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(U) AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH
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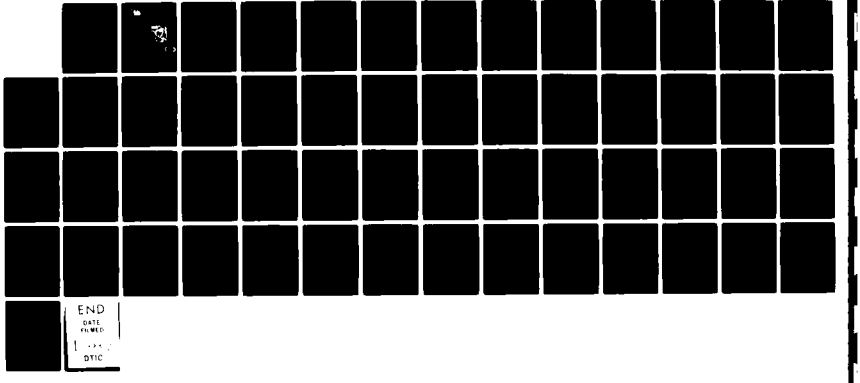

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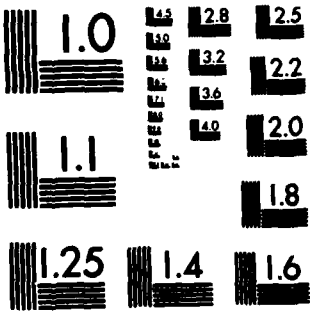

UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

LIQUID FUEL SYSTEMS MAINTENANCE

CAREER LADDER

AFS 545X1

AFPT 90-545-462

OCTOBER 1982

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150

DISTRIBUTION FOR

AFS 545X1 OSR AND SUPPORTING DOCUMENTS

	OSR	JOB INV	ANL EXT	TNG EXT
AFHRL/LRT	1	1	1m	1m/1h
AFHRL/MODS	2	6	1m	1m
AFMEA/MEMD	1	1	1h	1
AFMPC/MPCHS	1	1		
AFMPC/MPCRPQ	2			
ARMY OCCUPATIONAL SURVEY BRANCH	1	1		
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HQ AAC/DPAT	3	3		3
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HQ AFCC/MPXT	3	3		3
HQ AFESC/DEMG	1	1		1
HQ AFISC/DAP	1	1		
HQ AFLC/MPCA	3	3		3
HQ AFSC/MPAT	3	3		3
HQ ATC/TTQ	2	1		1
HQ ESC/DPTATC	1	1		1
HQ ESC/DPTE	2	2		2
HQ MAC/DPAT	3	3		3
HQ PACAF/DPAL	1	1		1
HQ PACAF/DPAT	3	3		3
HQ SAC/DPAT	3	3		3
HQ SAC/LGMQ (ATCLO)	1	1		1
HQ TAC/DPAT	3	3		3
HQ TAC/DPLATC	1	1		1
HQ USAF/LEEEV (BOLLING AFB WA 20332)	1	1		1
HQ USAF/MPPT	1	1		1
HQ USAFE/DPAT	3	3		3
HQ USAFE/DPATC	1	1		1
HQ USMC/OMU	1	1		
LMDC/AN	1			
NODAC	1	1		
3330 TCHTW/TTGX (CHANUTE AFB IL)	9	2	2	9
3507 ACS/DPUI	1	1		

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*Total Active Federal Military Service

PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Liquid Fuel Systems Maintenance career ladder (545X1). Authority for conducting occupational 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 Captain Paul C. Thatcher, Inventory Development Specialist. Mr Reginald G. Nolte and First Lieutenant Carlton F. Middleton, Occupational Analysts, analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center, Randolph AFB, Texas 78150.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies may be obtained upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150.

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SUMMARY OF RESULTS

1. Survey Coverage: This report is a result of an analysis of a survey of 305 of the 407 assigned 545X1 personnel, for a 75 percent sample. This sample was representative across major commands and paygrades.

2. Specialty Jobs: Analysis revealed a common technical job performed by most 545X1 personnel. Five noteworthy variations within this job were found, differing mainly on the breadth of their job and non-technical responsibilities. In addition, one group of Shop Foremen were also identified performing mainly a supervisory and managerial job.

3. Career Ladder Progression: First-term 545X1 personnel are performing the full spectrum of technical liquid fuel systems maintenance tasks. With experience, 545X1 personnel continue to perform many of the same technical tasks; however, they also assume increasing managerial and supervisory responsibilities.

4. AFR 39-1 Specialty Descriptions: Comparison of the 545X1 Specialty Descriptions with OSR data revealed that these documents accurately reflect the tasks and jobs performed.

5. Analysis of Training Documents: Both the 545X1 STS and POI 3ABR54531 were found to be comprehensive and representative of the job performance of 545X1 personnel. One STS paragraph and two areas of the POI were identified for review.

6. Implications: The 545X1 career ladder is well structured and the present training seems appropriate based on STS and POI analyses.

OCCUPATIONAL SURVEY REPORT
LIQUID FUEL SYSTEMS MAINTENANCE CAREER LADDER
(AFSC 545X1)

INTRODUCTION

This is a report of an occupational survey of the Liquid Fuel Systems Maintenance career ladder (AFSC 545X1) completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in December 1981. The survey was requested by Headquarters, Air Training Command, and the Chanute Technical Training Center (CTTC) to evaluate training documents and the present career ladder structure.

Almost all Air Force bases have liquid fuel storage, distribution, and dispensing systems for fuel, such as gasoline or JP. These systems include fuel storage tanks, fuel pumps, hydrants, valves, and pipelines. Naturally, these systems need maintenance in the form of regular inspections and repair of malfunctions. This is the job of the 545X1 Liquid Fuel Systems Maintenance Specialist.

Background

When the last Occupational Survey Report was completed in December 1975, the career ladder included conventional and missile fuels under AFS 546X0/F (established 30 September 1961). Since then, the "F-shred" missile fuels was separated from conventional fuels and established as AFS 445X1. In April 1981, the Conventional Fuels, AFS 546X0, was directly converted to AFS 545X1.

The basic job of 545X1 personnel, as described by AFR 39-1, is to maintain, inspect, repair, install, and modify liquid fuel storage, distribution, and dispensing systems. Career ladder members receive formal training at the Chanute Technical Training Center in an eight-week basic course.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-545-462. As a starting point, tasks from the 1975 546X0/F inventory were reviewed, revised, and updated through detailed research of current career ladder publications and directives. This new tentative task list was then validated by course personnel at the Chanute Technical Training Center (CTTC) and a number of subject-matter specialists at Mather AFB CA, Travis AFB CA, Beale AFB CA, and Bergstrom AFB TX. The resulting inventory contained 553 tasks grouped under 18 duty headings. Also included in the inventory was an extensive background section that asked for information such as:

Job Satisfaction
Job Title
Work area assigned
Automatic fuel valves maintained
Fuel Meters maintained
Fuel Pumps maintained
Equipment used on the job

Survey Administration

During the period September 1981 through December 1981, consolidated base personnel offices in operational units worldwide administered the job inventory to incumbents holding the DAFSC 545X1. These DAFSC 545X1 personnel were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each respondent who completed a job inventory first completed an identification and biographical information section and then checked all tasks which were performed in his or her present job. Those tasks checked were then rated on a nine-point scale showing the relative amount of time spent on that task as compared to all other tasks checked. The ratings 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 in performing a task.

To determine the relative percentage of time spent on each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of the time spent on the job. These ratings are totaled and each task rating is then divided by the total number of task responses. The resulting quotient is then multiplied by 100. This procedure provides a basis for comparing all tasks in terms of both percent members performing and relative percent time spent.

Data Processing and Analysis

Once job inventories are returned from the field, they are visually checked to ensure proper completion. Then both task and background data from the inventories are entered into a computer to form a complete case record for all respondents. From this data, computer products are generated and a report is written based on their analysis.

Survey Sample

Incumbents were selected to participate in this survey to ensure an accurate representation across all MAJCOM and paygrade groups. Tables 1 and 2 list the distribution of assigned and sampled personnel by major command and paygrade groups, respectively. Table 3 reflects the distribution of the survey sample in terms of months Total Active Federal Military Service (TAFMS). As demonstrated by these tables, the overall sample was representative of the career ladder population as a whole.

TABLE 1

COMMAND REPRESENTATION

COMMAND	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
SAC	26	26
MAC	18	17
TAC	17	19
USAFE	11	10
PACAF	8	7
AFLC	7	9
ATC	6	4
AAC	4	5
AFSC	3	3
	100	100

TOTAL 545X1 ASSIGNED - 407
TOTAL 545X1 SAMPLED - 305
PERCENT SAMPLED - 75%

TABLE 2

PAYGRADE REPRESENTATION

COMMAND	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AIRMAN	35	36
E-4	24	24
E-5	23	23
E-6	11	11
E-7	7	6
	100	100

TABLE 3

TAFMS DISTRIBUTION

	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE					
	1-48	49-96	97-144	145-192	193-240	241+
NUMBER IN SAMPLE	157	65	33	23	20	6
PERCENT OF SAMPLE	51%	21%	11%	8%	7%	2%

Task Factor Aministration

In addition to completing a Job Inventory booklet, selected senior 545X1 personnel were asked to complete a second booklet for either Task Difficulty or Training Emphasis. The Task Difficulty and Training Emphasis rating booklets were processed separately from the job inventories. These ratings were then used in a number of different analyses discussed in more detail within the report.

Task Difficulty. Each senior NCO completing a task difficulty booklet was asked to rate all of the tasks on a nine-point scale from extremely low to extremely high difficulty, with difficulty defined as the length of time it takes an average incumbent to learn to do the task. Ratings were then adjusted so tasks of average difficulty reflect a rating of 5.00.

Task difficulty data were independently collected from 20 experienced 7-skill level personnel stationed worldwide (see Table 4). The interrater reliability (as assessed through components of variance of standard group means) of .90 for these 545X1 raters reflected very high agreement. The resulting data was a rank ordering of tasks indicating a relative degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing a task difficulty value for each task item, it was then possible to compute a Job Difficulty Index (JDI) for the groups identified in the survey analysis. This index provided a relative measure of which jobs, when compared to other jobs identified, were more or less difficult. An equation using the number of tasks performed and the average difficulty per unit time spent as variables was the basis for the JDI. The index ranges from one, for very easy jobs, to 25 for very difficult jobs. The indices were adjusted so the average job difficulty index was 13.00. Thus, the more time a group spends on difficult tasks, and the more tasks they perform, the higher their job difficulty index.

Training Emphasis. Individuals completing training emphasis booklets were asked to rate all of the tasks on a ten-point scale from no training required to extremely heavy training required. This data was used to calculate a rank ordering of tasks indicating where the emphasis should be placed on structured training for first-term personnel. Structured training was defined as training provided at resident technical schools, Field Training Detachments (FTD), Mobile Training Teams (MTT), formal OJT, or by any other organized training method.

Training emphasis data were independently collected from 33 experienced 7-skill level personnel stationed worldwide (see Table 4). The interrater reliability (as assessed through components of variance of standard group means) for these raters was .91, indicating a very high agreement among raters as to which tasks required some form of structured training and which did not. In this specialty, tasks rated high in training emphasis show ratings of 5.10 or above (one standard deviation above the mean); the average training emphasis rating was 3.55; and those tasks with ratings less than 2.00 were considered as requiring very little emphasis in training.

When used in conjunction with other factors, such as percent members performing, the task difficulty and training emphasis ratings provide insight into the requirement for training. The information these ratings provide can help improve both training and overall career ladder management.

Training Documents

Occupational survey data are very useful for examining the currency of Specialty Training Standards (STSs) and Plans of Instruction (POIs). These data can indicate areas of an STS or POI that should be reviewed for additions or deletions based on percentage of members performing tasks and other task factors.

