



UNITED STATES AIR FORCE

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# OCCUPATIONAL SURVEY REPORT

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WEATHER EQUIPMENT AND  
NAVIGATION AIDS EQUIPMENT

AFSCs 302X0 AND 304X1

AFPT 90-302-770

JANUARY 1989

**OCCUPATIONAL ANALYSIS PROGRAM  
USAF OCCUPATIONAL MEASUREMENT CENTER  
AIR TRAINING COMMAND  
RANDOLPH AFB, TEXAS 78150-5000**

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AFSCs 302X0/304X1 OSR AND SUPPORTING DOCUMENTS

	<u>OSR</u>	<u>ANL EXT</u>	<u>TNG EXT</u>	<u>JOB INV</u>
AFHRL/MODS	2	1m	1m set*	1
AFHRL/ID	1	1m	1m set*/1h	1
AFLMC/LGM	1		1*	
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HQ ATC/DPAE	1		1*	
HQ ATC/TTOK	2		1set*	
HQ MAC/DPAT	3		3*	
HQ MAC/TTGT	1		1*	
HQ PACAF/TTGT	1		1*	
HQ PACAF/DPAT	3		3*	
HQ SAC/DPAT	3		3*	
HQ SAC/TTGT	1		1*	
HQ TAC/DPATJ	3		3*	
HQ TAC/TTGT	1		1*	
HQ USAF/LEYA (WASHINGTON DC 20330)	1		1set*	
HQ USAF/DPPE	1			
HQ USMC (CODE TPI)	1			
NODAC	1			
3330 TCHTW/TTGX (CHANUTE AFB IL)	4	2	1set* 4**	2
3300 TCHTW/TTGX (KEESLER AFB MS)	5	2	1set* 4***	2
3330 TCHTW/TTS (CHANUTE AFB IL)	1		1*	
3300 TCHTW/TTS (KEESLER AFB MS)	1		1*	
DET 2, USAFOMC (CHANUTE AFB IL)	1	1	1*	1
DET 3, USAFOMC (KEESLER AFB MS)	1	1	1*	1
USAFOMC/OMYXL	10	2m	5*	10
1872 SCHS/TU (AFCC) KEESLER AFB MS)	2	1m	1m/2h*	
3507 ACS/DPKI	1			
3785 FLDTG/TTFO	2		2	

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\* A set contains 1 extract for each of the 2 AFSCs  
\*\* AFSC 302X0 Extract only  
\*\*\* AFSC 304X1 Extract only



## PREFACE

↙ This report presents the results of an Air Force occupational survey of the Weather Equipment (AFSC 302X0) and Navigation Aids Equipment (AFSC 304X1) career ladders. The request for a joint survey of these two AFSCs was initiated by the Assistant Deputy Chief of Staff, Logistics, Headquarters Air Force Communications Command (HQ AFCC/LG), Scott Air Force Base IL. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products from which this report was produced are available for use by operations and training officials.

*Knowledge, Job analysis, Career ladders, Personnel development, Skills, Air Force Training, Air Force Training.*

The survey instrument was developed by Lieutenant Charles T. Jervey, Inventory Development Specialist. Ms Olga Velez provided computer support for the project. Ms Viola L. Hebert compiled and analyzed the survey data and wrote the final report. Administrative support was provided by Ms Raquel A. Soliz. This report was reviewed and approved by Lieutenant Colonel Charles D. Gorman, Chief, Airman Analysis Branch, Occupational Analysis Division, USAF Occupational Measurement Center. (SDW) 

Copies of this report are distributed to Air Staff sections, Major Commands, and other interested training and management personnel (see DISTRIBUTION on page i). Additional copies are available upon request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Division (OMY), Randolph AFB TX 78150-5000.

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## SUMMARY OF RESULTS

1. Survey Coverage: Sixty-two percent (N=1,132) of the total assigned AFSC 302X0/304X1 career ladder personnel completed job inventory booklets. This sampling represented 60 percent of assigned 3-, 5-, and 7-skill level 302X0 personnel (N=444), and 64 percent of assigned 3-, 5-, and 7-skill level 304X1 personnel. The survey sample for each AFSC was representative in terms of MAJCOM (AFCC being the single largest user), TAFMS, and paygrade distribution.

2. Specialty Jobs: Cumulatively, Weather and NAVAIDS personnel primarily ascribe to the production element of C-E maintenance functions. That is, the vast majority of these members participate in the actual physical performance of equipment maintenance. Ninety-five percent of the total survey sample grouped to form six clusters and six independent job types. Notwithstanding advanced technological changes over the years, there have been no substantial job changes in either AFSC since the previous surveys. The key differentiating factors between technical jobs were attributed to type (system) and category (i.e., tactical/mobile or fixed) of equipment maintained. Non-technical jobs differed based upon the number and types of tasks performed in support of maintenance production. For the most part, jobs broke out whereby Weather personnel were identified as maintaining weather equipment and NAVAIDS personnel were maintaining NAVAIDS equipment. None of the technically-oriented jobs showed a substantial degree of overlap or cross-utilization of personnel between AFSCs.

3. Career Ladder Progression: Career ladder progression up through AFSCs 302X0 and 304X1 is clearly defined. Three- and 5-skill level personnel of both AFSCs are primarily technicians, spending the majority of their job time performing general maintenance tasks and maintaining equipment or systems specific to their respective AFSC. The highest degree of commonality in task performance was identified between 7-skill level members. While these members spend some time maintaining equipment characteristic of their AFSC, they spend the majority of their job time performing supervisory or managerial functions which are not necessarily AFSC related.

4. AFR 39-1 Specialty Descriptions: Descriptions for DAFSC groups 30230/30250, 30431/30451, and 30471 require review to accurately depict the major duties and responsibilities performed by incumbents in the field. The dual nature (managerial/supervisory and technical) of 30270 members is accurately reflected in the AFR 39-1 description.

5. CONUS vs Overseas Analysis: The primary difference between 5-skill level weather members assigned to CONUS locations and their overseas counterparts and between 30451 members in the same category was based upon tasks performed in maintenance of certain equipment items. Overseas members of both AFSCs spend more time maintaining tactical/mobile equipment than their counterparts assigned to CONUS installations.

6. Training Analysis: The tentative STS for AFSC 302X0 indicates substantial percentages of career ladder groups (first-enlistment, 5-, and 7-skill level personnel) performing tasks directly related to the major STS elements. Some minor revisions may be required to better align AFR 39-1 specialty descriptions and STS requirements with incumbent data, particularly in the area of siting requirements (i.e., installation/removal of meteorological equipment).

Several areas in STS 304X1 require extensive review. Many of these areas involve maintenance of LORAN C/D systems, omnirange, and low-frequency beacons. Although some general maintenance tasks and electronic principles are commonly performed by first-enlistment personnel across the two AFSCs, each group primarily performs maintenance tasks on AFSC-specific equipment. Generally, survey data support common training in the areas of general maintenance activities, electronic fundamentals, and on certain items of test equipment.

7. Implications: Overall, career ladder jobs in both AFSCs have remained relatively stable. Jobs are showing a gradual shift toward increased generalization and less specialization. Hence, the scope of many jobs identified in the previous surveys of these AFSCs have now expanded. This shift may account in part for the overall increased levels of job satisfaction for both AFSC 302X0 and 304X1 personnel. No serious job satisfaction problems appear to exist within either specialty. Members report concern with the proposed Weather/NAVAIDS merger, particularly in areas involving training, manning, and promotion testing. Caution should be exercised when making interpretations of data from the combined sample for design of training programs for the merged AFSC.

OCCUPATIONAL SURVEY REPORT  
WEATHER EQUIPMENT (AFSC 302X0)  
AND  
NAVIGATION AIDS EQUIPMENT (AFSC 304X1)  
CAREER LADDERS

INTRODUCTION

This is a report of an occupational survey of Weather Equipment (AFSC 302X0) and Navigation Aids Equipment (AFSC 304X1) career ladders completed by the USAF Occupational Measurement Center in November 1988. Previous occupational survey reports of these two career ladders were published in April 1980 and July 1982, respectively.

Objectives of Study

The request for an occupational survey report (OSR) to be done concurrently on the Weather Equipment (AFSC 302X0) and Navigation Aids (NAVAIDS) (AFSC 304X1) specialties was initiated from HQ AFCC in response to the HQ USAF initiative to combine information systems maintenance AFSCs having similar responsibilities and tasks. Data obtained from this survey will be critical in formulating the utilization and training plan for these merged AFSCs.

Background

Historically, the Weather Equipment AFSC was created in 1958 when functions and equipment were deleted from the Ground Weather Equipment Operator (AFSC 251X0) specialty. Subsequent changes in the career ladder title (from Weather Equipment Repairman to Weather Equipment Specialist in May 1975) and changes in the 9-skill level (most recently in April 1987), have led to the current single career ladder structure--30230 through 30290. The CEM code (30100) designation comprises the highest skill level among all AFSCs within the Communications-Electronics Systems career field.

Career ladder changes in the NAVAIDS Equipment specialty have been somewhat more dynamic than those cited for the Weather Equipment AFSC. Since its establishment in September 1954 as the Flight Facilities Equipment Repairman AFSC, several major structural changes have occurred. In May 1955, the following shreds were authorized at the 3- and 5-skill levels: A-Shred maintained RGS/Beacon equipment; B-Shred maintained Instrument Low Approach Systems (ILAS); and C-Shred maintained TACAN systems. The shreds became obsolete 1 February 1959. Following these changes, the career ladder name was changed twice. The present AFSC titling was adopted 31 October 1979, and resulted from a recommendation by the 1977 Occupational Survey Report of the NAVAIDS specialty.

To date, the proposed merger of the Weather Equipment and NAVAIDS career ladders is slated to be fully operational by FY 1990. Merger of the resultant AFSC with Air Traffic Control Radar (AFSC 303X1) is projected for 1994. Reportedly, these three consolidated AFSCs will constitute the Traffic Control and Landing Systems (TRACALS) specialty.

Rationale supporting the merger includes the proposition that state-of-the-art equipment changes should allow for less specialization in these career ladders. A two-level maintenance concept is proposed by the merge between Weather Equipment and NAVAIDS. On-equipment maintenance will isolate faults to a line replaceable unit (LRU/black box) for immediate system restoration. Off-equipment maintenance will consist of depot-level repair of these LRUs. Hence, the aim is to approach maintenance from a systems level versus component level. Consequently, this approach will reduce the in-depth knowledge required by the technician, while increasing the number of end items maintained.

As described in AFR 39-1, AFSC 302X0 (Weather Equipment Specialist) personnel are responsible for installing, maintaining, inspecting, and repairing electronic and mechanical meteorological observing equipment. AFSC 304X1 Navigation Aids Equipment Specialists are responsible for installing, maintaining, repairing and modifying navigational aids, such as low frequency beacons, instrument landing systems (ILS), very high frequency omnirange (VOR), tactical air navigation (TACAN), long range aid to navigation (LORAN), and associated electronic test equipment.

In addition to the training and utilization issues, other topics will be addressed in this occupational survey report (OSR). Since this report encompasses two career ladders with different responsibilities, Specialty Training Standards, and training courses, the report is divided into five sections. The first section addresses the career ladder structure for the combined sample of AFSC 302X0 and 304X1 members. Sections II, III, IV and V discuss the separate ladders, including such topics as: (1) differences between groups, such as duty Air Force specialty codes (DAFSC); (2) comparison of survey data with career ladder documents, such as AFR 39-1 Specialty Descriptions; (3) analysis of current career ladder training documents using survey data; and (4) comparisons of job satisfaction data and other survey findings to those of the previous survey, along with implications of survey results.

An Armed Services Vocational Aptitude Battery (ASVAB) electronic score of 67 is required for entry into either of these two career ladders. Formal training for award of the 302X0 semi-skilled DAFSC consists of 33 weeks provided by 3330th Technical Training Wing (TCHTW), Chanute AFB IL. Personnel in the Navigational Aids Equipment specialty receive 27 weeks 3 days of basic skills training via the 3300th TCHTW, Keesler AFB MS.

## SURVEY METHODOLOGY

### Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory 90-302-770 dated July 1987. A tentative task list was prepared by the inventory developer after carefully reviewing the previous task list, current career ladder publications, training documents, and directives to determine the appropriateness of each task. This tentative task list was refined and validated through personal interviews with technical school personnel and other members assigned to operational bases. Additional contacts with personnel having career ladder involvement included Air Force Military Personnel Center (AFMPC) classification, functional, and resource managers; AFCC functional and resource managers; Air Force functional manager; HQ ATC Training Staff Officer; and the Training Manager for the respective AFSCs.

To ensure full coverage of the variety of tasks performed by career ladder members, compilation of the tentative task list was accomplished by a slightly different method than routinely used during the development stage of the job inventory. Based upon recommendations from AFCC functional managers, Wright-Patterson AFB OH was selected as the location for the 302X0 task development workshop. This base was selected because of the accessibility to a wider variety of equipment and publications pertinent to the career ladder. Likewise, Tinker AFB OK was selected as the location for the 304X1 workshop based upon similar rationale, in addition to the coexistence of mobility and other unique base-level units. During the workshops, the inventory developer served as the technical advisor to ensure compliance by career ladder members with USAFOMC task writing guidelines. A total of 17 subject-matter experts from 12 bases were interviewed.

This process resulted in a final job inventory, organized by weather equipment or NAVAIDS systems maintained, containing 2,004 tasks grouped under 25 duty headings. Also included was a background section requesting information such as grade, time in service, job satisfaction, test equipment maintained, and respondents' opinion of the AFSC 302X0/304X1 proposed merge.

### Survey Administration

From August 1987 through May 1988, Consolidated Base Personnel Offices (CBPO) in operational units worldwide administered the inventory to all eligible DAFSC 302X0 and 304X1 personnel at the 3-, 5-, and 7-skill levels. Members eligible for the survey consisted of the total assigned population, excluding the following: (1) hospitalized personnel, (2) members in transition for a permanent change of station, (3) members retiring during the time inventories were administered to the field, (4) all members in tentative status, and (5) members assigned to classified units. These job incumbents were selected from computer-generated mailing lists obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who filled out an inventory booklet first completed an identification and biographical information section, a background section which contains additional information pertinent to training, and then checked each task performed in their current job. Next, members rated these tasks on a 9-point scale showing relative time spent on each task as compared to all other tasks checked. Ratings ranged from 1 (very small amount of time spent) to 9 (very large amount of time spent).

To determine relative time spent for each task checked by a respondent, all of the 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 then divided by 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 percent time spent.

### Survey Sample

Personnel are selected to participate in occupational surveys to ensure a representative sample across using major commands (MAJCOM), paygrade, and total active federal military service (TAFMS) groups. All eligible AFSC 302X0 and 304X1 personnel at the 3-, 5-, and 7-skill levels were mailed survey booklets. As Table 1 displays, AFCC represents the primary user of Weather and NAVAIDS personnel. The 1,132 respondents in the final sample represent 62 percent of the total assigned AFSC 302X0 and 304X1 personnel. Table 2 displays survey respondents across paygrade groups, while Table 3 lists the sample distribution by TAFMS groups for each ladder. As demonstrated in these tables, the survey sample is both representative and comprehensive.

### Task Factor Administration

With the completion of the job inventory, an additional tasking was requested of selected senior NCOs. A second booklet, identical to the job inventory except in the biographical and background sections, was used to gather information for either training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the job inventories and provide task rating information which is used in a number of different analyses discussed in more detail in following sections of this report.

Task Difficulty (TD). TD is defined as the length of time an average airman needs to learn a task. Given this definition, 101 senior technicians (primarily 7-skill level) rated the difficulty of all the inventory tasks on a 9-point scale (from extremely low to extremely high). All raters were asked to assess the difficulty of tasks with which they were familiar, regardless of career ladder orientation of the task. Three separate sets of TD data were analyzed. These included TD data as rated by respondents of both career ladders combined (101 members) and data for each career ladder separately as rated by members of each individual specialty (50 AFSC 302X0 raters and 49 AFSC 304X1 raters). The interrater reliability, as assessed through components of variance of standard group means, for the combined AFSC 302X0/304X1

TABLE 1  
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>302X0</u>		<u>304X1</u>	
	PERCENT OF ASSIGNED (N=736)	PERCENT OF SAMPLE (N=444)	PERCENT OF ASSIGNED (N=1,081)	PERCENT OF SAMPLE (N=688)
AFCC	81	93	97	95
ATC	19	7	3	4
OTHER*	0	0	0	1
			<u>302X0</u>	<u>304X1</u>
TOTAL ASSIGNED			736	1,081
TOTAL NUMBER SURVEYED			613	920
TOTAL NUMBER IN FINAL SAMPLE			444	688
PERCENT OF SURVEYED IN SAMPLE			72%	75%
PERCENT OF ASSIGNED IN SAMPLE			60%	64%

\* Includes the following Major Commands: TAC,  
PACAF, MAC, and SAC

NOTE: Assigned strength as of July 1987

TABLE 2  
PAYGRADE DISTRIBUTION OF SURVEY SAMPLE

<u>PAYGRADE</u>	<u>302X0</u>		<u>304X1</u>	
	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
AIRMAN	38	27	19	20
E-4	22	25	30	30
E-5	21	25	26	27
E-6	11	12	16	15
E-7	8	10	9	7
E-8	*	1	*	*

\* Denotes less than 1 percent

TABLE 3  
TAFMS DISTRIBUTION OF SURVEY SAMPLE

<u>TAFMS (MONTHS)</u>	<u>302X0</u>		<u>304X1</u>	
	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
1-48	42	38	36	39
49-96	26	28	21	22
97-144	11	12	18	16
145-192	9	9	14	14
193-240	8	10	8	8
241+	4	3	3	1

adjusted so tasks of average difficulty have ratings of 5.00. The resulting data are essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Training Emphasis (TE). TE is a rating of which tasks require structured training for first-term personnel. Structured training is that training provided through avenues such as resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or some other organized training method. Experienced senior 5- and 7-skill level NCOs completing TE booklets were asked to rate tasks on a 10-point scale (from no training emphasis to extremely high training emphasis). Ratings were independently collected from AFSC 302X0 and AFSC 304X1 raters and the data were analyzed in three different ways. The interrater reliability (as assessed through components of variance of standard group means) was .96 for the combined group of TE raters (N=102). Tasks rated 2.81 or better by this combined group of raters are considered extremely high in TE, regardless of career ladder orientation. Likewise, the interrater reliability assessed separately for each specialty was extremely high (.97 for AFSC 302X0 raters and .96 for AFSC 304X1 respondents). This indicates that, within each career ladder, there was very high agreement among raters as to which tasks required some form of structured training. In the 302X0 specialty, tasks rated high in TE had ratings of 3.06 or better. Tasks rated high in TE for the 304X1 career ladder received ratings of 3.34 or higher. These data also provide essentially a rank ordering of tasks whereby those with the highest ratings are perceived by subject-matter experts as most important for first-term training.

TE and TD data provide objective information which should be used along with percent members performing data when making training decisions. Percent members performing data provide information on who and how many personnel perform the tasks. (NOTE: This will be highlighted in the TRAINING ANALYSIS section of the report.) Using these factors, in conjunction with appropriate training documents and directives, career ladder managers can tailor training programs to accurately reflect the needs of the users by more effectively determining when, where, and how to train assigned personnel.

#### Data Processing and Analysis

Once job inventories are returned from the field, task responses and background information are optically scanned. Other biographical information (such as name, base, sex, etc.) is keyed onto disks and transmitted directly into the computer. Once both sets of data are in the computer, they are merged to form a complete case record for each respondent. Computer-generated programs, using Comprehensive Occupational Data Analysis Program (CODAP) techniques, are then applied to the data.

CODAP produces composite job descriptions for groups of survey respondents based upon their ratings of specific inventory tasks. These job descriptions provide information on percent members performing each task, the relative percent time spent performing tasks, and the cumulative percent time spent by all members performing each task in the inventory. In addition to the job descriptions, the computer produces summaries that show how members

relative percent time spent performing tasks, and the cumulative percent time spent by all members performing each task in the inventory. In addition to the job descriptions, the computer produces summaries that show how members of each group responded to each background item. These background items aid in identifying characteristics of the group, such as DAFSCs represented, time in career field, equipment and systems maintained, personal opinions of the pending career ladder merge, and job satisfaction levels.

### SPECIALTY JOBS (Career Ladder Structure)

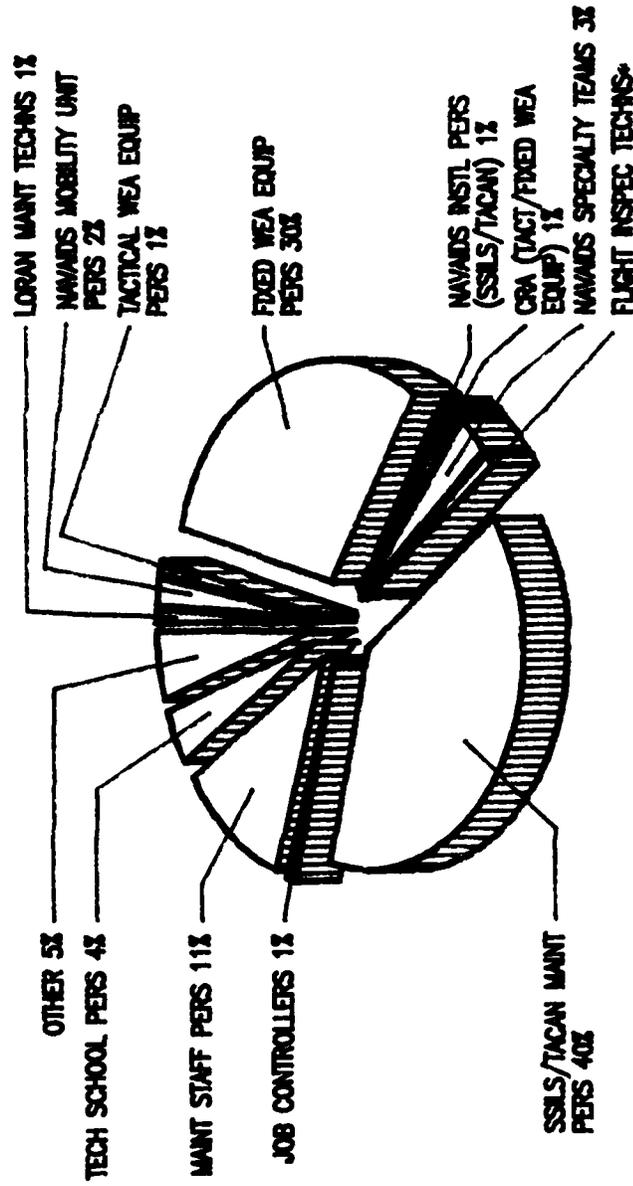
One of the major functions of the USAF Occupational Analysis Program is to identify distinct jobs performed within the specialties under study and describe how these jobs relate to one another. This is accomplished by examining what incumbents indicate they are actually doing in their current jobs, rather than what official career ladder documents dictate they should do. The tasks performed by career ladder personnel are examined and job groups are formed based on similarity of task performance. One of the primary objectives for conducting this survey was to identify areas of overlap or commonality in task performance between these two AFSCs. While this study represents a joint survey of both Weather and NAVAIDS personnel, they will be discussed as a single entity for the purpose of specialty job descriptions. Other areas of this report, however, will provide information and discussion of the AFSCs separately.

For purposes of this report, similarities and differences in task performance between incumbents will be defined in terms of jobs and clusters of jobs. Personnel who perform the same or similar tasks and spend a comparable amount of time performing these tasks, group together to form a JOB. A group of jobs having a substantial degree of similarity forms a CLUSTER. In some instances, specialized jobs are identified which are too dissimilar from other jobs to be included in a cluster and are designated INDEPENDENT JOB TYPES (IJT). In this section, the clusters will be fully explained in terms of task performance and demographic characteristics of group members. For the most part, functions of jobs within each cluster will be contained in the description at the cluster level. Independent job types will also be discussed fully. In addition, tables which provide additional information and support the narrative descriptions will be included. (Tables displaying selected background and task information for these clusters and independent job types are provided in Appendix A.)

#### Overview

Through structure analysis, based on tasks performed and relative time spent on tasks, six clusters and six independent job types were identified within the survey sample. Figure 1 is a diagrammatical representation of

CAREER LADDER STRUCTURE OF WEATHER EQUIPMENT &  
 NAVIGATION AIDS EQUIPMENT SPECIALTIES  
 (AFSCs 302X0 & 304X1)  
 (N=1,132)



\* (Flight Inspection Techns .4% of sample)

FIGURE 1

these major jobs. The STG numbers within each group, which have no mathematical significance, are computer-generated identifiers used to define aggregations of personnel in the group. The letter "N" denotes the number of members in the group. The titles given to these jobs are based upon composite job descriptions for the group members, job titles written in by survey respondents, background information responses to the inventory questionnaire, and telephone calls made to group members in the field.

