation and Repair Personnel Job Type (GRP134, N=7)
 - B. Military Airfield Lighting Installation and Repair Personnel Job Type (GRP139, N=21)
 - C. Junior Military Airfield Lighting Installation and Repair Personnel Job Type (GRP073, N=9)
- III. INSTALLATION AND REPAIR CLUSTER (GRP101, N=534)
 - A. Power Line Foremen and NCOICs Job Type (GRP157, N=31)
 - B. Power Line Installation and Repair Personnel Job Type (GRP111, N=490)
- IV. JUNIOR POWER LINE INSTALLATION AND REPAIR PERSONNEL INDEPENDENT JOB TYPE (GRP092, N=63)
- V. LINEMEN INDEPENDENT JOB TYPE (GRP061, N=14)
- VI. TECHNICAL TRAINING INSTRUCTOR INDEPENDENT JOB TYPE (GRP093, N=10)

The respondents forming these groups accounted for 90 percent of the survey sample. The remaining 10 percent represented personnel who perform unique jobs and did not group with any job type or cluster.

Job Descriptions

Presented on the following pages are descriptions of each job listed in Figure 1. The information presented is limited to a brief description of the respondents who comprised the job groups and examples of tasks performed which indicate the nature of their jobs. Selected background data are provided for the job groups in Tables 4 and 5. A more extensive (but not complete) list of tasks performed by each group is provided in Appendix A.

FIGURE 1
ELECTRIC POWER LINE JOB STRUCTURE



I. MANAGEMENT PERSONNEL CLUSTER (GRPO22, N=55). The management cluster contains 55 people and comprises approximately 7 percent of the sample. Cluster personnel, on an average, spend approximately 70 percent of their job time on management and supervisory-related duties, such as planning, organizing, directing, and inspecting. The amount of time spent conducting informal training, handling of forms, and records administration are also included in the above mentioned percentage. Typical tasks performed by these cluster members include:

- inspect worksites
- review correspondence or reports
- interpret plans, sketches, wiring diagrams, or specification sheets
- establish work priorities
- conduct or attend staff meetings
- inspect quality of completed repairs
- evaluate new equipment or proposed modification of existing equipment
- prepare briefings
- maintain power outage logs
- perform spot inspections of operational equipment

Forty-five percent of these individuals are civilians, and the remaining 55 percent are military (44 percent of whom hold a 7-skill level and 11 percent hold a 5-skill level). They supervise an average of 10 subordinates. Military members of this cluster average 153 months in the career field and 164 months in service. This cluster contains two job types which are discussed below.

A. Superintendents and Foremen (GRPO74, N=34). These 34 individuals primarily are responsible for the management and supervision of power line functions. Approximately 72 percent of these individuals' job time is spent on five supervisory duties (planning, organizing, evaluating and inspecting, directing and implementing, and maintaining forms, publications, records, and training). Fifty-six percent of these members are civilians. The remaining 44 percent are military members. Thirty-eight percent of the group hold DAFSC 54271, and the remaining 6 percent hold DAFSC 54251. With an average military grade of E-7, and an average of 187 months in service, these personnel performed an average of 110 tasks and supervised an average of 12 subordinates. Common tasks include:

- establish work priorities
- plan or schedule work loads
- inspect worksites
- inspect quality of completed repair
- interpret plans, sketches, wiring diagrams or specification sheets
- establish shop requirements

design or improve work methods or procedures
implement or direct safety programs
instruct subordinates on policies or directives
write or review job descriptions

B. Planning and Evaluating Personnel (GRP071, N=6). This small group of six respondents are primarily responsible for performing a planning and evaluating function. Eighty-one percent of their job time was spent performing tasks from three duties (planning and organizing, evaluating and inspecting, and directing and implementing). This is a military group, 17 percent of the personnel hold DAFSC 54251 and 83 percent hold DAFSC 54271. Having an average grade of E-6, an average of 145 months in the career field, and an average of 194 months of military service, this group perform an average of only 39 tasks. Common tasks include:

compile data for use in reports or policies
review correspondence or reports
analyze production or inspection reports
write staff studies, surveys, or special reports
design or improve work methods or procedures
inspect worksites
evaluate delay or interruption of work production
schedules
establish shop requirements
inspect quality of completed repairs
estimate budget requirements

II. AIRFIELD LIGHTING CLUSTER (GRP053, N=41). This group of 41 incumbents work primarily on airfield lighting. They are responsible for removing, installing, or adjusting airfield light fixtures; inspecting airfield lights, beacon lights, or obstruction lights for condition and operation; inspecting or clearing airfield lighting system vaults or equipment; and removing or installing airfield lighting breakway coupling. Although members of this cluster spend a majority of their job time on airfield lighting functions, they also perform other technical tasks common to this ladder. A large percentage (76 percent) of the members are assigned overseas, more than any other cluster reported. These members average 5 years of experience in the career field, 6 years of military service, and perform an average of 122 tasks. Common tasks include:

dig trenches manually
lay cables in trenches
splice underground cables
test or date static grounds
trace underground cable
replace airfield lights
locate shorts in underground cable systems

- remove or install streetlight fixtures
- locate open circuits in underground cable systems
- splice lighting system cables

The average grade of the military personnel in this cluster is E-4. Twelve percent of the personnel in this cluster are civilians. This cluster contains three different kinds of jobs, as discussed below.

A. Civilian Airfield Lighting Installation and Repair Personnel (GRP134, N=7). This is a small group of WG-10 civilian personnel who are in job series 2810. These personnel have an average of 10 years experience in the career field and an average of 12 years of federal service. They perform an airfield lighting job consisting of an average of 103 tasks. Common tasks include:

- test or date static grounds
- splice airfield light cables
- splice undergrade cable
- replace airfield lights
- lay cables in trenches
- dig trenches manually
- remove or replace flood or security light bulbs
- trace underground cables
- operate portable radios

B. Military Airfield Lighting Installation and Repair Personnel (GRP139, N=21). This group of 21 respondents consists of all military personnel. A majority of these members hold the 5-skill level with an average grade of E-4. With an average of 61 months in the career field, 78 months in service, and 42 percent in their first enlistment, these personnel were involved primarily with airfield lighting functions and performed an average of 150 tasks. Ninety-one percent of these personnel are assigned to overseas locations (95 percent to USAFE and 5 percent to PACAF). The main distinctions between these personnel and the above described group are the average number of tasks performed and the percent members assigned overseas. Common tasks include:

- test or date static ground
- splice airfield light cables
- splice underground cables
- perform operator maintenance on high reach trucks
- tear down, inspect, clean, and assemble M-16 rifles
- operate portable radios
- locate open circuits in underground cable systems
- remove or install airfield light fixtures

maintain overseas utility systems
install electrical grounds

C. Junior Military Airfield Lighting Installation and Repair Personnel (GRP073, N=9). These individuals have less time in career field (average 39 months) and time in service (an average of 42 months) than all other airfield lighting personnel. They are all military and all are assigned to MAC. Sixty-seven percent are assigned overseas. Seventy-eight percent of these members are in their first enlistment. Although these personnel are involved primarily with airfield lighting functions, they spend more of their job time on the more routine airfield lighting functions than the other groups described. Common tasks include:

clean shop storage facilities
perform operator maintenance on high reach trucks
remove or install bulbs in energized street-
light fixtures
inspect or clean hand tools
lay cables in trenches
remove or install floodlight or security light
bulbs
remove or install lighting system photo-
electric cells
splice underground cables

III. INSTALLATION AND REPAIR CLUSTER (GRP101, N=534). This group includes 534 (67 percent) of the respondents in the survey sample and was composed primarily of 5- and 7-skill level airmen and civilians (46 percent, 14 percent, and 34 percent, respectively). The military personnel average over 7 years in the career field and over 6 years military service. These personnel perform the full scope of exterior lighting or power line functions which include installing and maintaining systems, power line poles, overhead conductor, distribution equipment, and underground cables, and inspecting electrical systems and components. In addition, almost one-third of these incumbents perform some supervisory function similar to team leaders or first-line supervisors. These military personnel have an average grade of E-4, 33 percent are in their first enlistment, and they perform an average of 260 tasks. Common tasks include:

orally or manually signal to power equipment operators
climb poles using body belts, safety straps, and
climbers
remove or install cutouts
remove or install service drops
hoist materials or equipment to lineman
fuse transformer banks

- dig holes using auger bits for poles or
guy anchors
- remove or install mounted transformers
- remove or install hardware of crossarm
- replace airfield lights

Other more specialized groups which make up this cluster and merit further description are discussed below.

A. Power Line Foremen and NCOICs (GRP157, N=31). The 31 incumbents in this group supervise electrical power line activities. Thirty-five percent of these personnel are civilian, while the remaining 65 percent are military personnel. Forty-two percent hold 7-skill level, and the remaining 23 percent hold 5-skill level. The military foremen and NCOICs have an average grade of E-6, an average of 12 years in the career field, 13 years in service, and supervise an average of 9 subordinates. They perform the largest average number of tasks (267) of all groups identified. Common tasks include:

- establish work priorities
- assign work to personnel
- coordinate work activities within sections or with
other base activities
- establish shop requirements
- conduct inventories of tools, equipment, or
supplies
- plan or schedule workload
- establish requirements for equipment, tools, or
supplies
- implement or direct safety programs
- inspect quality of completed repairs

B. Power Line Installation and Repair Personnel (GRP111, N=490). This job type of 490 members represents the largest group described in this study and includes 62 percent of the survey sample. This group consists of 34 percent civilian and 66 percent military (3-, 5-, and 7-skill level), with the military members holding an average grade of E-4 and an average of over 7 years in the career field. These personnel perform the full scope of exterior electrical work, which includes installing and maintaining lighting systems, power line poles, overhead conductors, distribution equipment, underground cables, and inspecting electrical systems and components. They perform an average of 261 tasks. Common tasks include:

- orally or manually signal to power equipment
operators
- remove or install fused cutouts
- remove or install service drops
- fuse transformer banks

- remove or install photoelectric cells
- connect or disconnect transformers
- remove or install pole mounted transformers
- remove or install guy anchors
- inspect pole hardware

Thirty-four percent of the military personnel are in their first enlistment.

IV. JUNIOR POWER LINE INSTALLATION AND REPAIR PERSONNEL (GRP092, N=63). Two percent of these personnel are civilians, while the remaining 98 percent are military. The members of this group represent the youngest or least experienced of all groups reported, with an average grade of E-4, 31 months in the career field, and 34 months military service. They are primarily involved with the more routine tasks associated with electrical power line functions. They perform an average of 124 tasks. Common tasks include:

- clean shop or storage facilities
- remove or install lighting system photoelectric cells
- climb poles using body belts, safety straps, and
climbers
- remove or replace streetlight fixtures
- hoist materials or equipment to linemen
- perform operator maintenance on high reach trucks
- remove or install fuse cutouts
- pump water from manholes
- fill holes or tamp earth around poles or guy anchor
using tampers

Sixty percent of the military personnel are in their first enlistment.

V. LINEMEN (GRP061, N=14). This small group of 14 people is primarily responsible for performing lineman functions. Slightly over 67 percent of their job time is spent on three major duties: installing and maintaining power line poles, installing and maintaining overhead conductors, and installing and maintaining distribution systems. Fourteen percent of these personnel are civilian, while the remaining 86 percent are military (22 percent 3-skill level, 64 percent 5-skill level). They have an average grade of E-4, an average of 43 months in the career field, 59 months military service, and 36 percent are in their first enlistment. These members perform an average of 98 tasks. Common tasks include:

- climb poles using body belts, safety straps, and
climbers
- cut pole gains and drill bolt holes
- remove soil or rock from auger bits

- raise pole into position using derrick and power winch methods
- rig equipment for erections or removals
- determine depth and diameter of holes for pole installation
- load or unload poles on maintenance trucks
- remove or install insulators for overhead connectors
- remove or install hardware on crossarm

VI. TECHNICAL TRAINING INSTRUCTORS (GRP093, N=10). This group consists of military personnel who are assigned to Sheppard Technical Training Center. Fifty percent of these members are 5-skill level and 50 percent are 7-skill level DAFSCs. They are primarily responsible for conducting classroom instruction. With an average of 112 months in the career field and 121 months in military service, they perform an average of 142 tasks. Common tasks include:

- conduct formal classroom instruction
- administer written, oral, or performance tests
- demonstrate how to locate or interpret technical information
- climb poles using body belts, safety straps, and climbers
- direct pole removal activities
- direct pole installation activities
- perform or practice pole top rescue procedures
- write test questions
- arrange for training aids, space, or equipment

Twenty percent of these personnel are in their first enlistment.

Comparison of Military and Civilian Jobs

Included in the jobs identified in this study are both military personnel (AFSC 54231, 54251, and 54271) and civilians (job series 2810, 2805, and 5407). Both military and civilians were working in several job groups; the exceptions were: Civilian Airfield Lighting Installation and Repair Personnel, Military Airfield Lighting Installation and Repair Personnel, Planning and Evaluating Personnel, Junior Airfield Lighting Installation and Repair Personnel, and Technical Training Instructors. Within those job groups containing both military and civilians, both were performing similar functions. Most of the Military Airfield Lighting Installation and Repair Personnel are assigned overseas, while all members of the civilian group are assigned CONUS. The military airfield group members perform a higher average number of tasks than do the civilian airfield group members. The military group members also spend more time on contingency functions usually inherent in overseas assignments. The Planning and Evaluating Personnel job group consists of military members

who are responsible for planning and evaluating functions. Table 5A provides information which compares how military and civilians are represented within major job groupings.

The current classification structure is supported by survey data. As indicated in AFR 39-1, duties are broadly described, likewise civilian standards and descriptions broadly but accurately describe their duties. This is a technical career field and the tasks performed by both military and civilians characterize them as performing technical jobs. Most of the variability in task performance was not a function of being military or civilian, but was due to work assignment (example--airfield lighting versus nonairfield lighting).

