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ELECTRICIAN CAREER LADDER. AFSCS 54230, 54230F, 54250, 54250F, --ETC(U)
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OCCUPATIONAL SURVEY REPORT.



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ELECTRICIAN CAREER LADDER,
AFSCs 54230, 54230F, 54250, 54250F,
54270, 54270F, AND 54291.

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OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Electrician career ladder (AFSCs 54230, 54230F, 54250, 54250F, 54270, 54270F, and 54291). The project was directed by USAF Program Technical Training, Volume 2, dated July 1976. Authority for conducting specialty surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Capt Loretta Lee, Inventory Development Specialist. Mr. Reginald G. Nolte and Mr. Guy B. Cole analyzed the survey data and wrote the final report. This report has been reviewed and approved by Major Walter F. Kasper, Chief, Operations/Support Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas, 78236.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Because volume reproduction of this report is not feasible, distribution is made on a loan basis to air staff sections and major commands upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

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SUMMARY OF RESULTS

1. Survey Coverage: Survey results are based on responses from 74 percent of all Air Force electricians (DAFSC 542X0) and 76 percent of the LGM-25 electricians (DAFSC 542X0F) assigned to the career ladder.
2. Career Ladder Structure: Eleven job groups were identified as follows:
 - I. Interior Power Distribution and Lighting Specialists
 - II. General Electricians
 - III. Electro-Mechanical Appliance Repairmen
 - IV. Fire Alarm Systems Specialists
 - V. Interior Electrical Maintenance Specialists
 - VI. OJT Supervisors
 - VII. Electrical Superintendents/Supervisors
 - VIII. Electrical Quality Control Evaluators
 - IX. Electrical Inspectors
 - X. Intrusion Alarm Systems Specialists
 - XI. Planning Technicians
3. Job Satisfaction: Seventy-one percent of all survey respondents found their jobs interesting. This is slightly below the average reported by incumbents in 20 career ladders surveyed in 1976. Slightly more of the 542X0 find their job interesting than do 542X0F personnel. Eighty percent of all survey respondents felt that their talents and training were being used fairly well to perfectly. As was the case with job interest, this is slightly below the average reported by incumbents in 20 career ladders surveyed in 1976. In comparing responses from 542X0 and 542X0F airmen, the "F" shred personnel reported lower satisfaction with the use of their talents and training.
4. Comparison of 542X0 and 542X0F DAFSC Groups: Generally, AFS 542X0 personnel performed tasks related to the installation, maintenance, or repair of interior lighting systems and a variety of electrical and electrical-mechanical equipment. Electricians assigned to the F shred performed the same functions except that they specialized on equipment used in support of the Titan Missile System (LGM-25). When all jobs within the career ladder were grouped on the basis of task similarity, AFS 542X0F incumbents did not form an identifiable group within the career ladder. Instead, they appeared throughout many of the groups containing AFS 542X0 personnel. This seemed to indicate that the job of AFS 542X0F personnel may not be so unique as to require a shredout.
5. AFR 39-1 Review: Specialty descriptions for all skill levels in the electrician career ladder appear to accurately depict major duties and tasks performed by survey respondents.

6. STS Evaluation: Comparison of the current STS with survey data showed that the STS was an accurate outline of job tasks. All major functions identified during the occupational analysis were covered in detail in the STS.

OCCUPATIONAL SURVEY REPORT
ELECTRICIAN CAREER LADDER
AFSCs 542X0/XOF/91

INTRODUCTION

This is a report of an occupational survey of the Electrician career ladder (AFSCs 54230, 54230F, 54250, 54250F, 54270, 54270F, and 54291). The F shred specifies LGM-25 qualification on the Titan II missile system. The occupational survey was conducted by the Occupational Survey Branch, USAF Occupational Measurement Center, from October 1976 through August 1977. The previous occupational survey of this career ladder was completed in March 1973. There were no significant differences apparent in the overall findings of these reports.

↘ The report describes: (1) development and administration of the survey instrument; (2) summaries of tasks performed by airmen grouped by skill level, experience level, and similarity of tasks performed; (3) comparisons with career field structure documents; and (4) recommended actions for further study. ←

INVENTORY DEVELOPMENT AND ADMINISTRATION

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-542-088. Thorough research of publications and directives, personal interviews with 10 subject-matter specialists at three bases, and written reviews from 35 experienced electricians led to final development of the survey instrument, which consists of 369 tasks grouped under 10 duty headings.

During the period October 1976 through April 1977, consolidated base personnel offices in operational units worldwide administered the inventory booklets to job incumbents holding the electrician DAFSCs.

Table 1 reflects the percentage distribution, by major command, of assigned personnel in the career ladder as of September 1976. Also reflected is the distribution by major command of incumbents in the survey sample. The 1,259 AFSC 542X0 incumbents making up this sample represents 74 percent of the total AFSC population of 1,711 members. The 38 AFSC 542XOF incumbents represent 76 percent of the total AFSC population of 50 members.

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TABLE 1
 COMMAND REPRESENTATION OF SURVEY SAMPLE
 542X0/XOF/91

<u>COMMAND</u>	<u>PERCENT OF PERSONNEL ASSIGNED TO COMMAND</u>		<u>PERCENT OF SURVEY SAMPLE BY COMMAND</u>	
	<u>542X0</u>	<u>542XOF</u>	<u>542X0</u>	<u>542XOF</u>
SAC	24	100	24	100
TAC	14	-	15	-
MAC	13	-	14	-
ATC	8	-	8	-
USAFE	8	-	7	-
AFLC	7	-	7	-
ADC	6	-	6	-
PACAF	6	-	5	-
AFSC	5	-	5	-
AAC	4	-	4	-
USAFSS	2	-	2	-
AFCS	1	-	1	-
AU	1	-	1	-
OTHER	<u>1</u>	<u>-</u>	<u>1</u>	<u>-</u>
	100	100	100	100
	<u>542X0/91</u>	<u>542XOF</u>		
Total Assigned:	1,711	50		
Total Sampled:	1,259	38		
Percent of Assigned:	74%	76%		

CAREER LADDER STRUCTURE

The job structure of the Electrician career ladder was determined on the basis of similarity in tasks actually performed by incumbents in the field. This analysis was conducted independent of any prescribing directive for classification or training. By utilizing the job structure as a starting point the analyst is able to describe the career ladder, as it presently exists, and in turn evaluate the current Airman Air Force Specialty Description (AFR 39-1), Specialty Training Standard (STS), and other pertinent documents. In addition, information concerning the necessity of shredouts, possible classification problems and other variables which can be of interest to training or personnel managers, are reported.

The computer printouts used in this part of the analysis helped identify: (1) tasks which tend to be performed by the same incumbents in the field; (2) the breadth or narrowness of jobs performed in the field; and (3) tasks and background characteristics used in distinguishing among different jobs within the career field. Structure analysis therefore provided an objective indication of the amount of task overlap among the various groups of incumbents included in the survey sample.

