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IMPACT OF VARIOUS ENLISTMENT STANDARDS ON THE PROCUREMENT-TRAINING SYSTEM

By

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April 1977
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AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235

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This interim report was submitted by Personnel Research Division, Air Force Human Resources Laboratory, Lackland Air Force Base, Texas 78236, under project 7719, with HQ Air Force Human Resources Laboratory (AFSC), Brooks Air Force Base, Texas 78235. Mr. Bart M. Vitola, Personnel Research Division, was the project monitor.

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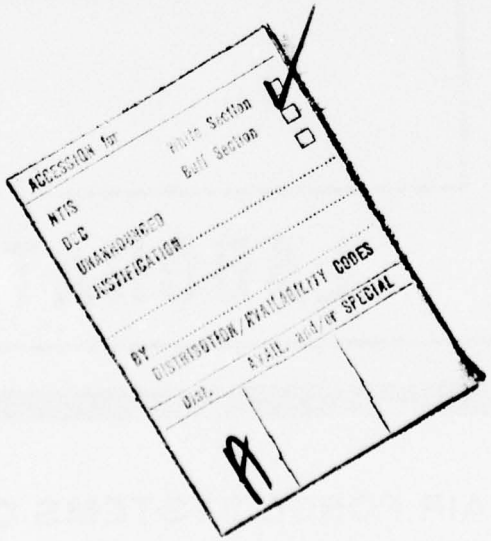

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Data were collected on male and female personnel who graduated or were eliminated from basic military training (BMT) or technical training (TT) in CY 1972–1974. Information on the enlistees included aptitude scores, education, age, sex, and racial subgroup membership. Twenty-one enlistment requirement standards were generated and compared to the enlistment requirements of 1974 and 1975. Each standard was comprised of subsets of aptitude data, age, and educational qualifications. Criterion assessment included: (a) cost associated with amount of attrition from BMT and TT, (b) percentage of the population rejected by the standard, (c) effect of each standard on the quality of the accession population and, (d) impact of each standard on racial subgroup mix. Results of the investigation indicate that a flexible index of enlistment requirements can be provided personnel planners which

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takes into consideration, cost, quality, racial subgroup mix, and expansion or contraction of recruiter market. Data from this study lead to a recommendation that two standards be considered as replacement for the 1975 enlistment requirements: (a) a minimum aptitude composite of MAGE 165 and either high school graduation or less than high school with a score between 65–99 on the AFQT (165/HSC) and, (b) all the requisites of 165/HSC plus a minimum age requirement of 17 years and 6 months (165/AGE/HSC).

PREFACE

The work reported in this study was accomplished under project 7719, Selection and Classification Technology, task 771902, Exploration of Methods for Increasing the Effectiveness of Personnel Programs.

Appreciation is expressed to MSgt Fred W. Brown and the members of his staff in the Computational Sciences Division for their professional assistance in computer programming and accomplishment of the desired analyses.

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IMPACT OF VARIOUS ENLISTMENT STANDARDS ON THE PROCUREMENT-TRAINING SYSTEM

I. INTRODUCTION

In the accomplishment of its mission, the Air Force invests millions of dollars in training to improve the skills of the men and women who are accepted for enlistment. Air Force personnel planners seek ways to reduce costs associated with attrition from training programs and, at the same time, maintain the highest quality potential possible. This objective has been sought through imposition of stringent qualifications for initial enlistment in an effort to raise the quality of the basic recruit. Two variables which have been established as indicators of quality are level of demonstrated aptitude and graduation from high school (Grunzke, Guinn, & Stauffer, 1970; Kantor & Guinn, 1975; Vitola, Guinn, & Magness, 1976).

