

COMMUNICATIONS SYSTEMS ELECTROMAGNETIC SPECTRUM MANAGEMENT AND BASE-LEVEL FREQUENCY MANAGERS

AFSC 492X2

AFPT 90-492-908

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

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# TABLE OF CONTENTS

	PAGE <u>NUMBER</u>
PREFACE	iv
SUMMARY OF RESULTS	v
INTRODUCTION	1 1
SURVEY METHODOLOGY	2 2 3 3 3
SPECIALTY JOBS (Career Ladder Structure)	5 5
FULL-TIME JOBS	6
ADDITIONAL DUTY JOB	11 12
CAREER LADDER PROGRESSION	12
SKILL-LEVEL DESCRIPTIONS	12 16
AFR 39-1 SPECIALTY JOB DESCRIPTIONS ANALYSIS	16
TRAINING ANALYSIS	21
Spectrum Management Personnel (AFSC 492X2)	21 29 29
JOB SATISFACTION	29
IMPLICATIONS	33
APPENDIX A	34

# TABLE OF CONTENTS (Tables, Figures, Appendices)

PAGE NUMBER

26

TABLE TABLE TABLE	1 2 3		MAJCOM REPRESENTATION IN SAMPLE	4 4
TABLE	4	-	MEMBERS (RELATIVE PERCENT OF JOB TIME SPENT)	8
	_		LADDER JOBS	9
TABLE	5	-	DISTRIBUTION OF AFSC 492X2 SKILL-LEVEL MEMBERS ACROSS	12
TABLE	6	-	TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS	13
TIOLE	-7		(RELATIVE PERCENT OF JOB TIME)	14
	/	_	REPRESENTATIVE TASKS PERFUKMED BY AFSC 49232 PERSONNEL	ן 1 ק
TABLE	a	_	TACKS WHICH DEST DIEEEDENTIATE BETWEEN DAESC 40232 AND	17
INDEL	2		DAESC 49272 (PERCENT MEMBERS PERFORMING)	18
TABLE	10	-	REPRESENTATIVE TASKS PERFORMED BY AFSC 49292 PERSONNEL	19
TABLE	11	-	TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 49272 AND	
			49292 PERSONNEL (PERCENT MEMBERS PERFORMING)	20
TABLE	12	~	SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS (TE)	
<b>T</b> . O			RATINGS	& 23
TABLE	13	-	SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY (TD)	
	1.4	_	RATINGS	& 25
TADLE	14	-	ACCIONMENT OF AECO A02Y2 DEDSONNEL	27
	15	-	REPRESENTATIVE TASKS PEREORMED BY EIRST-ASSIGNMENT AESC	21
	10		492X2 PERSONNEL	28
TABLE	16	-	SAMPLE OF TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT OF ALL CRITERION GROUP MEMBERS, BUT NOT MATCHED TO	20
			AFSC 492X2 JQS	& 31
TABLE	17	-	JOB SATISFACTION INDICATORS FOR 492X2 TICF GROUPS IN	
			CURRENT STUDY (PERCENT MEMBERS RESPONDING)	32
FIGURE	E 1	-	DISTRIBUTION OF AFSC 753X0 PERSONNEL ACROSS CAREER	
			LADDER JOBS	7

APPENDIX A -	SELECTED	REPRESENTATIVE	TASKS	PERFORMED	BY	MEMBERS	OF	
	CAREER LA	DDER JOBS						34

FIGURE 2 - DISTRIBUTION OF FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL

# PREFACE

This report presents the results of an Air Force Occupational Survey of the Communications Systems Electromagnetic Spectrum Management (AFSC 492X2) career ladder and Base-Level Frequency Manager additional duty. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

Captain Jose Caussade developed the survey instrument, Rebecca Hernandez provided computer programming support, and Ms Raquel A. Soliz provided administrative support. Mr Daniel E. Dreher and Lt John Martinez analyzed the data and wrote the final report. Lt Colonel Johnny M. Collins, Chief, Airman Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Squadron, reviewed and approved this report for release.

Copies of this report are distributed to Air Staff sections and other interested training and management personnel. Additional copies may be requested from the Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150-5000.

GARY R. BLUM, Lt Colonel, USAF Commander USAF Occupational Measurement Squadron JOSEPH S. TARTELL Chief, Occupational Analysis Branch USAF Occupational Measurement Squadron

# SUMMARY OF RESULTS

1. <u>Survey Coverage</u>: This report is based on data collected from 65 AFSC 492X2 respondents, which constitutes 84 percent of all assigned AFSC 492X2 personnel, 38 respondents with other AFSCs who have the job as an additional duty, and 5 civilians.

2. <u>Career Ladder Structure</u>: Full-time respondents were separated from additional duty respondents, and jobs performed by members of each group were identified. Although the basic job performed by both groups is Frequency Manager, some minor variations were found. Generally, full-time personnel perform more tasks than their additional duty counterparts, while those with the additional duty perform training tasks as part of the job.

3. <u>Career Ladder Progression</u>: Survey data show this is an atypical career ladder, as there is no 5-skill level, and 7-skill level members perform technical aspects of the career ladder, rather than act as first-line supervisors.

4. <u>Specialty Descriptions</u>: AFR 39-1 Specialty Descriptions accurately describe functions and tasks performed by AFSC 492X2 personnel.

5. <u>Training Analysis</u>: The Job Qualification Standard (JQS) is well supported by survey data. There are a number of technical tasks that are not matched to the JQS that need to be reviewed to determine if they suggest topics that should be included in the JQS.

6. <u>Job Satisfaction</u>: Job satisfaction indicators show most full-time members enjoy their job and feel their training and talents are used. Indicators for base-level personnel were not computed.

7. <u>Implications</u>: Overall, there is little difference between what full-time and base-level Frequency Managers do. In addition, since both 3- and 7-skill level members perform nearly the same technical job, and the career ladder has so few members, there is no clear indication a 5-skill level is necessary.

# OCCUPATIONAL SURVEY REPORT COMMUNICATIONS SYSTEMS ELECTROMAGNETIC SPECTRUM MANAGEMENT AND BASE-LEVEL FREQUENCY MANAGEMENT (AFSC 492X2)

# INTRODUCTION

This is a report of an occupational survey of the AFSC 492X2 Communications Systems Electromagnetic Spectrum Management career ladder and base-level Frequency Manager additional duty. It was requested by the USAF Frequency Management Center, primarily to compare tasks performed by members with the AFSC with those performed by members of other AFSCs who perform the Frequency Manager job as an additional duty. Another issue was whether a 5skill level should be added to the career ladder. Currently, AFSC 492X2 is a lateral career ladder, with members progressing from the 3-skill level directly to the 7-skill level. This is the first time an occupational survey has been conducted for this AFSC.

## Background

The AFR 39-1 Specialty Descriptions state that 3- and 7-skill level AFSC 492X2 personnel perform and supervise electromagnetic spectrum management functions. This includes coordinating all types of radio and radar transmission and reception, recommending equipment and antennas, and resolving interference problems.

Nine-skill level and CEM code members superintend electromagnetic spectrum management activities. This includes planning, organizing, directing, inspecting, and evaluating types of activities and tasks consistent with managing the career ladder.

As mentioned earlier, the AFSC 492X2 career ladder is a lateral specialty, and those who cross-train must hold the 5-skill level in AFSCs 116X0, 492X1, or any 30XXX specialty (except 305XX and 306XX), and attend a 12-week SAFCC 49232 Interservice Radio Frequency Management course conducted at Keesler AFB. While this course is taught on an ATC base, it is managed by AFCC and has instructors from all branches of the armed services. Typically, 3 classes of 21, including civilian, officer, and enlisted students, are conducted each year. The curriculum consists of electromagnetic wave fundamentals, radio wave propagation, antennas, call signs, interference and radiation hazards, frequency allocation, regulatory agencies, tactical radio systems engineering, and electronic warfare.

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# SURVEY METHODOLOGY

Data for this survey were collected using USAF Job Inventory AFPT 90-492-908 (January 1991). The Inventory Developer reviewed career ladder documents and then prepared a tentative task list, which was validated through personal interviews with 19 subject-matter experts at the following locations:

BASE	REASON FOR VISIT
Keesler AFB MI	Technical school
Bergstrom AFB TX	Tactical frequency support
Ramstein AFB GE	International frequency management
Hickam AFB HI	International frequency management
Patrick AFB FL	Combat (mobility) communications
Frequency Management Center, Washington DC	Functional headquarters

The final inventory contains 341 tasks and background questions asking respondents to indicate their status, if they perform the job as an an additional duty, job satisfaction, job title, work area they are assigned to, and prior AFSC. Responses will be used to help evaluate the JQS and compare AFSC 492X2 personnel to base-level Frequency Managers who have the job as an additional duty.

