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PROJECTION OF AIR FORCE ENLISTED MANPOWER REQUIREMENTS
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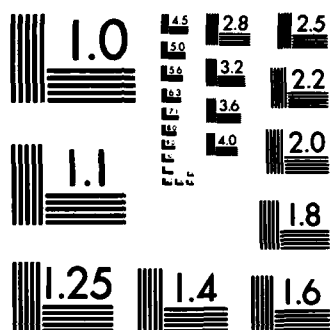
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RESOURCES

**PROJECTION OF AIR FORCE ENLISTED MANPOWER
REQUIREMENTS TO SUPPORT PERSONNEL AND
TRAINING PLANNING AND PROGRAMMING**

By

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June 1985

Final Report for Period February 1983 - March 1984

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The Public Affairs Office has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.

ANTHONY F. BRONZO, JR., Colonel, USAF
Commander

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This report documents the results of a project undertaken to suggest alternate ways by which the Air Force can improve its projection of future enlisted manpower requirements. Five tasks preceded formulation of alternatives and recommendations and are summarized with their findings as follows: 1. Identification of the needs for manpower requirements projections: Projections needed by personnel and training functions varied by organization, level of detail, and time horizon: 2. Characterization of the commonalities and distinctions among current Air Force projection methods: There were very limited commonalities and many differences found among current Air Force methods: 3. Analysis of historical trends in enlisted manpower authorizations: Authorization data exhibited trackable patterns. 4. Evaluation of the Skill Projection Model: The existing model has not be used for several years and offers little future promise as a projection tool.					
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5. Review of non-Air Force requirements projection methods: Air Force manpower projection methods were found to differ from those of other Services and non-DoD organizations.

Two alternatives for projecting future enlisted manpower requirements are proposed and discussed: (a) Authorization and Factor Projection, and (b) Quick, Partial Authorization Projection. The first alternative, which uses either extrapolated authorizations or factors in combination with the manpower projections allocated by the Force and Financial Plan, is recommended for longer-term development and implementation; however, the second alternative, which is already partly in place, is recommended for near-term use.

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PERSONNEL AND TRAINING PLANNING AND PROGRAMMING**

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This is a Special Report prepared for the Air Force Directorate of Manpower and Organization (AF/MPMI) and Air Force Management Engineering Agency (AFMEA/OL A).

SUMMARY

Two types of projections are required to support management decisions regarding the USAF enlisted work force: First, how many jobs will exist at designated future points in time? Secondly, among those personnel on duty now, how many will remain on duty to fill those jobs? This report focuses on how to make the first type of projection. It documents the basis for recommending the implementation of two proposed alternatives.

Specifically, the results of five research tasks that preceded the formulation of the alternatives and recommendations were as follows:

1. Manpower-requirement projections needed by personnel and training functions varied by organization, level of detail, and time horizon.
2. Current USAF methods and databases for making manpower-requirement projections had few similarities and many differences among themselves.
3. Trackable patterns were found in the historical trends in enlisted manpower authorizations.
4. The existing Skill Projection Model (SPM) was found not to have been used for several years and to offer little or no promise as a future projection tool.
5. USAF methods and databases for making manpower-requirement projections were found to differ from those of the other Services and non-DoD agencies.

The two alternatives for projecting future enlisted manpower requirements are (a) Authorization and Factor Projection and (b) Quick, Partial Authorization Projection. The first alternative uses either extrapolated authorizations or factors in combination with the manpower projections allocated by the Force and Financial Plan. It is recommended for longer-term development and implementation. The second alternative, which is already partly in place, is recommended for near-term use.

PREFACE

This project was initiated in response to Request for Personnel Research 82-03, "Manpower Projection of Skill Requirements." It was performed under work unit 77192006, "Skills Projection Analysis," and supports the Force Acquisition and Distribution System subthrust. The requirement for this research was identified by the Directorate of Manpower and Organization, Headquarters United States Air Force (HQ USAF/MPM). The individuals with original Air Staff responsibility for the project were Maj Roy Smoker and Mr Paul Smith. The project was undertaken by Science Applications, Inc. (SAI), in February 1983, under contract F33615-83-C-0037 to the Air Force Human Resources Laboratory (AFHRL). At the Air Force Management Engineering Agency, Capt Tom Milligan and Lt Robert Gordon provided valuable assistance to the project, and SMSgt Don Dickason spent many hours in providing authorization data. At SAI, Mr. Michael Smith and Ms. Kathleen Hedges performed very large portions of this work, and Robert Roll provided important statistical counsel and review; the overall project was directed by Craig Moore.