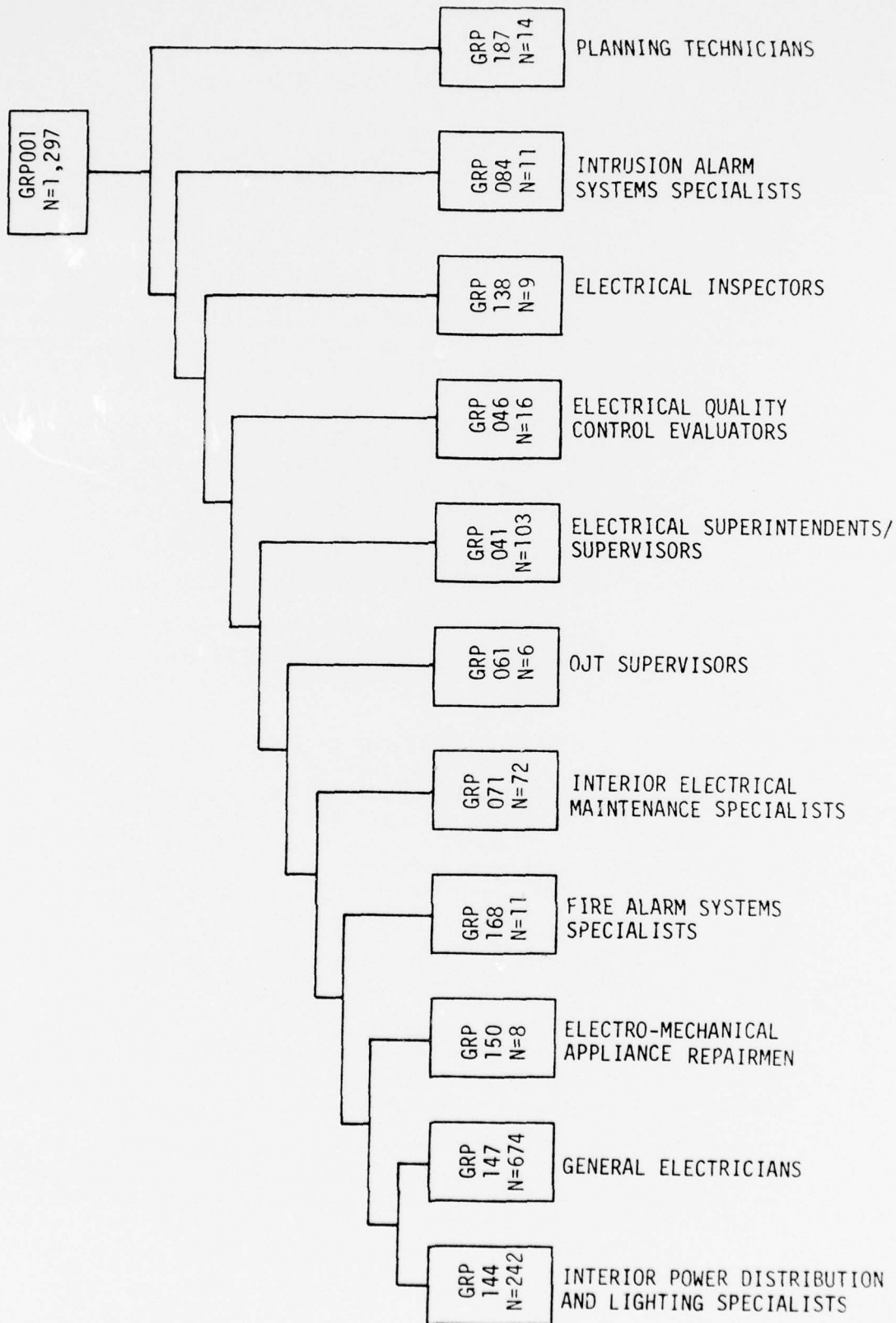
Based on the similarity of tasks performed by incumbents, the Electrician 542X0/XOF career field appears to be organized in eleven major groups or clusters. These job groups are illustrated in Figure 1 and described below.

- I. Interior Power Distribution and Lighting Specialists (GRP144)
- II. General Electricians (GRP147)
- III. Electro-Mechanical Appliance Repairmen (GRP150)
- IV. Fire Alarm Systems Specialists (GRP168)
- V. Interior Electrical Maintenance Specialists (GRP071)
- VI. OJT Supervisors (GRP061)
- VII. Electrical Superintendents/Supervisors (GRP041)
- VIII. Electrical Quality Control Evaluators (GRP046)
- IX. Electrical Inspectors (GRP138)
- X. Intrusion Alarm Systems Specialists (GRP084)
- XI. Planning Technicians (GRP187)

Ninety percent of the incumbents in the sample were found to perform jobs roughly equivalent to those described in the 11 major groupings shown in Figure 1. The remaining 10 percent of the sample included members whose jobs were not associated with any of these major groupings.

Personnel holding the F shredout did not cluster into a distinct group as would be expected, but appeared within a number of the reported groups, indicating that the majority of the tasks they perform are similar to those of the 542X0 personnel.

FIGURE 1



Group Descriptions

Members making up the Interior Power Distribution and Lighting Specialist and General Electrician groups (GRP144 and GRP147 respectively) comprise 71 percent of the total sample survey. Personnel in Interior Power Distribution and Lighting Specialist group were primarily involved with the installation and maintenance of interior lighting and power distribution systems. Task performance was limited to an average of 62 tasks annually involving general electrical tasks involving less complex commercial-type work. The majority of the incumbents were 5-skill level airmen in their first 48 months of service. General Electricians (GRP147), representing 52 percent of the survey sample, performed a wide variety of electrician tasks. Typically, these personnel performed an average of 142 tasks, twice as many as that of the Interior Power Distribution and Lighting Specialist group and were 5- and 7-skill level airmen having 4-8 years of service time. In addition to performing interior installation and maintenance of interior lighting and power distribution systems, these incumbents were involved in more complex and varied tasks such as inspection and repair of AC circuitry, electro-mechanical equipment, alarm systems, and DC circuits and equipment.

The eight members comprising the Electro-Mechanical Appliances Repairman group (GRP150) spend nearly 50 percent of their time maintaining installed electro-mechanical equipment and performing shop maintenance and repair of shop equipment. Most of their work involves commercial type equipment, with complex or specialized equipment generally not being involved.

Another small group consists of personnel who work primarily on Fire Alarm Systems (GRP168). Much of their job time involves working with DC current and devices. Over a third of these incumbents are overseas.

Members comprising the Interior Electrical Maintenance Specialists group (GRP071) perform a relatively small number of routine maintenance tasks related to living quarters or business offices. Typical tasks are: Remove or replace light bulbs, tighten wiring connections, splice wiring or cables, and remove or replace extension cords, wiring, or plugs.

The OJT Supervisors (GRP061) are engaged in training airmen in maintaining electro-mechanical equipment and the installation and maintenance of interior electrical power distribution and lighting systems. The group is small, consisting of six personnel.

Electrical Superintendents/Supervisors (GRP041) consists of 103 supervising personnel, primarily 7- and 9-skill levels, engaged in supervising the functions of the electrical branch or interior electric shop. Typical supervisory tasks include planning or scheduling workload, evaluating personnel or manning problems, implementing safety programs, and scheduling shifts, work assignments and similar tasks.

The Electrical Quality Control Evaluators (GRP046) are a small group of electricians engaged in evaluation functions relative to the electrical maintenance and repair functions within Civil Engineering. Most of these individuals are 7- and 9-skill levels with over 12 years experience in the career field.

Electrical Inspectors (GRP138) represent a group of nine individuals who spend the majority of their time inspecting installed electro-mechanical equipment and interior electrical power distribution and lighting systems. Within this group are four members who are in missile units or rocket propulsion sections. Two of these incumbents carry the F shred. All group members hold a 7- or 9-skill level.

Intrusion Alarm Systems Specialist (GRP084) specialize in the installation, maintenance, and repair of intrusion alarm systems. All are stationed overseas and are less concerned with fire alarm systems.

The Planning Technicians group members (GRP187) were engaged in electrical planning or programming functions. Representative tasks included planning installation, maintenance, or inspection of electrical power distribution systems, or electro-mechanical equipment; calculating or determining power requirements; drafting budgeting or financial estimates; and evaluating material problems and the like.

A more detailed discussion of the above groups, along with complete summaries of representative tasks and background information, can be found in Appendix A.

COMPARISON OF AFR 39-1 JOB DESCRIPTIONS TO SURVEY DATA

Survey results were compared to the AFR 39-1 job descriptions, dated 1 September 1976, for AFSCs 54250, 54270, and 54291. The job descriptions generally reflected an accurate picture of the jobs performed by survey respondents.

ANALYSIS OF DAFSC GROUPS

Tables 2 and 3 show the relative percent time spent by members of the various skill level groups on tasks within each duty area. Both the 54250 and 54250F personnel devote a majority of their time to Installing and Maintaining Interior Electrical Power Distribution and Lighting Systems (Duty F) and Maintaining Installed Electro-Mechanical Equipment (Duty H). The major differences between skill levels, as reflected in these tables, are primarily related to the increase in time spent on supervisory tasks and a decrease in time spent on technical tasks as skill level increases. Although 5-skill level personnel devote from seven to 13 percent of their time to tasks within the supervisory and administrative duties, 7-skill level personnel spend approximately 50 percent of their time on supervision and administration functions. In contrast, 9-skill level personnel spend almost all of their time (87 percent) on these functions.