### Survey Administration

From January through April 1991, Consolidated Base Personnel Offices administered the surveys to AFSC 492X2 personnel selected from a computergenerated mailing list provided by the Armstrong Laboratory, Human Resources Directorate. Base level Frequency Managers who attended the annual training conference in October 1990 were also asked to complete an inventory booklet. All respondents were asked to fill in the background information section first, go through the booklet and mark all tasks they perform in their current job or as an additional duty, and then go back and rate each task they marked on a 9-point scale reflecting the relative amount of time spent on each task. Time spent ratings range from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent). The computer calculated the relative percent time spent on all tasks for each respondent by first totaling ratings on all tasks, dividing the rating for each task by this total, and multiplying by 100. The percent time spent ratings from all inventories were then combined and used with percent member performing values to describe various groups in the career ladder.

# Survey Sample

The final sample includes responses from 65 AFSC 492X2 members, 5 full-time civilians, and 38 personnel with the Base-Level Frequency Manager additional duty. As shown in Tables 1 and 2, the MAJCOM and paygrade representation of full-time members in the sample is very close to that of the total AFSC 492X2 population.

# Data Processing and Analysis

Once the job inventories were received from the field, the booklets were screened for completeness and accuracy, and responses were entered into the computer to create a complete case record for each respondent. Comprehensive Occupational Data Analysis Programs (CODAP) then created a job description for each respondent, as well as composite job descriptions for members of various demographic groups. These job descriptions were used for much of the occupational analysis.

# Task Factor Administration

Personnel who make decisions about career ladder documents and training programs use task factor data (training emphasis and task difficulty ratings), as well as job descriptions. The survey process provides these data by asking selected E-6 and E-7 supervisors to complete either a training emphasis (TE) or task difficulty (TD) booklet. These booklets are processed separately from the job inventories, and TE and TD data, when applicable, are considered when analyzing other issues in the study.

<u>Training Emphasis (TE)</u>. TE is the amount of structured training first-enlistment personnel need in order to perform tasks successfully. Structured training is provided by resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Twenty experienced AFSC 492X2 supervisors rated tasks in the inventory on a 10-point scale ranging from 0 (no training emphasis required) to 9 (high TE required). Interrater agreement for the 20 supervisors is acceptable. The mean TE rating for tasks in the inventory is 2.86, and the standard deviation is 2.07. Any task with a TE rating of 4.93 or greater is considered to have high TE.

# MAJCOM REPRESENTATION IN SAMPLE

	PERCENT OF ASSIGNED	:	PERCENT OF SAMPLE
AFCC	83		79
AFSC	5		6
ELM	4		3
TAC	3		1
OTHER	5		11
Total Assigned Total Eligible Total in Sample Percent of Assig Percent of Eligi	= 77 = 70 = 65 ned in Sample ble in Sample	= 84% = 93%	

# TABLE 2

# DISTRIBUTION OF AFSC 492X2 PAYGRADES IN SAMPLE

PAYGRADE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
E-4	1	2
E-5	22	20
E-6	45	44
E-7	25	27
E-8	7	7

<u>Task Difficulty (TD)</u>. TD is an estimate of the length of time the average airman takes to learn to perform each task listed in the inventory. Twenty-two experienced AFSC 492X2 supervisors rated the difficulty of the tasks in the inventory on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Interrater agreement for these 22 supervisors is also acceptable. TD ratings are normally adjusted, so tasks of average difficulty have a value of 5.00, and a standard deviation of 1.00. Any task with a TD rating of 6.00 or greater is considered to be difficult to learn.

# SPECIALTY JOBS (Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of jobs performed. CODAP assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings. This process continues until all respondents possible are included in a group. The structure of the career ladder is then defined in terms of these groups, or jobs the respondents perform.

## <u>Overview</u>

The career ladder structure was initially examined using the total sample. Survey data showed respondents were divided into basically two jobs, one of which was performed by 80 percent of all full-time respondents and the other performed by 92 percent of all additional duty respondents. A comparison of job descriptions for these two groups revealed members of both groups perform many common technical tasks; however, there are also some slight differences in tasks performed by members of the two groups. Because one purpose for the survey was to compare full-time and additional duty personnel, and there appeared to be some differences between the two groups, the sample was then divided so full-time respondents could be considered separately from those who perform the job as an additional duty.

Survey data show, even when the two groups are considered separately, there is basically one job, Frequency Manager, that most full-time and all additional duty personnel perform. In addition, there are three other jobs performed by just a few full-time personnel. These are identified separately because of specific tasks performed or because of the relationship of the tasks to a specific duty. These jobs are discussed below. Jobs performed by full-time personnel are shown in Figure 1, time spent on duties by members in all jobs is presented in Table 3, while selected background information for these members is presented in Table 4. The Stage (STG) number listed by the job title listed below is a reference number assigned by CODAP, while the letter "N" refers to the number of respondents performing the job.

# FULL-TIME JOBS

Ι.	FREQUENCY MANAGER	(STG010, N=55)
II.	JUNIOR FREQUENCY MANAGER	(STG009, N=2)
III.	SUPERINTENDENT	(STG012, N=2)
IV.	TRAINING	(STG025, N=2)

# ADDITIONAL DUTY JOB

V. BASE-LEVEL FREQUENCY MANAGER

(STG004, N=38)

# FULL-TIME JOBS

I. <u>FULL-TIME FREQUENCY MANAGER JOB (STG010, N=55)</u>. This is the basic job of the specialty. Full-Time Frequency Managers perform an average of 124 tasks, and spend 23 percent of their duty time performing communication electronics systems activities, 21 percent performing general frequency management activities, 15 percent performing frequency actions, and 15 percent performing high-frequency electromagnetic wave propagation predictions. Five respondents in this group hold the 3-skill level, 47 hold the 7-skill level, 2 hold the 9-skill level, and 1 is a civilian. AFSC 492X2 personnel performing this job average 60 months TICF, and 21 are assigned overseas. Respondents in this job spend most of their time performing the following tasks:

calculate effective transmit power (ETP)
prepare satellite-access requests for the GMF/SHF
SATCOM system
determine LUFs for point-to-point communications
calculate bandwidth for frequency-modulated (FM)
multichannel systems
calculate amounts of power supplied to antennas
calculate radar distances using pulse durations (PD)
submit HF/ISB DCS entry frequency requests



# DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY SPECIALTY JOB MEMBERS (RELATIVE PERCENT OF JOB TIME SPENT)

집	TIES	FREQUENCY MANAGER (N=55)	JUNIOR FREQUENCY MANAGER (N=2)	SUPT (N=2)	TRAINING (N=2)	BASE-LEVEL FREQUENCY MANAGER (N=38)
۲	ORGANIZ: NG AND PLANNING	*	ω	*	*	*
æ	DIRECTING AND IMPLEMENTING	m	2	16	2	7
ပ	INSPECTING AND EVALUATING	9	2	16	9	14
Ο	TRAINING	ى	0	6	ĸ	13
ш	PERFORMENG ADMINISTRATIVE ACTIVITIES	2	0	œ	14	9
ш	PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	21	31	25	თ	21
G	PERFORMING FREQUENCY ACTIONS	15	21	6	2	11
Ŧ	PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	15	24	12	2	10
H	PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	23	18	4	19	14
ſ	PERFORMING SITING AND PATH ACTIVITIES	പ	0	0	25	2
¥	PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	2	0	0	10	*
<b>_</b> _	PERFORMING ELECTRONIC WARFARE ACTIVITIES	ε	0	0	9	1

\* Denotes less than 1 percent

	FREQUENCY MANAGER	JUNIOR FREQUENCY MANAGEMENT	SUPERINTENDENT	TRAINING	BASE-LEVEL FREQUENCY MANAGER
NUMBER IN GROUP PERCENT OF SAMPLE	55 51%	2%	2%	2 %	38 35%
DAFSC DISTRIBUTION 49232 49272 49272 49291 49291	85% 85% 0	20% 20% 0	2002	0000	0000
PAYGRADE DISTRIBUTION AIRMAN E-4 E-5 E-6 E-6 E-8 E-9 E-9 E-9	0 % 8 % % 0 % 8 % % 0 % % % %	000000	000000000000000000000000000000000000000	0000000	2 18% 111% 0 % 3 % 3 % 3 %
AVERAGE NUMBER OF TASKS PERFORMED AVERAGE MONTHS TICF PERCENT SUPERVISING	124 60 6%	17 2 0	69 96	0 66 03	52 80 16%

SELECTED BACKGROUND DATA ON 492X2 PERSONNEL IN CAREER LADDER JOBS

TABLE 4

9

Survey data show there are two variations on the core Frequency Manager job. Members with the variations perform many common frequency management tasks, but are distinguished by the number of tasks performed, emphasis on a few unique tasks, or time spent on tasks related to one specific duty. Eighteen respondents reported performing an average of 71 tasks, most of which deal with performing various kinds of calculations. Two other respondents spend more time on administrative tasks.