TABLE OF CONTENTS

	Page
I. BACKGROUND	7
II. FINDINGS FROM RESEARCH TASKS	7
Needs for Requirements Projection	8
Commonalities and Distinctions Among Enlisted Force Projection Methods.	9
Historical Trends in Enlisted Manpower Authorizations	10
The Skills Projection Model Evaluation.	11
Review of Non-Air Force Methods for Projecting Manpower Requirements.	12
III. ALTERNATIVES AND RECOMMENDATIONS	13
Projection Method Alternatives.	13
Specific Recommendations.	14
APPENDIX A: Primary Functions of Enlisted-Force Projection-Related Systems, Models, and Databases	15

LIST OF TABLES

Table	Page
1 Needs for Enlisted Manpower Requirements Projections	8
2 List of USAF Enlisted Projection Systems, Models, and Databases Examined	10

PROJECTION OF AIR FORCE ENLISTED MANPOWER REQUIREMENTS TO SUPPORT PERSONNEL AND TRAINING PLANNING AND PROGRAMMING

I. BACKGROUND

Managing the Air Force's enlisted work force requires decisions regarding personnel and training policies, plans, and programs. Whether these decisions are made at Headquarters, United States Air Force (HQ USAF), Major Commands (MAJCOMs), or Separate Operating Agencies (SOAs), they require two types of projections for each category of enlisted manpower. First, how many jobs will exist at each designated future time? Second, among those personnel on duty now, how many will remain?

This report focuses on how to make the first type of projection and was undertaken in response to Request for Personnel Research (RPR) 82-03, Manpower Projection of Skill Requirements. In this RPR, the Directorate of Manpower and Organization (HQ USAF/MPM) asked the Air Force Human Resources Laboratory (AFHRL) for assistance. The objective of the request was to shorten the personnel, training, and recruiting response times corresponding to program decisions. This was to be accomplished by providing alternative means for improvement over current procedures for projecting grade and skill requirements. From about 1970 to 1980, projections were made using the Skill Projection Model (SPM). The SPM is part of a larger system called Total Objective Plan for Career Airman Personnel (TOPCAP) that was used to aid overall enlisted force management. Toward the end of the 1970s, the SPM's projections were determined to be insufficiently stable and accurate; thus, the model has not been operated since February 1980.

According to HQ USAF, a replacement for the TOPCAP system is being developed: the Enlisted Force Management System (EFMS), which promises greater comprehensiveness, precision, consistency, efficiency, speed, and control than TOPCAP. However, the need that the SPM was designed to fill still exists. Personnel and training decision makers need early, stable, and accurate projections of future manpower requirements to permit timely policy and program control of the enlisted force. These projections support decision making because they establish and modify policies and programs that deal with recruiting, training, cross-training, retention, reenlistment, promotion, and separation. This effort seeks to identify and evaluate alternative methods that can improve the prediction of future enlisted manpower requirements. Such alternatives are identified, and specific action steps are recommended, in Section III of this report. Section II summarizes a series of preliminary tasks that led to the formulation of the alternatives and recommendations.

II. FINDINGS FROM RESEARCH TASKS

The tasks that preceded the formulation of alternatives and recommendations sought answers to five questions, as follows:

1. Needs for manpower requirements projections: When and what types of manpower requirements projections are needed?
2. Commonalities and distinctions among current USAF projection methods: What is the state of present Air Force technology concerned with projections of enlisted authorizations?
3. Historical trends in enlisted manpower authorizations: What patterns of behavior have been exhibited in the past by the categories of authorizations that must be projected?

4. SPM evaluation: To what extent are the inaccuracies in the SPM's projections due to shortcomings in the model?

5. Non-Air Force requirements projection methods: How do large, non-Air Force organizations predict future manpower requirements?

A summary of each task's results follows.