Table 4 lists tasks which most clearly differentiate between the 5- and 7-skill levels of the 542X0 personnel. Individuals at the 5-skill level concentrate primarily on technical functions. Many of these functions involve the more routine and repetitive tasks such as installing or connecting outlet boxes, receptacles, fixtures, etc.; installing or connecting interior junctions; and removing or replacing light bulbs. Typically, higher percentages of 7-skill level personnel perform supervisory tasks such as counseling personnel, scheduling work and leave for subordinates, conducting or participating in orientations or briefings and conducting safety training.

Comparisons between the 5- and 7-skill levels for DAFSC 542X0F personnel (see Table 5) show essentially the same differences as those found between the 54250 and 54270 personnel. Those at the 5-skill level perform a number of technical tasks such as installing or connecting receptacles or switches, soldering or wiring electrical connectors, and installing or removing and replacing AC equipment. Higher percentages of the personnel at the 7-skill level in the F shred perform supervisory functions and lower percentages perform technical tasks.

Tables 6 and 7 show tasks which best differentiate between 7-skill level personnel in the 54270 and 54270F jobs as compared to 9-skill level personnel. As shown in both tables, 9-skill level electricians primarily perform supervisory and managerial tasks while 7-skill level personnel are still involved in both supervision and technical task performance.

TABLE 2
PERCENT TIME SPENT ON DUTIES BY 542X0 DAFSC GROUPS

DUTIES	DAFSC	DAFSC	DAFSC	DAFSC
	54230 (N=190)	54250 (N=792)	54270 (N=226)	54291 (N=40)
A PLANNING AND ORGANIZING	1	2	9	14
B DIRECTING AND IMPLEMENTING	2	4	11	23
C EVALUATING	1	2	12	30
D TRAINING	1	2	7	9
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	2	3	9	11
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	43	38	22	6
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	9	9	6	2
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	24	22	13	2
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	7	9	5	2
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	10	9	6	1
TOTALS	100	100	100	100

TABLE 3
PERCENT TIME SPENT ON DUTIES BY 542X0F DAFSC GROUPS

DUTIES	DAFSC 54230F (N=11)	DAFSC 54250F (N=18)	DAFSC 54270F (N=9)
A PLANNING AND ORGANIZING	1	1	4
B DIRECTING AND IMPLEMENTING	3	2	8
C EVALUATING	1	1	20
D TRAINING	-	1	11
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	3	2	7
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	38	32	14
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	8	12	5
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	25	35	23
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO- MECHANICAL EQUIPMENT	11	7	5
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	10	7	3
TOTALS	100	100	100

TABLE 4
 TASKS WHICH BEST DIFFERENTIATE BETWEEN THE 5- AND 7-SKILL LEVELS FOR DAFSC 542X0
 (PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54250 (N=792)	DAFSC 54270 (N=226)	DIFFERENCE
F35 INSTALL OR CONNECT RECEPTACLES OR SWITCHES	90	53	+37
F65 REMOVE OR INSTALL OUTLET BOXES OR FIXTURES	88	52	+36
F31 INSTALL OR CONNECT INTERIOR JUNCTIONS, OUTLETS, OR SWITCH BOXES	88	53	+35
F67 REMOVE OR INSTALL RECEPTACLES OR SWITCHES	88	53	+35
F30 INSTALL OR CONNECT FIXTURES OR OUTLET BOXES	89	54	+35
H67 REMOVE OR REPLACE LIGHT BULBS	85	51	+34
B4 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	20	67	-47
C11 EVALUATE PERFORMANCE OF AIRMEN OR PREPARE AIRMAN PERFORMANCE REPORTS (APRs)	18	63	-45
A12 SCHEDULE SHIFTS, WORK ASSIGNMENTS, OR LEAVES	12	56	-44
B3 CONDUCT OR PARTICIPATE IN SUPERVISORY ORIENTATION OR BRIEFINGS	13	54	-41
B26 SUPERVISE ELECTRICIANS (AFSC 54250)	21	62	-41
D17 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	10	49	-39
A9 PLAN OR SCHEDULE WORKLOADS	15	53	-38
B19 IMPLEMENT OR FOLLOW UP SAFETY TRAINING PROGRAMS	16	52	-36
D9 CONDUCT SAFETY TRAINING	17	52	-35

TABLE 5
 TASKS WHICH BEST DIFFERENTIATE BETWEEN THE 5- AND 7-SKILL LEVELS FOR DAFSC 542X0F
 (PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54250F (N=18)	DAFSC 54270F (N=29)	DIFFERENCE
F35 INSTALL OR CONNECT RECEPTACLES OR SWITCHES	100	33	+67
F71 SOLDER WIRING OR ELECTRICAL CONNECTORS	100	33	+67
J12 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	83	22	+61
G11 INSTALL OR CONNECT AC EQUIPMENT	100	44	+56
J6 PAINT FACILITIES	78	22	+56
H47 REMOVE OR REPLACE AC EQUIPMENT	94	44	+50
C20 INSPECT OJT RECORDS	-	89	-89
C25 REVIEW CORRESPONDENCE OR REPORTS	-	78	-78
C10 EVALUATE MATERIEL PROBLEMS	-	67	-67
C29 REVIEW WORKLOADS OR SCHEDULING	-	67	-67
C15 EVALUATE TECHNICAL PROBLEMS IN USE OR MAINTENANCE OF TEST OR SUPPORT EQUIPMENT	6	67	-60
C11 EVALUATE PERFORMANCE OF AIRMEN OR PREPARE AIRMAN PERFORMANCE REPORTS (APRs)	11	67	-56
D15 COUNSEL OJT TRAINEES	11	67	-56
B19 IMPLEMENT OR FOLLOW UP SAFETY TRAINING PROGRAMS	-	56	-56
A12 SCHEDULE SHIFTS, WORK ASSIGNMENTS, OR LEAVES	6	56	-50

TABLE 6

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 54270 AND 54291 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54270 (N=226)	DAFSC 54291 (N=40)	DIFFERENCE
J12 REMOVE OR DISPOSE OF TRASH, WASTE, OR MATERIALS	56	8	+48
F50 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	56	8	+48
F62 REMOVE OR INSTALL FUSES OR RESETS	58	10	+48
H73 TIGHTEN WIRING CONNECTIONS	55	8	+47
F30 INSTALL OR CONNECT FIXTURES OR OUTLET BOXES	54	8	+46
H67 REMOVE OR REPLACE LIGHT BULBS	51	5	+46
C12 EVALUATE PERFORMANCE OF CIVILIANS OR PREPARE ANNUAL RATINGS	27	83	-56
A16 UPDATE POSITION DESCRIPTIONS FOR CIVILIAN PERSONNEL	22	78	-56
C26 REVIEW OR INDORSE APPS, SPECIAL AWARDS, OR PERSONNEL ACTIONS	35	90	-55
E13 MAINTAIN POWER LINE FAILURE DOCUMENTATION	5	60	-55
C9 EVALUATE MAINTENANCE OF POWER LINE DISTRIBUTION SYSTEMS OR ASSOCIATED EQUIPMENT	12	65	-53
C3 EVALUATE ADMINISTRATIVE PROBLEMS	27	80	-53
B28 SUPERVISE ELECTRICIAN TECHNICIANS (AFSC 54270)	33	85	-52
B16 IMPLEMENT OR FOLLOW UP COST REDUCTION PROGRAMS	16	63	-46
C13 EVALUATE PERSONNEL OR MANNING PROBLEMS	39	85	-46

TABLE 7

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 54270F AND 54291 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 54270F (N=9)	DAFSC 54291 (N=40)	DIFFERENCE
H21 INSPECT, CLEAN, OR SERVICE ELEVATOR SYSTEMS ELECTRO-MECHANICAL EQUIPMENT OR COMPONENTS	67	-	+67
H26 INSPECT, CLEAN, OR SERVICE MISSILE FACILITY ELECTRO-MECHANICAL SYSTEMS	67	-	+67
H34 ISOLATE MALFUNCTIONS ON MISSILE CONTROL CENTER ELECTRO-MECHANICAL EQUIPMENT	67	-	+67
H15 INSPECT, CLEAN, OR SERVICE DC CIRCUITRY ACCESSORIES OR COMPONENTS	67	5	+62
H16 INSPECT, CLEAN, OR SERVICE DC EQUIPMENT	67	5	+62
H13 INSPECT, CLEAN, OR SERVICE BATTERIES OR BANKS	67	8	+59
H6 INSPECT, CLEAN, OR SERVICE AC CONTROLS OR SWITCHES	67	10	+57
H7 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	67	10	+57
B25 SUPERVISE CIVILIAN PERSONNEL	-	85	-85
B28 SUPERVISE ELECTRICIAN TECHNICIANS (AFSC 54270)	-	85	-85
C12 EVALUATE PERFORMANCE OF CIVILIANS OR PREPARE ANNUAL RATINGS	-	83	-83
A16 UPDATE POSITION DESCRIPTIONS FOR CIVILIAN PERSONNEL	-	78	-78
C27 REVIEW OR INDORSE CIVILIAN PERFORMANCE RATINGS OR PERSONNEL ACTIONS	11	75	-64
A15 UPDATE POLICY DIRECTIVES OR OFFICE INSTRUCTIONS (OIs)	11	72	-61
B26 SUPERVISE ELECTRICIANS (AFSC 54250)	-	58	-58