To assist in this analysis, subject-matter specialists (SMSs) at the technical school compare the job inventory task list with the STSs and POIs. Where applicable, the SMSs match each task to the STS or POI item(s) that

best cover that task. Tasks that fit under no present STS or POI item are left unmatched. Based on this matching, computer products are generated that assist in analyzing the training documents in accordance with ATCR 52-22.

Because survey data is only one of many inputs into training decisions, the result of this training analysis is a recommendation of STS or POI items for review by training officials.

TABLE 4

COMMAND DISTRIBUTION OF TASK DIFFICULTY AND TRAINING EMPHASIS RATERS

COMMAND	PERCENT OF ASSIGNED	PERCENT OF TASK DIFFICULTY RATERS	PERCENT OF TRAINING EMPHASIS RATERS
SAC	26	31	27
MAC	18	21	23
TAC	17	21	14
USAFE	11	3	14
PACAF	8	7	4
AFLC	7	7	5
ATC	6	-	9
AAC	4	-	2
AFSC	3	7	-
OTHER	-	3	2
	100	100	100

SPECIALTY JOBS
(Career Ladder Structure)

Within most career ladders, there are usually a number of different jobs performed. The jobs may differ due to different tasks being performed, varying amounts of time spent performing the tasks, or the number of tasks the incumbents perform. Background variables, such as major work area, job title, and major command, usually correlate with differences in task performance and help to explain why the differences exist.

To identify the different jobs being performed, the responses of job incumbents are input to a computer which mathematically computes a hierarchical clustering of the returns, based on a comparison of the tasks performed and the similarity of relative time spent on tasks performed. Subsequently, a diagram is drawn which reflects individuals who have similar task performance. These groups are compared to one another and a resulting job structure is identified for the career ladder.

Analysis of the groups formed identified two major jobs in the 545X1 career ladder. The first was a technical job accounting for 84 percent of the survey respondents; the second was a non-technical job of shop foreman, comprising eight percent of the survey sample. The remaining personnel dispersed in sundry jobs too dissimilar to be categorized.

The technical job identified includes functions such as inspecting liquid fuel systems for corrosion, leaks, and malfunctions; repairing and replacing defective components; and adjusting systems to specifications. Much of this work involves work in the control pits/pumphouse and hydrant maintenance work areas.

Common components worked on include:

Automatic Fuel Valves

Clay-Val	(93%)
A. O. Smith	(39%)
O. P. W.	(34%)

Fuel Meters

A. O. Smith	(80%)
Brodie	(59%)
Tokheim	(56%)

Fuel Pumps

Deep Well Turbine	(94%)
Centrifugal	(80%)
Self-Priming Centrifugal	(70%)
Rotary Vane	(54%)
Gear	(42%)

These technical workers primarily install or remove such items as filter-separator elements, manhole covers, pressure gauges, ball valves, blind flanges on pipelines, gate valves, and pipeline skillet flanges. They also operationally inspect filter-separators, filter-separator fuel discharge control valves, manual valves, water drain valves, pump assemblies, meters, and pressure gauges. Additionally, they operate explosimeters and perform very general maintenance, such as bending and flaring copper tubing, cutting copper or stainless steel tubing, threading pipe, and reaming tubing.

Within this general technical job, several smaller job variations emerged; those considered noteworthy are addressed in this report. Two variants of working-supervisors were identified, one of which had members primarily working in the service station pump assembly maintenance area. Other groups surfaced because their job time was spent on either a larger or smaller group of tasks, with one group averaging the performance of 275 tasks and another averaging only 63 tasks.

The non-technical shop foreman's job consisted of performing managerial and administrative duties, in addition to supervising the more technical workers. Based on task similarity, the division of jobs performed is illustrated in Figure 1. The jobs to be discussed are listed below. The GRP number shown beside each title is a reference to computer printed information included for use by classification and training officials; the N refers to the number of respondents whose task performance placed them in that group.

I. LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (GRP014, N=256)

   a. Service Station Pump Assembly Maintenance Working Supervisors (GRP120, N=5)
   b. Working Supervisors (GRP123, N=15)
   c. Diverse Duty Fuel Systems Maintenance Personnel (GRP144, N=68)
   d. Junior Maintenance Personnel (GRP062, N=6)
   e. General Maintenance Personnel (GRP019, N=42)

II. SHOP FOREMEN (GRP023, N=23)

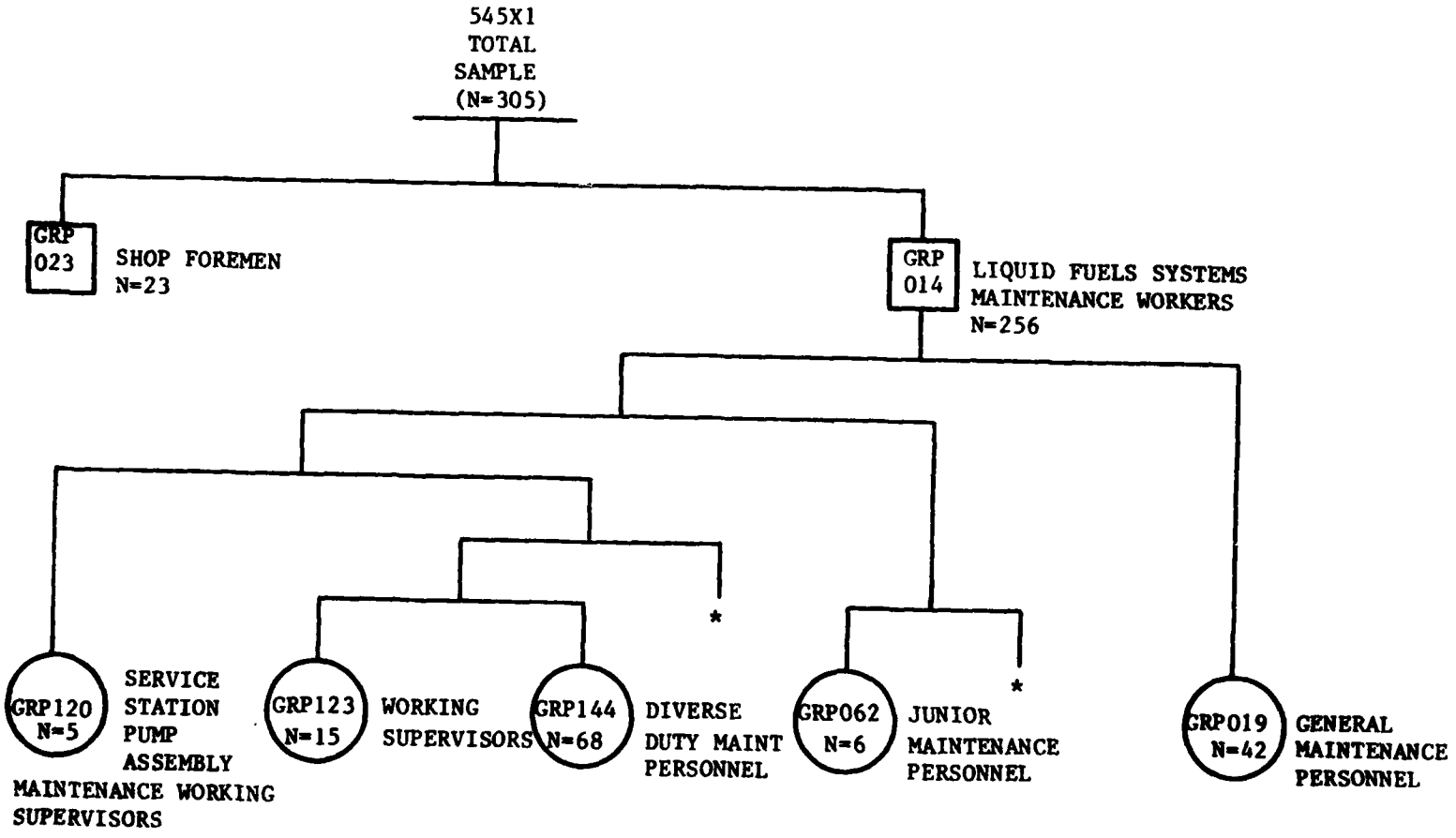
Job Groups

I. LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (GRP014, N=256). The job description of these 256 incumbents depicts the central core technical job of liquid fuel systems maintenance personnel.

The job performance of these workers centers around these functions:

cleaning fuel storage tanks
maintaining Clay-Val automatic fuel valves
maintaining A. O. Smith fuel meters
maintaining Brodie fuel meters
maintaining deep well turbine fuel pumps
maintaining centrifugal fuel pumps

FIGURE 1



*OTHER JOB GROUPS WERE IDENTIFIED WHICH HAD JOBS COVERED BY THE LIQUID FUEL SYSTEMS TECHNICAL MAINTENANCE PERSONNEL CLUSTER JOB DESCRIPTION; CONSEQUENTLY, THESE GROUPS ARE NOT INDIVIDUALLY DISCUSSED IN THE REPORT.

maintaining rotary vane fuel pumps
maintaining self-priming centrifugal fuel pumps
maintaining modified Pritchard hydrant systems

The type of work performed includes: inspecting liquid fuel systems for corrosion, leaks, and malfunctions; repairing and replacing defective components; and adjusting systems to specifications. An additional aspect of the job is that of performing tasks included in the Prime Beef duty, such as firing M-16 rifles and assembling AM-2 matting. Table 5 provides a list of the tasks most commonly performed by group members.

Most general technical job members spend the majority of their work time in either the control pits/pumphouse maintenance or the hydrant systems maintenance work areas (see Table 6). Tables 7 and 8 illustrate the range of automatic fuel valves, fuel meters, and fuel pumps maintained by this group.

The average time in service (months TAFMS) for this group of technical workers is 59 months (see Table 9). Only 32 percent of this group supervise other personnel, with 58 percent of the group in their first-enlistment. Additionally, almost one-quarter of the group is stationed outside the Continental United States (CONUS).

Although this job description adequately covers the bulk of the technical jobs performed by AFS 545X1 personnel, there are some notable variations of this inclusive job description that warrant discussion. As illustrated in Figure 1, these jobs are subgroups of the overall technical job group.

Ia. Service Station Pump Assembly Maintenance Working Supervisors (GRP120). Comprised of five respondents, this group of personnel performs both a supervisory and technical job. The technical job differs little from that of the central technical job previously discussed; however, these incumbents spend 31 percent of their job time performing non-technical duties such as supervising 54551 personnel and preparing APRs. There is a broad range of both technical and supervisory tasks performed by all five members of the group. Each member performs an average of 151 tasks. Table A1 in the Appendix provides a list of the representative tasks performed by members of this group.

The only automatic fuel valve maintained by more than one group member is the Clay-Val (see Table 7). Several fuel meters and pumps are maintained, though, as seen in Table 8. This group's job title is derived from the work area where members report spending the majority of their time; 60 percent of them report working mainly in the service station pump assembly maintenance work area (see Table 6).

In addition to the Service Station Pump Assembly Maintenance Working Supervisors, another group of working supervisors was identified. Personnel in the latter group did not share a common work area and performed, on the average, a broader range of tasks. The following is a description of the Working Supervisor's group.

Ib. Working-Supervisors (GRP123). Containing 15 members, this group differs from other members of the representative central technical maintenance job in that members perform supervisory responsibilities in addition to their technical job performance. The broader nature of the Working Supervisors' job, with members averaging the performance of 290 tasks, differentiates them from the aforementioned Service Station Pump Assembly Maintenance Working Supervisors. Ninety-eight percent of the tasks performed by the central technical maintenance group are performed by these working supervisors. Many of the extra tasks performed are in non-technical areas, with 27 percent of their job time spent on these duties (see Table 10). Representative tasks performed by the largest percentages of this group are listed in Appendix Table A2. There is a mix of 29 technical and non-technical tasks performed by all members of this group, indicating a high degree of commonality in job performance among members.