- I. NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN SYSTEMS) IJT (STG180, N=7)
- II. NAVAIDS SPECIALTY TEAMS CLUSTER (STG046, N=32)
- III. CENTRALIZED REPAIR ACTIVITY (CRA) PERSONNEL IJT (TACTICAL/FIXED WEATHER EQUIPMENT) (STG197, N=7)
- IV. FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL CLUSTER (STG125, N=334)
- V. TACTICAL WEATHER EQUIPMENT MAINTENANCE TECHNICIANS IJT (STG108, N=7)
- VI. LORAN C/D MAINTENANCE TECHNICIANS IJT (STG192, N=12)
- VII. NAVAIDS MOBILITY UNIT PERSONNEL IJT (STG199, N=18)
- VIII. SSILS/TACAN MAINTENANCE PERSONNEL CLUSTER (STG074, N=452)
- IX. JOB CONTROLLERS CLUSTER (STG104, N=14)
- X. MAINTENANCE STAFF PERSONNEL CLUSTER (STG042, N=130)
- XI. FLIGHT INSPECTION TECHNICIANS IJT (STG526, N=5)
- XII. TECHNICAL SCHOOL PERSONNEL CLUSTER (STG017, N=41)

Ninety-five percent of the respondents in the survey sample perform jobs equivalent to those in the six clusters and six independent job types outlined above. The remaining 5 percent did not group with any of the jobs due to the uniqueness of their jobs, based on mission requirements, temporary conditions, or the manner in which they perceive their jobs. In addition to the following narrative description, Table 4 displays selected background information pertinent for incumbents performing each job.

#### Descriptions of Career Ladder Jobs

The overall objective of the USAF maintenance mission is equipment readiness. Therefore, equipment must be kept in serviceable condition, safely operable, and properly configured to meet mission requirements in wartime and

TABLE 4  
 SELECTED BACKGROUND INFORMATION FOR WEATHER AND NAVAIDS SPECIALTY JOBS

NUMBER IN GROUP PERCENT OF TOTAL SAMPLE PERCENT CONUS	NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN) (STG180)		NAVAIDS SPECIALTY TEAMS (STG046)		CENTRALIZED REPAIR ACTIVITY (TACTICAL/FIXED WEATHER EQUIP) (STG197)		FIXED WEATHER EQUIPMENT MAINT PERSONNEL (STG125)		TACTICAL WEATHER EQUIPMENT MAINT TECHNICIANS (STG108)		LORAN C/D MAINTENANCE TECHNICIAN (STG192)	
30230	7	32	7	334	14%	20%	0%	0%	0%	0%	12	
30250	1%	3%	1%	30%	72%	55%	0%	86%	0%	0%	1%	
30270	100%	100%	71%	74%	14%	25%	0%	14%	0%	0%	0%	
30431					0%	0%	0%	0%	0%	0%	0%	
30451					0%	0%	0%	0%	0%	0%	92%	
30471					0%	0%	0%	0%	0%	0%	3%	
DAFSC DISTRIBUTION:												
DOMINANT PAYGRADE												
AVG MOS IN CAREER FIELD												
AVG MOS IN SERVICE												
PERCENT IN FIRST-ENLISTMENT												
PERCENT SUPERVISING												
AVG NUMBER OF TASKS PERFORMED												
	7	32	7	334	14%	20%	0%	0%	0%	0%	12	
	1%	3%	1%	30%	72%	55%	0%	86%	0%	0%	1%	
	100%	100%	71%	74%	14%	25%	0%	14%	0%	0%	0%	
					0%	0%	0%	0%	0%	0%	0%	
					0%	0%	0%	0%	0%	0%	92%	
					0%	0%	0%	0%	0%	0%	3%	
	E-4	E-3	E-5	E-3/E-4	E-4	E-5	E-3	E-4	E-5	E-5	E-5	
	36	45	71	67	64	71	67	64	89	64	89	
	38	61	78	79	84	78	79	84	95	84	95	
	86%	62%	28%	43%	0%	28%	43%	0%	8%	0%	8%	
	43%	44%	29%	46%	29%	29%	46%	29%	50%	29%	50%	
	54	150	178	346	168	178	346	168	216	168	216	

\* Denotes value less than 1 percent

Columns may not equal 100 percent due to rounding or nonresponse

TABLE 4 (CONTINUED)  
 SELECTED BACKGROUND INFORMATION FOR WEATHER AND NAVAIDS SPECIALTY JOBS

	NAVAIDS MOBILITY UNIT PERSONNEL (STG199)	SSILS/TACAN MAINTENANCE PERSONNEL (STG074)	JOB CONTROLLERS (STG104)	MAINTENANCE STAFF PERSONNEL (STG042)	FLIGHT INSPECTION TECHNICIANS (STG526)	TECHNICAL SCHOOL PERSONNEL (STG017)
NUMBER IN GROUP	18	452	14	130	5	41
PERCENT OF TOTAL SAMPLE	2%	40%	1%	11%	*	4%
PERCENT CCNUS	50%	76%	57%	79%	60%	98%
-----						
DAFSC DISTRIBUTION:						
30230	0%	*	0%	0%	0%	2%
30250	0%	1%	29%	5%	0%	32%
30270	0%	1%	7%	22%	0%	15%
30431	5%	14%	0%	0%	0%	0%
30451	78%	61%	50%	12%	0%	34%
30471	17%	22%	14%	61%	100%	17%
-----						
DOMINANT PAYGRADE	E-4/E-5	E-4	E-4	E-7	E-6	E-5
AVG MOS IN CAREER FIELD	70	63	59	150	114	99
AVG MOS IN SERVICE	80	74	76	179	167	114
PERCENT IN FIRST-ENLISTMENT	39%	47%	57%	3%	0%	12%
-----						
PERCENT SUPERVISING	50%	47%	21%	58%	20%	8%
AVG NUMBER OF TASKS PERFORMED	242	490	21	104	38	35

\* Denotes value less than 1 percent

Columns may not equal 100 percent due to rounding or nonresponse

peacetime. The maintenance concept adhered to in these career ladders is two-fold, involving on-equipment or off-equipment maintenance. On-equipment maintenance includes those functions characterized by "remove and replace" activities which will isolate faults to a line replaceable unit (LRU) for immediate system restoral. Theoretically, these activities should be accomplished with skills and equipment possessed by the operational unit. Off-equipment maintenance activities include those tasks which cannot be performed on the system itself and which require specialized skills or sophisticated in-shop equipment not available in the operating units. Ultimately, the goal of this maintenance approach is to reduce or eliminate unit dependence on off-equipment repair.

The primary duties and responsibilities of personnel in Weather Equipment and NAVAIDS maintenance AFSCs represent two of the many functions encompassed by the Communications-Electronics (C-E) systems career field. Some of these primary responsibilities include activities such as installation, modification, overhaul, maintenance, and repair of airborne and ground weather equipment, automatic tracking equipment, test equipment, and other navigational aids. Two components of the equipment maintenance function typify this career field: (1) technical element, and (2) production element. The technical element, of which Air Force Logistics Command (AFLC) has prime responsibility, serves as the focal point for technical and maintenance engineering support of systems and equipment in the operational inventories. The key aspect of the production element lies in maintenance production. That is the actual physical performance of equipment maintenance such as servicing, repairing, calibrating, configuring, testing, overhauling, modifying, and inspecting. It is this arm of maintenance accomplished by operating units which will be the major focus of jobs described in this section of the report.

I. NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN SYSTEMS IJT) (STG180, N=7). This group of 5-skill level specialists are all (100 percent) graduates of the E&I Standard Installation Procedures Training (SIPT) course. While 71 percent indicate Engineering and Installation (E&I) as their present functional area, all are assigned to a group level of command within CONUS. With an average time in service of 38 months, 86 percent of these airmen are in their first-enlistment. The majority of their job time (67 percent) is spent installing and removing fixed or mobile NAVAIDS equipment, such as AN/GRN-27/29, AN/TRN-26/39/40, and other TACAN systems. Seventy-one percent of the members of this highly specialized group have completed mobility training and do perform deployment and shakedown tests on the above-named systems. Of the average 54 tasks performed, typical ones include:

- perform predeployment vehicle inspections
- inventory scheme materials
- perform operational tests of newly installed systems
- remove instrument landing system (ILS) glideslope systems
- install AN/GRN-29 SSILS localizer systems
- remove fixed TACAN systems, other than antennas
- remove VOR and TVOR systems
- fabricate cable harnesses
- lace wiring assemblies

II. NAVAIDS SPECIALTY TEAMS CLUSTER (STG046, N=32). Three percent of the survey sample perform this job. While both Weather and NAVAIDS personnel are included, the majority (88 percent) are in AFSC 304X1 (see Table 4). Members of this group having DAFSCs of 30230/50 are assigned to workcenters that have merged with NAVAIDS. With paygrades ranging from E-3 (50 percent) to E-5 (31 percent), these airmen perform a job requiring specialized skills obtained through courses such as SIPT (84 percent completed) and mobility training (47 percent completed). Sixty-two percent of these incumbents are in their first enlistment and average 25 months on their current job. Similar to the group described in the immediate preceding paragraph, 92 percent of this group are assigned to the E&I functional area. Unlike the preceding group, however, members in the NAVAIDS Specialty Teams cluster install and perform general maintenance on weather equipment items (i.e., GMQ-20 windbird, GMQ-32 transmissometer, and TMQ-11 temperature/dewpoint measuring set), as well as on SSILS and TACAN systems. Sixty-five percent of their job time is spent performing general maintenance activities; hence, members of this group are more generalists than those of the previously described job. These incumbents spend a large percentage of their job time performing basic maintenance activities that lay the groundwork for major system installation. Tasks representative of this job include:

- inspect electrical cables
- install solderless connectors
- cut cables to electrical lengths
- install system grounds
- measure phase lags
- solder plugs

Members comprising this cluster of jobs perform tasks related to the jobs of E&I Team Members, E&I Team Chiefs/Nominees, and Special Maintenance Team Personnel. E&I Team Members spend the vast majority of their time performing the basic tasks laying the electrical groundwork. E&I Team Chiefs supervise as well as do many of the more advanced installation type tasks. Special Maintenance Team Personnel perform primarily nonprogrammed E&I activities requiring heavy analytical skills and maintenance functions beyond the capability of local operating units.

III. CENTRALIZED REPAIR ACTIVITY (CRA) PERSONNEL IJT (TACTICAL/FIXED WEATHER EQUIPMENT) (STG197, N=7). This small independent job type, representing 1 percent of the survey sample, is comprised of AFSC 302X0 personnel only. While ranging in skill level from 3- to 7-skill level, their paygrades are concentrated in the E-4 (43 percent) to E-5 (57 percent) range. Similar to many other jobs identified in the career ladder structure, the members of this group have spent a relatively short time in their current job (25 months on the average). The majority of these specialists are assigned within CONUS (71 percent) and are stationed at Kelly AFB TX or Wright-Patterson AFB OH. Members assigned to overseas installations, such as Elmendorf and Rhein Main, represent 29 percent of this group. Depending on the mission and the level of maintenance adhered to by the operating unit, members of this group may assist

local units by deploying to sites to perform intermediate level or mobile depot maintenance. Because they provide technical assistance or supplement manning at various sites, CRA Personnel work on a wide variety of weather equipment, such as FPS-77 radar set (fixed), TMQ-11 temperature/dewpoint (fixed), TMQ-15 wind measuring set (tactical), GMD-2/4 upper air balloon tracking (tactical), and GMQ-13 cloud height measuring set (fixed). Some of the tasks most representative of the 178 performed on the average are:

- inspect equipment for corrosion
- replace electron tubes
- isolate malfunctions in mechanical assemblies
- replace motors
- inspect gear mechanical alignment or meshing
- replace equipment subassemblies
- replace bearings
- overhaul antenna pedestal
- overhaul electrical systems
- set up or tear down TMQ-15
- level TMQ-14 projector trunion axis

IV. FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL CLUSTER (STG125, N=334). The airmen in this group represent the second largest job identified in the survey sample (30 percent; see Table 4), and the largest single job comprised of AFSC 302X0 personnel only (75 percent of AFSC 302X0 sample, see Table 6). Primarily 5-skill level (55 percent), members of this group represent almost the full range of respondents' paygrades from E-2 to E-7, with the highest concentration in the E-3 to E-5 range (81 percent). While 43 percent are in their first enlistment, members average 79 months in service.

Seven job variations comprise this cluster. Centralized Repair Activity Personnel (Fixed/Ground Weather Equipment) perform depot-level maintenance and pre-mobile depot maintenance (pre-MDMs) on fixed equipment only, such as FPS-77 and GMQ-13, and all are stationed at the 1923d Communication Group, Kelly AFB TX. FPS-77 Weather Radar Maintenance Personnel spend the major portion of their job time maintaining this fixed radar set. While Conventional Fixed Meteorological Equipment Technicians do not work on the FPS-77, they spend most of their job time repairing equipment such as GMQ-20 windbird, ML-658 barometers, TMQ-11 measuring set, and GMQ-32 transmissometer. Still other members spend almost equal percentages of their job time maintaining surface and radar weather equipment. Also identified within this large cluster, are Quality Assurance Monitors (assigned to the workcenters to inspect inventoried equipment), Weather Maintenance NCOICs (first-line supervisors), and Solar Environmental Support System Technicians (SESS), who maintain fixed systems associated with solar weather observation, such as ALDI-2000 radio receiver and FRR-95 solar telescope. Tasks most representative of the vast technical expertise contained within this cluster of jobs include:

- isolate malfunctions in electrical circuits
- perform turn-on/off procedures for TMQ-11 and check for normal indications
- perform GMQ-13 operational checks
- check GMQ-20 direction transmitter for proper orientation
- treat corroded items
- measure VSWR
- inspect M1-24 sling psychrometers
- check GMQ-32 receiver for proper operation, such as leakage, background, and transmissivity
- adjust FPS-77 sweep compensator
- perform FMN-1 operational checks
- service radomes

V. TACTICAL WEATHER EQUIPMENT MAINTENANCE TECHNICIANS IJT (STG108, N=7). This small group of specialized technicians (1 percent of sample) represents the only job identified having none of its members in the 1-48 months TAFMS group. Primarily 5-skill level (86 percent), these airmen average 84 months total active military service and 23 months in their present job. Seventy-one percent are assigned to overseas locations, including Yokota AB Japan and Greenham Common UK. The majority of these members are assigned to a combat communications functional area (57 percent) and have completed mobility training (71 percent). While spending the largest percentage of their job time maintaining tactical weather equipment, such as TMQ-15 wind measuring sets, TPS-68 mobile radar, and TMQ-20 dew/frost measuring sets, some incumbents indicate they also perform a heavy supply function. They perform 168 tasks on the average, and some of the most representative are:

- locate stock numbers in supply publications
- initiate AF Forms 2005 (Issue/Turn In Request)
- maintain preventive maintenance inspection (PMI) listings
- pack or unpack tactical equipment
- set up or tear down TMQ-15
- perform TPS-68 operational checks
- conduct pre- or postdeployment inspections
- replace equipment subassemblies
- perform operational checks of M1-658

VI. LORAN C/D MAINTENANCE TECHNICIANS (STG192, N=12). This group of mid-level NCOs (58 percent are in paygrade E-5) forms one of the jobs identified as having AFSC 304X1 personnel only. While these members possess either DAFSC 30451 (92 percent) or 30471 (8 percent), they perform a job that is substantially different from other members in the Navigation Aids Equipment career ladder. In addition to performing general maintenance tasks, 26 percent of their job time is spent operating and maintaining Long Range Navigation systems (LORAN). Sixty-seven percent of these airmen indicate they work in an organizational maintenance functional area, usually 12-hour shifts. All members of this job are assigned to overseas locations. They perform 216 tasks on the average, of which some of the most representative are:

- isolate LORAN C/D transmitter output group cycle generator malfunctions
- operate LORAN C/D computer keyboards
- turn on LORAN C/D transmitter driver groups
- perform corrosion control on electrical circuits
- interpret LORAN C/D chain scope displays
- isolate malfunctions in power supplies
- verify line voltages

VII. NAVAIDS MOBILITY UNIT PERSONNEL IJT (STG199, N=18). This equally divided group (between overseas and CONUS locations) consists of AFSC 304X1 personnel, exclusively. Ninety-four percent are assigned to combat communications groups and all are deployable. With an average time in service of 80 months, 39 percent are in their first enlistment. The largest portion of their job time spent maintaining any single system is spent on the TRN-26B (15 percent time spent). Mobility unit personnel do maintain other systems, such as GRN-29 SSILS, GRN-26 marker beacons, and other TACAN systems, but to a much lesser degree than the TRN-26. This job consists of 242 tasks on the average, and some of the most representative ones are:

- tear down AN/TRN-26 TACAN systems
- set up or tear down mobile TACAN systems
- camouflage equipment
- erect or tear down cantonment areas
- isolate AN/TRN-26 unit 5/9 monitor malfunctions
- remove mobile TACAN systems, other than antennas
- adjust AN/TRN-26 antenna control units
- communicate with aircrews on flight check observations or adjustments

VIII. SSILS/TACAN MAINTENANCE PERSONNEL CLUSTER (STG074, N=452). This is the largest single job identified within the survey sample (40 percent of sample) and is composed largely of NAVAIDS personnel (97 percent). The few Weather Equipment members included in this job represent those airmen assigned to combined workcenters; hence, some members of this job spend time maintaining conventional weather equipment, such as FMN-1 runway visual range computers, TMQ-11 measuring sets, or TMQ-5 radiosonde recorders. For the most part, however, these airmen spend the largest percentages of their job time maintaining TACAN transponders (15 percent time spent), GRN-27 solid-state instrument landing systems (SSILS) (13 percent time spent), and GRN-29 SSILS (10 percent time spent), along with other general maintenance functions. Forty-seven percent of these generalists are in their first enlistment, averaging 29 months in their current job. While the majority hold DAFSC 30451 (61 percent), the most dominant paygrade among members is E-4 (37 percent). This job comprises the largest number of tasks on the average (490) of all jobs identified in the career ladder structure of the Weather and NAVAIDS AFSCs.

Eight job variations were identified in this cluster of jobs. The key differentiating factors between these job types are based upon the specific SSILS/TACAN system maintained and the percent time spent maintaining the system. This difference is due largely to the location of the installation utilizing the system, its primary mission, system configuration, and utilization by agencies off base (i.e., civilian airports). For example, some members were identified as spending more time maintaining GRN-29 SSILS and marker beacons, while others spent more time performing maintenance on the GRN-29, Very High Frequency Omnidirectional Range (VOR), and TACAN systems. Hence, many of the tasks performed by members across different jobs within this cluster are highly similar. Some of the tasks most representative of the jobs of the 452 members of this cluster include:

- measure VSWR
- perform PMI on fixed TACAN systems
- test "bail out" alarm system
- adjust TACAN duplexers
- perform PMI on far field monitors
- inspect GRA-111 or TRN-26 monitor readouts
- measure AN/GRN-29 localizer course transmitter 90/150  
HZ percent of modulation
- perform AN/GRN-27 localizer ground checks

IX. JOB CONTROLLERS CLUSTER (STG104, N=14). Incumbents working within this cluster, comprised of both Weather and NAVAIDS personnel, have largely an administrative role. Fifty-seven percent are first-termers, and the majority have the 5-skill level (79 percent). Three-skill level members, regardless of career ladder, are not included in this job. Also, many members of this cluster do not perform maintenance tasks. Their primary function is to direct, monitor, and coordinate the implementation of the flying schedule and the scheduled/unscheduled maintenance. With paygrades ranging from E-3 to E-7, the primary difference between the two job variations within this cluster was due to the more senior members performing supervisory activities. Job Controllers perform a highly circumscribed job (21 tasks on the average). Tasks consuming a large percentage of their job time include:

- annotate AF Forms 264 (MMICS Job/Status Document)
- update equipment status boards
- coordinate repair activities with other agencies
- maintain charts, graphs, or status boards
- coordinate equipment cannibalization with other  
activities
- maintain preventive maintenance inspection (PMI)  
listings
- maintain vehicle control logs

X. MAINTENANCE STAFF PERSONNEL CLUSTER (STG042, N=130). This relatively large cluster (11 percent of survey sample) contains the largest percentage of senior NCOs from both Weather and NAVAIDS specialties (22 percent are 30270s and 61 percent are 30471s). The most dominant paygrade of members comprising this cluster is E-7 (42 percent). With members having 179 months average service time, only 3 percent are in their first enlistment. Several of the job variations identified within this cluster contain positions which are either appointed by or are directly responsible to the DCM. Jobs within the cluster vary based on the time spent on certain groupings of managerial tasks, such as inspecting tasks--typical of quality assurance; nonresident training tasks--typical of branch/unit maintenance trainers; and high-level staff functions--characteristic of functional/resource managers. While these variations are distinct, they all represent upper levels of maintenance management and incumbents share the responsibilities of planning, directing, scheduling, and controlling all maintenance resources to meet mission requirements. To accomplish this job, members perform 104 tasks on the average. Tasks representative of this group of managers include:

- draft correspondence
- analyze inspection report findings or survey results
- determine work priorities
- improve work methods or procedures
- interpret directives, policies, or procedures for subordinates
- evaluate inspection reports
- draft directives

As shown in Table 6 (percentage distribution of Weather and NAVAIDS personnel across specialty jobs), this job contains the second largest concentration of members from both specialties (8 percent of 302X0s; 14 percent of 304X1s).

XI. FLIGHT INSPECTION TECHNICIANS IJT (STG526, N=5). This small independent job type represents less than 1 percent of the total survey sample and roughly 1 percent of the AFSC 304X1 sample, as shown in Tables 4 and 6, respectively. All members performing this job have the 7-skill level and are primarily in paygrade E-6. With an average time in service of 167 months, none of these members are in their first enlistment. As a matter of fact, the seniority of these uniquely assigned technicians is second only to that described in the paragraph above for Maintenance Staff Personnel. The primary responsibility of incumbents performing this job is to conduct operational inspections of navigational aids equipment at Air Force bases having active runways; hence, all members have an "A" DAFSC prefix indicating their status as aircrew members. Seventy-two percent of their job time is spent performing flight inspections. An example of tasks most characteristic of this group include:

- perform aircrew position flight checklist procedures
- analyze flight inspection recordings
- perform airborne NAVAIDS flight inspection procedures
- determine flight inspection requirements
- plot flight facility coordinates on navigational charts
- brief aircrews on mission requirements

XII. TECHNICAL SCHOOL PERSONNEL CLUSTER (STG017, N=41). Seventy-eight percent of the members comprising this cluster (4 percent of survey sample) are assigned to Air Training Command, and most indicate Technical School as their functional area of assignment. Other job variations in this cluster included those members working in areas of technical writing (CDC writers) and maintenance training developers. While the largest concentration of members have the 5-skill level, most fall within paygrades of E-5 (46 percent) and E-6 (22 percent). Members performing this job, unlike those in the job described above, represent both Weather (5 percent of AFSC 302X0 sample) and NAVAIDS personnel (3 percent of AFSC 304X1 sample), having spent 114 months time in service and 29 months (on the average) in their present job. Fifty-one percent of their job time is devoted strictly to training activities. Some tasks most representative of their job are:

- conduct formal classroom instruction
- score tests
- review tests
- prepare lesson plans
- counsel personnel
- counsel trainees on training progress
- conduct resident technical training classes

#### Comparisons Among Specialty Jobs

While generally linked to the production element of maintenance, the jobs identified in the Weather and NAVAIDS combined career ladder structure vary in many respects. Some of these differences are based upon factors such as geographical location of the using operational unit, its mission, and the configuration of the weather or navigational aids equipment assigned. For example, NAVAIDS mobility units and tactical weather units have a mission inherently different from that of units maintaining primarily fixed NAVAIDS systems or weather equipment; hence, the types and configuration of equipment maintained is substantially different from those of units working on fixed systems. Also, differences exist between units performing on-equipment versus off-equipment maintenance. A large percentage of off-equipment and depot-level maintenance in AFSC 302X0 is delegated to centralized repair activities (CRA), while other operational units primarily perform on-equipment/organizational maintenance of assigned equipment. The impact of geographical location upon equipment configuration and maintenance tasks may be demonstrated by the fact that all LORAN C/D Maintenance Technicians (STG192) are located overseas, while all NAVAIDS Installation Personnel (ILS/TACAN) (STG180) are assigned to CONUS bases.

Of the 12 major jobs identified, the distribution of AFSC 302X0 and 304X1 personnel within those jobs is displayed in Table 6. The following three jobs are comprised of AFSC 302X0 members only: CRA Personnel (Tactical/Fixed Weather Equipment), Fixed Weather Equipment Maintenance Personnel, and Tactical Weather Equipment Maintenance Technicians. AFSC 304X1 personnel exclusively perform tasks related to four jobs: NAVAIDS Installation Personnel, LORAN C/D Maintenance Technicians, NAVAIDS Mobility Unit Personnel, and Flight Inspection Technicians. The five remaining jobs are representative of both Weather and NAVAIDS career ladder personnel. These findings suggest that the primary maintenance-oriented jobs within each of these career ladders are distinctively different. However, in some instances where Weather and NAVAIDS workcenters have merged, small percentages of AFSC 302X0 personnel are maintaining equipment common to NAVAIDS.