A dash (-) = less than 1% performing

COMPARISON OF 542X0 AND 542X0F DAFSC GROUPS

Generally, 542X0 personnel perform tasks concerned with the installation, maintenance, or repair of interior wiring systems and a variety of electrical and electrical-mechanical equipment. Electricians assigned to the F shred perform the same functions except that they specialize on interior wiring systems and electrical and electrical-mechanical equipment which is used in support of the Titan missile systems (LGM-25). The survey data indicate there are a large number of tasks which are common to both groups. For example, 103 of 184 technical tasks were performed by 30 percent or more of the respondents in both the 542X0 and the 542X0F groups. A representative sample of 20 of these tasks are shown on Table 8. These tasks illustrate that both groups are involved in the installation, maintenance, and repair of interior power distribution systems including interior junctions, outlets, switches and controls; installation, inspection, cleaning, or servicing of AC power circuits and AC fixtures and appliances; installing or connecting DC equipment; installing, inspecting, and servicing emergency lighting systems; isolating malfunctions and removing corrosion on electrical-mechanical appliances or fixtures; and cleaning, servicing, or lubricating special tools or shop equipment. These common tasks reflect an overall common knowledge of electrical theory and its practical application in a variety of work situations.

Table 9 lists tasks for which there appears to be significant differences in percent members performing between 542X0 and 542X0F personnel. The task list used in this survey contained task statements which were missile specific yet did not provide equivalent tasks for other systems (such as anti-intrusion or fire alarm systems, etc.) Subsequent discussion with technicians in the field suggests that many of these tasks are also applicable to locations other than missile facilities (for example, elevator systems are also in USAF Medical Centers, etc.) Technicians also report that when 542X0F personnel are not readily available, 542X0 personnel are utilized to work on LGM25 systems. Data in Table 9 tends to support this observation in that a few 542X0 personnel do report performing missile-related tasks.

Basic electrical theory and practices are common to both the 542X0 and 542X0F incumbents. The Technical Training Course, 3ABR54230 Electrician, qualifies individuals for assignment to 542X0 and 542X0F positions. However, it contains no specific training on missile systems. Also, there is no separate Career Development Course (CDC) for the 542X0F career ladder.

A particularly significant consideration is that 542X0F incumbents did not form an identifiable group within the career ladder when all jobs were grouped on the basis of task similarity. Instead, they appeared throughout many of the groups identified earlier. This seems to indicate that the job of 542X0F personnel may not be so unique as to require a shredout.

TABLE 8

TWENTY REPRESENTATIVE TASKS PERFORMED BY 30 PERCENT OR MORE OF BOTH 542X0 AND 542X0F PERSONNEL

	TASK	PERCENT MEMBERS PERFORMING	
		542X0	542X0F
F1	ANALYZE OR INTERPRET PLANS, DIAGRAMS, OR SPECIFICATIONS FOR INSTALLATION OF INTERIOR POWER DISTRIBUTION SYSTEMS	54	37
F2	ASSEMBLE OR WIRE CIRCUITRY COMPONENTS	53	58
F13	INSPECT OR CLEAN INTERIOR JUNCTION, OUTLETS, OR SWITCH BOXES	68	74
F14	INSPECT OR CLEAN INTERIOR POWER CONTROLS	57	58
F21	INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	48	63
F64	REMOVE OR INSTALL INTERIOR POWER CONTROLS	63	55
G4	ASSEMBLE, WIRE, OR SERVICE ELECTRO-MECHANICAL EQUIPMENT FOR INSTALLATION	42	53
G9	INSTALL OR CONNECT AC APPLIANCES OR FIXTURES	70	47
G11	INSTALL OR CONNECT AC EQUIPMENT	69	76
G15	INSTALL OR CONNECT BATTERIES OR BANKS	44	47
G18	INSTALL OR CONNECT DC EQUIPMENT	30	47
H8	INSPECT, CLEAN, OR SERVICE AC EQUIPMENT POWER CIRCUITRY	51	68
H9	INSEPECT, CLEAN, OR SERVICE AC FIXTURES OR APPLIANCES	66	68
H13	INSPECT, CLEAN, OR SERVICE BATTERIES OR BANKS	43	55
H30	ISOLATE MALFUNCTIONS ON ELECTRO-MECHANICAL APPLIANCES OR FIXTURES	34	50
H31	ISOLATE MALFUNCTIONS ON FIRE ALARM SYSTEMS	41	68
H71	SOLDER OR WELD EQUIPMENT	46	50
I1	ASSEMBLE OR DISASSEMBLE EQUIPMENT OR COMPONENTS	46	53
I13	ISOLATE MALFUNCTIONS ON AC EQUIPMENT, MOTORS, OR STARTERS	55	55
J4	CLEAN, SERVICE, OR LUBRICATE SPECIAL TOOLS OR SHOP EQUIPMENT	52	37

TABLE 9

TYPICAL TASKS WHICH DIFFERENTIATE BETWEEN 542XO AND 542XOF PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASK	DAFSC 542XO	DAFSC 542XOF	DIFFERENCE
F66 REMOVE OR INSTALL POWER SERVICE ENTRANCES OR WEATHERHEADS	45	5	+40
J7 PERFORM OPERATOR MAINTENANCE ON CIVIL ENGINEERING SHOP EQUIPMENT	41	3	+38
F3 CALCULATE OR DETERMINE POWER REQUIREMENTS	50	13	+37
I38 REWIRE APPLIANCES OR FIXTURES	53	18	+35
G25 INSTALL OR CONNECT INSTRUSION ALARM SYSTEMS OR COMPONENTS	33	11	+28
I4 BENCH CLEAN OR SERVICE APPLIANCES, FIXTURES, OR COMPONENTS	52	26	+26
I19 ISOLATE MALFUNCTIONS ON ELECTRICALLY POWERED HANDTOOLS	44	18	+26
H26 INSPECT, CLEAN, OR SERVICE MISSILE FACILITY ELECTRO-MECHANICAL SYSTEMS	6	68	-62
H21 INSPECT, CLEAN, OR SERVICE ELEVATOR SYSTEMS ELECTRO-MECHANICAL EQUIPMENT OR COMPONENTS	15	76	-61
H62 REMOVE OR REPLACE ELEVATOR SYSTEMS ELECTRO-MECHANICAL COMPONENTS	9	68	-59
H34 ISOLATE MALFUNCTIONS ON MISSILE CONTROL CENTER ELECTRO-MECHANICAL EQUIPMENT	3	61	-58
G21 INSTALL OR CONNECT ELECTRO-MECHANICAL ELEVATOR EQUIPMENT	9	66	-57
H40 ISOLATE MALFUNCTIONS ON MISSILE SITE ELECTRO-MECHANICAL EQUIPMENT	2	58	-56
H36 ISOLATE MALFUNCTIONS ON MISSILE ELEVATOR ELECTRO-MECHANICAL EQUIPMENT	4	53	-49
F12 INSPECT OR CLEAN FILTERS OR COMPONENTS	14	58	-44
H38 ISOLATE MALFUNCTIONS ON MISSILE OXIDIZER CONDITIONING OR TRAILER EQUIPMENT	2	42	-40
H39 ISOLATE MALFUNCTIONS ON MISSILE PROPELLANT TRANSFER OR TRAILER EQUIPMENT	2	42	-40

ANALYSIS OF ACTIVE FEDERAL MILITARY SERVICE (AFMS) GROUPS

Tables 10 and 11 reflect the percent time spent on the various duty categories by respondents grouped by enlistment periods for AFSCs 524X0 and 542X0F. Trends similar to those for DAFSC groups were noted, with incumbents in the first three enlistment periods spending most of their time on technical duties while those in the fourth or subsequent enlistment groups were performing supervisory tasks.