TABLE 4
PERCENT TIME SPENT ON DUTIES BY 542X1 JOB GROUPS

DUTIES	POWER LINE MGT CLUSTER (GRP022, N=55)	JOB TYPES		AIR FLD LIGHTING PERS (GRP053, N=41)	JOB TYPES		JOB TYPES		JR AIR FLD LIGHT INSTR & REPAIR PERS (GRP134, N=22)	JR AIR FLD LIGHT INSTR & REPAIR PERS (GRP074, N=9)
		SUPV & FOREMEN (GRP074, N=34)	PLAN & EVAL PERS (GRP071, N=6)		CIV AIR FLD LIGHT INSTR & REPAIR PERS (GRP134, N=71)	MIL AIR FLD LIGHT INSTR & REPAIR PERS (GRP134, N=22)				
A PLANNING AND ORGANIZING	14	17	35	1	1	2	2	1	1	1
B DIRECTING AND IMPLEMENTING	14	15	16	3	4	2	2	4	2	4
C EVALUATING AND INSPECTING	15	20	30	2	2	2	2	2	2	2
D TRAINING	10	11	5	2	1	2	2	1	2	2
E MAINTAINING FORMS, PUBLICATIONS, AND RECORDS	12	14	8	6	4	5	5	4	5	4
F INSTALLING AND MAINTAINING POWER LINE POLES	3	3	0	4	2	2	2	2	2	2
G INSTALLING AND MAINTAINING OVERHEAD CONDUCTORS	1	1	0	1	2	1	1	2	1	2
H INSTALLING AND MAINTAINING DISTRIBUTION	5	2	0	5	5	4	4	5	4	7
I LAYING AND MAINTAINING UNDERGROUND CABLES	2	3	0	18	24	16	16	18	16	18
J INSTALLING AND MAINTAINING LIGHTING SYSTEMS	3	1	0	30	36	30	30	22	30	22
K INSTALLING AND MAINTAINING SIRENS, ALARM SYSTEMS, AND TV SYSTEM COMPONENTS	0	0	0	1	0	1	1	0	1	1
L INSPECTING AND MAINTAINING CATHODIC PROTECTION SYSTEMS	0	0	0	0	0	0	0	0	0	0
M INSPECTING ELECTRICAL SYSTEMS AND COMPONENTS	3	2	1	7	8	8	8	8	8	5
N INSPECTING AND MAINTAINING TOOLS, EQUIPMENT, AND FACILITIES	4	3	0	6	6	6	6	6	6	8
O PRACTICING SAFETY AND RENDERING FIRST AID	5	6	2	4	4	4	4	4	4	5
P PERFORMING CONTINGENCY OR TACTICAL TEAM FUNCTIONS	7	6	3	11	2	2	2	2	2	15

TABLE 4 (CONTINUED)

PERCENT TIME SPENT ON DUTIES BY 542X1 JOB GROUPS

DUTIES	JOB TIMES				TECHNICIAN INSTRUMENT GROUPS (N-10)
	CONSTRUCTION (N-1)	REPAIR (N-2)	REPAIR (N-3)	REPAIR (N-4)	
A. PLANNING AND ORGANIZING	1	1	1	1	1
B. DIRECTING AND IMPLEMENTING	1	1	1	1	1
C. EVALUATING AND INSPECTING	1	1	1	1	1
D. TRAINING	1	1	1	1	1
E. MAINTAINING FORMS, PUBLICATIONS, AND RECORDS	1	1	1	1	1
F. INSTALLING AND MAINTAINING POWER LINE POLES	11	11	11	11	11
G. INSTALLING AND MAINTAINING OVERHEAD CONDUIT	11	11	11	11	11
H. INSTALLING AND MAINTAINING DISTRIBUTION	11	11	11	11	11
I. LAYING AND MAINTAINING UNDERGROUND CABLES	11	11	11	11	11
J. INSTALLING AND MAINTAINING LIGHTING SYSTEMS	11	11	11	11	11
K. INSTALLING AND MAINTAINING STRENGTH, ALARM SYSTEMS, AND TV SYSTEM COMPONENTS	11	11	11	11	11
L. INSPECTING AND MAINTAINING CATHODIC PROTECTION SYSTEMS	11	11	11	11	11
M. INSPECTING ELECTRICAL SYSTEMS AND COMPONENTS	11	11	11	11	11
N. INSPECTING AND MAINTAINING TOOLS, EQUIPMENT, AND FACILITIES	11	11	11	11	11
O. PRACTICING SAFETY AND RENDERING FIRST AID	11	11	11	11	11
P. PERFORMING CONTINGENCY OR TACTICAL TEAM FUNCTIONS	11	11	11	11	11

TABLE 5

BACKGROUND INFORMATION FOR 542X1 CLUSTERS AND INDEPENDENT JOB TYPES
(PERCENT RESPONDING)

POWER LINE MGT CLUSTER (GRP022, N=55)	JOB TYPES SUPT & FOREMEN (GRP074, N=34)		AIR FLD LIGHTING PERS (GRP053, N=41)		CIV AIR FLD LIGHT INSTL & REPAIR PERS (GRP134, N=7)		MIL AIR FLD LIGHT INSTL & REPAIR PERS (GRP139, N=21)		JR AIR FLD LIGHT INSTL & REPAIR PERS (GRP073, N=9)	
	74%	74%	41%	24%	71%	9%	33%	9%	1%	33%
55	34	6	41	7	21	9				
7%	4%	*	5%	1%	3%	1%				
74%	74%	67%	24%	71%	9%	33%				

NUMBER IN GROUP:
PERCENTAGE OF TOTAL SAMPLE:
PERCENT IN CONUS:

DAFSC DISTRIBUTION:	E-6	E-7	E-7	E-7	E-4	E-4	E-5	E-4	E-4	E-4
54231	0	0	0	0	22	0	0	14	44	44
54251	11	6	0	0	49	0	0	62	45	45
54271	44	38	100	0	17	0	0	24	11	11
CIVILIANS	45	56	-	0	12	100	0	0	0	0

AVERAGE GRADE:
AVERAGE MONTHS IN CAREER FIELD:
AVERAGE MONTHS IN SERVICE:

	E-6	E-7	E-7	E-7	E-4	E-4	E-5	E-4	E-4	E-4
10	10	3	0	0	49	14	14	43	78	78
10	10	12	3	3	3	1	1	4	2	2
92	110	110	39	122	103	150	103	150	93	93
5.2	5.3	5.3	5.6	4.7	4.7	4.7	4.7	4.7	4.5	4.5

PERCENT IN FIRST ENLISTMENT:
AVERAGE NUMBER SUPERVISED:
AVERAGE NUMBER OF TASKS PERFORMED:
JOB DIFFICULTY INDEX (JDI) (AVG JDI = 13.00):

MAJOR COMMAND ASSIGNED:	11	18	0	2	0	0	0	0	0	0
SAC	11	18	0	2	0	0	0	0	0	0
MAC	11	12	16	0	0	0	0	0	100	100
TAC	11	12	0	24	5	0	14	0	0	0
PACAF	20	9	17	5	28	5	28	5	0	0
USAFE	9	6	33	0	0	0	0	95	0	0
AFSC	14	24	0	5	29	0	0	0	0	0
ATC	7	9	17	56	0	0	0	0	0	0
AFLC	2	3	0	0	0	0	0	0	0	0
USFA	2	0	0	0	0	0	0	0	0	0
AAC	7	9	17	8	29	5	29	5	0	0
OTHER	6	5	0	0	0	0	0	0	0	0

TABLE 5 (CONTINUED)

BACKGROUND INFORMATION FOR 542X1 CLUSTERS AND INDEPENDENT JOB TYPES
(PERCENT RESPONDING)

	JOB TYPES						
	INSTL & REPAIR PERS (GRP101, N=534)	POWER LINE FOREMEN & MCOIC'S (GRP157, N=31)	POWER LINE INSTL REPAIR (GRP111, N=490)	JR POWER LINE INSTL REPAIR PERS (GRP092, N=63)	LINEMEN (GRP061, N=14)	TECH TNG INSTRS (GRP093, N=10)	
NUMBER IN GROUP:	534	31	490	63	14	10	
PERCENTAGE OF TOTAL SAMPLE:	67%	4%	62%	8%	2%	1%	
PERCENT IN COMUS:	90	84	90	87	93	100	
DAFSC DISTRIBUTION:							
54231	6	-	7	29	22	-	
54251	46	23	47	67	64	50	
54271	14	42	12	4	-	50	
CIVILIANS	34	35	34	2	14	-	
AVERAGE GRADE:							
AVERAGE MONTHS IN CAREER FIELD:	E-4	E-6	E-4	E-4	E-4	E-5	
AVERAGE MONTHS IN SERVICE:	93	138	91	31	43	112	
	74	146	55	47	71	121	
PERCENT IN FIRST ENLISTMENT:							
AVERAGE NUMBER SUPERVISED:	33%	-	34%	60%	36%	20%	
AVERAGE NUMBER OF TASKS PERFORMED:	6	9	6	2	2	8	
	260	267	261	121	98	142	
MAJOR COMMAND ASSIGNED:							
SAC	17	13	17	22	21	0	
MAC	14	16	13	11	15	0	
TAC	15	19	14	9	14	0	
PACAF	11	10	10	8	14	0	
USAFE	6	3	6	1	0	0	
AFSC	27	23	28	35	29	0	
ATC	1	3	1	0	0	100	
AFLC	1	0	2	0	0	0	
USAFA	1	0	2	2	0	0	
AAC	5	10	5	2	7	0	
OTHER	2	3	2	2	0	0	

TABLE 5A
MILITARY AND CIVILIAN DISTRIBUTION ACROSS JOBS

<u>JOB TYPES</u>	<u>CIVILIAN</u>	<u>MILITARY</u>
MANAGEMENT CLUSTER	45%	55%
AIRFIELD LIGHTING CLUSTER	12%	88%
INSTALLATION AND REPAIR CLUSTER	34%	66%
JUNIOR POWER LINE INSTALLER REPAIRER JOB TYPE	29%	98%
LINEMAN JOB TYPE	14%	86%
TECHNICAL TRAINING INSTRUCTORS	-	100%

ANALYSIS OF DAFSC GROUPS

In addition to identification and analysis of the job variations of the 542X1 career ladder, the 3-, 5-, and 7-skill level groups within the sample were also examined. There is no 9-skill level or CEM level specifically designated for the 542X1 career field, as all 542XX ladders have a common 54299 and 54200 CEM. The DAFSC analysis reveals similarities and differences between the skill-level groups in relation to tasks performed and the relative percentage of time spent performing particular duties. The data may be used in determining the accuracy of career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standards (STS), as well as determining training needs.

The distribution of 542X1 skill levels across career ladder job groups is displayed in Table 6, while Table 6A displays the average percent time spent on each duty across skill-level groups. Discussion of specific skill-level groups is presented below.

DAFSC 54231. The 3-skill level personnel, representing 10 percent (81 members) of the 542X1 sample, perform an average of 134 tasks. These members spend 94 percent of their job time on technical duties, with a majority reporting they spend approximately one-half of their job time performing tasks related to installing and maintaining lighting systems, power line poles, distribution equipment and overhead conductors, and performing contingency or tactical team functions. Forty-one percent of the 3-skill level individuals were in the Installation and Repair Job Cluster (See Table 6). Examples of such tasks performed include:

- read service meters
- tear down, inspect, clean, and reassemble M-16 rifles
- remove or install lighting systems photoelectric cells
- fire M-16 rifles
- remove or install streetlight fixtures
- perform operator maintenance on high reach trucks
- remove or install bulbs in deenergized streetlights
- replace airfield lights
- remove or install airfield light fixtures

Table 7 lists additional tasks performed by this group to illustrate the kinds of tasks performed by the majority of 3-skill level personnel.

DAFSC 54251. The 372 members (47 percent of survey sample) of the 5-skill level group perform a slightly broader job than indicated by 3-skill level respondents, with 87 percent of their duty time devoted to technically oriented tasks. Table 8 presents examples of tasks performed by this group. Note that many of the tasks are the same as for the 3-skill level group. The members of

this skill-level group perform an average of 190 tasks and spend approximately one-half of their job time on functions related to installing and maintaining lighting systems, power line poles, overhead connectors and distribution systems, and laying and maintaining underground cables. Some 5-skill level personnel (presumably the more senior ones) take on supervisory and administrative functions (Duties A, B, C, and D). Sixty-six percent of these personnel are in the Installation and Repair Job Cluster (Table 6). Tasks which clearly differentiate between 3- and 5-skill level are related to supervision and tasks requiring more technical ability (see Table 9). Note that even some 3-skill level personnel (11 percent) report they conduct OJT or demonstrate repair techniques. This may be a function of the level of experience in the career ladder; almost 50 percent of the military sample are in their first enlistment.

DAFSC 54271. Seven-skill level personnel represented 15 percent (121 members) of the 542X1 survey sample. They performed an average of 208 tasks, with 128 of those tasks accounting for over 50 percent of their job time. Although much (66 percent) of their job time was spent on technical functions, supervisory, managerial, and administrative tasks are performed by the 7-skill level group. Table 10 presents examples of tasks for this group which indicate the range of the job, with 75 percent of the group preparing APRs, while 67 percent direct installation of underground system cables. Thus, the 7-skill level job is a mix of technical and supervisory tasks. Sixty-one percent of these members are in the Installation and Repair Job Cluster (Table 6).

Differences between 5- and 7-skill level personnel are reflected by the listing of tasks in Table 11. As would be expected, the major differences in tasks performed involve supervisory and managerial responsibilities.