The working supervisors contained in this job group maintained a wide range of fuel meters and pumps, as well as automatic fuel valves (see Tables 7 and 8). The job difficulty index (JDI) of 18.6 computed for this job was the highest of all the jobs rated.

Ic. Diverse Duty Fuel Systems Maintenance Personnel (GRP144). With 68 members, this was the group with the largest technical job variation identified in the career ladder. Members of this group spent large amounts of job time in a wide variety of duty areas and had a wide range of task performance; members of this group averaged the performance of 275 tasks. Their job included many of the tasks of the central technical maintenance and general technical maintenance jobs, but their broad range of tasks differentiated them from the other technical jobs, and their technical concentration separated them from the working supervisors (only 37 percent of the Diverse Duty Fuel Systems Maintenance Personnel group supervise others). Table A3 in the Appendix lists representative tasks performed by these incumbents.

The most common work areas for these personnel were the control pits/pump house maintenance and hydrant systems maintenance work areas (see Table 6). A variety of fuel meters, fuel pumps, and automatic fuel valves was maintained by these workers, as shown in Tables 7 and 8. In line with the various systems maintained and the large average number of tasks performed, this job was second only to Working Supervisors in difficulty, with a JDI of 17.8.

Id. Junior Maintenance Personnel (GRP062). This group contained six members, four of whom were in SAC (see Table 9). Group members differed from other groups due to the limited number of tasks they performed. The central technical job group members performed an average of 176 tasks compared to only 108 tasks for the Junior Maintenance Personnel. Tasks performed by the Junior Maintenance group, however, tend to cover the spectrum of technical duties. Some of the representative tasks performed in these duties are listed in Table A4 in the Appendix. Half of the Junior Maintenance Personnel's job time was spent performing 62 tasks, all of which were performed by over 50 percent of the group. The 17 most performed technical tasks were performed by all members of this group, indicating a high degree of similarity in task performance among group members.

Junior Maintenance Personnel worked mainly in either the control pits/pump house maintenance or hydrant systems maintenance work areas (see Table 6). All of these respondents maintained Clay-Val automatic fuel valves, a variety of fuel pumps, and to a lesser extent, some fuel meters (see Tables 7 and 8).

Many of the Junior Maintenance personnel may still be in training while performing this job. The average time in service (TAFMS) for this group was 26 months--the lowest of any job group--and none of the respondents in this group supervised others (see Table 9). Also, no members were stationed overseas.

Generally, these Junior Maintenance Personnel were found to perform many of the standard fuel systems maintenance tasks; however, possibly due to their limited experience, they did not perform as wide a range of tasks as their more experienced fellow workers.

The next group discussed was also composed of low experience personnel. It has been labeled the General Maintenance Personnel job variant.

Ie. General Maintenance Personnel (GRP019). With 42 members, this was the second largest group identified within the central technical maintenance job. These workers had a very narrow job, spending 35 percent of their job time performing general maintenance functions. They performed an average of only 63 tasks (see Table 9); this is the lowest average number of tasks performed of any of the job groups. The General Maintenance Personnel did not have a large common job, as indicated by the fact that only 23 tasks were performed by more than 50 percent of the group (listed in Table A5 in the Appendix).

The only work area where a substantial number of group members spent the majority of their work time is the control pits or pump house maintenance work area (see Table 6). A. O. Smith fuel meters were the only fuel meters maintained by a majority of the group. Fuel pumps maintained included deep well turbines, centrifugal, and self-priming centrifugal (Table 8).

With a job of such a limited scope, it is not surprising that the JDI identifies this as the least difficult job of all (the JDI rating was 6.8 which was 4.8 points below the next lowest index--the Junior Maintenance Personnel). The average time in service for the group is 40 months (TAFMS) and the average grade is E-3 (See Table 9).

In contrast to the two groups most recently discussed, the most experienced group identified was the Shop Foremen. Theirs is not a central job variation, but rather a totally separate job with a predominantly supervisory or managerial emphasis.

II. SHOP FOREMEN (GRP023, N=23). The job of these 23 incumbents is mainly supervisory and managerial. Shop Foremen manage the fuel systems maintenance shops, supervise workers, and sometimes perform technical maintenance. Sixty-four percent of their job time was spent on non-technical duties. This job has a high concentration of managerial, supervisory, and

administrative tasks in their job (see Table A6 in the Appendix), but Tables 7 and 8 reveal that the foremen did maintain some equipment in their job.

The average time in service of 172 months (TAFMS) for these foremen was the highest average of any group identified. Consistent with this finding was their high average grade of E-6. One interesting fact about the shop foremen is that 61 percent of the group reported an overseas assignment (see Table 9).

Job Group Comparisons

The Shop Foremen job differs from the central technical job in that the foremen concentrate on managerial, supervisory, and administrative functions, while the technical workers perform many more actual maintenance tasks. Within the central technical job, the Working Supervisors and the Service Station Pump Assembly Maintenance Working Supervisors were the only job variations having substantial non-technical responsibilities. The main factor distinguishing these working supervisors was the breadth of their job. The Working Supervisors' job is much broader than that of the Service Station Pump Assembly Maintenance Working Supervisors. The more technical job variations also differentiated on the basis of the breadth of their task performance. The Diverse Duty Fuel Systems Maintenance Personnel had the broadest job, followed by the Junior Maintenance Personnel, with the General Maintenance Personnel job group having the narrowest job.

Another area, job satisfaction, also indicates differences between the job groups. The majority of Shop Foremen found their job interesting (91 percent) and feel their talents and training are well utilized (100 percent and 96 percent). Additionally, 74 percent plan to reenlist (see Table 11). In general, the other 545X1 personnel also found their job interesting and planned to reenlist. The most dissatisfied groups were the Junior Maintenance Personnel and the General Maintenance Personnel. Fewer members of both of these groups found their job interesting (50 percent and 66 percent), and reenlistment intentions were very low (17 percent and 33 percent). The low reenlistment intentions can possibly be partially explained by the low experience level of incumbents in both groups.

Summary

In summary, the 545X1 career ladder had a core technical job performed by most incumbents, with a few minor variations. In addition, there was a supervisory job group of shop foremen that was mainly managerial in nature, with some technical task performance. This homogeneous job structure is consistent with the present classification structure.

TABLE 5

LIQUID FUEL SYSTEMS MAINTENANCE WORKERS
(N=256)

TASKS		PERCENT MEMBERS PERFORMING
F116	CLEAN WORK AREAS	97
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	96
F118	CUT GASKET MATERIAL	96
F112	BEND COPPER TUBING	95
F115	CLEAN HAND TOOLS	93
F123	FLARE COPPER TUBING	93
F117	CUT COPPER OR STAINLESS STEEL TUBING	92
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	91
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	90
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	89
G202	INSTALL OR REMOVE MANHOLE COVERS	86
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	85
H277	INSTALL OR REMOVE PRESSURE GAUGES	84
M448	INSTALL OR REMOVE HOSES IN SERVICE STATION UNITS	84
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	84
F126	GROUND PORTABLE EQUIPMENT	83
J343	INSTALL OR REMOVE BALL VALVES	83
F162	THREAD PIPE	83
F120	CUT PIPE USING HAND TOOLS	82
F151	REAM TUBING	82
G200	INSTALL OR REMOVE BLIND FLANGES ON PIPELINES	82
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	81
F145	OPERATIONALLY INSPECT WATER DRAIN VALVES	81
F122	CUT STENCILS	80
M465	OPERATIONALLY INSPECT PUMP ASSEMBLIES FOR LEAKS	79
J359	OPERATIONALLY CHECK MANUAL VALVES FOR LEAKS	79
G166	CLEAN PROTECTIVE EQUIPMENT	79
R534	FIRE M-16 RIFLES	78
H284	OPERATIONALLY INSPECT METERS	78
F144	OPERATIONALLY INSPECT TRUCK FILL STAND SWING JOINTS	77
G203	INSTALL OR REMOVE PIPELINE SKILLET FLANGES	76
H285	OPERATIONALLY INSPECT PRESSURE GAUGES	76
G186	INSPECT FRESH AIR MASKS	75
J345	INSTALL OR REMOVE GATE VALVES	74
G190	INSPECT SAFETY HARNESSES	74
G177	EMPTY STORAGE TANKS USING PORTABLE PUMPS	74
F148	PERFORM MINOR CORROSION CONTROL TO EXTERIOR METAL SURFACES	73
G167	CLEAN TANK CLEANING HOSES	73

TABLE 6

WORK AREA MOST FREQUENTLY OCCUPIED ACCORDING TO JOB GROUPS
(PERCENT MEMBERS SPENDING MAJORITY OF WORK TIME)

		LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS					
COMMON 545X1 WORK AREAS	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (N=256)	SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (N=5)	WORKING SUPERVISORS (N=15)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (N=68)	JUNIOR MAINTENANCE PERSONNEL (N=6)	GENERAL MAINTENANCE PERSONNEL (N=42)	SHOP FOREMEN (N=23)
CONTROL PITS/PUMP HOUSE MAINTENANCE	54	0	27	62	67	74	22
HYDRANT SYSTEMS MAINTENANCE	23	0	27	31	33	7	4
PIPELINE MAINTENANCE	7	0	0	4	0	7	4
SERVICE STATION PUMP ASSEMBLY MAINTENANCE	6	60	7	0	0	5	0
STORAGE TANK CLEANING	4	0	0	0	0	2	0
QUALITY CONTROL	1	20	7	0	0	2	13
TECHNICAL TRAINING CENTER	1	0	7	0	0	0	0
WORKLOAD CONTROL SECTION	2	20	7	0	0	0	9
OTHER	2	0	18	3	0	3	39

NOTE: WORK AREA MOST FREQUENTLY OCCUPIED WAS IDENTIFIED BY RESPONSES TO A BACKGROUND QUESTION

TABLE 7

AUTOMATIC FUEL VALVES MAINTAINED BY JOB GROUPS
(PERCENT OF GROUP MEMBERS MAINTAINING)

AUTOMATIC FUEL VALVES (SORTED ALPHABETICALLY)	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (N=256)	LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS					
		SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (N=5)	WORKING SUPERVISORS (N=15)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (N=68)	JUNIOR MAINTENANCE PERSONNEL (N=6)	GENERAL MAINTENANCE PERSONNEL (N=42)	SHOP FOREMEN (N=23)
A.O. SMITH	39	20	33	43	50	48	35
BAILEY	4	0	7	9	0	0	0
BOWSER	12	0	20	24	0	2	9
CARTER	10	0	20	21	0	0	4
CLAY-VAL	93	100	93	97	100	91	91
EMCO-WHEATON	15	0	33	25	17	7	35
FISHER CONTROL	1	0	0	0	0	0	4
HARWOOD	11	0	7	22	17	5	17
LIQUID CONTROL	18	0	33	19	50	7	17
O.P.W.	34	20	53	49	17	21	30
PARKER	5	0	13	9	0	0	4
RECCO	1	0	7	3	0	0	0
VACCO	1	0	0	2	0	0	0
WARREN ENGINEERING	2	20	0	2	0	0	4
OTHER AUTOMATIC FUEL VALVES	1	0	0	2	0	0	4
MAINTAIN NO AUTOMATIC FUEL VALVES	2	0	7	0	0	5	13

TABLE 8

FUEL METERS AND FUEL PUMPS MAINTAINED BY JOB GROUPS
(PERCENT OF GROUP MEMBERS MAINTAINING)

		LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS					
	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (N=256)	SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (N=5)	WORKING SUPERVISORS (N=15)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (N=68)	JUNIOR MAINTENANCE PERSONNEL (N=6)	GENERAL MAINTENANCE PERSONNEL (N=42)	SHOP FOREMEN (N=23)
FUEL METERS (NOTE 1)							
A.O. SMITH	80	60	93	85	50	71	83
BOWSER	26	40	27	32	17	12	13
BRODIE	59	80	53	71	50	45	44
GRANCO	16	0	33	16	17	19	26
LIQUID CONTROL	23	20	27	27	33	12	17
NEPTUNE	27	20	20	29	17	14	48
CAL-METER	5	20	7	7	17	7	0
PITTSBURGH ROTOR CYCLE	.	0	0	6	0	0	4
ROCK ROTOR CYCLE	0	0	0	2	0	0	4
ROCKWELL	5	0	7	7	0	2	17
TOKHEIM	56	80	80	66	17	29	78
OTHER FUEL METERS	1	0	0	2	0	0	0
MAINTAIN NO FUEL METERS	2	0	7	0	0	0	13
FUEL PUMPS (NOTE 1)							
DEEP WELL TURBINE	94	80	87	96	83	93	83
GEAR	42	40	47	46	33	17	48
CENTRIFUGAL	80	100	80	88	83	62	83
PISTON	14	40	13	22	0	5	9
ROTARY VANE	54	20	67	75	50	36	52
SELF-PRIMING CENTRIFUGAL	70	60	67	82	67	57	65
TRI-ROTOR	18	0	33	25	0	0	13
OTHER FUEL PUMPS	2	0	0	3	0	0	4
MAINTAIN NO FUEL PUMPS	1	0	7	0	0	2	9

NOTE 1: EQUIPMENT IN EACH HEADING IS SORTED ALPHABETICALLY FOR EASY REFERENCE

TABLE 9

BACKGROUND INFORMATION FOR JOB GROUPS

	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (GRP014)	LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS: SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (GRP120)	WORKING SUPERVISORS (GRP123)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (GRP144)	JUNIOR MAINTENANCE PERSONNEL (GRP062)	GENERAL MAINTENANCE PERSONNEL (GRP019)	SHOP FOREMEN (GRP023)
NUMBER OF PERSONNEL IN JOB GROUP	256	5	15	68	6	42	23
AVERAGE NUMBER OF TASKS PERFORMED	176	151	290	275	108	63	123
PERCENT LOCATED OVERSEAS	24	20	13	13	0	31	61
AVERAGE TASK DIFFICULTY PER UNIT TIME SPENT	4.5	4.8	4.8	4.7	4.7	4.3	5.4
JOB DIFFICULTY INDEX	13.4	14.9	18.6	17.8	11.6	6.8	16.0
AVERAGE PAY GRADE	E-4	E-5	E-5/6	E-4	E-3	E-3	E-6
DUTY AIR FORCE SPECIALTY CODE							
54531	17%	0%	0%	18%	33%	28%	0%
54551	70%	60%	47%	69%	67%	67%	17%
54571	13%	40%	53%	13%	0%	5%	83%
MAJOR COMMAND							
SAC	29%	20%	33%	43%	67%	12%	22%
TAC	20%	40%	7%	9%	0%	33%	9%
MAC	17%	20%	7%	21%	17%	21%	22%
USAFE	7%	0%	13%	7%	0%	2%	17%
AFLC	10%	0%	13%	7%	0%	0%	4%
PACAF	6%	20%	0%	3%	0%	12%	13%
OTHER	11%	0%	27%	10%	16%	20%	13%
AVERAGE MONTHS TAFMS	59	135	129	62	26	40	173
PERCENT IN FIRST ENLISTMENT	58%	0%	7%	50%	74%	74%	0%
PERCENT SUPERVISING	32%	100%	87%	37%	0%	14%	88%

TABLE 10

PERCENT TIME SPENT ON DUTIES BY JOB GROUPS

		LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS					
	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (N=256)	SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (N=5)	WORKING SUPERVISORS (N=15)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (N=68)	JUNIOR MAINTENANCE PERSONNEL (N=6)	GENERAL MAINTENANCE PERSONNEL (N=42)	SHOP FOREMEN (N=23)
ORGANIZING AND PLANNING DIRECTING AND IMPLEMENTING INSPECTING AND EVALUATING TRAINING WORKING WITH FORMS, RECORDS, REPORTS, AND TECHNICAL DATA	7	31	27	7	2	4	64
PERFORMING GENERAL MAINTENANCE DUTIES	21	13	13	14	21	35	5
CLEANING AND INSPECTING FUEL STORAGE TANKS	18	21	19	19	15	15	20
MAINTAINING FUEL SYSTEMS COMPONENTS	10	6	9	10	10	10	2
INSTALLING AND MAINTAINING AUTOMATIC VALVES AND COMPONENTS	7	1	5	12	15	4	1
INSTALLING AND MAINTAINING MANUAL VALVES	9	6	7	8	10	10	1
OTHER TECHNICAL DUTIES	25	17	19	27	23	19	5
PERFORMING PRIME BEEF FUNCTIONS	3	5	2	3	4	4	2

TABLE 11

JOB SATISFACTION INFORMATION FOR JOB GROUPS
(PERCENT MEMBERS RESPONDING)

		LIQUID FUEL SYSTEMS MAINTENANCE WORKER JOB VARIATIONS					
	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS (N=256)	SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (N=5)	WORKING SUPERVISORS (N=15)	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (N=68)	JUNIOR MAINTENANCE PERSONNEL (N=6)	GENERAL MAINTENANCE PERSONNEL (N=42)	SHOP FOREMEN (N=23)
I FIND MY JOB:							
DULL	11	20	0	4	17	17	0
SO-SO	11	0	13	3	33	17	4
INTERESTING	78	80	87	93	50	66	91
MY JOB UTILIZES MY TALENTS:							
NOT AT ALL OR VERY LITTLE	20	0	7	13	17	29	0
FAIRLY WELL OR BETTER	80	100	93	87	83	71	100
MY JOB UTILIZES MY TRAINING:							
NOT AT ALL OR VERY LITTLE	11	0	7	4	0	26	4
FAIRLY WELL OR BETTER	88	100	93	96	100	74	96
THE SENSE OF ACCOMPLISHMENT GAINED FROM MY JOB LEAVES ME:							
DISSATISFIED	13	20	13	7	0	17	13
AMBIVALENT	17	0	7	13	17	24	9
SATISFIED	70	80	80	80	83	59	73
I PLAN TO REENLIST:							
NO, I WILL RETIRE	4	0	20	2	0	2	22
NO, OR PROBABLY NO	42	0	0	37	83	62	4
YES, OR PROBABLY YES	54	100	80	60	17	33	74

NOTE: COLUMNS MAY NOT ADD TO 100% DUE TO NO RESPONSE BY SOME SURVEY RESPONDENTS.

ANALYSIS OF DAFSC GROUPS

Job structure analysis revealed the different jobs performed in the career ladder by indicating how the 545X1 workers grouped based on the similarity of the tasks they performed. Analysis of Duty Air Force Specialty Code (DAFSC) groups, on the other hand, examines how the job changes with progression in skill level. This information can be useful in examining career ladder documents, such as the AFR 39-1 Specialty Descriptions and the Specialty Training Standards (STSs). For the 545X1 career ladder, only minor variations were found in the 3- and 5-skill level jobs, but a fairly large difference was found between the 5- and 7-skill level groups.

The 3- and 5-skill level job is mainly technical in nature. The main tasks differentiating these skill levels are listed in Table 12. As can be seen, most of the differences are the result of a greater percentage of 5-skill level personnel performing the same tasks. In addition, 5-skill level incumbents reported performing an average of 162 tasks as opposed to 131 for the 3-skill level personnel. Consequently, the main difference between the 54531 and 54551 job performance is a broadening of the job at the 5-skill level; otherwise, the jobs are much the same. Table 13 illustrates the technical nature of the 3- and 5-skill level jobs, showing the relative concentration of 3- and 5-skill level personnel in the technical jobs identified.

The 7-skill level technical job is very much the same as that of the 3- and 5-skill level technical job. In addition to the technical job, however, the 7-skill level incumbents have greater supervisory and managerial responsibilities. Table 14 shows that the tasks with the largest percentage differences in members performing for the 5- and 7-skill level groups are the supervisory and managerial tasks. The broader nature of the 7-skill level job is also evidenced by the greater average number of tasks performed by the 7-skill level personnel (180 tasks versus 162 tasks).

In summary, the liquid fuel systems maintenance job is mainly technical, regardless of skill level. Three- and 5-skill level personnel have a very similar job, with a highly technical orientation. With progression, however, the job broadens and supervisory and managerial responsibilities are added at the 7-skill level.

TABLE 12

TASKS BEST DIFFERENTIATING DAFSC 54531 AND 54551 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		DAFSC 54531 (N=47)	DAFSC 54551 (N=197)	DIFFERENCE
D68	CONDUCT OJT	6	34	-28
R533	ERECT TENTS	30	57	-27
B38	SUPERVISE LIQUID FUEL SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54551)	6	32	-26
B36	SUPERVISE APPRENTICE LIQUID FUEL MAINTENANCE SPECIALISTS (AFSC 54531)	13	38	-25
A15	PLAN OR SCHEDULE WORK ASSIGNMENTS	4	29	-25
H278	INSTALL OR REMOVE REGISTERS OR COUNTERS	38	62	-24
A6	DETERMINE WORK PRIORITIES	6	30	-24
G197	INSPECT UNDERGROUND STORAGE TANK PUMP IMPELLERS	13	37	-24
G169	CONTROL FLOW RATE WHEN RETURNING TANK TO SERVICE	17	41	-24
H249	CALIBRATE METERS OTHER THAN SERVICE STATION METERS	47	69	-22
F160	TEST HOSES USING HYDROSTATIC PRESSURE HOSE TESTERS	38	60	-22
M457	INSTALL OR REMOVE SERVICE STATION PUMP MOTORS	21	43	-22
B35	PREPARE REQUISITIONS FOR SUPPLIES OR EQUIPMENT	6	28	-22
K386	LUBRICATE CENTRIFUGAL PUMP MOTORS	21	42	-21
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	6	27	-21
C59	PREPARE APRs	4	24	-20
G195	INSPECT UNDERGROUND STORAGE TANK LADDERS	21	41	-20
E96	MAINTAIN PMEL CALIBRATION CHARTS	6	26	-20
N484	OPERATIONALLY INSPECT HOSE CONNECTIONS	34	53	-19
I308	INSTALL OR REMOVE CV FLOW CONTROLS	28	47	-19

TABLE 13

JOB GROUP DISTRIBUTION OF DAFSC GROUPS
(NUMBER OF MEMBERS)

	DAFSC 54531 (N=47)	DAFSC 54551 (N=197)	DAFSC 54571 (N=60)
I. LIQUID FUEL SYSTEMS MAINTENANCE WORKERS AND WORKING SUPERVISORS (GRP014)	44	179	33
Ia. SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS (GRP120)	0	3	2
Ib. WORKING SUPERVISORS (GRP123)	0	7	8
Ic. DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL (GRP144)	12	47	9
Id. JUNIOR MAINTENANCE PERSONNEL (GRP062)	2	4	0
Ie. GENERAL MAINTENANCE PERSONNEL (GRP019)	12	28	2
II. SHOP FOREMEN (GRP023)	0	4	19

NOTE: THE NUMBER OF MEMBERS OF JOB GROUPS DOES NOT EQUAL THE TOTAL NUMBER IN THE DAFSC GROUP DUE TO THE DAFSC MEMBERS WHO DID NOT GROUP IN THE IDENTIFIED JOB GROUPS.

