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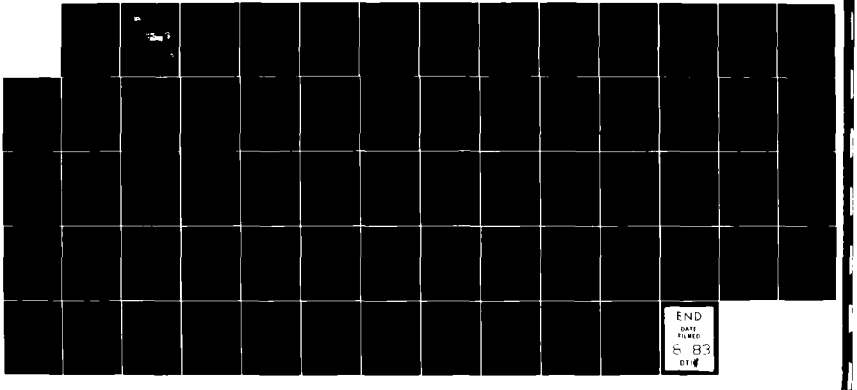

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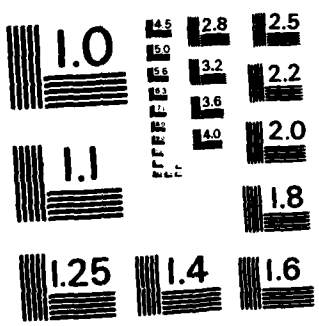
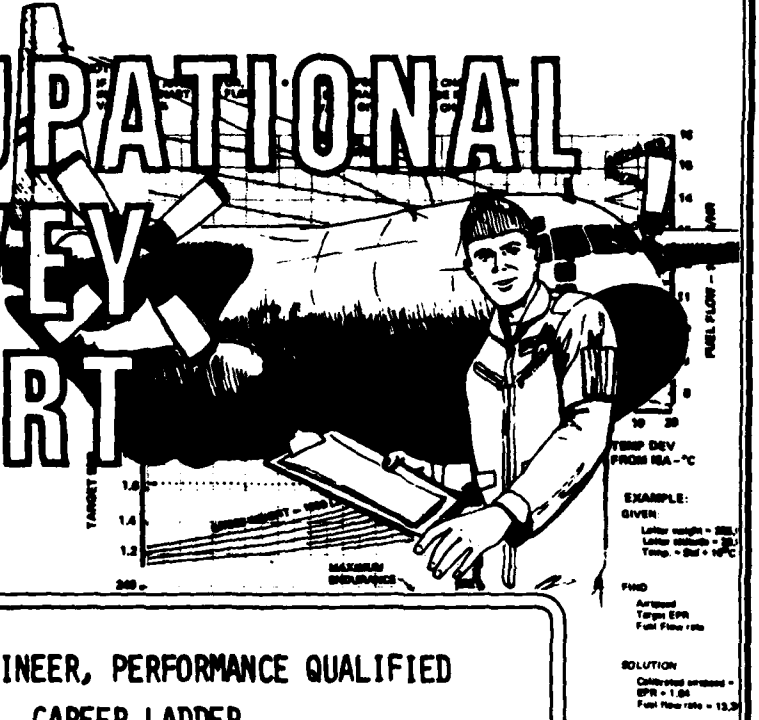


UNITED STATES AIR FORCE

# OCCUPATIONAL SURVEY REPORT



FLIGHT ENGINEER, PERFORMANCE QUALIFIED
CAREER LADDER

AFS 113X0C

AFPT 90-113-455

JUNE 1983



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

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| ALTUS AFB OK 73523 | 2 | 1 | 1 | 2 |
| 443 TCHTS/TTG (Attn: TSgt Horn) | | | | |
| ALTUS AFB OK 73523 | 2 | 1 | 1 | 2 |
| 552 AWACS | | | | |
| TINKER AFB OK 73145 | 2 | 1 | 1 | 2 |
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| 3785 FLDTG/TTFO | 2 | 2 | | 2 |

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## PREFACE

This report presents the results of an occupational survey of the Flight Engineer, Performance Qualified, career ladder (AFS 113X0C). The survey was requested by the Director of Training, Deputy Chief of Staff, Operations, Headquarters, Strategic Air Command (SAC). Authority for conducting occupational surveys is contained in AFR 35-2. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument for this project was developed by First Lieutenant Kevin F. Morefield, Inventory Development Specialist. Mr. Bill Feltner provided computer support for this project. Dr. Linda S. Aslett analyzed the survey data and wrote the report. This report was reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, 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 are available upon request to the USAF Occupational Measurement Center, Attention to the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150 (AUTOVON 487-5811).

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Chief, Occupational Analysis Branch
USAF Occupational Measurement Center

## SUMMARY OF RESULTS

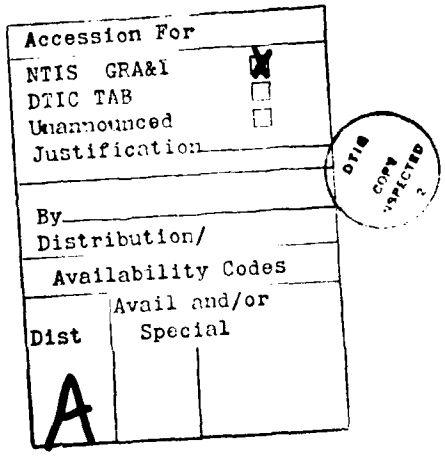
1. Survey Coverage: Inventory booklets were completed by 1,690 career ladder personnel (representing 71 percent of total assigned strength). This sample was representative in terms of both MAJCOM and grade distribution, and provided a comprehensive view of flight engineer jobs.

2. Specialty Structure: Personnel working in the 113X0C career ladder held highly similar jobs. Job variation was driven primarily by number of tasks performed, seniority, and aircraft assignment. Most survey respondents were serving aboard C-141, C-130, or C-5 aircraft. One group of senior managers was identified, as well as a small group of training personnel.

3. DAFSC and Skill-Level Task Differences: Skill-level differences consisted primarily of the addition of supervision, training, and management tasks to the senior flight engineer's workload. Technical task performance remained consistent despite skill-level changes. The only technical activity performed more often by 7-skill level personnel was air refueling.

4. Career Ladder Documents: The AFR 39-1 Specialty Description provides good general descriptions of jobs performed by 113X0C personnel. The present STS was basically supported by survey data, but a revision is needed to make several paragraphs more representative of the career field, and to include new technical areas, such as MADARS. The 11330C POI was supported by task data, but several POI areas either had no tasks referenced or were referenced to tasks with low training emphasis and few personnel performing them. These POI sections should be examined for training adequacy based on survey data.

5. Implications: Flight engineers performed similar jobs, with variations explained primarily by aircraft assignment and number of tasks performed. Senior career ladder personnel were found in all job groups, but performed duties different enough to separate some of them into a Senior Manager group. A review of career ladder documents revealed a need for changes in the STS to more accurately reflect training requirements for career personnel.



# OCCUPATIONAL SURVEY REPORT
# FLIGHT ENGINEER, PERFORMANCE QUALIFIED, CAREER LADDER
# (AFS 113X0C)

## INTRODUCTION

This is a report of an occupational survey of personnel in the Flight Engineer, Performance Qualified, career ladder completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in May 1983. The last occupational survey of this career ladder was published in August 1976. The present survey was requested by the Director of Training, Deputy Chief of Staff, Operations, Headquarters, Strategic Air Command. This survey is part of a group of surveys of enlisted aircrew AFSCs being done to examine the feasibility of a preliminary undergraduate aircrew technical school. In addition, a common aircrew study examining tasks performed across all enlisted aircrew specialties will be published later this year.

### Background

From January 1967 to May 1975, AFS 435X0A/B/C was designated for flight engineer personnel. The A-shred was for turboprop (C-130) flight engineers, B-shred for helicopters, and C-shred for flight engineers qualified on the C-5 or C-141 aircraft. In 1975, as part of the organization of the Enlisted Aircrew Operations career field, flight engineers were redesignated AFS 113X0A/B/C. The CEM Code of 11300 was added in October 1978, and the 9-skill level was converted from 11390 to 11399. The most recent change in the career field occurred in April 1980 when turboprop personnel (A-shred) were merged with the C-shred, Performance Qualified.

The duties of the 3- and 5-skill level Flight Engineer Specialist are described in AFR 39-1 as operation and monitoring of engine and aircraft systems controls, panels, and indicators; performance of visual inspections (preflight, thru-flight and postflight); and flight duties described in applicable flight manual checklists. Among these duties are computation and application of aircraft weight and balance, as well as aircraft performance data and determination of engine fuel consumption using airspeed, atmospheric data charts, on board computers, electronic calculators, or slide rules.

Personnel usually enter the Flight Engineer career ladder as a cross-trainee from Aircraft Maintenance career ladders, although some career ladder personnel enter directly from civilian life. Initial training for C-shred flight engineers is conducted by Military Airlift Command (MAC) at Altus AFB, Oklahoma. The eight-week two-day 11330C-Fixed Wing Performance Course includes ground instruction on aerodynamic factors of aircraft performance and performance chart construction; liquid crystal display (LCD) calculator operations and computations; prediction of takeoff and landing data; cruise

range and data relative to fuel consumption (cruise control); performance limitations; inflight replanning and maintenance of flight log, plan and other records during flight; analysis of individual flight conditions; and computation of aircraft weight and balance during ground and flight operations. Upon completion of their initial training, each 11330C flight engineer attends qualification training for the particular aircraft assigned. Follow-on training for the C-5 and C-41 aircraft occurs at Altus AFB. Training for the C-130 aircraft is conducted by MAC at Little Rock AFB, Arkansas. Not all follow-on aircraft qualification is conducted by MAC. For example, KC-10 training is conducted by SAC and E-3 training is operated by TAC. All follow-on training includes ground school, use of a flight simulator, and transition to the corresponding aircraft.

## SURVEY METHODOLOGY

### Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-113-455 dated January 1982. A preliminary task list was prepared after reviewing pertinent career ladder publications and directives, tasks from previous job inventories, and data from the last occupational survey report (OSR). This preliminary task list was refined and validated through personal interviews with subject-matter specialists from the initial flight engineer training at Altus and follow-on flight schools. The resulting job inventory contained a listing of 605 tasks grouped under 23 duty headings and a background section containing such information as grade, type of mission flown, duty title, time in service, job satisfaction and present aircraft qualification rating.

### Survey Administration

During the period February 1982 through August 1982, Consolidated Base Personnel Offices (CBPOs) in operational units worldwide administered the inventory to job incumbents holding DAFSC 113X0C. These personnel were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each member rated each selected task on a nine-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from one (very small amount of time spent) through five (about average time spent) to nine (very large amount of time spent).

To determine relative time spent for each task checked by a respondent, all of an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is divided by the sum of the total task ratings and multiplied by 100. This procedure provides a basis for comparing tasks in terms of both percent members performing and average relative percent time spent.

### Survey Sample

Personnel were selected to participate in this survey to ensure an accurate representation across using major commmands (MAJCOM) and paygrade groups. Table 1 reflects the percentage distribution, by major command, of assigned personnel in the career ladder as of December 1981. Also shown is the MAJCOM percent distribution of survey respondents.

Table 2 reflects the paygrade group distributions, while Table 3 lists the sample distribution by TAFMS groups. About 59 percent of sampled 113X0C personnel are in the grades E-5 through E-6 (see Table 2) and 48 percent are in their third or fourth enlistment (see Table 3). The survey sample provided a good representation of the career ladder population.

TABLE 1

COMMAND REPRESENTATION OF SURVEY SAMPLE

| COMMAND | PERCENT OF ASSIGNED | PERCENT OF SAMPLE |
|---|---|---|
| MAC | 89 | 89 |
| TAC | 6 | 5 |
| AFSC | 3 | 2 |
| SAC | 1 | 2 |
| OTHER | 1 | 2 |
| TOTAL | 100 | 100 |

TOTAL ASSIGNED* - 2,525
TOTAL ELIGIBLE FOR SURVEY** - 2,386
TOTAL SAMPLED - 1,690
PERCENT SAMPLED - 71%

*ASSIGNED STRENGTH AS OF DECEMBER 1981
**EXCLUDES THOSE IN PCS STATUS, STUDENTS, HOSPITALIZED PERSONNEL, AND PERSONNEL WITH LESS THAN SIX WEEKS ON THE JOB.

TABLE 2

PAYGRADE REPRESENTATION OF SURVEY SAMPLE
113X0C

| | PERCENT OF ASSIGNED | PERCENT OF SAMPLE |
|---|---|---|
| AIRMAN | * | * |
| E-4 | 8 | 5 |
| E-5 | 32 | 33 |
| E-6 | 27 | 29 |
| E-7 | 22 | 24 |
| E-8,9 | 11 | 9 |

*LESS THAN ONE PERCENT

NOTE: MANNING FIGURES AS OF DECEMBER 1981

TABLE 3

TICF DISTRIBUTION OF SURVEY SAMPLE

| | MONTHS IN THE CAREER FIELD | | | | | |
|---|---|---|---|---|---|---|
| | 1-48 | 49-96 | 97-144 | 145-192 | 193-240 | 241+ |
| NUMBER IN AFS 113X0C SAMPLE | 731 | 544 | 158 | 146 | 84 | 27 |
| PERCENT OF AFS 113X0C SAMPLE | 43% | 32% | 9% | 9% | 5% | 2% |

## Task Factor Administration

In addition to completing the job inventory, selected senior 113X0C personnel (generally E-6 and E-7 technicians) were also asked to complete a second booklet for either training emphasis (TE) or task difficulty (TD). Major command distribution of these raters appears in Table 4. The TE and TD booklets are processed separately from the job inventories. The rating information is used in several analyses discussed in detail within this report.

Task Difficulty. Each senior technician completing a task difficulty booklet was asked to rate all inventory tasks on a nine-point scale (from extremely low to extremely high) as to relative difficulty. Difficulty is defined as the length of time required by an average member to learn to do the task. Task difficulty data were independently collected from 48 experienced 7- or 9-skill level 113X0C personnel stationed worldwide, with all raters assessing the difficulty of inventory tasks. The interrater reliability (as assessed through components of variance of standard group means) was very high--.96. Task difficulty ratings were adjusted so tasks of average difficulty would have a 5.00 rating. The resulting data is essentially a rank ordering of tasks indicating the relative degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing the 113X0C task difficulty index for each task item, it was then possible to compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. An equation using the number of tasks performed and the average difficulty per unit time spent (ADPUTS) as variables are the basis for the JDI. The index ranges form 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so the average JDI is 13.00.

Training Emphasis. Experienced technicians completing training emphasis booklets were asked to rate tasks on a ten-point scale ranging from no training required (0) to extremely heavy training required (9). Training emphasis is a rating of which tasks require more emphasis in structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 70 experienced 113X0C 7- and 9-skill level personnel stationed worldwide. The interrater reliability (as assessed through components of variance of standard groups means) for these raters was .98, indicating there was good agreement among raters as to which tasks required some form of structured training and which did not.