TABLE 6
DISTRIBUTION OF SKILL LEVELS ACROSS JOB GROUPS
(PERCENT MEMBERS PERFORMING)

MAJOR JOB GROUPS	SKILL LEVELS		
	3-SKILL	5-SKILL	7-SKILL
MANAGEMENT CLUSTER (GRP022, N=55)	-	2%	20%
AIRFIELD LIGHTING CLUSTER	11%	5%	5%
INSTALLATION AND REPAIR CLUSTER (GRP101, N=534)	41%	66%	61%
JUNIOR POWER LINE INSTALLER REPAIRER JOB TYPE (GRP092, N=63)	22%	11%	1%
LINEMAN JOB TYPE (GRP061, N=14)	3%	2%	-
TECHNICAL TRAINING INSTRUCTOR JOB TYPE	-	1%	4%
NONGROUPED	23%	13%	9%
	100%	100%	100%

TABLE 6A

AVERAGE PERCENT TIME SPENT PERFORMING DUTIES BY 542X1 DAFSC GROUPS

DUTIES	DAFSC 54231 (N=81)	DAFSC 54251 (N=372)	DAFSC 54271 (N=121)
A PLANNING AND ORGANIZING	*	2	6
B DIRECTING AND IMPLEMENTING	2	3	7
C EVALUATING	2	3	9
D TRAINING	*	2	6
E MAINTAINING FORMS, PUBLICATIONS, AND RECORDS	3	3	6
F INSTALLING AND MAINTAINING POWER LINE POLES	15	15	9
G INSTALLING AND MAINTAINING OVERHEAD CONDUCTORS	10	11	7
H INSTALLING AND MAINTAINING DISTRIBUTION EQUIPMENT	11	10	7
I LAYING AND MAINTAINING UNDERGROUND CABLES	9	9	8
J INSTALLING AND MAINTAINING LIGHTING SYSTEMS	18	18	11
K INSTALLING AND MAINTAINING SIRENS, ALARM SYSTEMS, AND TV SYSTEM COMPONENTS	*	1	1
L INSPECTING AND MAINTAINING CATHODIC PROTECTION SYSTEMS	*	*	*
M INSPECTING ELECTRICAL SYSTEMS AND COMPONENTS	7	6	5
N INSPECTING AND MAINTAINING TOOLS, EQUIPMENT, AND FACILITIES	9	8	6
O PRACTICING SAFETY AND RENDERING FIRST AID	3	4	4
P PERFORMING CONTINGENCY OR TACTICAL TEAM FUNCTIONS	10	8	8

* Denotes less than 1 percent

TABLE 7

EXAMPLES OF TASKS PERFORMED BY DAFSC 54231 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
N408 CLEAN SHOP OR STORAGE FACILITIES	85
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	83
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	81
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	81
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	80
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	80
P457 FIRE M-16 RIFLES	80
H207 CLEAR OR CONTROL VEGETATION FROM SUBSTATION GROUNDS	79
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	77
H237 REMOVE OR INSTALL FUSED CUTOUPS	75
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	74
N412 INSPECT OR CLEAN HANDTOOLS	74
F143 REMOVE OR INSTALL GUY WIRES	74
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	74
J332 REMOVE OR INSTALL BULBS IN ENERGIZED STREETLIGHT FIXTURES	73
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	73
H242 REMOVE OR INSTALL SERVICE DROPS	73
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	72
P502 TEAR DOWN, INSPECT, CLEAN, AND REASSEMBLE M-16 RIFLES	70
I277 PUMP WATER FROM MANHOLES	69
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	68
J345 REMOVE OR INSTALL RECREATIONAL LIGHT BULBS	68
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	68
J303 ADJUST STREET FIXTURES	68
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	68
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	67
P500 PUT ON OR TAKE OFF CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	65
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	64
J352 REPLACE AIRFIELD LIGHTS	64
I259 DIG TRENCHES MANUALLY	64
H230 READ SERVICE METERS	63
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	60
P451 ASSEMBLE AND TOW AM-2 MATTING FOR RAPID RUNWAY REPAIR	53
M402 TEST OR DATE STATIC GROUNDS	53
P455 ERECT TENTS	48

TABLE 8

EXAMPLES OF TASKS PERFORMED BY DAFSC 54251 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
N408 CLEAN SHOP OR STORAGE FACILITIES	90
F116 CLIMB POLES USING BODY FELT, SAFETY STRAP, AND CLIMBERS	90
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	87
N412 INSPECT OR CLEAN HANDTOOLS	86
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	85
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	85
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	85
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	85
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	84
H237 REMOVE OR INSTALL FUSED CUTOUTS	83
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	83
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	83
P457 FIRE M-16 RIFLES	83
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	82
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	81
F119 CUT POLE GAINS AND DRILL BOLT HOLES	81
H242 REMOVE OR INSTALL SERVICE DROPS	81
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	81
I277 PUMP WATER FROM MANHOLES	81
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	81
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	81
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	80
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	80
F147 REMOVE POLES USING WINCH LINES	79
J352 REPLACE AIRFIELD LIGHTS	79
N429 PERFORM OPERATOR MAINTENANCE ON LINE TRUCKS	79
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	78
G203 TRIM OR CUT TREES USING HAND EQUIPMENT	78
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	78
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	75
M383 INSPECT AIRFIELD LIGHTS, BEACON LIGHTS, OR OBSTRUCTION LIGHTS FOR CONDITION AND OPERATION	73
J332 REMOVE OR INSTALL BULBS IN ENERGIZED STREETLIGHT FIXTURES	73
J331 REMOVE OR INSTALL BULBS IN ENERGIZED AIRFIELD LIGHT FIXTURES	73
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	67

TABLE 9

TASKS WHICH BEST DIFFERENTIATE BETWEEN 3- AND 5-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54231 (N=81)	DAFSC 54251 (N=372)	DIFFERENCE
I284 RIG CABLES AND WIND LINES FOR PULLING UNDERGROUND CABLES	23	53	-30
F123 DIRECT POLE INSTALLATION ACTIVITIES	28	58	-30
F124 DIRECT POLE REMOVAL ACTIVITIES	28	57	-29
I264 INSPECT OR GUIDE WINCH LINES AS CABLES ARE PULLED INTO DUCTS	26	54	-28
B23 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	2	28	-26
N420 INSPECT, CLEAN, OR LUBRICATE WINCH LINE TAKEUP REELS	22	47	-25
O440 LOCK AND TAG SWITCHES PRIOR TO DISTRIBUTION SYSTEM WORK	33	58	-25
I285 RIG MANHOLES FOR CABLE PULLING	30	54	-24
FI40 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	51	75	-24
G181 REMOVE OR INSTALL TERMINATION KITS	38	63	-25
J324 PERFORM LIGHTING SYSTEM VOLTAGE CHECKS	25	49	-24
J337 REMOVE OR INSTALL ISOLATING (IL) TRANSFORMERS	46	70	-24
D65 CONDUCT ON-THE-JOB TRAINING (OJT)	11	35	-24
J327 REMOVE OR INSTALL AIRFIELD LIGHT CONTROL COMPONENTS	19	42	-23
J333 REMOVE OR INSTALL CONDENSER DISCHARGE CABINET COMPONENTS	16	39	-23
J313 ISOLATE FLOODLIGHT OR SECURITY LIGHT CIRCUITS	30	53	-23
N413 INSPECT OR CLEAN HOT LINE TOOLS	51	74	-23
FI50 RIG POLES FOR ERECTIONS OR REMOVALS	44	67	-23
N437 TEST HOT LINE TOOLS	15	38	-23
N421 INSPECT, CLEAN, OR LUBRICATE WINCHES OR CABLES	35	57	-22
FI33 LOAD OR UNLOAD POLES ON FLATBED TRUCKS	25	47	-22

TABLE 10

EXAMPLES OF TASKS PERFORMED BY DAFSC 54271 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
0442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	81
B31 INTERPRET PLANS, SKETCHES, WIRING DIAGRAMS, OR SPECIFICATION SHEETS	81
P457 FIRE M-16 RIFLES	80
B24 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	79
B23 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	79
C57 PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	78
B20 ASSIGN WORK TO PERSONNEL	77
C59 WRITE AIRMAN PERFORMANCE REPORTS	75
B22 COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	74
N408 CLEAN SHOP OR STORAGE FACILITIES	74
0446 PERFORM OR PRACTICE RESUSCITATION	73
C53 INSPECT WORKSITES	72
B34 SELECT MATERIAL OR EQUIPMENT FOR CONSTRUCTION OR MAINTENANCE JOBS	70
B21 CONDUCT INVENTORIES OF TOOLS, EQUIPMENT, OR SUPPLIES	70
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	70
I261 DIRECT INSTALLATION OF UNDERGROUND SYSTEM CABLES	67
C52 INSPECT QUALITY OF COMPLETED REPAIRS	67
E89 COMPLETE AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	65
A3 DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	65
D76 INSTRUCT SUBORDINATES ON POLICIES OR DIRECTIVES	64
A12 ESTABLISH WORK PRIORITIES	64
E111 VERIFY INFORMATION ON WORK ORDERS	62
B32 REVIEW CORRESPONDENCE OR REPORTS	60
A2 CONDUCT OR ATTEND STAFF MEETINGS	60
A16 PLAN OR SCHEDULE WORKLOAD	60
P475 OPERATE PORTABLE RADIOS	60
E92 COMPLETE AF FORMS 1800 (OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT (GENERAL PURPOSE VEHICLE))	58
H230 READ SERVICE METERS	56
D80 REVIEW TRAINING PROGRESS OF INDIVIDUALS	56
C44 EVALUATE LINE OR SYSTEM REWORK REQUIREMENTS	54
A1 COMPILE DATA FOR USE IN REPORTS OR POLICIES	52
C40 COMPUTE MANHOUR ESTIMATES FOR REPAIR OF LINES OR SYSTEMS	48
C39 COMPUTE COST ESTIMATES FOR REPAIR OF LINES OR SYSTEMS	42

TABLE 11

TASKS WHICH BEST DIFFERENTIATE BETWEEN 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54251 (N=372)	DAFSC 54271 (N=121)	DIFFERENCE
C59 WRITE AIRMAN PERFORMANCE REPORTS	23	75	-52
B22 COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	23	74	-51
B24 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	28	79	-51
B23 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	28	79	-51
D67 COUNSEL AIRMEN ON TRAINING PROGRESS	21	69	-48
B20 ASSIGN WORK TO PERSONNEL	30	77	-47
C42 EVALUATE INDIVIDUALS OR RECOMMEND PROMOTION, DEMOTION, OR RECLASSIFICATION	13	60	-47
B32 REVIEW CORRESPONDENCE OR REPORTS	13	60	-47
D83 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING COURSES	6	52	-46
C49 INDORSE AIRMAN PERFORMANCE REPORTS	9	55	-46
D66 CONDUCT SUPERVISORY ORIENTATION OF NEWLY ASSIGNED PERSONNEL	14	59	-45
D63 ASSIGN OJT TRAINERS	7	52	-45
A16 PLAN OR SCHEDULE WORKLOAD	15	60	-45
C52 INSPECT QUALITY OF COMPLETED REPAIRS	22	67	-45
D71 ESTIMATE INDIVIDUAL TRAINING NEEDS	15	60	-45
E98 COMPLETE AF FORMS 561 (BASE CIVIL ENGINEER WEEKLY SCHEDULE)	19	62	-43
A2 CONDUCT OR ATTEND STAFF MEETINGS	17	60	-43
D76 INSTRUCT SUBORDINATES ON POLICIES OR DIRECTIVES	21	64	-43
A3 DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	23	65	-42

Summary

Career ladder progression is well defined. Overall, the responsibilities of the 3- and 5-skill level incumbents are similar. Both groups spend the vast majority of their job time performing technical tasks. In comparison, 7-skill level personnel also spend a majority of their job time on technical functions; however, they are more involved with supervisory, management, training, and administrative tasks than 3- and 5-skill level personnel.

COMPARISON OF SURVEY DATA TO AFR 39-1 SPECIALTY DESCRIPTIONS

Data for 3-, 5-, and 7-skill level groups were compared to the AFR 39-1 Specialty Descriptions for Electric Power Line Specialists and Technicians, dated 15 September 1984. These descriptions provide a broad overview of the duties performed by each skill level within the career ladder. Based on the previously presented DAFSC analysis, the 3-, 5-, and 7-skill level specialty descriptions appear complete and accurately reflect the overall duties and responsibilities of these personnel. The 7-skill level description not only reflected supervisory responsibilities, but the maintenance duties as well, which is appropriate.

ANALYSIS OF EXPERIENCE (TAFMS) GROUPS

An analysis was also made comparing tasks and job differences among individuals grouped by time in service (TAFMS) to determine how personnel utilization patterns change as experience increases. Table 12 provides a list of the relative amount of time spent on duties by members of each TAFMS group. As the level of experience increased, respondents spent slightly greater percentages of their job time performing supervisory and management functions. The major emphasis of this job is technical; therefore, a majority of the job time of all enlistment groups is devoted to technical functions.

First-Enlistment Personnel

Figure 2 presents a distribution of first-term 542X1 respondents across job groups identified in the SPECIALTY JOBS section of this report. As illustrated in Figure 2, first-enlistment personnel participated in a full range of activities and were members of all of the technically-oriented jobs. Sixty-two percent of the 1-48 months personnel were installing and repairing electrical power lines. Fourteen percent were working as junior power line installation and repair personnel and 8 percent were maintaining airfield lighting. Only 1 percent were assigned to technical training instructor positions at Sheppard AFB, 2 percent as linemen, and 2 percent as power line

managers. As discussed in the Specialty Jobs section of this report, and displayed in Figure 2, personnel in their first 4 years in the specialty performed tasks related to all major job clusters, with a majority of them working as power line installation and repair personnel.

Since the first job (1-24 months TAFMS) and the first enlistment (1-48 months TAFMS) are the target population for initial skill training, the tasks they perform are most important. Table 13 provides examples of tasks commonly performed by airmen with 1-48 months TAFMS. Common tasks performed by these personnel include general installation and repair, contingency and general maintenance actions, such as fire M-16 rifles, clean shop or storage facilities, and remove or install service drops.