Enlistment standards related to aptitude have remained relatively constant over the past 20 years although the emphasis on recruiting young men having a high school education has varied considerably. From 1956 to 1972, a nonprior service male applicant was required to obtain a score of 40 on at least one of the four aptitude indexes of the Airman Qualifying Examination (AQE) and a score of 21 or higher on the Armed Forces Qualification Test (AFQT). In the 1972 through 1974 time frame, male applicants were required to obtain a score of 40 on the General Aptitude Index and an additional score of 40 on either the Mechanical, Administrative, or Electronics index of the AQE. The AFQT requirement remained the same as the 1956 through 1971 requirement (a minimum of 21). For female applicants, AQE aptitude requirements were the same as those required of males. However, from 1956 to 1974, all non-prior service female personnel were required to take the Armed Forces Women's Selection Test (AFWST) in lieu of the AFQT. A qualifying score on the AFWST was between 42 and 47. In 1974, female accessions, like their male counterparts, were administered the AFQT.

Educational requirements for male enlistees during the 1956 through 1974 time frame did not include a high school diploma. However, during the early 1960s, as well as in the current time period, there has been increased emphasis on recruiting high school graduates or high school nongraduates with high aptitude potential. For the female recruits, a high school diploma or its equivalent was mandatory from 1956 to 1974. In 1974, enlistment requirements were changed to permit females to enlist with less than 12 years of formal education.

There is one other enlistment requirement in which males and females have differed. From 1956 to 1974, female enlistees had to be at least 18 years of age whereas 17-year-old males could enlist if their parents or legal guardians would give their consent. Since 1974, both males and females may enlist at 17 years of age with parental or guardian consent.

In 1975, the Air Force established enlistment standards for all accessions which are more stringent than those required in the past. Today's accessions must qualify on three criteria: (a) the total score on the four combined aptitude indexes of the Armed Services Vocational Aptitude Battery (ASVAB) must be equal to or exceed 170, (b) the General Aptitude Index score must be 45 or higher, and (c) if an enlistee is classified as Category III or IV on the AFQT, that enlistee must be a high school graduate.

In a favorable selection environment; i.e., one in which there is an abundance of volunteers having the desired education and aptitude levels, the stringency of the enlistment standard is not of major concern. However, if the selection ratio becomes unfavorable, Air Force managers need information on how to modify enlistment standards so that recruiters will have a broader segment of the population from which they may recruit while minimizing the loss of input quality.

It is the purpose of this study to provide Air Force managers and planners a methodology by which a comparison of possible enlistment standards and requirements may be made and standards selected for operational use in accordance with either a favorable or unfavorable recruiting climate.

II. METHOD

Data were collected on male and female non-prior service personnel (Table 1) who graduated or were eliminated from Air Force basic military training (BMT) or technical training (TT) during the CY 1972

through 1974 time period. The technical training data were restricted to personnel taking 3AQR and 3ABR courses only. Sources of the data were files of information provided to the Computational Sciences Division of the Air Force Human Resources Laboratory by Air Training Command. Information on the enlistees included date of birth, sex, racial subgroup, AQE/ASVAB and AFQT scores, years of formal education, and disposition from BMT and TT. BMT and TT cost data were provided by the Comptroller's Division, Air Training Command.

As a basis for decision-making, various enlistment standards were developed for gaming purposes. The proposed standards were comprised of combinations of aptitudinal data, specific levels of aptitude, age, and educational qualifications. These standards were applied to the 1972 through 1974 populations to determine their impact on quality of input, attrition in BMT and TT, and racial subgroup mix.

The 1972 through 1974 data base was chosen because it represents draft-induced and volunteer input and because a less stringent standard was in use than the 1975 standard. The tabulated data that are presented for discussion are derived through direct application of the various standards to the 1974 accessions, and success/failure rates are based upon empirical counts of the 1974 experience.

Distributions were obtained for accessions in each year to indicate rate of elimination from BMT and TT by age, sex, and level of education. BMT attrition cost data indicated the cost per eliminee to be about $1,400 and about $1,700 per graduate. In TT, the cost per graduate ranged from $1,700 to $34,000. An arbitrary and extremely conservative cost of $1,000 per individual attrition from TT was selected so that dollar values could be computed to provide a basis for comparison between enlistment standards. Therefore, although it is an important criterion, the cost-avoidance dollar values associated with any one standard should be considered as a relative rather than an absolute estimate of the standard's potential from a cost standpoint.