#### Job Structure Comparison to Previous Surveys

Occupational Survey Reports of the Weather Equipment and Navigation Aids Maintenance career ladders were last completed in April 1980 and July 1982, respectively. The previous surveys were unilateral studies. Each AFSC was analyzed separately for the purpose of updating entry-level career ladder training. The current OSR represents a joint survey of AFSC 302X0/304X1 career ladder members for the primary purpose of merging the two AFSCs (see Objectives of Study section of this report). The number of members included in the samples were relatively consistent: AFSC 302X0, N=557 in 1980 study, N=444 in current study; and for AFSC 304X1, N=706 in 1982 study, N=688 in current study. Likewise, jobs performed by incumbents in the previous surveys were highly similar to those performed by their counterparts in the current survey.

In the analysis of the AFSC 302X0 career ladder structure in the previous survey, 12 major jobs were identified. Jobs differed primarily by the level of maintenance performed on the assigned weather equipment, equipment specialization, and the performance of supervisory and managerial duties. The analysis of the AFSC 304X1 career ladder structure in July 1982 revealed 4 clusters and 7 independent job types (11 jobs). These findings for both previous studies are comparable to the 12 major jobs identified in the current survey (see Table 5). Some of the jobs in the previous OSRs, although still in existence, have been captured in broader job descriptions in the current survey. For example, in the current survey, the largest cluster comprised entirely of 302X0 personnel (Fixed Weather Equipment Maintenance Personnel) contains the same job variations identified as clusters or independent job types in the 1980 survey. Also, this same pattern of a more generalized description of the major jobs is depicted in the SSILS/TACAN Maintenance Personnel cluster, in which the four jobs of the 1982 survey are identifiable in the single description at the cluster level presently. These findings suggest that jobs within both AFSCs are moving toward more generalization instead of increased specialization, thereby supporting the rationale proposed for the intended merger of these two AFSCs. State-of-the-art equipment changes

TABLE 5  
COMPARISON OF MAJOR JOBS BETWEEN SURVEYS

<u>CURRENT SURVEY (N=1,132)</u>	<u>PREVIOUS SURVEYS</u> (AFSC 302X0, dated APRIL 1980; N=557) (AFSC 304X1, dated JULY 1982; N=706)
NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN SYSTEMS) IJT (1% OF SAMPLE)	NAVAIDS INSTALLATION IJT (4% OF 304X1 SAMPLE)
NAVAIDS SPECIALTY TEAMS CLUSTER (3% OF SAMPLE)	
-----	
CENTRALIZED REPAIR ACTIVITY IJT (TACTICAL/FIXED WEATHER EQUIPMENT) (1% OF SAMPLE)	CRA TACTICAL EQUIPMENT REPAIRMEN (1% OF 302X0 SAMPLE)
	CRA FIXED-INSTALLATION EQUIPMENT REPAIRMEN (5% OF 302X0 SAMPLE)
-----	
FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL CLUSTER (30% OF SAMPLE)	NONRADAR SURFACE EQUIPMENT MAINTENANCE PERSONNEL (13% OF 302X0 SAMPLE)
	SURFACE EQUIPMENT MAINTENANCE PERSONNEL (56% OF 302X0 SAMPLE)
	FIRST-LINE RADAR MAINTENANCE SUPERVISORS (2% OF 302X0 SAMPLE)
	UPPER AIR DATA AND SURFACE EQUIPMENT REPAIRMEN (1% OF 302X0 SAMPLE)
	SOLAR EQUIPMENT REPAIRMEN (2% OF 302X0 SAMPLE)
	QUALITY CONTROL/INSPECTION PERSONNEL (1% OF 302X0 SAMPLE)

TABLE 5 (CONTINUED)

COMPARISON OF MAJOR JOBS BETWEEN SURVEYS

<u>CURRENT SURVEY (N=1,132)</u>	<u>PREVIOUS SURVEYS</u> (AFSC 302X0, dated APRIL 1980; N=557) (AFSC 304X1, dated JULY 1982; N=706)
LORAN C/D MAINTENANCE TECHNICIANS IJT (1% OF SAMPLE)	LORAN MAINTENANCE IJT (5% OF 304X1 SAMPLE)
-----	-----
NAVAIDS MOBILITY UNIT PERSONNEL IJT (2% OF SAMPLE)	MOBILE TACAN MAINTENANCE PERSONNEL IJT (2% OF 304X1 SAMPLE)
-----	-----
SSILS/TACAN MAINTENANCE PERSONNEL CLUSTER (40% OF SAMPLE)	GENERAL NAVAIDS MAINTENANCE CLUSTER (49% OF 304X1 SAMPLE)
	AN/GRN-29 SSILS MAINTENANCE CLUSTER (5% OF 304X1 SAMPLE)
	AN/GRN-27 SSILS MAINTENANCE IJT (1% OF 304X1 SAMPLE)
	AIR DROPPABLE TACAN MAINTENANCE IJT (1% OF 304X1 SAMPLE)
-----	-----
JOB CONTROLLERS (1% OF SAMPLE)	JOB CONTROL IJT (4% OF 304X1 SAMPLE)
-----	-----
MAINTENANCE STAFF PERSONNEL CLUSTER (11% OF SAMPLE)	MAINTENANCE MANAGEMENT SUPERVISORS (2% of 302X0 SAMPLE)
	MAINTENANCE SUPERVISORS (2% of 302X0 SAMPLE)
	HEADQUARTERS STAFF PERSONNEL (2% OF 302X0 SAMPLE)
	MANAGEMENT CLUSTER (10% OF 304X1 SAMPLE)

TABLE 5 (CONTINUED)

COMPARISON OF MAJOR JOBS BETWEEN SURVEYS

	PREVIOUS SURVEYS
	(AFSC 302X0, dated APRIL 1980; N=557)
<u>CURRENT SURVEY (N=1,132)</u>	<u>(AFSC 304X1, dated JULY 1982; N=706)</u>
FLIGHT INSPECTION TECHNICIANS IJT (LESS THAN 1 PERCENT OF SAMPLE)	FLIGHT FACILITIES INSPECTION IJT (2% OF 304X1 SAMPLE)
-----	-----
TECHNICAL SCHOOL PERSONNEL CLUSTER (3% OF SAMPLE)	TECHNICAL TRAINING CLUSTER (5% OF 304X1 SAMPLE)
-----	-----
TACTICAL WEATHER EQUIPMENT MAINTENANCE TECHNICIANS IJT (1% OF SAMPLE) *	
	NONSOLID-STATE ILS MAINTENANCE IJT *
	(2% OF 304X1 SAMPLE)*
	UPPER AIR DATA EQUIPMENT DEPOT REPAIRMEN *
	(2% OF 302X0 SAMPLE)*

\* No comparable job identified

TABLE 6

DISTRIBUTION OF WEATHER EQUIPMENT AND NAVIGATION AIDS EQUIPMENT  
MAINTENANCE PERSONNEL ACROSS SPECIALTY JOBS

<u>SPECIALTY JOBS</u>	<u>AFSC 302X0 MEMBERS (N=444)</u>	<u>AFSC 304X1 MEMBERS (N=688)</u>
NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN SYSTEMS)	0%	1%
NAVAIDS SPECIALTY TEAMS	1%	4%
CENTRALIZED REPAIR ACTIVITY PERSONNEL (TACTICAL/ FIXED WEATHER EQUIPMENT)	2%	0%
FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL	75%	0%
TACTICAL WEATHER MAINTENANCE TECHNICIANS	2%	0%
LORAN C/D MAINTENANCE TECHNICIANS	0%	2%
NAVAIDS MOBILITY UNIT PERSONNEL	0%	3%
SSILS/TACAN MAINTENANCE PERSONNEL	2%	64%
JOB CONTROLLERS	2%	1%
MAINTENANCE STAFF PERSONNEL	8%	14%
FLIGHT INSPECTION TECHNICIANS	0%	1%
TECHNICAL SCHOOL PERSONNEL	5%	3%
NOT GROUPED	3%	7%

should allow for less specialization in the Weather and NAVAIDS career ladders moving towards a system level (rather than component level) approach to maintenance. However, as stated in the preceding paragraphs, the technically-oriented jobs are distinctively different in comparison across AFSCs.

#### Summary

In conclusion, this joint review of the Weather and Navigation Aids career ladder structure reveals that no substantial job changes have occurred since these AFSCs were last surveyed, notwithstanding advanced technological changes in equipment over the years. While the major technically-oriented jobs were primarily differentiated by the types of weather or navigation aids equipment maintained, it is interesting to note that major jobs identified in the last survey(s) are still in existence in the current survey in spite of the combined survey sample. However, the differences in tasks performed and time spent on those tasks by members of jobs identified in the previous surveys are less pronounced in major jobs identified in the current survey. Moreover, jobs in the current survey differed not only by the type of equipment maintained, but by the category of equipment maintained as well (i.e., fixed versus tactical). Data indicate that larger percentages of AFSC 302X0 personnel are performing tasks related to NAVAIDS equipment maintenance than vice-versa. This finding is notable due to the fact that relatively large percentages of both Weather and NAVAIDS respondents indicate their workcenters have been physically merged. The major portion of incumbents are maintaining equipment specific to their respective AFSC.

#### DAFSC AND AFR 39-1 SPECIALTY DESCRIPTION ANALYSES

In addition to analysis of the career ladder structure, an analysis of DAFSC groups is helpful in understanding each specialty. The DAFSC analysis compares the skill levels to identify similarities and differences in task performance. AFR 39-1 Specialty Descriptions are designed to provide a broad overview of the duties and responsibilities required at the various skill levels. The following discussion will first examine tasks performed by members in each DAFSC group, then compare these tasks and responsibilities to those described in the respective AFR 39-1 description. This information may be used to determine whether personnel are utilized in the manner specified by the AFR 39-1 Specialty Description, which reflects what career ladder personnel should be doing, and for considering changes to current training programs.

A comparison of duty and task performance between 3- and 5-skill level members of AFSC 302X0 and between DAFSCs 30431 and 30451 indicated the jobs they perform are essentially the same. Therefore, each specialty will be discussed as one group in this report. Duties and tasks performed by 7-skill level members in each AFSC will be discussed separately. While there is a straight career ladder progression up through DAFSC 30290, AFSC 304X1 shares 9-skill level personnel with seven related specialties. For purposes of this

study, jobs performed by 3- through 7-skill level members of each career ladder will be examined. Additional information on DAFSC groups will be provided in tables throughout this section of the report. A more detailed listing of representative tasks for skill-level groups may be found in Appendix B.

The distribution of skill-level groups across career ladder jobs is displayed in Table 7, while Table 8 presents the relative percent time spent on each duty across DAFSC groups. The heaviest concentration of Weather and NAVAIDS personnel is in jobs which demonstrate the move toward a less specialized approach to maintenance (i.e., Fixed Weather Equipment Maintenance Personnel and SSILS/TACAN Maintenance Personnel). Within each specialty, as personnel progress upward through the skill levels, the amount of time spent performing supervisory, inspecting, managerial, training, and administrative tasks (Duties A, B, C, D, and E) generally increases. At the same time, performance of technical tasks generally decreases (with the exception of Duty J for 30270 members) as the skill level increases. Also, a broad array of general maintenance functions (Duty F) are performed by substantial percentages of members across all skill levels.

#### Skill-Level Descriptions

DAFSCs 30230/30250. These personnel, representing 27 percent of the survey sample and 70 percent of AFSC 302X0 respondents, perform an average of 283 tasks, of which 183 tasks comprise 50 percent of their total job time. These incumbents spend approximately 70 percent of their job time on technical weather equipment maintenance duties, as illustrated in Table 8. A closer look at Table 8 reveals that members spend the vast majority of their job time (59 percent) performing general maintenance functions (more so than any other DAFSC group). Equal percentages of their job time are spent performing general maintenance administrative tasks and maintaining primarily fixed weather equipment, such as GMQ-20 wind bird, TMQ-11, GMQ-32, and FPS-77 radar. Likewise, Table 7 shows the highest concentration of these incumbents perform tasks related to the job described as Fixed Weather Equipment Maintenance Personnel in the previous section of this report. In the performance of their jobs, some of the most time-consuming tasks performed are:

- measure DC voltages
- initiate AFTO Forms 349 (Maintenance Data Collection Record)
- clean equipment electrical or mechanical components
- inspect equipment for corrosion
- replace electron tubes

Table 9 lists additional representative tasks performed by this group of airmen. Also, these tasks are most highly differentiating between 30230/30250 and 30270 incumbents based upon percent members performing and relative time spent on tasks. The indication of fewer members performing supervisory tasks is the key discerning factor. Commonality of task performance between this

TABLE 7  
DISTRIBUTION OF DAFSC PERSONNEL ACROSS SPECIALTY JOBS  
(PERCENT MEMBERS RESPONDING)

<u>JOB TITLE</u>	DAFSC 30230/ 30250 (N=310)	DAFSC 30270 (N=134)	DAFSC 30431/ 30451 (N=475)	DAFSC 30471 (N=213)
NAVAIDS INSTALLATION PERSONNEL (ILS/ TACAN SYSTEMS)	0%	0%	2%	0%
NAVAIDS SPECIALTY TEAMS	1	0%	5%	2%
CENTRALIZED REPAIR ACTIVITY PERSONNEL (TACTICAL/FIXED)	2%	1%	0%	0%
FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL	81%	62%	0%	0%
TACTICAL WEATHER MAINTENANCE TECHNICIANS	2%	1%	0%	0%
LORAN C/D MAINTENANCE TECHNICIANS	0%	0%	2%	*
NAVAIDS MOBILITY UNIT PERSONNEL	0%	0%	3%	1%
SSILS/TACAN MAINTENANCE PERSONNEL	1%	3%	71%	47%
JOB CONTROLLERS	1%	1%	1%	1%
MAINTENANCE STAFF PERSONNEL	2%	21%	3%	37%
FLIGHT INSPECTION TECHNICIANS	0%	0%	0%	2%
TECHNICAL SCHOOL PERSONNEL	5%	5%	3%	3%
NOT GROUPED	5%	6%	10%	7%

\* Denotes less than one percent

TABLE 8

## AVERAGE PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTIES	DAFSC	DAFSC	DAFSC	DAFSC
	30230/ 30250 (N=310)	30270 (N=134)	30431/ 30451 (N=475)	30471 (N=213)
A ORGANIZING AND PLANNING	2	6	2	9
B DIRECTING AND IMPLEMENTING	3	8	3	9
C INSPECTING AND EVALUATING	3	11	3	15
D TRAINING	3	7	4	8
E PERFORMING GENERAL MAINTENANCE MANAGEMENT AND ADMINISTRATIVE FUNCTIONS	11	14	10	13
F PERFORMING GENERAL MAINTENANCE FUNCTIONS	59	42	36	18
G MAINTAINING NONELECTRONIC METEOROLOGICAL INSTRUMENTS AND SOLID-STATE BAROMETERS	3	2	*	*
H PERFORMING MAINTENANCE FUNCTIONS ON WIND, TEMPERATURE, VISIBILITY, AND CLOUD SETS	11	6	*	*
I PERFORMING MAINTENANCE FUNCTIONS ON WIND, TEMPERATURE, AND CLOUD TACTICAL WEATHER EQUIPMENT	1	*	*	*
J PERFORMING MAINTENANCE FUNCTION ON SOLAR OPTICAL AND RADIO OBSERVING EQUIPMENT	1	2	0	0
K PERFORMING MAINTENANCE FUNCTIONS ON METEOROLOGICAL WEATHER RADAR	2	1	*	*
L PERFORMING MOBILITY REQUIREMENTS	*	0	*	0
M INSTALLING AND REMOVING FIXED OR MOBILE NAVAIDS EQUIPMENT	*	*	3	1
N MAINTAINING TEST EQUIPMENT	*	*	1	1
O MAINTAINING LOW FREQUENCY (LFB) SYSTEMS	0	*	*	*
P MAINTAINING AN/GRN-27 SOLID-STATE INSTRUMENT LANDING SYSTEMS (SSILS)	*	*	9	7
Q MAINTAINING AN/GRN-29 SSILS	*	*	9	4
R MAINTAINING MARKER BEACONS	*	*	*	*
S MAINTAINING VHF OMNIRANGE SYSTEMS	*	*	3	1
T MAINTAINING TACTICAL AIR NAVIGATION (TACAN) MONITORING GROUPS	*	*	4	3
U MAINTAINING TACAN TRANSPONDERS	*	*	12	7
V MAINTAINING AN/TRN-26 TACAN SYSTEMS	*	0	*	*
W MAINTAINING AN/TRN-41 TACAN SYSTEMS	*	*	*	*
X OPERATING AND MAINTAINING LORAN C/D SYSTEMS	0	0	*	*
Y PERFORMING FLIGHT INSPECTIONS	0	0	*	2

\* Less than 1 percent

TABLE 9

DISPLAY OF REPRESENTATIVE TASKS FOR 302X0 DAFSC GROUPS, DIFFERENCES BETWEEN THE GROUPS, AND COMPARISONS TO 304X1 DAFSC GROUPS (PERCENT MEMBERS RESPONDING)

TASKS	30230/30250 (N=310)	30270 (N=134)	DIFF	30431/30451 (N=475)	30471 (N=213)
H825 ADJUST TMQ-11 TEMPERATURE INDICATION	75	48	27	2	1
H846 CHECK TMQ-11 DEWPOINT ELEMENT	75	49	25	3	1
H880 PERFORM TURN-ON/OFF PROCEDURES FOR TMQ-11 AND CHECK FOR NORMAL INDICATIONS	76	51	25	3	2
H887 TEST AND ADJUST GMQ-20 WIND SPEED AND DIRECTION TRANSMITTER	73	49	24	3	2
H836 CHECK GMQ-20 DIRECTION TRANSMITTER FOR PROPER ORIENTATION	73	50	23	5	3
H868 ISOLATE MALFUNCTIONS IN TMQ-11 TRANSMITTER	70	48	22	1	2
F384 CLEAN EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	81	61	20	60	36
G796 INSPECT ML-658 DIGITAL BAROMETERS	67	49	18	2	4
F533 MEASURE DC VOLTAGES	87	69	18	81	49
*****					
B55 DRAFT CORRESPONDENCE	16	70	-54	16	68
C129 WRITE APR	27	75	-48	29	71
A34 PLAN WORK ASSIGNMENTS OR WORKLOADS	19	65	-46	19	54
B64 INTERPRET DIRECTIVES, POLICIES, OR PROCEDURES FOR SUBORDINATES	23	68	-45	19	62
E233 MAINTAIN ADMINISTRATIVE FILES	24	60	-36	22	46
C74 ANALYZE INSPECTION REPORT FINDINGS OR SURVEY RESULTS	17	50	-33	17	68
C75 ANALYZE TRENDS IN SYSTEM PERFORMANCE OR MALFUNCTIONS	16	63	-32	26	59
C112 EVALUATE TECHNICAL ORDER IMPROVEMENT REPORTS	8	38	-30	7	32
C120 INSPECT MODIFICATION KIT INSTALLATIONS	10	33	-23	14	39

group and their counterparts in the NAVAIDS specialty appears to lie primarily in generalized maintenance activities. Likewise, Table 11 displays weather equipment commonly maintained by 302X0 personnel. DAFSC 30230/30250 airmen show higher percentages maintaining than any other skill-level group included in the survey. Fifty-one percent of these airmen indicate they perform duties in workcenters that have been physically merged with NAVAIDS workcenters. This may account for the small percentage of 30230/30250 members performing maintenance on NAVAIDS equipment (see Table 12).

AFR 39-1 Specialty Description. Data gathered from 30230/30250 career ladder personnel were compared to the pertinent AFR 39-1 Specialty Description, dated 1 February 1988. While the crux of the description is accurate, one area involving installation and removal of meteorological equipment may require review. Members in this DAFSC group show low percentages performing tasks related to "determining position for equipment according to plans, diagrams, and specifications", such as: determine proper location to set up equipment or develop interservice agreements for in-site survey for equipment installation as related to paragraph 10 in the current Specialty Training Standard (STS) (see TRAINING ANALYSIS section).

DAFSC 30270. While the greater performance of supervisory tasks separates this group from their junior counterparts (see Table 9), the heaviest concentration of their job time (42 percent) is spent performing general maintenance functions (Duty F; see Table 8). Hence, their job is broader in scope (performing 329 tasks on the average) than 3-/5-skill level Weather Maintenance personnel, but comparable in range to 7-level NAVAIDS members. The performance of many supervisory tasks show large percentages of 7-skill level members performing across both AFSCs (see Tables 9 and 10). The bulk of these airmen are identified in jobs such as Fixed Weather Equipment Maintenance Personnel and Maintenance Staff Personnel, as shown in Table 7. Also note, a small percentage of these highly skilled incumbents (3 percent) were identified performing the job of SSILS/TACAN Maintenance. Forty-four percent of these 7-skill level incumbents are assigned to workcenters that are merged with NAVAIDS.

AFR 39-1 Specialty Description. The February 1988 AFSC 30270 Specialty Job Description accurately describes the job reported by DAFSC 30270 (Weather Equipment Technicians) occupational survey respondents. The supervisory and technical nature of their jobs are reflected in the major duties and responsibilities outlined in the description. Although a very small number of 7-skill level incumbents are performing maintenance on NAVAIDS specific equipment (see Table 12), taken alone, these data are not substantial enough to warrant a revision to AFR 39-1.

DAFSCs 30431/30451. The combined 3-/5-skill level of the NAVAIDS career ladder comprises the largest percentage of the survey sample (42 percent). With an average time in service of 58 months, 57 percent of these airmen are in their first enlistment. Three percent have the DAFSC prefix of T, indicating they are resident school instructors.

TABLE 10

DISPLAY OF REPRESENTATIVE TASKS FOR 304X1 DAFSC GROUPS, DIFFERENCES BETWEEN THE GROUPS, AND COMPARISONS TO 302X0 DAFSC GROUPS (PERCENT MEMBERS RESPONDING)

TASKS	30431/30451 (N=475)	30471 (N=213)	DIFF	30230/30250 (N=475)	30270 (N=213)
F386 CLEAN SOLDERING EQUIPMENT	70	35	35	85	66
F536 MEASURE OUTPUT POWER	80	50	30	69	60
F329 ADJUST PERCENT OF MODULATION	55	28	27	20	16
F469 INSTALL SOLDERLESS CONNECTORS	66	42	24	53	49
U1794 MEASURE TACAN ANTENNA ROTATION SPEEDS	64	40	24	3	2
Q1454 CLEAN AN/GRN-29 GLIDESLOPE EQUIPMENT CABINET, SHELTER, AND FILTERS	51	28	23	2	1
F613 PERFORM PMI ON FIXED TACAN SYSTEMS	65	42	23	7	4
T1696 CLEAN GRA-111 OR TRN-26	56	35	21	3	2
F612 PERFORM PMI ON FAR FIELD MONITORS	59	38	21	6	0
*****					
B55 DRAFT CORRESPONDENCE	16	68	-52	16	70
C131 WRITE REPLIES TO INSPECTION REPORTS	14	58	-44	20	63
C129 WRITE APR	29	71	-42	27	75
A26 ESTABLISH WORK PRIORITIES OR SCHEDULES	19	62	-43	19	62
A4 DETERMINE WORK PRIORITIES	38	74	-36	33	65
A34 PLAN WORK ASSIGNMENTS OR WORKLOADS	19	54	-35	19	65
A20 ESTABLISH PERFORMANCE STANDARDS	9	43	-34	10	48
D159 EVALUATE OJT TRAINERS	7	34	-27	26	58
C119 INSPECT FACILITIES	37	63	-26	28	57

TABLE 11

WEATHER EQUIPMENT MAINTAINED BY DAFSC GROUPS  
(30 PERCENT OR MORE MEMBERS MAINTAINING)

<u>EQUIPMENT</u>	DAFSC 30230/ 30250 (N=310)	DAFSC 30270 (N=134)	DAFSC 30431/ 30451 (N=475)	DAFSC 30471 (N=213)
ANEROID BAROMETER	69	51	4	4
BAROGRAPH	54	38	2	2
CLOUD HEIGHT MEASURING SET, GMQ-13	81	56	9	7
DIGITAL BAROMETER ML-658 GM	70	52	4	5
MEASURING SET TMQ-11	80	54	7	6
RADAR SET FPS-77	58	44	6	5
RAIN GAUGE ML-17	66	48	5	5
RUNWAY VIS RANGE COMPUTER SET FMN-1	45	29	3	2
SLING PSYCHROMETER ML-24	67	49	4	5
TRANSMISSOMETER GMQ-32	66	49	5	6
WIND MEASURING SET GMQ-20	77	55	12	7

TABLE 12

NAVIGATION AIDS EQUIPMENT MAINTAINED  
(20 PERCENT OR MORE MEMBERS MAINTAINING)

<u>EQUIPMENT</u>	DAFSC 30431/ 30451 (N=475)	DAFSC 30471 (N=213)	DAFSC 30230/ 30250 (N=310)	DAFSC 30270 (N=134)
RADIO BEACON COMPASS SYSTEMS	23	24	9	6
SOLID-STATE INSTRUMENT LANDING SYSTEMS (SSILS)				
AN/GRN-27 NULL REFERENCE GLIDESLOPE	31	23	4	2
AN/GRN-27 PARABOLIC ANTENNA	29	23	4	2
AN/GRN-29 CAPTURE EFFECT GLIDESLOPE	32	20	6	2
AN/GRN-29 NULL REFERENCE GLIDESLOPE	39	27	5	1
MARKER BEACON SYSTEMS				
AN/GRN-28	21	14	4	2
TACTICAL AIR NAVIGATION (TACAN) SYSTEMS				
AN/GRN-19A	35	26	7	4
AN/GRN-20C	20	18	5	3
VHF OMNIRANGE (VOR) AND TERMINAL VHF OMNIRANGE (TVOR) SYSTEMS				
AN/FRN-31	19	13	5	3

As displayed in Table 7, the largest portion of 30431/30451 members are performing tasks related to the job of SSILS/TACAN Maintenance (71 percent), while the next highest percentage are in NAVAIDS Specialty Teams. Table 10 displays those tasks performed by substantial percentages of 3-/5-skill level members, while highlighting differences between members across other skill-level groups. Again, only those tasks pertaining to general maintenance functions are shared by substantial percentages of 302X0 personnel. These airmen perform 358 tasks on the average, of which 50 percent of their total job time is spent on 289 tasks. Some of the most typical tasks performed by this group are:

- maintain charts, graphs, or status boards
- inspect equipment for corrosion
- perform PMI on localizers
- perform PMI on fixed TACAN systems
- analyze indications of built-in-test-equipment (BITE)
- measure TACAN transmitter power outputs

While 60 percent of these airmen indicate they work in areas that have combined workcenters with Weather, 58 percent indicate they do not perform maintenance on conventional weather equipment (see Table 11). Table B3 in the Appendix also presents additional task information for this group.