When used in conjunction with other information, such as percent members performing, task difficulty and training emphasis ratings can provide insight into training requirements. Such insights may help validate lengthening or shortening portions of instruction supporting AFSC needed knowledges or skills.

TABLE 4

TASK FACTOR RATER MAJCOM DISTRIBUTION

| COMMAND | PERCENT OF ASSIGNED | PERCENT OF TASK DIF RATERS | PERCENT OF TRNG EMP RATERS |
|---|---|---|---|
| MAC | 89 | 87 | 90 |
| TAC | 6 | 7 | 5 |
| AFSC | 3 | 3 | 2 |
| SAC | 1 | 2 | 2 |
| OTHER | 1 | 1 | 1 |

## SPECIALTY JOBS
(Career Ladder Structure)

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

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

### Specialty Structure Overview

The job structure of the Performance Qualified Flight Engineer career ladder was determined by performing a job type analysis of the 1,690 survey respondents. Based on task similarity and the amount of time spent performing each task, the jobs performed by 113X0C personnel separated into 12 job groups, 11 of which grouped within one large cluster. One small independent job type of Trainers was identified. There were some differences related to aircraft assignment and aircraft systems variations; however, on the whole, flight engineers perform highly similar jobs. In fact, the majority of the job variation noted was accounted for by differences in size of job (number of tasks performed) and seniority within the career ladder. The jobs performed, based on task similarity and relative time spent, are illustrated in Figure 1. The group (GRP) number is a reference to computer-printed information included for use by classification and training managers. The letter "N" stands for the number of people in the group.

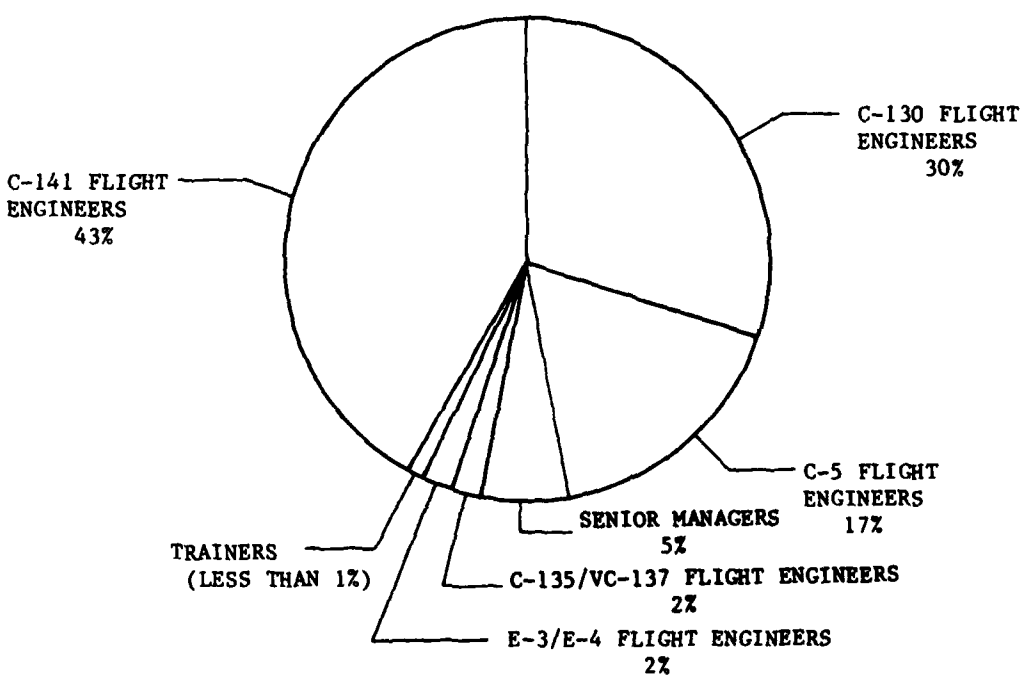
I. SQUADRON/UNIT FLIGHT ENGINEER CLUSTER (GRP069, N=1,575)

- A. C-141 Flight Engineers (GRP243, N=279; GRP482, N=270; GRP075, N=83)
- B. C-5 Flight Engineers (GRP545, N=155; GRP177, N=87)
- C. C-130 Flight Engineers (GRP394, N=296; GRP156, N=101; GRP078, N=46)
- D. C-135, VC-137 Flight Engineers (GRP346, N=20)
- E. E-3, E-4 Flight Engineers (GRP391, N=31)
- F. Senior Managers (GRP331, N=35)

II. TRAINERS (GRP071, N=7)

FIGURE 1

FLIGHT ENGINEER (PERFORMANCE QUALIFIED) CAREER LADDER GROUPS
(AFS 113X0C)



The respondents forming these groups accounted for 94 percent of the survey sample. The remaining six percent of the sample consisted of unique cases which did not group with the mainstream of flight engineer jobs. Some of the job titles reported by these personnel included KC-10 Instructor, Staff Trainer, Chief Flight Simulator Instructor, and STAN-EVAL Program Manager.

## Job Descriptions

The following paragraphs describe each of the jobs listed above. The information is limited to a brief description of the respondents who comprised the job group and a sample of the tasks performed which illustrate the nature of their job. Appendix A contains additional task performance information for each job group.

I. SQUADRON/UNIT FLIGHT ENGINEER CLUSTER (GRP069, N=1,575). This large group of flight engineers comprised 93 percent of the total respondent sample and provided a comprehensive view of the duties and tasks performed within the career ladder. Job time was spread over the entire spectrum of technical duties. Only two of the duties in the job inventory accounted for more than 10 percent of job time: environmental system functions and common aircrew tasks. Monitoring, operation, inspection, and analysis of malfunctions in environmental systems (air-conditioning, bleed air, overheat/fire, antiicing or deicing, etc.) accounted for 12 percent of flight engineers' job time. This work included such tasks as:

Operate and monitor automatic aircraft pressurization systems
Perform cabin heater system operational checks
Remove or replace environmental oxygen system components
Perform preflight turbo compressor operational checks
Analyze rain removing equipment malfunctions
Inspect environmental fire suppression bottles

Common aircrew tasks also accounted for 12 percent of job time. Examples of such tasks included monitoring radio communication transmissions, participating in crew maintenance debriefings, loading crew gear on aircraft, ordering aircrew flight lunches, and performing personal equipment inspections.

The remaining job time was spread over the range of other technical duties outlined in AFR 39-1. Five functions each accounted for eight percent of duty time. One of these was computation of aircraft weight, balance, and performance data, a primary job component performed by virtually all flight engineers. The other four duty areas were performance of power plant functions; ground and inflight emergency procedures; landing gear system functions; and general aircraft functions. General aircraft functions included diverse tasks, among them:

Secure cargo
Supervise passengers
Periodically check cargo restraints

Operate seats, seat belts, or shoulder harnesses
Inspect survival equipment
Maintain required hand tools
Inspect aircraft structures for erosion, corrosion, damage, or cracks

Several technical duties contributed only two to three percent to flight engineer job time. These functions were associated with communications and navigation equipment, cargo door and ramp systems, and flight control systems.

A composite list of representative tasks performed by cluster members appears in Table 5. Seventy percent of group members were 7-skill level personnel, with the remainder holding the 3- or 5-skill levels. Flight engineers within this cluster performed an average of 286 tasks (out of an inventory which included 605 tasks). Within this cluster, flight engineers broke into numerous groups, identified primarily by the size of their job (number of tasks performed). Increased supervisory responsibilities, as well as aircraft assignment, accounted for minor variations. For clarity, job types assigned to the same airframe are presented together, with differences noted within the discussion.

TABLE 5

REPRESENTATIVE TASKS OF FLIGHT ENGINEER CLUSTER
(GRP069, N=1,575)

COMPUTE TAKEOFF, LANDING, CRUISE, CLIMB, AIRCRAFT EMERGENCY, DESCENT, NONSTANDARD CONFIGURATIONS, MAXIMUM ENDURANCE, AND HOLDING DATA.

PARTICIPATE IN PREMISSION WEATHER, GENERAL, OR SPECIALIZED MISSIONS BRIEFINGS; CREW MAINTENANCE AND CREW OPERATION DEBRIEFINGS; AND LIFE SUPPORT TRAINING SEMINARS.

INSPECT LANDING GEAR TIRES, DOORS, STEERING SYSTEMS, WHEEL ASSEMBLIES, AND CYLINDERS OR SNUBBERS; AIRCRAFT CARGO DOORS, RAMPS, LATCHES, COCKPIT, CABIN COMPARTMENT OR FURNISHINGS; EMERGENCY ESCAPE HATCHES, LATCHES, OR EXIT SYSTEMS; POWER PLANT EXHAUST SECTIONS, COWLINGS; AND LIFE RAFT RELEASE HANDLES.

MONITOR ENVIRONMENTAL BLEED AIR, HEAT, OVERHEAT/FIRE DETECTION, VENTILATING SYSTEM OPERATIONS; LEADING GEAR POSITION INDICATIONS, EXTENSIONS OR RETRACTIONS AND STEERING SYSTEM OPERATIONS; INSTRUMENT SYSTEM, POWER PLANT CONTROL, BRAKE ANTI-SKID, DOOR WARNING SYSTEM, AND HYDRAULIC SUCTION BOOST PUMP OPERATIONS; AND BRAKE PRESSURES.

OPERATE OXYGEN, AIRCRAFT PRESSURIZATION, AIR-CONDITIONING, POWER PLANT FUEL, LIGHTING, FUEL FEED, AND RAMP SYSTEMS; ULTRAHIGH AND VERY HIGH FREQUENCY RADIOS; GALLEY EQUIPMENT; AND REFUELING SYSTEMS.

ANALYZE MALFUNCTIONS IN APU OR GTC FIRE DETECTION, POWER PLANT OIL COOLER, ANTIICING, POWER PLANT STARTER, FUEL FEED, CARGO DOOR, PRIMARY FLIGHT CONTROL, AND INSTRUMENT SYSTEMS.

REMOVE OR REPLACE FAIRINGS, COWLINGS, INSPECTION PLATES, DOORS, PANELS, ACCESS COVERS, ELECTRICAL FUSES, AND BULBS.

INTERPRET WIRING OR SCHEMATIC DIAGRAMS.

COMPLETE TRAVEL VOUCHERS.

ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENTS FORMS (AFTO FORM 781A)

A. C-141 Flight Engineers (GRP243, N=279; GRP482, N=270; GRP075, N=83). These groups of flight engineers performed similar jobs with the distribution of their time across the range of technical duties varying only modestly, despite substantial differences in number of tasks performed (see Table 6). Only two duty areas accounted for ten percent or more of job time--common aircrew tasks and environmental system functions. Tasks common to all three groups are adequately represented by the cluster task list in Table 5. Except for the slight increase in supervisory and management duty time for GRP482, a more senior group in both grade, TAFMS, and TICF, these flight engineers' distribution of job time was markedly consistent. Two variations in duty performance warrant highlighting. Performance of flight control system functions across surveyed flight engineers generally represented only two or three percent of job time. One group of C-141 flight engineers (GRP243) was unusual in spending eight percent of their job time on flight control system functions. The other variation noted among C-141 groups concerned a small group of 83 flight engineers performing the fewest tasks (169 tasks). This group (GRP075) spent a somewhat higher percentage of their time performing common aircrew tasks, landing gear system functions tasks and computation of aircraft weight, balance, and performance data.

These C-141 groups separated from one another during job analysis largely due to their job sizes. As shown in both Tables 6 and 7, number of tasks performed ranged from 169 for GRP075, to 323 for GRP482, with the mid-range GRP243 performing 246 tasks. No background data, such as time in career field, skill level, grade, type of unit, or job title differences, were found to explain such a variation in job size. The job of a flight engineer, though uniform in time spent across technical duties, obviously varies in task performance among individuals.

B. C-5 Flight Engineers (GRP545, N=155; GRP177, N=87). These two groups of flight engineers were distinctly different from other groups in performance of Malfunction Detection Analysis and Recording Subsystem (MADARS) functions--a system specific to the C-5 aircraft to which they were assigned. Examples of tasks unique to these personnel included:

**Perform MADARS engine vibration analyses**
**Monitor MADARS operations**
**Perform MADARS preflight operational checks**
**Perform MADARS environmental system analyses**
**Perform MADARS flight control system analyses**

Performance of these tasks accounted for only five to seven percent of each group's job time. The majority of job time and tasks performed mirrored the general flight engineer job performance as described in the cluster description (see Table 6). Flight engineers on C-5 aircraft separated into two groups based on job size. The largest group (GRP545) performed an average of 337 tasks, while the smaller group (GRP177) reported performing over 100 less tasks. Again, no background data, such as grade, time in career field, skill level, or type of unit, varied enough between group members to explain such a job size variation.

C. C-130 Flight Engineers (GRP394, N=296; GRP156, N=101; GRP078, N=46). These flight engineers' task performance was unique from other cluster members in their work with the turboprop system functions inherent to the C-130 aircraft. Job time spent on this duty accounted for only five percent for any of the three groups and included such tasks as:

Perform propeller feathering system operational checks
Operate and monitor propeller antiicing or deicing systems
Monitor propeller pitchlock system malfunctions
Perform propeller system control operational checks
Service propeller oil systems

Flight engineers working on specialized variations of the aircraft are also part of these job groups: HC- and WC-130s assigned to the Aerospace Rescue and Recovery Service at McClellan AFB and the AC-130 gunships assigned to the 16th Special Operations Squadron at Hurlburt Field. The C-130 flight engineers separated into three distinct groups, again, based on the size of their job (number of tasks performed). An examination of Table 6 reveals the high degree of similarity among group members in the relative distribution of job time across duties. As found in the earlier discussion of other flight engineers, environmental system functions and common aircrew tasks were the only duties each accounting for 10 percent or more of job time. Table 7 displays background data for these groups. The majority of all group members held 7-skill level DAFSC and were in nonsupervisory positions. Each group did have, however, some junior personnel both in time in career field (TICF) and skill level. Minor differences in primary missions were noted between the groups, but, generally, group membership was driven by job size (number of tasks performed). Other background information, such as unit and job title, provided no insight into the large variation in job size. The range of tasks performed was 178 to 281 tasks. The majority of flight engineers aboard C-130s performed over 200 tasks, while a small group of 46 personnel (GRP078) performed a much smaller job.

D. C-135, VC-137 Flight Engineers (GRP346, N=20). Although this group of 113X0C personnel are involved in diverse missions, a common airframe brought them together. All of this group operate a modified Boeing 707 aircraft. Fourteen of these flight engineers are assigned to the 89th Military Airlift Wing, nine at Andrews AFB, and five at the Wing Detachment 1, located at Hickam AFB. These personnel serve on C-135s and VC-137s used for passenger service for Government officials and other ranking VIPs. The most well-known of these aircraft is "Air Force One," a VC-137 for use by the President. The remaining group members are assigned to WC-135s operating with the 41st Reconnaissance Weather Rescue Wing at McClellan AFB (five members) and the 20th Special Operations Squadron at Hurlburt (one member). These flight engineers' duty performance was similar to the cluster (Table 6), but was one of the more senior groups identified. Three duty areas each accounted for 10 percent or more of job time: common aircrew tasks, environmental systems functions, and power plant functions. All personnel were 7-skill or higher and the average grade was E-7, the highest grade average of any group in the career ladder. Perhaps reflecting this increased seniority and responsibility, the job difficulty index for this group was second only to senior managers.