In addition to cost, the following criteria were selected to assess the enlistment standards: (a) amount of reduction in attrition rate over and above the actual attrition rate experienced for the specific time period, (b) the percentage of the accession population that would have been rejected by the standard and the actual BMT success rate of the rejected population, (c) the effect that each standard would have on the quality of the accession population, and (d) the impact of each standard on the racial subgroup mix of the accession population.

III. RESULTS AND DISCUSSION

The enlistment standards used in this study are listed in Table 2. The rationale for selecting these particular standards was based on several factors. The actual input group and the 1975 standards were used to provide baseline data for comparison purposes with the proposed standards. Composite standards similar to the 1975 requirement were used varying the overall aptitude score component at a higher (175) and lower (165) minimum. The purpose of the variation was to determine, in either a more favorable or unfavorable recruiting climate, the effect the different composite standards would have on attrition rates from BMT and TT.

The 1975 standard was comprised of a composite of an aptitude sum of MAGE 170 plus a General aptitude index of 45 and an educational requirement. It was believed that the effectiveness of the MAGE 170 alone, as well as MAGE 165 and 175, should be explored. Since the General aptitude index has been accepted as an overall measure of intellectual functioning, the effectiveness of various levels of the single aptitude index (i.e., GAI of 55, 50, and 45) were investigated.

Finally, single education and age level standards were used to assess the impact of a standard which requires each accession to be at least 17 years and 6 months of age or have completed a high school education or its equivalent. The rationale for the age and educational restrictions was based on research which indicated that 17-year-olds cost a great deal in terms of their productive return. The 17-year-old group is typically high school non-graduate and low aptitude with high attrition rates from BMT and TT (Kantor & Guinn, 1975; Vitola, Guinn, & Magness, 1976; Wilbourn, Vitola, & Leisey, 1976).

Data from Table 3 show the percentage of eliminees by age groups from BMT and TT for CY 1974. It is evident that young 17-year-olds (17/5) are contributing heavily to the overall attrition rate of the 17-year-old group, while the older 17-year-olds (17-6/11) attrit at about the same rate as the other age groups.

Current procurement needs demand an expanded recruiting market, therefore, a mandatory 18-year-old enlistment requirement would not be practical at this time. However, as will be shown, an age requirement of 17 years, 6 months or older does expand the recruiting market and is more cost effective than the current practice of enlisting young 17-year-olds (all enlistees below 18 years of age must have either parental or guardian consent).

In the Phase I analyses, the effectiveness of Standards 2 through 13 was assessed. Based on these preliminary findings, 10 additional standards were generated. These new standards (Numbers 14 through 23 in Table 2) comprise one or more of the components of the standards used in the preliminary analyses which appeared to warrant further investigation.

Since the detailed data pertaining to the actual and proposed standards for the 1972 through 1974 time period lead to similar conclusions, only the 1974 data were used for discussion.[1] The formula used to compute the cost data for all of the standards is explained in Table 4.

Phase I Analyses

Tables 5 through 7 present comparative data on the actual and 1975 standards and 11 of the proposed standards. Comparisons were made on criteria such as differences in graduation rate, possible cost avoidance, percentage of the 1974 population rejected by the standard, and the BMT success rate of the rejected population. The last two criteria (Table 7) are most important since they indicate both the additional burden to be placed on recruiting personnel to attract a sufficient number of individuals of the quality imposed by the standard requirement and the percentage of those rejected individuals that would not have successfully completed BMT. In addition, one standard might eliminate a disproportionate number of males or females. With the Air Force's objective to increase the number of female accessions, a standard which would make this objective more difficult would be questionable from an operational standpoint.