AFR 39-1 Specialty Description. The major duties and responsibilities for 30431/30451 as outlined in the February 1988 AFR 39-1 description closely parallels those actually performed by these members in the field. However, two areas, paragraphs a and b involving installing fixed navigational aids equipment and deployment of mobile equipment, may require review. Few AFSC 304X1 members perform installation and removal of fixed or mobile NAVAIDS equipment--those who do are primarily in the jobs of NAVAIDS Installation Personnel, NAVAIDS Specialty Teams, or NAVAIDS Mobility Unit Personnel, accounting for 10 percent of all 30431/30451 personnel. (NOTE: These jobs are dominated by AFSC 30451 members, as shown in Table 4 (see discussion of Specialty Jobs section)).

DAFSC 30471. Nineteen percent of the survey sample have DAFSC 30471 (31 percent of AFSC 304X1 survey sample). Similar to 7-skill level members of the Weather Equipment AFSC, these incumbents have an average time in service of 162 months and 27 months on their present job. They perform 325 tasks on the average, with 201 tasks occupying 50 percent of their total job time. The dual-scope of their job is exemplified by data showing 47 percent of 30471 members in the job of SSILS/TACAN Maintenance and 37 percent performing Maintenance Staff functions (see Table 7). The majority of these members supervise three subordinates, on the average. In addition to the supervisory activities (Table 10), these incumbents spend more time on inspecting/evaluating and training than any other skill-level group in the survey sample. Like most other DAFSC groups, 30471 members spend a large portion of their job time performing general maintenance functions primarily related to inspections

or operational checks of equipment (see Table B4 in the Appendix B of this report). While 47 percent indicate they are assigned to a merged workcenter, 62 percent indicate they do not maintain any weather equipment in their present job.

AFR 39-1 Specialty Description. The February 1988 specialty description for 30471 personnel is highly similar to AFR 39-1 for 30431/30451, having identical major duty areas. Again, as described in the discussion for 3-/5-skill level NAVAIDS personnel, the performance of some tasks related to paragraph 2a (Installs fixed navigational aids equipment) and 2b (Deploys and activates transportable and mobile navigational aids equipment) show low percentages of 30471 members performing. The remainder of the specialty description accurately reflects the primary duties and responsibilities of 7-skill level NAVAIDS technicians as they are currently utilized.

#### Equipment Utilization by DAFSC Groups

Table 13 lists test equipment maintained by 30 percent or more 302X0 or 304X1 DAFSC personnel included in our survey sample. Of the 124 items of test equipment listed in the job inventory, 27 items (22 percent) show substantial percentages of both 302X0 and 304X1 members utilizing. It is interesting to note, while substantial percentages of both Weather and NAVAIDS respondents indicate they are involved in cross-utilization training (CUT) and their workcenters have been physically merged with each other, few members are working on equipment outside their designated AFSC.

#### Summary of DAFSC and AFR 39-1 Analyses

Generally, the DAFSC analysis reflects the trend toward decreased maintenance specialization identified in the analysis of specialty jobs for AFSCs 302X0 and 304X1. This was made evident in the hierarchical grouping process whereby larger percentages of members in both career ladders fell into jobs in which generalized maintenance skills are highly utilized--Fixed Weather Equipment Maintenance Personnel for AFSC 302X0 members and SSILS/TACAN Maintenance Personnel for AFSC 304X1 members. Hence, members across all DAFSC groups spend the vast majority of their job time performing tasks related to the general maintenance function, as displayed in Table 8. On the other hand, tasks having a specific career ladder orientation are not performed by substantial percentages of members outside that career ladder (see Tables 9 and 10). Also, some career ladder specific tasks related to maintaining certain equipment items show low percent members performing within that AFSC. While Tables 11 and 12 display common weather and NAVAIDS equipment maintained by career ladder members, other weather items (i.e., tactical weather equipment, solar optical and radio observing equipment, and TPS-68 radar) and NAVAIDS items (i.e., low frequency beacons, marker beacons, AN/TRN-26, and AN/TRN-41) show low percent members maintaining across all DAFSC groups. Still, career ladder progression through AFSCs 302X0 and 304X1 is well defined.

TABLE 13

EXAMPLES OF TEST EQUIPMENT UTILIZED BY  
WEATHER AND NAVAIDS PERSONNEL  
(30 PERCENT OR MORE PERCENT MEMBERS PERFORMING)

TEST EQUIPMENT	DAFSC	DAFSC	DAFSC	DAFSC
	30230 30250 (N=310)	30270 (N=134)	30431 30451 (N=475)	30471 (N=213)
AMMETER, CLAMP-ON	72	60	11	10
* AMMETER, PORTABLE	33	24	34	11
ATTENUATOR, FIXED	13	19	50	39
* ATTENUATOR, IN-LINE	19	29	67	49
ATTENUATOR, SWITCHABLE	15	26	41	35
* ATTENUATOR, VARIABLE	31	34	65	46
ANALYZER, DISTORTION	1	5	27	30
ANALYZER, SPECTRUM	16	24	83	54
AUDIO OSCILLATOR	16	26	36	34
* COMPASS	24	31	27	31
* COUNTER, ELECTRONIC DIGITAL	48	47	70	55
* COUNTER, ELECTRONIC FREQUENCY	73	60	85	59
DECADE RESISTOR	30	37	5	5
* DETECTOR CRYSTAL	29	27	64	49
DETECTOR, PORTABLE FIELD (ILS)	3	**	75	56
* DETECTOR, RF	27	34	66	44
DIFFERENTIAL VOLTMETER	10	8	55	48
* DIGITAL MULTIMETER	92	73	92	63
* DIRECTIONAL COUPLER	51	41	82	55
* DUMMY LOAD	57	45	89	63
HYDROMETER	7	5	48	41
* HIGH VOLTAGE PROBE	85	63	41	31
METER, MODULATION	4	3	45	36
* THERMISTOR, (BOLOMETER)	57	49	41	42
* VOLTMETER, DIGITAL	74	59	79	53
WATTMETER	12	14	78	55

\* Denotes commonality across AFSCs

\*\* Less than 1 percent

A review of AFR 39-1 Specialty Descriptions for each of the DAFSCs included in the survey sample, indicates some minor adjustments may be required to capture major duties and responsibilities currently performed by respective skill-level personnel in the field. Additionally, DAFSC group data must be reviewed cumulatively to identify necessary areas to be incorporated in descriptions of the merged AFSCs. Overall, as current data reflect, members in the Weather and NAVAIDS AFSCs are functioning independently of each other; however, there are some areas of commonality in the performance of general maintenance functions.

#### ANALYSIS OF CONUS VERSUS OVERSEAS GROUPS

Comparisons were made of the tasks performed and background data for the DAFSC 30250 (Weather Equipment) and 30451 (NAVAIDS) personnel assigned to the Continental United States (CONUS) versus the members assigned to overseas locations. Excluding some minor differences in equipment maintained, the jobs performed by CONUS and overseas members in each of the specialties were essentially the same. Job satisfaction indicators of job interest and perceived utilization of talents and training were also highly similar across both groups.

In the review of data provided by 5-skill level Weather respondents in CONUS and overseas locations, it was noted that a larger percentage of overseas members (nearly twice as many) spend time maintaining the TMQ-15 (tactical dewpoint) measuring set, as do their counterparts assigned to CONUS locations. On the other hand, DAFSC 30250 CONUS members spend more time working on primarily fixed weather equipment, such as the FMQ-8 (new item replacing TMQ-11 measuring set) and FPS-77 radar. There were no appreciable differences noted between the two groups in utilization of test equipment. Both groups spend the vast majority of their job time performing general maintenance, administrative, and maintenance functions on wind, temperature, visibility, and cloud sets. As customarily found in studies of differences between CONUS and overseas groups, overseas members have more time in service than CONUS personnel (81 months TAFMS versus 58 months TAFMS). These findings correspond with information presented in the Analysis of Specialty Jobs section in which a large percentage of members comprising the job of Tactical Weather Equipment Maintenance Technicians are 5-skill level members stationed overseas.

Twenty-two percent of all DAFSC 30451 personnel are assigned to overseas locations. Although no major differences in task performance were noted between the two groups, some slight variations in equipment maintained were identified. While larger percentages of overseas members spend more time maintaining TRN-41 (TACAN), TRN-26 (TACAN), and GRN-29 (SSILS) systems, their counterparts stationed within CONUS spend very little time maintaining the two TACAN systems and spend almost equal amounts of time maintaining GRN-29 and GRN-27 SSILS(s). In addition, a small number of overseas members maintain LORAN C/D systems, while the equivalent function/equipment is not performed in

CONUS. As mentioned in the earlier discussion of differences in specialty jobs, these differences in equipment maintained may be attributed to geographical location, equipment configuration, and primary mission of the installation.

## TRAINING ANALYSIS

Occupational survey data are one of the many sources of information that can be used as a guide in developing training programs for first-termers. Information gathered from the following factors used in conjunction may be helpful in evaluating current training and for establishing baselines for projected training: (1) the overall description of the job being performed by first-enlistment personnel within each specialty; (2) percentages of members performing specific tasks or maintaining certain systems or equipment items, and (3) training emphasis and task difficulty ratings.

As stated in the INTRODUCTION of this report, one of the major objectives for conducting this survey was to provide information to be used in designing training programs for the eventually merged 302X0 and 304X1 AFSCs. Training emphasis (TE) and task difficulty (TD) ratings were independently collected from AFSCs 302X0 and 304X1 NCOs and analyzed in several different ways. The collection of TE and TD data in this manner was deemed necessary to provide an accurate and comprehensive review of the Specialty Training Standard for each AFSC separately and cumulatively. Training emphasis ratings provided by AFSC 302X0 subject-matter experts yielded an average rating of 1.40, with a standard deviation of 1.66. Hence, in the discussion of AFSC 302X0 personnel, tasks having a rating of 3.06 (average TE + 1 standard deviation) or better are considered highly recommended for some method of structured training. Likewise, in the review of data pertinent to AFSC 304X1 members only, tasks with TE ratings of 3.34 (average 1.82 + 1.52 standard deviation) are considered most important for first-term training. Finally, in the review of training documents from the cumulative perspective of all raters (AFSCs 302X0 and 304X1) included in the survey (N=102), tasks with TE ratings of 2.81 (average of 1.59 + 1.22 standard deviation) or better should be highly considered for structured training. Although TD ratings were also gathered independently, all TD ratings are adjusted to an average of 5.00 and a standard deviation of 1.00, regardless of career ladder orientation of the task. Tasks of 3.00 or better are perceived as difficult enough to warrant centralized training. (NOTE: The appropriate use of TE and TD ratings will be demonstrated in the following discussions of relevant career ladder training documents.)

### Discussion of AFSC 302X0 Task Factor Data

Tables 14 and 15, respectively, list representative tasks upon which 55 Weather subject-matter experts agree require some form of structured training for first-termers and are the most difficult for an average airman to learn to perform proficiently. As Table 14 portrays, the majority of tasks rated

TABLE 14

EXAMPLES OF TASKS RATED HIGHEST IN TRAINING EMPHASIS FOR 302X0 PERSONNEL  
(1 SD OR HIGHER ABOVE AVERAGE)

TASKS	TNG EMPH*	PERCENT PERFORMING		TASK DIFF**
		1ST JOB (N=90)	1ST ENL (N=167)	
F489 ISOLATE MALFUNCTIONS IN POWER SUPPLIES	7.04	81	80	6.04
F483 ISOLATE MALFUNCTIONS IN ELECTRICAL CIRCUITS	6.78	83	82	6.12
F364 ALIGN RANGE HEIGHT INDICATOR (RHI)	6.33	68	69	7.21
F485 ISOLATE MALFUNCTIONS IN MECHANICAL ASSEMBLIES	6.29	66	72	5.55
H859 ISOLATE MALFUNCTIONS IN GMQ-20 SPEED SYSTEMS	6.13	70	74	4.56
G813 PERFORM OPERATIONAL CHECKS ON ML-658	6.11	64	65	3.99
H858 ISOLATE MALFUNCTIONS IN GMQ-20 DIRECTION SYSTEM	6.07	68	72	4.98
G808 ISOLATE MALFUNCTIONS IN ML-658 DISPLAY CARDS (SEVEN SEGMENT DISPLAY)				
H860 ISOLATE MALFUNCTIONS IN RUNWAY SELECTING SYSTEMS	5.85	32	30	6.03
H836 CHECK GMQ-20 DIRECTION TRANSMITTER FOR PROPER ORIENTATION	5.80	38	37	6.12
F356 ALIGN AFC CIRCUITS	5.78	60	63	4.31
F366 ALIGN SWEEP PRESENTATION TO ANTENNA POSITION	5.73	60	60	5.98
F357 ALIGN AMPLITUDE RANGE INDICATOR (A/R)	5.73	62	63	6.00
E219 INITIATE AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	5.65	69	68	5.83
H856 ISOLATE MALFUNCTIONS IN GMQ-13 PROJECTOR MECHANICAL SYSTEM	5.64	78	79	4.38
F383 CHECK ANTENNA SYSTEM BACKLASH OR MECHANICAL PLAY	5.55	60	65	5.04
H874 PERFORM GMQ-32 OPERATIONAL CHECKS	5.53	68	69	5.53
H846 CHECK TMQ-11 DEWPOINT ELEMENT	5.49	70	68	4.12
K1074 ISOLATE MALFUNCTIONS IN FPS-77 INTENSITY COMPENSATION AND FOCUS MODULE	5.15	83	80	4.49
	5.04	37	44	6.15

\* Average Training Emphasis = 1.40 with SD of 1.66

\*\* Average Task Difficulty = 5.00 with SD of 1.00

TABLE 15

EXAMPLES OF TASKS RATED HIGHEST IN DIFFICULTY FOR AFSC 302X0 PERSONNEL  
(1 SD OR HIGHER ABOVE AVERAGE)

TASKS	TASK DIFF**	TNG EMPH**	PERCENT MEMBERS PERFORMING	
			1ST ENL (N=167)	30250 (N=235)
Q1484 ISOLATE AN/GRN-29 LOCALIZER DISTRIBUTION UNIT MALFUNCTIONS	8.95	.31	1	1
K1060 ADJUST TPS-68 MODULATOR CURRENT LIMIT CIRCUITRY	8.49	.58	1	2
M1123 INSTALL VERY HIGH FREQUENCY (VHF) OMNIRANGE AND TACTICAL AIR NAVIGATION (VORTAC) SYSTEMS	7.89	.15	0	0
T1686 ALIGN AN/GRA-111 OR TRN-26 MONITOR REPLY INPUTS	7.56	4.04	1	2
H826 ALIGN FMN-1 DRUM ASSEMBLY	7.51	4.04	39	38
T1714 REPLACE AN/GRA-111 ANTENNA TRANSFER UNITS	7.25	.64	1	2
F364 ALIGN RANGE HEIGHT INDICATOR (RHI)	7.21	6.33	69	66
H885 REPLACE FMN-1 FILM CODE	7.02	3.51	31	30
J951 ALIGN FMQ-7 VIDEO METER	6.93	.22	1	2
C129 WRITE APR	6.84	2.05	3	35
F626 PERFORM SOLAR BORESIGHT PROCEDURES	6.73	.22	1	2
F304 ADJUST ANTENNA TO CORRECT SOLAR BORESIGHT ERRORS	6.63	4.84	50	58
M1110 CONDUCT PREINSTALLATION SURVEYS	6.57	.05	0	0
F362 ALIGN PLAN POSITION INDICATOR	6.51	5.65	65	62
B47 COUNSEL PERSONNEL	6.49	1.71	10	44
F477 ISOLATE MALFUNCTIONS IN ANTENNA CONTROL CIRCUITRY	6.41	5.33	56	60
H853 ISOLATE MALFUNCTIONS IN FMN-1 ELECTROMAGNETIC DISPLAY	6.41	3.36	22	27
F402 ISOLATE MALFUNCTIONS IN RF RECEIVERS	6.40	4.06	35	42
F404 DETERMINE KLYSTRON RESIDUAL FREQUENCY MODULATION	6.40	1.15	25	17
F508 ISOLATE MALFUNCTIONS IN TUBE AFC UNIT CIRCUITRY	6.36	5.36	49	51
F301 ADJUST ANTENNA ELEVATION LINEARITY	6.35	5.36	62	58
J1033 REPLACE FMQ-7 OPTICS	6.29	.22	1	2
F486 ISOLATE MALFUNCTIONS IN OPERATIONAL AMPLIFIERS	6.22	5.71	47	48
K1074 ISOLATE MALFUNCTIONS IN FPS-77 INTENSITY COMPENSATION AND FOCUS MODULE	6.15	5.04	44	43
F483 ISOLATE MALFUNCTIONS IN ELECTRICAL CIRCUITS	6.12	6.78	82	76

\* Average Task Difficulty = 5.00 with SD of 1.00

\*\* Average Training Emphasis = 1.40 with SD of 1.66

highest in training emphasis pertain to isolating malfunctions and performing alignments and operational checks of conventional meteorological equipment. In addition, these tasks are performed by substantial percentages of first-enlistment personnel. On the other hand, many tasks rated highest in difficulty by AFSC 302X0 NCOs relate to equipment maintained by few Weather Equipment personnel, overall. Table 15 lists some of these tasks which pertain to equipment not specific to AFSC 302X0 (i.e., SSILS or TACAN systems) or which have low percent members performing (i.e., solar and tactical weather equipment) among first-enlistment airmen and subsequent skill-level groups. As expected, most of these tasks are rated relatively low in training emphasis. These findings coincide with the information presented in the section on analysis of SPECIALTY JOBS, which revealed larger percentages of AFSC 302X0 personnel performing general maintenance tasks on fixed, conventional weather equipment, while smaller percentages work in areas such as CRA maintenance, tactical weather equipment maintenance, or solar environmental support systems.

#### Discussion of AFSC 304X1 Task Factor Data

In the review of task factor information pertinent to AFSC 304X1, Tables 16 and 17 provide similar data as described above. Tasks rated highest in TE (Table 16) by the 49 AFSC 304X1 raters indicate those tasks referencing activities, such as alignments, adjustments, and isolating malfunctions on the newer SSILS system (AN/GRN-29), TACAN monitoring groups (GRA-111), and other general maintenance tasks, deserve some form of common structured training. These high task ratings coincide with the high performance by first-termers in the field. As shown in Table 17, many tasks rated highest in difficulty show lower percentages of first-termers performing activities such as supervisory and training, maintaining LORAN C/D and GRN-27 systems, or installing and removing NAVAIDS equipment. A noticeable comparison between Tables 16 and 17 shows that, while tasks related to AN/GRN-29 SSILS received higher TE ratings, tasks pertaining to AN/GRN-27 are more difficult to learn to perform proficiently. Reportedly, this difference may be attributed to the fact that the AN/GRN-29 is a newer, highly reliable system with longer mean-time-to-failure intervals than the AN/GRN-27 SSILS. Information discussed in the sections on SPECIALTY JOBS and the ANALYSES OF DAFSC GROUPS/AFR 39-1 SPECIALTY DESCRIPTIONS corresponds with the findings presented here. For example, the performance of activities such as removal and installation of NAVAIDS equipment and maintaining tactical NAVAIDS equipment is limited to a small portion of the AFSC 304X1 career ladder personnel (usually in functional areas such as E&I or MOB units).

#### Discussion of Combined (AFSCs 302X0 and 304X1) Task Factor Data

Examples of task factor data for the combined sample of AFSCs 302X0 and 304X1 personnel with cumulative ratings by subject-matter experts are provided in Tables 18 and 19. As expected, tasks receiving the highest TE ratings and performed by large percentages of members (cumulatively) pertain to general maintenance functions. While a large number of tasks receiving high TE ratings were AFSC specific, it appears more AFSC 302X0 tasks received higher

TABLE 16

EXAMPLES OF TASKS RATED HIGHEST IN TRAINING EMPHASIS FOR AFSC 304X1 PERSONNEL  
(1 SD OR HIGHER ABOVE AVERAGE)

TASKS	TNG EMP*	PERCENT PERFORMING			TASK DIFF**
		1ST JOB (N=105)	1ST ENL (N=270)		
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	6.12	56	64	4.03	
F530 MEASURE ANTENNA VSWR	6.10	63	74	4.66	
Q1489 ISOLATE AN/GRN-29 LOCALIZER SYSTEM MALFUNCTIONS TO MAJOR SUBASSEMBLIES, SUCH AS TRANSMITTERS OR POWER SUPPLIES	6.04	24	42	5.07	
F563 PERFORM FLIGHT CHECK GROUND PROCEDURES	6.02	64	74	5.92	
F613 PERFORM PMI ON FIXED TACAN SYSTEMS	6.00	64	70	5.82	
F614 PERFORM PMI ON GLIDESLOPES	5.90	66	72	5.49	
U1781 ISOLATE TACAN SYSTEM MALFUNCTIONS TO MAJOR SUBASSEMBLIES	5.90	43	55	5.47	
Q1511 PERFORM AN/GRN-29 GLIDESLOPE FLIGHT CHECK GROUND PROCEDURES	5.88	33	47	6.30	
F615 PERFORM PMI ON LOCALIZERS	5.82	65	70	5.56	
F541 MEASURE RF FREQUENCIES	5.67	57	66	4.13	
E221 INITIATE AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	5.45	63	67	3.73	
T1705 ISOLATE AN/GRA-111 SYSTEM MALFUNCTIONS TO MAJOR SUBASSEMBLIES SUCH AS MONITORS OR BUILT-IN TEST EQUIPMENT	5.45	30	45	5.92	
F533 MEASURE DC VOLTAGES	5.43	88	85	3.19	
U1780 ISOLATE TACAN RECEIVER MALFUNCTIONS	5.43	44	56	6.68	
F367 ALIGN AN/GRN-29 LOCALIZER COURSE MONITORS	5.20	36	48	5.24	
U1772 ISOLATE FMO MALFUNCTIONS	5.20	46	58	6.09	
Q1493 MEASURE AN/GRN-29 GLIDESLOPE ANTENNA VSWR	5.04	42	52	5.54	
F407 DETERMINE PROPER OPERATION OF KLYSTRON	4.96	45	56	6.13	

\* Average Training Emphasis = 1.82 with SD of 1.52

\*\* Average Task Difficulty = 5.00 with SD of 1.00

TABLE 17

EXAMPLES OF TASKS RATED HIGHEST IN DIFFICULTY FOR AFSC 304X1 PERSONNEL  
(1 SD OR HIGHER ABOVE AVERAGE)