TABLE 12

RELATIVE TIME SPENT ON DUTIES BY TAFMS GROUPS

DUTIES	1-48 (N=266)	49-96 (N=164)	97-144 (N=64)	145-192 (N=33)	193-240 (N=44)	.41+ (N=10)
A PLANNING AND ORGANIZING	1	1	5	5	9	10
B DIRECTING AND IMPLEMENTING	2	3	6	9	9	11
C EVALUATING AND INSPECTING	2	3	6	9	11	14
D TRAINING	1	2	5	6	9	5
E MAINTAINING FORMS, PUBLICATIONS, AND RECORDS	3	3	5	5	7	8
F INSTALLING AND MAINTAINING POWER LINE POLES	16	15	10	8	7	9
G INSTALLING AND MAINTAINING OVERHEAD CONDUCTORS	11	11	8	6	6	6
H INSTALLING AND MAINTAINING DISTRIBUTION EQUIPMENT	10	9	9	7	6	5
I LAYING AND MAINTAINING UNDERGROUND CABLES	10	9	9	7	7	4
J INSTALLING AND MAINTAINING LIGHTING SYSTEMS	19	15	14	12	8	9
K INSTALLING AND MAINTAINING SIRENS, ALARM SYSTEMS, AND TV SYSTEM COMPONENTS	1	1	1	1	1	1
L INSPECTING AND MAINTAINING CATHODIC PROTECTION SYSTEMS	*	*	*	*	*	*
M INSPECTING ELECTRICAL SYSTEMS AND COMPONENTS	7	6	5	4	3	4
N INSPECTING AND MAINTAINING TOOLS, EQUIPMENT, AND FACILITIES	8	8	7	6	5	5
O PRACTICING SAFETY AND RENDERING FIRST AID	3	4	3	4	4	3
P PERFORMING CONTINGENCY OR TACTICAL TEAM FUNCTIONS	8	9	7	6	9	6

FIGURE 2

DISTRIBUTION OF FIRST-ENLISTMENT PERSONNEL
ACROSS JOB SPECIALTY GROUPS
(PERCENT MEMBERS RESPONDING)

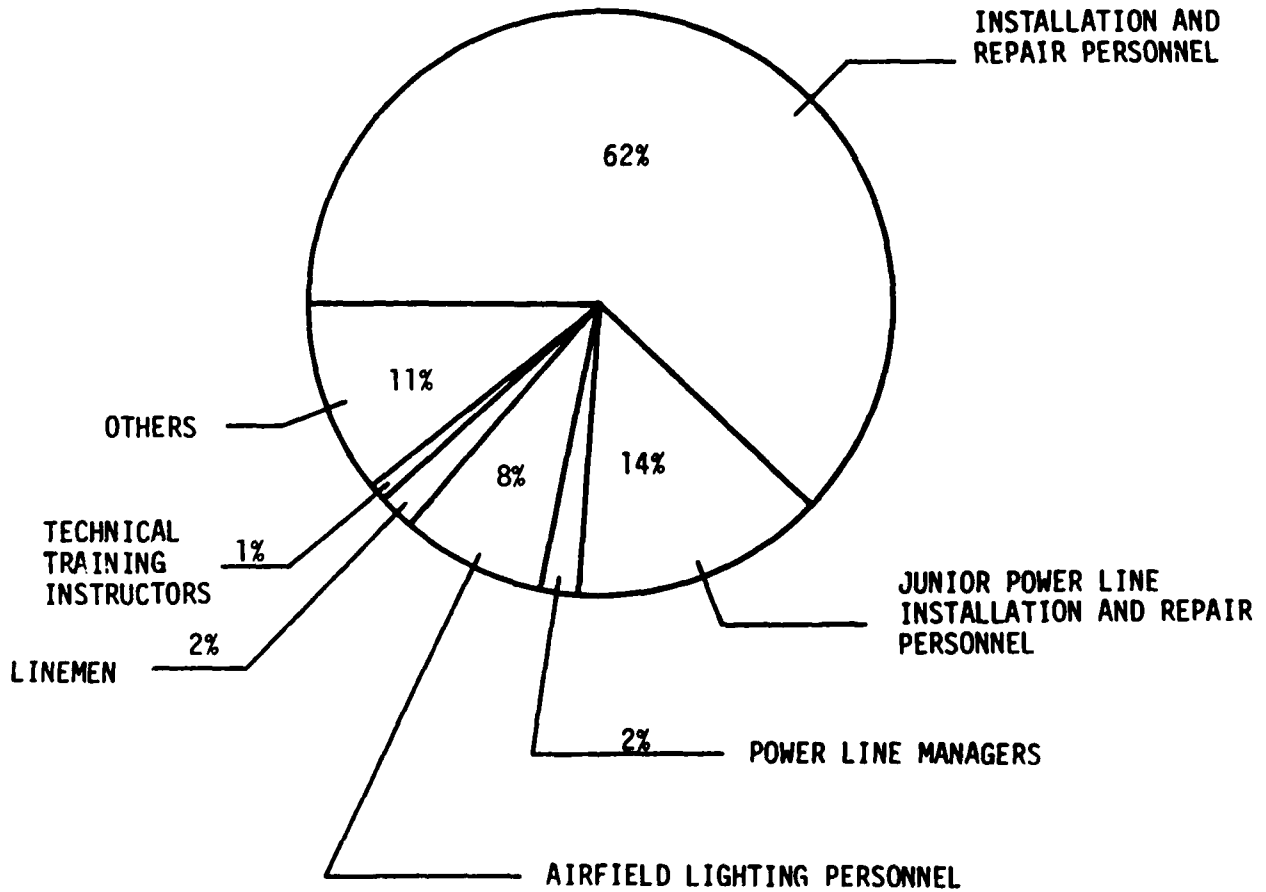


TABLE 13

EXAMPLES OF REPRESENTATIVE TASKS COMMONLY PERFORMED BY 542X1
FIRST-ENLISTMENT (1-48 MONTHS) TAFMS GROUPS

TASKS	PERCENT MEMBERS PERFORMING (N=266)
N408 CLEAN SHOP OR STORAGE FACILITIES	92
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	91
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	89
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	88
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	87
N412 INSPECT OR CLEAN HANDTOOLS	86
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	86
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	86
P457 FIRE M-16 RIFLES	86
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	85
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	84
H237 REMOVE OR INSTALL FUSED CUTOUPS	84
J303 ADJUST STREET FIXTURES	83
H242 REMOVE OR INSTALL SERVICE DROPS	82
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	82
N428 PERFORM MAINTENANCE ON HIGH REACH TRUCKS	82
F142 REMOVE OR INSTALL GUY ANCHORS	82
J302 ADJUST RECREATIONAL LIGHT FIXTURES (E.G., BALLFIELDS, TENNIS COURTS)	81
F143 REMOVE OR INSTALL GUY WIRES	81
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	81
I277 PUMP WATER FROM MANHOLES	80
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	80
H241 REMOVE OR INSTALL POLE MOUNTED TRANSFORMERS	79
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	79
J332 REMOVE OR INSTALL BULBS IN ENERGIZED STREETLIGHT FIXTURES	79
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	78
F119 CUT POLE GAINS AND DRILL BOLT HOLES	78
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	77
J352 REPLACE AIRFIELD LIGHTS	77
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	77
N429 PERFORM OPERATOR MAINTENANCE ON LINE TRUCKS	76
J297 ADJUST AIRFIELD LIGHT FIXTURES	72
J331 REMOVE OR INSTALL BULBS IN ENERGIZED AIRFIELD LIGHT FIXTURES	70
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	65
H230 READ SERVICE METERS	65

TRAINING ANALYSIS

Occupational survey data provide information which can assist training managers in the development, validation, and modification of training programs relevant to the needs of personnel working in their first assignment within a career ladder. Factors which can be used to evaluate training are the percent of first-job (1-24 months TAFMS) or first 4 years in the service (1-48 months TAFMS) members performing tasks, along with training emphasis and task difficulty ratings (as discussed in the Task Factor Administration section). These factors were used to examine the Specialty Training Standard (STS) and the Plan of Instruction (POI) for Course 3ABR542X1, Electric Power Line Specialist. Training personnel from the Technical School at Sheppard AFB, Texas, matched inventory tasks to appropriate sections of the POI (dated April 1983) and STS (dated August 1978). This matching is used as the basis for comparison. A complete computer listing displaying the percent members performing, training emphasis ratings, and task difficulty ratings for each task statement, along with POI and STS matchings, was forwarded to the school for their use in review of training documents.

Training Emphasis

Training emphasis (TE) for each task in the inventory was assessed through ratings by experienced Electric Power Line NCOs. Data were processed to produce ordered listings of tasks in terms of recommended emphasis in training for first-term enlisted personnel. The average rating for all tasks included in the job inventory was 3.27 with a standard deviation of 1.60. Tasks receiving ratings of 4.87 or higher may be considered to have relatively high training emphasis. For a more complete description of these ratings, see the section on Task Factor Administration in the INTRODUCTION.

Examples of tasks rated highest in training emphasis are listed in Table 14 to show the types of tasks which should have priority in training programs. As can be seen, tasks with the highest TE rating are related to maintenance of power line poles, overhead conductors, safety and first aid, inspecting, and distribution of equipment duties. Overall, tasks in Table 14 with highest training emphasis, with one exception (convert three-phase transformer bank to open delta), are performed by 30 percent or more of the 542X1 population; and in the majority of cases this condition is also true for the first-job group (1-24 months), and the first-enlistment group (1-48 months).

Task Difficulty

The relative difficulty of each task in the inventory was assessed through ratings of 33 experienced 542X1 NCOs. These tasks were processed to produce an ordered listing of all tasks in terms of their relative difficulty. Ratings were standardized to have an average of 5.0 with a standard deviation equal to 1.

Those tasks listed in Table 15 rated the most difficult by 542X1 task difficulty (TD) raters are related to a variety of electric power line functions and involve maintaining underground cables, overhead conductors, power line poles, lighting systems, and inspection functions. The difficult management tasks listed in Table 15 are performed by only a few first-term electric power line members. Such managerial tasks may require specialized OJT, but are not performed by enough first-enlistment personnel to warrant training in initial skills training programs. They are displayed simply to illustrate the range of tasks which are perceived to be difficult.

Specialty Training Standard

A review of STS 542X1, dated August 1978, included comparing STS sections to survey data. The 542X1 STS organizes career field duties into subdivisions by specific activities (i.e., installing and maintaining or inspecting and evaluating).

Survey data supported the present STS. There are only 18 tasks not matched to the STS, and those are displayed in Table 16. A majority (10 tasks) of these tasks are related to contingency or tactical team functional duties. The remaining tasks were related to safety and first aid, underground cable, and inspecting and maintaining electrical systems and components, tools, equipment and facilities, and cathodic protection systems. It appears most of these unreferenced tasks are related to contingency activity and probably are not intended to be covered in the current STS. Other nonreferenced tasks performed by 20 percent or more should be reviewed by training management personnel and a decision made as to whether or not they should be covered by the STS.

TABLE 14
TASKS RATED HIGHEST IN TRAINING EMPHASIS

<u>TASKS</u>	<u>TRAINING EMPHASIS</u>	<u>PERCENT MEMBERS PERFORMING 1ST JOB</u>
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	7.27	89
0442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	7.15	67
0446 PERFORM OR PRACTICE RESUSCITATION	6.82	62
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	6.73	79
0445 PERFORM OR PRACTICE POLE TOP RESCUE PROCEDURES	6.58	37
C56 PERFORM SPOT INSPECTIONS OF HOT LINE TOOLS	6.55	39
0449 PERFORM OR PRACTICE TREATMENT FOR SHOCK	6.49	46
C58 PERFORM SPOT INSPECTIONS OF RUBBER PROTECTIVE EQUIPMENT	6.45	39
C57 PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	6.30	44
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	6.30	73
0444 PERFORM OR PRACTICE MANHOLE RESCUE PROCEDURES	6.27	39
0443 PERFORM OR PRACTICE CONTROL OF BLEEDING	6.24	53
H218 FUSE TRANSFORMER BANKS	6.21	62
E95 COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	6.15	49
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	6.15	66
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	6.12	84
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	6.12	68
H242 REMOVE OR INSTALL SERVICE DROPS	6.12	72
E96 COMPLETE AF FORMS 268 (CAUTION-ABNORMAL CONDITIONS)	6.09	37
N429 PERFORM OPERATOR MAINTENANCE ON LINE TRUCKS	6.09	68
0450 PERFORM SAFETY SUPERVISION OF LINEMEN WORKING ON ENERGIZED CIRCUITS	6.03	30
0447 PERFORM OR PRACTICE TREATMENT FOR HEAT EXHAUSTION	6.00	44
0448 PERFORM OR PRACTICE TREATMENT FOR HEAT STROKE	6.00	46
I289 SPLICE UNDERGROUND CABLES	5.97	65
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	5.91	66
N414 INSPECT OR CLEAN RUBBER PROTECTIVE EQUIPMENT	5.91	54
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	5.88	62
I257 CONSTRUCT TAPE SPLICES ON HIGH VOLTAGE CABLES	5.88	49
I273 LOCATE SHORTS IN UNDERGROUND CABLE SYSTEMS	5.88	68
H216 CONVERT THREE-PHASE TRANSFORMER BANKS TO OPEN DELTA CONNECTIONS	5.06	27

TABLE 15

TASKS RATED HIGHEST IN TASK DIFFICULTY

TASKS	TASK DIFFICULTY	FIRST ENLISTMENT PERCENT MEMBERS PERFORMING
G202 TRANSFER ENERGIZED CONDUCTORS FROM OLD POLES TO NEW POLES WITH HOT STICKS	7.98	10
G187 REPLACE DEFECTIVE SECTIONS OF ENERGIZED CONDUCTORS USING HOT STICKS	7.81	14
G201 TRANSFER ENERGIZED CONDUCTORS FROM OLD POLES TO NEW POLES USING RUBBER PROTECTIVE EQUIPMENT	7.68	18
G194 SPLICE DEFECTIVE SECTIONS OF ENERGIZED CONDUCTORS USING HOT STICKS	7.60	8
G173 REMOVE OR INSTALL CROSSARMS WHICH SUPPORT ENERGIZED CONDUCTORS USING HOT STICKS AND AUXILIARY CROSSARMS	7.58	17
G188 REPLACE DEFECTIVE SECTIONS OF ENERGIZED CONDUCTORS USING RUBBER PROTECTIVE EQUIPMENT	7.56	23
G174 REMOVE OR INSTALL CROSSARMS WHICH SUPPORT ENERGIZED CONDUCTORS USING RUBBER PROTECTIVE EQUIPMENT	7.46	22
G196 SPLICE DEFECTIVE SECTIONS OF ENERGIZES CONDUCTORS USING RUBBER PROTECTIVE EQUIPMENT	7.39	22
D70 DEVELOP OR REVISE RESIDENT TRAINING OR CAREER DEVELOPMENT COURSES (CDCs)	7.36	3
G195 SPLICE DEFECTIVE SECTIONS OF ENERGIZED CONDUCTORS USING INSULATED AERIAL BUCKETS	7.32	27
I257 CONSTRUCT TAPE SPLICES ON HIGH VOLTAGE CABLES	6.95	62
G200 TRANSFER ENERGIZED CONDUCTORS FROM OLD POLES TO NEW POLES USING INSULATED AERIAL BUCKETS	6.94	23
G186 REPLACE DEFECTIVE SECTIONS OF ENERGIZED CONDUCTORS USING INSULATED AERIAL BUCKETS	6.93	33
H245 REMOVE OR INSTALL SUBSTATION METERS	6.89	14
C59 WRITE AIRMAN PERFORMANCE REPORTS	6.81	6
I258 CONSTRUCT TAPECAST SPLICES ON UNDERGROUND CABLE SYSTEMS	6.81	53
C60 WRITE CIVILIAN PERFORMANCE RATINGS	6.80	3
C55 INVESTIGATE CAUSES OF RECURRING LINE OR SYSTEM MALFUNCTIONS OR DEFECTIVE MAINTENANCE PROCEDURES	6.80	28
K359 ISOLATE MALFUNCTIONS TO TRAFFIC LIGHT MONITOR UNIT CIRCUITS	6.79	12