TABLE 14

TASKS BEST DIFFERENTIATING DAFSC 54551 AND 54571 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		DAFSC 54551 (N=197)	DAFSC 54571 (N=60)	DIFFERENCE
C59	PREPARE APRs	24	82	-58
B32	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	22	77	-55
A8	DEVELOP WORK METHODS OR PROCEDURES	21	73	-52
C45	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	15	67	-52
A4	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	13	65	-52
A20	SCHEDULE LEAVES OR PASSES	19	70	-51
B41	WRITE CORRESPONDENCE	14	65	-51
C47	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	13	63	-50
A5	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	18	68	-50
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	27	77	-50
C56	EVALUATE WORK SCHEDULES	14	63	-49
C48	EVALUATE INSPECTION REPORTS OR PROCEDURES	12	61	-49
H284	OPERATIONALLY INSPECT METERS	74	62	+12
G200	INSTALL OR REMOVE BLIND FLANGES ON PIPELINES	76	62	+14
F123	FLAIR COPPER TUBING	86	68	+18
G166	CLEAN PROTECTIVE EQUIPMENT	77	42	+35
F116	CLEAN WORK AREAS	96	62	+34
0493	DRAIN FILTER-SEPARATORS	53	22	+31
F115	CLEAN HAND TOOLS	90	60	+30
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	91	62	+29
G167	CLEAN TANK CLEANING HOSES	70	41	+29
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	79	50	+29

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

The AFR 39-1 specialty description for AFSCs 54511, 54531, and 54551 (dated 1 January 1982) was compared to occupational survey data for the 3- and 5-skill level respondents. Based on an examination of reported task performance by the 3- and 5-skill levels, this specialty description gives a comprehensive representation of the fuel systems maintenance specialist job.

Similarly, a comparison of the AFR 39-1 specialty description for AFSC 54571 with task performance data for 54571 survey respondents revealed a comprehensive document describing the diverse job of the fuel systems maintenance technician.

ANALYSIS OF TAFMS* GROUPS

Another useful area to examine is how the career ladder job changes with increasing Total Active Federal Military Service (TAFMS). One of the uses of this data is to provide a picture of the composite job performed by first-enlistment personnel. The first-enlistment job description is then compared to the relevant Plan of Instruction (POI) to evaluate coverage of initial technical training. An additional use for enlistment group data is to assess job variations and job satisfaction changes across job groups.

The most prominent change in duties with experience is the gradual assumption of supervisory, managerial, and administrative responsibilities. Chronological progression in liquid fuels maintenance proceeds from a highly technical job to a more technical-managerial job. The first-enlistment personnel (1-48 months TAFMS) perform an average of 145 tasks covering the full range of the 545X1 technical job. As could be expected, Figure 2 reflects that 93 percent of the first-termers are in the 545X1 technical jobs. Table 15 provides a list of the tasks most commonly performed by the first-termers; these tasks are also frequently performed by second-enlistment (49-96 months TAFMS) personnel. As Table 16 shows, equipment maintained does not substantially change with experience. The second-enlistment group performs a broader job, though, averaging the performance of 174 tasks. Career experience personnel (97+ months TAFMS) perform many of the same technical tasks, but perform a variety of non-technical tasks as well. In general, the 545X1 technical job remains much the same with experience; but, experience carries with it additional non-technical duties.

Another area of analysis is the examination of job satisfaction indicators. These indicators reflect certain attitudes incumbents have toward their job.

High percentages of all three 545X1 experience groups, relative to the comparative sample of direct support specialties, find their job interesting. This is particularly noticable for the first-enlistment where there is a 30 percent difference (see Table 17).

*Total Active Federal Military Service

Perceived utilization of talents and training between 545X1 and comparative experience groups is similar. The only area of potential concern is in the reenlistment intentions of second-enlistment personnel. Only 61 percent of the 545X1 second-enlistment group versus 72 percent of the comparative sample plan to reenlist. Otherwise, reenlistment intentions are similar between the 545X1 and the comparative sample experience groups.

In summary, the 545X1 job progresses from a technical to a combination technical-supervisory job with experience. This progression is illustrated by the broadening of task performance with more experience. The technical job does not change much, but the more experienced workers perform additional supervisory and managerial tasks. As could be expected with similar jobs, job satisfaction indicators are comparable across 545X1 groups. The job satisfaction responses of 545X1 personnel are also similar to those of comparative sample groups, although, in general, 545X1 personnel report higher satisfaction than their counterpart comparative sample experience groups on almost every index. Reenlistment intentions were generally comparable between 545X1 and the comparative sample experience groups, with the exception of slightly lower intentions by second-enlistment 545X1 personnel.

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY 545X1 INCUMBENTS
WITH 1-48 MONTHS TAFMS

TASKS		PERCENT MEMBERS PERFORMING (N=157)
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	94
F118	CUT GASKET MATERIAL	94
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	89
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	87
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	83
H277	INSTALL OR REMOVE PRESSURE GAUGES	81
M448	INSTALL OR REMOVE HOSES ON SERVICE STATION UNITS	80
J343	INSTALL OR REMOVE BALL VALVES	78
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	78
G202	INSTALL OR REMOVE MANHOLE COVERS	77
F120	CUT PIPE WITH POWER CUTTER	76
M465	OPERATIONALLY INSPECT PUMP ASSEMBLIES FOR LEAKS	75
F145	OPERATIONALLY INSPECT WATER DRAIN VALVES	75
J345	INSTALL OR REMOVE GATE VALVES	73
G166	CLEAN PROTECTIVE EQUIPMENT	72
J349	INSTALL OR REMOVE LUBRICATED PLUG VALVES	66
F131	INSPECT GROUNDING CABLES OR RODS FOR CONDITION	65
M440	CLEAN PUMP ASSEMBLY STRAINERS	62
G231	SCRAPE FLANGES TO REMOVE RUST OR SCALE	61
F154	STENCIL HOSES WITH INSPECTION INFORMATION	61
M442	INSTALL OR REMOVE COMPLETE SERVICE STATION PUMP ASSEMBLIES	60
H276	INSTALL OR REMOVE METERS	57
G235	SQUEEGEE TANK FLOORS	57
F134	INSTALL OR REMOVE GROUNDING CABLES	57
N481	LUBRICATE SWIVEL JOINTS	56

TABLE 16

AUTOMATIC VALVES, METERS, AND PUMPS MAINTAINED BY 545X1 PERSONNEL BY TAFMS GROUPS

ITEM	PERCENT MAINTAINING			
	1-24 MOS TAFMS	1-48 MOS TAFMS	49-96 MOS TAFMS	97+ MOS TAFMS
AUTOMATIC VALVES				
A.O. SMITH	42	43	25	40
BAILEY	2	3	3	2
BOWSER	12	13	6	12
CARTER	4	5	14	13
CLAY-VAL	90	90	89	92
EMCO-WHEATON	7	10	12	27
FISHER CONTROL	2	1	2	2
HARWOOD	10	10	9	16
LIQUID CONTROL	21	15	20	20
O.P.W.	21	27	37	38
PARKER	4	4	3	7
RECCO	1	1	2	1
VACCO	2	1	2	0
WARREN ENGINEERING	1	2	2	2
FUEL METERS				
A.O SMITH	80	78	79	78
BOWSER	31	26	26	20
BRODIE	63	57	51	55
GRANCO	16	15	12	21
LIQUID CONTROL	22	19	26	26
NEPTUNE	19	23	26	35
CAL-METER	5	5	6	2
PITTSBURGH ROTOR CYCLE	6	5	3	5
ROCK ROTOR CYCLE	4	5	5	9
ROCKWELL	4	5	5	9
TOKHEIM	45	47	68	68
FUEL PUMPS				
DEEP WELL TURBINE	93	92	91	88
GEAR	42	40	43	40
CENTRIFUGAL	74	77	75	83
PISTON	16	14	9	12
ROTARY VANE	45	51	51	54
SELF-PRIMING CENTRIFUGAL	71	67	66	71
TRI-ROTOR	16	15	15	20

TABLE 17

JOB SATISFACTION DATA FOR 545X1 TAFMS GROUPS
(PERCENT MEMBERS RESPONDING)

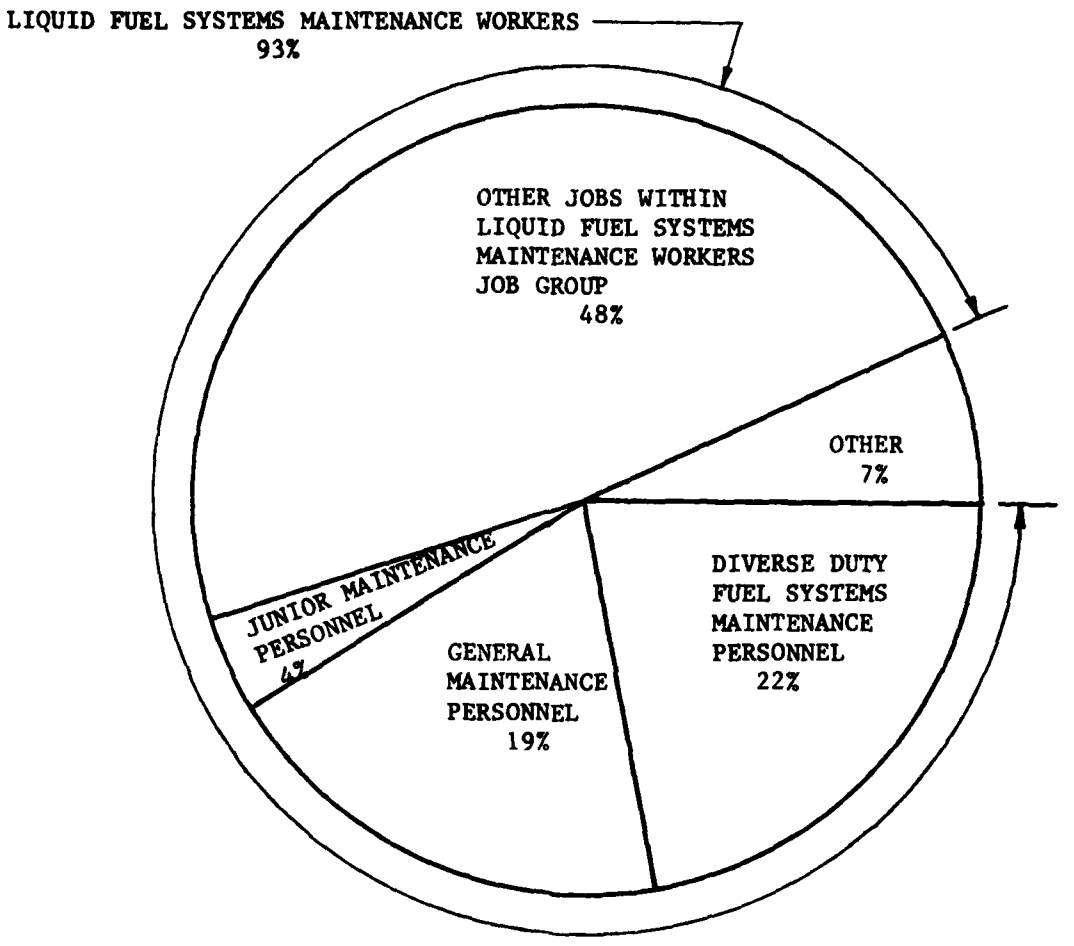
	1-48 MONTHS		49-96 MONTHS		97+ MONTHS	
	545X1 RESPONDENTS (N=157)	1981 COMPARATIVE SAMPLE* (N=1392)	545X1 RESPONDENTS (N=65)	1981 COMPARATIVE SAMPLE* (N=352)	545X1 RESPONDENTS (N=82)	1981 COMPARATIVE SAMPLE* (N=703)
I FIND MY JOB:						
DULL	12	29	12	14	4	10
SO-SO	14	27	12	26	11	16
INTERESTING	73	43	76	60	83	72
MY JOB UTILIZES MY TALENTS:						
NOT AT ALL TO VERY LITTLE	24	48	20	25	11	17
FAIRLY WELL TO PERFECTLY	76	51	80	75	88	82
MY JOB UTILIZES MY TRAINING:						
NOT AT ALL TO VERY LITTLE	16	16	6	13	11	12
FAIRLY WELL TO PERFECTLY	84	83	94	87	88	87
I PLAN TO REENLIST:						
WILL RETIRE	1	**	0	**	15	**
NO OR PROBABLY NO	55	57	39	26	8	27
YES OR PROBABLY YES	41	41	61	72	77	72

*COMPARATIVE SAMPLE TAKEN FROM DIRECT SUPPORT SPECIALTIES SURVEYED IN 1981; INCLUDES AFSs 566X0 AND 631X0.
**"NO OR PROBABLY NO" INCLUDES PLANS TO RETIRE FOR THE COMPARATIVE SAMPLE.