Needs for Requirements Projections

To ensure that the eventual recommendations for improving enlisted manpower requirements projection would meet personnel and training decision making needs, this task identified the decisions to be supported, the organization(s) primarily responsible for making each decision, the associated timing requirements, the length of the horizon over which requirements projections are needed, and the required level of projection detail. This was accomplished in Task 1 by reviewing personnel and training planning and decision-making documentation, by observing decision making in progress (e.g., attending the Trained Personnel Requirements [TPR] Conference), and by interviewing Air Force officials responsible for personnel and training policies.

Table 1 displays the results, categorizing decisions into long-range planning, management planning and programming, and operational control. The boundaries between these categories are not firmly drawn, but moving from long-range planning to operational control, the following trends are observed: (a) Decision-making responsibility shifts to organizations that pursue nearer-term objectives, with shorter planning horizons, (b) decisions are made more frequently, and (c) the level of requirements projection detail needed increases.

Table 1. Needs for Enlisted Manpower Requirements Projections

DECISION	PRIME	DECISION	-----"REQUIREMENTS"-----	
	ORGANIZATION	INTERVAL	HORIZON	LEVEL OF DETAIL ^a
Long-Range Planning				
Occupational Structure				
Major Occupational Restructuring	FMs ^b	As Needed	0-120+ mo	Varies
Limited Classification Revision	MPC + FMs	6 mo.	0-120+ mo.	SG
Force Structure Planning				
Modify Compensation Structure	MPX	As Needed	0-120+ mo.	CG
Modify Promotion Structure	MPX	As Needed	0-120+ mo.	CG
Modify Active Force Structure	MPX	As Needed	0-120+ mo.	CG
Loss Policy	MPX	As Needed	0-120+ mo.	CG
Training Planning				
Modify Training Concepts	ATC, FMs, MPP	As Needed	24 + mo.	SG
Modify Training Settings	ATC & FMs	As Needed	24 + mo.	SG
Course Creation/Phase-Out	ATC	As Needed	24 + mo.	SE

Management Planning and Programming				
Budget Development & Justification				
Overall Enlisted Manpower Requirement	MPM & MPP	4 mo.	6-84 mo.	AE
Enlisted Grade & Experience Breakout	MPX	4	6-84	CG
Selective Reenlistment Bonuses (SRBs)	MPP	4	6-84	SG
Recruiting & Training Resources	MPP & ATC	4	6-84	SE
Aggregate Program Planning				
Prior Service (PS) Accessions	MPP & MPX	4	0-84	SG
Non-Prior Service Accessions	MPP & MPX	4	0-84	AE
Retraining Quotas	MPP	4	0-24	SG

Table 1. Needs for Enlisted Manpower Requirements Projections (Continued)

DECISION	PRIME ORGANIZATION	DECISION INTERVAL	-----"REQUIREMENTS"-----	
			HORIZON	LEVEL OF DETAIL ^a
Promotions	MPP	4	0-36	AG
Separation	MPP	4	0-84	AE
Skills Management Program				
Specialty Prioritization	SMC ^c	12	0-84d	SG
Promotion Differentials	SMC	12	0-84d	SG
Retraining, PS, Bypass, Control AFSC Quantities	MPP & SMC	12	0-60	SG
High-Year-of-Tenure Extensions	MPP & SMC	On-going	0-36	SG
Career Job Reservations (CJR's)	MPP & SMC	6	0-84	SG
Selective Reenlistment Bonuses (SRBs)	MPP (&SMC)	6	0-48	SG
Separations	MPP	12	0-36	SG
Trained Personnel Requirement (TPR)				
Establishment	MPP, FMs, MAJCOMs	6	6-36	SE
Refinement	MPP & ATC	6	6-36	SE
Operational Control				
Ladder Manning	MPC	On-going	0-36 mo.	SE
Specialty Accessions	MPP & ATC	On-going	0-12	TPR & Guidance
Accession Schedule	ATC/RS	On-going	0-12	Accession Program
Training Production	MPC & MPP	On-going	0-12	TPR
Reenlistment Quantities	MPP & ATC	On-going	0-12	CJR's
Separation Monitoring	MPC & MPP	On-going	0-12	Separation Program

^aAE = Aggregate End-Strength

AG = Aggregate by Grade

CG = Career Group by Grade

SE = Specialty End-Strength

SG = Specialty by Grade

^bFunctional Managers

^cSMC = Skills Management Conference

^dAccuracy over months 12-36 of this horizon is more important than over months 0-11 and 37-84.