TABLE 16

TASKS NOT REFERENCED TO STS

TASKS	TRAINING EMPHASIS	PERCENT MEMBERS PERFORMING	
		IST JOB	IST ENLIST
P475 OPERATE PORTABLE RADIOS	4.15	52	56
0438 ESCORT PERSONNEL FROM OTHER ORGANIZATIONS WHILE IN ELECTRICAL FACILITIES	3.79	47	59
P458 IDENTIFY CHEMICAL WARFARE AGENTS	3.54	42	48
P500 PUT ON OR TAKE OFF CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	3.39	67	70
T274 OPERATE POWER TRENCH DIGGING EQUIPMENT (E.G., "DITCH WITCH")	3.15	17	17
M384 INSPECT CAPACITOR BANKS	3.09	22	30
P451 ASSEMBLE AND TOW AM-2 MATTING FOR RAPID RUNWAY REPAIR	3.09	51	67
P463 LAY AM-2 MATTING FOR AIRCRAFT PARKING REVETMENTS	2.97	11	23
P469 OPERATE CHEMICAL WARFARE PERSONNEL PROTECTIVE EQUIPMENT	2.91	34	49
0441 OPERATE FIREFIGHTING EQUIPMENT	2.58	8	14
P487 PERFORM EXPLOSIVE ORDNANCE RECONNAISSANCE	2.30	17	24
P485 PERFORM DECONTAMINATION PROCEDURES FOR CHEMICAL WARFARE AGENTS	2.18	13	21
P453 ERECT B-1 REPUBLIC STEEL REVETMENTS FOR AIRCRAFT PARKING	1.21	4	6
P479 OPERATE WALK-IN REFRIGERATION BOXES	.76	4	4
L382 WELD ELECTRICAL JUMPERS ACROSS WATER OR GAS LINE CONNECTIONS	.61	4	3
L381 VISUALLY INSPECT WATER STORAGE TANKS	.36	5	6
E97 COMPLETE AF FORMS 290 (TRANSCRIPT FOR PEST REPORT)	.33	5	4
D70 DEVELOP OR REVISE RESIDENT TRAINING OR CAREER DEVELOPMENT COURSES (CDCs)	.00	5	3

Plan of Instruction

This 8-week Electric Power Line course is a basic course intended to train personnel new to this career ladder. Course instruction includes constructing, inspecting, maintaining, and modifying energized and deenergized high voltage electrical distribution systems and related equipment. As 542X1 personnel progress in experience, other advanced courses are available to train them on more advanced functions. A complete list of these courses is presented in the INTRODUCTION of this report.

The current plan of instruction (POI) for Course 54231 (dated April 1983) was examined, using tasks matched by personnel from Sheppard Technical Training Center to criterion objectives (CO), task difficulty ratings, training emphasis ratings, and percent of first-enlistment personnel performing information. The course was reviewed for appropriateness of instruction as evidenced by tasks performed by survey respondents. The complete results of matching tasks to POI objectives are presented in a separate computer printout (FCPRT3) within the training extract.

These matchings provide data which can be used as a basis for considering what items should be taught in the basic course, based on tasks performed by personnel during their first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS).

The occupational survey data basically supported all the COs which had tasks matched to them. Only three COs did not have tasks identified as relating to them (safety working practices, communication security, and electrical fundamentals). Other unmatched objectives were breakouts of matched objectives and not being matched was a function of the extent of subdivision of the objectives.

About 215 tasks covering a variety of duties were not referenced to any section of the POI 3ABR54231 basic course. A careful review of these nonreferenced tasks by personnel from Sheppard Technical Training Center revealed they were taught or trained in either OJT or advanced courses or were contingency or supervisory functions. Examples of those tasks are presented in Table 17. Many of these tasks are performed by 30 percent or more of the first-enlistment personnel; however, only 38 tasks were rated average or above in training emphasis. Training personnel are encouraged to review those tasks not referenced to POI 54231 to determine whether it is most appropriate to cover those tasks in the basic course or in some other form of training.

TABLE 17

EXAMPLES OF TASKS NOT REFERENCED TO POI

TASKS	TNG EMP	PERCENT MEMBERS PERFORMING			TASK DIFF
		IST JOB (1-24 TAFMS)	IST		
			ENL (1-48 TAFMS)		
F134 LOAD OR UNLOAD POLES ON MAINTENANCE TRUCKS	5.24	57	66		4.75
M402 TEST OR DATE STATIC GROUNDS	5.06	52	59		4.30
J305 BENCH CHECK CONDENSER DISCHARGE CHASSIS COMPONENTS	4.85	20	35		6.48
G182 REMOVE OR INSTALL TERMINATORS	4.70	33	47		5.92
P459 INSTALL ELECTRICAL GROUNDS	4.70	60	73		3.95
J334 REMOVE OR INSTALL CONDENSER DISCHARGE CHASSIS COMPONENTS	4.55	20	34		5.64
F124 DIRECT POLE REMOVAL ACTIVITIES	4.51	27	46		5.44
J333 REMOVE OR INSTALL CONDENSER DISCHARGE CABINET COMPONENTS	4.49	20	34		5.56
P502 TEAR DOWN, INSPECT, CLEAN, AND REASSEMBLE M-16 RIFLES	4.49	75	81		4.77
I255 CONSTRUCT CABLE END SEALS ON UNDERGROUND CABLE SYSTEMS	4.45	25	31		5.59
E92 COMPLETE AF FORMS 1800 (OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT (GENERAL PURPOSE VEHICLE))	4.42	46	50		3.87
F123 DIRECT POLE INSTALLATION ACTIVITIES	4.42	27	47		5.65
P457 FIRE M-16 RIFLES	4.18	81	87		3.93
P462 INSTALL PORTABLE AIRFIELD LIGHTING SYSTEMS	4.18	39	49		5.61
P475 OPERATE PORTABLE RADIOS	4.15	52	56		3.30
P496 PRACTICE SELF-PROTECTION FROM EXTREME WEATHER	3.94	35	46		4.57
G170 REMOVE FOREIGN OBJECTS FROM OVERHEAD DISTRIBUTION SYSTEMS	3.91	48	61		4.37
J339 REMOVE OR INSTALL LIGHTING SYSTEM CIRCUIT BREAKERS	3.85	37	50		4.67
O438 ESCORT PERSONNEL FROM OTHER ORGANIZATIONS WHILE IN ELECTRICAL FACILITIES	3.79	47	59		3.64
E86 COMPLETE AF FORMS 1061 (POLE INSPECTION DATA)	3.70	10	15		4.14
G171 REMOVE OR INSTALL CROSSARMS WHICH SUPPORT ENERGIZED CONDUCTORS USING INSULATED AERIAL BUCKETS	3.70	29	37		6.68
G200 TRANSFER ENERGIZED CONDUCTORS FROM OLD POLES TO NEW POLES USING INSULATED AERIAL BUCKETS	3.64	15	23		6.94
N408 CLEAN SHOP OR STORAGE FACILITIES	3.61	91	92		2.56
H233 REMOVE OR INSTALL CAPACITOR BANKS	3.58	11	25		6.12
O458 IDENTIFY CHEMICAL WARFARE AGENTS	3.54	42	48		5.36
J344 REMOVE OR INSTALL MASTER SEQUENCE TIME CONTROL COMPONENTS	3.51	19	22		6.46
H247 REMOVE OR INSTALL TRANSFORMER BUSHINGS OR GASKETS	3.49	20	33		4.92
G159 DIRECT INSTALLATION OF OVERHEAD CIRCUITS	3.46	19	37		6.03

Job Satisfaction Indicators

The main purpose of this section is to examine job satisfaction indicators of the personnel within the electric power line career ladder. The results of this analysis may provide managers with a better understanding of some of the factors affecting the job performance of airmen in the career ladder. This information was gathered through the use of three inventory questions covering job interest and perceived utilization of talents and training.

Table 18 presents this information for TAFMS groups in AFS 542X1 and a comparative sample of direct support career ladders (N=4,340) surveyed in 1983. As illustrated in Table 18, slightly more 542X1 first-enlistment (1-48 months), second-enlistment (49-96 months), and career personnel (97+ months) find their job interesting than the equivalent comparative sample groups. With progression in the career field, indicators of use of talents are equal or slightly greater for all enlistment groups than for the comparative sample group. As to indicators of use of training, all enlistment groups were higher than the equivalent enlistment groups of the comparative sample.

Job satisfaction indicators for the clusters and job groups identified in this study were positive for all situations, with the exception of a group of Junior Airfield Lighting Installation and Repair personnel. Sixty-seven percent of these individuals perceived their training was utilized very little (see Table 19). This is probably the result of inexperienced personnel being assigned the more routine tasks.

TABLE 18

COMPARISON OF JOB SATISFACTION INDICATORS BY TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)*

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	542X1	COMPARATIVE SAMPLE	542X1	COMPARATIVE SAMPLE	542X1	COMPARATIVE SAMPLE
<u>EXPRESSED JOB INTEREST:</u>						
DULL	5	8	2	8	6	7
SO-SO	10	11	13	12	9	12
INTERESTING	85	79	81	77	84	78
NO RESPONSE	-	2	4	3	1	3
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
NOT AT ALL TO VERY LITTLE	13	18	15	17	15	16
FAIRLY WELL TO PERFECTLY	87	82	83	83	84	83
NO RESPONSE	-	-	2	-	1	1
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
NOT AT ALL TO VERY LITTLE	17	22	14	22	17	22
FAIRLY WELL TO PERFECTLY	82	78	84	77	82	78
NO RESPONSE	1	-	2	11	1	-

* Comparative sample taken from direct support speciality reported in 1983 (N=4,340)
Includes AFSCs 12XXX, 22XXX, 23XXX, 25XXX, 39XXX, 47XXX, 51XXX, 54XXX, 55XXX, 56XXX, 57XXX, 59XXX, 60XXX, 61XXX, 62XXX, 63XXX, 64XXX, 75XXX, 81XXX, and 82XXX

TABLE 19
 JOB SATISFACTION INFORMATION FOR 542X1 CLUSTERS AND INDEPENDENT JOB TYPES
 (PERCENT RESPONDING)

	JOB TYPES		JOB TYPES		JOB TYPES		JOB TYPES	
	POWER LINE MGT CLUSTER (GRP022, N=55)	SUPT & FOREMEN (GRP074, N=34)	PLAN & EVAL PERS (GRP071, N=6)	AIR FLD LIGHTING PERS (GRP053, N=41)	CIV AIR FLD LIGHT INSTL & REPAIR PERS (GRP134, N=7)	MIL AIR FLD LIGHT INSTL & REPAIR PERS (GRP139, N=21)	JR AIR FLD LIGHT INSTL & REPAIR PERS (GRP073, N=9)	
2	0	0	12	14	10	11		
10	6	33	12	0	10	22		
86	91	67	69	71	76	56		
2	3	0	7	15	4	11		
11	0	17	20	0	14	33		
89	100	83	75	86	81	67		
0	0	0	5	14	5	0		
22	12	33	29	14	10	67		
78	88	67	66	71	86	33		
0	0	0	5	15	5	0		

HOW DO YOU FIND YOUR JOB:

DULL
 SO-SO
 INTERESTING
 NO RESPONSE

HOW WELL DOES YOUR JOB UTILIZE YOUR TALENTS:

VERY LITTLE OR NOT AT ALL
 FAIRLY WELL TO PERFECTLY
 NO RESPONSE

HOW WELL DOES YOUR JOB UTILIZE YOUR TRAINING:

VERY LITTLE OR NOT AT ALL
 FAIRLY WELL TO PERFECTLY
 NO RESPONSE

TABLE 19 (CONTINUED)
 JOB SATISFACTION INFORMATION FOR 542X1 CLUSTERS AND INDEPENDENT JOB TYPES
 (PERCENT RESPONDING)

	JOB TYPES						
	INSTL & REPAIR PERS (GRP101, N=534)	POWER LINE FOREMEN & NCOICs (GRP157, N=31)	POWER LINE INSTL REPAIR (GRP111, N=490)	JR POWER LINE INSTL REPAIR PERS (GRP092, N=63)	LINEMEN (GRP061, N=14)	TECH TNG INSTRS (GRP093, N=10)	
<u>HOW DO YOU FIND YOUR JOB:</u>							
DULL	2	0	3	6	0	0	
SO-SO	8	0	8	22	0	0	
INTERESTING	88	97	87	71	93	100	
NO RESPONSE	2	3	2	-	7	0	
<u>HOW WELL DOES YOUR JOB UTILIZE YOUR TALENTS:</u>							
VERY LITTLE OR NOT AT ALL	7	7	7	17	7	0	
FAIRLY WELL TO PERFECTLY	92	90	92	83	93	100	
NO RESPONSE	1	3	1	0	0	0	
<u>HOW WELL DOES YOUR JOB UTILIZE YOUR TRAINING:</u>							
VERY LITTLE OR NOT AT ALL	8	0	8	21	7	0	
FAIRLY WELL TO PERFECTLY	91	97	91	79	93	100	
NO RESPONSE	1	3	1	0	0	0	

Job satisfaction indicators for the previous survey conducted in 1977 were presented by skill levels and total sample, while the present survey presents data for enlistment groups. Overall, the job satisfaction indicators for the total sample, 5-, 7-, and 9-skill level groups are relatively high for the previous survey (Table 20) and are also relatively high for enlistment groups in the present survey (Table 21).

