UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

GUNSMITH

AFSC 753X1

AFPT 90-753-863

OCTOBER 1988

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
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TABLE OF CONTENTS

	PAGE NUMBER
PREFACE	iii
SUMMARY OF RESULTS	iv
INTRODUCTION	1
Background	1
SURVEY METHODOLOGY	1
Survey Administration	1
SPECIALTY JOBS (Career Ladder Structure)	2
Summary	2
AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS	5
JOB SATISFACTION	5
UTILIZATION ISSUES	5
Summary	9

PREFACE

This report presents the results of an Air Force occupational survey of the Gunsmith (AFSC 753X1) career ladder. Authority for conducting specialty surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

CMSgt Anthony O'Flaherty developed the survey instrument, Mr Wayne Fruge provided computer programming support, and Mr Daniel E. Dreher analyzed the data and wrote the final report. Lieutenant Colonel Charles D. Gorman, Chief Airman Analysis Branch, Occupational Analysis Division, USAF Occupational Measurement Center, reviewed and approved this report for release.

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SUMMARY OF RESULTS

1. Survey Coverage: This report is based on data collected from the 15 military and 3 civilian respondents assigned to the 3280 Technical Training Group at Lackland AFB TX.

2. Career Ladder Structure: Only two jobs were identified in this small career ladder, gunsmiths and supervisors. While the gunsmiths perform many common tasks, they did reflect slight variations in time spent on tasks related to specific functions within the career ladder.

3. AFR 39-1 Specialty Description: Survey data show only one or two military gunsmiths design jigs and fixtures, lay out plans, or machine parts and they spend very little time on these tasks. Functional personnel need to decide if these statements should be removed from the Specialty Description or if military gunsmiths should be trained and involved with these activities.

4. Job Satisfaction: Most military gunsmiths find their job interesting, feel their talents and training are used, and plan to reenlist. Because satisfaction indicators for gunsmiths were not reported in the 1979 OSR, no comparison can be made between the present and previous studies.

5. Utilization Issues: Survey data suggest there is no appreciable overlap between the AFSC 753X1 Gunsmith and AFSC 427X0 Machinist jobs. While AFSC 753X0, Combat Arms Training personnel and AFSC 753X1 Gunsmiths perform some similar tasks, Combat Arms Training personnel, perform mainly field level maintenance and Gunsmiths do the more precision depot-level maintenance. Survey data show civilian gunsmiths do nearly all match grade weapon maintenance.

OCCUPATIONAL SURVEY REPORT
GUNSMITH
(AFSC 753X1)

INTRODUCTION

This is a report of an occupational survey of the Gunsmith (AFSC 753X1) career ladder completed by the USAF Occupational Measurement Center in September 1988. This career ladder was last surveyed in 1979 in a combined survey with the AFSC 753X0 Small Arms career ladder. The present survey was requested by HQ ATC/TTOC to collect occupational survey data to support a Training Requirements Analysis and to identify how Air Force gunsmiths are being used.

Background

The AFR 39-1 Specialty Description states that AFSC 753X1 personnel inspect, repair and modify ground weapons, fabricate small parts, and boresight and test fire weapons. Members cross-train into the career ladder from any other specialty and learn gunsmith skills by on-the-job training. Most Air Force gunsmiths perform depot-level maintenance on weapons used at Lackland AFB TX and Camp Bullis TX, while a few are more involved with quality control, research and development, and test firing weapons and ammunition.

Keywords: Job analysis, Air Force training, Personnel Development, Skills, (STOO)

SURVEY METHODOLOGY

Data for this survey were collected using USAF Job Inventory AFPT 90-753-863 (April 1988). The Inventory Developer reviewed pertinent career ladder documents, the previous OSR and job inventory, and then prepared a tentative task list. The task list was validated through personal interviews with 8 subject matter-experts assigned to the 3820th Technical Training Group at Lackland AFB TX.

The final inventory contains 505 tasks grouped under 12 duty headings and standard background questions asking for DAFSC, organization of assignment, MAJCOM, duty title, TAFMS, and time in career ladder. There are additional questions asking respondents to indicate the weapons they repair and the tools they use. Supervisors and functional managers will use responses to these questions to evaluate the current OJT program.