NOTE: COLUMNS MAY NOT ADD TO 100% DUE TO NO RESPONSE BY SOME SURVEY RESPONDENTS

FIGURE 2

DISTRIBUTION OF FIRST-ENLISTMENT
PERSONNEL IN JOB GROUPS
(N=157)



STS 545X1 Liquid Fuel Systems Maintenance. A comprehensive review of STS 545X1, dated April 1981, compared STS items to survey data. Usually, STS paragraphs containing general information or subject-matter knowledge requirements are not evaluated. Overall, the 545X1 STS provides comprehensive coverage of the job performed by personnel in the field, with survey data supporting most significant STS paragraphs or subparagraphs. While some tasks may not have high percentages of personnel performing them, high training emphasis ratings for those tasks or the fact that the tasks are part of a specialized job being performed in the career ladder may support the retention of STS elements involving those tasks. Paragraph 12, Portable and Air Transportable Fuel Systems, has low training emphasis ratings and a low percentage of members performing. It should be reviewed. Computer printouts reflecting the match between STS items and survey sample data have been furnished to the technical school for additional review.

POI 3ABR545X1. Based on a matching of inventory tasks to the 3ABR545X1 POI, dated July 1981, by technical school subject-matter specialists, a computer product was generated displaying the results of that matching process. Information furnished for consideration includes training emphasis (TE) and task difficulty (TD) ratings, as well as percent members performing data for first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) personnel.

A review of this data revealed that most POI blocks and units appear to be supported by survey data based on percentages of first-term personnel performing tasks or the high training emphasis ratings for those tasks. Table 18 lists the tasks rated highest in training emphasis. Of these, only one is not taught in the basic course and should be reviewed. In addition, one of the POI units merits further discussion.

Block II, unit 5B, has tasks referenced to it which have not been rated high in training emphasis and which have a low percentage of first-job and first-enlistment personnel performing them. This unit deals with performing specific pipeline repairs. Tasks referenced to it, along with the percentage of first-termers performing them, are:

patch pipelines using saddle clamps (13%)
prepare pipeline surfaces for patches (10%)
patch pipelines using casings (5%)
patch pipelines using half soles (3%)
patch pipelines using pit patches (3%)
patch pipelines using slabs (3%)

The patching tasks all have high task difficulty; however, the task highest in training emphasis is "patching pipelines using saddle claps" (TE = 4.24, which lies between the mean (3.55) and high ratings (5.10). Most of the other patching tasks are below average in training emphasis ratings. This block is recommended for review by training officials.

In addition, the Tri-Rotor pump trainer is used in training, but only 16 percent of the first-job 545X1 personnel report maintaining Tri-Rotor pumps. These pumps are recommended for review as to their appropriateness in training. Table 19 lists all the equipment maintained by over 30 percent of the first-job or first-enlistment 545X1 personnel.

TABLE 18

TASKS RATED HIGHEST IN TRAINING EMPHASIS

TASKS		TNG EMP	545X1 PERCENT MEMBERS PERFORMING 1ST JOB (N=83)	1ST ENL (N=157)
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	7.30	81	82
K368	ADJUST DEEP WELL TURBINE MECHANICAL SEALS	6.82	47	54
K370	ADJUST DEEP WELL TURBINE PUMP IMPELLERS	6.76	40	43
I293	ADJUST CDHS-3 PRESSURE DIFFERENTIAL CONTROLS	6.70	47	49
H249	CALIBRATE METERS OTHER THAN SERVICE STATION METERS	6.67	60	62
G163	ACT AS BACKUP SAFETY PERSON DURING TANK CLEANING OPERATIONS	6.58	49	55
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	6.55	75	78
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	6.51	83	87
F160	TEST HOSES USING HYDROSTATIC PRESSURE HOSE TESTERS	6.45	49	56
I295	ADJUST CRD PRESSURE REDUCING CONTROLS	6.42	55	61
I296	ADJUST CRL PRESSURE RELIEF CONTROLS	6.42	58	63
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	6.33	94	94
I297	ADJUST CV FLOW CONTROLS	6.33	53	54
G175	DON PROTECTIVE CLOTHING	6.24	49	59
G174	DON BREATHING UNITS	6.18	47	55
G186	INSPECT FRESH AIR MASKS	6.18	64	66
I292	ADJUST CDHS-2 PRESSURE DIFFERENTIAL CONTROLS	6.18	48	47
F118	CUT GASKET MATERIAL	6.06	96	94
G190	INSPECT SAFETY HARNESSES	6.06	60	63
G177	EMPTY STORAGE TANKS USING PORTABLE PUMPS	6.00	63	67
H247	CALIBRATE DIRECT READING PRESSURE GAUGES	5.94	45	50
F123	FLARE COPPER TUBING	5.91	89	90
G191	INSPECT SAFETY ROPES	5.91	52	55
J364	OVERHAUL NONLUBRICATED PLUG VALVES	5.88	25	32
K379	INSTALL OR REMOVE DEEP WELL TURBINE PUMPS	5.88	27	35
K391	OVERHAUL DEEP WELL TURBINE PUMPS*	5.85	13	22
G167	CLEAN TANK CLEANING HOSES	5.82	63	66
I329	OVERHAUL CRL PRESSURE RELIEF CONTROLS	5.79	36	43
I326	OVERHAUL CDHS-3 PRESSURE DIFFERENTIAL CONTROLS	5.76	23	29
I328	OVERHAUL CRD PRESSURE REDUCING CONTROLS	5.76	30	39

*THIS TASK IS NOT TAUGHT IN THE BASIC COURSE.

NOTE: 1. TNG EMP MEAN = 3.55

2. TASKS RATED ABOVE 5.10 ARE HIGH IN TNG EMP

TABLE 19

AUTOMATIC VALVES, METERS, AND PUMPS MAINTAINED BY 30 PERCENT OR MORE OF 1-24 OR 1-48 MONTHS TAFMS 545X1 PERSONNEL

	PERCENT MAINTAINING	
	1-24 MOS TAFMS	1-48 MOS TAFMS
AUTOMATIC VALVES		
A.O. SMITH	42	43
CLAY-VAL	90	90
FUEL METERS		
A.O. SMITH	80	78
BOWSER	31	26
BRODIE	63	57
TOKHEIM	45	47
FUEL PUMPS		
DEEP WELL TURBINE	93	92
GEAR	42	40
CENTRIFUGAL	74	77
ROTARY VANE	45	51
SELF-PRIMING CENTRIFUGAL	71	67

ANALYSIS OF CONUS VERSUS OVERSEAS GROUPS

A comparison was made between the tasks performed by DAFSC 54551 personnel stationed within the Continental United States (CONUS) and those located overseas. Results indicated that, while the job performed by both groups was basically the same, a number of variations did exist. Those respondents assigned to CONUS performed on the average a greater number of tasks than did overseas personnel (172 versus 133). CONUS personnel tended to be more involved in installing and maintaining fuel storage pumps and performing PRIME BEEF functions than are overseas incumbents (see Table 20).

Also, there were some background differences between the two groups. Overseas respondents tend to be more senior in both grade and average time in the service. Average time in the career field was also higher for overseas personnel (65 months versus 50 months). Job satisfaction indices indicate that overseas personnel show less intention to reenlist than their CONUS peers (45 percent versus 52 percent). Overall, morale indicators for both groups do not indicate any problem areas.

TABLE 20

TASKS BEST REFLECTING DIFFERENCES BETWEEN 54551 CONUS AND OVERSEAS PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		CONUS (N=145)	OVERSEAS (N=49)	DIFFERENCE
G185	INSPECT FLOATING ROOF TANK SEALS	65	16	+49
R533	ERECT TENTS	68	27	+41
R534	FIRE M-16 RIFLES	88	47	+41
F139	ISOLATE PRODUCT RECOVERY SYSTEM MALFUNCTIONS	54	16	+38
H291	VISUALLY INSPECT FLOATING ROOF FOR OUT-OF-ROUND CONDITION	40	2	+38
F137	INSTALL OR REMOVE PRODUCT RECOVERY SYSTEMS	48	12	+36
G192	INSPECT TANK ANTIFREEZE VALVES	39	4	+35
J349	INSTALL OR REMOVE LUBRICATED PLUG VALVES	75	41	+34
J363	OVERHAUL LUBRICATED PLUG VALVES	52	18	+34
M440	CLEAN PUMP ASSEMBLY STRAINERS	72	39	+33
M442	INSTALL OR REMOVE COMPLETE SERVICE STATION PUMP ASSEMBLIES	69	37	+32
R539	OPERATE CHEMICAL WARFARE PERSONAL PROTECTIVE EQUIPMENT	61	29	+32
I309	INSTALL OR REMOVE EJECTOR-STRAINERS	48	16	+32
H255	CLEAN SEALS OF FLOATING ROOF TANKS	35	4	+31
K382	INSTALL OR REMOVE ROTARY VANE PUMP VANES	33	2	+31
K368	ADJUST DEEP WELL TURBINE MECHANICAL SEALS	66	35	+31
K390	OVERHAUL CENTRIFUGAL PUMPS	45	14	+31
K369	ADJUST DEEP WELL TURBINE PACKING GLANDS	40	10	+30
J350	INSTALL OR REMOVE NONLUBRICATED PLUG VALVES	72	43	+29
I317	INSTALL OR REMOVE SOLENOIDS (2, 3, 4 PORT)	49	20	+29
G168	COMMUNICATE WITH TANK CLEANERS USING SOUND POWER COMMUNICATION SET	27	49	-22
G175	DON PROTECTIVE CLOTHING	59	78	-19

COMPARISON OF MAJCOM GROUPS

Examination of the tasks performed by personnel according to their major command (MAJCOM) revealed some job differences between commands. Differences in task performance, as well as differences in equipment maintenance, were varied and patterns of liquid fuel systems maintenance specific to the major commands were hard to identify. Consequently, the best way to illustrate MAJCOM variation is through equipment tables and corresponding percent members maintaining the equipment for each MAJCOM. These tables are provided following this section (see Tables 21 and 22). In addition, differences were also found in the breadth of the jobs performed by the MAJCOM groups. SAC reports the broadest job, averaging the performance of 196 tasks, while AAC has the narrowest job, averaging only 116 tasks performed.

Job satisfaction indicators varied somewhat between MAJCOMs (as seen in Table 23). AFSC, SAC, and TAC all had over 80 percent of their members reporting their job as interesting, while only 60 percent of the USAFE group found their job interesting. PACAF personnel were the most satisfied with the utilization of their talents on the job, and 94 percent of the MAC group felt their training was used on the job. Reenlistment intentions were comparable across commands, with AAC having the lowest (41 percent plan to reenlist) and AFSC having the highest. No other noteworthy differences across major commands were found.