Commonalities and Distinctions Among Enlisted Force Projection Methods

To ensure that any recommended improvements are compatible with present projection methods and other components of the enlisted manpower, personnel, and training management system, a systematic review of USAF enlisted projection methods was conducted in Task 2. Table 2 lists the 12 systems, models, and databases reviewed and indicates whether they focus on manpower (i.e., requirements and/or authorizations) or personnel (e.g., accessions, training, retention), whether they already exist or are only proposed, and whether they are used. Each is briefly described in Appendix A. Of the 12 systems, models, and databases examined, most involved the manpower function, several were only in the proposed stage, and most received little or no use.

**Table 2. List of USAF Enlisted Projection Systems, Models,
and Databases Examined**

	Used (U) Vs. Not Used (N)		
	Existing (E) Vs. Proposed (P)		
	Focus On Manpower (M) Vs. Personnel (P)		
Skill Projection Model (SPM)	M	E	N
Command Manpower Data System (CMDS)	M	E	U
Manpower Standards Application Routine (MSAR)	M	E	(U)
Standards Programming Integration (SPI)	M	P	N
Functional Estimating Equations (FEEs)	M	P	N
Program Estimating Equations (PEEs)	M	E	(U)
Transient Entitlements Distribution System (TEDS)	M	E	U
Mission Impact Generalized Explanatory Base Operating Support (GEBOS-M) Model	M	E	(U)
Total Objective Plan for Career Airman Personnel (TOPCAP)	P	E	N
Enlisted Force Management System (EFMS)	M/P	P	N
Enlisted Programming System (ENPRO)	P	P	N
Enriched Airman Gain/Loss File (EAGL)	P	(E)	N

Note. Parentheses connote partially or somewhat (e.g., MSAR finds very limited use, and EAGL exists in a preliminary form).

Historical Trends in Enlisted Manpower Authorizations

This task identified and measured patterns of changes in enlisted manpower authorizations. By examining the historical behavior of manpower authorizations, the patterns of authorization change that any revised requirements projection method should anticipate were determined. For increasingly detailed subcategorizations within the enlisted occupational hierarchy (i.e., career progression groups, occupations, shredouts, skill levels, and pay grades), analyses were made of the year-end authorizations recorded in the Unit Authorization File (UAF) for fiscal years 1977 to 1982. Within each subgroup, an exponential growth model¹ was used to identify authorizations that exhibited significant trends of growth or shrinkage or that remained stable. Also, their coefficients of variation (CV)² were used to identify authorizations that exhibited especially high and low variation or remained stable. Authorizations were then placed into categories which represented a combination of growth and stability patterns based upon the results of the growth model and the CV values.

Some observations from analyzing the entire authorization data set include:

1. Significant growth and shrinkage occurred at all levels in the enlisted occupational hierarchy.
2. There was a significant shift in authorizations from higher to lower skill levels (especially into the apprentice, skill level 3, subcategory).
3. Authorization-level variation was substantial at virtually all levels of the work force.

¹The model used to characterize trends in authorizations is $Y(t) = \exp(\alpha + Bt)$ or $\ln(Y(t)) = \alpha + Bt$, where $Y(t)$ is the authorization for period t , and α and B are the scale and growth parameters, respectively.

²CV = (Standard Deviation/Mean)*100%.

4. High growth (or high shrinkage), high variability occupational entities tended to be smaller, whereas larger entities tended to be more stable.

The Skills Projection Model Evaluation

Task 4 analyzed and evaluated the existing SPM to determine if the model could serve as the future skills projection tool. Model inaccuracies and shortcomings were explored, and input data were thoroughly analyzed.