Table 8 summarizes the data from Tables 5 through 7 to make comparisons between the standards easier. Using the criteria enumerated, 5 of the 11 generated standards would appear to merit further consideration. This group of standards includes MAGE 165, GAI 45, HSC, HSG, and AGE. The MAGE 165 standard is more cost-effective than the 1975 standard and also broadens the recruiter market. The GAI 45 standard has several favorable characteristics: cost savings are sizeable, it screens out fewer potential applicants, and it simplifies computation of the enlistment requirements.

A comparison of the educational standards HSC, HSG, and AGE with the 1975 standard reveals that these standards have the same desirable aspects as the GAI 45 standards with regard to cost savings, the recruiter market, and computation of the standard requirement.

Finally, each of the five more promising standards were compared to the 1975 standard on the basis of the BMT success rate of the rejected population. In four of the five standards, the BMT success rate of the rejected population is lower than the success rate of the population rejected by the 1975 standard (HSC being equal to 1975). This indicates that these standards are minimizing the exclusion of potentially successful personnel.

Phase II Analyses

At this point in the evaluation of the generated standards, it was reasoned that although empirically each of the five standards was promising, from a pragmatic viewpoint there might be little likelihood that the Air Force would establish a single standard of either aptitude, education, or age only. Further, there was the probability that various combinations of these five standards might produce a set of enlistment requirements that would better satisfy the assessment criteria than did the single standards. On the basis of this rationale, an additional 10 standards were generated.

Each standard was comprised of a combination of two or three of the five enlistment standards selected from the Phase I analyses. The composites that were generated are listed as standards 14 through 23 in Table 2.

The identical criteria used to evaluate the standards generated in Phase I were also used for assessment of the 10 composite standards generated for the Phase II analyses: cost, rejection rate by the standard, and

[1] Information pertaining to the 1972–1973 data may be obtained by written request to AFHRL/PEM, Brooks AFB, Texas 78235.

BMT success rate of the rejectees. Tables 9 through 11 data show comparisons of BMT and TT cost, percent rejected by each standard, and BMT success rate of rejectees between the 1975 standard and the 10 standards of Phase II.

Table 12 presents summary characteristics of these additional enlistment standards. Inspection of these data indicates that all the composite standards have a more desirable set of enlistment characteristics than the 1975 standard. It is also realized that some of the standards are more closely related to the current needs of the Air Force than are others. For example, today's recruiting climate is such that an expanded market is necessary to meet imposed manpower quotas. The standards that require HSG shrink that market more than those that do not require HSG. Additionally, it is not conceivable that personnel planners would altogether abandon an educational requirement; therefore, standards such as 165/AGE and GAI 45/AGE may not be as acceptable as 165/AGE/HSC or GAI 45/AGE/HSC. However, it does appear that each of the additional enlistment standards has met an acceptable level which merits further consideration in the decision making process.

Phase III Analyses

Before a final decision was made on the value of one standard compared to another, an evaluation was made which included some indication of the impact of the proposed standards on the quality of Air Force accessions and racial subgroup mix. To provide data on these critical issues, the effect of each of the 10 Phase II standards on these factors was assessed in Phase III. The 10 standards were then compared to the 1975 standard.

For these analyses, AFQT and ASVAB performance are indicators of quality. In addition to the overall AFQT mean, the samples were also grouped by AFQT Category to delineate the differences in quality among enlistment standard subgroups (Table 13). Primarily, attention will be directed to 165/HSC, 165/AGE/HSC and GAI 45/AGE/HSC versus the 1975 standard.

Inspection of the data in Table 13 reveals little difference in the overall means or the percentages in each Category. It would appear that no practical loss in quality, as measured by the AFQT, would result from the selection of any of these standards. It is evident that each of these standards closely approximates the quality levels obtained by the 1975 standard.

Table 14 data reflect mean ASVAB aptitude performance in the aptitude area required for initial assignment of the 1974 accessions (i.e., Selector AI scores). Similar differences are found between the proposed enlistment standards and the 1975 standard in Mechanical, Administrative, General, and Electronics aptitude areas as was noted in the AFQT data. Little, if any, differences in quality would result from using any of the proposed standards, while each of the proposed standards provides benefits not afforded by the more stringent 1975 standard.