II. JUNIOR FREQUENCY MANAGER JOB (STG009, N=2). This is the first job performed by graduates of the 3-skill level awarding course. While both respondents performing this job are paygrade E-6, they average only 2 months in the career ladder and report performing an average of only 17 tasks. Junior Frequency Managers spend 31 percent of their duty time performing general frequency management activities, 24 percent performing high frequency electromagnetic wave propagation predictions, and 21 percent performing frequency actions. Typical tasks include:

submit HF/ISB DCS entry frequency requests
determine LUFs for point-to-point communications
determine station classes
develop customer education programs
prepare satellite-access requests for the GMF/SHF
SATCOM system
provide assigned temporary frequencies for exercises
or contingencies

III. <u>SUPERINTENDENT JOB</u> (STG012, N=2). This is a management job performed by two AFSC 492X2 personnel. Respondents with the job perform an average of 69 tasks and spend 25 percent of their overall duty time performing general frequency management activities, 16 percent inspecting and evaluating, and 16 percent directing and implementing. Typical tasks include:

> Assist in exercise or contingency tactical line-of-sight (LOS) radio system engineer planning Draft inspection findings Analyze workload requirements Direct maintenance or utilization of equipment, supplies, materials, or workspace Perform self-inspections Implement self-inspection programs

IV. <u>TRAINING JOB (SIG012, N=2)</u>. Two AFSC 492X2 personnel are assigned as instructors at the interservice school at Keesler AFB. They have responsibilities in the classroom and also with curriculum development and evaluation. These two instructors reported spending 25 percent of their duty time performing siting and path activities, 19 percent performing communicationselectronics systems activities, 14 percent performing administrative activities, and 10 percent performing electromagnetic compatibility activities. However, they did not indicate they perform typical training tasks found in Duty D. Instead, they indicated they spend a high percentage of time on siting and path activities and electromagnetic compatibility activities, topics they teach in the classroom. These two activities are only performed by frequency managers of the other armed services and Air Force civil engineering personnel. Tasks performed by the two instructors which distinguish them from other groups include:

> assist in engineering LMR nets select best modes of propagation, other than atmospheric read military grid maps read topographic maps calculate harmonic offender frequencies identify proper tolerances of equipment resolve intermodulation problems determine area coverages

# ADDITIONAL DUTY JOB

V. <u>BASE-LEVEL</u> <u>FREQUENCY MANAGER (STG004, N=38)</u>. There is essentially one additional duty job, Base-Level Frequency Manager, with some slight variations due to an emphasis on specific tasks, or differences in time spent on individual duties. Base-Level Frequency Managers range from paygrade E-1 to E-9, have a variety of primary AFSCs, and are for the most part more junior personnel, as over half are in their first 24 months TAFMS. They report spending 21 percent of their time performing tasks related to general frequency management activities, 14 percent on tasks related to communicationselectronics systems activities, 14 percent inspecting and evaluating, 13 percent training, and 11 percent performing frequency actions. They are distinguished by the time they spend performing the following tasks:

> Determine LUFs for point-to-point communications Prepare satellite-access requests for the GMF/SHF SATCOM system Submit HF/ISB DCS entry frequency requests Provide assigned temporary frequencies for exercises or contingencies Evaluate tropo radio system plans for other than exercises or contingencies Calculate effective transmit power (ETP)

Survey data show there are six variations in the Base-Level Frequency Manager job identified separately by either the number of tasks performed, unique tasks performed, or emphasis on tasks from one duty. Members in 1 variation perform only 30 tasks, fewer than members of any job or variation. Members of another variation spend more time on two specific tasks related to satellite frequency requests. Another variation includes performing general frequency management tasks, plus several training tasks. Yet another variation involves spending more time on administrative tasks dealing with publication libraries, budgeting, and manpower allocations. The fifth variation shows members perform an average of 176 tasks. This variation is performed by members with the highest average number of months TAFMS. The final variation involves personnel who perform a number of tasks unique to antennas and communication nets.

# Summary

There is basically one job, Frequency Manager, that most full-time and and all additional duty personnel perform. Survey data show, while full-time personnel perform more tasks than additional duty personnel perform, overall differences between the two groups is slight.

# CAREER LADDER PROGRESSION

Analysis of DAFSC groups, together with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed by members of the various skill-level groups, which in turn may be used to determine how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what members of the various skill-level groups are doing. Only full-time personnel were included in this analysis, as they are the only ones with the DAFSC.

The distribution of skill-level members in the various jobs is shown in Table 5, while relative amounts of time members of the various skill-level groups spend on duties are shown in Table 6. These data show members of all three skill-level groups are involved in technical aspects of the specialty, but 9-skill level members are more involved in administrative functions.

# SKILL LEVEL DESCRIPTIONS

<u>DAFSC 49232</u>. Seven respondents have DAFSC 49232. Five of the seven have the Frequency Manager job. Because they hold the 3-skill level, they are fairly new to the career ladder and are in upgrade training. Three-skill level members perform an average of 70 tasks and, as shown in Table 6, spend the greatest amount of duty time performing tasks related to general frequency management activities and wave propagation predictions. Representative tasks performed are listed in Table 7.

# DISTRIBUTION OF AFSC 492X2 SKILL-LEVEL MEMBERS ACROSS CAREER LADDER JOBS (PERCENT)

<u>JOB</u>	49232 <u>(N=7)</u>	49272 <u>(N=53)</u>	49292 <u>(N=4)</u>
FREQUENCY MANAGER	71	89	50
JUNIOR FREQUENCY MANAGER	14	2	0
SUPERINTENDENT	14	0	0
TRAINING	0	4	0
NOT GROUPED	1	5	50

<u>DU</u>	TIES	49232 <u>(N=7)</u>	49272 <u>(N=53)</u>	49292 <u>(N=4)</u>
A	ORGANIZING AND PLANNING	*	*	*
В	DIRECTING AND IMPLEMENTING	4	4	9
С	INSPECTING AND EVALUATING	5	6	11
D	TRAINING	3	5	10
E	PERFORMING ADMINISTRATIVE ACTIVITIES	1	2	5
F	PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	23	21	24
G	PERFORMING FREQUENCY ACTIONS	19	15	7
Η	PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	22	14	11
Ι	PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	19	22	15
J	PERFORMING SITING AND PATH ACTIVITIES	1	5	4
К	PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	*	2	1
L	PERFORMING ELECTRONIC WARFARE ACTIVITIES	*	3	1

# TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS (RELATIVE PERCENT OF JOB TIME)

\* Denotes less than 1 percent

# REPRESENTATIVE TASKS PERFORMED BY AFSC 49232 PERSONNEL

TASKS	<u></u>	PERCENT MEMBERS PERFORMING (N=7)
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	100
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM	100
0220	DECUTE ASSIGNED TEMPODADY EDECUENCIES FOR EVERCISES OF	100
6220	CONTINGENCIES	100
6232	SUBMIT HE/ISB DCS ENTRY EREQUENCY REQUESTS	86
H241	ANALYZE PROPAGATION CHARTS	86
1271	CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	86
G219	PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM	
	SYSTEMS	86
F197	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	86
I264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	86
H257	DISTRIBUTE PROPAGATION PRODUCTS TO USERS	86
G217	NOMINATE FREQUENCIES FOR ASSIGNMENTS	86
I267	CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM)	
	MULTICHANNEL SYSTEMS	86
I265	CALCULATE ANTENNA FIELD STRENGTHS	86
F177	DEVELOP CUSTOMER EDUCATION PROGRAMS	86
I268	CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	86
F213	USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	/1
F193	MODIFY DU FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY	71
<b>F10</b> C	ALLULATION) VIA NUTE-TU-HULDEK	/1
F180	OD CONTINCTICES	71
0220	UN CUNTINGENTIES	71
U259	DEPADE INITIAL OF LOST COMMUNICATION EPEOLENCY SCHEDULES	71
H263	REPARE INITIAL OR LOST COMMONICATION TREQUENCY SCHEDULES	71
1203	CALCULATE EM THRESHOLDS	71
H262	PROCESS HE PROPAGATION PREDICTION REQUESTS	71
H258	EVALUATE PREDICTED PATH RELIABILITY (PPR) STUDIES	71
F199	PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	71
H247	DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	57
I278	CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	57
F192	MAINTAIN TECHNICAL DATA FILES	57

<u>DAFSC 49272</u>. Forty-seven of the 53 7-skill level members have the Frequency Manager job, 1 is a Junior Frequency Manager, and 2 perform the Instructor job. Seven-skill level members have a broader job, performing an average of 120 tasks and, as shown by figures in Table 6, spend most of their duty time performing tasks related to the technical aspects of the career ladder, rather than supervisory tasks. Representative tasks performed by DAFSC 49272 are listed in Table 8. Because 7-skill level members perform many of the same tasks as 3-skill level members, only those tasks performed by higher percentages of 7-skill level members distinguish between members of the two skill level groups (Table 9). These data suggest DAFSC 49272 members have a technical and limited administrative role, rather than the traditional first-line supervisor role found in many career ladders.