E. E-3, E-4 Flight Engineers (GRP391, N=31). This is another group of flight engineers assigned to modified Boeing aircraft. The E-3 aircraft, commonly referred to as AWACS (Airborne Warning and Control System), is assigned to TAC's 552d Airborne Warning and Control Wing at Tinker AFB. Overseas E-3 flight engineers were located in Korea, Germany, and Iceland. The mission of these aircraft is all-weather surveillance. Two flight engineers serving on the E-4, Airborne Command Post, also were part of this group. These modified Boeing 747 aircraft are assigned to SAC and stationed at Offutt AFB. Duty time distribution among these flight engineers did not differ from the cluster description.

F. Senior Managers (GRP331, N=85). These flight engineers held jobs involving responsibility for supervision and management within their organizations. Their flying duties paralleled other flight engineers, but their duty time distribution (Table 6) and job titles revealed a job of larger scope and heightened administrative load. This group performed an average of 442 tasks, more than any other group, and received the highest Job Difficulty rating for the career field (18.4). Tasks performed by over 80 percent of these flight engineers included:

Evaluate individuals for promotion, demotion, or reclassification
Evaluate aircraft performance data
Establish organizational policies, office instructions (OI), or standing operating procedures (SOP)
Prepare or maintain local forms, records, or regulations
Supervise Flight Engineer Technicians (AFSC 11370C)
Write staff studies, surveys, or special reports
Evaluate compliance with performance standards
Establish performance standards for subordinates

Seventy-eight percent of these personnel held the 7-skill level, while 18 percent were 9-skill or CEM Code-level personnel. Examples of these senior managers' job titles included Operations Superintendent, SAC Flight Engineer Program Manager, NCOIC Flight Engineer Section, Resource Manager, and Stan-Eval Examiner.

II. TRAINERS (GRP071, N=7). Most survey respondents indicated involvement in some form of training (upgrade, certification), while others taught in resident training courses for entry-level engineers. Due to both flying requirements for retaining qualification in an aircraft, and training involving actual performance aboard the aircraft, most trainers' task performance grouped them with other flight engineers flying aboard a common aircraft. Only this small group were unusual in time spent on training functions. Tasks performed by this group included:

Conduct or participate in training conferences
Write test questions
Conduct job proficiency, initial qualification, and transition training

Counsel trainees on training progress
Supervise training programs other than OJT
Develop lesson plans

Training duties accounted for ten percent of duty time and made these flight engineers unique enough from their peers that they formed the only independent job type for this career ladder sample. Three members of this group of trainers were involved in training or training development for the AWACS program at Tinker AFB.

## Comparisons of Specialty Jobs

Job groups described in this section are shown in Tables 7 and 8, along with selected background information and job satisfaction data.

Flight engineers surveyed provided a view of a highly uniform career field, with 93 percent of the survey sample forming into one large cluster. One small group of trainers was identified, but despite differences in aircraft assignment and aircraft system variations, flight engineers performed highly similar jobs. Differences in the size of the job (number of tasks performed) and seniority within the career ladder accounted for much of the job variation. Each of the three predominant aircraft groups (C-130, C-141, C-5) broke into several jobs of varying sizes, but, except in the case of one group of C-141 flight engineers who were senior in grade and time in career ladder, no background variables were found to explain the difference in job scope among flight engineers flying on a common aircraft type. Many senior flight engineers, regardless of aircraft assignment, grouped into the Senior Manager job group, as well as predominated among the personnel serving aboard C-135/VC-137 VIP service aircraft.

Job satisfaction among 113X0C personnel was excellent (Table 8). The vast majority of flight engineers found their jobs interesting, and were making good use of their training and talent. The group reporting the lowest job satisfaction of the career ladder was a small group of C-130 personnel who were performing the most narrow job in terms of number of tasks performed (GRP078).

Career ladder jobs were compared for difficulty using the Job Difficulty Index (JDI) described in the TASK FACTOR ADMINISTRATION portion of this report. The JDI is based on the number of tasks performed and the relative difficulty of these tasks. The index ranges from 1.0 for very simple jobs to 25.0 for the most demanding jobs. This index provides an overview of jobs within a career ladder and pinpoints those jobs of increasing responsibility and broader scope. Table 7 displays the JDI values for career ladder groups identified. The most difficult jobs were Senior Managers, followed by C-135/VC-137 Flight Engineers. Jobs with the lowest JDI values were those narrowest in scope for two of the aircraft--C-130 (GRP078) with a rating of 8.5 and C-141 (GRP075) with a rating of 7.3.

In summary, the 113X0C career ladder is highly uniform, with some job variations driven primarily by number of tasks performed, seniority, and aircraft assignment. Senior career ladder personnel were found throughout the job groups, but predominated in the C-135/VC-137 Flight Engineer group and a Senior Manager group composed of personnel serving on all types of aircraft.

TABLE 6

PERCENT TIME SPENT ON DUTIES BY 113X0C JOB GROUPS

| | FLIGHT ENGINEER CLUSTER (GRP069, N=1,575) | C-141 GROUPS (GRP243, N=279) | (GRP482, N=270) | (GRP075, N=83) | C-5 GROUPS (GRP545, N=155) | (GRP177, N=87) | C-130 GROUPS (GRP394, N=296) | (GRP156, N=101) | (GRP078, N=46) |
|---|---|---|---|---|---|---|---|---|---|
| AVERAGE NUMBER OF TASKS PERFORMED | 286 | 246 | 323 | 169 | 337 | 247 | 281 | 228 | 178 |
| A PLANNING AND ORGANIZING | 1 | * | 1 | * | * | * | * | 1 | * |
| B DIRECTING AND IMPLEMENTING | 2 | 2 | 3 | 1 | 2 | 1 | 2 | 2 | 1 |
| C INSPECTING AND EVALUATING | 1 | * | 1 | * | 1 | * | * | 1 | * |
| D TRAINING | 2 | 1 | 3 | 1 | 2 | 1 | 2 | 2 | 2 |
| E PERFORMING ADMINISTRATIVE FUNCTIONS | 1 | * | 1 | * | * | * | * | * | * |
| F PERFORMING COMMON AIRCREW TASKS | 12 | 13 | 12 | 16 | 10 | 11 | 10 | 12 | 13 |
| G COMPUTING AIRCRAFT WEIGHT, BALANCE, AND PERFORMANCE DATA | 8 | 9 | 8 | 10 | 7 | 7 | 6 | 7 | 8 |
| H PERFORMING LANDING GEAR SYSTEM FUNCTIONS | 8 | 8 | 7 | 10 | 7 | 8 | 7 | 8 | 8 |
| I PERFORMING AEROSPACE GROUND EQUIPMENT (AGE) FUNCTIONS | * | * | * | * | * | * | * | * | * |
| J PERFORMING AIRCRAFT CARGO DOOR AND RAMP SYSTEM FUNCTIONS | 2 | 2 | 2 | 3 | * | * | 2 | 1 | 1 |
| K PERFORMING AIRCRAFT FUEL SYSTEM FUNCTIONS | 5 | 5 | 7 | 4 | 4 | 4 | 5 | 4 | 4 |
| L PERFORMING AIRCRAFT GENERAL FUNCTIONS | 8 | 8 | 8 | 9 | 8 | 7 | 8 | 8 | 9 |
| M PERFORMING AUXILIARY POWER UNIT (APU) AND GAS TURBINE (GTC) FUNCTIONS | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 5 |
| N PERFORMING COMMUNICATIONS AND NAVIGATION EQUIPMENT FUNCTIONS | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| O PERFORMING ELECTRICAL AND INSTRUMENT SYSTEM FUNCTIONS | 6 | 6 | 6 | 7 | 5 | 5 | 7 | 8 | 9 |
| P PERFORMING ENVIRONMENTAL SYSTEM FUNCTIONS | 12 | 13 | 13 | 11 | 13 | 14 | 13 | 11 | 10 |
| Q PERFORMING AND PRACTICING GROUND AND INFLIGHT EMERGENCY PROCEDURES | 8 | 8 | 8 | 7 | 7 | 8 | 8 | 8 | 7 |
| R PERFORMING FLIGHT CONTROL SYSTEM FUNCTIONS | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| S PERFORMING POWER PLANT FUNCTIONS | 8 | 8 | 9 | 7 | 8 | 7 | 9 | 9 | 8 |
| T PERFORMING PNEUDRAULIC OR HYDRAULIC SYSTEM FUNCTIONS | 4 | 4 | 3 | 3 | 7 | 8 | 3 | 3 | 2 |
| U PERFORMING PROPELLER SYSTEM FUNCTIONS | 2 | * | * | - | - | - | 5 | 5 | 5 |
| V PERFORMING MALFUNCTION DETECTION ANALYSIS AND RECORDING SUBSYSTEM (MADARS) FUNCTIONS | * | * | * | - | 5 | 7 | - | - | - |

* LESS THAN ONE PERCENT
- NOT PERFORMED

TABLE 6 (CONTINUED)

PERCENT TIME SPENT ON DUTIES BY 113X0C JOB GROUPS

| | | C-135/VC-137 FLIGHT ENGINEERS (GRP346, N=20) | E-3/E-4 FLIGHT ENGINEERS (GRP391, N=31) | SENIOR MANAGERS (GRP331, N=35) | TRAINERS (GRP071, N=7) |
|---|---|---|---|---|---|
| AVERAGE NUMBER OF TASKS PERFORMED | | 319 | 281 | 442 | 211 |
| A | PLANNING AND ORGANIZING | 2 | 1 | 3 | 4 |
| B | DIRECTING AND IMPLEMENTING | 4 | 2 | 5 | 5 |
| C | INSPECTING AND EVALUATING | 3 | 1 | 4 | 3 |
| D | TRAINING | 5 | 2 | 6 | 10 |
| E | PERFORMING ADMINSTRATIVE FUNCTIONS | 2 | 1 | 2 | 2 |
| F | PERFORMING COMMON AIRCREW TASKS | 11 | 12 | 9 | 17 |
| G | COMPUTING AIRCRAFT WEIGHT, BALANCE, AND PERFORMANCE DATA | 8 | 9 | 6 | 2 |
| H | PERFORMING LANDING GEAR SYSTEM FUNCTIONS | 7 | 7 | 6 | 6 |
| I | PERFORMING AEROSPACE GROUND EQUIPMENT (AGE) FUNCTIONS | - | * | 1 | 1 |
| J | PERFORMING AIRCRAFT CARGO DOOR AND RAMP SYSTEM FUNCTIONS | 1 | * | 1 | 1 |
| K | PERFORMING AIRCRAFT FUEL SYSTEM FUNCTIONS | 5 | 6 | 4 | 6 |
| L | PERFORMING AIRCRAFT GENERAL FUNCTIONS | 8 | 8 | 8 | 7 |
| M | PERFORMING AUXILIARY POWER UNIT (APU) AND GAS TURBINE (GTC) FUNCTIONS | * | 4 | 3 | 1 |
| N | PERFORMING COMMUNICATIONS AND NAVIGATION EQUIPMENT FUNCTIONS | 2 | 2 | 2 | 1 |
| O | PERFORMING ELECTRICAL AND INSTRUMENT SYSTEM FUNCTIONS | 6 | 6 | 5 | 5 |
| P | PERFORMING ENVIRONMENTAL SYSTEM FUNCTIONS | 10 | 12 | 10 | 7 |
| Q | PERFORMING AND PRACTICING GROUND AND INFLGHT EMERGENCY PROCEDURES | 7 | 8 | 6 | 4 |
| R | PERFORMING FLIGHT CONTROL SYSTEM FUNCTIONS | 4 | 3 | 3 | 2 |
| S | PERFORMING POWER PLANT FUNCTIONS | 10 | 10 | 8 | 4 |
| T | PERFORMING PNEUDRAULIC OR HYDRAULIC SYSTEM FUNCTIONS | 2 | 4 | 4 | 2 |
| U | PERFORMING PROPELLER SYSTEM FUNCTIONS | * | - | 3 | * |
| V | PERFORMING MALFUNCTION DETECTION ANALYSIS AND RECORDING SUBSYSTEM (MADARS) FUNCTIONS | - | - | * | - |

* LESS THAN ONE PERCENT
- NOT PERFORMED

TABLE 7

SELECTED BACKGROUND INFORMATION FOR CLUSTER, JOB TYPES, AND INDEPENDENT JOB TYPES

| | FLIGHT ENGINEER CLUSTER (GRP069) | C-141 GROUPS (GRP243) | C-141 GROUPS (GRP482) | C-141 GROUPS (GRP075) | C-5 GROUPS (GRP545) | C-5 GROUPS (GRP177) | C-130 GROUPS (GRP394) | C-130 GROUPS (GRP156) | C-130 GROUPS (GRP078) |
|---|---|---|---|---|---|---|---|---|---|
| NUMBER IN GROUP | 1,575 | 279 | 270 | 83 | 155 | 87 | 296 | 101 | 46 |
| PERCENT OF TOTAL SAMPLE | 93% | 17% | 16% | 5% | 9% | 5% | 18% | 6% | 3% |
| PERCENT IN CONUS | 91% | 98% | 99% | 99% | 99% | 100% | 78% | 74% | 76% |
| DAFSC DISTRIBUTION | | | | | | | | | |
| 11330C | 2% | 3% | 2% | 5% | 2% | 8% | 1% | 1% | 4% |
| 11350C | 21% | 28% | 13% | 13% | 14% | 18% | 28% | 35% | 35% |
| 11370C | 70% | 69% | 79% | 79% | 79% | 60% | 67% | 58% | 59% |
| AVG GRADE | E-6 | E-5,E-6 | E-6 | E-5 | E-6 | E-6 | E-6 | E-6 | E-5, E-6 |
| AVG MONTHS IN CAREER FIELD | 73 | 48 | 79 | 47 | 73 | 61 | 76 | 75 | 68 |
| AVG MONTHS IN SERVICE | 166 | 138 | 172 | 128 | 176 | 164 | 162 | 163 | 144 |
| PERCENT IN FIRST CAREER FIELD ENLISTMENT | 43% | 66% | 37% | 68% | 43% | 58% | 37% | 44% | 42% |
| PERCENT SUPERVISING | 26% | 21% | 30% | 18% | 25% | 18% | 22% | 29% | 13% |
| AVG NUMBER OF TASKS PERFORMED | 286 | 246 | 323 | 169 | 337 | 247 | 281 | 228 | 178 |
| JOB DIFFICULTY INDEX (JDI) (AVG JDI=13.00) | 13.6 | 11.7 | 15.0 | 7.3 | 15.8 | 12.6 | 14.7 | 11.5 | 8.5 |
| MISSION (PERCENT PERFORMING) | | | | | | | | | |
| AIR REFUELING | 2 | - | * | - | * | 1 | 1 | 6 | 4 |
| AIRBORNE SURVEILLANCE | 3 | - | * | - | - | - | * | 1 | 0 |
| COMBAT AIRLIFT | 13 | 7 | 6 | 4 | 4 | 2 | 29 | 30 | 26 |
| LINE | 45 | 73 | 62 | 68 | 67 | 81 | 14 | 9 | 15 |
| LOCAL TRAINING | 19 | 11 | 16 | 16 | 19 | 12 | 28 | 31 | 41 |
| RESCUE AND RECOVERY | 2 | - | - | - | - | - | 8 | 4 | 2 |
| SPECIAL OPERATIONS | 6 | * | 3 | 5 | * | - | 9 | 8 | 7 |
| SUPPORT | 4 | 3 | 5 | 6 | 3 | 2 | 4 | 5 | 13 |
| OTHER | 4 | 3 | 4 | 2 | * | 3 | 4 | 8 | 2 |