TASKS	TASK DIFF*	TNG EMP**	PERCENT MEMBERS PERFORMING		
			1ST ENL (N=270)	30451 (N=394)	30471 (N=213)
S1586 ALIGN ANTENNAS	9.15	2.78	6	7	7
M1123 INSTALL VERY HIGH FREQUENCY (VHF) OMNIRANGE AND TACTICAL AIR NAVIGATION (VORTAC) SYSTEMS	7.98	.84	7	6	4
A18 ESTABLISH HOST-TENANT SUPPORT AGREEMENTS	7.95	.02	6	4	8
F394 COMPUTE PHASE LAGS	7.34	3.39	24	23	18
U1823 REPLACE TACAN ANTENNA	7.31	2.53	26	29	23
M1117 INSTALL FIXED TACTICAL AIR NAVIGATION (TACAN) SYSTEMS, OTHER THAN ANTENNAS	7.19	.92	7	7	4
B47 COUNSEL PERSONNEL	7.01	1.14	13	40	72
P1258 ADJUST AN/GRN-27 LOCALIZER RECOMBINATION CIRCUITS	7.01	3.14	19	23	20
X1951 ISOLATE LORAN C/D TRANSMITTER OUTPUT GROUP CYCLE CONTROL LOGIC MALFUNCTIONS	6.98	.27	1	4	0
S1566 ADJUST ANTENNA RF PHASING	6.98	3.39	18	18	11
D148 DEVELOP COURSES OF TRAINING	6.94	.04	1	4	9
F365 ALIGN RF RECEIVERS	6.87	4.22	46	46	33
P1339 ISOLATE AN/GRN-27 LOCALIZER RECOMBINATION CIRCUIT MALFUNCTIONS	6.86	3.06	19	24	18
P1257 ADJUST AN/GRN-27 LOCALIZER PROXIMITY PROBES	6.83	1.80	12	14	15
S1602 ANALYZE GROUND CHECKS	6.81	4.20	23	21	14
F353 ADJUST VOLTAGE STANDING WAVE RATIO (VSWR)	6.76	4.14	51	48	34
U1756 ALIGN TACAN TRANSMITTER KLYSTRON AND DUPLEXER CIRCUITS	6.74	5.41	54	55	38
F378 CALCULATE TRANSMITTER ANTENNA SYSTEM GAIN	6.74	1.45	14	15	8
Q1472 ISOLATE AN/GRN-29 GLIDESLOPE MODULATOR SIDEBAND TO CARRIER PHASINGS	6.49	4.84	26	28	23
T1703 ISOLATE AN/GRA-111 OR AN/TRN-26 MONITOR MALFUNCTIONS	6.43	4.49	47	52	36

\* Average Task Difficulty = 5.00 with SD of 1.00

\*\* Average Training Emphasis = 1.82 with SD of 1.52

TABLE 18

TASKS RATED HIGHEST IN TRAINING EMPHASIS FOR AFSCs 302X0 AND 304X1 PERSONNEL  
(1 SD OR HIGHER ABOVE AVERAGE)

TASKS	TNG EMP*	PERCENT COMBINED SAMPLE MEMBERS PERFORMING		TASK DIFF**
		1ST JOB (N=195)	1ST ENL (N=437)	
F489 ISOLATE MALFUNCTIONS IN POWER SUPPLIES	6.55	72	75	5.86
F788 TRACE CIRCUITS OR SIGNALS USING BLOCK OR CIRCUIT DIAGRAMS	6.35	64	68	4.87
F533 MEASURE DC VOLTAGES	5.86	89	87	3.25
F540 MEASURE RESISTANCES	5.71	66	71	3.32
F544 MEASURE VSWR	5.61	64	70	4.85
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	5.48	68	70	3.99
F409 DIAGNOSE EQUIPMENT MALFUNCTIONS USING SYSTEMS OPERATIONAL CHECKS	5.43	51	56	6.25
F772 SOLDER SOLID-STATE DEVICES, SUCH AS TRANSISTORS, DIODES, OR INTEGRATED COMPONENTS	5.36	54	59	4.87
F490 ISOLATE MALFUNCTIONS IN PREAMPLIFIERS	5.27	33	40	6.34
F518 ISOLATE MALFUNCTIONS USING FLOW CHARTS	5.20	18	22	5.59
F327 ADJUST OUTPUT POWER	5.12	70	74	4.46
F541 MEASURE RF FREQUENCIES	5.07	54	60	4.42
F654 REPAIR ELECTRICAL WIRES	4.25	28	27	6.20
H880 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-13 AND CHECK FOR NORMAL INDICATIONS	3.57	24	27	5.80
H836 CHECK GMQ-20 DIRECTION TRANSMITTER FOR PROPER ORIENTATION	3.54	37	32	3.93
F613 PERFORM PMI ON FIXED TACAN SYSTEMS	3.48	36	46	5.93
H883 PERFORM TURN-ON/OFF PROCEDURES FOR TMQ-11 AND CHECK FOR NORMAL INDICATIONS	3.46	39	33	5.40
H874 PERFORM GMQ-32 OPERATIONAL CHECKS	3.42	32	27	3.76
F612 PERFORM PMI ON FAR FIELD MONITORS	3.00	33	43	4.75
Q1474 ISOLATE AN/GRN-29 GLIDESLOPE SYSTEM MALFUNCTIONS TO MAJOR SUBASSEMBLIES, SUCH AS TRANSMITTERS OR POWER SUPPLIES	2.96	13	25	5.23
U1754 MAINTAIN PRIORITY MONITOR REPORTS (D-18)	2.81	7	13	3.81

\* Average Training Emphasis = 1.59 with SD of 1.22

\*\* Average Task Difficulty = 5.00 with SD of 1.00

TABLE 19

## EXAMPLES OF TASKS RATED HIGHEST IN DIFFICULTY BY AFSCs 302X0 AND 304X1 PERSONNEL

TASKS	TASK DIFF*	TNG EMPH**	PERCENT COMBINED SAMPLE MEMBERS PERFORMING		
			ALL ENL (N=437)	ALL 5-LVL (N=639)	ALL 7-LVL (N=347)
S1586 ALIGN ANTENNAS	9.22	1.46	4	4	3
F403 DESIGN CIRCUITRY	8.95	.43	2	3	4
M1123 INSTALL VERY HIGH FREQUENCY (VHF) OMNIRANGE AND TACTICAL AIR NAVIGATION (VORTAC) SYSTEMS	7.84	.43	5	2	3
H826 ALIGN FMN-1 DRUM ASSEMBLE	7.83	2.51	15	15	11
J940 ALIGN FMQ-7 SCAN CONVERSION MEMORY UNIT	7.56	.19	0	1	3
M1115 INSTALL AN/GRN-27 SSILS LOCALIZER SYSTEMS	7.49	.46	4	3	2
U1823 REPLACE TACAN ANTENNA	7.41	1.51	17	19	14
A13 DRAFT DIRECTIVES	7.19	.22	2	6	32
F393 COMPUTE INSTRUMENT LANDING SYSTEM (ILS) ANTENNA GLIDESLOPE HEIGHTS OR OFFSETS	7.09	1.54	13	14	13
F394 COMPUTE PHASE LAGS	7.04	2.34	17	16	13
P1239 ADJUST AN/GRN-27 GLIDESLOPE PROXIMITY PROBES	7.04	1.21	8	10	9
J1025 REPAIR FMQ-7 OPTICS	7.02	.14	0	1	3
B47 COUNSEL PERSONNEL	6.95	1.47	12	42	75
F404 DETERMINE KLYSTRON RESIDUAL FREQUENCY MODULATION	6.94	1.00	12	13	7
F553 OVERHAUL WAVEGUIDE ROTARY JOINTS	6.87	.77	4	3	3
J951 ALIGN FMQ-7 VIDEO METER	6.84	.19	0	1	3
P1263 ALIGN AN/GRN-27 GLIDESLOPE ANTENNA SYSTEMS FOR PROPER HEIGHT OFFSETS	6.83	.99	5	6	4
S1602 ANALYZE GROUND CHECKS	6.82	2.09	15	14	9
T1707 ISOLATE MX-1627 MONITOR MALFUNCTIONS	6.77	1.31	8	10	7
M1122 INSTALL TACAN ANTENNAS	6.74	.68	12	11	4
X1951 ISOLATE LORAN C/D TRANSMITTER OUTPUT GROUP CYCLE CONTROL LOGIC MALFUNCTIONS	6.58	.11	0	2	0

\* Average Task Difficulty = 5.00 with SD of 1.00

\*\* Average Training Emphasis = 1.59 with SD of 1.22

ratings along with substantial percentages of members in the combined first-job/enlistment sample performing them. Telephone calls made to subject-matter experts in the field suggest this occurrence may be attributed to the fact that Weather personnel complete critical task coverage mandated in Job Qualification Standards (JQS) in less time than AFSC 304X1 personnel; therefore, 302X0s in upgrade training are performing maintenance tasks in the field sooner than their 304X1 counterparts.

Tasks rated highest in difficulty were those having a supervisory, training, or technical nature. Technical tasks presenting the most difficulty for airmen to perform included those related to aligning, adjusting and isolating malfunctions on NAVAIDS equipment and weather equipment. Again, as discussed in the section above, tasks involving NAVAIDS equipment, such as AN/GRN-27 SSILS, LORAN C/D systems, and mobile TACAN systems show high TD ratings and relatively low percent members performing in the combined sample of first-enlistment and across 5- and 7-skill level personnel. Likewise, tasks oriented to solar weather equipment, such as FRR-95 telescope and FMQ-7 optical telescope, are highly difficult, low in TE, and performed by even fewer members across the combined groups.

Hence, task factor data reviewed in these three ways indicate that tasks related to general maintenance activities received higher TE ratings by members of both AFSCs and are performed by large percentages of incumbents across AFSCs. These tasks should be considered for some form of structured training for AFSC 302X0 and 304X1 first-enlistment airmen. In addition, career ladder-oriented tasks involving conventional fixed weather equipment and general NAVAIDS equipment (SSILS/TACAN) and systems should also be included in some method of structured training. On the other hand, tasks rated highest in difficulty pertain to equipment and systems maintained by low percentages of members within the specific AFSC as well as low percent members performing outside the AFSC. While TE ratings were generally low on these tasks, training decisions in these areas should be tempered with other factors, such as the availability of equipment (i.e., An/GRN-27 SSILS or FMQ-7) in the field to provide adequate on-the-job training (OJT) to newly assigned personnel.

#### Analysis of First-Enlistment Personnel

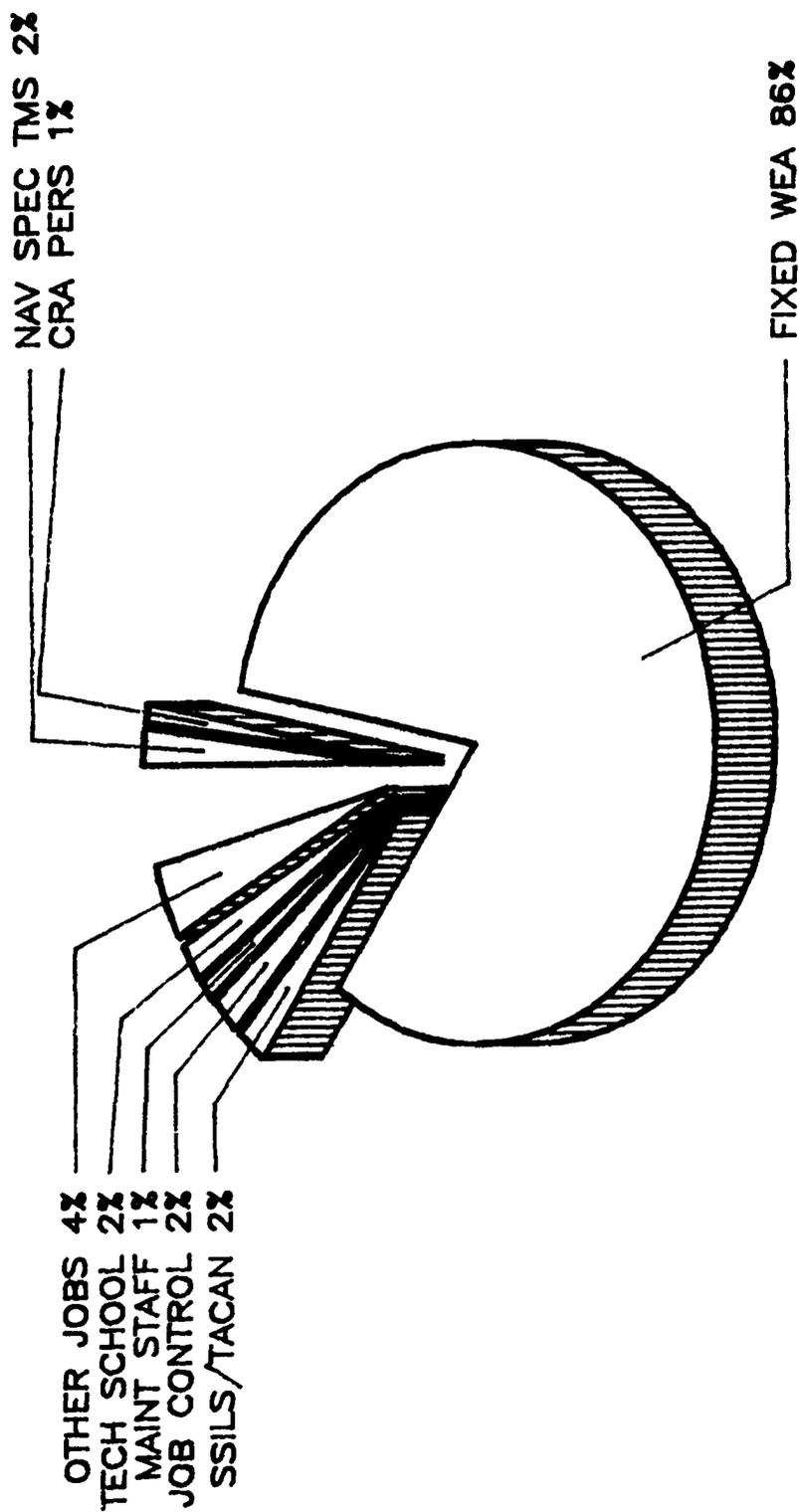
First-enlistment personnel are the target group for the design of basic resident career ladder training programs. Therefore, an in-residence course Plan of Instruction (POI) is written to the task performance level of a first-term individual. To facilitate in the evaluation of AFSC 302X0 and AFSC 304X1 career ladder training documents (Specialty Training Standard (STS) and Plan of Instruction (POI)), 302X0 technical school personnel at Chanute Technical Training Center and 304X1 technical school personnel at Keesler AFB matched job inventory tasks to appropriate sections of their respective STS and POI. It was these matchings upon which comparisons to each career ladder's training documents were based. It should be noted that comments and tables presented in this section pertaining to questionable elements (or lack of elements) in the training documents are intended to highlight what appears to be problem areas. A complete computer listing displaying percent members performing tasks, TE, and TD ratings for each task, along with STS and POI

matchings, has been forwarded to the respective technical school for its use in further detailed reviews of training documents. Summaries of that data and information are given below, preceded by an analysis of the nature of jobs performed by the target population (first-enlistment personnel, usually) of entry-level training programs. Also, commonalities across career ladders will be identified to aid in the formulation of training programs for the merged AFSCs.

AFSC 302X0 First-Enlistment Personnel. First-enlistment members in the Weather Equipment specialty spend the majority of their job time performing tasks related to maintenance and repair of fixed, conventional weather systems, such as TMQ-11, GMQ-13, GMQ-32, and FPS-77. Figure 2 displays the distribution of AFSC 302X0 first-termers across jobs identified in the career ladder structure of the combined AFSCs. Eighty-six percent of the 1-48 month TAFMS group, as well as the vast majority of AFSC 302X0 career ladder members, fell in the job identified as Fixed Weather Equipment Maintenance Personnel. Equipment typically maintained by incumbents performing this job is generally the same as equipment maintained by substantial percentages of first-termers (see Table 22). In addition, as discussed in the previous paragraph on AFSC 302X0 task factor information, maintenance tasks related to these equipment items were rated high in TE, average to above average in TD, and are performed by large percentages of first-enlistment personnel in AFSC 302X0 career ladder (see Table 20). While most of these airmen have completed the basic ABR Weather course, 20 percent have completed advanced formal training specified for AFSC 302X0, such as E&I Standard Installation Procedures Training (SIPT). Approximately 4 percent of AFSC 302X0 first-termers have received some formal NAVAIDS training as well. This low percentage is reflected in the small number of first-term AFSC 302X0 airmen performing maintenance tasks on NAVAIDS equipment (see Table 23). Table 24 lists test equipment maintained by AFSCs 302X0 and 304X1 first-enlistment personnel. Of the 124 items of test equipment listed in the job inventory, the 2 groups of first-enlistment personnel maintained 25 items in common (roughly 20 percent of the total listing).

AFSC 304X1 First-Enlistment Personnel. The performance of general maintenance tasks and tasks specifically oriented to the NAVAIDS AFSC, account for the largest percentage of AFSC 304X1 first-termers' job time. They perform more tasks, on the average (345), than AFSC 302X0 first-term personnel (262 average tasks). Table 21 lists some of the representative tasks performed by NAVAIDS first-termers and compares them with AFSC 302X0 first-enlistment group members. While 39 percent of AFSC 304X1 first-term personnel indicated their workcenters have physically merged with Weather, few are cross-utilized to maintain weather equipment (see Table 22). NAVAIDS systems which are maintained by substantial percentages of AFSC 304X1 first-term airmen (i.e., GRN-27, GRN-29 SSILS, and TACAN systems) are listed in Table 23. Also, these systems are maintained by the bulk of the AFSC 304X1 career ladder in the performance of the job identified as SSILS/TACAN Maintenance. Figure 3 graphically depicts the similar distribution of AFSC 304X1 first-enlistment personnel across specialty jobs. Although the performance of some general maintenance tasks are held in common between first-term airmen of these two AFSCs, each primarily performs maintenance tasks which are AFSC-specific.

DISTRIBUTION OF AFSC 302X0 FIRST-ENLISTMENT PERSONNEL  
ACROSS SPECIALTY JOBS  
(N=167)



(0% Representation in the following jobs:  
Nav Instl, LORAN Maint, Nav Mob Unit, TAC Wea Maint)

Figure 2

TABLE 20

COMPARISON OF 302X0 REPRESENTATIVE TASKS BETWEEN  
FIRST-ENLISTMENT GROUPS  
(30 PERCENT OR BETTER 302X0 PERFORMING)

TASKS	PERCENT MEMBERS PERFORMING	
	302X0 1ST ENL (N=167)	304X1 1ST ENL (N=270)
F533 MEASURE DC VOLTAGES	90	85
F384 CLEAN EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	85	66
F439 INSPECT EQUIPMENT FOR CORROSION	86	80
F627 PERFORM SOLDERING OR DESOLDERING ON ELECTRICAL CIRCUITS	83	64
H887 TEST AND ADJUST GMQ-20 WIND SPEED AND DIRECTION TRANSMITTER	80	3
F386 CLEAN SOLDERING EQUIPMENT	89	75
H849 COMPARE GMQ-20 TRANSMITTER DIRECTION TO INDICATORS AND RECORDERS FOR PROPER OPERATION AND TRACKING	78	6
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	74	64
H880 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-13 AND CHECK FOR NORMAL INDICATIONS	85	3
F540 MEASURE RESISTANCES	78	67
F436 INSPECT ELECTRICAL WIRING	84	70
H883 PERFORM TURN-ON/OFF PROCEDURES FOR TMQ-11 AND CHECK FOR NORMAL INDICATIONS	82	3
H873 PERFORM GMQ-13 OPERATIONAL CHECKS	80	3
F385 CLEAN HAND OR POWER TOOLS	80	68
F560 PERFORM CORROSION CONTROL ON EQUIPMENT CABINETS OR RACKS	76	75
H837 CHECK GMQ-20 TRANSMITTER ASSEMBLY FOR PROPER FRICTION AND BALANCE	71	3
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	63	64
H846 CHECK TMQ-11 DEWPOINT ELEMENT	80	2
F489 ISOLATE MALFUNCTIONS IN POWER SUPPLIES	80	30
K1085 PERFORM FPS-77 OPERATIONAL CHECKS	56	1
H874 PERFORM GMQ-32 OPERATIONAL CHECKS	68	1
F363 ALIGN POWER SUPPLIES	75	65
K1088 PERFORM TURN-ON/OFF PROCEDURES ON FPS-77 AND CHECK FOR NORMAL INDICATIONS	54	2

TABLE 21

COMPARISON OF 304X1 REPRESENTATIVE TASKS BETWEEN  
FIRST-ENLISTMENT GROUPS  
(30 PERCENT OR BETTER 304X1 PERFORMING)

TASKS	PERCENT MEMBERS PERFORMING	
	304X1 1ST ENL (N=270)	302X0 1ST ENL (N=167)
F413 DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	80	84
F536 MEASURE OUTPUT POWER	83	72
F469 INSTALL SOLDERLESS CONNECTORS	80	51
F632 RECORD EQUIPMENT PARAMETERS OR METER READINGS	72	37
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	69	74
E245 MAINTAIN PREVENTIVE MAINTENANCE INSPECTION (PMI) LISTINGS	45	50
F615 PERFORM PMI ON LOCALIZERS	70	11
F614 PERFORM PMI ON GLIDESLOPES	72	10
F329 ADJUST PERCENT OF MODULATION	78	25
F613 PERFORM PMI ON FIXED TACAN SYSTEMS	70	8
F530 MEASURE ANTENNA VSWR	74	63
F430 IDENTIFY OUT OF TOLERANCE EQUIPMENT PARAMETERS, SUCH AS METER READINGS	66	57
F635 REMOVE DUMMY LOADS	72	21
F775 TEST "BAIL-OUT" ALARM SYSTEM	71	8
F623 PERFORM RADIATION PATTERN GROUND CHECKS	64	9
F784 VERIFY PROPER OPERATION OF POWER SUPPLIES	69	59
F693 REPLACE ELECTRON TUBES	64	85
F570 PERFORM OPERATIONS CHECK OF BUILT-IN TEST EQUIPMENT (BITE)	65	46
U1759 CLEAN TACAN EQUIPMENT	67	3
Q1506 MEASURE AN/GRN-29 LOCALIZER COURSE TRANSMITTER POWER OUTPUTS	56	2
Q1501 MEASURE AN/GRN-29 LOCALIZER BATTER VOLTAGES	55	2
U1794 MEASURE TACAN ANTENNA ROTATION SPEEDS	67	4
U1758 CLEAN EQUIPMENT FILTERS	65	2
F445 INSPECT LEAD ACID BATTERIES	59	12
F783 VERIFY PROPER OPERATION OF BITE	54	28
U1752 AGE KLYSTRON TUBES	60	2
F589 PERFORM OPERATIONS CHECKS OF RF RECEIVERS	49	29

TABLE 22

WEATHER EQUIPMENT MAINTAINED BY FIRST-ENLISTMENT GROUPS  
(30 PERCENT OR MORE MEMBERS PERFORMING)

<u>EQUIPMENT</u>	<u>302X0 1ST ENL (N=167)</u>	<u>304X1 1ST ENL (N=270)</u>
ANEROID BAROMETER ML-102	71	2
BAROGRAPH ML-563	57	1
CLOUD HEIGHT MEASURING SET GMQ-13	89	9
DIGITAL BAROMETER ML-658	75	4
MEASURING SET TMQ-11	88	7
RADAR SET FPS-77	65	7
RAIN GAUGE ML-17	69	5
RECORDER RO-362	78	2
RUNWAY VISIBILITY RANGE COMPUTER SET FMN-1	52	*
SLING PSYCHROMETER ML-24	68	4
TRANSMISSOMETER GMQ-32	70	4
WIND MEASURING SET GMQ-20	86	11

\* Denotes less than 1 percent

TABLE 23

NAVAIDS EQUIPMENT MAINTAINED BY FIRST-ENLISTMENT GROUPS  
(30 PERCENT OR MORE MEMBERS PERFORMING)

<u>EQUIPMENT</u>	<u>304X1 1ST ENL (N=270)</u>	<u>302X0 1ST ENL (N=167)</u>
SOLID STATE INSTRUMENT LANDING SYSTEMS (SSILS)		
AN/GRN-27 NULL REFERENCE GLIDESLOPE	33	4
AN/GRN-27 PARABOLIC ANTENNA	30	5
AN/GRN-27 CAPTURE EFFECT GLIDESLOPE	32	4
AN/GRN-29 NULL REFERENCE GLIDESLOPE	45	5
TACAN SYSTEMS		
AN/GRN-19A	34	6