DAFSC 49292. There are only four 9-skill level respondents, two of whom report being Frequency Managers (Table 5). As shown by data in Table 6, these four respondents spend most of their time on duties related to the technical aspects of the job, but also spend more time than members of other jobs on tasks related to administrative and training duties. Representative tasks performed by 9-skill level members are listed in Table 10 and include technical, administrative, and training tasks. Tasks which best distinguish between 7- and 9-skill level members are presented in Table 11. A higher percentage of 7-skill level respondents perform frequency management tasks, while a higher percentage of 9-skill level members perform administrative and training tasks.

### Summary

Survey data show 3- and 7-skill level personnel spend most of their time on general frequency management activities, and 9-skill level members spend more time on administrative and training tasks. The typical supervisorsubordinate roles do not generally exist in this specialty because most members hold the 7-skill level and often only a few AFSC 492X2 personnel are assigned to a base. Only 13 of the 66 AFSC 492X2 respondents indicated they have any supervisory responsibility, and 8 of the 13 reported supervising only 1 individual.

# AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS

The current AFR 39-1 Specialty Descriptions for the career ladder were compared to job descriptions for each job identified and for each DAFSC group. Survey data suggest the jobs and tasks included in the current AFR 39-1 Specialty Descriptions accurately reflect the work being done in the field.

# REPRESENTATIVE TASKS PERFORMED BY AFSC 49272 PERSONNEL

\_ \_ \_ \_ \_ \_

TLOKO		PERCENT MEMBERS PERFORMING
TASKS		<u>(N=53)</u>
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	94
H241	ANALYZE PROPAGATION CHARTS	89
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM	
	SYSTEM	89
F197	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	87
G220	PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR	
	CONTINGENCIES	87
G232	SUBMIT HE/ISB DUS ENTRY FREQUENCY REQUESTS	85
+1//	DEVELOP CUSTOMER EDUCATION PROGRAMS	85
12/9	CALCULATE PHYSICAL LENGTH OF DIPULE ANTENNAS	83
1280	CALCULATE RADAR DISTANCES USING PULSE DURATIONS (PD)	03
1281	(DDD)	83
1274		83
12/4	CALCULATE RANDWIDTH FOR EDECHENCY MODULATED (EM)	05
1207	MULTICHANNEL SYSTEMS	81
F193	MODIEY DD FORMS 1494 (APPLICATION FOR FOULPMENT	01
1 1 5 5	EREQUENCY ALLOCATION) VIA NOTE-TO-HOLDER	81
I276	CALCULATE LOSSES OF TRANSMISSION LINES	81
I271	CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	79
I272	CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	79
G239	VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	79
I264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	77
I275	CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	77
1269	CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	75
H257	DISTRIBUTE PROPAGATION PRODUCTS TO USERS	75
I268	CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	75
I265	CALCULATE ANTENNA FIELD STRENGTHS	74
F176	DETERMINE STATION CLASSES	74
F199	PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	74
H263	REQUEST COMPUTERIZED PROPAGATION PRODUCTS	12
1278	CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	70
F213	USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	57
G214	ASSIGN TEMPORARY FREQUENCIES FOR EXERCISES OR	<b>r 7</b>
	UCNTINGENCIES	5/

# TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 49232 AND DAFSC 49272 PERSONNEL (PERCENT MEMBERS PERFORMING)

TASKS		49232 (N=7)	49272 (N=53)	DIFFRENCE
6219	PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	86	64	22
I266	CALCULATE BANDWIDTH FOR AMPLITUDE MODULATED (AM) SYSTEMS	57	36	21
			, 1 1 1 1 1 1 1	
C80	EVALUATE WORK SCHEDULES	0	60	-60
K327	IDENTIFY INTERMODULATION PRODUCTS	14	66	-52
D127	PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	14	66	-52
K328	IDENTIFY NOISE SOURCES	0	49	-49
E134	ANNOTATE SF FORMS 700 (SECURITY CONTAINER INFORMATION)	0	49	-49
F183	EVALUATE LMR SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	0	47	-47

# REPRESENTATIVE TASKS PERFORMED BY AFSC 49292 PERSONNEL

<u>TASKS</u>		PERCENT MEMBERS PERFORMING (N=4)
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GME/SHE SATCOM	
	SYSTEM	100
F197	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	100
C068	EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE	
	OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	100
C069	EVALUATE JOB OR POSITION DESCRIPTIONS	100
B060	SUPERVISE MILITARY PERSONNEL WITH AFSCs OTHER THAN 492X2	100
B047	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT, SUPPLIES,	
	MATERIALS, OR WORKSPACE	75
F193	MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY	
	ALLOCATION) VIA NOTE-TO-HOLDER	75
F199	PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	75
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	75
H263	REQUEST COMPUTERIZED PROPAGATION PRODUCTS	75
1267	CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM)	
1000	MULTICHANNEL SYSTEMS	/5
1269	CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	/5
1264	CALCULATE ANTENNA ETELD STDENOTUS	/5
1205	LALULATE ANTENNA FIELU SIKENGIHS	/5
BU52	IMPLEMENT SUGGESTION PROGRAMS	/ 5 75
F175	DETERMINE REQUIREMENTS FOR FOREIGN DISCLOSURES	75
F177	DEVELOD CUSTOMED EDUCATION DEOCRAMS	75
C061	ANALYZE INSPECTION REPORTS OR CHARTS	75
1270	CALCULATE EFFECTIVE ISOTROPIC RADIATED POWER (FIRP)	75
1268	CALCULATE BANDWIDTH FOR EM SINGLE CHANNEL SYSTEMS	75
1271	CALCULATE EFFECTIVE TRANSMIT POWER (FTP)	75
1272	CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	75
G232	SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	75
F186	EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES	
	OR CONTINGENCIES	75
F187	EVALUATE TROPO RADIO SYSTEM PLANS FOR OTHER THAN EXERCISES	
	OR CONTINGENCIES	75
D108	DEVELOP PHASE TRAINING PLANS	75
D125	PLAN OR SCHEDULE TRAINING, SUCH AS OJT OR ANCILLARY	
	TRAINING	50
B46	DIRECT MAINTENANCE OF ADMINISTRATIVE FILES	50

# TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 49272 AND 49292 PERSONNEL (PERCENT MEMBERS PERFORMING)

TASKS		49272 (N=53)	49292 (N=4)	DIFFERENCE
G220	PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR CONTINGENCIES	87	25	<u>62</u>
G239	VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	79	25	54
F183	EVALUATE LMR SYSTEM PLANS FOR OTHER THAN EXERCISES OR CONTINGENCIES	47	0	47
1277	CALCULATE NOISE THRESHOLDS	72	25	47
I 289	DETERMINE MINIMUM RECEIVER INPUT SIGNAL LEVELS FOR LOS SYSTEMS	45	0	45
1278	CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	70	25	45
		*		
C69	EVALUATE JOB OR POSTIION DESCRIPTIONS	45	100	-55
B60	SUPERVISE MILITARY PERSONNEL WITH AFSCs OTHER THAN 492X2	51	100	-49
H247	DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	62	100	- 38
0129	SELECT PERSONNEL FOR SPECIALIZED TRAINING	42	75	-33
D95	ADMINISTER TESTS	17	50	-33
D108	DEVELOP PHASE TRAINING PLANS	43	75	-32

20

# TRAINING ANALYSIS

Occupational survey data are a source of information used to review training documents for the specialty. The three most commonly used types of data are: (1) percent of first-enlistment personnel performing tasks, (2) ratings of how much training emphasis tasks should receive in the basic resident course, and (3) ratings of relative TD.