First Enlistment Groups

Percent time spent on various tasks by the first job group (6-24 months AFMS) is nearly identical to the first enlistment group. Incumbents spend the majority of their time on technical tasks involving interior power distribution, lighting systems, and electro-mechanical equipment. The number of tasks are limited to 62 and do not involve the more complex work performed by subsequent enlistment groups.

Tables 12 and 13 portray representative tasks performed by DAFSC 542X0 and DAFSC 542X0F personnel in their first enlistment period. The DAFSC 542X0 incumbents reflect high percentages of members performing interior electrical tasks involving installation and maintenance of power distribution and lighting systems. Personnel in DAFSC 542X0F perform similar tasks but in addition spend a high percentage of their job time on maintaining installed electro-mechanical equipment, such as inspect, clean, or service missile facility electro-mechanical systems, and install or connect electro-mechanical elevator equipment.

Subsequent Enlistment Groups

As shown by these tables, incumbents in the first three enlistment periods spent the majority of their job time on technical tasks (82 percent). By the fourth enlistment, supervisory duties had increased and incumbents spent only 67 percent of their job time on technical duties. By the sixth enlistment, incumbents spend only 47 percent of their time performing technical tasks while supervisory tasks now take up 53 percent of their job time. This trend of increasing supervisory and decreasing technical percentages is generally typical in all career fields, but it is interesting to note that the trend is depressed in both the 542X0 and 542X0F ladders. The job time percentages for most career fields surveyed showed that the fifth and sixth enlistment period are generally more heavily weighted toward supervisory tasks than in this career ladder.

TABLE 12

REPRESENTATIVE TASKS PERFORMED BY 80% OR MORE OF 542X0 PERSONNEL
IN THEIR FIRST ENLISTMENT PERIOD (1-48 MONTHS TAFMS)
(N=661)

TASK	PERCENT MEMBERS PERFORMING
F36 INSTALL OR CONNECT SENSORS OR CIRCUIT CONTROLLERS	92
F30 INSTALL OR CONNECT FIXTURES OR OUTLET BOXES	92
F31 INSTALL OR CONNECT INTERIOR JUNCTIONS, OUTLETS, OR SWITCH BOXES	91
F67 REMOVE OR INSTALL RECEPTACLES OR SWITCHES	90
F62 REMOVE OR INSTALL FUSES OR RESETS	90
F65 REMOVE OR INSTALL OUTLET BOXES OR FIXTURES	89
F50 MEASURE, CUT, RUN, OR TERMINATE WIRING THROUGH CONDUITS	89
F49 MEASURE, CUT, FORM, FIT, OR ATTACH THIN WALL TUBING OR CONDUITS	88
H67 REMOVE OR REPLACE LIGHT BULBS	88
F63 REMOVE OR INSTALL INTERIOR JUNCTION OUTLETS OR SWITCH BOXES	85
H73 TIGHTEN WIRING CONNECTIONS	84
J1 CLEAN FACILITIES	84
J2 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	83
H72 SPLICE WIRING OR CABLES	82

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY 85% OR MORE OF 542X OF PERSONNEL
IN THEIR FIRST ENLISTMENT PERIOD (1-48 MONTHS TAFMS)
(N=18)

TASK	PERCENT MEMBERS PERFORMING
H67 REMOVE OR REPLACE LIGHT BULBS	100
F35 INSTALL OR CONNECT RECEPTACLES OR SWITCHES	100
H73 TIGHTEN WIRING CONNECTIONS	94
G11 INSTALL OR CONNECT AC EQUIPMENT	94
F67 REMOVE OR INSTALL RECEPTACLES OR SWITCHES	94
F62 REMOVE OR INSTALL FUSES OR RESETS	94
F24 INSTALL EMERGENCY BATTERY LIGHTING UNITS	89
F21 INSPECT OR SERVICE EMERGENCY BATTERY LIGHTING UNITS	89
F31 INSTALL OR CONNECT INTERIOR JUNCTIONS, OUTLETS, OR SWITCH BOXES	89
H47 REMOVE OR REPLACE AC EQUIPMENT	89
F42 ISOLATE MALFUNCTIONS ON LIGHTING SYSTEMS	89
H62 REMOVE OR REPLACE ELEVATOR SYSTEMS ELECTRO-MECHANICAL COMPONENTS	89
F63 REMOVE OR INSTALL INTERIOR JUNCTION OUTLETS OR SWITCH BOXES	89
H23 INSPECT, CLEAN, OR SERVICE FIRE ALARM SYSTEMS OR COMPONENTS	89
H7 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	89
F71 SOLDER WIRING OR ELECTRICAL CONNECTORS	89
F36 INSTALL OR CONNECT SENSORS OR CIRCUIT CONTROLLERS	89

ANALYSIS OF CONUS/OVERSEAS GROUPS

Task performance differences between DAFSC 54250 personnel assigned within CONUS and those overseas appear to be of little significance. CONUS personnel spend somewhat more time on cathodic protection systems, AC equipment controls or switches, and AC equipment power circuitry. Overseas personnel spend slightly more time on supervisory tasks such as planning or scheduling workloads, evaluating performance of airmen, and supervising civilian personnel.

The most significant differences were found in comparing background information for the CONUS/overseas groups. In general, the overseas group had more military service, greater time in the career ladder, and a somewhat higher average grade.

COMPARISON OF SPECIALTY TRAINING STANDARD (STS)
TO SURVEY DATA

STS 542X0, dated 2 December 1970, was compared to the survey data. Paragraphs 1 and 2 were not evaluated because of the general applicability to several related career fields.

The STS is designed to cover only the 542X0 ladder. No reference is made to the 542X0F ladder on the tasks peculiar to Titan II missile electricians. The additional training standards required of those individuals receiving the F shredout are contained in the 542X0F Job Proficiency Guide (JPG), Headquarters Strategic Air Command, dated 28 January 1976. Both documents adequately reflect the major functions identified by the occupational analysis. Proficiency levels also seemed to be appropriate.

SUMMARY OF BACKGROUND INFORMATION

Each USAF Job Inventory contains a background information section in which the respondent reports information about himself and his job. This information is summarized in the following paragraphs.

Method of Assignment to Career Ladder

Approximately two-thirds of the survey respondents entered the career ladder in one of three ways: by completing resident technical training, by directed duty assignment (DDA) from basic training to OJT without bypass test, or by being retrained from another Air Force specialty. The remaining third of the incumbents entered the career ladder by various other avenues as shown in Table 14.

Job Interest

Job interest of 542X0 and 542X0F incumbents is reflected in Table 15. On the average, 71 percent of all the survey respondents found their job interesting. This is slightly lower than the 80 percent for incumbents in 22 other career ladders surveyed in 1976. Slightly more of the AFS 542X0 incumbents felt their job to be interesting than did the group of 542X0F respondents.

Perceived Utilization of Talents and Training

Eighty percent of all survey respondents felt that their talents and training were being used fairly well or better. This is slightly below the 82 percent average reported by incumbents in the 20 career ladders surveyed in 1976. In comparing responses from 542X0 and 542X0F airmen the "F" shredout reported lower satisfaction with use of their talents and training. Only 56 percent reported that their talents were used fairly well or better and 51 percent reported that their training was used fairly well or better.

Reenlistment Intentions

Table 16 shows reenlistment intentions by enlistment groups for the 542X0 personnel and for members of the F shred. These data show that 39 percent of the first-term, 58 percent of the second and 61 percent of the career group within the 542X0 groups plan to reenlist. Reenlistment plans for the F shred personnel are somewhat lower, however, with only 28 percent of the first-term, 25 percent of the second-term and 42 percent of the career group showing reenlistment intentions.