TABLE 7 (CONTINUED)

SELECTED BACKGROUND INFORMATION FOR CLUSTER, JOB TYPES, AND INDEPENDENT JOB TYPES

| | C-135/VC-137 FLIGHT ENGINEERS (GRP346) | E-3/E-4 FLIGHT ENGINEERS (GRP391) | SENIOR MANAGERS (GRP331) | TRAINERS (GRP071) |
|---|---|---|---|---|
| NUMBER IN GROUP | 20 | 31 | 85 | 7 |
| PERCENT OF TOTAL SAMPLE | 1% | 2% | 5% | * |
| PERCENT IN CONUS | 85% | 81% | 89% | 100% |
| DAFSC DISTRIBUTION | | | | |
| 11330C | 0 | 0 | 0 | 0 |
| 11350C | 0 | 23% | 4% | 14% |
| 11370C | 80% | 74% | 78% | 43% |
| AVG GRADE | E-7 | E-6 | E-7 | E-7 |
| AVG MONTHS IN CAREER FIELD | 128 | 76 | 131 | 135 |
| AVG MONTHS IN SERVICE | 220 | 173 | 230 | 212 |
| PERCENT IN FIRST CAREER FIELD ENLISTMENT | 5% | 35% | 16% | 14% |
| PERCENT SUPERVISING | 50% | 32% | 55% | 43% |
| AVG NUMBER OF TASKS PERFORMED | 319 | 281 | 442 | 211 |
| JOB DIFFICULTY INDEX (JDI) | 16.2 | 14.2 | 18.4 | 11.8 |
| (AVG JDI=13.00) | | | | |
| MISSION (PERCENT PERFORMING) | | | | |
| AIR REFUELING | - | - | 4 | 43 |
| AIRBORNE SURVEILLANCE | 5 | 65 | 2 | 14 |
| COMBAT AIRLIFT | - | 3 | 15 | - |
| *LINE* | 5 | - | 22 | 14 |
| LOCAL TRAINING | 10 | 10 | 15 | - |
| *RESCUE AND RECOVERY* | - | - | 7 | - |
| SPECIAL OPERATIONS | 60 | 23 | 13 | 29 |
| SUPPORT | 10 | - | 6 | - |
| OTHER | 5 | - | 11 | - |

*LESS THAN ONE PERCENT

TABLE 8

JOB SATISFACTION INFORMATION FOR 113X0C JOB GROUPS
(PERCENT RESPONDING)

| | FLIGHT ENGINEER CLUSTER (GRP069) | C-141 GROUPS (GRP243) | C-141 GROUPS (GRP482) | C-141 GROUPS (GRP075) | (C-5 GROUPS) (GRP545) | (C-5 GROUPS) (GRP177) | C-130 GROUPS (GRP394) | C-130 GROUPS (GRP156) | C-130 GROUPS (GRP078) | C-135/VC-137 FLIGHT ENGINEERS (GRP346) |
|---|---|---|---|---|---|---|---|---|---|---|
| HOW DO YOU FIND YOUR JOB: | | | | | | | | | | |
| DULL | 2 | 1 | * | - | * | 2 | 3 | 1 | 2 | - |
| SO-SO | 4 | 3 | 2 | 1 | 3 | 1 | 6 | 4 | 15 | 10 |
| INTERESTING | 93 | 95 | 97 | 99 | 93 | 94 | 89 | 93 | 83 | 85 |
| HOW WELL DOES YOUR JOB UTILIZE YOUR TALENTS: | | | | | | | | | | |
| VERY LITTLE OR NOT AT ALL | 4 | 3 | 2 | 1 | 5 | 3 | 6 | 5 | 9 | 10 |
| FAIRLY WELL TO PERFECTLY | 96 | 97 | 98 | 99 | 93 | 97 | 93 | 95 | 89 | 90 |
| HOW WELL DOES YOUR JOB UTILIZE YOUR TRAINING: | | | | | | | | | | |
| VERY LITTLE OR NOT AT ALL | 3 | 1 | * | 1 | 3 | 1 | 5 | 3 | 9 | 10 |
| FAIRLY WELL TO PERFECTLY | 97 | 98 | 99 | 96 | 94 | 99 | 94 | 96 | 89 | 90 |
| HOW SATISFIED ARE YOU WITH THE SENSE OF ACCOMPLISHMENT GAINED FROM YOUR JOB: | | | | | | | | | | |
| DISSATISFIED | 6 | 3 | 2 | 5 | 6 | 3 | 10 | 8 | 11 | 5 |
| AMBIVALENT | 4 | 3 | 4 | 4 | 4 | 1 | 4 | 6 | 7 | - |
| SATISFIED | 90 | 93 | 94 | 92 | 88 | 95 | 83 | 86 | 77 | 95 |
| DO YOU PLAN TO REENLIST: | | | | | | | | | | |
| NO, I WILL RETIRE WITH 20 YEARS MILITARY SERVICE | 12 | 9 | 10 | 6 | 12 | 13 | 9 | 16 | 2 | 5 |
| NO OR PROBABLY NO | 9 | 10 | 7 | 11 | 7 | 5 | 11 | 6 | 9 | 15 |
| YES OR PROBABLY YES | 79 | 80 | 83 | 82 | 81 | 83 | 78 | 77 | 89 | 80 |

NOTE: COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO "NO RESPONSE" OR ROUNDING

TABLE 8 (CONTINUED)

JOB SATISFACTION INFORMATION FOR 113X0C JOB GROUPS
(PERCENT RESPONDING)

| | E-3/E-4 FLIGHT ENGINEERS (GRP391) | SENIOR MANAGERS (GRP331) | TRAINERS (GRP071) |
|---|---|---|---|
| HOW DO YOU FIND YOUR JOB: | | | |
| DULL | 7 | 4 | - |
| SO-SO | 7 | 2 | - |
| INTERESTING | 84 | 92 | 86 |
| HOW WELL DOES YOUR JOB UTILIZE YOUR TALENTS: | | | |
| VERY LITTLE OR NOT AT ALL | - | 5 | 29 |
| FAIRLY WELL TO PERFECTLY | 100 | 95 | 57 |
| HOW WELL DOES YOUR JOB UTILIZE YOUR TRAINING: | | | |
| VERY LITTLE OR NOT AT ALL | - | 1 | 29 |
| FAIRLY WELL TO PERFECTLY | 100 | 99 | 57 |
| HOW SATISFIED ARE YOU WITH THE SENSE OF ACCOMPLISHMENT GAINED FROM YOUR JOB: | | | |
| DISSATISFIED | 10 | 12 | 14 |
| AMBIVALENT | - | 5 | 14 |
| SATISFIED | 91 | 84 | 57 |
| DO YOU PLAN TO REENLIST: | | | |
| NO, I WILL RETIRE WITH 20 YEARS MILITARY SERVICE | 19 | 31 | 14 |
| NO OR PROBABLY NO | 16 | 8 | 14 |
| YES OR PROBABLY YES | 65 | 61 | 71 |

NOTE: COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO "NO RESPONSE" OR RO'NDING

## ANALYSIS OF DAFSC GROUPS

An analysis of skill-level groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational analysis. The DAFSC analysis identifies differences in task and duty performance at various skill levels. Such information is useful in evaluating how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what career ladder personnel are actually doing in the field.

DAFSC 11330/50C: These 403 personnel were involved in the full range of technical duties of the career field (Table 9). Twenty-six percent of their duty time was spent performing either common aircrew tasks or environmental system functions. Aircrew tasks included inspecting ramp area for foreign object damage (FOD) matter, loading crew gear, and studying technical orders for abnormal and emergency inflight procedures. Three- and 5-skill level airmen performed operation, monitoring, and inspection of many aircraft environmental systems, including oxygen, fire extinguishing, air-conditioning, pressurization, and bleed air systems. The duty occupying the third most time for this group was general aircraft functions (nine percent), such as preflight inspection of aircraft structures and systems, cleaning of work areas, and operation of UHF and VHF radios. Three- and 5-skill level personnel did not form a majority of any of the job groups discussed in the SPECIALTY JOBS section of this report. They formed a third of two of the C-130 groups, and were found in other groups in small numbers (15-25 percent representation). Among the Senior Manager group, 3- and 5-skill level personnel represented four percent, and no junior career personnel were in the C-135/VC-137 Flight Engineer group. Table 10 displays tasks commonly performed by airmen at these skill levels.

DAFSC 11370C: These more experienced personnel made up 69 percent of the survey sample, and composed the majority of all job groups. An increase in time spent on managerial, and supervisory duties for this skill level was only modest (Table 11). The primary job focus remained technical, with supervision and management tasks added to senior personnel's responsibilities. Table 11 presents tasks which most clearly distinguish between 3-, 5-, and 7-skill level flight engineers. The only technical activity performed more often by 7-skill level flight engineers was several air refueling tasks.

TABLE 9

RELATIVE TIME SPENT ON 113X0C DUTIES BY SKILL LEVEL GROUPS

| DUTY | 11330/50C PERSONNEL | 11370C PERSONNEL |
|---|---|---|
| A. PLANNING AND ORGANIZING | * | 2 |
| B. DIRECTING AND IMPLEMENTING | 1 | 3 |
| C. INSPECTING AND EVALUATING | * | 2 |
| D. TRAINING | * | 3 |
| E. PERFORMING ADMINISTRATIVE FUNCTIONS | * | 1 |
| F. PERFORMING COMMON AIRCREW TASKS | 14 | 12 |
| G. COMPUTING AIRCRAFT WEIGHT, BALANCE, AND PERFORMANCE DATA | 9 | 7 |
| H. PERFORMING LANDING GEAR SYSTEM FUNCTIONS | 8 | 7 |
| I. PERFORMING AEROSPACE GROUND EQUIPMENT (AGE) FUNCTIONS | * | * |
| J. PERFORMING AIRCRAFT CARGO DOOR AND RAMP SYSTEM FUNCTIONS | 2 | 2 |
| K. PERFORMING AIRCRAFT FUEL SYSTEM FUNCTIONS | 4 | 5 |
| L. PERFORMING AIRCRAFT GENERAL FUNCTIONS | 9 | 8 |
| M. PERFORMING AUXILIARY POWER UNIT (APU) AND GAS TURBINE COMPRESSOR (GTC) FUNCTIONS | 4 | 4 |
| N. PERFORMING COMMUNICATIONS AND NAVIGATION EQUIPMENT FUNCTIONS | 2 | 2 |
| O. PERFORMING ELECTRICAL AND INSTRUMENT SYSTEM FUNCTIONS | 7 | 6 |
| P. PERFORMING ENVIRONMENTAL SYSTEM FUNCTIONS | 12 | 12 |
| Q. PERFORMING AND PRACTICING GROUND AND INFLIGHT EMERGENCY PROCEDURES | 7 | 7 |
| R. FLIGHT CONTROL SYSTEM FUNCTIONS | 3 | 3 |
| S. PERFORMING POWER PLANT FUNCTIONS | 8 | 8 |
| T. PERFORMING PNEUDRAULIC OR HYDRAULIC SYSTEM FUNCTIONS | 4 | 4 |
| U. PERFORMING PROPELLER SYSTEM FUNCTIONS | 2 | 2 |
| V. PERFORMING MALFUNCTION DETECTION ANALYSIS AND RECORDING SUBSYSTEM (MADARS) FUNCTIONS | * | * |

* LESS THAN ONE PERCENT

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY 11330/50C PERSONNEL

| TASKS | | PERCENT MEMBERS PERFORMING |
|---|---|---|
| G203 | COMPUTE LANDING DATA | 97 |
| G205 | COMPUTE TAKEOFF DATA | 97 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 94 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 93 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 93 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 93 |
| H254 | VERIFY LANDING GEAR SAFETY PINS ARE INSTALLED AFTER FLIGHTS | 90 |
| L309 | INSPECT COCKPIT, CABIN COMPARTMENT, OR FURNISHINGS | 90 |
| L312 | INSPECT DOORS, RAMPS, OR VISORS | 89 |
| 0385 | INSPECT PITOT PROBES, TEMPERATURE PROBES, OR INSTRUMENT SYSTEMS STATIC PORTS | 88 |
| L306 | INSPECT AIRCRAFT TO ENSURE PROPER CHOCKING | 88 |
| H234 | INSPECT LANDING GEAR STEERING SYSTEM | 87 |
| H238 | MONITOR BRAKE ANTISKID SYSTEM OPERATIONS | 83 |
| L325 | OPERATE AND MONITOR HEATING SYSTEMS | 81 |
| L305 | INSPECT AIRCRAFT STRUCTURES FOR EROSION, CORROSION, DAMAGE, OR CRACKS | 81 |
| H229 | INSPECT LANDING GEAR CYLINDERS OR SNUBBERS | 80 |
| J269 | OPERATE AND MONITOR NORMAL CARGO DOOR OR RAMP SYSTEMS | 77 |
| F185 | SECURE EQUIPMENT FOR DESCENT OF LANDING | 72 |
| P443 | PERFORM ENVIRONMENTAL OXYGEN SYSTEM OPERATING CHECKS | 71 |
| K282 | INSPECT FUEL TANK CAP SECURITY | 70 |
| Q486 | RECOMMEND CORRECTIVE ACTION FOR INFLIGHT EMERGENCY CONDITIONS | 68 |

TABLE 11

TASKS WHICH DISTINGUISH 11370C PERSONNEL FROM 11350C PERSONNEL

| TASKS | | PERCENT 11350C PERFORMING | PERCENT 11370C PERFORMING | DIFFERENCE |
|---|---|---|---|---|
| B56 | SUPERVISE FLIGHT ENGINEER SPECIALISTS (AFSC 11350C) | 13 | 50 | +37 |
| B25 | ADVISE SUBORDINATES WITH TECHNICAL PROBLEMS | 25 | 61 | +36 |
| C86 | PREPARE APRs | 9 | 44 | +35 |
| B54 | SUPERVISE APPRENTICE FLIGHT ENGINEER SPECIALIST (AFSC 11330C) | 15 | 45 | +30 |
| D97 | CONDUCT REQUALIFICATION TRAINING | 8 | 38 | +30 |
| D102 | COUNSEL TRAINEES ON TRAINING PROGRESS | 12 | 40 | +28 |
| D94 | CONDUCT JOB PROFICIENCY TRAINING | 10 | 37 | +27 |
| D103 | DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION | 21 | 48 | +27 |
| D93 | CONDUCT INITIAL QUALIFICATION TRAINING | 10 | 35 | +25 |
| A3 | COORDINATE NEW ASSIGNMENTS WITH FLIGHT SCHEDULING | 5 | 28 | +23 |
| K271 | ANALYZE AIR REFUELING SYSTEM MALFUNCTIONS | 23 | 45 | +22 |
| G202 | COMPUTE INFLIGHT REFUELING DATA | 25 | 47 | +22 |
| K285 | OPERATE AND MONITOR AIR REFUELING SYSTEMS | 25 | 46 | +21 |
| A14 | ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES | 6 | 27 | +21 |
| D89 | ADMINISTER TESTS | 8 | 29 | +21 |

## ANALYSIS OF EXPERIENCE GROUPS (TICF)

The job performed by survey respondents in different Time in Career Field (TICF) groups were examined to determine if there were differences in tasks performed. The 113X0C members surveyed fit the usual pattern seen in most career ladders, but the pattern was not as pronounced. As time in career field increased, there was an increase in performance of duties involving supervisory, managerial, and training tasks (see Table 12), but the increase was small, with time spent on technical flight engineer duties remaining basically consistent. This pattern is indicative of a career field where administrative, managerial and supervisory duties are added to senior personnel's work, with only minor deletion of time on previous technical duties. Basically, regardless of time in career ladder, flight engineers tended to perform a technical job.