TE and TD data are secondary factors used in conjunction with percent members performing figures to determine what tasks should be included in entry-level training. Tasks with high TE and TD ratings and performed by moderate to high percentages of first-assignment personnel are normally taught in resident courses, while tasks with high TE and TD ratings and low percentages of first-assignment personnel performing may be more appropriate for OJT. Tasks with low TE and TD ratings are generally not included in any formal training, unless their inclusion can be justified by percent members performing, command concerns, or criticality.

School personnel can also use the Automated Training Indicator (ATI) for making training decisions. A computer program uses percent of firstassignment members performing each task, TE and TD ratings, and the Course Training Decision Table found in ATCR 52-22, Atch 1, to assign an ATI value to each task in the inventory. ATIs range from 1 to 18 and suggest which tasks are most appropriate for training and at what level. The decision table and explanation of the ATIs precede the listing of tasks in descending order of ATI in the Training Extract. School personnel will find this table and listing valuable for making decisions about training documents.

Tasks with the highest TE ratings, with accompanying percent first-job (1-24 months TICF) and first-assignment (1-48 months TICF) percent members performing are listed in Table 12, while tasks with the highest TD ratings and percent first-job, first-enlistment, and 7-skill level members performing are listed in Table 13. Most tasks with high TE are related to performing frequency actions and are performed by more than 30 percent of first-job and first-assignment members. Most tasks with high TD ratings, on the other hand, are a mixture of frequency management and training functions and are performed by fairly low percentages of first-job, first-assignment, and 7-skill level members. The Training Extract also contains listings of tasks sorted in descending order of both TE and TD.

# <u>First-Assignment Communications Systems and Electromagnetic</u> <u>Spectrum Management Personnel (AFSC 492X2)</u>

Thirty-one full-time respondents indicated they are in their first assignment. As shown by Figure 2, almost all have the Frequency Manager job. First-assignment Frequency Managers spend 22 percent of their duty time performing tasks related to general frequency management functions, 22 percent on tasks related to communications-electronics systems activities, 15 percent performing frequency actions, and 15 percent performing propagation predictions (see Table 14). Representative tasks performed by first-assignment AFSC 492X2 personnel are listed in Table 15.

12	
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# SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS (TE) RATINGS

VSKS 237 SUBMIT TEMPORARY F CONTINGENCIES 236 SUBMIT TEMPORARY F OR CONTINGENCIES	FREQUENCY PROPOSALS FOR EXERCISES OR	TNC	1-24	()	
<ul> <li>37 SUBMIT TEMPORARY F</li> <li>37 SUBMIT TEMPORARY F</li> <li>36 SUBMIT TEMPORARY F</li> <li>37 OR CONTINGENCIES</li> </ul>	FREQUENCY PROPOSALS FOR EXERCISES OR	EMPH	TICF	1-48 TICF	TASK DIFF
36 SUBMIT TEMPORARY F OR CONTINGENCIES		6.80	33	45	5.49
	FREQUENCY PROPOSAL ACTIONS, OTHER THAN EXERCISE	6.60	27	35	5.06
39 VERIFY STATION CLA	<b>VSSES ARE CORRECT FOR REQUESTED SERVICE</b>	6.60	67	71	5.12
33 SUBMIT NEW PERMANE	ENT FREQUENCY PROPOSAL ACTIONS	6.55	47	55	5.58
30 SUBMIT FREQUENCY A	<pre>\colored colored colored</pre>	6.50	40	48	4.91
17 NOMINATE FREQUENCI	IES FOR ASSIGNMENTS	6.45	73	74	5.33
34 SUBMIT PERMANENT F REVIEWS	FREQUENCY DELETION ACTIONS, OTHER THAN 5-YEAR	6.45	20	16	4.49
14 ASSIGN TEMPORARY F	REQUENCIES FOR EXERCISES OR CONTINGENCIES	6.40	40	52	5.14
15 ASSIGN TEMPORARY F CONTINGENCIES	REQUENCIES FOR OTHER THAN EXERCISES OR	6.40	33	45	5 27
31 SUBMIT FREQUENCY R	ENEWAL ACTIONS, OTHER THAN 5-YEAR REVIEWS	6.40	13	13	4.67

TE Mean = 2.86 S.D. = 2.07 TD Mean = 5.00 S.D. = 1.00 TABLE 12 (CONTINUED)

# SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS (TE) RATINGS

	MEMBER	PERCENI	
	G 1-2 IPH <u>TIC</u>	24 1-48 E TICF	
DDIFICATION ACTIONS, OTHER THAN 6	40 33	48	ۍ ۲.
THIN ALLOCATED FREQUENCY BANDS 6	40 33	48	ى. ئ
EQUENCIES FOR EXERCISES OR 6	35 87	81	4.
<pre>PROPOSAL ACTIONS FOR COMPLETENESS 6</pre>	30 7	32	9.0
9	25 20	29	4
NCY RANGE 6	20 47	61	ъ.
NT COMMUNICATIONS 6	20 60	61	2. 2
UENCIES FOR OTHER THAN EXERCISES 6	10 13	35	4.6
NG MUF, FOT, AND LUF PREDICTIONS 6	10 27	32	ъ.
ION PRODUCTS 6	10 40	45	S
9	10 40	45	ŝ
ALLOCATIONS 6	00 40	55	4
9	00 13	23	5

TE Mean = 2.86 S.D. = 2.07TD Mean = 5.00 S.D. = 1.00

23

# SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY (TD) RATINGS

			MEMBER	PERCEN S PERF(	T DRMING	
TASKS		TASK DIFF	1-24 TICF	1-48 TICF	75370	TNG EMPH
F173	DETERMINE ELECTROMAGNETIC COMPATIBILITY (EMC) WITH OTHER USER REQUIREMENTS	7.26	7	10	6	5.00
A21	ESTABLISH ORGANIZATIONAL POLICIES, SUCH AS OPERATING INSTRUCTIONS (01) OR STANDING OPERATING PROCEDURES (SOP)	7.18	0	0	0	1.20
F167	ASSIST IN EXERCISE OR CONTINGENCY TACTICAL LINE-DF-SIGHT (LOS) RADIO SYSTEM ENGINEER PLANNING	6.72	13	16	15	5.50
1281	CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES (PRR)	6.69	67	77	83	3.10
J296	ANALYZE RADIO LINK DEFICIENCIES	6.69	0	9	17	5.00
D110	DEVELOP TQT	6.68	7	19	30	00.
F203	RECOMMEND CORRECTIVE ACTION TO IMPROVE SYSTEM PERFORMANCE OR INTERSYSTEM FREQUENCY COMPATIBILITY	6.67	20	19	26	3.05
F164	ASSIST IN EXERCISE OR CONTINGENCY TACTICAL GND MOBILE FORCES/SUPER HIGH FREQ SAT COMM SYSTEM ENGINEER PLANNING	6.66	13	16	21	4.90
F170	ASSIST IN EXERCISE OR CONTINGENCY TACTICAL ULTRA HIGH FREQ AIR FORCE SAT COMM SYSTEM ENGINEER PLANNING	6.64	7	10	6	5.35
F199	PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	6.63	60	68	74	4.00

TD Mean = 5.00 S.D. = 1.00TE Mean = 2.86 S.D. = 2.07

24

TABLE 13 (CONTINUED)

# SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY (TD) RATINGS

			<b>TERFUR</b>	<u>MING</u>	
	TASK 1. DIFF T	-24 ICF	1-48 TICF 7	5370	TNG
XERCISE OR CONTINGENCY TACTICAL TROPOSPHERIC SCATTER DIO SYSTEM ENGINEER PLANNING	6.63	13	13	17	4.85
<pre>D FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY N)</pre>	6.62	13	26	32	3.25
RADAR DISTANCES USING PULSE RISE TIMES (PRT)	6.58	47	52	58	3.00
UNRESIDENT COURSE TRAINING MATERIALS	6.54	20	29	43	.20
RADAR DISTANCES USING PULSE DURATIONS (PD)	6.50	73	81	83	3.10
ERFORMANCE TESTS	6.50	7	16	25	.05
HASE TRAINING PLANS	6.46	20	35	43	.20
INTERFERENCE SOURCES	6.46	20	26	32	5.00
PECTRUM MANAGEMENT GUIDANCE TO USERS	6.46	40	48	55	5.40
EXERCISE OR CONTINGENCY TACTICAL AIR-TO-AIR OR AIR-TO- ADIO SYSTEM ENGINEER PLANNING	6.42	7	10	11	5.50
PECTRUM DECONFLICTION	6.37	13	26	32	5.25
NOISE THRESHOLDS	6.36	47	61	72	3.70
ECTIVES OR PUBLICATIONS	6.34	0	9	6	2.55