Survey Administration

In May 1988, the survey was administered to the 15 military and three civilian gunsmiths assigned to the 3820th Technical Training Group at Lackland AFB TX. Respondents were asked to complete the identification and biographical information section first, go through the job inventory booklet and mark all tasks they perform in their current job, 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 of time spent on all tasks for each respondent by first totalling all the ratings marked, dividing the rating for each task by the total, and then 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.

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. Comprehensive Occupational Data Analysis Programs (CODAP), a series of computer programs used to process occupational survey data, assists with this 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 most similar in terms of tasks performed and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this inital group or new groups are formed based on the similarity of tasks and time spent ratings. This process continues until all respondents have been included in a group. When members of small groups spend similar amounts of time on similar tasks, they are combined into larger groups that represent jobs performed in the career ladder. The structure of the career ladder is then expressed in terms of the jobs identified in the clustering process.

Survey data show there are two basic jobs performed --gunsmiths and supervisors. Job descriptions for the two groups are listed in Tables 1 and 2. While all gunsmiths perform the tasks listed in Table 1, smaller numbers are distinguished somewhat by the time they spend performing a few distinctive tasks related to specific functions. For example, there are six gunsmiths who spend more time on revolver maintenance tasks, five who perform more weapon testing tasks, three who work with match grade weapons, and two who spend more time on purely inspection tasks. The Supervisors were identifed separately because of the time they spend performing purely supervisory tasks. Their role is clearly seen by comparing tasks listed in Tables 1 and 2.

Summary

This is a very small career ladder with only two jobs, Gunsmith and Supervisor. The distinction between the two jobs is quite clear. While gunsmiths perform many common tasks, they do have some slight variation in time spent on tasks related to specific functions within the career ladder.

TABLE 1

REPRESENTATIVE TASKS PERFORMED BY GUNSMITHS
(N=16)

TASKS		NUMBER PERFORMING
F201	VISUALLY INSPECT WEAPON GRIPS, STOCKS, HANDGUARDS, OR FOREARMS	16
F199	VISUALLY INSPECT WEAPON FIRING PINS OR BUSHINGS	16
F211	VISUALLY INSPECT WEAPON SEARS	16
F197	VISUALLY INSPECT WEAPON EJECTORS	16
F198	VISUALLY INSPECT WEAPON EXTRACTORS	16
F206	VISUALLY INSPECT WEAPON OPERATING ROD PISTONS	16
F212	VISUALLY INSPECT WEAPON SELECTOR LEVERS	16
F215	VISUALLY INSPECT WEAPON TRIGGER GROUP COMPONENTS	16
G288	REMOVE OR REPLACE SERVICE GRADE WEAPON EXTRACTORS	16
G286	REMOVE OR REPLACE SERVICE GRADE WEAPON EJECTORS	16
F195	VISUALLY INSPECT WEAPON BUTTSTOCK ASSEMBLIES	15
F207	VISUALLY INSPECT WEAPON OPERATING RODS, SPRINGS, OR GUIDES	15
F196	VISUALLY INSPECT WEAPON DISCONNECTORS	15
G253	REMOVE OR REPLACE EXTERNAL WEAPON SAFETIES	15
F161	INSPECT WEAPONS FOR HEADSPACE TOLERANCES USING PRECISION TOOLS	14
F191	VISUALLY INSPECT WEAPON BARRELS	14
F160	INSPECT WEAPONS FOR HEADSPACE TOLERANCES USING GO-NO-GO GAUGES	14
F170	PERFORM DRY FIRE CYCLES	14
F109	INSPECT EXTERIOR WEAPON PARTS, SUCH AS STOCKS OR RIVETS	14
F104	DETAIL STRIP WEAPONS	14
F200	VISUALLY INSPECT WEAPON GAS TUBES	14
F181	VISUALLY INSPECT REVOLVERS FOR CYLINDER INDEXING	14
F180	VISUALLY INSPECT REVOLVER CYLINDERS FOR DAMAGE, SUCH AS OBSTRUCTIONS OR CORROSION	14
F106	FIELD STRIP WEAPONS, OTHER THAN M-15 REVOLVERS	13
F110	INSPECT EXTERNAL WEAPON SAFETIES	13
G194	VISUALLY INSPECT WEAPON BUFFERS	13