The SPM was developed in the early 1970's and was used to fill an information void. This void occurred because personnel and training managers need information by grade and skill level on projected authorizations to serve as inputs to the planning and decision-making process. However, the Planning, Programming, and Budgeting System is a very time-consuming process. In the Force and Financial Plan (F&FP), MAJCOMs and SOAs receive total enlisted manpower allocations by Program Element Code (PEC) for all the years in the Five-Year Defense Plan (FYDP). They must add detail to the allocations such as occupational specialty, skill level, pay grade, base, operating unit, etc. The allocated manpower detailed by the MAJCOMs and SOAs is entered in the UAF. Among other purposes, this file serves to identify detailed, near-term authorized positions so the personnel assignment process can match available personnel to them. Because of the time required by the MAJCOMs and SOAs to specify this detail, the SPM was developed to anticipate the results. The SPM took the most recent distribution of allocated manpower in each PEC from the UAF and distributed future FYDP manpower allocations, summing Air Force-wide to identify projected authorizations in each pay grade within each skill level for each enlisted occupational specialty. These projections became the manpower requirements or targets for purposes of personnel and training planning and programming.

To evaluate the SPM, two major subtasks were accomplished. The first subtask involved the review, analysis, and actual operation of the SPM. The second subtask was concerned with an in-depth analysis of the historical patterns present in the SPM's data input files. In the first subtask, a review of what limited documentation does exist on the model was completed. Discussions were held with HQ USAF/MPM staff on model problems and limitations. (It should be noted that only one individual currently in HQ USAF/MPM had hands-on experience with actual operation of the model.) Two of the key problems are that (a) unless otherwise indicated, the model uses the most recent historical manpower authorization patterns and cannot react to technological changes that impact authorizations, and (b) there are no historical data files with which to compare model input.

A sample run of the SPM was made. This run was preceded by construction of extract input files from the UAF and the F&FP. These files were difficult to construct, and data editing was primarily a responsibility of the user. Once the files were constructed, the model itself was exercised by selecting from a menu of 16 programs that run individually and cannot be linked together. Several of the programs require judgment from the user. The process is iterative: The model is run, the results are analyzed, adjustments are made, the model is rerun as necessary, and finally an acceptable result is obtained. Consequently, the resulting forecasts are a function of the user's knowledge of program plans, experience with the model and the input data, and the ability to interpret and make parameter and data modifications based on interpretation of intermediate results.

Because of the problems with historical data files, the complexity of the SPM, and the degree to which the user affects the outcome of the projection process, no reliable mechanism for evaluating the accuracy of the SPM forecasts exists. Human judgments that entered into model

operation and the interpretation of results could not be replicated. Based on these conclusions, further operational evaluation of the SPM was not undertaken in this skill-projection analysis.

Although in the first subtask it was not possible to make an extensive comparative study of SPM results, the second subtask did enlarge the knowledge base on the SPM through an understanding of the data environment (input files) surrounding the SPM. Analysis was made of the histories of both manpower authorizations (as reflected in the UAF) and manpower allocations (as reflected in the F&FP) from FY1977 through FY1982. Using UAF year-end authorization data, analyses for Program Elements within Commands and SOAs, similar to those conducted in Task 3 for occupational data, were accomplished. Those analyses included the use of the exponential growth model to characterize trends and the CV to characterize stability of the authorizations. Most Air Force Command/Program Elements exhibited little significant authorization growth or shrinkage from 1977 through 1982; however, the larger Command/Program combinations tended to be growing or shrinking, although the average for the entire data set was near 0%. Stability of the data, as measured by their CVs, exhibited a similar distribution pattern to that observed for occupational data in Task 3.

Using allocated manpower in the F&FP, variability in the allocations associated with Command/Program Element combinations was examined. Since the data represent planned rather than actual authorizations, and consequently extend several years into the future, considerably greater variation was encountered for these data than for CVs computed from corresponding authorizations in the UAF. Each Command/Program Element F&FP variability was partitioned into three components: budget variation (the allocation change occurring within budget years), changed plans (occurring between budget years), and planned change (occurring through the length of each budget exercise's F&FP); changed plans consistently accounted for the majority of the F&FP variability. This implies that, generally, much more fluctuation was due to simple changes between one year's plan and the next year's plan than to changes embodied in a single year's 5-year plan. Indeed, there seemed to be an inverse relationship: When change was planned, less changing of plans occurred.