### 1-48 Months TICF Personnel

Figure 2 shows the distribution of 1-48 months career ladder personnel across the job groups discussed in the SPECIALTY JOBS section of this report. Approximately half of career personnel serve on C-141 aircraft, with 27 percent and 19 percent serving on C-130 and C-5 aircraft respectively. Flight engineers serving in their first four years in the career ladder performed a technical job basically the same as more senior career field personnel. Table 12 reveals the marked consistency across TICF groups, and Table 13 lists representative tasks performed by 1-48 months TICF flight engineers. Supervision and management occupied five percent of job time for the 1-48 months group, while at the most senior levels, 18 percent of job time was spent on these duties.

FIGURE 2

DISTRIBUTION OF 1-48 MONTHS IN CAREER FIELD PERSONNEL
ACROSS CAREER LADDER JOBS
(PERCENT MEMBERS RESPONDING)
(N=630)

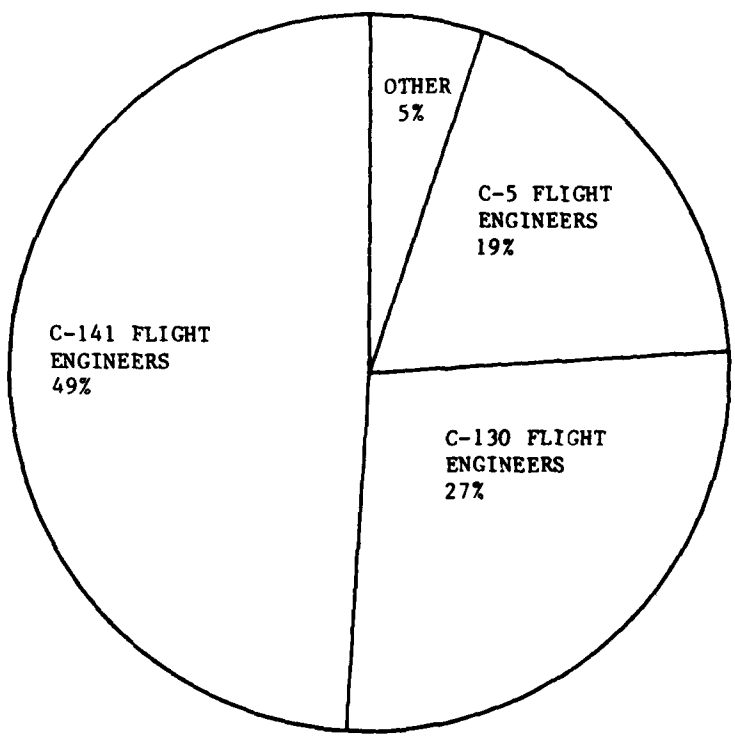


TABLE 12

PERCENT TIME SPENT ON DUTIES BY 113X0C EXPERIENCE GROUPS
(RELATIVE TIME SPENT)

| DUTY | EXPERIENCE GROUPS (MONTHS TICF) 1-48 (N=731) | 49-96 (N=544) | 97-14 (N=158) | 145-192 (N=146) | 103-240 (N=84) | 241+ (N=27) |
|---|---|---|---|---|---|---|
| A PLANNING AND ORGANIZING | 1 | 2 | 3 | 5 | 3 | 3 |
| B DIRECTING AND IMPLEMENTING | 2 | 3 | 4 | 6 | 6 | 8 |
| C INSPECTING AND EVALUATING | 1 | 1 | 2 | 3 | 3 | 3 |
| D TRAINING | 1 | 3 | 4 | 4 | 4 | 4 |
| E PERFORMING ADMINISTRATIVE FUNCTIONS | 1 | 1 | 1 | 2 | 2 | 4 |
| F PERFORMING COMMON AIRCREW TASKS | 13 | 11 | 11 | 11 | 10 | 11 |
| G COMPUTING AIRCRAFT WEIGHT, BALANCE, AND PERFORMANCE DATA | 8 | 8 | 7 | 7 | 7 | 6 |
| H PERFORMING LANDING GEAR SYSTEM FUNCTIONS | 8 | 7 | 7 | 7 | 7 | 5 |
| I PERFORMING AEROSPACE GROUND EQUIPMENT (AGE) FUNCTIONS | * | * | * | * | * | * |
| J PERFORMING AIRCRAFT CARGO DOOR AND RAMP SYSTEM FUNCTIONS | 2 | 2 | 1 | 1 | 2 | 1 |
| K PERFORMING AIRCRAFT FUEL SYSTEM FUNCTIONS | 5 | 5 | 4 | 4 | 5 | 4 |
| L PERFORMING AIRCRAFT GENERAL FUNCTIONS | 8 | 8 | 7 | 7 | 8 | 6 |
| M PERFORMING AUXILIARY POWER UNIT (APU) AND GAS TURBINE (GTC) FUNCTIONS | 4 | 4 | 3 | 3 | 3 | 3 |
| N PERFORMING COMMUNICATIONS AND NAVIGATION EQUIPMENT FUNCTIONS | 2 | 2 | 2 | 2 | 2 | 1 |
| O PERFORMING ELECTRICAL AND INSTRUMENT SYSTEM FUNCTIONS | 7 | 6 | 6 | 5 | 5 | 5 |
| P PERFORMING ENVIRONMENTAL SYSTEM FUNCTIONS | 12 | 12 | 11 | 11 | 10 | 10 |
| Q PERFORMING AND PRACTICING GROUND AND INFLIGHT EMERGENCY PROCEDURES | 7 | 7 | 8 | 7 | 6 | 8 |
| R PERFORMING FLIGHT CONTROL SYSTEM FUNCTIONS | 3 | 3 | 3 | 2 | 2 | 2 |
| S PERFORMING POWER PLANT FUNCTIONS | 8 | 8 | 8 | 8 | 7 | 8 |
| T PERFORMING PNEUDRAULIC OR HYDRAULIC SYSTEM FUNCTIONS | 4 | 4 | 3 | 3 | 3 | 3 |
| U PERFORMING PROPELLER SYSTEM FUNCTIONS | 1 | 2 | 2 | 2 | 2 | 2 |
| V PERFORMING MALFUNCTION DETECTION ANALYSIS AND RECORDING SUBSYSTEM (MADARS) FUNCTIONS | 1 | 1 | * | * | * | * |

* LESS THAN ONE PERCENT

TABLE 13

TASKS PERFORMED BY MOST 1-48 MONTHS 113X0C PERSONNEL

| TASK | | PERCENT PERFORMING |
|---|---|---|
| G205-203 | COMPUTE TAKEOFF AND LANDING DATA | 97 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 97 |
| G199 | COMPUTE CRUISE DATA | 97 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 96 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 96 |
| G198 | COMPUTE CLIMB DATA | 96 |
| H235 | INSPECT LANDING GEAR TIRES | 95 |
| H255 | VERIFY LANDING SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 95 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 95 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 95 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 95 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 94 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 94 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 94 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 94 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 94 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 93 |
| H241 | MONITOR LANDING GEAR POSITION INDICATIONS | 93 |
| H230 | INSPECT LANDING GEAR DOORS | 93 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEMS OPERATIONS | 93 |
| F187 | STUDY TECHNICAL ORDERS FOR ABNORMAL AND EMERGENCY INFLIGHT PROCEDURES | 92 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 92 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 92 |
| F144 | ADVISE MAINTENANCE PERSONNEL IN IDENTIFYING AIRCRAFT SYSTEM MALFUNCTIONS | 92 |
| 0388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 91 |
| L309 | INSPECT COCKPIT, CABIN COMPARTMENT, OR FURNISHINGS | 91 |
| M361 | PERFORM PREFLIGHT APU OR GTC OPERATIONAL CHECKS | 91 |
| H254 | VERIFY LANDING GEAR SAFETY PINS ARE INSTALLED AFTER FLIGHT | 90 |
| J267 | INSPECT AIRCRAFT CARGO DOORS, RAMPS, OR LATCHES | 90 |

## ANALYSIS OF JOB SATISFACTION

Table 14 presents data reflecting the job interest, perceived utilization of talents and training, and reenlistment intentions of selected TICF groups. The only comparative job satisfaction data available for aircrew specialties in 1982 was from the 113X0B career ladder. Note the aircrew groups displayed are not directly comparable. Care should be taken in interpreting these figures because the C-shred flight engineer specialty is a lateral career field, while the B-shred is not. Therefore, the 113X0C groups in 1-48 months time in the career field will be more experienced and older than members in the 113X0B 1-48 TAFMS (Total Active Federal Military Service) months groups.

Despite such differences, both aircrew groups reported consistently favorable job satisfaction. Perceived utilization of both training and talents was rated high although 113X0C personnel tended to be more satisfied than B-shred incumbents. The seniority difference between the lateral C-shred and direct entry B-Shred appeared most clearly among the 97-plus months groups, with 30 percent of the C-shred personnel planning to retire, and 76 percent of the B-shred personnel planning to reenlist. Overall, the personnel in the 113X0B/C aircrew specialty are happy with their jobs and the utilization of both their training and talents.

Job satisfaction among enlisted aircrew specialties generally is very high, especially among those like the 113X0C which competitively selects highly qualified enlisted members for cross training. Such personnel are usually dedicated to an Air Force career and take pride in their acceptance to a flight specialty. This report is only one of several aircrew specialty studies underway during the same time frame. A comprehensive comparison of job satisfaction across all enlisted aircrew specialties will be contained in the common aircrew study scheduled for publication later this year.

TABLE 14

JOB SATISFACTION INDICES FOR EXPERIENCE GROUPS
(PERCENT MEMBERS RESPONDING)*

| | 1-48 MONTHS | | 49-96 MONTHS | | 97+ MONTHS | |
|---|---|---|---|---|---|---|
| | 113X0C PERSONNEL TICF (N=731) | COMPARATIVE SAMPLE** TAFMS (N=16) | 113X0C PERSONNEL TICF (N=544) | COMPARATIVE SAMPLE** TAFMS (N=51) | 113X0C PERSONNEL TICF (N=415) | COMPARATIVE SAMPLE** TAFMS (N=164) |
| EXPRESSED JOB INTEREST: | | | | | | |
| DULL | 2 | - | 2 | 6 | 2 | 5 |
| SO-SO | 4 | - | 5 | 6 | 4 | 6 |
| INTERESTING | 94 | 100 | 91 | 86 | 92 | 88 |
| PERCEIVED UTILIZATION OF TALENTS: | | | | | | |
| LITTLE OR NOT AT ALL | 2 | - | 5 | 8 | 7 | 10 |
| FAIRLY WELL OR BETTER | 97 | 100 | 95 | 82 | 92 | 90 |
| PERCEIVED UTILIZATION OF TRAINING: | | | | | | |
| LITTLE OR NOT AT ALL | 1 | - | 4 | 10 | 4 | 9 |
| FAIRLY WELL OR BETTER | 98 | 100 | 96 | 90 | 95 | 91 |
| REENLISTMENT INTENTIONS: | | | | | | |
| PLAN TO RETIRE | 3 | - | 10 | 2 | 31 | - |
| PLAN NOT TO REENLIST | 10 | 25 | 7 | 14 | 10 | 23 |
| PLAN TO REENLIST | 86 | 75 | 82 | 84 | 58 | 76 |

* COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO NO RESPONSE AND ROUNDING
** COMPARATIVE SAMPLE TAKEN FROM THE AIRCREW SPECIALTY - REPORTED IN 1982, AFS 113X0B

## COMPARISON OF SURVEY DATA TO AFR 39-1 SPECIALTY DESCRIPTIONS

A comparison was made between the survey data and the specialty descriptions for the 113X0C career ladder as described in AFR 39-1. This regulation should provide a broad description of the functions performed by members of both shreds of the specialty. This review indicated the current AFR 39-1 descriptions provide a thorough view of the duties and responsibilities of Performance Qualified Flight Engineers.

## ANALYSIS OF CONUS VERSUS OVERSEAS GROUPS

A comparison of career field personnel in CONUS and overseas assignments was made to determine if flight engineers' jobs varied depending on assignment. Both 5- and 7-skill DAFSC personnel were included in the analysis. Only 137 of the 1,526 survey respondents were serving in overseas locations. Most of these were HC/C/WC-130 flight engineers.

No significant differences in duty and task performance was found. The higher proportion of overseas personnel performing propellor system functions related directly to the large numbers of C-130 turboprop aircraft at overseas locations.

## TRAINING ANALYSIS

Occupational survey data are a source of information which can assist training managers in the development of training programs relevant to the needs of personnel working in their first assignment within a career ladder. Factors which can be used to evaluate training are the percent of first-job (1-24 months TICF) or first-enlistment (1-48 months TICF) members performing tasks, along with training emphasis and task difficulty ratings (as discussed in the TASK FACTOR ADMINISTRATION section). These factors were used to examine the Specialty Training Standard (STS) and the Plan of Instruction (POI) for Course 113X0C, Fixed Wing Performance Qualification. Training personnel from the 443d Technical Training Squadron (MAC) matched inventory tasks to appropriate sections of the POI and STS. It was this matching upon which comparisons are based. A complete computer listing displaying the percent members performing, training emphasis ratings, and task difficulty ratings for each task statement, along with POI and STS matchings, was forwarded to the school for their use in any further detailed review of training documents.

### Training Emphasis and Task Difficulty Data

Training emphasis and task difficulty data can be used to provide information on training needs as perceived by experienced technicians within the specialty. Comparisons can then be made between this information and present training programs to determine if course adjustments are needed.