TABLE 20
JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING FOR 542X1 DAFSC GROUPS,
1977 SURVEY
(PERCENT MEMBERS RESPONDING)

	1977		
	TOTAL 542X1 N=557)	DAFSC 54251 (N=317)	DAFSC 54271 (N=102)
I FIND MY JOB:			DAFSC 54291 (N=38)
DULL	5	4	6
SO-SO	10	13	4
INTERESTING	85	83	90
NOT REPORTED	-	-	-
MY JOB UTILIZES MY TALENTS:			
VERY LITTLE OR NOT AT ALL	14	15	12
FAIRLY WELL TO PERFECTLY	86	85	88
MY JOB UTILIZES MY TRAINING			
VERY LITTLE OR NOT AT ALL	13	14	12
FAIRLY WELL TO PERFECTLY	87	86	88

TABLE 21

JOB SATISFACTION INDICATORS BY TAFMS GROUPS, PRESENT SURVEY
(PERCENT MEMBERS PERFORMING)

	<u>1-48 MONTHS TAFMS</u>	<u>49-96 MONTHS TAFMS</u>	<u>97+ MONTHS TAFMS</u>
<u>EXPRESSED JOB INTEREST:</u>			
DULL	5	2	6
SO-SO	10	13	9
INTERESTING	85	81	84
NO RESPONSE	-	4	1
<u>PERCEIVED UTILIZATION OF TALENTS:</u>			
NOT AT ALL TO VERY LITTLE	13	15	15
FAIRLY WELL TO PERFECTLY	87	83	84
NO RESPONSE	-	2	1
<u>PERCEIVED UTILIZATION OF TRAINING:</u>			
NOT AT ALL TO VERY LITTLE	17	15	17
FAIRLY WELL TO PERFECTLY	82	84	82
NO RESPONSE	1	1	1

ANALYSIS OF CONUS VERSUS OVERSEAS GROUPS

Comparisons between the functions performed and background data of airmen assigned overseas versus those assigned within CONUS can provide useful information for trainers and managers. An analysis of task performance differences between the 45 3 and 5-skill level incumbents assigned within CONUS and the 72 5-skill level incumbents stationed overseas reveals very few differences between the two groups. CONUS members perform an average of 195 tasks, compared to 139 for their counterparts overseas.

Table 22 presents those tasks showing the greatest difference in percent members performing between CONUS and overseas personnel. As shown, tasks related to installing and maintaining lighting systems, power line poles, and overhead conductors are examples of functions that CONUS personnel spend more of their job time on than the overseas group.

TABLE 22

TASKS WHICH BEST DIFFERENTIATE BETWEEN CONUS AND OVERSEAS PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	CONUS	OVERSEAS	DIFFERENCES
F155 TRANSPORT POLES BY LINE MAINTENANCE TRUCKS	76	33	43
F134 LOAD OR UNLOAD POLES ON MAINTENANCE TRUCKS	72	32	40
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	73	36	37
I77G REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	79	43	36
451P ASSEMBLE AND TOW AM-2 MATTING FOR RAPID RUNWAY REPAIR	69	33	36
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH	76	42	34
G204 TRIM OR CUT TREES USING POWER EQUIPMENT	64	31	34
G193 SPLICE DEFECTIVE SECTIONS OF DE-ENERGIZED BARE OVERHEAD CONDUCTORS			
G198 STRING CONDUCTORS FOR OVERHEAD LINES	67	33	34
C58 PERFORM SPOT INSPECTIONS OF RUBBER PROTECTIVE EQUIPMENT	75	42	33
G184 REPAIR POLE GROUNDS	65	32	36
H237 REMOVE OR INSTALL FUSED CUTOUTS	70	38	32
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	85	53	32
P455 ERECT TENTS	79	47	32
F131 INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	67	35	32
M389 INSPECT LIGHTING ARRESTERS	80	49	31
G172 REMOVE OR INSTALL CROSSARMS WHICH SUPPORT DE-ENERGIZED CONDUCTORS	74	43	31
	73	42	31

OTHER ANALYSES

In addition to information related to tasks and duties, each survey respondent was requested to fill out a general background information section. This section provides biographical and specialty-related data which may be used to address specific issues raised by career ladder personnel. A brief summary of this information is presented below.

Strength and Stamina

The experienced 7-skill level personnel who provided the task difficulty ratings also assisted in identifying problems associated with the performance of tasks and duties relative to strength and stamina. These personnel were asked to identify specific tasks which required excessive strength or stamina to perform. The responses to the strength and stamina question were analyzed and no problems were identified.

Schedule Normally Worked

The majority (92 percent) of Electric Power Line personnel worked a day schedule from 0700 to 1600. The remainder of these personnel worked various other shifts as presented in Table 23.

Pole Climbing in Present Job

Tasks including climbing poles using various means are performed by 542X1 personnel. Eighty-five percent of these personnel climbed poles using body belts and safety straps, 37 percent climbed poles using other methods, and 88 percent used cherry pickers to work on poles (see Table 24).

Chemical Items Handled

A special chemical is sometimes handled by Power Line Personnel in the performance of their duties. Sixty-nine percent of these respondents indicated handling Poly-chloride Biphenyls (PCB) in their present job, and 54 percent indicated handling PCBs in previous assignments (see Table 25).

Number of Days TDY During Past Year

Thirty-seven percent of the Electric Power Line Personnel spent varying numbers of days TDY for mission related purposes. Table 26 presents data relative to TDY for Electric Power Line Personnel for the past year. Sixty-three percent did not perform TDY during the past year.

Number of Days TDY Monthly for War Skill Training

Forty percent of these members spent varying numbers of days in warskill training, while the other sixty percent did not participate in warskill training. The number of days these members were TDY in the past year for warskill training is presented in Table 27.

Hours Spent in Weekly Upgrade Training

Eighty percent of these personnel did not participate in weekly upgrade training. The remaining 20 percent spent varying numbers of hours in upgrade training. The number of hours they were involved is reflected in Table 28.

Contingency Exercises Participated in During the Past Year

Fifty-seven percent of the 542X1 personnel participated in contingency exercises. They were involved in varying numbers of exercises during the past year which ranged from one to 25 or more exercises per year. The number of times participated in is reflected in Table 29.

TABLE 23

WORK SCHEDULE NORMALLY WORKED

<u>SCHEDULE</u>	<u>542X1 PERSONNEL PERCENT MEMBERS RESPONDING</u>
0700-1600	92
1600-2400	1
2400-0800	1
0600-1800	1
1800-0600	1
ROTATING SHIFT - 8 HOURS	1
VARIABLE - DEPENDING ON WORKLOAD	3
TOTAL	<u>100</u>

TABLE 24
POLE CLIMBING IN PRESENT JOB

	<u>542X1 PERCENT MEMBERS RESPONDING</u>
CLIMB POLES USING BODY BELTS AND SAFETY STRAPS	85
CLIMB POLES USING ANY OTHER METHOD	37
USE CHERRY PICKERS TO WORK ON POLES	88

TABLE 25
CHEMICAL ITEMS HANDLED

	<u>542X1 PERCENT MEMBERS RESPONDING YES</u>
DO YOU HANDLE POLY-CHLORIDE BIPHENYLS (PCBs) ON YOUR PRESENT JOB?	69
HAVE YOU HANDLED PCBs IN A PREVIOUS ASSIGNMENT?	54

TABLE 26
NUMBER DAYS TDY PAST YEAR TDY

<u>DAYS PER YEAR TDY</u>	<u>542X1 PERSONNEL PERCENT MEMBERS RESPONDING</u>
0	63
1-30	26
31-60	6
61-90	2
91-120	1
121-150	0
151-180	1
181 OR MORE	1
TOTAL	<u>100</u>

TABLE 27
NUMBER OF DAYS TDY EACH MONTH FOR WARSKILL TRAINING

<u>DAYS PAST YEAR TDY FOR TRAINING</u>	<u>542X1 PERSONNEL PERCENT MEMBERS RESPONDING</u>
0	60
1-2	25
3-4	8
5-6	3
7-8	1
9-10	1
11-12	0
13 OR MORE	2
TOTAL	<u>100</u>

TABLE 28
NUMBER OF HOURS SPENT IN WEEKLY UPGRADE TRAINING

<u>NUMBER OF HOURS</u>	<u>542X1 PERSONNEL PERCENT MEMBERS RESPONDING</u>
0	80
LESS THAN 1 HOUR	10
1 HOUR BUT LESS THAN 2 HOURS	6
2 HOURS BUT LESS THAN 3 HOURS	2
3 HOURS BUT LESS THAN 4 HOURS	1
4 HOURS BUT LESS THAN 5 HOURS	0
5 HOURS BUT LESS THAN 6 HOURS	0
6 OR MORE HOURS	<u>1</u>
TOTAL	100

TABLE 29
**NUMBER OF CONTINGENCY EXERCISES PARTICIPATED IN
PAST YEAR**

<u>NUMBER OF CONTINGENCY EXERCISES</u>	<u>542X1 PERSONNEL PERCENT MEMBERS RESPONDING</u>
0	43
1-5	46
6-10	8
11-15	2
16-20	0
21-25	0
MORE THAN 25	<u>1</u>
TOTAL	100

COMPARISON OF PRESENT SURVEY TO PREVIOUS SURVEY

The previous Occupational Survey Report (OSR) of the 542X1, Electric Power Line, career ladder was published in 1977. Findings in that report were similar to present findings. The major job groupings were almost identical for the previous and current survey; however, a few more job types within major job grouping were identified in the current OSR than in the previous one (probably because of a more detailed analysis). Table 30 compares jobs identified in the two studies. As the table illustrates, all jobs identified in 1977 were subsumed within the jobs identified in the current study.

TABLE 30

COMPARISON OF 1977 542X1 JOB GROUPS TO CURRENT STUDY (JOB GROUPS IDENTIFIED)

<u>1984 STUDY (N=796)</u>	<u>1977 STUDY (N=559)</u>
Management Cluster (N=55)	Electric Power Line Supervisors (N=52)
Airfield Lighting Cluster (N=41)	Airfield Lighting System Installer
Installation and Repair Cluster (N=534)	Repairer (N=20) Power Line Installer Repairer (N=352)
Junior Installer Repair Personnel (N=63)	Assistant Power Line Installer Repairer (N=55)
Linemen (N=14)	Apprentice Power Line Installer
Technical Training Instructors (N=10)	Repairer (N=12) Technical Training Instructor (N=7)

IMPLICATIONS

Occupational survey results indicate that the Electric Power Line career ladder is very homogeneous. The separation of clusters, job types, and independent job types are the results of differences in time spent on core tasks and the performance of unique powerline functions. Other differences in tasks performed emerge as personnel increase in experience and take on additional supervisory and training functions inherent in gaining seniority. Three major technical job clusters, two specialized groups and one training group were identified. The current classification structure for this career ladder is supported by survey data.

Specialty documents were reviewed and were found generally descriptive of the career ladder. The majority of the STS was supported by survey data, but 18 tasks were not referenced to any area of the STS. Most of the POI blocks were supported by survey data. There were, however, a large number of tasks not referenced to the POI. Nonreferenced items for both the STS and the POI should be examined to determine if they should be included in the respective documents.

Generally speaking, military and civilian personnel are performing very similar jobs. However, there are some minor variations. For example, military personnel are more involved with contingency tasks than their civilian coworkers.

Job satisfaction indicators reveal that most respondents find their jobs interesting and feel their talents and training are adequately utilized.

APPENDIX A

TABLE A1
EXAMPLES OF TASKS PERFORMED BY MANAGEMENT CLUSTER
(GRPO22)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=55)
C53 INSPECT WORKSITES	89
B31 INTERPRET PLANS, SKETCHES, WIRING DIAGRAMS, OR SPECIFICATION SHEETS	85
A12 ESTABLISH WORK PRIORITIES	82
A2 CONDUCT OR ATTEND STAFF MEETINGS	82
A3 DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	80
C52 INSPECT QUALITY OF COMPLETED REPAIRS	78
B22 COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	78
B32 REVIEW CORRESPONDENCE OR REPORTS	76
A1 COMPILE DATA FOR USE IN REPORTS OR POLICIES	76
A11 ESTABLISH SHOP REQUIREMENTS	75
B20 ASSIGN WORK TO PERSONNEL	75
B23 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	75
C46 EVALUATE NEW EQUIPMENT OR PROPOSED MODIFICATION OF EXISTING EQUIPMENT	73
C42 EVALUATE INDIVIDUALS OR RECOMMEND PROMOTION, DEMOTION, OR RECLASSIFICATION	73
C57 PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	73
A10 ESTABLISH REQUIREMENTS FOR EQUIPMENT, TOOLS, OR SUPPLIES	71
B24 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	71
D76 INSTRUCT SUBORDINATES ON POLICIES OR DIRECTIVES	71
C37 ANALYZE PRODUCTION OR INSPECTION REPORTS	69
C59 WRITE AIRMAN PERFORMANCE REPORTS	69
B33 REVIEW EQUIPMENT AUTHORIZATION LISTS	69
C55 INVESTIGATE CAUSES OF RECURRING LINE OR SYSTEM MALFUNCTIONS OR DEFECTIVE MAINTENANCE PROCEDURES	69
E95 COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	67
C47 EVALUATE SUGGESTIONS	67
A17 SCHEDULE LEAVES, PASSES, OR TDYS	67
E96 COMPLETE AF FORMS 268 (CAUTION-ABNORMAL CONDITIONS)	67
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	67
B34 SELECT MATERIAL OR EQUIPMENT FOR CONSTRUCTION OR MAINTENANCE JOBS	65
B21 CONDUCT INVENTORIES OF TOOLS, EQUIPMENT, OR SUPPLIES	65
C40 COMPUTE MANHOUR ESTIMATES FOR REPAIR OF LINES OR SYSTEMS	65
C43 EVALUATE INSPECTIONS, MAINTENANCE, OR REPAIR METHODS OR PROCEDURES	64
C49 INDORSE AIRMAN PERFORMANCE REPORTS	64

TABLE A2

EXAMPLES OF TASKS PERFORMED BY SUPERINTENDENTS AND FOREMEN
(GRP074)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=34)
A12 ESTABLISH WORK PRIORITIES	97
A16 PLAN OR SCHEDULE WORKLOAD	97
B20 ASSIGN WORK TO PERSONNEL	97
B31 INTERPRET PLANS, SKETCHES, WIRING DIAGRAMS, OR SPECIFICATION SHEETS	97
C52 INSPECT QUALITY OF COMPLETED REPAIRS	97
C53 INSPECT WORKSITES	94
A11 ESTABLISH SHOP REQUIREMENTS	94
B22 COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	94
D76 INSTRUCT SUBORDINATES ON POLICIES OR DIRECTIVES	94
B23 COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	94
A17 SCHEDULE LEAVES, PASSES, OR TDYS	94
C57 PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	94
B24 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	94
B33 REVIEW EQUIPMENT AUTHORIZATION LISTS	94
C55 INVESTIGATE CAUSES OF RECURRING LINE OR SYSTEM MALFUNCTIONS OR DEFECTIVE MAINTENANCE PROCEDURES	91
C59 WRITE AIRMAN PERFORMANCE REPORTS	91
C40 COMPUTE MANHOUR ESTIMATES FOR REPAIR OF LINES OR SYSTEMS	91
B32 REVIEW CORRESPONDENCE OR REPORTS	88
A3 DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	88
C42 EVALUATE INDIVIDUALS OR RECOMMEND PROMOTION, DEMOTION, OR RECLASSIFICATION	88
E95 COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	88
E96 COMPLETE AF FORMS 268 (CAUTION-ABNORMAL CONDITIONS)	88
E98 COMPLETE AF FORMS 561 (BASE CIVIL ENGINEER WEEKLY SCHEDULE)	85
E111 VERIFY INFORMATION ON WORK ORDERS	85
B34 SELECT MATERIAL OR EQUIPMENT FOR CONSTRUCTION OR MAINTENANCE JOBS	85
A10 ESTABLISH REQUIREMENTS FOR EQUIPMENT, TOOLS, OR SUPPLIES	85
A2 CONDUCT OR ATTEND STAFF MEETINGS	85
C46 EVALUATE NEW EQUIPMENT OR PROPOSED MODIFICATION OF EXISTING EQUIPMENT	85
C58 PERFORM SPOT INSPECTIONS OF RUBBER PROTECTIVE EQUIPMENT	85
C60 WRITE CIVILIAN PERFORMANCE RATINGS	85
C49 INDORSE AIRMAN PERFORMANCE REPORTS	85
C44 EVALUATE LINE OR SYSTEM REWORK REQUIREMENTS	82