Since it is imperative that a sufficient number of individuals with high aptitude potential be recruited to fill initial assignment requisites, especially in the General and Electronics areas, it is also important to know what percent of the incoming accessions demonstrate a potential that enables them to be assigned to Air Force specialties which require a minimum aptitude percentile of 60 or 80. Table 15 data indicate the percentage of 1974 incoming accessions that would have scored 40 and above, 60 and above, and 80 and above in the M, A, G, and E areas of the ASVAB when they were screened by the 1975, 165/HSC, 165/AGE/HSC and GAI 45/AGE/HSC standards. It is apparent that regardless of aptitude area, or level of aptitude, the 165/HSC or 165/AGE/HSC could readily be substituted for the 1975 standard with little decrement in the overall numbers of accessions in each category. There is a sufficient reduction in percentage of people scoring 60 and above and 80 and above when the GAI 45/AGE/HSC standard is applied to reject it as a replacement standard for the current 1975 standard in favor of either 165/HSC or 165/AGE/HSC.

The final criterion by which the standards generated in Phase II were assessed is the impact of the standards on the racial subgroup mix of incoming accessions. Prior to evaluating the racial subgroup data, some historical facts should be stated. For at least the last decade, the United States Air Force has practiced a policy of equal enlistment opportunity regardless of race, color, creed, religion, or sex. At present, about 15 percent of the enlisted force is Black, while Blacks represent about 12 percent of the population at large. Taking into consideration the entire range of first-term attrition, about 10 to 13 percent of incoming Black accessions would provide for a non-discriminatory enlistment flow. With these equal opportunity goals in

mind, the data of Table 16 take on added meaning. Each of the enlistment standards would reject a percentage of the 17.6 percent Black population that was actually enlisted in CY 1974. For example, the 1975 standard would reject 30 percent of the CY 1974 Black population. This, in turn, would result in the percentage of Black accessions in CY 1974 being 12.3 had the 1975 standard been applied. (It should be noted that 12.3 percent Black accessions is within the range of racial subgroup non-discrimination.) If the 165/HSC, 165/AGE/HSC and GAI 45/AGE/HSC standards had been applied to the CY 1974 population, the percentages of Black accessions would have been 13.5, 13.5 and 15.2, respectively. While this study was in progress, CY 1975 racial subgroup criterion data matured and the 10 standards were applied to the CY 1975 population. The results indicate that the use of all proposed standards would not drastically change racial subgroup mix. However, previously stated limitations considered, it appears that the 165/HSC and 165/AGE/HSC standards would best serve to maintain a non-discrimination policy for racial subgroup entry.

IV. CONCLUSIONS AND RECOMMENDATIONS

Based on the data of this study, it was empirically demonstrated that judicious use of an enlistment requirements index in the selection process could result in appreciable savings in basic military and technical training costs. Further, the value of an enlistment standard must be estimated using multiple criteria rather than a single criterion of cost.

Results of this study suggest that an enlistment requirement of an aptitude composite score MAGE 165 be set as a standard. Depending on the recruiting market, all 17-year-olds may be enlisted, or a minimum age of 17 years and 6 months may be required. All enlistees should be high school graduates (GEDs accepted) or, if not high school graduates, be classified as Category I or II on the AFQT. The rationale for these recommendations is that when compared with the 1975 standard, the 165/HSC and 165/AGE/HSC have the following set of characteristics:

1. Greater cost avoidance is realized.
   a. 165/HSC – $734,600 vs. $1,178,200
   b. 165/AGE/HSC – $734,600 vs. $1,863,200
2. An expanded recruiting market is provided.
   a. 165/HSC – Rejection rate: male and female – 17% vs. male 9%; female 12%
   b. 165/AGE/HSC – Rejection rate: male and female – 17% vs. male and female 12%
3. A greater percentage of potential BMT eliminees would be rejected.
   a. 165/HSC – 2% more males, 1% more females
   b. 165/AGE/HSC – 2% more males, 1% more females
4. No practical decrement in quality of accessions is experienced.
5. Opportunity for Black enlistment is about the same.