Finally, an attempt was made to summarize the manner in which planned allocations approached eventual values. Planned allocations were fit with mathematical models that represented convergence to final allocations. Seldom did strong relations exist between model-predicted and actual allocation plans. The conclusion was that planned allocations often approached final values rather unsystematically. An important finding of this part of the analysis is that allocation plans understate eventual manpower allocations much more frequently than they overstate them.

Review of Non-Air Force Methods for Projecting Manpower Requirements

Task 5 reviewed manpower requirements projection methods and needs as found in the U.S. Army, U.S. Navy, Internal Revenue Service, U.S. Postal Service, American Telephone and Telegraph Company, General Telephone and Electronics Corporation, and Mobil Oil Corporation. The nonmilitary organizations were selected to provide a basis for evaluating the Air Force's skill-projection process by comparing it with those of other large organizations which, like the Air Force, have a large work force (at least 90,000 employees), have numerous operating locations, are technologically oriented, provide considerable in-house training for many employees, promote largely from within, produce or provide multiple products and/or services, employ a variety of skills, and have some degree of limited lateral entry at experienced positions.

This review found that the Air Force is unique in the degree to which its manpower requirements determination is decentralized and its personnel decision making is centralized.

Other organizations align these functions at more nearly the same organizational level. When projecting future manpower requirements, non-DoD organizations often explicitly consider productivity improvement, current and expected economics of the labor market, and relations between work force mix and operational capabilities.

III. ALTERNATIVES AND RECOMMENDATIONS

Projection Method Alternatives

The goals of this effort did not include the design and programming of a new computerized model to anticipate manpower projections. Results of the evaluation of the SPM indicated that modifications to the SPM were not feasible and that the most readily employable and cost-effective solution to the manpower projection problem would be achieved through developing improved administrative and information processing procedures utilizing databases and information systems that already exist. During the course of this investigation, several of the alternatives that were developed required the application of databases and the operation of systems (discussed in Task 2) that do not yet exist: mainly, the Enlisted Force Management System. These alternatives are well-documented in working papers and have been briefed to the Air Staff. However, the two alternatives presented in this Special Report do not rely on new systems, but rather can be adopted by the manpower community with limited changes to the present manpower-projection process.

The two alternatives also rely on significant findings from the previous five tasks. The most relevant of these findings are that patterns do exist in historical manpower occupational authorizations and that less organizational detail is needed in the Planning, Programming, and Budgeting System cycle by personnel and training managers to make their plans and decisions over the management planning and operational control time horizons. With due consideration to these goals and findings the following two alternatives are presented:

Alternative 1--Authorization and Factors Projection. This alternative provides a set of possible authorization projections through a combination of two approaches: one using historical trend patterns and the other using historical authorization factors. The first approach would be to develop projections based directly on historical trends. These authorizations could be accomplished in a hierarchical manner beginning with Air Force Specialty Code, then for skill level, for each MAJCOM and SOA, and for each Air Force PEC. Results of Task 3 show that there are some predictable patterns present in historical data and this alternative would make use of those trends. One shortcoming of this approach is that projected authorizations based on trend extrapolations would not necessarily match corresponding manpower allocations for Air Force PECs, MAJCOMs/SOAs, or total end strength, and the differences would have to be reconciled by the Air Staff.

The second approach would use a database of factors (fractions) that reflect the anticipated distribution of enlisted manpower within each Air Force Program Element and each MAJCOM or SOA. These factors could simply be the most recent or could be projected trends of enlisted manpower factors. These factors would be multiplied by corresponding F&FP allocation projections to yield authorization projections that would balance with allocations. Projections based on both historical trends and factor approaches could then be combined through using decision rules or weights agreed on by the Air Staff and MAJCOM/SOAs. MAJCOMs and SOAs would have the option to select or develop their own projections.

Personnel and training decision making could continue using either of these accepted authorization projections until final approval and detail in the UAF is completed. Air Staff

could also sort these authorization projections into categories whose past authorization levels have varied unsystematically or whose F&FP projections now deviate markedly from past projections, and the MAJCOM/SOA task of reviewing the projections could be eased by focusing on trouble spots. This alternative's primary advantage is that it makes use of known historical authorization patterns as well as planned changes embodied in the F&FP.