TABLE A3

EXAMPLES OF TASKS PERFORMED BY PLANNING AND EVALUATING PERSONNEL
(GRP071)

DUTY/TASK TITLES		PERCENT MEMBERS PERFORMING (N=26)
A1	COMPILE DATA FOR USE IN REPORTS OR POLICIES	100
B32	REVIEW CORRESPONDENCE OR REPORTS	100
C37	ANALYZE PRODUCTION OR INSPECTION REPORTS	100
A18	WRITE STAFF STUDIES, SURVEYS, OR SPECIAL REPORTS	100
A2	CONDUCT OR ATTEND STAFF MEETINGS	100
A3	DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	100
C47	EVALUATE SUGGESTIONS	100
B31	INTERPRET PLANS, SKETCHES, WIRING DIAGRAMS, OR SPECIFICATION SHEETS	83
A12	ESTABLISH WORK PRIORITIES	83
C53	INSPECT WORKSITES	67
C52	INSPECT QUALITY OF COMPLETED REPAIRS	67
C41	EVALUATE DELAY OR INTERRUPTION OF WORK PRODUCTION SCHEDULES	67
B22	COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	67
C46	EVALUATE NEW EQUIPMENT OR PROPOSED MODIFICATION OF EXISTING EQUIPMENT	67
C43	EVALUATE INSPECTIONS, MAINTENANCE, OR REPAIR METHODS OR PROCEDURES	67
A11	ESTABLISH SHOP REQUIREMENTS	67
A13	ESTIMATE BUDGET REQUIREMENTS	67
A10	ESTABLISH REQUIREMENTS FOR EQUIPMENT, TOOLS, OR SUPPLIES	67
A9	ESTABLISH MANNING OR PERSONNEL REQUIREMENTS	67
B33	REVIEW EQUIPMENT AUTHORIZATION LISTS	67
A15	PLAN BRIEFINGS	50
E109	MAKE ENTRIES ON AF FORMS 103 (BASE CIVIL ENGINEERING WORK CLEARANCE REQUEST)	50
A6	DEVELOP OR UPDATE ORGANIZATIONAL POLICIES OR PROCEDURES	50
A16	PLAN OR SCHEDULE WORKLOAD	50
C51	INSPECT BENCH STOCK STORAGE FACILITIES	50
E111	VERIFY INFORMATION ON WORK ORDERS	50
A14	MAINTAIN STATUS BOARDS	50
E92	COMPLETE AF FORMS 1800 (OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT (GENERAL PURPOSE VEHICLE))	50
C40	COMPUTE MANHOUR ESTIMATES FOR REPAIR OF LINES OR SYSTEMS	50
C54	INVESTIGATE ACCIDENTS OR INCIDENTS	50
B21	CONDUCT INVENTORIES OF TOOLS, EQUIPMENT, OR SUPPLIES	50
C42	EVALUATE INDIVIDUALS OR RECOMMEND PROMOTION, DEMOTION, OR RECLASSIFICATION	50

TABLE A4

EXAMPLES OF TASKS PERFORMED BY AIR FIELD LIGHTING CLUSTER
(GRP053)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=41)
I289 SPLICE UNDERGROUND CABLES	98
I259 DIG TRENCHES MANUALLY	95
I270 LAY CABLE IN TRENCHES	95
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	90
N408 CLEAN SHOP OR STORAGE FACILITIES	88
I283 REPLACE DEFECTIVE SECTIONS OR UNDERGROUND CABLE SYSTEMS	88
I273 LOCATE SHORTS IN UNDERGROUND CABLE SYSTEMS	88
I294 TRACE UNDERGROUND CABLES	85
J340 REMOVE OR INSTALL LIGHTING SYSTEM FUSES	85
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	83
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	83
N412 INSPECT OR CLEAN HANDTOOLS	83
I272 LOCATE OPEN CIRCUITS IN UNDERGROUND CABLE SYSTEMS	83
M402 TEST OR DATE STATIC GROUNDS	78
J353 SPLICE AIRFIELD LIGHT CABLES	78
J352 REPLACE AIRFIELD LIGHTS	78
J354 SPLICE LIGHTING SYSTEM CABLES	78
P502 TEAR DOWN, INSPECT, CLEAN, AND REASSEMBLE M-16 RIFLES	78
J332 REMOVE OR INSTALL BULBS IN ENERGIZED STREETLIGHT FIXTURES	76
J331 REMOVE OR INSTALL BULBS IN ENERGIZED AIRFIELD LIGHT FIXTURES	76
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	76
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	76
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	76
J338 REMOVE OR INSTALL LIGHTING BALLASTS	76
P457 FIRE M-16 RIFLES	76
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	73
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	73
I271 LOCATE GROUNDS IN UNDERGROUND CABLE SYSTEMS	73
J297 ADJUST AIRFIELD LIGHT FIXTURES	73
J300 ADJUST LIGHTING SYSTEM PHOTOELECTRIC CELLS	73
J311 ISOLATE AIRFIELD LIGHT CIRCUITS	73
E95 COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	73
J337 REMOVE OR INSTALL ISOLATING (IL) TRANSFORMERS	71
P500 PUT ON OR TAKE OFF CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	71
J303 ADJUST STREET FIXTURES	71
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	71
J325 REMOVE OR INSTALL AIRFIELD LIGHT BREAKAWAY COUPLINGS	68
I265 INSTALL CABLE MARKERS FOR BURIED CABLES	68

TABLE A5

EXAMPLES OF TASKS PERFORMED BY CIVILIAN AIR FIELD
LIGHTING INSTALLER REPAIRMEN
(GRP134)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=7)
J352 REPLACE AIRFIELD LIGHTS	100
J353 SPLICE AIRFIELD LIGHT CABLES	100
J331 REMOVE OR INSTALL BULBS IN ENERGIZED AIRFIELD LIGHT FIXTURES	100
J325 REMOVE OR INSTALL AIRFIELD LIGHT BREAKAWAY COUPLINGS	100
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	100
J297 ADJUST AIRFIELD LIGHT FIXTURES	100
M396 PERFORM PERIODIC MAINTENANCE ON AIRFIELD LIGHTING SYSTEM EQUIPMENT	100
J337 REMOVE OR INSTALL ISOLATING (IL) TRANSFORMERS	100
I283 REPLACE DEFECTIVE SECTIONS OF UNDERGROUND CABLE SYSTEMS	100
I289 SPLICE UNDERGROUND CABLES	100
N408 CLEAN SHOP OR STORAGE FACILITIES	100
I294 TRACE UNDERGROUND CABLES	100
J312 ISOLATE AIRFIELD LIGHT EQUIPMENT	100
I271 LOCATE GROUNDS IN UNDERGROUND CABLE SYSTEMS	100
J308 CLEAN STROBE LIGHT REFLECTORS	100
I290 TAG UNDERGROUND CABLES	100
J310 DISCHARGE CONDENSER DISCHARGE SYSTEM CAPACITORS ON STROBE FIXTURES	100
I276 PLACE REELS FOR PULLING UNDERGROUND CABLE	100
J326 REMOVE OR INSTALL AIRFIELD LIGHT CONSTANT CURRENT REGULATORS	100
J327 REMOVE OR INSTALL AIRFIELD LIGHT CONTROL COMPONENTS	100
I273 LOCATE SHORTS IN UNDERGROUND CABLE SYSTEMS	100
I270 LAY CABLE IN TRENCHES	100
M383 INSPECT AIRFIELD LIGHTS, BEACON LIGHTS, OR OBSTRUCTION LIGHTS FOR CONDITION AND OPERATION	86
J311 ISOLATE AIRFIELD LIGHT CIRCUITS	86
M397 PERFORM PERIODIC MAINTENANCE ON AIRFIELD LIGHTING SYSTEM VAULTS	86
N412 INSPECT OR CLEAN HANDTOOLS	86
I293 TEST SPLICES OF UNDERGROUND SYSTEM CABLES FOR OPENS, SHORTS, OR GROUNDS	86
J305 BENCH CHECK CONDENSER DISCHARGE CHASSIS COMPONENTS	86
J321 MEASURE CURRENT IN LIGHTING SYSTEM CIRCUITS	86
J340 REMOVE OR INSTALL LIGHTING SYSTEM FUSES	86
I262 INSPECT CABLES AND TEND REELS AS CABLES ARE PULLED INTO DUCTS	86
I277 PUMP WATER FROM MANHOLES	86

TABLE A6

EXAMPLES OF TASKS PERFORMED BY MILITARY AIR FIELD
LIGHTING INSTALLER REPAIRMEN (GRP139)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=21)
J353 SPLICE AIRFIELD LIGHT CABLES	100
I289 SPLICE UNDERGROUND CABLES	100
J352 REPLACE AIRFIELD LIGHTS	100
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	100
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	100
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	100
P459 INSTALL ELECTRICAL GROUNDS	100
J311 ISOLATE AIRFIELD LIGHT CIRCUITS	100
J302 ADJUST RECREATIONAL LIGHT FIXTURES (E.G., BALLFIELDS, TENNIS COURTS)	100
M402 TEST OR DATE STATIC GROUNDS	95
I270 LAY CABLE IN TRENCHES	95
I259 DIG TRENCHES MANUALLY	95
I272 LOCATE OPEN CIRCUITS IN UNDERGROUND CABLE SYSTEMS	95
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	95
J331 REMOVE OR INSTALL BULBS IN ENERGIZED AIRFIELD LIGHT FIXTURES	95
J300 ADJUST LIGHTING SYSTEM PHOTOELECTRIC CELLS	95
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	95
J325 REMOVE OR INSTALL AIRFIELD LIGHT BREAKAWAY COUPLINGS	95
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	95
J297 ADJUST AIRFIELD LIGHT FIXTURES	95
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	95
J303 ADJUST STREET FIXTURES	95
J340 REMOVE OR INSTALL LIGHTING SYSTEM FUSES	95
I294 TRACE UNDERGROUND CABLES	90
P475 OPERATE PORTABLE RADIOS	90
P466 MAINTAIN OVERSEAS UTILITY SYSTEMS	90
P500 PUT ON OR TAKE OFF CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	90
I283 REPLACE DEFECTIVE SECTIONS OF UNDERGROUND CABLE SYSTEMS	90
I273 LOCATE SHORTS IN UNDERGROUND CABLE SYSTEMS	90
E101 MAINTAIN LOGS OF STATIC GROUND TESTS	90
M383 INSPECT AIRFIELD LIGHTS, BEACON LIGHTS, OR OBSTRUCTION LIGHTS FOR CONDITION AND OPERATION	90
J337 REMOVE OR INSTALL ISOLATING (IL) TRANSFORMERS	90
J338 REMOVE OR INSTALL LIGHTING BALLASTS	90
P502 TEAR DOWN, INSPECT, CLEAN, AND REASSEMBLE M-16 RIFLES	90
I271 LOCATE GROUNDS IN UNDERGROUND CABLE SYSTEMS	86
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	86

TABLE A7

**EXAMPLES OF TASKS PERFORMED BY APPRENTICE AIR FIELD LIGHTING
INSTALLER REPAIRMEN
(GRP073)**

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=29)
N408 CLEAN SHOP OR STORAGE FACILITIES	100
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	100
J332 REMOVE OR INSTALL BULBS IN ENERGIZED STREETLIGHT FIXTURES	100
I259 DIG TRENCHES MANUALLY	100
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	100
I270 LAY CABLE IN TRENCHES	100
I289 SPLICE UNDERGROUND CABLES	100
J338 REMOVE OR INSTALL LIGHTING BALLASTS	100
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	100
P502 TEAR DOWN, INSPECT, CLEAN, AND REASSEMBLE M-16 RIFLES	100
P457 FIRE M-16 RIFLES	100
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	89
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	89
N412 INSPECT OR CLEAN HANDTOOLS	89
I283 REPLACE DEFECTIVE SECTIONS OF UNDERGROUND CABLE SYSTEMS	89
I294 TRACE UNDERGROUND CABLES	89
J345 REMOVE OR INSTALL RECREATIONAL LIGHT BULBS	89
H230 READ SERVICE METERS	89
J354 SPLICE LIGHTING SYSTEM CABLES	89
O446 PERFORM OR PRACTICE RESUSCITATION	89
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	78
H217 CUT METAL CONDUITS	78
O443 PERFORM OR PRACTICE CONTROL OF BLEEDING	78
P500 PUT ON OR TAKE OFF CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	78
E95 COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	78
M402 TEST OR DATE STATIC GROUNDS	67
J303 ADJUST STREET FIXTURES	67
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	67
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	67
I256 CONSTRUCT RESIN INJECTED SPLICES ON UNDERGROUND CABLE SYSTEMS	67
J300 ADJUST LIGHTING SYSTEM PHOTOELECTRIC CELLS	67
I272 LOCATE OPEN CIRCUITS IN UNDERGROUND CABLE SYSTEMS	67
J340 REMOVE OR INSTALL LIGHTING SYSTEM FUSES	67
I263 INSPECT OR GUIDE CABLES OR GROUND WIRES AS CABLES ARE PULLED INTO DUCTS	67
P497 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	67
I273 LOCATE SHORTS IN UNDERGROUND CABLE SYSTEMS	67
M386 INSPECT CONNECTIONS OF SYSTEM GROUNDS	67