TABLE 2

REPRESENTATIVE TASKS PERFORMED BY SUPERVISORS
(N=2)

TASKS		NUMBER PERFORMING
C 54	WRITE APRS	2
B 41	SUPERVISE GUNSMITH TECHNICIANS (AFSC 75371)	2
C 52	INVESTIGATE ACCIDENTS OR INCIDENTS	2
B 39	ORIENT NEWLY ASSIGNED PERSONNEL	2
A 8	DETERMINE WORK PRIORITIES	2
A 9	DETERMINE WORKLOAD REQUIREMENTS	2
A 21	SCHEDULE TDY, LEAVES, OR PASSES	2
B 37	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	2
C 44	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	2
D 58	ASSIGN ON-THE-JOB TRAINING (OJT) TRAINERS	2
A 1	ASSIGN PERSONNEL TO DUTY POSITIONS	2
B 29	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	2
B 40	SUPERVISE GUNSMITH SPECIALISTS (AFSC 75331)	2
C 46	EVALUATE SAFETY PROGRAMS	2
E 75	INITIATE AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	2
C 50	INDORSE AIRMAN PERFORMANCE REPORTS (APR)	2
A 2	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	2
B 25	CONDUCT STAFF MEETINGS	2
C 53	SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	2
E 95	MAINTAIN GENERAL PURPOSE CHECKLIST	2
J443	INVENTORY SERVICE GRADE WEAPONS	2
D 67	EVALUATE TRAINING METHODS AND TECHNIQUES	2
J441	INSPECT WEAPONS FACILITIES	2
A 13	ESTABLISH ORGANIZATIONAL POLICIES	2
J438	INSPECT AMMUNITION STORAGE FACILITIES	2

AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS

The current AFR 39-1 Specialty Description for the gunsmiths was compared to clusters of tasks identified by CODAP and to job descriptions for groups of respondents and selected individuals. Survey data show only two or three of the military gunsmiths perform tasks related to designing jigs and fixtures, laying out plans, and fabricating or machining parts, as stated in the Specialty Description, and spend very little time on these activities. The two civilian gunsmiths, on the other hand, perform more fabrication tasks as they do most of the match grade weapon maintenance. Functional personnel need to determine if the fabrication statements should be removed from the Specialty Description or if military gunsmiths should be trained on and become more involved with fabrication activities.

JOB SATISFACTION

Job satisfaction indicators for various groups are listed in Table 3. Because there are only two civilian gunsmiths, a comparison between them and their military counterparts is not really meaningful. Overall, military gunsmiths find their job interesting, feel their talents and training are used, and plan on reenlisting. Unfortunately, the 1979 OSR for AFSCs 753X0 and 753X1 did not include satisfaction indicators for gunsmiths so present indicators cannot be compared to previous indicators.

UTILIZATION ISSUES

Functional personnel are concerned about how much involvement the military gunsmiths have with fabricating parts, maintaining match grade weapons, and teaching combat arms training. Survey data were collected to reflect AFSC 753X1 involvement in these areas.

Survey data suggest there is little overlap between the job gunsmiths and AFSC 427X0 machinists perform. Each gunsmith's responses to tasks in Duty H (Designing, Fabricating, And Modifying Weapon Parts, Tools, And Fixtures) were reviewed. Military gunsmiths indicate they spend very little time performing any fabrication tasks, while the two civilian gunsmiths indicate they spend some time fabricating rifle and shotgun stocks, bolt handles, firing pins, screws, spring guides, and trigger guards. These tasks appear related to maintaining match grade weapons. Apparently both civilian and military AFSC 427X0 machinists assigned to the gunsmith shop, rather than military AFSC 753X1 gunsmiths, perform fabrication tasks.