Much has been printed by the national press about the success of the all-volunteer force. To make certain that this success continues, there must be a flexibility of enlistment requirements that maintains accession quality and, at the same time, prevents shortfalls in recruiting due to a shrinking manpower pool. It is believed that the enlistment standards methodology developed in this study can provide that flexibility.

Table 1. **Sample Population**

Year	Basic Military Training		Technical Training	
	Male	Female	Male	Female
1972	81,661	4,701	54,263	3,389
1973	72,113	7,683	55,128	5,898
1974	64,405	8,952	41,528	6,278

Table 2. **Enlistment Standards Descriptions and Abbreviations**

	Standard Description	Abbreviation
1.	Actual Standard Used for Yearly Input	(Actual)
2.	1975 Enlistment Standards (MAGE 170 or higher; GAI=45 or higher; if Category III or IV on AFQT, High School Graduate)	(1975)
3.	Composite Standard-High (MAGE=175 or higher; GAI=45 or higher; if Category III or IV on AFQT, High School Graduate)	(Comp-Hi)
4.	Composite Standard-Low (MAGE=165 or higher; GAI=45 or higher; if Category III or IV on AFQT, High School Graduate)	(Comp-Lo)
5.	Composite of Aptitude Indexes (MAGE=175 or higher)	(MAGE=175)
6.	Composite of Aptitude Indexes (MAGE=170 or higher)	(MAGE=170)
7.	Composite of Aptitude Indexes (MAGE=165 or higher)	(MAGE=165)
8.	General Aptitude Index (G=55 or higher)	(GAI=55)
9.	General Aptitude Index (G=50 or higher)	(GAI=50)
10.	General Aptitude Index (G=45 or higher)	(GAI=45)
11.	High School Non-Graduates	(HSC)
12.	High School Graduate	(HSG)
13.	Minimum age of 17 years and 6 months	(AGE)
14.	Composite of Aptitude Indexes (MAGE=165 or higher) plus AGE	(165/AGE)
15.	Composite of Aptitude Indexes (MAGE=165 or higher), High School Graduate; plus AFQT Category I and II High School Non-Graduates	(165/HSC)
16.	Composite of Aptitude Indexes (MAGE=165 or higher) plus High School Graduation	(165/HSG)
17.	Composite Aptitude Indexes (MAGE=165 or higher), minimum AGE plus AFQT Category I and II High School	(165/AGE/HSC)
18.	Aptitude Composite (MAGE=165 or higher), minimum AGE plus high school graduation	(165/AGE/HSG)
19.	General Aptitude Index (G=45 or higher) and minimum AGE	(GAI 45/AGE)
20.	General Aptitude Index (G=45 or higher), high school graduate and AFQT Category I and II high school non-graduates	(GAI 45/HSC)
21.	General Aptitude Index (G=45 or higher) and high school graduation	(GAI 45/HSG)
22.	General Aptitude Index (G=45 or higher), minimum AGE, high school graduates and AFQT Category I and II high school non-graduates	(GAI 45/AGE/HSC)
23.	General Aptitude Index (G=45 or higher), minimum AGE plus high school graduates	(GAI 45/AGE/HSG)

Table 3. **Percentage of Eliminees by Age Group – CY 1974**

Age Group	Percentage of Eliminees	
	BMT	TT
17	11	11
17 (17/0–5)	15	14
17 (17/6–11)	9	10
18	8	8
19	9	10
20	8	10
21	9	9
22	11	11
23	11	10
24+	13	12