In summary, differences in task performance and the breadth of the jobs performed do exist across MAJCOMs, but the differences are varied and MAJCOM-specific patterns of maintenance are hard to identify. Additionally, some variation can be found in job satisfaction indicators; however, differences are relatively small. Overall, the 545X1 job is comparable across MAJCOMs.

TABLE 21

AUTOMATIC VALVES MAINTAINED BY 545X1 MAJOR COMMAND (MAJCOM) GROUPS

	PERCENT MEMBERS MAINTAINING								
	SAC (N=80)	TAC (N=59)	MAC (N=52)	USAFE (N=30)	AFLC (N=26)	PACAF (N=20)	AAC (N=17)	ATC (N=13)	AFSC (N=8)
AUTOMATIC VALVES									
A. O. SMITH	45	31	35	40	42	30	65	8	38
BAILEY	6	3	2	0	4	0	0	0	0
BOWSER	14	5	17	3	35	5	0	0	0
CARTER	11	7	4	13	19	5	12	8	0
CLAY-VAL	91	86	94	83	92	90	88	100	88
EMCO-WHEATON	16	5	23	13	31	15	6	8	13
FISHER CONTROL	3	0	2	0	4	0	0	0	0
HARWOOD	9	12	17	23	0	0	29	0	0
LIQUID CONTROL	21	12	8	17	23	40	24	0	25
O. P. W.	35	20	35	30	50	25	29	39	38
PARKER	5	3	0	3	19	0	12	0	0
RECCO	3	0	0	0	4	0	0	0	0
VACCO	4	0	0	0	0	0	0	0	0
WARREN ENGINEERING	1	2	4	3	4	0	0	0	0

TABLE 22

FUEL METERS AND PUMPS MAINTAINED BY
545X1 MAJOR COMMAND (MAJCOM) GROUPS

	PERCENT MEMBERS MAINTAINING								
	SAC (N=80)	TAC (N=59)	MAC (N=52)	USAFE (N=30)	AFLC (N=26)	PACAF (N=20)	AAC (N=17)	ATC (N=13)	AFSC (N=8)
FUEL METERS									
A. O. SMITH	80	73	69	70	89	80	82	100	88
BOWSER	26	7	23	17	46	45	29	23	38
BRODIE	64	44	60	23	89	60	41	62	38
GRANCO	16	15	14	7	8	5	41	15	75
LIQUID CONTROL	30	25	25	7	23	25	6	8	13
NEPTUNE	41	31	31	0	39	5	6	8	25
CAL-METER	8	0	0	0	4	10	0	23	13
PITTSBURGH ROTOR CYCLE	5	3	2	0	19	5	0	0	0
ROCK ROTOR CYCLE	0	2	2	0	0	0	0	0	0
ROCKWELL	3	2	8	7	19	0	12	0	13
TOKHEIM	59	61	58	47	54	65	53	23	88
FUEL PUMPS									
DEEP WELL TURBINE	99	88	89	73	96	90	88	92	88
GEAR	50	32	33	13	77	50	24	39	50
CENTRIFUGAL	81	71	79	63	89	90	71	85	88
PISTON	23	3	14	7	19	20	0	0	0
ROTARY VALVE	65	41	54	20	69	65	29	54	50
SELF-PRIMING CENTRIFUGAL	74	59	60	57	85	75	59	77	88
TRI-ROTOR	19	10	15	0	58	5	0	15	25

TABLE 23

COMPARISON OF MAJCOM JOB SATISFACTION
(PERCENT MEMBERS RESPONDING)

	SAC (N=80)	TAC (N=59)	MAC (N=52)	USAFE (N=30)	AFLC (N=26)	PACAF (N=20)	AAC (N=17)	ATC (N=13)	AFSC (N=8)
I FIND MY JOB:									
DULL	5	9	17	10	23	5	0	23	0
SO-SO	10	8	15	30	8	10	18	8	13
INTERESTING	82	83	68	60	69	85	77	69	87
MY JOB UTILIZES MY TALENTS:									
NOT AT ALL TO VERY LITTLE	18	19	17	27	31	15	12	31	13
FAIRLY WELL TO PERFECTLY	82	81	83	73	69	85	82	69	87
MY JOB UTILIZES MY TRAINING:									
NOT AT ALL TO VERY LITTLE	9	15	6	23	15	15	12	15	13
FAIRLY WELL TO PERFECTLY	91	85	94	77	85	85	82	85	87
I PLAN TO REENLIST:									
WILL RETIRE	7	3	4	7	0	0	6	0	13
NO OR PROBABLY NO	39	41	39	37	42	35	47	46	12
YES OR PROBABLY YES	54	56	56	53	54	65	41	54	75

NOTE: COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO NO RESPONSE OF SOME SURVEY RESPONDENTS

COMPARISON TO PREVIOUS SURVEY

The 545X1 job was previously surveyed in 1975 as the 546X0 career ladder. The Occupational Survey Report (OSR) from this data was published in December 1975. At that time, Missile Fuel Systems Maintenance was also included as AFS 546X0F. Since then, the F-shred has been re-established as AFS 445X1, and Conventional Fuel Systems Maintenance received a numeric change from AFS 546X0 to AFS 545X1, with a 9-skill level conversion to the general 54599 Mechanical Superintendent.

Most of the conventional fuel systems maintenance jobs identified in the 1975 OSR paralleled the jobs identified in the present OSR (see Table 24).

As compared to the 1975 sample, present 545X1 first-termers find their job more interesting (73 versus 60 percent). Reenlistment intentions, on the other hand, dropped from 1975 to the present for both first- and second-enlistment groups. In 1975, 48 percent of the 1-48 months TAFMS group indicated plans to reenlist as compared to 41 percent of the present first-term sample; second-termers planning to reenlist dropped from 70 to 61 percent.

In other areas, the 1975 data did not differ substantially from the present data. Besides the separation of the missile fuels into their own AFS, the 545X1 career field has remained stable.

TABLE 24

COMPARISON OF SURVEY FINDINGS IN 1975 OSR WITH PRESENT OSR

	JOB SATISFACTION			
	1975 GROUPS		1982 GROUPS	
	FIRST TERMERS	SECOND TERMERS	FIRST TERMERS	SECOND TERMERS
I FIND MY JOB:				
DULL	18	10	12	12
SO-SO	22	13	14	12
INTERESTING	60	77	73	76
I PLAN TO REENLIST:				
NO, OR PROBABLY NO (INCLUDES RETIREMENT)	52	28	56	39
YES, OR PROBABLY YES	48	70	41	61
NOT REPORTED	0	2	3	0

COMPARISON OF JOB GROUPS

1975 STUDY	PRESENT STUDY
CONVENTIONAL FUELS SPECIALIST/TECHNICIAN	DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL
NCOIC CONVENTIONAL FUELS MECHANICAL SUPERINTENDENT	SHOP FOREMEN
MOGAS PUMP ASSEMBLY MAINTENANCE TECHNICIAN	SERVICE STATION PUMP ASSEMBLY WORKING SUPERVISORS
FIRST-LINE SUPERVISORS	WORKING SUPERVISORS
OTHER 546X0 JOB GROUPS	LIQUID FUEL SYSTEMS MAINTENANCE WORKERS

IMPLICATIONS

Analysis of the 545X1 career ladder revealed that the majority of the personnel performed a similar technical job with a few variations based on the area of maintenance concentration or the number of tasks they performed. One supervisory and managerial job of shop foreman was identified. As a result of these findings, the present career ladder structure is supported by occupational data.

Concerning training, the 545X1 STSs and POI 3ABR54531 items were generally supported by occupational survey data. Paragraph 12 in the STS and Block II, unit 5B in the POI need review. In addition, use of the Tri-Rotor pump trainer in training needs review.

Finally, 545X1 personnel reported satisfaction with their job at every experience level. Reenlistment intentions were also generally high.

In summary, based on both job performance and the job attitudes of survey respondents, the 545X1 Liquid Fuel Systems Maintenace career ladder is structured well and requires only limited training review.

APPENDIX A

REPRESENTATIVE TASKS PERFORMED BY JOB GROUPS

TABLE A1

TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF
SERVICE STATION PUMP ASSEMBLY MAINTENANCE WORKING SUPERVISORS
(N=5)

TASKS		PERCENT MEMBERS PERFORMING
B35	PREPARE REQUISITIONS FOR SUPPLIES OR EQUIPMENT	100
B38	SUPERVISE LIQUID FUEL SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54551)	100
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	100
C59	PREPARE APRs	100
G170	COORDINATE WITH BASE SAFETY, FIRE DEPARTMENT, AND SECURITY POLICE ON TANK CLEANING PROCEDURES	100
G171	COORDINATE WITH BIOENVIRONMENTAL ENGINEERS ON INSPECTION OF SAFETY EQUIPMENT	100
J343	INSTALL OR REMOVE BALL VALVES	100
D83	MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	100
G174	DON BREATHING UNITS	100
B33	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	100
D71	COUNSEL TRAINEES ON TRAINING PROGRESS	100
G186	INSPECT FRESH AIR MASKS	100
R539	OPERATE CHEMICAL WARFARE PERSONAL PROTECTIVE EQUIPMENT	100
G178	GIVE TANK ENTRY SAFETY BRIEFINGS	100
G203	INSTALL OR REMOVE PIPELINE SKILLET FLANGES	100
E99	MAKE ENTRIES ON BASE CIVIL ENGINEERING WEEKLY SCHEDULE FORMS (AF FORM 561)	100
G202	INSTALL OR REMOVE MANHOLE COVERS	100
D68	CONDUCT OJT	100
C47	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	100
D84	PLAN OJT	100
R534	FIRE M-16 RIFLES	100
D77	DIRECT OR IMPLEMENT OJT PROGRAMS	100
F120	CUT PIPE USING HAND TOOLS	100
A15	PLAN OR SCHEDULE WORK ASSIGNMENTS	100
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	100
F123	FLARE COPPER TUBING	100
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	100
F162	THREAD PIPE	100
F153	SEND TEST OR OTHER EQUIPMENT TO PRECISION MEASUREMENT EQUIPMENT LABORATORY (PMEL)	80
M448	INSTALL OR REMOVE HOSES IN SERVICES STATION UNITS	80
B36	SUPERVISE APPRENTICE LIQUID FUELS SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54531)	80

TABLE A2

TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF WORKING SUPERVISORS (N=15)

TASKS		PERCENT MEMBERS PERFORMING
B38	SUPERVISE LIQUID FUELS SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54551)	100
A6	DETERMINE WORK PRIORITIES	100
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	100
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	100
B35	PREPARE REQUISITIONS FOR SUPPLIES OR EQUIPMENT	100
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	100
A16	PLAN SAFETY PROGRAMS	100
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	100
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	100
F145	OPERATIONALLY INSPECT WATER DRAIN VALVES	100
F144	VISUALLY INSPECT ABOVE GROUND PIPELINES FOR LEAKS AND CONDITION	100
B28	IMPLEMENT SAFETY PROGRAMS	100
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	100
B33	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	100
H284	OPERATIONALLY INSPECT METERS	100
C50	EVALUATE MAINTENANCE AND USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	100
G203	INSTALL OR REMOVE PIPELINE SKILLET FLANGES	100
G200	INSTALL OR REMOVE BLIND FLANGES ON PIPLELINES	100
J366	SECURE MANUAL VALVES FOR MAINTENANCE	100
F126	GROUND PORTABLE EQUIPMENT	100
A20	SCHEDULE LEAVES OR PASSES	100
F117	CUT COPPER OR STAINLESS STEEL TUBING	100
F112	BEND COPPER TUBING	100
G190	INSPECT SAFETY HARNESSES	100
F123	FLARE COPPER TUBING	100
J350	INSTALL OR REMOVE NONLUBRICATED PLUG VALVES	100
G189	INSPECT PROTECTIVE CLOTHING	100
G191	INSPECT SAFETY ROPES	100
A15	PLAN OR SCHEDULE WORK ASSIGNMENTS	93
M448	INSTALL OR REMOVE HOSES IN SERVICES STATION UNITS	93
J359	OPERATIONALLY CHECK MANUAL VALVES FOR LEAKS	93
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	93
H277	INSTALL OR REMOVE PRESSURE GAUGES	93