TABLE A8

EXAMPLES OF TASKS PERFORMED BY INSTALLATION AND REPAIR CLUSTER
(GRP101)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=534)
F116 CLIMB POLES BY USING BODY BELT, SAFETY STRAP, AND CLIMBERS	98
H237 REMOVE OR INSTALL FUSED CUTOUTS	97
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMAN	97
N412 INSPECT OR CLEAN HANDTOOLS	97
H241 REMOVE OR INSTALL POLE MOUNTED TRANSFORMERS	97
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	96
H218 FUSE TRANSFORMER BANKS	96
H214 CONNECT OR DISCONNECT TRANSFORMERS	96
N408 CLEAN SHOP OR STORAGE FACILITIES	96
H242 REMOVE OR INSTALL SERVICE DROPS	96
M388 INSPECT FUSE CUTOUTS	96
F142 REMOVE OR INSTALL GUY ANCHORS	96
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	96
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	96
F130 INSPECT POLE HARDWARE	96
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	95
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	95
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	95
F131 INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	95
G203 TRIM OR CUT TREES USING HAND EQUIPMENT	95
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	95
F143 REMOVE OR INSTALL GUY WIRES	95
I277 PUMP WATER FROM MANHOLES	95
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	95
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	95
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	95
G165 LOAD OR UNLOAD REELS	95
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	94
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	94
F120 DETERMINE DEPTH AND DIAMETER OF HOLES FOR POLE INSTALLATION	94
H207 CLEAR OR CONTROL VEGETATION FROM SUBSTATION GROUNDS	94
F147 REMOVE POLES USING WINCH LINES	93
F119 CUT POLE GAINS AND DRILL BOLT HOLES	93
G177 REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	93
N413 INSPECT OR CLEAN HOT LINE TOOLS	93
G179 REMOVE OR INSTALL POLE GROUNDS	93
H208 CLEAR OR CONTROL VEGETATION FROM TRANSFORMER PADS	93
H253 THREAD OR PULL ELECTRIC CABLES THROUGH CONDUITS	93

TABLE A9
EXAMPLES OF TASKS PERFORMED BY POWERLINE FOREMEN
(GRP157)

<u>DUTY/TASK TITLES</u>	<u>PERCENT MEMBERS PERFORMING (N=31)</u>	
B20	ASSIGN WORK TO PERSONNEL	100
C53	INSPECT WORKSITES	100
B21	CONDUCT INVENTORIES OF TOOLS, EQUIPMENT, OR SUPPLIES	100
B30	IMPLEMENT OR DIRECT SAFETY PROGRAMS	100
C58	PERFORM SPOT INSPECTIONS OF RUBBER PROTECTIVE EQUIPMENT	100
C57	PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	100
B23	COUNSEL SUBORDINATES ON JOB PROGRESSION OR CAREER DEVELOPMENT	100
H218	FUSE TRANSFORMER BANKS	100
A12	ESTABLISH WORK PRIORITIES	97
B22	COORDINATE WORK ACTIVITIES WITHIN SECTIONS OR WITH OTHER BASE ACTIVITIES	97
B34	SELECT MATERIAL OR EQUIPMENT FOR CONSTRUCTION OR MAINTENANCE JOBS	97
A16	PLAN OR SCHEDULE WORKLOAD	97
A3	DESIGN OR IMPROVE WORK METHODS OR PROCEDURES	97
D65	CONDUCT ON-THE-JOB TRAINING (OJT)	97
G175	REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	97
G158	CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	97
H237	REMOVE OR INSTALL FUSED CUTOUTS	97
A10	ESTABLISH REQUIREMENTS FOR EQUIPMENT, TOOLS, OR SUPPLIES	94
C52	INSPECT QUALITY OF COMPLETED REPAIRS	94
B31	INTERPRET PLANS, SKETCHES, WIRING DIAGRAMS, OR SPECIFICATION SHEETS	94
C56	PERFORM SPOT INSPECTIONS OF HOT LINE TOOLS	94
E95	COMPLETE AF FORMS 267 (ELECTRICAL DANGER-MEN AT WORK)	94
G159	DIRECT INSTALLATION OF OVERHEAD CIRCUITS	94
F137	ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	94
F130	INSPECT POLE HARDWARE	94
F131	INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	94
F120	DETERMINE DEPTH AND DIAMETER OF HOLES FOR POLE INSTALLATION	94
F116	CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	94
H214	CONNECT OR DISCONNECT TRANSFORMERS	94
M388	INSPECT FUSE CUTOUTS	94
A11	ESTABLISH SHOP REQUIREMENTS	90
E111	VERIFY INFORMATION ON WORK ORDERS	90
B29	ESTABLISH PROCEDURES FOR MAINTENANCE OR UTILIZATION OF TOOLS, EQUIPMENT, OR SUPPLIES	90
E89	COMPLETE AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	90
A17	SCHEDULE LEAVES, PASSES, OR TDYS	90

TABLE A10

EXAMPLES OF TASKS PERFORMED BY POWER LINE INSTALLER REPAIRMEN
(GRP111)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=490)
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	99
F142 REMOVE OR INSTALL GUY ANCHORS	99
H237 REMOVE OR INSTALL FUSED CUTOUTS	98
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	98
H241 REMOVE OR INSTALL POLE MOUNTED TRANSFORMERS	98
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	98
N412 INSPECT OR CLEAN HANDTOOLS	98
F143 REMOVE OR INSTALL GUY WIRES	97
N408 CLEAN SHOP OR STORAGE FACILITIES	97
H242 REMOVE OR INSTALL SERVICE DROPS	97
H218 FUSE TRANSFORMER BANKS	97
H214 CONNECT OR DISCONNECT TRANSFORMERS	97
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	97
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	97
F130 INSPECT POLE HARDWARE	97
M388 INSPECT FUSE CUTOUTS	97
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	97
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	97
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	96
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	96
F131 INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	96
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	96
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	96
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	96
G165 LOAD OR UNLOAD REELS	96
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	96
H207 CLEAR OR CONTROL VEGETATION FROM SUBSTATION GROUNDS	96
F119 CUT POLE GAINS AND DRILL BOLT HOLES	96
G203 TRIM OR CUT TREES USING HAND EQUIPMENT	96
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	96
F120 DETERMINE DEPTH AND DIAMETER OF HOLES FOR POLE INSTALLATION	96
I277 PUMP WATER FROM MANHOLES	95
G179 REMOVE OR INSTALL POLE GROUNDS	95
F147 REMOVE POLES USING WINCH LINES	95
G177 REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	95
J336 REMOVE OR INSTALL FLOODLIGHT OR SECURITY LIGHT FIXTURES	95
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	94
H208 CLEAR OR CONTROL VEGETATION FROM TRANSFORMER PADS	94

TABLE A11

**EXAMPLES OF TASKS PERFORMED BY JUNIOR POWERLINE
INSTALLER REPAIRER (GRP092)**

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=63)
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	98
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	95
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	95
H237 REMOVE OR INSTALL FUSED CUTOUTS	95
N408 CLEAN SHOP OR STORAGE FACILITIES	94
J341 REMOVE OR INSTALL LIGHTING SYSTEM PHOTOELECTRIC CELLS	94
J351 REMOVE OR INSTALL STREETLIGHT FIXTURES	94
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	94
F119 CUT POLE GAINS AND DRILL BOLT HOLES	94
J335 REMOVE OR INSTALL FLOOD OR SECURITY LIGHT BULBS	90
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	90
H242 REMOVE OR INSTALL SERVICE DROPS	90
F143 REMOVE OR INSTALL GUY WIRES	89
H241 REMOVE OR INSTALL POLE MOUNTED TRANSFORMERS	89
H214 CONNECT OR DISCONNECT TRANSFORMERS	89
J330 REMOVE OR INSTALL BULBS IN DE-ENERGIZED STREETLIGHT FIXTURES	87
F142 REMOVE OR INSTALL GUY ANCHORS	87
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	87
H207 CLEAR OR CONTROL VEGETATION FROM SUBSTATION GROUNDS	87
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	86
I277 PUMP WATER FROM MANHOLES	84
J352 REPLACE AIRFIELD LIGHTS	83
G203 TRIM OR CUT TREES USING HAND EQUIPMENT	83
G177 REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	83
J328 REMOVE OR INSTALL AIRFIELD LIGHT FIXTURES	81
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	81
N412 INSPECT OR CLEAN HANDTOOLS	81
G179 REMOVE OR INSTALL POLE GROUNDS	81
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	81
F131 INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	79
H218 FUSE TRANSFORMER BANKS	79
P457 FIRE M-16 RIFLES	79
F115 CHANGE AUGER BITS	79
J299 ADJUST FLOODLIGHT OR SECURITY LIGHT FIXTURES	78
H208 CLEAR OR CONTROL VEGETATION FROM TRANSFORMER PADS	78
G165 LOAD OR UNLOAD REELS	78
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	76
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	76

TABLE A12

EXAMPLES OF TASKS PERFORMED BY LINEMEN (GRP061)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=14)
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	100
G158 CONNECT OR DISCONNECT OVERHEAD CONDUCTORS	100
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	93
F119 CUT POLE GAINS AND DRILL BOLT HOLES	93
F148 REMOVE SOIL OR ROCK FROM AUGER BITS	93
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	93
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	93
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	93
F147 REMOVE POLES USING WINCH LINES	93
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	86
F149 RIG EQUIPMENT FOR ERECTIONS OR REMOVALS	86
F150 RIG POLES FOR ERECTIONS OR REMOVALS	86
F120 DETERMINE DEPTH AND DIAMETER OF HOLES FOR POLE INSTALLATION	86
G177 REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	86
F142 REMOVE OR INSTALL GUY ANCHORS	86
F143 REMOVE OR INSTALL GUY WIRES	86
G169 REEL OUT CONDUCTORS FOR OVERHEAD LINES	86
H237 REMOVE OR INSTALL FUSED CUTOUPS	86
G179 REMOVE OR INSTALL POLE GROUNDS	86
G165 LOAD OR UNLOAD REELS	86
F115 CHANGE AUGER BITS	86
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	79
F134 LOAD OR UNLOAD POLES ON MAINTENANCE TRUCKS	79
G198 STRING CONDUCTORS FOR OVERHEAD LINES	79
F123 DIRECT POLE INSTALLATION ACTIVITIES	79
F155 TRANSPORT POLES BY LINE MAINTENANCE TRUCKS	79
F124 DIRECT POLE REMOVAL ACTIVITIES	79
F129 GUIDE POLES TO CLEAR OBSTRUCTIONS DURING ERECTIONS OR REMOVALS	79
H214 CONNECT OR DISCONNECT TRANSFORMERS	79
F131 INSPECT POLES OR CROSSARMS FOR CRACKS OR DETERIORATIONS	71
F130 INSPECT POLE HARDWARE	71
G191 SAG CONDUCTORS USING SIGHTING METHODS	71
F136 LOAD OR UNLOAD POLES ON POLE TRAILERS	71
H241 REMOVE OR INSTALL POLE MOUNTED TRANSFORMERS	71
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	71
H242 REMOVE OR INSTALL SERVICE DROPS	71
H218 FUSE TRANSFORMER BANKS	71

TABLE A13

EXAMPLES OF TASKS PERFORMED BY TRAINING INSTRUCTORS
(GRP093)

DUTY/TASK TITLES	PERCENT MEMBERS PERFORMING (N=10)
D64 CONDUCT FORMAL CLASSROOM INSTRUCTION	100
D61 ADMINISTER WRITTEN, ORAL, OR PERFORMANCE TESTS	100
F116 CLIMB POLES USING BODY BELT, SAFETY STRAP, AND CLIMBERS	100
O442 PERFORM OR PRACTICE CLOSED CHEST CARDIAC MASSAGE	100
D68 DEMONSTRATE HOW TO LOCATE OR INTERPRET TECHNICAL INFORMATION	100
O446 PERFORM OR PRACTICE RESUSCITATION	100
F137 ORALLY OR MANUALLY SIGNAL TO POWER EQUIPMENT OPERATORS	100
F124 DIRECT POLE REMOVAL ACTIVITIES	100
F123 DIRECT POLE INSTALLATION ACTIVITIES	100
G177 REMOVE OR INSTALL INSULATORS FOR OVERHEAD CONDUCTORS	100
F157 TRANSPORT POLES BY POLE TRAILERS	100
G175 REMOVE OR INSTALL GROUND SETS ON DE-ENERGIZED LINES	100
G176 REMOVE OR INSTALL HARDWARE ON CROSSARMS	100
F120 DETERMINE DEPTH AND DIAMETER OF HOLES FOR POLE INSTALLATION	100
C57 PERFORM SPOT INSPECTIONS OF OPERATIONAL EQUIPMENT	90
O445 PERFORM OR PRACTICE POLE TOP RESCUE PROCEDURES	90
N428 PERFORM OPERATOR MAINTENANCE ON HIGH REACH TRUCKS	90
F136 LOAD OR UNLOAD POLES ON POLE TRAILERS	90
O443 PERFORM OR PRACTICE CONTROL OF BLEEDING	90
N429 PERFORM OPERATOR MAINTENANCE ON LINE TRUCKS	90
D85 WRITE TEST QUESTIONS	90
N423 INSPECT, CLEAN, OR TREAT CLIMBING EQUIPMENT	90
F140 RAISE POLES INTO POSITION USING DERRICK AND POWER WINCH METHODS	90
F118 CORRECT POLE ALIGNMENT USING POWER EQUIPMENT	90
F122 DIG HOLES USING AUGER BIT FOR POLES OR GUY ANCHORS	90
F135 LOAD OR UNLOAD POLES ON POLE RACKS	90
F155 TRANSPORT POLES BY LINE MAINTENANCE TRUCKS	90
F117 CORRECT POLE ALIGNMENT USING HAND TOOLS	90
F128 FILL HOLES OR TAMP EARTH AROUND POLES OR GUY ANCHORS USING TAMPERS	90
F152 SET UP POWER AUGER EQUIPMENT	90
B24 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	90
N422 INSPECT, CLEAN, OR REPAIR HAND LINES, BLOCK AND TACKLE, OR COFFIN HOISTS	90
G160 HOIST MATERIALS OR EQUIPMENT TO LINEMEN	90
G172 REMOVE OR INSTALL CORSSARMS WHICH SUPPORT DE-ENERGIZED CONDUCTORS	90

END

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