Table 4. **Cost Avoidance Computation Formula**

STEP 1

$$\frac{\text{Desired Number of Graduates}}{\text{Graduation Rate (New Proposed Standard)}} = \text{Required Input (New Proposed Standard)}$$

STEP 2

Required Input – Desired Number of Graduates = Number of Eliminees (New Proposed Standard)

STEP 3

Number of Eliminees (New Proposed Standard) x Cost per Eliminee = Total Cost for Eliminees (New Proposed Standard)

STEP 4

Total Cost for Eliminees (Old Standard) – Total Cost for Eliminees (New Standard) = Total Cost Avoidance Associated with New Proposed Standard

Table 5. **Phase I – Cost Comparison of Enlistment Standards, BMT – CY 1974**

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
Enlistment Standard	Cost per Elim	Total Input[a]	Graduation Rate	Number Grads	Number Elims	Total Cost of Elims[b]	Cost Avoidance[c]
		M 64,405	.9055818	58,324	6,081	$8,513,400	
Actual	$1,400	F 8,952	.9340929	8,362	590	826,000	
		T 73,357		66,686	6,671	9,339,400	
		M 64,219	.9082110	58,324	5,895	$8,253,000	
1975	$1,400	F 8,945	.9348205	8,362	583	816,200	
		T				$9,069,200	$ 270,200
		M 64,191	.9086002	58,324	5,867	$8,213,800	
Comp-Hi	$1,400	F 8,944	.9349030	8,362	582	814,800	
		T				$9,028,600	$ 310,800
		M 64,240	.9078098	58,324	5,916	$8,282,400	
Comp-Lo	$1,400	F 8,955	.9337974	8,362	593	830,200	
		T				$9,112,600	$ 226,800
		M 64,221	.9081825	58,324	5,897	$8,255,800	
MAGE 175	$1,400	F 8,948	.9345293	8,362	586	820,400	
		T				$9,076,200	$ 263,200
		M 64,252	.9077391	58,324	5,928	$8,299,200	
MAGE 170	$1,400	F 8,947	.9346024	8,362	585	819,000	
		T				$9,118,200	$ 221,200
		M 64,262	.9075657	58,324	5,940	$8,316,000	
MAGE 165	$1,400	F 8,955	.9338300	8,362	593	830,200	
		T				$9,146,200	$ 193,200
		M 64,279	.9073520	58,324	5,955	$8,337,000	
GAI 55	$1,400	F 8,949	.9344416	8,362	587	821,800	
		T				$9,158,800	$ 180,600
		M 64,360	.9062146	58,324	6,036	$8,450,400	
GAI 50	$1,400	F 8,958	.9334487	8,362	596	834,400	
		T				$9,284,800	$ 54,600
		M 64,268	.9075185	58,324	5,944	$8,321,600	
GAI 45	$1,400	F 8,940	.9353889	8,362	578	809,200	
		T				$9,130,800	$ 208,600
		M 64,316	.9068303	58,324	5,992	$8,388,800	
HSC	$1,400	F 8,951	.9342014	8,362	589	824,600	
		T				$9,213,400	$ 126,000
		M 63,945	.9120921	58,324	5,621	$7,869,400	
HSG	$1,400	F 8,929	.9365098	8,362	567	793,800	
		T				$8,663,200	$ 676,200
		M 64,237	.9079447	58,324	5,913	$8,278,200	
AGE	$1,400	F 8,948	.9344777	8,362	586	820,400	
		T				$9,098,600	$ 240,800

[a] Input required to obtain same number of graduates as ACTUAL standard.

[b] Total Cost of Elims = Col 2 (Cost per Elim) x Col 6 (Number of Elims).

[c] Total Cost of Elims (ACTUAL STANDARD) – Total Cost of Elims (PROPOSED STANDARD).