TD Mean = 5.00 S.D. = 1.00 TE Mean = 2.86 S.D. = 2.07

# DISTRIBUTION OF FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL ACROSS CAREER LADDER JOBS



FIGURE 2

# RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL

TA	SKS	PERCENT MEMBERS PERFORMING <u>(N=37)</u>
A	ORGANIZING AND PLANNING	*
В	DIRECTING AND IMPLEMENTING	3
С	INSPECTING AND EVALUATING	6
D	TRAINING	6
E	PERFORMING ADMINISTRATIVE ACTIVITIES	2
F	PERFORMING GENERAL FREQUENCY MANAGEMENT ACTIVITIES	22
G	PERFORMING FREQUENCY ACTIONS	15
Η	PERFORMING HIGH FREQUENCY ELECTROMAGNETIC WAVE PROPAGATION PREDICTIONS	15
I	PERFORMING COMMUNICATIONS-ELECTRONICS SYSTEMS ACTIVITIES	22
J	PERFORMING SITING AND PATH ACTIVITIES	4
K	PERFORMING ELECTROMAGNETIC COMPATIBILITY ACTIVITIES	1
L	PERFORMING ELECTRONIC WARFARE ACTIVITIES	1

\* Denotes less than 1 percent

# REPRESENTATIVE TASKS PERFORMED BY FIRST-ASSIGNMENT AFSC 492X2 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING <u>(N=37)</u>
H250	DETERMINE LUES FOR POINT-TO-POINT COMMUNICATIONS	95
H241	ANALYZE PROPAGATION CHARTS	89
G232	SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	84
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM	
	SYSTEM	84
I271	CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	81
G220	PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR	
	CONTINGENCIES	81
I264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	78
F177	DEVELOP CUSTOMER EDUCATION PROGRAMS	78
I274	CALCULATE FM THRESHOLDS	76
1279	CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	76
1280	CALCULATE RADAR DISTANCES USING PULSE DURATIONS	76
F193	MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY	
	ALLOCATION) VIA NOTE-TO-HOLDER	73
G239	VERIFY STATION CLASSES ARE CORRECT FOR REQUESTED SERVICE	/3
1276	CALCULATE LUSSES OF TRANSMISSION LINES	/3
1268	CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	/3
1281	LALLULATE KADAR DISTANLES USING PULSE REPETITION RATES	70
1070	(PKK) CALCULATE ELECTRICAL HEICUT OF RIDOLE ANTENNAS	/3
12/2	CALCULATE ELECTRICAL REIGHT OF DIPULE ANTENNAS	73
1207	MULTICHANNEL SYSTEMS	70
F176	DETERMINE STATION CLASSES	70
1269	CALCHIATE RANDWINTH FOR NON-EM DUISED SYSTEMS	70
1265	CALCULATE ANTENNA ETELD STRENGTHS	70
1275	CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	70
F186	EVALUATE SYSTEM REQUIREMENTS FOR OTHER THAN EXERCISES OR	
	CONTINGENCIES	68
H263	REQUEST COMPUTERIZED PROPAGATION PRODUCTS	65
H261	PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	62
F213	USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	46
G214	ASSIGN TEMPORARY FREQUENCIES FOR EXERCISES OR	
	CONTINGENCIES	46

# Job Qualification Standard

For the purposes of reviewing the Job Qualification Standard (JQS), USAFOMS personnel met with personnel from the 1872 TDS at Keesler AFB and matched tasks listed in the job inventory to each line item of the JQS. A computer listing of the JQS with the matched tasks, percent members performing the tasks, TE and TD ratings, and ATI for each task is included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13, AFR 8-13/ATC Supplement 1 (Attachment 1, paragraph A1-3c(4)), and ATCR 52-22 Attachment 1, were used to review the relevance of the JQS.

The JQS has 18 topics, all of which have a number of inventory tasks matched to them. Using AFR 8-13 criteria and percentages of AFSC 492X2 respondents, all 18 topics are supported by survey data, meaning tasks matched are performed by more than 20 percent of all first-job, first-assignment, or 7-skill level members.

There are a number of technical tasks performed by more than 20 percent of all respondents that are not matched to JQS elements (see Table 16). While most do not have high TE, most reflect a high percent members performing, and some are considered difficult. These tasks were reviewed to determine if they deal with a particular function. A number deal with calculations related to antennas, and others deal with determining frequencies for different types of communications. School personnel need to review these tasks to determine if they suggest subject material that should be included in the JQS, or if they are substeps of functions already covered.

## Summary

The JQS is well supported by survey data. Unmatched tasks with high percent members performing need to be reviewed.

## JOB SATISFACTION

Respondents were asked to indicate how interested they are in their jobs, if they feel their talents and training are being used, and if they intend to reenlist. Satisfaction indicators for AFSC 492X2 respondents are shown in Table 17. Overall indicators are higher for the more experienced members, with a higher percentage of 49-96 month TICF members finding their job interesting and feeling their training is well used.

SAMPLE OF TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT OF ALL CRITERION GROUP MEMBERS, BUT NOT MATCHED TO AFSC 492X2 JQS

			P MEMBERS	ERCENT PERFO	RMING		
TASKS		TNG	1-24 TICF	1-48 TICF	<u>-71</u> 7-	TASK DIFF	ATI
G218	PREPARE SAIELLITE FREQUENCY REQUESTS FOR GMF/SHF SAICOM SYSTEMS	4.65	47	55	58	4.83	16
G219	PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM SYSTEMS	4.85	60	61	64	4.56	16
H247	DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	3.05	40	55	62	4.98	16
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	5.15	100	67	94	5.21	17
H253	DETERMINE MOST DESIRABLE FREQUENCY RANGE	6.20	47	61	68	5.28	17
H254	DETERMINE MUFS FOR POINT-TO-POINT COMMUNICATIONS	6.20	60	61	62	5.05	17
H255	DETERMINE MUFS FOR SHIP-TO-SHORE COMMUNICATIONS	3.05	47	61	64	4.94	16
H256	DETERMINE TAKEOFF ANGLES	4.75	40	55	57	5.55	17
Н261	PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	3.80	53	71	70	4.27	16
H263	REQUEST COMPUTERIZED PROPAGATION PRODUCTS	3.55	53	68	72	3.50	16
1264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	4.15	87	84	77	5.39	17
I265	CALCULATE ANTENNA FIELD STRENGTHS	4.00	67	74	74	5.58	17
1266	CALCULATE BANDWIDTH FOR AMPLITUDE MODULATED (AM) SYSTEMS	3.75	27	42	36	5.75	15
1267	CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM) MULTICHANNEL SYSTEMS	3.90	67	74	81	5.84	17

TE Mean = 2.97 S.D. = 1.85TD Mean = 5.00 S.D. = 1.00 TABLE 16 (CONTINUED)

SAMPLE OF TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT OF ALL CRITERION GROUP MEMBERS, BUT NOT MATCHED TO AFSC 492X2 JQS

			MEMBERS	PERCENT	RMING		
		TNG	1-24 TICF	1-48 TICF	<u>-7-</u>	TASK DIFF	ATI
CALCULATE BANDWIDTH FOR FM S	INGLE CHANNEL SYSTEMS	4.00	73	77	75	5.72	17
CALCULATE BANDWIDTH FOR NON-F	M PULSED SYSTEMS	3.30	67	74	75	5.94	17
CALCULATE EFFECTIVE ISOTROPIC	RADIATED POWER (EIRP)	4.15	53	65	74	5.81	17
CALCULATE EFFECTIVE TRANSMIT PC	WER (ETP)	4.60	87	84	79	5.81	17
CALCULATE ELECTRICAL HEIGHT OF	DIPOLE ANTENNAS	3.75	73	77	79	5.23	17
CALCULATE ELECTRICAL LENGTH OF C	JIPOLE ANTENNAS	3.75	33	45	38	5.23	15
CALCULATE FM THRESHOLDS		3.65	67	74	83	6.21	18
CALCULATE GAINS OF FLAT PASSIVE RE	EFLECTORS	3.10	53	68	17	6.25	18
CALCULATE LOSSES OF TRANSMISSION	LINES	3.80	60	71	81	5.63	17
CALCULATE NOISE THRESHOLDS		3.70	47	61	72	6.36	18
CALCULATE PHYSICAL HEIGHT OF DIPO	LE ANTENNAS	4.00	47	61	70	4.92	16
CALCULATE PHYSICAL LENGTH OF DIPO	LE ANTENNAS	4.30	67	77	83	4.83	16
CALCULATE RADAR DISTANCES USING PU	JLSE DURATIONS (PD)	3.10	73	81	83	6.50	18
CALCULATE RADAR DISTANCES USING P	ULSE REPETITION RATES (PRR)	3.10	67	77	83	6.69	18
CALCULATE RADAR DISTANCES USING P	ULSE RISE TIMES (PRT)	3.00	47	52	58	6.58	18