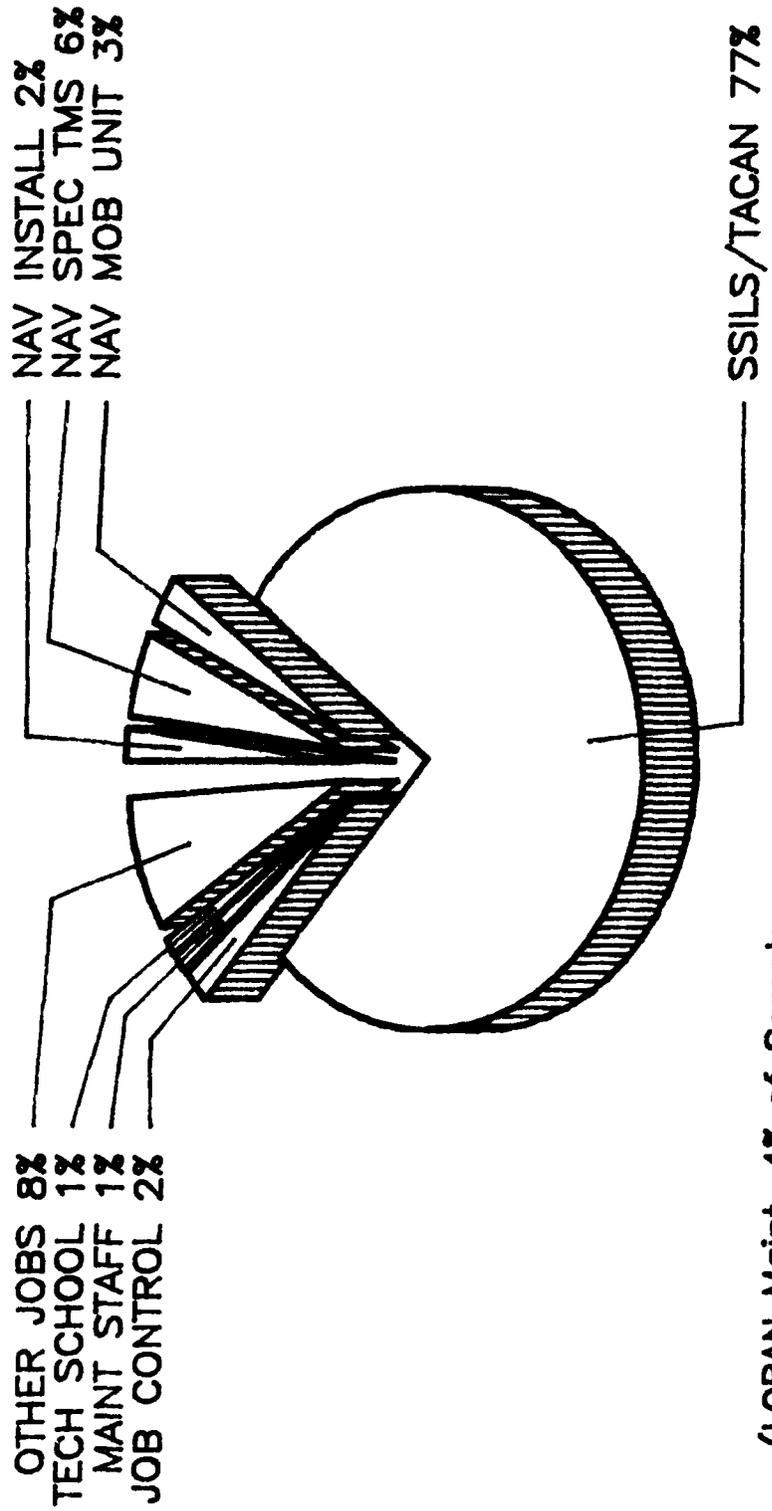
TABLE 24

TEST EQUIPMENT UTILIZED BY FIRST-ENLISTMENT GROUPS  
(30 PERCENT OR MORE MEMBERS USING)

TEST EQUIPMENT	302X0 1ST ENL (N=167)	304X1 1ST ENL (N=270)
AMMETER, CLAMP-ON	73	9
*AMMETER, PORTABLE	38	39
ATTENUATOR, FIXED	15	53
ATTENUATOR, IN-LINE	17	71
ATTENUATOR, SWITCHABLE	14	40
ATTENUATOR, VARIABLE	29	68
ANALYZER, SPECTRUM	13	89
AUDIO OSCILLATOR	13	35
*ELECTRONIC DIGITAL COUNTER	38	74
*ELECTRONIC FREQUENCY COUNTER	74	90
CRYSTAL DETECTOR	26	66
PORTABLE FIELD (ILS) DETECTOR	4	81
RF DETECTOR	21	71
DIFFERENTIAL VOLTMETER	10	54
*DIGITAL MULTIMETER	94	96
*DIRECTIONAL COUPLER	50	87
*DUMMY LOAD	56	93
*ELECTRONIC COUNTER	33	70
*AUDIO SIGNAL GENERATOR	37	60
*GENERATOR, RF PULSE	36	30
GUNNERS QUADRANT	71	4
HYDROMETER	9	49
MEGOhmMETER	25	42
OSCILLOSCOPE	95	92
*TESTER, GAS TUBE	30	60
TEST SET, WIND SPEED	81	7
*VOLTMETER, DIGITAL	76	81
VOLTMETER, VACUUM TUBE	8	51

\* Denotes common usage by both groups

DISTRIBUTION OF AFSC 304X1 FIRST-ENLISTMENT  
PERSONNEL ACROSS SPECIALTY JOBS  
(N=270)



(LORAN Maint .4% of Sample  
0% Representation in the following jobs:  
CRA Pers, Fixed Wea, TAC Wea Maint)

Figure 3

### Discussion of Relevance and Accuracy of Career Ladder Training Documents

The STSs for AFSCs 302X0 and 304X1 were reviewed for comprehensiveness and accuracy in relation to actual task performance and jobs performed by career ladder incumbents (percent members performing), TE and TD information as stipulated in ATCR 52-22. Typically, tasks performed by 20 percent or more of personnel in appropriate experience or skill level groups should be considered for inclusion in the STS. In most instances, incumbent data includes first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) experience groups and 5- and 7-skill level groups. The STS of each AFSC was analyzed in two ways. First, the task factor information in the initial review consisted only of those ratings provided by members of each career ladder respectively, in addition to incumbent (percent members performing) data for each AFSC separately. Secondly, to better identify areas of overlap and commonality between the two AFSCs, each document was reviewed using combined 302X0/304X1 percent members performing data, TE and TD ratings provided by the total sample of raters (N=102). STS paragraphs containing general information or subject-matter knowledge proficiency requirements were not reviewed. In addition, Electronic Fundamentals data will be reviewed and discussed in this training analysis. (NOTE: The Plan of Instruction (POI) for AFSCs 302X0 and 304X1, dated 3 November 1987 and 2 April 1984 with changes through July 1987 respectively, will not be reviewed in this study due to the implementation of extensively revised POIs before analysis was completed on the documents in effect at the time job inventory tasks were matched to the documents).

#### AFSC 302X0 Specialty Training Standard (STS)

A comprehensive review of STS 302X0, Weather Equipment specialty, dated March 1988 (tentative), was made by comparing STS items to survey data. Overall, the STS captures the various jobs identified in the career ladder structure analysis of this AFSC. The primary technical orientation of career ladder jobs is reflected in the break-out of STS elements by types of meteorological equipment. The majority of STS elements having task performance proficiency codes represent fixed weather or test equipment and are maintained by substantial percentages of first-enlistment personnel (see Tables 22 and 24). Generally, pertinent tasks matched to STS elements (disregarding general maintenance functions) show above average to high TE ratings, substantial percentages of first-enlistment, 5- and 7-skill level 302X0 members performing, and are within one standard deviation (SD) (plus or minus) of the average TD level. STS paragraph 10A is dashed (no training) for resident school instruction and matched tasks show low TE ratings, low percent members performing, and high TD (see Table 25). This area, involving determining equipment siting requirements, does require review for AFR 39-1 purposes (see DAFSC 30230/30250 discussion of AFR 39-1 section of this report).

Tasks not referenced to any STS item were numerous. Of the 55 tasks rated high in TE (3.06 or better), the top 10 tasks pertain to maintenance functions involving the TMQ-11 temperature dewpoint measuring set (see Table 26). Additionally, the large percentage of members maintaining would suggest this area be considered for inclusion in the STS. According to technical

TABLE 25

## AFSC 302X0 STS AREAS REQUIRING REVIEW

<u>STS ELEMENT/ PROFICIENCY CODE</u>	<u>PROBLEM</u>
9E (7). Use safety practices when working with electrostatic discharge sensitive equipment (2b b)	Less than 10 PMP* Low TE** (1.07)
10A. Equipment siting requirements (- b)	AFR 39-1 implications
17E. Use the decade resistance box (Temperature Dew-Point Measuring Set AN/FMQ-8) (2b b)	No matched tasks
17G(2). Perform preventive maintenance routines on AN/FMQ-8 alignment and adjustment (2b b)	No matched tasks

\* PMP denotes percent members performing

\*\* TE denotes training emphasis rating

TABLE 26

EXAMPLES OF TASKS NOT REFERENCED TO STS 302X0

TASK	TE*	ID**	PERCENT MEMBERS PERFORMING		
			1ST ENL (N=167)	5-LVL (N=235)	7-LVL (N=134)
H867 ISOLATE MALFUNCTIONS IN TMQ-11 INDICATOR	5.71	5.44	74	71	49
H868 ISOLATE MALFUNCTIONS IN TMQ-11 TRANSMITTER	5.67	4.98	74	69	48
H883 PERFORM TURN-ON/OFF PROCEDURES FOR TMQ-11 AND CHECK FOR NORMAL INDICATIONS	5.67	3.92	82	74	51
H846 CHECK TMQ-11 DEWPOINT ELEMENT	5.15	4.49	80	73	49
H878 PERFORM TMQ-11 DEAD BAND CHECK	5.15	3.59	54	58	48
G807 INSTALL OR REMOVE ML-658 DIGITAL BAROMETERS	4.09	4.28	46	52	41
G790 CALIBRATE ML-24 SLING PSYCHROMETERS	3.53	3.17	49	55	48
G793 INSPECT ML-24 SLING PSYCHROMETERS	3.44	2.97	61	65	50
F773 SPlice FIELD CABLES	3.18	5.35	20	24	27
C118 INSPECT EQUIPMENT USING PERFORMANCE CRITERIA CHECKLISTS	3.09	4.74	34	44	62

\* Average Training Emphasis = 1.40 with SD of 1.66 (High Training Emphasis = or 3.06)

\*\* Average Task Difficulty = 5.00 with SD of 1.00

school personnel, the TMQ-11 is being replaced by the new state-of-the-art temperature dewpoint measuring set--FMQ-8. This equipment item is included in the tentative STS (paragraph 17). Nevertheless, TMQ-11 may need to be included during the transition period of the merger. Table 25 lists some of the other STS areas requiring review. Overall, these data indicate good support of the tentative 302X0 STS.

The review of the AFSC 302X0 STS with data from the combined sample of career ladder members (both AFSCs 302X0 and 304X1) and task factor raters, yielded essentially the same findings as did the data from the separate AFSC 302X0 review. The primary difference was identified in the "Tasks not referenced" section. A larger number of tasks pertaining to general maintenance functions dominated the top rated TE tasks. In addition, tasks involving maintenance on TACAN transponders, AN/GRN-111 or TRN-26 TACAN monitoring groups, performing flight check ground procedures on AN/GRN-29 SSILS, as well as TMQ-11 maintenance functions, showed substantial percentages performing, high TE (2.81 or better), and relatively high TD. Since this STS did not contain elements for NAVAIDS equipment maintenance and the TMQ-11 is phasing out, data still support the AFSC 302X0 STS for future use in setting training standards for the merged career ladder of AFSCs 302X0/304X1.

#### AFSC 304X1 Specialty Training Standard (STS)

A comprehensive review of the STS 304X1 (tentative), Navigational Aids Equipment, dated April 1988, was conducted in a similar method to that described above for the AFSC 302X0 STS. Overall, the STS does capture the various jobs typically performed by AFSC 304X1 personnel. Although few members perform some of these jobs, such as NAVAIDS Mobility or Flight Inspection Personnel, they are appropriately reflected by the STS proficiency coding with either procedural task knowledge (b) or no training provided (-) in the course or CDC (see STS paragraphs 8 and 13). Tasks matched to these areas comprise identifiable jobs being performed in the career ladder, thereby lending support for retention of those STS elements involving such tasks.

Some elements of the STS do require review by training personnel and subject-matter experts. Table 27 provides some examples of areas that should be reviewed, and the problems identified through analysis of the matched data as provided in the TRAINING EXTRACT. As highlighted in the table, areas involving maintenance on the following equipment or systems require review for possible changes in proficiency coding or deletion from future revisions to the STS: (1) low frequency beacons, (2) LORAN C/D systems, and (3) Omnirange. Generally, these areas showed low percent members performing tasks directly related to the maintenance function on the equipment item. In addition, other areas of the STS (paragraph 12) involving installation of beacon systems, instrument landing systems (ILS), and omnirange systems require review. Analysis of the matched incumbent data most pertinent for these STS elements reveals overall low percentages of members performing tasks other than general installation functions (i.e., cutting cables to electrical lengths, installing electrical grounds, or labeling equipment) which may not be career ladder specific. Few members across AFSC 304X1 skill-level groups or the first-enlistment group perform tasks related to STS paragraph 13 (Deployment of

TABLE 27

## EXAMPLES OF AFSC 304X1 STS AREAS REQUIRING REVIEW

<u>STS ELEMENT/PROFIEIENCY CODES</u>	<u>PROBLEM IDENTIFIED</u>
7A(1). Perform maintenance on Low-Frequency Beacons (2b/- b -)	Low PMP/TE* on tasks directly related to equipment item. Reduced inventory in career field.
7A(2). Perform maintenance on LORAN (- - -)	Low PMP/TE on tasks directly related to equipment item. Job performed by small percentage of career ladder members OS.
7A(3)(A). Perform maintenance on ILS power supply and batter charger (2b b -)	Multiple items in one STS element.
7A(4)(B). Perform maintenance on Omnirange ID and voice circuits (2b - -)	Low PMP on tasks directly related to equipment item (VOR). General maintenance tasks meet PMP criteria.
7A(4)(G). Perform maintenance on Omnirange control circuits (2b - -)	No matched tasks
8C(1). Perform flight check procedures on Low-Frequency Beacons (2b/- - -)	Low PMP/TE on tasks directly related to equipment item.
10B. Select proper test equipment and tools in maintaining Navaid equipment (2b b c)	Too broad (102 matched tasks)
12B(1)/(2)/(3). Install Navaids equipment in accordance with installation instructions (1) Beacon systems (2) ILS (3) Omnirange (1a/- - -)	Low PMP/TE on tasks directly related to STS equipment item. Installation procedures performed by small percentage of career ladder.
13B(1)A/B. Deployment preparation for TACAN systems (A) AN/TRN-26 (B) AN/TRN-41 (2b/- b c)	Low PMP deployment tasks for mobile TACAN systems

\* Denotes percent members performing; TE denotes training emphasis rating

Mobile NAVAIDS Equipment). Likewise, these areas are delineated in AFR 39-1 Specialty Descriptions (paragraphs a and b) for 3-/5-skill level and 7-skill level members. Hence, the indication of low percent members performing (PMP) tasks related to these STS elements may have an impact upon utilization of personnel, AFR 39-1 implications, and career ladder training.

The "tasks not referenced" section is another area to review for identification of groups of tasks making up a functional area, tasks performed by substantial percentages of career ladder members, and those tasks receiving high task factor (TE/TD) ratings. A review of Table 28 reveals a number of tasks extracted for display. All of the 18 tasks rated highest in TE (3.34 or better) have substantial percentages of AFSC 304X1 members performing them. The majority of these tasks pertain to the performance of administrative or supply functions, in addition to general maintenance tasks. These tasks should be considered for possible inclusion in revisions to the STS.

In the review of STS 304X1 using task factor and incumbent data from the combined sample of NAVAIDS and Weather personnel, many of the same areas requiring review (discussed in the preceding paragraphs) were also identified in this analysis. Within each STS module, tasks having a general maintenance orientation received the highest TE ratings from the total sample of raters (N=102). As expected, larger percentages of members in the combined sample are performing general maintenance tasks. Many of the STS areas identified for review in the separate analysis of AFSC 304X1 members only, were also found in the review using combined data. In addition, several other areas which were not identified in the separate review (i.e., 7A(3)(f), 7A(4)(d), and 8D(2)) showed low percent members performing tasks matched to the STS element. For example, STS element 7A(3)(f) shows less than 20 percent members performing maintenance on ILS RF recombination systems (AN/GRN-27), while this same area of the STS met PMP criteria in the separate STS 304X1 review. However, in both analyses this STS area is one that should be considered for on-the-job training; therefore, retention in the STS would be justified based on task factor criteria (i.e., TD is greater than 6.00 (very high)). Tasks not referenced to any STS element having the highest TE ratings and performed by large percentages of members in the combined sample are similar to those identified in the separate review of STS 304X1. Here again, the majority of these tasks pertain to administrative or supply functions and should be considered for inclusion when the STS is updated.

#### Electronic Principles Inventory (EPI)

The Electronic Fundamentals attachment to STSs 302X0 and 304X1 and the electronic principles taught in the basic course (POI C3AQR31020-002 for AFSC 302X0 and E3AQR30020-009 for AFSC 304X1) can be reviewed using data from the Electronic Principles Inventory (EPI), AFPT 90-EPI-825, dated June 1987. The EPI is a knowledge-based inventory containing 712 questions under 39 subject areas. It identifies the range of electronic principles personnel must understand to perform any electronics-oriented job in various AFSCs.

TABLE 28

## EXAMPLES OF TASKS NOT REFERENCED TO STS 304X1

TASK	IE*	ID**	PERCENT MEMBERS PERFORMING		
			1ST ENL (N=270)	5-LVL (N=394)	7-LVL (N=213)
E221 INITIATE AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	5.45	3.73	67	69	49
F369 ANALYZE INDICATIONS OF BUILT-IN-TEST (BIT)	5.35	5.84	53	50	41
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	5.31	4.09	69	67	63
U1802 MEASURE TACAN RECEIVER SQUITTER COUNTS	4.33	4.37	61	60	39
E199 ANNOTATE EQUIPMENT PERFORMANCE LOGS	4.04	3.67	35	42	37
E234 MAINTAIN BENCHSTOCK LEVELS	3.82	3.90	39	37	23
E228 INVENTORY EQUIPMENT, SUPPLIES, OR TOOLS	3.69	3.62	53	54	54
S1651 PERFORM GROUND CHECKS	3.59	5.18	24	22	12
E224 INITIATE DD FORMS 1574 (SERVICEABLE TAG-MATERIAL)	3.43	3.69	52	59	46
F344 ADJUST TIME DELAY CIRCUITS	3.18	4.89	49	46	36
N1174 SELECT CRYSTAL ELEMENTS FOR THRU LINE WATTMETERS	2.94	2.90	32	32	30
E298 VERIFY DIFM DOCUMENT LISTINGS	2.06	3.90	19	29	40

\* Average Training Emphasis = 1.82 with SD of 1.52 (High Training Emphasis = 3.34 or better)

\*\* Average Task Difficulty = 5.00 with SD of 1.00

From September 1987 through April 1988, 157 personnel having DAFSC 30250 and 171 incumbents having DAFSC 30451 completed the EPI. A comprehensive report for those AFSCs taught at Keesler (EPI 2) was published in July 1988. Although data are available for those AFSCs taught at Chanute, the complete report (EPI 3) has a projected publication date of February 1989. Based on findings from these data, AFSCs 302X0 and 304X1 personnel require a broad knowledge base of electronic principles in performing their job (required ASVAB score of 67 on the electronics portion for entry in AFSC 302X0 or 304X1). Table 29 lists those Electronic areas where 50 percent or more DAFSC(s) 30250 or 30451 personnel responded "yes" to using in their present job. These data, as well as the complete data package for electronic-oriented AFSCs taught at Chanute or Keesler Technical Training Centers, can help subject-matter experts when making training decisions regarding those portions of the STS or POI which address electronic fundamentals or principles.

#### Summary of Training Analysis

The greatest percentage of first-enlistment personnel in both career ladders perform a range of tasks descriptive of jobs containing the bulk of career ladder members--Fixed Weather Equipment Maintenance for AFSC 302X0 and SSILS/TACAN Maintenance for AFSC 304X1. Career ladder-specific equipment maintained by substantial percentages of AFSC 302X0 first-termers shows few of their AFSC 304X1 counterparts maintaining similar equipment, and vice-versa. Many items of test equipment are maintained in common by members in both AFSCs. Also, many areas of electronic principles are utilized by 5-skill level members across these two AFSCs. These findings indicate that training focusing on maintenance of certain test equipment and electronic fundamentals would be appropriately considered for common training. The performance of functions requiring knowledge of general maintenance concepts and tasks showed substantial percentages of members performing across both career ladders; hence, these areas should also be considered for some method of structured training for members of the merged AFSCs.

Overall, substantial percentages of members are performing tasks matched to elements of each STS. While the AFSC 302X0 STS had fewer elements showing low percent members performing tasks and other identifiable discrepancies than found in STS 304X1, the review of data from the combined career ladders revealed almost identical findings as the separate reviews using career ladder-specific data. However, caution should be exercised when reviewing incumbent data from the combined AFSCs on tasks matched to STS elements. For example, tasks which directly relate to a particular STS item may show substantial percent members performing of the combined sample; but, when the actual raw number of members performing is determined it may be conceivable those members performing are all AFSC 302X0 personnel or all AFSC 304X1 members. All data from the combined groups should be reviewed and conceptualized in this manner to prevent skewed interpretations when making training decisions for AFSCs undergoing merger considerations.

TABLE 29

ELECTRONIC PRINCIPLES USED BY FIFTY PERCENT OR MORE  
OF AFSC 30250 OR 30451 PERSONNEL

<u>ELECTRONIC PRINCIPLES</u>	<u>MEMBERS USING (YES/NO)</u>	
	<u>30250 (N=156)</u>	<u>30451 (N=171)</u>
BASIC CIRCUIT CALCULATIONS	YES	YES
RESISTORS	YES	YES
RELAYS	YES	YES
INDUCTORS	YES	YES
CAPACITORS	YES	YES
TRANSFORMERS	YES	YES
DC MOTORS	YES	NO
AC MOTORS	YES	YES
DC GENERATORS	YES	NO
SYNCHROS/SERVOS	YES	NO
METER MOVEMENTS	YES	YES
SOLID STATE CIRCUITS AND DEVICES	YES	YES
TUBES	YES	YES
MULTIMETERS	YES	YES
OSCILLOSCOPES	YES	YES
SIGNAL GENERATORS	YES	YES
FREQUENCY COUNTERS	YES	YES
DIGITAL MULTIMETERS	YES	YES
SPECTRUM ANALYZERS	NO	YES
TUBE TESTERS	YES	NO
TRANSISTOR AMPLIFIER CIRCUITS	YES	YES
TRANSISTOR AMPLIFIER STABILIZATION CIRCUITS	YES	NO
COUPLING CIRCUITS	YES	YES
ELECTRON TUBE AMPLIFIER CIRCUITS	YES	YES
OPERATIONAL AMPLIFIERS	YES	YES
POWER SUPPLY CIRCUITS	YES	YES
POWER SUPPLY FILTERS	YES	YES
POWER SUPPLY VOLTAGE REGULATORS	YES	YES
RESISTIVE CAPACITIVE INDUCTIVE CIRCUITS (RCL)	YES	YES
FREQUENCY SENSITIVE FILTERS	YES	YES
OSCILLATORS	YES	YES
MULTIVIBRATORS	YES	YES
WAVESHAPING CIRCUITS	YES	YES
LIMITER/CLAMPER CIRCUITS	YES	YES
DIGITAL LOGIC NUMBERING SYSTEMS AND FUNCTIONS	YES	YES
COMPUTERS	YES	NO
DIGITAL CIRCUITS	YES	NO
CONNECTIONS	YES	YES
MICROWAVE OSCILLATORS AND AMPLIFIERS	YES	NO
RESONANT CAVITIES	YES	YES
TRANSMITTERS AND RECEIVERS	NO	YES
ANTENNAS	YES	YES
RF MEASUREMENTS	YES	YES
RF CALCULATIONS	YES	YES
PHOTO SENSITIVE DEVICES	YES	NO

## JOB SATISFACTION

Jobs may change over time for many reasons, such as mergers, splits, or shreds within or between AFSCs, thereby affecting the jobs of the individuals supporting these specialties. The results of job satisfaction responses of the current survey sample were analyzed using several comparisons: (1) between TAFMS groups of the current and previous surveys of each AFSC, (2) between TAFMS groups of the current survey and a comparative sample of personnel from other Mission Equipment Maintenance AFSCs surveyed in 1987, and (3) across specialty job groups identified in the SPECIALTY JOBS section of this report. A review of job satisfaction indicators can aid training and utilization personnel in determining trends or identifying perceptions of work environments rendered by incumbents, as well as their attitudes in areas such as training, use of talents, and reenlistment intentions.

In the comparison of job satisfaction information between experience groups of the previous sample and those of the current survey, Tables 30 and 31 reflect data for AFSCs 302X0 and 304X1, respectively. Table 30 depicts that, while all AFSC 302X0 TAFMS groups show increases in job satisfaction levels from the previous survey, the most marked improvement has been between first-term personnel. As mentioned in the last AFSC 302X0 survey, there continues to be a decline in the number of personnel in experience groups since the 1972 survey of this career ladder. This may be attributed to the highly salable skills obtained by Weather Equipment specialists that draws them to the civilian job market.

Job satisfaction data for AFSC 304X1 TAFMS groups is shown in Table 31. The most dramatic shift has occurred in the area of reenlistment intent between first-term and second-enlistment members and their counterparts in the previous survey. Overall, job satisfaction is higher among members of the current sample than for their counterparts surveyed over 6 years ago. Unlike AFSC 302X0 experience groups, the number of personnel in AFSC 304X1 TAFMS groups has remained relatively constant since the last survey. In addition, job satisfaction levels for the two AFSCs are comparable across the three enlistment groups.

In the review of job satisfaction information across TAFMS groups of the two AFSCs included in the current survey and those of other Mission Equipment Maintenance AFSCs surveyed in 1987 (see Table 32), data indicate that second-enlistment (49-96 months TAFMS) AFSC 304X1 members expressed the highest overall levels of satisfaction across their comparable group. Although reenlistment intent is always an area of concern (particularly among first-enlistment personnel in the current sample) the first-termers in both AFSCs of the current survey show higher probability to reenlist than do their counterparts in the comparative sample. Generally, TAFMS groups included in the current survey indicate higher levels of job satisfaction than their counterparts in similar AFSCs, with the 49-96 month group of Navigation Aids Equipment personnel expressing the overall highest levels of job satisfaction.