TABLE 14

METHOD OF ASSIGNMENT TO DAFSC 542X0 CAREER LADDER
(PERCENT MEMBERS RESPONDING)

	TOTAL SAMPLE N=1,297	54230 N=190	54250 N=792	54270 N=226	54230F N=11	54250F N=18	54270F N=9	54291 N=40
COMPLETING RESIDENT TECHNICAL TRAINING	27	20	29	27	46	17	11	25
RECLASSIFIED WITHOUT COMPLETING TECHNICAL TRAINING OR OJT	2	3	2	1	-	-	-	-
DIRECT DUTY ASSIGNMENT (DDA) FROM BASIC TRAINING TO OJT WITHOUT BYPASS TEST	25	40	26	17	9	-	-	15
DDA FROM BASIC TRAINING BY BYPASS TEST	9	5	10	8	-	5	-	15
CONVERTING FROM ANOTHER AIR FORCE SPECIALTY WITHOUT TRAINING BY CLASSIFICATION BOARD ACTION	4	4	4	4	-	39	23	5
BEING RETRAINED FROM ANOTHER AIR FORCE SPECIALTY	14	13	12	19	13	33	22	15
REENLISTING AFTER PRIOR SERVICE IN USAF, OR FROM ANOTHER BRANCH OF SERVICE	4	1	2	10	-	-	11	18
OTHER	15	14	15	14	27	6	33	70

TABLE 15

EXPRESSION OF JOB INTEREST, PERCEIVED UTILIZATION OF TALENTS AND TRAINING
AND CAREER INTENT BY TOTAL SAMPLE AND DAFSC GROUPS
(PERCENT MEMBERS RESPONDING)

	TOTAL SAMPLE N=1,297	54230 N=190	54250 N=792	54270 N=226	54230F N=111	54250F N=18	54270F N=9	54291 N=40
I FIND MY JOB:								
DULL	7	6	8	6	-	33	-	-
SO-SO	11	9	12	10	27	17	11	5
INTERESTING	71	72	71	69	64	50	89	83
OTHER	11	13	9	15	9	-	-	12
MY JOB UTILIZES MY TALENTS:								
NOT AT ALL OR VERY LITTLE	17	17	17	16	18	44	-	8
FAIRLY WELL TO VERY WELL	66	65	70	57	73	45	55	45
EXCELLENTLY OR PERFECTLY	14	14	10	21	-	11	45	43
OTHER	3	4	3	6	9	-	-	4
MY JOB UTILIZES MY TRAINING:								
NOT AT ALL OR VERY LITTLE	19	14	20	19	36	39	-	10
FAIRLY WELL TO VERY WELL	64	71	67	55	55	45	67	45
EXCELLENTLY OR PERFECTLY	14	13	11	20	-	6	33	38
OTHER	3	2	2	6	9	10	-	7

TABLE 16
REENLISTMENT INTENTIONS

DO YOU PLAN TO REENLIST?	542X0			542X0F		
	<u>FIRST TERM</u>	<u>SECOND TERM</u>	<u>CAREER</u>	<u>FIRST TERM</u>	<u>SECOND TERM</u>	<u>CAREER</u>
NO, OR PROBABLY NO	51	36	24	61	38	25
YES, OR PROBABLY YES	39	58	61	28	25	42
NO RESPONSE	10	6	15	11	37	33

COMPARISON TO EARLIER STUDIES

The results of this survey were compared to the Occupational Survey Report AFPT 90-542-088, Electrician Career Field Ladder 542X0, 542X0F, and 54291, 30 March 1973, which summarized the results of the analysis of survey data collected during the period April 1972 through March 1973. The career ladder has remained highly homogeneous over the years, with a large number of similar tasks being performed by all non-supervisory groups in both studies. No significant differences in the findings of these reports were found. However, the present study questioned the use of the F shred.

FINDINGS

It appears that the "F" shredout could be deleted and personnel holding the "F" shredout could be integrated into the general Electrician career ladder. Several reasons were found for this conclusion. First, 542X0F incumbents did not form an identifiable group within the career ladder when all jobs were grouped on the basis of task similarity. Second, a large number of tasks were common to both groups, reflecting an overall common knowledge of electrical theory and its practical application in a variety of work situations. Third, the basic resident course 3ABR54230, Electrician, qualifies individuals for assignment to both 542X0 and 542X0F positions, although it contains no specific training on missile systems. And finally, there is no separate Career Development Course (CDC) for the 542X0F career ladder.

APPENDIX A

GROUP ID NUMBER AND TITLE: GRP144 - Interior Power Distribution and Lighting Specialists

PERCENT OF SAMPLE: 19%

MAJOR COMMAND DISTRIBUTION: SAC (21%), MAC (19%), TAC (18%), AFLC (11%), ATC (6%), AAC (5%), AFSC (5%), Other (15%)

LOCATION: CONUS (80%), Overseas (20%)

DAFSC DISTRIBUTION: 54230 (27%), 54250 (69%), 54270 (3%), Other (1%)

AVERAGE GRADE: 3.4

AVERAGE TIME IN SERVICE: 49 months

EXPRESSED JOB INTEREST: Dull (7%), So-So (13%), Interesting (68%), No Reply (12%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 15%
Fairly Well to Perfectly 80%
No Reply 5%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 20%
Fairly Well to Perfectly 77%
No Reply 3%

AVERAGE NUMBER OF TASKS PERFORMED: 62

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	48
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	21
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	11
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	8
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	6

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F30 INSTALL OR CONNECT FIXTURES OR OUTLET BOXES	98
F31 INSTALL OR CONNECT INTERIOR JUNCTIONS, OUTLETS, OR SWITCH BOXES	96
F65 REMOVE OR INSTALL OUTLET BOXES OR FIXTURES	95
H73 TIGHTEN WIRING CONNECTIONS	79
J2 CLEAN OR MAINTAIN HANDTOOLS OR TOOL BOXES	78

GRP144

These 242 incumbents are primarily engaged in the installation and maintenance of lighting and convenience outlets for living areas or offices. They are not involved in the more complex wiring typical of industrial or special purpose activities. These incumbents are primarily 5-skill levels. Group members perform general electrical tasks like installing, removing, and/or connecting receptacles, lighting fixtures, and junction boxes.

GROUP ID NUMBER AND TITLE: GRP147 - General Electricians

PERCENT OF SAMPLE: 52%

MAJOR COMMAND DISTRIBUTION: SAC (25%), TAC (14%), MAC (11%), ATC (10%),
ADC (7%), USAFE (7%), AFLC (6%), AFSC (6%),
AAC (5%), Other (9%)

LOCATION: CONUS (82%), Overseas (18%)

DAFSC DISTRIBUTION: 54230 (13%), 54250 (59%), 54270 (25%), Other (3%)

AVERAGE GRADE: 3.9

AVERAGE TIME IN SERVICE: 69 months

EXPRESSED JOB INTEREST: Dull (5%), So-So (10%), Interesting (76%), No Reply (9%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 14%
Fairly Well to Perfectly 83%
No Reply 3%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 13%
Fairly Well to Perfectly 84%
No Reply 3%

AVERAGE NUMBER OF TASKS PERFORMED: 142

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	35
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	24
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO- MECHANICAL EQUIPMENT	11
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	10
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	7

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F35 INSTALL OR CONNECT RECEPTACLES OR SWITCHES	99
F62 REMOVE OR INSTALL FUSES OR RESETS	99
H7 INSPECT, CLEAN, OR SERVICE AC EQUIPMENT	87
G10 INSTALL OR CONNECT AC CIRCUITRY ACCESSORIES OR COMPONENTS	82
I13 ISOLATE MALFUNCTIONS ON AC EQUIPMENT, MOTORS, OR STARTERS	81

GRP147

The 674 members of this group make up over 50 percent of the survey sample. Most possess the 5- or 7-skill level. Members perform a wide variety of electrician tasks. Typically these personnel perform twice as many tasks as that of GRP144. In addition to performing installation and maintenance of interior electric systems, they are involved in a large variety of other electrical functions such as installation, inspection, and repair of AC circuitry and accessories and components. They also assemble and/or service electro-mechanical equipment; remove and replace alarm systems; and install, maintain, and repair DC circuits and equipment.