TE Mean = 2.97 S.D. = 1.85TD Mean = 5.00 S.D. = 1.00

31

# JOB SATISFACTION INDICATORS FOR 492X2 TICF GROUPS IN CURRENT STUDY (PERCENT MEMBERS RESPONDING)

		TICF	
	1-48 MONTHS	49-96 MONTHS	97+ MONTHS
	492X2	492X2	492X2
	(N=37)	(N=20)	(N=14)
EXPRESSED JOB INTEREST:			
INTERESTING	59	85	64
SO-SO	16	15	29
DULL	16	0	0
PERCEIVED USE OF TALENTS:			
FAIRLY WELL TO GOOD	67	90	92
LITTLE OR NOT AT ALL	24	10	0
PERCEIVED USE OF TRAINING:			
FAIRLY WELL TO GOOD	62	95	85
LITTLE OR NOT AT ALL	30	5	7
REENLISTMENT INTENTIONS:			
WILL REENLIST	65	55	29
WILL NOT REENLIST	3	10	0
WILL RETIRE	22	35	64

No lateral career ladders were surveyed in 1990

# IMPLICATIONS

Overall, there is little difference between what Full-Time and Base-Level Frequency Managers do. Full-time AFSC 492X2 personnel perform a higher average number of tasks, while base-level personnel are somewhat more involved in training and administrative functions. Both 3- and 7-skill level members perform the technical aspects of the specialty, instead of 7-skill level members being first-line supervisors. Because of this, the 5-skill level may not be necessary for this career ladder.

Job satisfaction indicators indicate most full-time members enjoy their job and feel their training and talents are used. The JQS for the specialty is supported, but there are unmatched tasks that need to be reviewed by school personnel.

# APPENDIX A

# SELECTED REPRESENTATIVE TASKS PERFORMED BY MEMBERS OF CAREER LADDER JOBS

# FULL-TIME FREQUENCY MANAGER (STG010)

NUMBER	IN	GROUP :	55		AV	/ERAGE	TIME	IN	JOB:	24	MONTHS
PERCENT	OF	TOTAL	SAMPLE:	51%	AV	/ERAGE	TICF:	60	MON	ΓHS	

		PERCENT
TIONO		MEMBERS
TASKS		PERFORMING
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GME/SHE SATCOM	
1 2 3 3	SYSTEM	98
F197	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	98
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	96
G220	PPOVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR	
	CONTINGENCIES	95
I280	CALCULATE RADAR DISTANCES USING PULSE DURATIONS (PD)	93
I281	CALCULATE RADAR DISTANCES USING PULSE REPETITION RATES	
	(PRR)	93
H241	ANALYZE PROPAGATION CHARTS	93
G217	NOMINATE FREQUENCIES FOR ASSIGNMENTS	92
I267	CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM)	
	MULTICHANNEL SYSTEMS	91
G232	SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	91
I274	CALCULATE FM THRESHOLDS	91
I271	CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	89
I279	CALCULATE PHYSICAL LENGTH OF DIPOLE ANTENNAS	89
I276	CALCULATE LOSSES OF TRANSMISSION LINES	89
I272	CALCULATE ELECTRICAL HEIGHT OF DIPOLE ANTENNAS	89
F193	MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY	
	ALLOCATION) VIA NOTE-TO-HOLDER	87
I264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	85
1269	CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	85
H257	DISTRIBUTE PROPAGATION PRODUCTS TO USERS	85
1265	CALCULATE ANTENNA FIELD STRENGTHS	85
1268	CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	85
1275	CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	85
1270	CALCULATE EFFECTIVE ISOTROPIC RADIATED POWER (EIRP)	85
H263	REQUEST COMPUTERIZED PROPAGATION PRODUCTS	84
F199	PROVIDE SPECTRUM MANAGEMENT GUIDANCE TO DEVELOPERS	84
G239	VERIFY STATION CLASSES ARE CORRECT FOR REQUESTLD SERVICE	84
12//	CALCULATE NOISE THRESHOLDS	82
H261	PREPARE INITIAL OR LOST COMMUNICATION FREQUENCY SCHEDULES	80
1278	CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	/8

# FULL-TIME JUNIOR FREQUENCY MANAGERS (STG009)

NUMBER IN GROUP:2AVERAGE TIME IN JOB:2 MONTHSPERCENT OF TOTAL SAMPLE:2%AVERAGE TICF:2 MONTHS

		PERCENT MEMBERS
TASKS		PERFORMING
G232	SUBMIT HF/ISB DCS ENTRY FREQUENCY REQUESTS	100
H250	DETERMINE LUFS FOR POINT-TO-POINT COMMUNICATIONS	100
F176	DETERMINE STATION CLASSES	100
F177	DEVELOP CUSTOMER EDUCATION PROGRAMS	100
F213	USE NATIONAL TABLE OF FREQUENCY ALLOCATIONS	100
A4	DETERMINE LOGISTICS REQUIREMENTS, SUCH AS EQUIPMENT,	
	PERSONNEL, OR SPACE	100
F189	IDENTIFY FREQUENCIES TO FILL REQUIREMENTS FOR PLANS OR	
	ANNEXES	100
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM	
	SYSTEM	50
G220	PROVIDE ASSIGNED TEMPORARY FREQUENCIES FOR EXERCISES OR	
	CONTINGENCIES	50
H247	DETERMINE FOTS FOR SHIP-TO-SHORE COMMUNICATIONS	50
I264	CALCULATE AMOUNTS OF POWER SUPPLIED TO ANTENNAS	50
I267	CALCULATE BANDWIDTH FOR FREQUENCY MODULATED (FM)	
	MULTICHANNEL SYSTEMS	50
F193	MODIFY DD FORMS 1494 (APPLICATION FOR EQUIPMENT FREQUENCY	
	ALLOCATION) VIA NOTE-TO-HOLDER	50
H241	ANALYZE PROPAGATION CHARTS	50
B046	DIRECT MAINTENANCE OF ADMINISTRATIVE FILES	50
C68	EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE	
	OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	50
F187	EVALUATE TROPO RADIO SYSTEM PLANS FOR OTHER THAN EXERCISES	5.0
	OR CONTINGENCIES	50
G219	PREPARE SATELLITE FREQUENCY REQUESTS FOR UHF AFSATCOM	5.0
	SYSTEMS	50
H257	DISTRIBUTE PROPAGATION PRODUCTS TO USERS	50
I268	CALCULATE BANDWIDTH FOR FM SINGLE CHANNEL SYSTEMS	50
1269	CALCULATE BANDWIDTH FOR NON-FM PULSED SYSTEMS	50
1274	CALCULATE FM THRESHOLDS	50
1275	CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	50
1276	CALCULATE LOSSES OF TRANSMISSION LINES	50
1279	CALCULATE PHYSICAL LENGTH OF DIPULE ANTENNAS	50