TABLE 30

COMPARISON OF JOB SATISFACTION DATA BETWEEN AFSC 302X0  
PREVIOUS SURVEY (APRIL 1980) AND CURRENT SURVEY  
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS (N=167)		49-96 MOS TAFMS (N=122)		97+ MOS TAFMS (N=155)	
	CURRENT SURVEY	PREVIOUS SAMPLE	CURRENT SURVEY	PREVIOUS SAMPLE	CURRENT SURVEY	PREVIOUS SAMPLE
JOB INTERESTING	78	53	76	69	73	73
TALENTS UTILIZED FAIRLY WELL TO PERFECTLY	90	65	82	74	80	84
TRAINING UTILIZED FAIRLY WELL TO PERFECTLY	90	69	85	77	81	81
LIKELY TO REENLIST	62	28	70	47	65	68

TABLE 31

COMPARISON OF JOB SATISFACTION DATA BETWEEN AFSC 304X1  
PREVIOUS SURVEY (JULY 1982) AND CURRENT SURVEY  
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS (N=270)		49-96 MOS TAFMS (N=147)		97+ MOS TAFMS (N=271)	
	CURRENT SURVEY	PREVIOUS SAMPLE	CURRENT SURVEY	PREVIOUS SAMPLE	CURRENT SURVEY	PREVIOUS SAMPLE
JOB INTERESTING	79	74	84	68	75	74
TALENTS UTILIZED FAIRLY WELL TO PERFECTLY	84	76	88	77	83	85
TRAINING UTILIZED FAIRLY WELL TO PERFECTLY	86	74	86	76	76	78
LIKELY TO REENLIST	72	41	78	50	65	65

TABLE 32

TAFMS JOB SATISFACTION DATA  
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS		
	302X0 MBSR (N=167)	304X1 COMP SAMPLE* (N=2,187)	302X0 MBSR (N=122)	304X1 MBSR (N=147)	302X0 MBSR (N=155)	304X1 MBSR (N=271)	COMP SAMPLE* (N=1,613)
JOB INTERESTING	78	79	72	76	73	75	78
TALENTS UTILIZED FAIRLY WELL TO PERFECTLY	90	84	78	82	80	83	82
TRAINING UTILIZED FAIRLY WELL TO PERFECTLY	90	86	83	85	81	76	79
LIKELY TO REENLIST	62	72	57	70	65	65	73

\* Other Mission Equipment Maintenance AFSCs surveyed in 1987: 303X1, 303X3, 303X6, 321X1, 427X0, and 427X3

As shown in Table 33, the highest levels of job interest were expressed by members performing two of the most highly specialized jobs identified in the combined career ladder(s) structure--NAVAIDS Installation Personnel and Flight Inspection Technicians. Together, these jobs represent less than 2 percent of the combined survey sample. Noteworthy is the fact that, while NAVAIDS Installation Personnel indicate such a high level of job interest, only 43 percent perceive their training is being well utilized and 29 percent show favorable reenlistment intentions. These findings (i.e., overall favorable job satisfaction indices for Flight Inspection Technicians and low areas for NAVAIDS Installation Personnel) have prevailed since the 1982 survey of the Navigation Aids Equipment specialty. Via telephonic communication with NAVAIDS Installation Personnel in the field, some of the dissatisfaction may be attributed to the limited scope of their job in which they do not perform many of the tasks for which they have been trained and the frequent TDY requirement causing lengthy separations from home and family. On the other hand, CRA (Tactical/Fixed Weather Equipment) personnel now show more favorable job satisfaction indicators than their counterparts in the April 1980 AFSC 302X0 survey. An increase in the scope of their job (i.e., maintaining fixed and or tactical weather equipment for a particular geographical region) may have attributed to higher levels of job satisfaction for these airmen. Tactical Weather Equipment Maintenance Technicians indicated the lowest levels of job satisfaction in all categories, except reenlistment intent for which NAVAIDS Installation Personnel showed the lowest percentage. Perceptions regarding utilization of training were mixed among NAVAIDS Installation Personnel, NAVAIDS Specialty Teams, and Job Controllers. With the exception of Tactical Weather Equipment Maintenance Technicians, all other job groups expressed relatively high levels of perceived utilization of training and reenlistment intention.

#### Analysis of Write-in Comments

Occupational survey booklets include blank pages on which career ladder members may write in additional tasks or make comments about any subject. In addition, general background information extracted from job inventories may be used to address specific issues raised by career ladder personnel.

Review of job inventory write-in comments from survey sample respondents indicates concern among members of both career ladders regarding the proposed merger of Weather and Navigation Aids Equipment specialities. While a portion of the job inventory background section addressed this issue, the majority of write-in comments emphasize members' concern with this matter. An equal percentage (56 percent) of AFSCs 302X0 and 304X1 members reported positive indicators that the Weather/NAVAIDS merger will work. However, some of the primary concerns expressed by members of both AFSCs included the following areas: (1) writing of "fair" Specialty Knowledge Tests (SKT), (2) maintaining the large number of equipment items representative of both career ladders, and (3) proper training with the need for increased ABR training on test equipment. (NOTE: These data are available in computer products contained in the TRAINING EXTRACT.)

TABLE 33

JOB SATISFACTION INFORMATION FOR WEATHER AND NAVIGATION AIDS EQUIPMENT SPECIALTY JOBS  
(PERCENT MEMBERS RESPONDING)

	NAVAIDS INSTALLATION PERSONNEL (STG180, N=7)	NAVAIDS SPECIALTY TEAMS (STG046, N=32)	CENTRALIZED REPAIR ACTIVITY (STG197, N=7)	FIXED WEATHER EQUIPMENT MAINT PERSONNEL (STG125, N=334)	TACTICAL WEATHER EQUIPMENT MAINT (STG108, N=7)	LORAN C/C MAINTENANCE TECHNICIANS (STG192, N=12)
JOB INTERESTING	100	72	72	79	14	83
TALENTS UTILIZED FAIRLY WELL TO PERFECTLY	86	69	86	90	29	92
TRAINING UTILIZED FAIRLY WELL TO PERFECTLY	43	50	71	92	14	92
LIKELY TO REENLIST	29	75	57	69	57	67

TABLE 33 (CONTINUED)

JOB SATISFACTION INFORMATION FOR WEATHER AND NAVIGATION AIDS EQUIPMENT SPECIALTY JOBS  
(PERCENT MEMBERS RESPONDING)

	NAVAIDS MOBILITY UNIT (STG199, N=180)	SSILS/TACAN MAINT PERS (STG074, N=452)	JOB CONTROLLERS (STG104, N=14)	MAINTENANCE STAFF PERSONNEL (STG042, N=130)	FLIGHT INSPECTION TECHNS (STG526, N=5)	TECHNICAL SCHOOL PERSONNEL (STG017, N=41)
JOB INTERESTING	83	81	64	75	100	78
TALENTS UTILIZED FAIRLY WELL TO PERFECTLY	100	88	71	79	100	76
TRAINING UTILIZED FAIRLY WELL TO PERFECTLY	69	91	50	67	100	81
LIKELY TO REENLIST	78	65	43	65	80	56

## IMPLICATIONS

This survey was conducted primarily to obtain current data to assist career ladder managers and training personnel in the evaluation and management of training programs to be designed for the merged specialty containing AFSCs 302X0 and 304X1. Occupational survey data indicate that, while most of the jobs identified in the combined career ladder structure are technically oriented, these technical jobs vary in many ways. Some of the key differentiating factors were based upon the type (system) and category of equipment maintained, as well as the equipment configuration due to geographical location. Although new state-of-the-art equipment has been introduced to both career ladders, there has been no substantial change in jobs performed since these AFSCs were last surveyed. Some of the technical jobs identified in the current survey are not as distinctively different or delimiting as reported in the previous surveys. These findings indicate a gradual shift toward a degree of generalization instead of increased specialization, thereby providing some supportive information for the intended merge of these two AFSCs. Still, the vast majority of incumbents are maintaining equipment specific to their assigned AFSC.

The review of AFR 39-1 Specialty Descriptions with survey data for DAFSC groups indicate some minor revisions may be warranted for 3-/5-skill level descriptions for both AFSCs. For example, few 30230/30250 members perform tasks related to siting or installation/removal of meteorological equipment. Likewise, installation of fixed NAVAIDS equipment or deployment of mobile NAVAIDS equipment tasks are performed by small percentages of 30431/30451 personnel or the AFSC 304X1 career ladder on the whole. The majority of career ladder members indicate they are assigned to workcenters that have been physically merged. However, data indicate few members are currently being utilized to maintain equipment outside their designated AFSC inventory.

The maintenance of AFSC-specific equipment is also characteristic of first-enlistment personnel included in this report. The review of each STS and electronic principles information indicate consistent findings. Substantial percentages of members in both AFSCs perform many general maintenance functions in common, but they primarily perform career ladder-oriented tasks. Data support common training in the areas of general maintenance, electronic principles, and on some items of test equipment used by substantial percentages of first-job and first-enlistment personnel across AFSCs.

AFSCs 302X0 and 304X1 job satisfaction indicators have increased across experience groups since the last survey of these AFSCs. Job satisfaction levels for the two AFSCs are comparable and overall higher than those of their counterparts in the comparative sample surveyed in 1987. Reenlistment intent is highly favorable across enlistment groups of both AFSCs.

APPENDIX A  
REPRESENTATIVE TASKS PERFORMED BY CAREER LADDER GROUPS  
AND BACKGROUND INFORMATION

TABLE A1

GROUP ID NUMBER AND TITLE: NAVAIDS INSTALLATION PERSONNEL (ILS/TACAN SYSTEMS)  
(ST180)

GROUP SIZE: N=7

PERCENT OF SAMPLE: 1%

DOMINANT PAYGRADE: E-4

AVERAGE TICF: 36 MONTHS

AVERAGE TAFMS: 38 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
M1134 PERFORM PREDEPLOYMENT VEHICLE INSPECTIONS	100
M1133 PERFORM PREDEPLOYMENT PROCESSING	100
M1125 INVENTORY SCHEME MATERIALS	100
M1128 PACK OR UNPACK SCHEME MATERIALS	100
M1131 PERFORM OPERATIONAL TESTS OF NEWLY INSTALLED SYSTEMS	100
M1135 PERFORM PRESHAKEDOWN TESTS	100
M1136 PERFORM SHAKEDOWN TESTS	100
M1122 INSTALL TACAN ANTENNAS	100
M1117 INSTALL FIXED TACTICAL AIR NAVIGATION (TACAN) SYSTEMS, OTHER THAN ANTENNAS	100
M1123 INSTALL VERY HIGH FREQUENCY (VHF) OMNIRANGE AND TACTICAL AIR NAVIGATION (VORTAC) SYSTEMS	100
M1114 INSTALL AN/GRN-29 SSILS GLIDESLOPE SYSTEMS	100
M1115 INSTALL AN/GRN-29 SSILS LOCALIZER SYSTEMS	100
M1149 REMOVE TACAN ANTENNAS	100
M1142 REMOVE FIXED TACAN SYSTEMS, OTHER THAN ANTENNAS	100
M1151 REMOVE VOR AND TVOR SYSTEMS	100
M1132 PERFORM POSTDEPLOYMENT PROCEDURES	86
M1110 CONDUCT PREINSTALLATION SURVEYS	86
M1153 REVIEW SCHEME PACKAGE PRIOR TO INSTALLATION	86
M1143 REMOVE INSTRUMENT LANDING SYSTEM (ILS) GLIDESLOPE SYSTEMS	86
M1144 REMOVE ILS LOCALIZER SYSTEMS	86
M1124 INSTALL VHF OMNIRANGE (VOR) OR TERMINAL VHF OMNIRANGE (TVOR) SYSTEMS	86
M1150 REMOVE VOR AND TACAN (VORTAC) SYSTEMS	86
M1158 SET UP OR TEAR DOWN MOBILE TVOR TEST VANS	71
M1159 SET UP OR TEAR DOWN MOBILE, PNEUMATIC, TELESCOPING ANTENNA MASTS	71
M1130 PERFORM INSTALLATION FINAL INSPECTIONS	71
M1120 INSTALL NAVAIDS SHELTERS	71
Y1997 OPERATE NAVAIDS FLIGHT INSPECTION SYSTEM (NAFIS) GROUND SUPPORT EQUIPMENT	57
Y1992 DETERMINE FLIGHT INSPECTION GROUND SUPPORT EQUIPMENT REQUIREMENTS	57
M1145 REMOVE MARKER BEACONS	57
M1111 COORDINATE INSTALLATION REQUIREMENTS WITH OTHER ACTIVITIES	43
F467 INSTALL MOUNTING BRACKETS OR FIXTURES	43

TABLE A2

GROUP ID NUMBER AND TITLE: NAVAIDS SPECIALTY TEAMS CLUSTER (ST046)  
 GROUP SIZE: N=32 PERCENT OF SAMPLE: 3%  
 DOMINANT PAYGRADE: E-4 AVERAGE TICF: 45 MONTHS  
 AVERAGE TAFMS: 61 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F413 DRIVE SMALL GOVERNMENT VEHICLES, SUCH AS PICKUPS OR PASSENGER VEHICLES	88
F435 INSPECT ELECTRICAL CABLES	84
M1135 INVENTORY SCHEME MATERIALS	78
F463 INSTALL EQUIPMENT ELECTRICAL GROUNDS	75
F402 CUT CABLES TO ELECTRICAL LENGTHS	75
F462 INSTALL EQUIPMENT ANCHORING DEVICES	72
M1128 PACK OR UNPACK SCHEME MATERIALS	69
F739 REPLACE SOLDERLESS CONNECTORS	66
M1152 REVIEW SCHEME MATERIALS	66
F438 INSPECT EQUIPMENT ELECTRICAL GROUNDS	66
F461 INSTALL DUMMY LOADS	66
M1133 PERFORM PREDEPLOYMENT PROCESSING	63
F691 REPLACE ELECTRICAL WIRES	63
F419 FABRICATE CONDUITS	59
M1132 PERFORM POSTDEPLOYMENT PROCEDURES	56
F699 REPLACE FUSES	56
F470 INSTALL SYSTEM GROUNDS	56
F535 MEASURE LINE VOLTAGES	56
F471 INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	53
F389 COMMUNICATE OVER RADIO DURING OPERATIONAL TESTS	50
F525 MAINTAIN FACILITY APPEARANCE	47
E228 INVENTORY EQUIPMENT, SUPPLIES, OR TOOLS	47
F416 FABRICATE CABLE HARNESSSES	47
M1135 PERFORM PRESHAKEDOWN TESTS	47
F442 INSPECT GROUNDING SYSTEMS	47
M1153 REVIEW SCHEME PACKAGE PRIOR TO INSTALLATION	44
M1122 INSTALL TACAN ANTENNAS	44
F420 FABRICATE ELECTRICAL OR SUPPORT CABLES	44
F305 ADJUST ATTENUATORS	44
F400 CONSTRUCT JUNCTION BOXES	41
F771 SOLDER PLUGS	41
M1123 INSTALL VERY HIGH FREQUENCY (VHF) OMNIRANGE AND TACTICAL AIR NAVIGATION (VORTAC) SYSTEMS	41
M1117 INSTALL FIXED TACTICAL AIR NAVIGATION (TACAN) SYSTEMS, OTHER THAN ANTENNAS	38
M1142 REMOVE FIXED TACAN SYSTEMS, OTHER THAN ANTENNAS	38

TABLE A3

GROUP ID NUMBER AND TITLE: CENTRALIZED REPAIR ACTIVITY PERSONNEL (TACTICAL/FIXED WEATHER EQUIPMENT) (ST197)  
 GROUP SIZE: N=7 PERCENT OF SAMPLE: 1%  
 DOMINANT PAYGRADE: E-5 AVERAGE TICF: 71 MONTHS  
 AVERAGE TAFMS: 78 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
F439 INSPECT EQUIPMENT FOR CORROSION	100
F776 TIGHTEN LOOSE BOLTS, NUTS, OR SCREWS	100
F693 REPLACE ELECTRON TUBES	100
F571 PERFORM OPERATIONS CHECK OF CHART RECORDERS	100
F485 ISOLATE MALFUNCTIONS IN MECHANICAL ASSEMBLIES	100
F521 LUBRICATE EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	100
F699 REPLACE FUSES	100
F560 PERFORM CORROSION CONTROL ON EQUIPMENT CABINETS OR RACKS	86
F653 REPAIR ELECTRICAL CIRCUITS	86
F696 REPLACE EQUIPMENT SUBASSEMBLIES	86
F472 INVENTORY AND MAINTAIN TOOL KITS	71
F670 REPLACE BEARINGS	71
F384 CLEAN EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	71
F772 SOLDER SOLID-STATE DEVICES, SUCH AS TRANSISTORS, DIODES, OR INTEGRATED COMPONENTS	71
F318 ADJUST INTERMEDIATE FREQUENCY (IF)	71
F550 OVERHAUL ELECTRICAL SYSTEMS	71
F715 REPLACE NONSEMICONDUCTOR DEVICES, SUCH AS CAPACITORS OR RESISTORS	71
F766 SERVICE SLIPRINGS, CONTACT ASSEMBLIES, AND BRUSHES	71
F769 SOLDER CIRCUIT BOARDS	71
F326 ADJUST OUTPUT OF TUBE HIGH OR LOW VOLTAGE POWER SUPPLY	71
F730 REPLACE RELAYS	71
F549 OVERHAUL ANTENNA PEDESTAL	57
F554 PACK OR UNPACK TACTICAL EQUIPMENT	57
F689 REPLACE ELECTRICAL CABLES	57
F745 REPLACE SYNCHROS/SERVOS	57
F471 INTERPRET PLANS, DIAGRAMS, OR SCHEMATICS	43
I897 COMPARE TMQ-15 DIRECTION TRANSMITTER TO INDICATORS FOR PROPER OPERATION AND TRACKING	43
I918 TEST TMQ-15 TRANSMITTERS USING TEST FACILITIES KIT (MK-861)	43
I914 SET UP OR TEAR DOWN TMQ-15	43
F570 PERFORM OPERATIONS CHECK OF BUILT-IN TEST EQUIPMENT (BITE)	29
I905 LEVEL TMQ-14 PROJECTOR TRUNION AXIS	29
I913 SET UP OR TEAR DOWN TMQ-14	29
I912 PERFORM TURN-ON/OFF PROCEDURES ON TMQ-20 AND CHECK FOR NORMAL INDICATIONS	29

TABLE A4

GROUP ID NUMBER AND TITLE: FIXED WEATHER EQUIPMENT MAINTENANCE PERSONNEL CLUSTER  
(ST125)

GROUP SIZE: N=334

PERCENT OF SAMPLE: 30%

DOMINANT PAYGRADE: E-3/E-4

AVERAGE TICF: 67 MONTHS

AVERAGE TAFMS: 79 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
F528 MEASURE AC VOLTAGES	95
F489 ISOLATE MALFUNCTIONS IN POWER SUPPLIES	91
F693 REPLACE ELECTRON TUBES	90
F314 ADJUST FRONT PANEL CONTROLS, SUCH AS GAIN, BRIGHTNESS, AND POSITIONING	89
F627 PERFORM SOLDERING OR DESOLDERING ON ELECTRICAL CIRCUITS	89
F385 CLEAN HAND OR POWER TOOLS	89
E219 INITIATE AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	89
H880 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-13 AND CHECK FOR NORMAL INDICATIONS	87
H883 PERFORM TURN-ON/OFF PROCEDURES FOR TMQ-11 AND CHECK FOR NORMAL INDICATIONS	87
H825 ADJUST TMQ-11 TEMPERATURE INDICATION	85
H873 PERFORM GMQ-13 OPERATIONAL CHECKS	85
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	84
F555 PAINT EQUIPMENT OR SHELTERS	84
H849 COMPARE GMQ-20 TRANSMITTER DIRECTION TO INDICATORS AND RECORDERS FOR PROPER OPERATION AND TRACKING	83
F559 PERFORM CORROSION CONTROL ON ELECTRICAL CIRCUITS	83
F383 CHECK ANTENNA SYSTEM BACKLASH OR MECHANICAL PLAY	81
F435 INSPECT ELECTRICAL CABLES	80
F364 ALIGN RANGE HEIGHT INDICATOR (RHI)	79
H871 MEASURE GMQ-13 PROJECTOR LAMP CURRENT	79
F415 ELECTRICALLY ZERO SYNCHRO SYSTEMS	78
H884 RECHARGE TMQ-11 DEWPOINT ELEMENT	78
G796 INSPECT ML-658 DIGITAL BAROMETERS	77
H840 CHECK OPERATION OF GMQ-13 DETECTOR HEATER/DEICER ASSEMBLY	75
G814 PERFORM TURN-ON/OFF PROCEDURES FOR ML-658 AND CHECK FOR NORMAL INDICATIONS	75
G793 INSPECT ML-24 SLING PSYCHROMETERS	74
H874 PERFORM GMQ-32 OPERATIONAL CHECKS	74
H852 DETERMINE TMQ-11 DEWPOINT USING ML-429 PSYCHROMETRIC CALCULATOR	72
H878 PERFORM TMQ-11 DEAD BAND CHECK	68
H827 ALIGN GMQ-13 PROJECTOR TO DETECTOR	66
H876 PERFORM GMQ-32 SYSTEM CALIBRATION	66



TABLE A6

GROUP ID NUMBER AND TITLE: LORAN C/D MAINTENANCE TECHNICIANS (ST192)  
 GROUP SIZE: N=12 PERCENT OF SAMPLE: 1%  
 DOMINANT PAYGRADE: E-5 AVERAGE TICF: 89 MONTHS  
 AVERAGE TAFMS: 95 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
X1952 ISOLATE LORAN C/D TRANSMITTER OUTPUT GROUP CYCLE GENERATOR MALFUNCTIONS	100
X1960 OPERATE LORAN C/D COMPUTER KEYBOARDS	100
X1924 INTERPRET KEYBOARD SEND/RECEIVE (KSR) MESSAGES	100
X1926 INTERPRET LORAN C/D DRIVER STATUS AND CONTROL LAMPS	100
X1929 INTERPRET LORAN C/D TRANSMITTER OUTPUT GROUPS STATUS AND CONTROL LAMP	100
X1961 OPERATE LORAN C/D COMPUTERS	100
X1927 INTERPRET LORAN C/D MONITOR SYNCHRONIZER STATION ALPHA NUMERIC DISPLAYS	100
X1959 LOAD LORAN C/D COMPUTER PROGRAM TAPES	100
X1944 ISOLATE LORAN C/D SEQUENCE CHARGE SUPPLY MALFUNCTIONS	100
X1964 OPERATE TAPE READERS	100
X1925 INTERPRET LORAN C/D CHAIN SCOPE DISPLAYS	100
X1922 INITIALIZE LORAN C/D COMPUTERS	100
X1987 TURN ON LORAN C/D TRANSMITTER DRIVER GROUPS	100
X1986 TURN ON LORAN C/D MONITOR SYNCHRONIZER GROUPS	100
F677 REPLACE CIRCUIT CARDS	100
X1968 PERFORM LORAN C/D HIGH CURRENT POWER SUPPLY OPERATIONAL CHECKS	100
F533 MEASURE DC VOLTAGES	92
F736 REPLACE SEMICONDUCTOR DEVICES	92
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	92
X1937 ISOLATE LORAN C/D MONITOR SYNCHRONIZER MALFUNCTIONS TO MAJOR SUBASSEMBLIES, SUCH AS POWER SUPPLIES OR RECEIVERS	92
X1914 ADJUST LORAN C/D LOW VOLTAGE POWER SUPPLIES	92
B65 ORIENT NEWLY ASSIGNED PERSONNEL	92
X1963 OPERATE TAPE PUNCHES	92
F778 TRACE CIRCUITS OR SIGNALS USING BLOCK OR CIRCUIT DIAGRAMS	83
E231 LOCATE STOCK NUMBERS IN SUPPLY PUBLICATIONS	83
F632 RECORD EQUIPMENT PARAMETERS OR METER READINGS	83
X1949 ISOLATE LORAN C/D TRANSMITTER DRIVER MALFUNCTIONS TO MAJOR SUBASSEMBLIES, SUCH AS POWER SUPPLIES/CONTROL CIRCUITS	83
X1958 ISOLATE LORAN C/D TRANSMITTER STATUS AND CONTROL ASSEMBLY MALFUNCTIONS	83
X1923 INITIALIZE LORAN C/D TRANSMITTER OUTPUT GROUPS	83
F774 TAG EQUIPMENT	83