TABLE A3

TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF
DIVERSE DUTY FUEL SYSTEMS MAINTENANCE PERSONNEL
(N=68)

TASKS		PERCENT MEMBERS PERFORMING
F116	CLEAN WORK AREAS	100
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	100
F115	CLEAN HAND TOOLS	100
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	100
F117	CUT COPPER OR STAINLESS STEEL TUBING	99
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	99
G202	INSTALL OR REMOVE MANHOLE COVERS	99
F145	OPERATIONALLY INSPECT WATER DRAIN VALVES	99
F112	BEND COPPER TUBING	99
F123	FLARE COPPER TUBING	99
J345	INSTALL OR REMOVE GATE VALVES	99
F118	CUT GASKET MATERIAL	97
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	97
J359	OPERATIONALLY CHECK MANUAL VALVES FOR LEAKS	97
G203	INSTALL OR REMOVE PIPELINE SKILLET FLANGES	97
J343	INSTALL OR REMOVE BALL VALVES	97
I295	ADJUST CRD PRESSURE REDUCING CONTROLS	97
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	97
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	96
G200	INSTALL OR REMOVE BLIND FLANGES ON PIPELINES	96
M448	INSTALL OR REMOVE HOSES IN SERVICE STATION UNITS	96
J351	INSTALL OR REMOVE PACKINGS ON MANUAL VALVES	96
H277	INSTALL OR REMOVE PRESSURE GAUGES	96
H284	OPERATIONALLY INSPECT METERS	96
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	94
J365	REFILL GREASE CHAMBERS	94
M465	OPERATIONALLY INSPECT PUMP ASSEMBLIES FOR LEAKS	94
I296	ADJUST CRL PRESSURE RELIEF CONTROLS	94
K368	ADJUST DEEP WELL TURBINE MECHANICAL SEALS	94
F162	THREAD PIPE	94
G177	EMPTY STORAGE TANKS USING PORTABLE PUMPS	93
G166	CLEAN PROTECTIVE EQUIPMENT	93
G167	CLEAN TANK CLEANING HOSES	93
H285	OPERATIONALLY INSPECT PRESSURE GAUGES	93
N476	INSTALL OR REMOVE HOSE FITTINGS	93
H283	OPERATIONALLY INSPECT MANUAL VALVES AT BOTTOM OF ABOVE GROUND TANKS	93
M440	CLEAN PUMP ASSEMBLY STRAINERS	93

TABLE A4

TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF
JUNIOR MAINTENANCE PERSONNEL
(N=6)

TASKS		PERCENT MEMBERS PERFORMING
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	100
F118	CUT GASKET MATERIAL	100
I292	ADJUST CDHS-2 PRESSURE DIFFERENTIAL CONTROLS	100
G200	INSTALL OR REMOVE BLIND FLANGES ON PIPLELINES	100
I295	ADJUST CRD PRESSURE REDUCING CONTROLS	100
F116	CLEAN WORK AREAS	100
J366	SECURE MANUAL VALVES FOR MAINTENANCE	100
I296	ADJUST CRL PRESSURE RELIEF CONTROLS	100
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	100
F117	CUT COPPER OR STAINLESS STEEL TUBING	100
F123	FLARE COPPER TUBING	100
K368	ADJUST DEEP WELL TURBINE MECHANICAL SEALS	100
F112	BEND COPPER TUBING	100
F126	GROUND PORTABLE EQUIPMENT	100
F115	CLEAN HAND TOOLS	100
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	100
L420	OPERATIONALLY INSPECT PRESSURE RELIEF VALVES	100
I303	INSTALL OR REMOVE CDHS-2 PRESSURE DIFFERENTIAL CONTROLS	83
L434	PRESSURIZE PIPELINE SYSTEMS FOR LEAK CHECKS	83
H247	CALIBRATE DIRECT READING PRESSURE GAUGES	83
H244	ADJUST LOW LEVEL CONTROL SWITCHES	83
I328	OVERHAUL CRD PRESSURE REDUCING CONTROLS	83
I329	OVERHAUL CRL PRESSURE RELIEF CONTROLS	83
J357	LUBRICATE PLUG VALVES	83
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	83
H277	INSTALL OR REMOVE PRESSURE GAUGES	83
I293	ADJUST CDHS-3 PRESSURE DIFFERENTIAL CONTROLS	83
M442	INSTALL OR REMOVE COMPLETE SERVICE STATION PUMP ASSEMBLIES	83
I306	INSTALL OR REMOVE CRD PRESSURE REDUCING CONTROLS	83
I307	INSTALL OR REMOVE CRL PRESSURE RELIEF CONTROLS	83
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	83
M448	INSTALL OR REMOVE HOSES IN SERVICE STATION UNITS	83
K370	ADJUST DEEP WELL TURBINE PUMP IMPELLERS	83
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	83
F132	INSTALL OR REMOVE COMPRESSION (FERREL) FITTINGS	83
F151	REAM TUBING	83
M440	CLEAN PUMP ASSEMBLY STRAINERS	83
G202	INSTALL OR REMOVE MANHOLE COVERS	67

TABLE A5

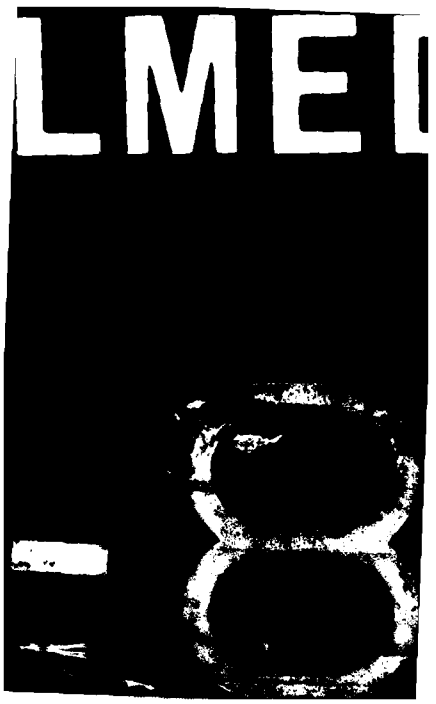
TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF
GENERAL MAINTENANCE PERSONNEL
(N=42)

TASKS		PERCENT MEMBERS PERFORMING
F116	CLEAN WORK AREAS	98
F133	INSTALL OR REMOVE FILTER-SEPARATOR ELEMENTS	95
F118	CUT GASKET MATERIAL	95
F112	BEND COPPER TUBING	90
F123	FLARE COPPER TUBING	88
F115	CLEAN HAND TOOLS	86
M450	INSTALL OR REMOVE NOZZLES ON SERVICE STATION UNITS	83
F117	CUT COPPER OR STAINLESS STEEL TUBING	83
F126	GROUND PORTABLE EQUIPMENT	81
F142	OPERATIONALLY INSPECT FILTER-SEPARATORS	71
R534	FIRE M-16 RIFLES	71
H277	INSTALL OR REMOVE PRESSURE GAUGES	69
F151	REAM TUBING	67
F140	OPERATE EXPLOSIMETERS (VAPOR INDICATORS)	67
M448	INSTALL OR REMOVE HOSES IN SERVICE STATION UNITS	64
J343	INSTALL OR REMOVE BALL VALVES	64
F122	CUT STENCILS	60
F162	THREAD PIPE	57
F120	CUT PIPE USING HAND TOOLS	55
G202	INSTALL OR REMOVE MANHOLE COVERS	52
F141	OPERATIONALLY INSPECT FILTER-SEPARATOR FUEL DISCHARGE CONTROL VALVES	50
J342	ADJUST PACKING GLANDS ON MANUAL VALVES	50
G166	CLEAN PROTECTIVE EQUIPMENT	50
F148	PERFORM MINOR CORROSION CONTROL TO EXTERIOR METAL SURFACES	48
J358	OPERATIONALLY CHECK MANUAL VALVES FOR EASE OF OPERATION	48
F145	OPERATIONALLY INSPECT WATER DRAIN VALVES	48
J359	OPERATIONALLY CHECK MANUAL VALVES FOR LEAKS	45
F154	STENCIL HOSES WITH INSPECTION INFORMATION	45
L434	PRESSURIZE PIPELINE SYSTEMS FOR LEAK CHECKS	45
H285	OPERATIONALLY INSPECT PRESSURE GAUGES	45
H284	OPERATIONALLY INSPECT METERS	45
H249	CALIBRATE METERS OTHER THAN SERVICE STATION METERS	45
G167	CLEAN TANK CLEANING HOSES	45
F136	INSTALL OR REMOVE HYDRANT PIT LIDS, HINGES, OR HANDLES	43
F144	OPERATIONALLY INSPECT TRUCK FILL STAND SWING JOINTS	43
G177	EMPTY STORAGE TANKS USING PORTABLE PUMPS	43
F152	REMOVE WATER FROM HYDRANT PITS	40
R530	ASSEMBLE AM-2 MATTING	40

TABLE A6

TASKS PERFORMED BY THE HIGHEST PERCENTAGE OF SHOP FOREMEN (N=23)

TASKS		PERCENT MEMBERS PERFORMING
B41	WRITE CORRESPONDENCE	96
A15	PLAN OR SCHEDULE WORK ASSIGNMENTS	96
A6	DETERMINE WORK PRIORITIES	96
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	96
A5	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	96
B33	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	96
B35	PREPARE REQUISITIONS FOR SUPPLIES OR EQUIPMENT	91
C56	EVALUATE WORK SCHEDULES	91
C59	PREPARE APRs	91
B32	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	91
E99	MAKE ENTRIES ON BASE CIVIL ENGINEERING WEEKLY SCHEDULE FORMS (AF FORM 561)	91
B26	DIRECT UTILIZATION OF EQUIPMENT	91
A20	SCHEDULE LEAVES OR PASSES	91
B38	SUPERVISE LIQUID FUELS SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54551)	87
C45	EVALUATE COMPLIANCE WITH PERFORMANCE STANDARDS	87
B37	SUPERVISE CIVILIANS	87
C48	EVALUATE INSPECTION REPORTS OR PROCEDURES	87
G173	COORDINATE WITH MAJOR AIR COMMANDS ON TANK ENTRY, REPAIR, OR MODIFICATION	87
C50	EVALUATE MAINTENANCE AND USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	87
A8	DEVELOP WORK METHODS OR PROCEDURES	87
E102	MAKE ENTRIES ON BCE JOB ORDER RECORD FORMS (AF FORM 1879)	87
C51	EVALUATE PROCEDURES FOR STORAGE, INVENTORY, OR INSPECTION OF PROPERTY ITEMS	87
A4	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	87
E104	MAKE ENTRIES ON BCE WORK REQUEST FORMS (AF FORM 332)	87
C42	ANALYZE WORKLOAD REQUIREMENTS	83
A11	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	83
B28	IMPLEMENT SAFETY PROGRAMS	83
G170	COORDINATE WITH BASE SAFETY, FIRE DEPARTMENT, AND SECURITY POLICE ON TANK CLEANING PROCEDURES	83
D71	COUNSEL TRAINEES ON TRAINING PROGRESS	83
B36	SUPERVISE APPRENTICE LIQUID FUELS SYSTEMS MAINTENANCE SPECIALISTS (AFSC 54531)	78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