As noted above, civilian gunsmiths are more involved with match grade weapons than their military counterparts. This is clearly seen by comparing job descriptions for military and civilian gunsmiths (Tables 4 and 5). In fact, survey data show the two civilian gunsmiths do nearly all the work done on match grade weapons. Military gunsmiths confirmed this in interviews with members of the Training Requirements Analysis team of the USAFOMC Training Development Services Division. Military gunsmiths indicated they should have more training and involvement with match grade weapons. Functional personnel need to review the AFR 39-1 Specialty Description and job requirements for military gunsmiths.

TABLE 3

COMPARISON OF JOB SATISFACTION INDICATORS FOR VARIOUS GROUPS OF GUNSMITHS (NUMBER RESPONDING)

EXPRESSED JOB INTEREST:	CIVILIAN (N=2)	MILITARY (N=14)	1-48 MOS TICF (N=11)	49-96 MOS TICF (N=4)
INTERESTING	2	12	9	4
SO-SO	-	-	-	-
DULL	-	2	2	-
PERCEIVED USE OF TALENTS:				
FAIRLY WELL TO GOOD	2	10	7	4
LITTLE OR NOT AT ALL	-	4	4	-
PERCEIVED USE OF TRAINING:				
FAIRLY WELL TO GOOD	2	13	10	4
LITTLE OR NOT AT ALL	-	1	1	-
REENLISTMENT INTENTIONS:				
WILL REENLIST	N/A	13	10	4
WILL NOT REENLIST	N/A	1	1	-
WILL RETIRE	N/A	-	-	-

- DENOTES 0 PERCENT

TABLE 4

REPRESENTATIVE TASKS PERFORMED BY CIVILIAN GUNSMITHS
(N=2)

TASKS	
F104	DETAIL STRIP WEAPONS
G258	REMOVE OR REPLACE MATCH GRADE WEAPON BARREL COMPONENTS
G259	REMOVE OR REPLACE MATCH GRADE WEAPON BARRELS
F160	INSPECT WEAPONS FOR HEADSPACE TOLERANCES USING GO- NO-GO GAUGES
F161	INSPECT WEAPONS FOR HEADSPACE TOLEANCES USING PRECISION TOOLS
F191	VIUSALLY INSPECT WEAPON BARRELS
F123	INSPECT MATCH GRADE WEAPON SIGHTS FOR PRECISE MOVEMENT
F166	MEASURE SLIDE TO RECEIVER FIT OR MATCH GRADE WEAPONS
G233	DEBURR AND PEEN WEAPON RECEIVER RAILS
G255	REMOVE OR REPLACE MATCH GRADE SHOTGUN INTERNAL PARTS, SUCH AS HAMMER SPRINGS OR COCKING HAMMERS
G261	REMOVE OR REPLACE MATCH GRADE WEAPON GAS CYLINDERS
H358	FABRICATE CUSTOM SHOTGUN OR CUSTOM RIFLE FORENDS
F144	INSPECT WEAPON FIRING PINS OR BUSHINGS USING PRECISION TOOLS
F146	INSPECT WEAPON HAMMER COMPONENTS USING PRECISION TOOLS
F154	INSPECT WEAPON SEARS USING PRECISION TOOLS
F157	INSPECT WEAPONS SIGHTS FOR DAMAGE, SUCH AS BROKEN REAR LEAF OR BROKEN WINDAGE SCREWS
F175	VISUALLY INSPECT MATCH GRADE SHOTGUN INTERNAL PARTS, SUCH AS HAMMER SPRINGS OR COCKING HAMMERS
F177	VISUALLY INSPECT MATCH GRADE WEAPON GLASSBEDDING
F199	VISUALLY INSPECT WEAPON FIRING PINS OR BUSHINGS
F205	VISUALLY INSPECT WEAPON MUZZLE CROWNS
F211	VISUALLY INSPECT WEAPON SEARS
G264	REMOVE OR REPLACE MATCH GRADE WEAPON SEARS
F122	INSPECT MATCH GRADE WEAPON SEARS USING PRECISION TOOLS
G227	BLUE WEAPONS
G238	DEBURR AND STONE WEAPON SEAR ANGLES