Seventy senior flight engineers provided training emphasis ratings on each task within the job inventory. These ratings resulted in an average rating of 3.31, with a standard deviation of 2.05. Thus, all tasks rated above 5.36 are those considered important in training for personnel new to the career ladder. Forty-eight senior career flight engineers provided ratings for task difficulty information. These ratings are standardized so average task difficulty is 5.00, with a standard deviation of 1.00. Therefore, all tasks rated 6.00 or better are considered difficult tasks within the 113X0C career field. The objective of this data collection is to develop ordered listings of those items which should be considered for training. These complete lists of inventory tasks either in the order of relative task difficulty or training emphasis are included in the Analysis Extract, and Task Difficulty and Training Emphasis ratings accompany each inventory task displayed in the Training Extract. (The Task Factor Administration section in the INTRODUCTION gives a more detailed explanation of both types of data.)

Table 15 provides examples of the tasks raters believed required the most training emphasis for flight engineers serving their 1-48 months in the career field. This list is provided to illustrate the types of tasks field NCOs believe to be important in initial training programs. All of the tasks are performed by 70 percent or more of 1-48 months personnel. Fourteen of the tasks are not presently part of the initial flight engineer training course at Altus. Task difficulty ratings for some of these tasks are above average and merit consideration for training inclusion if not in the 113X0C Fixed Wing Performance Qualification course, then in the follow-on aircraft specific training received by new flight engineers.

TABLE 15

TASKS RATED HIGHEST IN TRAINING EMPHASIS FOR 113X0C PERSONNEL



| TASKS | | TRAINING EMPHASIS | TASK DIFFICULTY | PERCENT MEMBERS PERFORMING 1-48 TICF | PERCENT MEMBERS PERFORMING TOTAL 113X0C SAMPLE |
|---|---|---|---|---|---|
| *G205 | COMPUTE TAKEOFF DATA | 7.28 | 6.01 | 97 | 98 |
| *G203 | COMPUTE LANDING DATA | 7.14 | 5.23 | 97 | 97 |
| *F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 6.94 | 4.73 | 97 | 97 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 6.94 | 2.91 | 95 | 96 |
| *G198 | COMPUTE CLIMB DATA | 6.92 | 5.26 | 96 | 96 |
| *G199 | COMPUTE CRUISE DATA | 6.89 | 5.39 | 97 | 97 |
| *P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 6.86 | 5.27 | 94 | 95 |
| *G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 6.83 | 5.71 | 94 | 92 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | 6.78 | 5.84 | 93 | 94 |
| K287 | OPERATE AND MONITOR FUEL FEED SYSTEMS | 6.75 | 4.94 | 90 | 89 |
| F187 | STUDY TECHNICAL ORDERS FOR ABNORMAL AND EMERGENCY INFLIGHT PROCEDURES | 6.64 | 5.57 | 93 | 92 |
| *G201 | COMPUTE DESCENT DATA | 6.64 | 5.25 | 89 | 86 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 6.61 | 5.81 | 93 | 93 |
| *P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 6.58 | 5.19 | 93 | 94 |
| Q469 | PRACTICE OR PERFORM ENGINE GROUND FIRE EMERGENCY PROCEDURES | 6.58 | 5.76 | 87 | 87 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 6.56 | 5.10 | 94 | 92 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 6.53 | 2.84 | 96 | 96 |
| *O388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 6.53 | 5.35 | 91 | 91 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 6.53 | 5.01 | 93 | 93 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 6.50 | 4.52 | 93 | 94 |
| F158 | OPERATE FIRE EXTINGUISHERS | 6.50 | 2.43 | 72 | 70 |
| Q477 | PRACTICE OR PERFORM LOSS OF ELECTRICAL POWER PROCEDURES | 6.50 | 6.55 | 91 | 91 |
| F183 | POST CHANGES TO PERSONAL AIRCREW PUBLICATIONS | 6.47 | 4.60 | 86 | 88 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 6.47 | 3.56 | 94 | 94 |
| *G204 | COMPUTE MAXIMUM ENDURANCE AND HOLDING DATA | 6.47 | 5.90 | 87 | 86 |

*COVERED BY PRESENT 113X0C POI

## Specialty Training Standard (STS)

A review of STS 113X0C, dated April 1980, compared STS sections to survey data. Paragraphs containing general information or subject-matter proficiency requirements were not evaluated. Several portions of the STS require revision, and task data support the addition of new technical areas to the present STS. Table 16 displays technical tasks performed by 10 percent or more of flight engineers but not referenced to the STS. Many of these tasks refer to general aircrew member responsibilities and seem to pinpoint a need for a general crew duty paragraph or perhaps an expansion of the Flight Management (paragraph 6) or Aircraft General (paragraph 8) paragraphs. Additionally, the MADARS system was being used by 10 percent or more of job incumbents and should be considered for inclusion in an STS revision.

During the matching process conducted by training personnel at the 443d Technical Training Squadron, another problem area was identified. The current STS has paragraphs to cover specific inspections (i.e., pre-, thru- and post-flight inspections), but no general inspection entry for aircraft systems. Therefore, all inspection tasks were matched with pre-, thru-, and post-flight inspections--an inaccurate picture because many inspections of systems occur as needed, not just during completion of the highly specific inspection checklists. The addition of inspection to those STS paragraphs dealing with each aircraft system would resolve this difficulty. Overall, the STS needs revision to make it an accurate training document for the 113X0C career ladder. During the next STS review, career field managers and training personnel should consider these findings and the information found in detailed STS matched products in the Training Extract.

## Plan of Instruction (POI)

Based on previously mentioned assistance from training specialists at Altus AFB, the 113X0C POI, dated January 1982, was matched with survey task statements, and a computer printout was generated displaying the results of this process. Information furnished includes training emphasis (TE) and task difficulty (TD) ratings, as well as percent members performing data for first-job (1-24 months TICF) and first-enlistment in career field (1-48 months TICF).

The 8-week, 2-day 11330C - Fixed Wing Performance Course is the initial training for C-shred flight engineers and provides ground instruction on aerodynamic factors of aircraft performance and performance chart construction; liquid crystal display (LCD) calculator operations and computations; prediction of takeoff and landing data; cruise range and data relative to fuel comsumption (cruise control); performance limitations; inflight preplanning and maintenance of flight log, plan and other records during flight; analysis of individual flight conditions; and computation of aircraft weight and balance during ground and flight operations. Detailed instruction on specific aircraft systems is a major component of follow-on training given to 11330C flight engineers upon completion of course 11330C.

TABLE 16

TASKS NOT REFERENCED TO STS 113X0C

| TASKS | |
|---|---|
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS |
| L298 | ANALYZE DOOR WARNING SYSTEM MALFUNCTIONS |
| F177 | PERFORM PERSONAL EQUIPMENT INSPECTIONS |
| L323 | MONITOR DOOR WARNING SYSTEM OPERATIONS |
| P442 | PERFORM ENVIRONMENTAL OVERHEAT/FIRE DETECTION SYSTEM OPERATIONAL CHECKS |
| P433 | MONITOR ENVIRONMENTAL WINDSHIELD HEAT SYSTEM OPERATIONS |
| F185 | SECURE EQUIPMENT FOR DESCENT OR LANDING |
| 0380 | ANALYZE EXTERIOR OR INTERIOR LIGHTING SYSTEM MALFUNCTIONS |
| Q460 | ANALYZE EMERGENCY EXIT SYSTEM MALFUNCTIONS |
| T540 | ANALYZE PNEUDRAULIC PRESSURE SUPPLY SYSTEM MALFUNCTIONS |
| F153 | LOAD CREW GEAR ON AIRCRAFT |
| F191 | VISUALLY INSPECT SPARE LIFE SUPPORT EQUIPMENT |
| F178 | PERFORM SMALL ARMS QUALIFICATIONS |
| F160 | OPERATE GALLEY EQUIPMENT, SUCH AS OVENS OR COFFEE MAKERS |
| H245 | PERFORM INFLIGHT ANTISKID SYSTEM OPERATIONAL CHECKS |
| F175 | PERFORM HIGH ALTITUDE PROCEDURES IN ALTITUDE CHAMBER |
| S530 | PERFORM POWER PLANT ENGINE ANALYSIS LOG CHECKS |
| L343 | REMOVE OR REINSTALL FAIRINGS, COWLINGS, INSPECTION PLATES, DOORS, PANELS, OR ACCESS COVERS |
| G213 | INSPECT CARGO FOR SECURITY |
| F164 | ORDER AIRCREW TRANSPORTATION |
| E141 | PREPARE OR MAINTAIN USAF INVOICE FORMS (AF FORM 15) |
| F159 | OPERATE FLIGHTLINE MOTOR VEHICLES |
| G193 | ASSIST LOADMASTER IN LOADING CARGO |
| K295 | POSITION TEMPERATURE DATUM (TD) SYSTEMS |
| L300 | ANALYZE EXIT SPOILER (AIR DEFLECTOR) SYSTEM MALFUNCTIONS |
| L314 | INSPECT EXIT SPOILERS (AIR DEFLECTORS) |
| L338 | PERIODICALLY CHECK CARGO RESTRAINTS |
| N373 | PERFORM CRASH POSITION INDICATOR (CPI) OPERATIONAL CHECKS |
| N374 | PERFORM EMERGENCY LOCATOR TRANSMITTER (ELT) OPERATIONAL CHECKS |
| N372 | PERFORM CRASH DATA POSITION INDICATOR AND RECORDING (DPIR) OPERATIONAL CHECKS |
| F163 | ORDER AIRCREW FLIGHT LUNCHES |
| L339 | POSITION PARACHUTES OR OXYGEN BOTTLES |
| H246 | PERFORM INFLIGHT LG BRAKE SYSTEM OPERATIONAL CHECKS |
| L297 | ANALYZE COOLING DOOR SYSTEM MALFUNCTIONS |
| L333 | PERFORM EXIT SPOILER (AIR DEFLECTOR) OPERATIONAL CHECKS |
| I260 | INSPECT AIR SUPPLY AGE |
| L346 | SECURE CARGO |
| L322 | MONITOR COOLING DOOR OPERATIONS |
| I259 | INSPECT AGE PORTABLE LIGHTING EQUIPMENT |
| L302 | DIRECT CARGO LOADING OR UNLOADING |

TABLE 16 (CONTINUED)

TASKS NOT REFERENCED TO STS 113X0C

| TASKS | |
|---|---|
| K288 | OPERATE AND MONITOR LIQUID COOLING SYSTEMS |
| L316 | INSPECT SERVICING OF WINDSHIELD WASHER FLUIDS AND RAIN REMOVAL FLUIDS |
| H224 | ADJUST TIRE PRESSURES |
| L331 | PERFORM COOLING DOOR OPERATIONAL CHECKS |
| L326 | OPERATE AND MONITOR VISORS |
| L347 | SUPERVISE PASSENGERS |
| L340 | PREPARE AIRCRAFT OR GENERAL CARGO FOR LOADING OR UNLOADING |
| H253 | SERVICE LG BRAKE SYSTEMS |
| F188 | TURN IN AIRCRAFT LIFE SUPPORT EQUIPMENT |
| F173 | PERFORM FLIGHT TEST FOR NEW EQUIPMENT VALIDATION |
| F180 | PICK UP AIRCRAFT LIFE SUPPORT EQUIPMENT |
| U575 | INSPECT PROPELLER PITCHLOCK SYSTEMS |
| V594 | PERFORM MADARS ENGINE VIBRATION ANALYSES |
| V599 | PERFORM MADARS LANDING GEAR SYSTEM ANALYSES |
| V603 | PERFORM MADARS PROPULSION POWER PLANT SYSTEM ANALYSES |
| V589 | ANALYZE MALFUNCTION DETECTION ANALYSIS AND RECORDING SUBSYSTEM (MADARS) MALFUNCTIONS |
| V591 | MONITOR MADARS OPERATIONS |
| V595 | PERFORM MADARS ENVIRONMENTAL SYSTEM ANALYSES |
| F181 | PICK UP AND INSPECT FLIGHT LUNCHES |
| V598 | PERFORM MADARS HYDRAULIC SYSTEM ANALSES |
| V600 | PERFORM MADARS MECHANICAL SYSTEM ANALYSES |
| F182 | PICK UP COFFEE JUGS, WATER JUGS, OR OVENS |
| V596 | PERFORM MADARS FLIGHT CONTROL SYSTEM ANALYSES |
| V592 | PERFORM MADARS COMMUNICATIONS SYSTEM ANALYSES |
| V601 | PERFORM MADARS NAVIGATION SYSTEM ANALYSES |
| V593 | PERFORM MADARS ELECTRONIC SYSTEM ANALYSES |
| V604 | PERFORM MADARS RADAR SYSTEM ANALYSES |
| V590 | INSPECT MADARSs |
| L303 | INSPECT AERIAL DELIVERY EQUIPMENT FOR SECURITY OR DAMAGE |

Due both to the limited scope of entry-level training and the detailed system-specific task inventory used in this survey, only 40 tasks matched with the 11330C POI. A list of some of the unreferenced technical tasks receiving high TE ratings is shown in Table 17. These tasks are generally equipment- and system-specific, with many relating to emergency procedures or analyzing of aircraft system malfunctions--clearly topics more suitable to follow-on aircraft-specific training. There were, however, five tasks matched to the POI with both low training emphasis ratings and few 1-48 months TICF flight engineers performing them. Table 18 shows these tasks. Training managers should review this short list to determine if some adjustment in training time or depth is needed. There were also three sections of the POI where no tasks were matched: Flight Control Systems (6-0-1), Bleed Air System (8-0), and Extract Applicable Information (14-0-1-1). The training objectives appear task oriented, but without task inventory items matched, an accurate assessment of training is difficult. Possibly, some matches were overlooked. A close examination of the "Tasks Not Referenced" section of the POI document in the Training Extract may highlight tasks relating to these POI sections. Such tasks could provide feedback on training adequacy and appropriateness in these areas.