# FULL-TIME SUPERINTENDENT (STGC12)

NUMBER IN GROUP: 2	AVERAGE	TIME IN JOB: 13 MONTHS
PERCENT OF TOTAL SAI	MPLE: 2% AVERAGE	TICF: 96 MONTHS

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TASKS		PERCENT MEMBERS PERFORMING
<u></u>		<u>r en on nu</u>
F167	ASSIST IN EXERCISE OR CONTINGENCY TACTICAL LINE-OF-SIGHT	
	(LOS) RADIO SYSTEM ENGINEER PLANNING	100
B48	DRAFT INSPECTION FINDINGS	100
C62	ANALYZE WORKLOAD REQUIREMENTS	100
B47	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT, SUPPLIES,	
	MATERIALS, OR WORKSPACE	100
C86	PERFORM SELF-INSPECTIONS	100
B51	IMPLEMENT SELF-INSPECTION PROGRAMS	100
D127	PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	100
C61	ANALYZE INSPECTION REPORTS OR CHARTS	100
E144	ESTABLISH REQUIREMENTS FOR OFFICE FORMS	100
F202	RECOMMEND CORRECTIVE ACTION TO IMPROVE INTERSERVICE	
	FREQUENCY COMPATIBILITY	100
C68	EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE	
	OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	100
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GMF/SHF SATCOM	100
5107	SYSTEM	100
F19/	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	100
6218	PREPARE SATELLITE FREQUENCY REQUESTS FUR GMF/SHF SATUUM	100
0000	STATEMAS	100
6220	CONTINCTACIES OF CONTINCT OF CONTINCT OF CONTINCTACIES OF	100
U2A1		100
H241	ANALTZE PRUPAGATIUN CHARTS	100
C240	MANAGE CLASSIFIED MATERIALS VEDIEV STATION CLASSES ADE WITHIN ALLOCATED EDEOUENCY	100
6240	DANDS	100
	DANUS INITIATE DEDSONNEL ACTION DECHESTS SHOU AS AE EODMS 2006	100
D34	(CLASSIFICATION/ON_THE_ TOR TRAINING ACTION)	100
057	CHERTSTRICATION/ON-THE OUD TRAINING ACTION)	100
537	MANAGEMENT SDECIALISTS (AFSC A9232)	100
D102	COUNSEL TRAINEES ON TRAINING DROCDESS	100
E101	MAINTAIN DADIO EDECHENCY AUTHODIZATION (DEA) LISTS	100
D105	DEVELOD NEW FOILDMENT TRAINING PROCRAMS	100
BV0	TMDI EMENT COST-DEDUCTION DROCRAMS	50
E15/	DEEDADE CODDECDONNENCE OTHED THAN ERECHENCY DOODOCALS	50
C134	TREFARE CONTESTORDERCE, OTHER THAN TREQUERCT FROFUSAES	50

# FULL-TIME TRAINING (STG025)

NUMBER IN GROUP: 2 NUMBER IN GROUP:2AVERAGE TIME IN JUB:30PERCENT OF TOTAL SAMPLE:2%AVERAGE TICF:93 MONTHS

AVERAGE TIME IN JOB: 30 MONTHS

		PERCENT MEMBERS
TASKS		PERFORMING
1000	DETERMINE MINIMUM DECENTED INDUT CIONAL LEVELS FOR LOS	
1289	UETERMINE MINIMUM RELEIVER INPUT SIGNAL LEVELS FUR LUS	100
1205	STALEMA CALCHEATE STONAL TO NOISE DATIOS	100
1285	CALCULATE STGNAL-TU-NUISE KATTUS	100
1290	OPTERMINE MINIMUM RELEIVER INPUT SIGNAL LEVELS FOR TROPU	100
1200	STSTENS ACCIST IN ENGINEEDING IMD NETS	100
1299	ASSISE IN ENGINEERING LPR NEES CALCHEATE DADAD DISTANCES HSINC DHESE DISE TIMES (DDT)	100
1202	DETEDMINE EMISSION DESIGNATODS	100
1280	DETERMINE CAINS OF ANTENNAS	100
.1301	ASSIST IN ENGINEERING SATELLITE NETS	100
1293	SELECT DIRECTIONS OF MAXIMUM RADIATION FOR ANTENNAS OTHER	100
1233	THAN LONG WIRE	100
1294	SELECT DIRECTIONS OF MAXIMUM RADIATION FOR COMMON ARRAYS	100
1295	SELECT DIRECTIONS OF MAXIMUM RADIATION FOR LONG WIRE	100
	ANTENNAS	100
J321	SELECT BEST MODES OF PROPAGATION. OTHER THAN ATMOSPHERIC	100
I283	CALCULATE RECEIVER SENSITIVITIES	100
I284	CALCULATE SATELLITE LOOK ANGLES	100
J319	READ MILITARY GRID MAPS	100
J320	READ TOPOGRAPHIC MAPS	100
I288	DETERMINE MEDIAN RECEIVER INPUT SIGNAL LEVELS	100
I291	DETERMINE OCCUPIED BANDWIDTHS	100
J297	ASSIST IN ENGINEERING AIR-TO-GROUND NETS	100
J308	CALCULATE TRUE AZIMUTHS	100
J310	DETERMINE ATMOSPHERIC EFFECTS OF PROPAGATION PATHS	100
J316	DETERMINE SYSTEM RELIABILITY FOR LOS SYSTEMS	100
K322	ASSIST USERS IN PREPARING MEACONING, INTRUSION, JAMMING,	
	AND INTERFERENCE (MIJI) REPORTS	100
K323	CALCULATE HARMONIC OFFENDER FREQUENCIES	100
K329	IDENTIFY PROPER TOLERANCES OF EQUIPMENT	100
K331	RESOLVE INTERMODULATION PROBLEMS	100
K332	REVIEW INTERFERENCE REPORTS	100
J307	CALCULATE PREDICTED RELIABILITY OF SYSTEMS	100
J309	DETERMINE AREA COVERAGES	100
J313	DETERMINE REQUIRED ANTENNAE HEIGHT, OTHER THAN DIPOLE	100

# BASE-LEVEL FREQUENCY MANAGER (STG004)

NUMBER IN GROUP: 38 PERCENT OF TOTAL SAMPLE: 35% AVERAGE TIME IN JOB: 34 MONTHS AVERAGE TAFMS: 80 MONTHS

TASKS		PERCENT MEMBERS <u>PERFORMING</u>
	DETERMINE LUEG FOR ROTHE TO ROTHE COMMUNICATIONS	20
H250	DETERMINE LUFS FUR PUINT-TU-PUINT COMMUNICATIONS	89
GZ 32	SUBMIT HEADED DADID CASEM DIANG EOD OTHED THAN EVEDCISES	07
F10/	OD CONTINCENCIES	87
6220	DROVIDE ASSIGNED TEMPORARY ERECHENCIES FOR EXERCISES OR	07
0220	CONTINGENCIES	82
F195	PREPARE SATELLITE ACCESS REQUESTS FOR THE GME/SHE SATCOM	02
, 190	SYSTEM	79
1271	CALCULATE EFFECTIVE TRANSMIT POWER (ETP)	76
G218	PREPARE SATELLITE FREQUENCY REQUESTS FOR GMF/SHF SATCOM	
	SYSTEMS	76
I274	CALCULATE FM THRESHOLDS	76
F212	USE INTERNATIONAL TABLE OF FREQUENCY ALLOCATIONS	74
H241	ANALYZE PROPAGATION CHARTS	71
D127	PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	71
C68	EVALUATE JOB HAZARDS OR COMPLIANCE WITH AIR FORCE	
	OCCUPATIONAL SAFETY AND HEALTH (AFOSH) PROGRAM STANDARDS	71
1275	CALCULATE GAINS OF FLAT PASSIVE REFLECTORS	71
D129	SELECT PERSONNEL FOR SPECIALIZED TRAINING	68
1276	CALCULATE LOSSES OF TRANSMISSION LINES	68
1278	CALCULATE PHYSICAL HEIGHT OF DIPOLE ANTENNAS	66
H242	CALCULATE FREE SPACE LOSSES	63
F186	EVALUATE SYSTEM REQUIREMENTS FOR UTHER THAN EXERCISES OR	<b>C</b> 2
0000	UUNIINGENUIES	63
6239	VERIFY STATION LEASSES ARE CORRECT FOR REQUESTED SERVICE	63
F19/	PROVIDE COMMENTS ON FREQUENCY SUPPORTABILITY	63
H248	DETERMINE GROUNDWAVE PROPAGATION PREDICTIONS	61
0102	DEVELOP NEW EQUIPMENT TRAINING PROGRAMS	01
6219	EVENTER SATELLITE FREQUENCE REQUESTS FUR UNF AFSATUUM	61
C224	DEVIEW EDENHENCY DENEWAL ACTIONS OTHED THAN REVEAD	01
6224	REVIEW FREQUENCE RENEWAL ACTIONS, UTTER THAN STEAR	17
ron	REVIEWS FOR COMPLETENESS AND ACCORACT TNEDECT DEDCONNEL FOD COMDITANCE WITH MILITADV STANDADOS	47
L04	INSPECT PERSONNEL FOR COMPLIANCE WITH MILLIART STANDARDS	40