TABLE 5

REPRESENTATIVE TASKS PERFORMED BY MILITARY GUNSMITHS
(N=14)

	TASKS
F201	VISUALLY INSPECT WEAPON GRIPS, STOCKS, HANDGUARDS, OR FOREARMS.
F199	VISUALLY INSPECT WEAPON FIRING PINS OR BUSHINGS
F197	VISUALLY INSPECT WEAPON EJECTORS
F198	VISUALLY INSPECT WEAPON EXTRACTORS
F206	VISUALLY INSPECT WEAPON OPERATING ROD PISTONS
F212	VISUALLY INSPECT WEAPON SELECTOR LEVERS
F161	INSPECT WEAPONS FOR HEADSPACE TOLERANCE USING PRECISION TOOLS
F195	VISUALLY INSPECT WEAPON BUTTSTOCK ASSEMBLIES
F215	VISUALLY INSPECT WEAPON TRIGGER GROUP COMPONENTS
F207	VISUALLY INSPECT WEAPON OPERATING RODS, SPRINGS, OR GUIDES
F191	VISUALLY INSPECT WEAPON BARRELS
F109	INSPECT EXTERIOR WEAPON PARTS, SUCH AS STOCKS OR RIVETS
F106	FIELD STRIP WEAPONS, OTHER THAN M-15 REVOLVERS
F170	PERFORM DRY FIRE CYCLES
F160	INSPECT WEAPONS FOR HEADSPACE TOLERANCES USING GO-NO-GO GAUGES
F110	INSPECT EXTERNAL WEAPON SAFETIES
G228	REMOVE OR REPLACE SERVICE GRADE WEAPON EXTRACTORS
F196	VISUALLY INSPECT WEAPON DISCONNECTORS
F194	VISUALLY INSPECT WEAPON BUFFERS
G287	REMOVE OR REPLACE SERVICE GRADE WEAPON EJECTORS
G253	REMOVE OR REPLACE EXTERNAL WEAPON SAFETIES
F181	VISUALLY INSPECT REVOLVERS FOR CYLINDER INDEXING
F180	VISUALLY INSPECT REVOLVER CYLINDERS FOR DAMAGE, SUCH AS OBSTRUCTIONS OR CORROSION
G218	ADJUST REVOLVER TIMING
G219	ADJUST REVOLVER YOKES

Gunsmiths perform no AFSC 753X0 firing range duties other than to operate a test range. A listing of individual responses to tasks in Duty K (Performing Range Operations) shows only two individuals spend any appreciable time performing the 38 range operations tasks. AFSC 753X1 Gunsmith Test and Evaluation personnel perform these tasks as part of the testing process rather than as range instructors.

Job descriptions reported in the 1985 OSR for AFSC 753X0 CATM personnel were compared to the job description for gunsmiths to identify common weapon maintenance tasks performed by members of both AFSCs. The 1985 survey shows most CATM personnel are instructors, with only a few performing weapon maintenance. While members of both AFSCs perform a number of similar tasks, there is a distinct difference in the type of maintenance members of the two groups perform. CATM personnel perform field level maintenance, consisting of making immediate repairs or modifications by installing replacement parts that do not require special fitting or tooling. Gunsmiths, on the other hand, make repairs or modifications that involve machining or hand fitting parts. The latter activities must be performed in the gunsmith shop rather than on the firing range. These differences are consistent with AFR 39-1 Specialty Descriptions for the two career ladders.

Summary

Survey data suggest there is little overlap between the gunsmith and machinist or combat arms training jobs. Machinists assigned to the gunsmith shops do most of the fabrication while the gunsmiths perform depot level maintenance on weapons. Most Combat Arms Training and Maintenance personnel are instructors, with only a few performing field level maintenance on weapons. Survey data show civilian gunsmiths perform nearly all match-grade weapon maintenance. Copies of computer products used in these analyses have been provided to functional personnel for use in making training decisions.