TABLE 17

EXAMPLES OF TASKS WITH HIGH TRAINING EMPHASIS NOT REFERENCED TO POI 11330C

| TASKS | | TRAINING EMPHASIS | TASK DIFFICULTY | PERCENT MEMBERS PERFORMING 1-24 MONTHS TICF | PERCENT MEMBERS PERFORMING 1-48 MONTHS TICF |
|---|---|---|---|---|---|
| F187 | STUDY TECHNICAL ORDERS FOR ABNORMAL AND EMERGENCY INFLIGHT PROCEDURES | 7.20 | 5.40 | 93 | 93 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 6.89 | 5.59 | 89 | 93 |
| Q474 | PRACTICE OR PERFORM LANDING GEAR (LG) EMERGENCY EXTENSION PROCEDURES | 6.71 | 6.13 | 85 | 88 |
| Q487 | REPORT EMERGENCY CONDITIONS | 6.33 | 5.16 | 70 | 74 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 6.27 | 3.89 | 94 | 94 |
| L313 | INSPECT EMERGENCY ESCAPE HATCHES OR LATCHES | 6.23 | 4.28 | 90 | 93 |
| Q486 | RECOMMEND CORRECTIVE ACTION FOR INFLIGHT EMERGENCY CONDITIONS | 6.21 | 6.08 | 65 | 73 |
| T548 | MONITOR PNEUDRAULIC OR HYDRAULIC PRESSURE SUPPLY SYSTEM OPERATIONS | 6.14 | 4.68 | 78 | 80 |
| P432 | MONITOR ENVIRONMENTAL OVERHEAT/FIRE DETECTION SYSTEM OPERATIONS | 6.13 | 4.67 | 81 | 84 |
| S504 | ANALYZE POWER PLANT BLEED AIR SYSTEM MALFUNCTIONS | 6.06 | 5.56 | 82 | 85 |
| S509 | ANALYZE POWER PLANT FUEL SYSTEM MALFUNCTIONS | 6.04 | 5.89 | 75 | 80 |
| S512 | ANALYZE POWER PLANT STARTER SYSTEM MALFUNCTIONS | 6.00 | 5.47 | 77 | 82 |
| T547 | MONITOR HYDRAULIC SUCTION BOOST PUMP OPERATIONS | 5.97 | 4.49 | 84 | 87 |
| 0379 | ANALYZE ELECTRICAL SYSTEM MALFUNCTIONS OTHER THAN EXTERIOR OR INTERIOR LIGHTING SYSTEMS | 5.94 | 6.47 | 78 | 81 |
| Q484 | PRACTICE OR PERFORM WING FLAP DRIVE FAILURE OR ASYMMETRY EMERGENCY PROCEDUES | 5.90 | 5.55 | 81 | 85 |
| S510 | ANALYZE POWER PLANT IGNITION SYSTEM MALFUNCTIONS | 5.87 | 5.85 | 72 | 79 |
| F176 | PERFORM OR PRACTICE EMERGENCY AIRCRAFT EGRESS PROCEDURES | 5.86 | 4.08 | 55 | 61 |
| H238 | MONITOR BRAKE ANTISKID SYSTEM OPERATIONS | 5.83 | 4.37 | 79 | 85 |
| H239 | MONITOR BRAKE PRESSURES | 5.80 | 3.96 | 82 | 84 |
| F162 | OPERATE ULTRAHIGH FREQUENCY (UHF) RADIOS | 5.76 | 5.57 | 72 | 78 |
| L312 | INSPECT DOORS, RAMPS, OR VISORS | 5.66 | 4.56 | 88 | 90 |
| M349 | ANALYZE APU OR GTC ELECTRICAL SYSTEM MALFUNCTIONS | 5.64 | 5.70 | 79 | 83 |

TABLE 17 (CONTINUED)

EXAMPLES OF TASKS WITH HIGH TRAINING EMPHASIS NOT REFERENCED TO POI 11330C

| TASKS | | TRAINING EMPHASIS | TASK DIFFICULTY | PERCENT MEMBERS PERFORMING 1-24 MONTHS TICF | PERCENT MEMBERS PERFORMING 1-48 MONTHS TICF |
|---|---|---|---|---|---|
| P445 | PERFORM PREFLIGHT ENVIRONMENTAL AIR-CONDITIONING SYSTEM OPERATIONAL CHECKS | 5.63 | 5.09 | 72 | 75 |
| H229 | INSPECT LG CYLINDERS OR SNUBBERS | 5.59 | 5.38 | 78 | 83 |
| F177 | PERFORM PERSONAL EQUIPMENT INSPECTIONS | 5.57 | 3.91 | 76 | 77 |
| J265 | ADVISE AIRCRAFT COMMANDER OF CARGO DOOR OR RAMP SYSTEM INTEGRITY | 5.51 | 4.43 | 63 | 70 |
| Q475 | PRACTICE OR PERFORM LG WHEEL BRAKE FAILURE EMERGENCY PROCEDURES | 5.50 | 5.59 | 63 | 70 |
| K272 | ANALYZE FUEL DUMP SYSTEM MALFUNCTIONS | 5.46 | 5.72 | 42 | 52 |
| N371 | OPERATE RADARS | 5.36 | 5.86 | 60 | 67 |

TABLE 18

POI BLOCKS REFLECTING PERFORMANCE BY LESS THAN 30 PERCENT OF 1-48 MONTHS TICF

| POI REFERENCE BLOCK-UNIT | TASKS | TRAINING EMPHASIS | TASK DIFFICULTY | PERCENT MEMBERS PERFORMING | |
|---|---|---|---|---|---|
| | | | | 1-24 MONTHS TICF | 1-48 MONTHS TICF |
| 3-0-1-1 | G214 MAINTAIN CALENDAR AND HOURLY ITEM INSPECTION DOCUMENT FORMS AFTO FORMs 781D) | .84 | 4.51 | 12 | 11 |
| 5-0-2 | T552 OPERATE HYDRAULIC ATMs | 2.23 | 4.41 | 23 | 20 |
| | T553 OPERATE HYDRAULIC PTUs | 1.96 | 4.40 | 22 | 19 |
| | T556 OPERATE PTUs | 1.60 | 4.16 | 20 | 18 |
| 16-0-4 | L348 UPDATE WEIGHT AND BALANCE FORMS | 2.94 | 5.47 | 18 | 19 |

## COMPARISON OF CURRENT SURVEY TO PREVIOUS SURVEY

Results of this survey were compared to those of Occupational Survey Report AFPT 90-435-181, Flight Engineer career ladder, dated August 1976. Sample size for the 1982 survey was larger--1,690 compared to 1,439 for the 1976 survey.

Job groups identified were basically the same. The previous survey identified three functional groups: a C-130 group, a C-141/C-5 group, and a small group of nonflying personnel composed of trainers and MAJCOM staff personnel. In the 1982 survey, a small group of trainers reappeared, but MAJCOM staff were found both in aircraft groups and in the Senior Manager job group. Both surveys also reported high job satisfaction and basic uniformity in tasks performed across skill-level and time-in-career-ladder groups.

In summary, the 113X0C career ladder has remained relatively unchanged in terms of career ladder structure and personnel makeup. There is no evidence in the 1982 data to suggest this career ladder is undergoing any major changes or shifts in emphasis.

## IMPLICATIONS

Survey results indicate flight engineers perform highly similar jobs regardless of skill level, experience level, or major command. Job variations identified related to aircraft assignment, number of tasks performed, and the expansion of job responsibilities resulting from supervisory and training duties acquired with seniority.

Job satisfaction is very high for this specialty, with the majority of individuals in all TICF groups reporting their job interesting and their talents and training well utilized.

Examination of career ladder documents supported the present AFR 39-1 Specialty Description, but found the STS and POI both in need of review and revision. Several areas within the STS need enlargement and the MADARS system needs to be added. Some POI areas either had no tasks referenced, or were referenced to tasks with few people performing them. Such sections warrant review for training adequacy and appropriateness based on survey data.

# APPENDIX A

## TASKS PERFORMED BY JOB GROUP MEMBERS

TABLE A1

SQUADRON/UNIT FLIGHT ENGINEER CLUSTER
(GRP069)

| TASKS | | PERCENT MEMBERS PERFORMING (N=1,575) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 99 |
| G203 | COMPUTE LANDING DATA | 99 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 99 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 99 |
| H235 | INSPECT LG TIRES | 98 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORM 781A) | 98 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 98 |
| G198 | COMPUTE CLIMB DATA | 98 |
| G199 | COMPUTE CRUISE DATA | 98 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 98 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 98 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | 98 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 98 |
| H230 | INSPECT LG DOORS | 97 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 97 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 97 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 97 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 97 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 97 |
| H241 | MONITOR LG POSITION INDICATIONS | 97 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 96 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 96 |
| L313 | INSPECT EMERGENCY ESCAPE HATCHES OR LATCHES | 96 |
| 0388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 96 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 96 |

AVERAGE NUMBER OF TASKS PERFORMED: 286

TABLE A2

C-141 FLIGHT ENGINEERS
(GRP243)

| TASKS | | PERCENT MEMBERS PERFORMING (N=279) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 100 |
| G203 | COMPUTE LANDING DATA | 99 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 99 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 99 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 99 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 99 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 98 |
| G199 | COMPUTE CRUISE DATA | 98 |
| G198 | COMPUTE CLIMB DATA | 98 |
| H235 | INSPECT LG TIRES | 98 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 98 |
| F184 | REVIEW AFTO FORMs 781 SERIES FOR AIRCRAFT DISCREPANCIES | 98 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 98 |
| J269 | OPERATE AND MONITOR NORMAL CARGO DOOR OR RAMP SYSTEMS | 98 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 98 |
| H230 | INSPECT LG DOORS | 98 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 98 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 98 |
| M358 | MONITOR APU FIRE WARNING SYSTEM OPERATIONS | 98 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 97 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 97 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 97 |
| F144 | ADVISE MAINTENANCE PERSONNEL IN IDENTIFYING AIRCRAFT SYSTEM MALFUNCTIONS | 97 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 97 |

AVERAGE NUMBER OF TASKS PERFORMED: 246

TABLE A3

C-141 FLIGHT ENGINEERS
(GRP482)

| | TASKS | PERCENT MEMBERS PERFORMING (N=270) |
|---|---|---|
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 100 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 100 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 100 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 99 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 99 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 99 |
| G199 | COMPUTE CRUISE DATA | 99 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 99 |
| H235 | INSPECT LG TIRES | 99 |
| H230 | INSPECT LG DOORS | 99 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | 99 |
| P406 | ANALYZE ENVIRONMENTAL AIR-CONDITIONING SYSTEM MALFUNCTIONS | 99 |
| H228 | INSPECT LG BRAKE OR ANTISKID SYSTEMS | 99 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 99 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 99 |
| G203 | COMPUTE LANDING DATA | 99 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 99 |
| G198 | COMPUTE CLIMB DATA | 99 |
| P447 | PERFORM PREFLIGHT ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONAL CHECKS | 99 |
| P445 | PERFORM PREFLIGHT ENVIRONMENTAL AIR-CONDITIONING SYSTEM OPERATIONAL CHECKS | 99 |
| H231 | INSPECT LG EMERGENCY SYSTEMS | 99 |
| P408 | ANALYZE ENVIRONMENTAL BLEED AIR SYSTEM MALFUNCTIONS | 99 |
| Q477 | PRACTICE OR PERFORM LOSS OF ELECTRICAL POWER PROCEDURES | 99 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 99 |
| P407 | ANALYZE ENVIRONMENTAL ANTIICING OR DEICING SYSTEM MALFUNCTIONS | 99 |

AVERAGE NUMBER OF TASKS PERFORMED: 323

TABLE A4

C-141 FLIGHT ENGINEERS
(GRP075)

| TASKS | | PERCENT *MEMBERS* PERFORMING (N=83) |
|---|---|---|
| G203 | COMPUTE LANDING DATA | 98 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 97 |
| G205 | COMPUTE TAKEOFF DATA | 96 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 96 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 96 |
| H235 | INSPECT LG TIRES | 96 |
| G198 | COMPUTE CLIMB DATA | 96 |
| J267 | INSPECT AIRCRAFT CARGO DOORS, RAMPS, OR LATCHES | 95 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 95 |
| J269 | OPERATE AND MONITOR NORMAL CARGO DOOR OR RAMP SYSTEMS | 95 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 95 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 93 |
| G199 | COMPUTE CRUISE DATA | 93 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 93 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 92 |
| H230 | INSPECT LG DOORS | 92 |
| N371 | OPERATE RADARS | 92 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 92 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 91 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 91 |
| M361 | PERFORM PREFLIGHT APU OR GTC OPERATIONAL CHECKS | 91 |
| H254 | VERIFY LG SAFETY PINS ARE INSTALLED AFTER FLIGHTS | 91 |
| R501 | PERFORM WING SPOILER SYSTEM OPERATIONAL CHECKS | 91 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 91 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 91 |

AVERAGE NUMBER OF TASKS PERFORMED: 169

TABLE A5

C-5 FLIGHT ENGINEERS
(GRP545)

| TASKS | | PERCENT MEMBERS PERFORMING (N=155) |
|---|---|---|
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 100 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 100 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 100 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 100 |
| T553 | OPERATE HYDRAULIC PTUs | 100 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 100 |
| H241 | MONITOR LG POSITION INDICATIONS | 100 |
| T545 | MONITOR HYDRAULIC ATMs | 100 |
| T546 | MONITOR HYDRAULIC PTUs | 100 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 100 |
| H230 | INSPECT LG DOORS | 100 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 100 |
| L312 | INSPECT DOORS, RAMPS, OR VISORS | 100 |
| Q463 | PRACTICE OR PERFORM APU OR GTC FIRE EMERGENCY PROCEDURES | 100 |
| Q471 | PRACTICE OR PERFORM FUEL FEED SYSTEM FAILURE EMERGENCY PROCEDURES | 100 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | 100 |
| Q467 | PRACTICE OR PERFORM ELECTRICAL FIRE PROCEDURES OTHER THAN CABIN FIRES | 100 |
| G203 | COMPUTE LANDING DATA | 99 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 99 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 99 |
| T552 | OPERATE HYDRAULIC ATMs | 99 |
| T547 | MONITOR HYDRAULIC SUCTION BOOST PUMP OPERATIONS | 99 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 99 |
| H240 | MONITOR LG EXTENSIONS OR RETRACTIONS | 99 |
| T548 | MONITOR PNEUDRAULIC OR HYDRAULIC PRESSURE SUPPLY SYSTEM OPERATIONS | 99 |

AVERAGE NUMBER OF TASKS PERFORMED: 337

TABLE A6

C-5 FLIGHT ENGINEERS
(GRP177)

| TASKS | | PERCENT MEMBERS PERFORMING (N=87) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 100 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 100 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 100 |
| V602 | PERFORM MADARS PREFLIGHT OPERATIONAL CHECKS | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| T545 | MONITOR HYDRAULIC ATMs | 100 |
| F156 | OPEN OR CLOSE CREW ENTRANCE DOORS | 100 |
| V594 | PERFORM MADARS ENGINE VIBRATION ANALYSES | 98 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 98 |
| T547 | MONITOR HYDRAULIC SUCTION BOOST PUMP OPERATIONS | 98 |
| T546 | MONITOR HYDRAULIC PTUs | 98 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 98 |
| V603 | PERFORM MADARS PROPULSION POWER PLANT SYSTEM ANALYSES | 98 |
| H235 | INSPECT LG TIRES | 98 |
| V599 | PERFORM MADARS LANDING GEAR SYSTEM ANALYSES | 98 |
| Q463 | PRACTICE OR PERFORM APU OR GTC FIRE EMERGENCY PROCEDURES | 98 |
| V591 | MONITOR MADARS OPERATIONS | 97 |
| T552 | OPERATE HYDRAULIC ATMs | 97 |
| T553 | OPERATE HYDRAULIC PTUs | 97 |
| T556 | OPERATE PTUs | 97 |
| T554 | OPERATE HYDRAULIC SUCTION BOOST PUMPS | 97 |
| L312 | INSPECT DOORS, RAMPS, OR VISORS | 97 |
| P438 | OPERATE AND MONITOR ENVIRONMENTAL UNDERFLOOR HEATING SYSTEMS | 97 |
| M361 | PERFORM PREFLIGHT APU OR GTC OPERATIONAL CHECKS | 97 |
| V595 | PERFORM MADARS ENVIRONMENTAL SYSTEM ANALYSES | 97 |