GROUP ID NUMBER AND TITLE: GRP150 - Electro-Mechanical Appliance Repairmen

PERCENT OF SAMPLE: Less than 1%

MAJOR COMMAND DISTRIBUTION: MAC (38%), TAC (25%), ATC (13%), PACAF (13%)
Other (11%)

LOCATION: CONUS (63%), Overseas (37%)

DAFSC DISTRIBUTION: 54250 (100%)

AVERAGE GRADE: 3.3

AVERAGE TIME IN SERVICE: 35 months

EXPRESSED JOB INTEREST: Dull (12%), So-So (25%), Interesting (63%),

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 13%
Fairly Well to Perfectly 87%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 13%
Fairly Well to Perfectly 87%

AVERAGE NUMBER OF TASKS PERFORMED: 66

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	30
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO-MECHANICAL EQUIPMENT	19
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	18
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	18
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	13

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
H9 INSPECT, CLEAN OR SERVICE AC FIXTURES OR APPLIANCES	100
H73 TIGHTEN WIRING CONNECTIONS	100
I4 BENCH CLEAN OR SERVICE APPLIANCES, FIXTURES, OR COMPONENTS	88
G11 INSTALL OR CONNECT AC EQUIPMENT	88
J7 PERFORM OPERATOR MAINTENANCE ON CIVIL ENGINEERING SHOP EQUIPMENT	88

GRP150

These eight members spend nearly 50 percent of their job time maintaining installed electro-mechanical equipment and performing maintenance and repair of shop equipment. All are 5-skill levels serving in their first enlistment. Common tasks involve repairing commercial type equipment in living areas and the maintenance and repair of shop equipment. Complex industrial or specialized equipment is generally not involved.

GROUP ID NUMBER AND TITLE: GRP168 - Fire Alarm Systems Specialists

PERCENT OF SAMPLE: Less than 1%

MAJOR COMMAND DISTRIBUTION: AFLC (27%), USAFE (18%), PACAF (18%), SAC (18%)
AAC (9%), MAC (9%), Other (1%)

LOCATION: CONUS (64%), Overseas (36%)

DAFSC DISTRIBUTION: 54230 (9%), 54250 (73%), 54270 (18%)

AVERAGE GRADE: 4.1

AVERAGE TIME IN SERVICE: 85 months

EXPRESSED JOB INTEREST: So-So (9%), Interesting (82%), No Reply (9%)

PERCEIVED UTILIZATION OF TALENTS: Fairly Well to Perfectly 100%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 18%
Fairly Well to Perfectly 82%

AVERAGE NUMBER OF TASKS PERFORMED: 71

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	36
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	21
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	16
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO- MECHANICAL EQUIPMENT	12
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	9

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
I8 BENCH CLEAN OR SERVICE FIRE WARNING SYSTEMS COMPONENTS OR SENSORS	100
H23 INSPECT, CLEAN, OR SERVICE FIRE ALARM SYSTEMS OR COMPONENTS	100
G24 INSTALL OR CONNECT FIRE ALARM SYSTEMS	100
H65 REMOVE OR REPLACE FIRE ALARM SYSTEMS OR COMPONENTS	100
H24 INSPECT, CLEAN, OR SERVICE INTRUSION ALARM SYSTEMS OR COMPONENTS	91

GRP168

This small group of electricians work primarily on alarm systems including fire alarms, intrusion alarms, and warning alarm systems. In addition, they inspect, install, and service emergency lighting systems. The majority of the systems maintained involve working with DC current and devices. Less than one-half report that they install, connect, or otherwise work with AC circuitry accessories or components.

GROUP ID NUMBER AND TITLE: GRP071 - Interior Electrical Maintenance Specialists

PERCENT OF SAMPLE: 6%

MAJOR COMMAND DISTRIBUTION: SAC (18%), MAC (17%), AFLC (17%), TAC (15%), ATC (7%), USAFE (7%), Other (19%)

LOCATION: CONUS (76%), Overseas (24%)

DAFSC DISTRIBUTION: 54230 (25%), 54250 (68%), 54270 (4%), Other (3%)

AVERAGE GRADE: 3.5

AVERAGE TIME IN SERVICE: 49 months

EXPRESSED JOB INTEREST: Dull (18%), So-So (14%), Interesting (63%), No Reply (5%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 33%
Fairly Well to Perfectly 66%
No Reply 1%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 29%
Fairly Well to Perfectly 67%
No Reply 4%

AVERAGE NUMBER OF TASKS PERFORMED: 30

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	56
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	17
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	12

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F35 INSTALL OR CONNECT RECEPTACLES OR SWITCHES	100
F67 REMOVE OR INSTALL RECEPTACLES OR SWITCHES	93
F65 REMOVE OR INSTALL OUTLET BOXES OR FIXTURES	92
H73 TIGHTEN WIRING CONNECTIONS	63
H72 SPLICE WIRING OR CABLES	53

GRPO71

This group of 72 members perform an average of only 30 tasks, all of which are routine interior electrical maintenance functions or relatively simple electrical tasks such as installing outlets, tightening connections, removing and replacing fixtures, or removing or replacing fuses.

GROUP ID NUMBER AND TITLE: GRP061 - OJT Supervisors

PERCENT OF SAMPLE: Less than 1%

MAJOR COMMAND DISTRIBUTION: MAC (33%), TAC (33%), PACAF (33%), Other (1%)

LOCATION: CONUS (67%), Overseas (33%)

DAFSC DISTRIBUTION: 54250 (68%), 54270 (32%)

AVERAGE GRADE: 5.0

AVERAGE TIME IN SERVICE: 131 months

EXPRESSED JOB INTEREST: Dull (17%), Interesting (50%), No Reply (33%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 17%
Fairly Well to Perfectly 83%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 17%
Fairly Well to Perfectly 83%

AVERAGE NUMBER OF TASKS PERFORMED: 56

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	24
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	18
B DIRECTING AND IMPLEMENTING	13
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	11
D TRAINING	9
C EVALUATING	7
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLICANCES, AND DEVICES	6
A PLANNING AND ORGANIZING	5
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO- MECHANICAL EQUIPMENT	5

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
B26 SUPERVISE ELECTRICIANS (AFSC 54250)	100
J3 CLEAN OR SERVICE MOBILE VANS, SERVICE TRUCKS, OR EQUIPMENT	100
D26 MAINTAIN TRAINING RECORDS	83
H73 TIGHTEN WIRING CONNECTIONS	83
B23 SUPERVISE APPRENTICE ELECTRICIANS (AFSC 54230)	83

GRP061

These incumbents train airmen to maintain electro-mechanical equipment and to install and maintain interior electrical power distribution and lighting systems. The average number of tasks performed is 56 and typical tasks include inspecting, cleaning, or servicing AC circuitry accessories or components; planing installation, maintenance, or inspection of electrical power distribution or electro-mechanical equipment; directing training or training support functions; arranging for training aids or training materials; and evaluating installation or operation of electrical equipment.

GROUP ID NUMBER AND TITLE: GRP041 - Electrical Superintendents/Supervisors

PERCENT OF SAMPLE: 8%

MAJOR COMMAND DISTRIBUTION: SAC (22%), MAC (21%), USAFE (10%), TAC (8%),
ADC (7%), ATC (7%), AAC (5%), AFLC (5%), Other (15%)

LOCATION: CONUS (74%), Overseas (16%)

DAFSC DISTRIBUTION: 54250 (13%), 54270 (55%), 54291 (32%)

AVERAGE GRADE: 6.5

AVERAGE TIME IN SERVICE: 208 months

EXPRESSED JOB INTEREST: Dull (6%), So-So (9%), Interesting (72%), No Reply (13%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 14%
Fairly Well to Perfectly 82%
No Reply 4%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 17%
Fairly Well to Perfectly 79%
No Reply 4%

AVERAGE NUMBER OF TASKS PERFORMED: 103

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
B DIRECTING AND IMPLEMENTING	21
C EVALUATING	20
A PLANNING AND ORGANIZING	13
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	12
D TRAINING	11

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
B4 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	97
C11 EVALUATE PERFORMANCE OF AIRMEN OR PREPARE AIRMAN PERFORMANCE REPORTS (APRs)	90
A12 SCHEDULE SHIFTS, WORK ASSIGNMENTS, OR LEAVES	90
B19 IMPLEMENT OR FOLLOW UP SAFETY TRAINING PROGRAMS	88
C6 EVALUATE ELECTRICAL MALFUNCTIONS AND TAKE CORRECTIVE ACTION	82

GRP041

The 103 incumbents in this group are responsible to insure that the work performed by the electrical branch or interior electric shop meets required performance standards. Also, they are charged with supervising the personnel who work in these duty areas.