TABLE A7

GROUP ID NUMBER AND TITLE: NAVAIDS MOBILITY UNIT PERSONNEL (IJT) (ST199)  
 GROUP SIZE: N=18 PERCENT OF SAMPLE: 2%  
 DOMINANT PAYGRADE: E-4/E-5 AVERAGE TICF: 70 MONTHS  
 AVERAGE TAFMS: 80 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
M1126 LOAD OR UNLOAD EQUIPMENT ON AIRCRAFT, MOBILIZERS, PALLETS, OR VEHICLES	100
M1157 SET UP OR TEAR DOWN MOBILE TACAN SYSTEMS	100
V1882 TEAR DOWN AN/TRN-26 TACAN SYSTEM	100
V1879 SET UP AN/TRN-26 TACAN SYSTEM	100
M1133 PERFORM PREDEPLOYMENT PROCESSING	100
V1844 ALIGN AN/TRN-26 TRANSMITTERS	100
V1835 ADJUST AN/TRN-26 ANTENNA POSITIONING	100
V1843 ALIGN AN/TRN-26 RECEIVER SECTIONS	100
V1854 ISOLATE AN/TRN-26 SYSTEM MALFUNCTIONS TO MAJOR SUPPLIES	100
M1119 INSTALL MOBILE TACAN SYSTEMS, OTHER THAN ANTENNAS	94
M1132 PERFORM POSTDEPLOYMENT PROCEDURES	94
M1109 CAMOUFLAGE EQUIPMENT	94
M1112 ERECT OR TEAR DOWN CANTONMENT AREAS	94
V1858 ISOLATE AN/TRN-26 UNIT 5/9 MONITOR MALFUNCTIONS	94
V1871 REPLACE AN/TRN-26 RECIVER/TRANSMITTERS	94
F618 PERFORM PMI ON MOBILE TACAN SYSTEMS	89
F439 INSPECT EQUIPMENT FOR CORROSION	89
F774 TAG EQUIPMENT	89
V1837 ADJUST AN/TRN-26 RECEIVER-TRANSMITTER CONTROL SECTIONS	89
M1146 REMOVE MOBILE TACAN SYSTEMS, OTHER THAN ANTENNAS	83
V1863 MEASURE AN/TRN-26 RECEIVER SECTION SIGNALS	83
E221 INITIATE AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	83
T1682 ALIGN AN/GRA-111 OR TRN-26 MONITOR OSCILLATORS	83
F384 CLEAN EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	83
V1856 ISOLATE AN/TRN-26 UNIT 11 POWER SUPPLY MALFUNCTIONS	83
F367 ALIGN TRANSMITTERS	78
V1880 SITE AN/TRN-26 SYSTEMS	78
F463 INSTALL EQUIPMENT ELECTRICAL GROUNDS	78
F438 INSPECT EQUIPMENT ELECTRICAL GROUNDS	78
F546 OPERATE FIELD PHONE SYSTEMS	78
F563 PERFORM FLIGHT CHECK GROUND PROCEDURES	72
M1160 TEAR DOWN CANTONMENT AREAS	72
F390 COMMUNICATE WITH AIRCREWS ON FLIGHT CHECK OBSERVATIONS OR ADJUSTMENTS	67
F775 TEST "BAIL-OUT" ALARM SYSTEM	67
V1847 ISOLATE AN/TRN-26 ANTENNA CONTROL UNIT MALFUNCTIONS	67
E228 INVENTORY EQUIPMENT, SUPPLIES, OR TOOLS	61

TABLE A8

GROUP ID NUMBER AND TITLE: SSILS/TACAN MAINTENANCE PERSONNEL CLUSTER (ST074)  
 GROUP SIZE: N=452 PERCENT OF SAMPLE: 40%  
 DOMINANT PAYGRADE: E-4 AVERAGE TICF: 63 MONTHS  
 AVERAGE TAFMS: 74 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
F544 MEASURE VSWR	89
F489 ISOLATE MALFUNCTIONS IN POWER SUPPLIES	88
F613 PERFORM PMI ON FIXED TACAN SYSTEMS	88
U1794 MEASURE TACAN ANTENNA ROTATION SPEEDS	87
U1808 PERFORM TACAN TURN-ON/OFF PROCEDURES	86
U1744 ADJUST TACAN MEDIUM VOLTAGE POWER SUPPLIES	86
F615 PERFORM PMI ON LOCALIZERS	85
F525 MAINTAIN FACILITY APPEARANCE	85
U1767 INSPECT POWER SUPPLIES	85
U1792 MEASURE KLYSTRON BIAS VOLTAGES	85
U1735 ADJUST KLYSTRON BEAM CURRENTS	84
U1759 CLEAN TACAN EQUIPMENT	84
F634 RECORD RADIATION PATTERN GROUND CHECK READINGS	84
U1765 INSPECT FMO	83
F389 COMMUNICATE OVER RADIO DURING OPERATIONAL TESTS	83
U1806 MEASURE TACAN TRANSMITTER POWER OUTPUTS	83
U1790 MEASURE FMO GATE PULSE WIDTHS	83
U1791 MEASURE FMO SHAPE PULSE WIDTHS	82
U1722 ADJUST CODER-MONITOR AUXILLARY REFERENCE BURST PULSE COUNTS AND SPACINGS	82
F438 INSPECT EQUIPMENT ELECTRICAL GROUNDS	82
F540 MEASURE RESISTANCES	81
U1752 AGE KLYSTRON TUBES	81
U1760 COLD TUNE KLYSTRONS	81
U1763 INSPECT ANTENNA CONTROL UNIT	80
F430 IDENTIFY OUT OF TOLERANCE EQUIPMENT PARAMETERS, SUCH AS METER READINGS	78
Q1507 MEASURE AN/GRN-29 LOCALIZER COURSE TRANSMITTER 90/150 HZ PERCENT OF MODULATION	69
Q1503 MEASURE AN/GRN-29 LOCALIZER CLEARANCE TRANSMITTER POWER OUTPUTS	68
Q1501 MEASURE AN/GRN-29 LOCALIZER BATTERY VOLTAGES	67
Q1454 CLEAN AN/GRN-29 GLIDESLOPE EQUIPMENT CABINET, SHELTER, AND FILTERS	67
Q1500 MEASURE AN/GRN-29 LOCALIZER ANTENNA VSWR	67
Q1458 INSPECT AN/GRN-29 GLIDESLOPE COURSE TRANSMITTERS	66
Q1442 ALIGN AN/GRN-29 GLIDESLOPE POWER SUPPLIES	63
Q1511 PERFORM AN/GRN-29 GLIDESLOPE FLIGHT CHECK GROUND PROCEDURES	61

TABLE A9

GROUP ID NUMBER AND TITLE: JOB CONTROLLERS CLUSTER (ST104)  
 GROUP SIZE: N=14 PERCENT OF SAMPLE: 1%  
 DOMINANT PAYGRADE: E-4 AVERAGE TICF: 59 MONTHS  
 AVERAGE TAFMS: 76 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
E195 ANNOTATE AF FORMS 264 (MMICS JOB/STATUS DOCUMENT)	93
E289 UPDATE EQUIPMENT STATUS BOARDS	86
E235 MAINTAIN CHARTS, GRAPHS, OR STATUS BOARDS	79
E236 MAINTAIN CLASSIFIED DOCUMENTS	71
B41 CONDUCT BRIEFINGS, CONFERENCES, STAFF MEETINGS, SYMPOSIUMS, OR WORKSHOPS	64
B44 COORDINATE EQUIPMENT CANNIBALIZATION WITH OTHER ACTIVITIES	64
A36 PREPARE BRIEFINGS	57
E245 MAINTAIN PREVENTIVE MAINTENANCE INSPECTION (PMI) LISTINGS	50
B51 DIRECT MAINTENANCE OF EQUIPMENT OR FACILITIES	50
B45 COORDINATE INSPECTION AND MAINTENANCE OF EQUIPMENT WITH OTHER ACTIVITIES	50
A28 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	50
E258 PERFORM SECURITY INSPECTIONS	50
A4 DETERMINE WORK PRIORITIES	43
E240 MAINTAIN EQUIPMENT STATUS REPORTS	36
B49 DIRECT DEVELOPMENT OR MAINTENANCE OF CHARTS, GRAPHS, OR STATUS BOARDS	36
A27 IMPROVE WORK METHODS OR PROCEDURES	36
E255 MAINTAIN VEHICLE CONTROL LOGS	36
B47 COUNSEL PERSONNEL	36
C129 WRITE APR	29
B71 SUPERVISE OTHER AFSC	29
B43 CONDUCT TOURS OF FACILITIES	29
D141 CONDUCT OJT	29
E297 UPDATE WORKLOAD STATUS BOARDS	21
D169 MAINTAIN TRAINING RECORDS	21
E256 MONITOR EQUIPMENT SHIPMENTS	21
B40 BRIEF PERSONNEL ON NEW DIRECTIVES	21
E219 INITIATE AFTO FORMS 349 (MAINTENANCE DATA COLLECTION RECORD)	21
E282 REVIEW ACCURACY OF MAINTENANCE MANAGEMENT DOCUMENTS	14
C102 EVALUATE MAINTENANCE DATA COLLECTION REPORTS	14
E196 ANNOTATE AF FORMS 861 (BASE/TRANSIENT JOB CONTROL NUMBER REGISTER)	14
E192 ACCOUNT FOR ASSIGNED PROPERTY	14

TABLE A10

GROUP ID NUMBER AND TITLE: MAINTENANCE STAFF PERSONNEL CLUSTER (ST042)

GROUP SIZE: N=130

PERCENT OF SAMPLE: 11%

DOMINANT PAYGRADE: E-7

AVERAGE TICF: 150 MONTHS

AVERAGE TAFMS: 179 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
A28 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	94
B55 DRAFT CORRESPONDENCE	80
C74 ANALYZE INSPECTION REPORT FINDINGS OR SURVEY RESULTS	76
A27 IMPROVE WORK METHODS OR PROCEDURES	68
B40 BRIEF PERSONNEL ON NEW DIRECTIVES	65
C98 EVALUATE INSPECTION REPORTS	62
C75 ANALYZE TRENDS IN SYSTEM PERFORMANCE OR MALFUNCTIONS	61
C113 EVALUATE TRAINING PROGRAMS	57
C119 INSPECT FACILITIES	56
A13 DRAFT DIRECTIVES	56
A3 DETERMINE REQUIREMENTS FOR EQUIPMENT, PERSONNEL, SPACE, OR SUPPLIES	52
C90 EVALUATE COMPLIANCE WITH WORK STANDARDS	51
C95 EVALUATE INDIVIDUALS FOR AWARDS OR DECORATIONS	51
A19 ESTABLISH OFFICE INSTRUCTIONS (OI)	50
C132 WRITE SPECIAL REPORTS, STAFF STUDIES, OR SURVEYS	49
B46 COORDINATE REPAIR ACTIVITIES WITH OTHER AGENCIES	48
E233 MAINTAIN ADMINISTRATIVE FILES	48
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	48
B43 CONDUCT TOURS OF FACILITIES	47
B49 DIRECT DEVELOPMENT OR MAINTENANCE OF CHARTS, GRAPHS, OR STATUS BOARDS	46
C105 EVALUATE PERFORMANCE OF INSTALLED EQUIPMENT	45
B59 IMPLEMENT QUALITY CONTROL PROGRAMS	43
C106 EVALUATE PERFORMANCE OF NEWLY INSTALLED EQUIPMENT	43
B60 IMPLEMENT SAFETY OR SECURITY PROGRAMS	43
E257 PERFORM SAFETY INSPECTIONS	43
A8 DEVELOP INSPECTION SCHEDULES	42
C110 EVALUATE SAFETY PROCEDURES	38
A15 DRAFT STANDARD OPERATING PROCEDURES (SOP)	38
C84 CONDUCT WORKCENTER QUALITY CONTROL INSPECTIONS	37
C88 EVALUATE CHANGES TO NAVAIDS SYSTEMS	37
E258 PERFORM SECURITY INSPECTIONS	37
B54 DRAFT BUDGET REQUIREMENTS	37
C92 EVALUATE EMERGENCY PROCEDURES	37
A38 WRITE JOB DESCRIPTIONS	37

TABLE A11

GROUP ID NUMBER AND TITLE: FLIGHT INSPECTION TECHNICIANS IJT (ST526)  
 GROUP SIZE: N=5 PERCENT OF SAMPLE: .4%  
 DOMINANT PAYGRADE: E-6 AVERAGE TICF: 114 MONTHS  
 AVERAGE TAFMS: 167 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
Y2000 PERFORM AIRCREW POSITION FLIGHT CHECKLIST PROCEDURES	100
Y1988 ANALYZE FLIGHT INSPECTION RECORDINGS	100
Y1998 PERFORM AIRBORNE NAVAIDS FLIGHT INSPECTION PROCEDURES	100
Y1999 PERFORM AIRCRAFT NAFIS OPERATIONAL CHECKS	100
Y1994 DEVELOP FLIGHT PROFILES	100
Y2003 PREPARE FLIGHT CHECK REPORTS	100
Y1993 DETERMINE FLIGHT INSPECTION REQUIREMENTS	100
Y1995 EVALUATE FLIGHT INSPECTION RECORDINGS	100
Y2001 PERFORM FLIGHT INSPECTION SUPPORT EQUIPMENT OPERATIONAL CHECKS	100
Y2004 PREPARE FLIGHT INSPECTION CHECK SHEETS	100
Y1992 DETERMINE FLIGHT INSPECTION GROUND SUPPORT EQUIPMENT REQUIREMENTS	100
Y2002 PLOT FLIGHT FACILITY COORDINATES ON NAVIGATIONAL CHARTS	100
Y1997 OPERATE NAVAIDS FLIGHT INSPECTION SYSTEM (NAFIS) GROUND SUPPORT EQUIPMENT	100
Y1996 INTERPRET NAVIGATIONAL CHARTS OR MAPS	100
Y1990 BRIEF GROUND PERSONNEL ON MISSION REQUIREMENTS	100
Y1991 CONDUCT FLIGHT INSPECTION POSTFLIGHT DEBRIEFINGS	100
Y1989 BRIEF AIRCREWS ON MISSION REQUIREMENTS	100
C74 ANALYZE INSPECTION REPORT FINDINGS OR SURVEY RESULTS	60
D144 COUNSEL TRAINEES ON TRAINING PROGRESS	60
D169 MAINTAIN TRAINING RECORDS	40
D141 CONDUCT OJT	40
D139 CONDUCT FORMAL CLASSROOM INSTRUCTION	40
C88 EVALUATE CHANGES TO NAVAIDS SYSTEMS	40
C97 EVALUATE INSPECTION PROCEDURES	40
D161 EVALUATE TRAINING MATERIALS OR METHODS	40
C98 EVALUATE INSPECTION REPORTS	40
C106 EVALUATE PERFORMANCE OF NEWLY INSTALLED EQUIPMENT	40
C119 INSPECT FACILITIES	40
E266 PREPARE INSPECTION CHECKLISTS	40
F390 COMMUNICATE WITH AIRCREWS ON FLIGHT CHECK OBSERVATIONS OR ADJUSTMENTS	40
F548 OPERATE VHF RADIOS	40
C123 PREPARE INSPECTION REPORTS	40
D158 EVALUATE OJT TRAINEES	40

TABLE A12

GROUP ID NUMBER AND TITLE: TECHNICAL SCHOOL PERSONNEL CLUSTER (ST017)  
 GROUP SIZE: N=41 PERCENT OF SAMPLE: 4%  
 DOMINANT PAYGRADE: E-5 AVERAGE TICF: 99 MONTHS  
 AVERAGE TAFMS: 114 MONTHS

THE FOLLOWING ARE IN DESCENDING ORDER BY PERCENT MEMBERS PERFORMING:

TASKS	PERCENT MEMBERS PERFORMING
D139 CONDUCT FORMAL CLASSROOM INSTRUCTION	76
D187 SCORE TESTS	73
D182 REVIEW TESTS	73
D174 PREPARE LESSON PLANS	71
D181 REVIEW TEST QUESTIONS	71
D133 ADMINISTER TESTS	68
D190 WRITE TEST QUESTIONS	66
B47 COUNSEL PERSONNEL	61
D144 COUNSEL TRAINEES ON TRAINING PROGRESS	59
D142 CONDUCT RESIDENT TECHNICAL TRAINING CLASSES	56
D137 CHECK OPERATION OF TRAINING EQUIPMENT	51
D162 EVALUATE TRAINING PROGRESS OF CLASSROOM STUDENTS	49
D153 DEVELOP TRAINING AIDS	49
D176 PREPARE TESTS	46
A28 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	37
D152 DEVELOP TEST QUESTION BANKS	34
B43 CONDUCT TOURS OF FACILITIES	34
E228 INVENTORY EQUIPMENT, SUPPLIES, OR TOOLS	29
D169 MAINTAIN TRAINING RECORDS	27
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	27
D180 REVIEW STUDENT CRITIQUES	27
E258 PERFORM SECURITY INSPECTIONS	24
E218 INITIATE AFTO FORMS 22 (TECHNICAL ORDER SYSTEM PUBLICATION IMPROVEMENT REPORT AND REPLY)	24
D161 EVALUATE TRAINING MATERIALS OR METHODS	22
B56 EVALUATE ALIGNMENT PROCEDURES	22
F534 MEASURE FREQUENCIES USING OSCILLOSCOPE, FREQUENCY COUNTERS, AND WAVE METERS	22
F699 REPLACE FUSES	22
E251 MAINTAIN TECHNICAL ORDER FILES	20
D148 DEVELOP COURSES OF TRAINING	20
D163 EVALUATE TRAINING TECHNIQUES	20
F533 MEASURE DC VOLTAGES	20

APPENDIX B  
REPRESENTATIVE TASKS PERFORMED BY DAFSC GROUPS

TABLE B1

## REPRESENTATIVE TASKS PERFORMED BY 30230/30250 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=310)
F533 MEASURE DC VOLTAGES	87
F439 INSPECT EQUIPMENT FOR CORROSION	85
F528 MEASURE AC VOLTAGES	84
F437 INSPECT EQUIPMENT COMPONENTS	82
F436 INSPECT ELECTRICAL WIRING	82
F534 MEASURE FREQUENCIES USING OSCILLOSCOPE, FREQUENCY COUNTERS, AND WAVE METERS	79
F693 REPLACE ELECTRON TUBES	78
H880 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-13 AND CHECK FOR NORMAL INDICATIONS	77
F540 MEASURE RESISTANCES	76
E221 INITIATE AFTO FORMS 350 (REPARABLE ITEM PROCESSING TAG)	75
H846 CHECK TMQ-11 DEWPOINT ELEMENT	74
F363 ALIGN POWER SUPPLIES	73
H859 ISOLATE MALFUNCTIONS IN GMQ-20 SPEED SYSTEM	70
F772 SOLDER SOLID-STATE DEVICES, SUCH AS TRANSISTORS, DIODES OR INTEGRATED COMPONENTS	67
G796 INSPECT ML-658 DIGITAL BAROMETERS	67
F364 ALIGN RANGE HEIGHT INDICATOR (RHI)	66
H881 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-32 AND CHECK FOR NORMAL INDICATIONS	63
H852 DETERMINE TMQ-11 DEWPOINT USING MS-658 PSYCHROMETRIC CALCULATOR	62
F770 SOLDER NONSOLID-STATE CIRCUIT COMPONENTS	60
F388 COMMUNICATE OVER LANDLINES DURING OPERATIONAL CHECKS	58
H878 PERFORM TMQ-11 DEAD BAND CHECK	57
F610 PERFORM OPERATIONS CHECK OF WAVEGUIDE PRESSURE	55
F369 ANALYZE INDICATIONS OF BUILT-IN-TEST (BIT)	52
F625 PERFORM SIMULATED TARGET CHECKS	52
K1066 CHECK FPS-77 HAND WHEEL ASSEMBLE	46
D144 COUNSEL TRAINEES ON TRAINING PROGRESS	33
E243 MAINTAIN MAINTENANCE MANAGEMENT INFORMATION AND CONTROL SYSTEM (MMICS) WORKCENTER LISTINGS	30

TABLE B2  
 REPRESENTATIVE TASKS PERFORMED BY 30270 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=134)
A28 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS, BRIEFINGS, CONFERENCES, OR WORKSHOPS	83
B47 COUNSEL PERSONNEL	81
E30 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	76
B67 SCHEDULE LEAVES, PASSES OR TEMPORARY DUTY	71
B55 DRAFT CORRESPONDENCE	70
A27 IMPROVE WORK METHODS OR PROCEDURES	68
E280 RESEARCH ILLUSTRATED PARTS OR SUPPLY CATALOGS	66
A12 DEVELOP WORK METHODS OR PROCEDURES	57
F356 ALIGN AFC CIRCUITS	56
F544 MEASURE VSWR	54
C105 EVALUATE PERFORMANCE OF INSTALLED EQUIPMENT	53
C78 CONDUCT GROUND SAFETY OR FIRE INSPECTIONS	52
H880 PERFORM TURN-ON/OFF PROCEDURES FOR GMQ-13 AND CHECK FOR NORMAL INDICATIONS	52
H849 COMPARE GMQ-20 TRANSMITTER DIRECTION TO INDICATORS AND RECORDERS FOR PROPER OPERATION AND TRACKING	51
B66 REVIEW EQUIPMENT AUTHORIZATION INVENTORY DATA (EAID)	46
C116 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	46
C89 EVALUATE CHANGES TO WEATHER SYSTEMS	45
C98 EVALUATE INSPECTION REPORTS	44
B52 DIRECT MAINTENANCE OF PUBLICATIONS	43
B57 EVALUATE CALIBRATION PROCEDURES	43
D164 IMPLEMENT OJT PROGRAMS	43
A15 DRAFT STANDARD OPERATING PROCEDURES (SOP)	37
E281 RESEARCH MAINTENANCE RECORDS OR REPORTS	35

TABLE B3

## REPRESENTATIVE TASKS PERFORMED BY 30431/30451 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=475)
F533 MEASURE DC VOLTAGES	81
F536 MEASURE OUTPUT POWER	80
F439 INSPECT EQUIPMENT FOR CORROSION	77
F534 MEASURE FREQUENCIES USING OSCILLOSCOPE, FREQUENCY COUNTERS, AND WAVE METERS	74
F530 MEASURE ANTENNA VSWR	71
F632 RECORD EQUIPMENT PARAMETERS OR METER READINGS	69
F775 TEST "BAIL OUT" ALARM SYSTEMS	66
F326 ADJUST OUTPUT OF TUBE HIGH OR LOW VOLTAGE POWER SUPPLY	65
F615 PERFORM PMI ON LOCALIZERS	64
F430 IDENTIFY OUT OF TOLERANCE EQUIPMENT PARAMETERS, SUCH AS METER READINGS	64
F367 ALIGN TRANSMITTERS	64
F384 CLEAN EQUIPMENT ELECTRICAL OR MECHANICAL COMPONENTS	60
F623 PERFORM RADIATION PATTERN GROUND CHECKS	60
F777 TIN SOLDERING EQUIPMENT	58
F436 INSPECT ELECTRICAL WIRING	69
F472 INVENTORY AND MAINTAIN TOOL KITS	49
F527 MEASURE AC RIPPLE ON DC VOLTAGES	64
Q1506 MEASURE AN/GRN-29 LOCALIZER COURSE TRANSMITTER POWER OUTPUTS	52
U1794 MEASURE TACAN ANTENNA ROTATION SPEEDS	64
Q1454 CLEAN AN/GRN-29 GLIDESLOPE EQUIPMENT CABINET, SHELTER, AND FILTERS	51
U1791 MEASURE FMO SHAPE PULSE WIDTHS	60
F783 VERIFY PROPER OPERATION OF BITE	54
T1710 PERFORM MONITOR RECEIVER SENSITIVITY ALARM CHECK ON GRA-111 OR TRN-26	53
U1800 MEASURE TACAN RECEIVER SELECTIVITY	52

TABLE B4

## REPRESENTATIVE TASKS PERFORMED BY 30471 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=213)
A28 PARTICIPATE IN MEETINGS, SUCH AS STAFF MEETINGS BRIEFINGS, CONFERENCES, OR WORKSHOPS	81
A4 DETERMINE WORK PRIORITIES	74
B47 COUNSEL PERSONNEL	72
B65 ORIENT NEWLY ASSIGNED PERSONNEL	71
C129 WRITE APR	71
B55 DRAFT CORRESPONDENCE	68
C119 INSPECT FACILITIES	63
B73 SUPERVISE 304X1 PERSONNEL	62
B40 BRIEF PERSONNEL ON NEW DIRECTIVES	62
E230 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	62
C75 ANALYZE TRENDS IN SYSTEM PERFORMANCE OR MALFUNCTIONS	59
D141 CONDUCT OJT	57
C118 INSPECT EQUIPMENT USING PERFORMANCE CRITERIA CHECKLISTS	53
B45 COORDINATE INSPECTION AND MAINTENANCE OF EQUIPMENT WITH OTHER ACTIVITIES	53
A12 DEVELOP WORK METHODS OR PROCEDURES	46
B61 IMPLEMENT SELF-INSPECTION PROGRAMS	44
B59 IMPLEMENT QUALITY CONTROL PROGRAMS	35
C104 EVALUATE MISSION IMPACT RESULTING FROM INOPERATIVE FLIGHT FACILITIES	32
D186 SCHEDULE OJT	32
B54 DRAFT BUDGET REQUIREMENTS	32
C84 CONDUCT WORKCENTER QUALITY CONTROL INSPECTIONS	29