AVERAGE NUMBER OF TASKS PERFORMED: 247

TABLE A7

C-130 FLIGHT ENGINEERS
(GRP394)

| TASKS | | PERCENT MEMBERS PERFORMING (N=296) |
|---|---|---|
| 0385 | INSPECT PITOT PROBES, TEMPERATURE PROBES, OR INSTRUMENT SYSTEMS STATIC PORTS | 100 |
| K282 | INSPECT FUEL TANK CAP SECURITY | 99 |
| H235 | INSPECT LG TIRES | 99 |
| S504 | ANALYZE POWER PLANT BLEED AIR SYSTEM MALFUNCTIONS | 99 |
| G205 | COMPUTE TAKEOFF DATA | 99 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 99 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 99 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 99 |
| H230 | INSPECT LG DOORS | 99 |
| U580 | OPERATE PROPELLER ANTIICING OR DEICING SYSTEMS | 99 |
| P406 | ANALYZE ENVIRONMENTAL AIR-CONDITIONING SYSTEM MALFUNCTIONS | 99 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 98 |
| H241 | MONITOR LG POSITION INDICATIONS | 98 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 98 |
| 0389 | OPERATE AND MONITOR EXTERIOR AND INTERIOR LIGHTING SYSTEMS | 98 |
| 0382 | CHECK PITOT HEAT FOR PROPER OPERATIONS | 98 |
| G199 | COMPUTE CRUISE DATA | 98 |
| 0401 | REMOVE OR REPLACE ELECTRICAL SYSTEM FUSES | 98 |
| G203 | COMPUTE LANDING DATA | 98 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 98 |
| 0583 | INSPECT AIRCRAFT WIRING, CIRCUIT BREAKERS, OR CONTROL PANELS | 98 |
| L313 | INSPECT EMERGENCY ESCAPE HATCHES OR LATCHES | 98 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 98 |
| S512 | ANALYZE POWER PLANT STARTER SYSTEM MALFUNCTIONS | 98 |
| P408 | ANALYZE ENVIRONMENTAL BLEED AIR SYSTEM MALFUNCTIONS | 98 |

AVERAGE NUMBER OF TASKS PERFORMED: 281

TABLE A8

C-130 FLIGHT ENGINEERS
(GRP156)

| TASKS | | PERCENT MEMBERS PERFORMING (N=101) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 99 |
| U580 | OPERATE PROPELLER ANTIICING OR DEICING SYSTEMS | 99 |
| G198 | COMPUTE CLIMB DATA | 99 |
| G203 | COMPUTE LANDING DATA | 98 |
| H241 | MONITOR LG POSITION INDICATIONS | 98 |
| U577 | MONITOR PROPELLER ANTIICING OR DEICING SYSTEM OPERATIONS | 98 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 97 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 97 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 97 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 97 |
| G199 | COMPUTE CRUISE DATA | 97 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 96 |
| U578 | MONITOR PROPELLER NEGATIVE TORQUE SYSTEM INDICATORS | 96 |
| U576 | MONITOR PROPELLER ANTIICING OR DEICING LOADMETER OPERATIONS | 96 |
| L313 | INSPECT EMERGENCY ESCAPE HATCHES OR LATCHES | 96 |
| H235 | INSPECT LG TIRES | 96 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 95 |
| U582 | PERFORM PROPELLER FEATHERING SYSTEM OPERATIONAL CHECKS | 95 |
| M361 | PERFORM PREFLIGHT APU OR GTC OPERATIONAL CHECKS | 95 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 95 |
| K282 | INSPECT FUEL TANK CAP SECURITY | 95 |
| H245 | PERFORM INFLIGHT ANTISKID SYSTEM OPERATIONAL CHECKS | 95 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 95 |
| Q482 | PRACTICE OR PERFORM SMOKE ELIMINATION PROCEDURES | 95 |
| K287 | OPERATE AND MONITOR FUEL FEED SYSTEMS | 94 |

AVERAGE NUMBER OF TASKS PERFORMED: 228

TABLE A9

C-130 FLIGHT ENGINEERS
(GRP078)

| TASKS | | PERCENT MEMBERS PERFORMING (N=46) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 97 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 97 |
| U580 | OPERATE PROPELLER ANTIICING OR DEICING SYSTEMS | 97 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 95 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 95 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 95 |
| F163 | PARTICIPATE IN CREW MAINTENANCE DEBREFINGS | 95 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 95 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 93 |
| H245 | PERFORM INFLIGHT ANTISKID SYSTEM OPERATIONAL CHECKS | 93 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 93 |
| H235 | INSPECT LG TIRES | 93 |
| G198 | COMPUTE CLIMB DATA | 93 |
| P429 | MANUALLY OPERATE AND MONITOR AIRCRAFT PRESSURIZATION SYSTEMS | 93 |
| G199 | COMPUTE CRUISE DATA | 93 |
| H241 | MONITOR LG POSITION INDICATIONS | 91 |
| F144 | ADVISE MAINTENANCE PERSONNEL IN IDENTIFYING AIRCRAFT SYSTEM MALFUNCTIONS | 91 |
| L315 | INSPECT FIRE EXTINGUISHERS OR OTHER EMERGENCY EQUIPMENT | 91 |
| O385 | INSPECT PITOT PROBES, TEMPERATURE PROBES, OR INSTRUMENT SYSTEMS STATIC PROBES | 91 |
| U582 | PERFORM PROPELLER FEATHERING SYSTEM OPERATIONAL CHECKS | 91 |
| O382 | CHECK PITOT HEAT FOR PROPER OPERATIONS | 91 |
| H254 | VERIFY LG SAFETY PINS ARE INSTALLED AFTER FLIGHTS | 89 |
| M362 | PERFORM PREFLIGHT GTC BLEED AIR OPERATIONAL CHECKS | 89 |

AVERAGE NUMBER OF TASKS PERFORMED: 178

TABLE A10

C-135/VC-137 FLIGHT ENGINEER
(GRP346)

| TASKS | | PERCENT MEMBERS PERFORMING (N=20) |
|---|---|---|
| F187 | STUDY TECHNICAL ORDERS FOR ABNORMAL AND EMERGENCY INFLIGHT PROCEDURES | 100 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 100 |
| G207 | COMPUTE WEIGHT AND BALANCE DATA USING CHARTS, LOAD ADJUSTERS, OR CALCULATORS | 100 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 100 |
| G205 | COMPUTE TAKEOFF DATA | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 100 |
| G199 | COMPUTE CRUISE DATA | 100 |
| G192 | ADVISE PILOT OF WEIGHT AND BALANCE STATUS | 100 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 100 |
| 0387 | MONITOR INSTRUMENT SYSTEM OPERATIONS | 100 |
| 0388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 100 |
| K287 | OPERATE AND MONITOR FUEL FEED SYSTEMS | 100 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 100 |
| H240 | MONITOR LG EXTENSIONS OR RETRACTIONS | 100 |
| H241 | MONITOR LG POSITION INDICATIONS | 100 |
| C62 | EVALUATE AIRCRAFT PERFORMANCE DATA | 100 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 100 |
| G198 | COMPUTE CLIMB DATA | 100 |
| L309 | INSPECT COCKPIT, CABIN COMPARTMENT, OR FURNISHINGS | 100 |
| H236 | INSPECT LG WHEEL ASSEMBLIES | 100 |
| 0383 | INSPECT AIRCRAFT WIRING, CIRCUIT BREAKERS, OR CONTROL PANELS | 100 |
| H235 | INSPECT LG TIRES | 100 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 100 |
| S517 | INSPECT POWER PLANT EXHAUST SECTIONS | 100 |

AVERAGE NUMBER OF TASKS PERFORMED: 319

TABLE A11

E-3/E-4 FLIGHT ENGINEERS
(GRP391)

| TASKS | | PERCENT MEMBERS PERFORMING (N=31) |
|---|---|---|
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 100 |
| F187 | STUDY TECHNICAL ORDERS FOR ABNORMAL AND EMERGENCY INFLIGHT PROCEDURES | 100 |
| G204 | COMPUTE MAXIMUM ENDURANCE AND HOLDING DATA | 100 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 100 |
| 0388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 100 |
| Q468 | PRACTICE OR PERFORM ENGINE FAILURE EMERGENCY PROCEDURES | 100 |
| G205 | COMPUTE TAKEOFF DATA | 100 |
| G199 | COMPUTE CRUISE DATA | 100 |
| F167 | PARTICIPATE IN GENERAL OR SPECIALIZED MISSION BRIEFINGS | 100 |
| G207 | COMPUTE WEIGHT AND BALANCE DATA USING CHARTS, LOAD ADJUSTERS, OR CALCULATORS | 100 |
| G209 | DETERMINE FUEL CONSUMPTION USING TIME, SPEED, AND DISTANCE FORMULAS AND CHARTS | 100 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 100 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| G198 | COMPUTE CLIMB DATA | 100 |
| K287 | OPERATE AND MONITOR FUEL FEED SYSTEMS | 100 |
| G192 | ADVISE PILOT OF WEIGHT AND BALANCE STATUS | 100 |
| P434 | OPERATE AND MONITOR AUTOMATIC AIRCRAFT PRESSURIZATION SYSTEMS | 100 |
| G201 | COMPUTE DESCENT DATA | 100 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 100 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 100 |
| L309 | INSPECT COCKPIT, CABIN COMPARTMENT, OR FURNISHINGS | 100 |
| P431 | MONITOR ENVIRONMENTAL BLEED AIR SYSTEM OPERATIONS | 100 |
| H255 | VERIFY LG SAFETY PINS ARE REMOVED PRIOR TO FLIGHTS | 100 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 100 |

AVERAGE NUMBER OF TASKS PERFORMED: 281

TABLE A12

SENIOR MANAGERS
(GRP331)

| TASKS | | PERCENT MEMBERS PERFORMING (N=85) |
|---|---|---|
| G205 | COMPUTE TAKEOFF DATA | 100 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 100 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 100 |
| F184 | REVIEW AFTO FORM 781 SERIES FOR AIRCRAFT DISCREPANCIES | 100 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 100 |
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 100 |
| G198 | COMPUTE CLIMB DATA | 100 |
| L325 | OPERATE AND MONITOR HEATING SYSTEMS | 100 |
| 0388 | OPERATE AND MONITOR ELECTRICAL SYSTEMS OTHER THAN LIGHTING SYSTEMS | 100 |
| L309 | INSPECT COCKPIT, CABIN COMPARTMENT, OR FURNISHINGS | 100 |
| Q477 | PRACTICE OR PERFORM LOSS OF ELECTRICAL POWER PROCEDURES | 100 |
| S528 | OPERATE AND MONITOR POWER PLANT FUEL SYSTEMS | 100 |
| 0387 | MONITOR INSTRUMENT SYSTEM OPERATIONS | 100 |
| S519 | MONITOR POWER PLANT ANTIICING SYSTEM OPERATIONS | 100 |
| S504 | ANALYZE POWER PLANT BLEED AIR SYSTEM MALFUNCTIONS | 100 |
| 0393 | PERFORM ELECTRICAL POWER SYSTEM OPERATIONAL CHECKS | 100 |
| L328 | OPERATE SEATS, SEAT BELTS, OR SHOULDER HARNESSES | 100 |
| F146 | APPLY EXTERNAL ALTERNATING CURRENT (AC) AND DIRECT CURRENT (DC) POWER TO AIRCRAFT | 100 |
| 0379 | ANALYZE ELECTRICAL SYSTEM MALFUNCTIONS OTHER THAN EXTERIOR OR INTERIOR LIGHTING SYSTEMS | 100 |
| 0383 | INSPECT AIRCRAFT WIRING, CIRCUIT BREAKERS, OR CONTROL PANELS | 100 |
| L306 | INSPECT AIRCRAFT TO ENSURE PROPER CHOCKING | 100 |
| Q473 | PRACTICE OR PERFORM INFLIGHT DOOR WARNING EMERGENCY PROCEDURES | 100 |
| S503 | ANALYZE POWER PLANT ANTIICING SYSTEM MALFUNCTIONS | 100 |

AVERAGE NUMBER OF TASKS PERFORMED: 442

TABLE A13

TRAINERS
(GRP071)

| TASKS | | PERCENT MEMBERS PERFORMING (N=7) |
|---|---|---|
| F165 | PARTICIPATE IN CREW MAINTENANCE DEBRIEFINGS | 100 |
| F145 | ANNOTATE AIRCRAFT WRITE-UPS ON MAINTENANCE DISCREPANCY AND WORK DOCUMENT FORMS (AFTO FORMs 781A) | 100 |
| F155 | MONITOR RADIO COMMUNICATION TRANSMISSIONS | 100 |
| G205 | COMPUTE TAKEOFF DATA | 100 |
| F154 | MAINTAIN CURRENT STATUS OF FLIGHT MANUALS, SAFETY AND OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS | 100 |
| P435 | OPERATE AND MONITOR ENVIRONMENTAL AIR-CONDITIONING SYSTEMS | 100 |
| G210 | DETERMINE FUEL REQUIRED FOR FLIGHTS | 100 |
| G203 | COMPUTE LANDING DATA | 100 |
| B56 | SUPERVISE FLIGHT ENGINEER SPECIALISTS (AFSC 11350C) | 100 |
| F172 | PERFORM CREW INFORMATION FILE CHECKS | 100 |
| G192 | ADVISE PILOT OF WEIGHT AND BALANCE DATA USING CHARTS, LOAD ADJUSTERS, OR CALCULATORS | 100 |
| G217 | MONITOR FUEL LOGS | 100 |
| F167 | PARTICIPATE IN GENERAL OR SPECIALIZED MISSION BRIEFINGS | 100 |
| F147 | COORDINATE CORRECTION OF AIRCRAFT DISCREPANCIES OR MALFUNCTIONS WITH AIRCRAFT COMMANDER | 100 |
| B25 | ADVISE SUBORDINATES WITH TECHNICAL PROBLEMS | 100 |
| G218 | PREPARE AIRCRAFT WEIGHT AND BALANCE FORMS (DD FORM 365 SERIES) | 100 |
| G202 | COMPUTE INFLIGHT REFUELING DATA | 100 |
| G195 | COMPLETE RANGE CHARTS | 100 |
| G196 | COMPUTE AIRCRAFT EMERGENCY DATA | 100 |
| D125 | WRITE TEST QUESTIONS | 100 |
| F164 | ORDER AIRCREW TRANSPORTATION | 100 |
| F152 | INSTRUCT EXTRA CREW MEMBERS OR PASSENGERS ON INFLIGHT OR GROUND EMERGENCY PROCEDURES | 100 |
| B57 | SUPERVISE FLIGHT ENGINEER TECHNICIANS (AFSC 11370C) | 85 |
| F190 | VISUALLY INSPECT PANELS, LOCKS, OR FASTENERS | 85 |

AVERAGE NUMBER OF TASKS PERFORMED: 211

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