GROUP ID NUMBER AND TITLE: GRP046 - Electrical Quality Control Evaluators

PERCENT OF SAMPLE: 1%

MAJOR COMMAND DISTRIBUTION: SAC (38%), TAC (19%), USAFE (19%), AAC (6%), ATC (6%),
Hq COM (6%), MAC (6%)

LOCATION: CONUS (63%), Overseas (37%)

DAFSC DISTRIBUTION: 54250 (18%), 54270 (69%), 54291 (13%)

AVERAGE GRADE: 5.8

AVERAGE TIME IN SERVICE: 175 months

EXPRESSED JOB INTEREST: So-So (19%), Interesting (75%), No Reply (6%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 25%
Fairly Well to Perfectly 75%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 38%
Fairly Well to Perfectly 50%
No Reply 12%

AVERAGE NUMBER OF TASKS PERFORMED: 39

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
C EVALUATING	38
A PLANNING AND ORGANIZING	24
B DIRECTING AND IMPLEMENTING	15
D TRAINING	8
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	6

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
C13 EVALUATE PERSONNEL OR MANNING PROBLEMS	81
C3 EVALUATE ADMINISTRATIVE PROBLEMS	81
A1 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, MATERIAL, OR SUPPLIES	75
A8 PLAN OR PREPARE BRIEFINGS	69
B3 CONDUCT OR PARTICIPATE IN SUPERVISORY ORIENTATIONS OR BRIEFINGS	56

GRP046

These 16 non-supervisory personnel evaluate the effectiveness of the civil engineering electrical maintenance quality and repair program. To accomplish this they evaluate personnel on the job performance, manning problems, and other areas affecting successful completion of the units' mission.

GROUP ID NUMBER AND TITLE: GRP138 - Electrical Inspectors

PERCENT OF SAMPLE: Less than 1%

MAJOR COMMAND DISTRIBUTION: SAC (44%), ADC, AFSC, PACAF, TAC, USAFE
 (11% each), Other (1%)

LOCATION: CONUS (78%), Overseas (22%)

DAFSC DISTRIBUTION: 54270 (78%), 54291 (11%)

AVERAGE GRADE: 5.4

AVERAGE TIME IN SERVICE: 168 months

EXPRESSED JOB INTEREST: So-So (22%), Interesting (78%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 22%
 Fairly Well to Perfectly 78%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 33%
 Fairly Well to Perfectly 67%

AVERAGE NUMBER OF TASKS PERFORMED: 73

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	32
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	24
C EVALUATING	20
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	5
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	5

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
H10 INSPECT, CLEAN, OR SERVICE AC POWER SYSTEMS	100
H5 INSPECT, CLEAN, OR SERVICE AC CIRCUITRY ACCESSORIES OR COMPONENTS	100
F13 INSPECT OR CLEAN INTERIOR JUNCTIONS, OUTLETS, OR SWITCH BOXES	89
F14 INSPECT OR CLEAN INTERIOR POWER CONTROLS	89
C2 CONDUCT INSPECTIONS OF POWER LINE DISTRIBUTION SYSTEMS OR ELECTRICAL EQUIPMENT MAINTENANCE	78

GRP138

This group of nine individuals spent the major part of their job time inspecting installed electro-mechanical equipment and interior electrical power distribution and lighting systems. Typical tasks performed by this group include inspecting condition of support equipment or facilities, power line distribution systems or electrical equipment maintenance; performing periodic or special inspections of facilities or work areas; and inspecting, cleaning, and servicing of AC and DC equipment. Four group members are assigned to missile or rocket propulsion units and two of these four incumbents carry the F shred. All group members are 7-skill level or higher and have an average of over 12 1/2 years in the career field.

GROUP ID NUMBER AND TITLE: GRP084 - Intrusion Alarm Systems Specialists

PERCENT OF SAMPLE: Less than 1%

MAJOR COMMAND DISTRIBUTION: USAFE (73%), PACAF (27%)

LOCATION: Overseas (100%)

DAFSC DISTRIBUTION: 54250 (64%), 54270 (36%)

AVERAGE GRADE: 4.7

AVERAGE TIME IN SERVICE: 125 months

EXPRESSED JOB INTEREST: Dull (9%), So-So (27%), Interesting (64%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 9%
Fairly Well to Perfectly 91%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 27%
Fairly Well to Perfectly 73%

AVERAGE NUMBER OF TASKS PERFORMED: 34

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING INSTALLED ELECTRO-MECHANICAL EQUIPMENT	36
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	16
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	13
J MAINTAINING FACILITIES, SHOP EQUIPMENT, TOOLS, AND WORK AREAS	12
I PERFORMING SHOP MAINTENANCE AND REPAIR OF ELECTRO- MECHANICAL EQUIPMENT	9

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
H32 ISOLATE MALFUNCTIONS ON INTRUSION ALARM SYSTEMS	100
G25 INSTALL OR CONNECT INTRUSION ALARM SYSTEMS OR COMPONENTS	100
H24 INSPECT, CLEAN, OR SERVICE INTRUSION ALARM SYSTEMS OR COMPONENTS	100
I9 BENCH CLEAN OR SERVICE INTRUSION ALARM SYSTEMS COMPONENTS OR SENSORS	100
G27 PERFORM OPERATIONAL INSPECTIONS AFTER INSTALLATION	82

GRP084

The eleven members of this group specialize in the installation, maintenance and repair of intrusion alarm systems. A few also work on warning and fire alarm systems.

Two members of this group from USAFE reported in the write-in section of the inventory that due to agreements with the host government all operation and maintenance type work done in Civil Engineering is accomplished by host civilian employees or by contract. Therefore, personnel in this career ladder are authorized to work on intrusion detection systems only.

GROUP ID NUMBER AND TITLE: GRP187 - Planning Technicians

PERCENT OF SAMPLE: 1%

MAJOR COMMAND DISTRIBUTION: SAC (57%), ATC (14%), AAC, ADC, PACAF, TAC
(7% each), Other (1%)

LOCATION: CONUS (86%), Overseas (14%)

DAFSC DISTRIBUTION: 54250 (35%), 54270 (65%)

AVERAGE GRADE: 5.6

AVERAGE TIME IN SERVICE: 182 months

AMOUNT OF SUPERVISION: None

EXPRESSED JOB INTEREST: Dull (7%), So-So (21%), Interesting (57%), No Reply (15%)

PERCEIVED UTILIZATION OF TALENTS: Little or Not At All 21%
Fairly Well to Perfectly 71%
No Reply 8%

PERCEIVED UTILIZATION OF TRAINING: Little or Not At All 14%
Fairly Well to Perfectly 79%
No Reply 7%

AVERAGE NUMBER OF TASKS PERFORMED: 16

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
F INSTALLING AND MAINTAINING INTERIOR ELECTRICAL POWER DISTRIBUTION AND LIGHTING SYSTEMS	31
A PLANNING AND ORGANIZING	26
C EVALUATING	13
G INSTALLING ELECTRO-MECHANICAL SYSTEMS, EQUIPMENT, APPLIANCES, AND DEVICES	12
E PERFORMING ADMINISTRATIVE AND SUPPLY FUNCTIONS	11

REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F3 CALCULATE OR DETERMINE POWER REQUIREMENTS	100
F4 DETERMINE SPECIFICATIONS FOR WIRING, CIRCUIT PROTECTIVE DEVICES, SENSORS, OR CONTROLS	100
A4 PLAN INSTALLATION, MAINTENANCE, OR INSPECTION OF ELECTRICAL POWER DISTRIBUTION SYSTEMS OR ELECTRO- MECHANICAL EQUIPMENT	100
G5 DETERMINE POWER, CIRCUIT, OR CONTROL REQUIREMENTS FOR AC EQUIPMENT	64
G3 ANALYZE OR INTERPRET DRAWINGS, SCHEMATICS, OR SPECIFICATIONS FOR EQUIPMENT INSTALLATION	57

GRP187

This 14 member group is involved with electrical planning or programming functions. Representative tasks include plan installation, maintenance, or inspection of electrical power distribution systems or electro-mechanical equipment; calculate or determine power requirements; develop or draft installation plans or working drawings; draft budgeting or financial estimates; plan layout of work facilities; and evaluate material problems.