Alternative 2--Quick and Partial Authorization Extension. This alternative is similar to what the Air Force is currently using. Simply described, this approach would pass each new set of F&FP allocations directly to the MAJCOMs and SOAs and require identification of the corresponding authorizations only to the skill level within occupational specialty. The MAJCOMs and SOAs would subsequently add the detail to these partial extensions to enter them into the UAF, but personnel and training decision making could proceed in the meantime using the Air Force-wide sums of the partially extended authorizations. This approach would always show authorization projections that balance with the F&FP's allocation projections. This is simultaneously an advantage and a disadvantage. The advantage is that justifications for personnel plans and programs should be bolstered because they would be based directly on approved operating program plans. The disadvantage is that these plans and programs probably would have to be revised significantly and frequently in response to the extremely variable allocated manpower plans in the F&FP. Personnel and training managers could use factors based on most recent authorization breakdowns or use the Alternative 1 fractional trends to anticipate manpower distributions.

Specific Recommendations

Given the two alternatives as discussed, it is recommended that the Air Force give Alternative 1 primary consideration for longer-term development and implementation. This alternative, which uses trend and factor projections in combination with the F&FP allocation projections, would simultaneously employ the predictable patterns authorizations often exhibit and would dampen the fluctuations present in F&FP projections. Until Alternative 1 is operational; however, it is recommended that Alternative 2 be used as an interim solution to the problem. It is already partly in place and seems to be working. Its primary drawbacks include (a) the considerable difficulty the MAJCOMs and SOAs have in quickly identifying longer-term requirements projections--even though they need to consider manpower only in much more aggregate terms than previously, and (b) the strict link to the highly variable manpower allocation projections identified in the F&FP. Alternative 1 can be viewed as a modification to Alternative 2 that aims to alleviate these problems.

APPENDIX A. PRIMARY FUNCTIONS OF ENLISTED-FORCE PROJECTION-RELATED
SYSTEMS, MODELS, AND DATABASES

Skill Projection Model (SPM). Predicts enlisted authorizations from the Force and Financial Plan (F&FP) allocations by specialty, skill level, pay grade, command, and overseas/CONUS mix.

Command Manpower Data System (CMDS). Maintains the detailed distribution of manpower authorizations in the form of the Unit Authorization File.

Manpower Standards Application Routine (MSAR). Converts workload factors into manpower requirements and creates Project Work File transactions that may be used to update the Unit Authorization File.

Standards Programming Integration (SPI) System. Produces rapid-turnaround manpower requirements estimates based on Program Estimating Factors. An example of the Program Estimating Factors is the average number of hours to be flown per month per F-15.

Functional Estimating Equations (FEEs). Estimates program manpower requirements at the MAJCOM/SOA level of detail. Also can be used to distribute these requirements to locations and work centers.

Program Estimating Equations (PEEs). Determines aggregate manpower requirements for programs at MAJCOM/SOA level. Program estimating equations are used by manpower planners in the budget allocation process.

Transient Entitlements Distribution System (TEDS). Projects transient entitlements (authorizations for manpower in transit, hospitalized, in prison, etc.) for each MAJCOM/SOA.

Mission Impact Generalized Explanatory Base Operating Support (GEBOS-M) Model. Estimates Base Operating Support and Real Property Maintenance Activities manpower from programmable and nonprogrammable factors.

Total Objective Plan for Career Airman Personnel (TOPCAP). A system of models used in planning and maintaining the career enlisted work force.

Enlisted Force Management System (EFMS). An improved, extended, modernized version of the Total Objective Plan for Career Airman Personnel that is being designed to aid in determining accession, training, and retention plans and programs--including estimating the effects of compensation and personnel policy alternatives on enlisted force behavior.

Enlisted Programming System (ENPRO). That part of the Enlisted Force Management System which focuses on personnel programming decision making (nearer-term accessions, training, retention, and separation programs).

Enriched Airman Gain/Loss File (EAGL). A longitudinal enlisted personnel history file that will be an integral part of the Enlisted Force Management System to be used on a continuing basis as a source of data for airman force analysis.

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