Table 6. **Phase I – Cost Comparison of Enlistment Standards, TT – CY 1974**

Col 1 Enlistment Standard	Col 2 Cost per Elim	Col 3 Total Input[a]	Col 4 Graduation Rate	Col 5 Number Grads	Col 6 Number Elims	Col 7 Total Cost of Elims[b]	Col 8 Cost Avoidance[c]
		M 41,528	.9108071	37,824	3,704	$10,000,800	
Actual	$2,700	F 6,278	.8620579	5,412	866	2,338,200	
		T 47,806		43,236	4,570	$12,339,000	
		M 41,349	.9151929	37,824	3,525	$ 9,517,500	
1975	$2,700	F 6,285	.8610787	5,412	873	2,357,100	$ 464,400
		T				$11,874,600	
		M 41,315	.9154967	37,824	3,491	$ 9,425,700	
Comp-Hi	$2,700	F 6,286	.8609775	5,412	874	2,359,800	$ 553,500
		T				$11,785,500	
		M 41,322	.9153516	37,824	3,498	$ 9,444,600	
Comp-Lo	$2,700	F 6,281	.8616960	5,412	869	2,346,300	$ 548,100
		T				$11,790,900	
		M 41,310	.9156064	37,824	3,486	$ 9,412,200	
MAGE 175	$2,700	F 6,295	.8597950	5,412	883	2,384,100	$ 542,700
		T				$11,796,300	
		M 41,329	.9150906	37,824	3,505	$ 9,463,500	
MAGE 170	$2,700	F 6,295	.8597014	5,412	883	2,384,100	$ 491,400
		T				$11,847,600	
		M 41,144	.9193170	37,824	3,320	$ 8,964,000	
MAGE 165	$2,700	F 6,291	.8603382	5,412	879	2,373,300	$1,001,700
		T				$11,337,300	
		M 41,450	.9129542	37,824	3,626	$ 9,790,200	
GAI 55	$2,700	F 6,270	.8631802	5,412	858	2,316,600	$ 232,200
		T				$12,106,800	
		M 41,362	.9144571	37,824	3,538	$ 9,552,600	
GAI 50	$2,700	F 6,269	.8632978	5,412	857	2,313,900	$ 472,500
		T				$11,866,500	
		M 41,178	.9185475	37,824	3,354	$ 9,055,800	
GAI 45	$2,700	F 6,209	.8716622	5,412	797	2,151,900	$1,131,300
		T				$11,207,700	
		M 40,957	.9235028	37,824	3,133	$ 8,459,100	
HSC	$2,700	F 6,277	.8622448	5,412	865	2,335,500	$1,544,400
		T				$10,794,600	
		M 41,290	.9160511	37,824	3,466	$ 9,358,200	
HSG	$2,700	F 6,235	.8680483	5,412	823	2,222,100	$ 758,700
		T				$11,580,300	
		M 41,300	.9158444	37,824	3,476	$ 9,385,200	
AGE	$2,700	F 6,273	.8626918	5,412	861	2,324,700	$ 629,100
		T				$11,709,900	

[a]Input required to obtain same number of graduates as ACTUAL standard.

[b]Total Cost of Elims = Col 2 (Cost per Elim) x Col 6 (Number of Elims).

[c]Total Cost of Elims (ACTUAL STANDARD) – Total Cost of Elims (PROPOSED STANDARD).

Table 7. **Percent Rejected by Standards and BMT Success Rate of Rejected Population – CY 1974 (Males: 64,405, Females: 8,952)[a]**

Enlistment Standard	Percent Rejected by Standard		BMT Success Rate for Rejectees	
	Male %	Female %	Male %	Female %
1975	17	17	90	94
Comp-Hi	18	19	90	93
Comp-Lo	16	15	90	94
MAGE-175	12	17	89	93
MAGE-170	10	14	89	93
MAGE-165	8	12	88	93
GAI-55	25	17	90	93
GAI-50	16	10	90	94
GAI-45	10	4	88	91
HSC	0[b]	0[b]	92	94
HSG	6	2	85	81
AGE	4	0[b]	85	93

[a]Actual BMT success rate in 1974 for males was 91%; for females 93%.

[b]Less than one percent.

Table 8. **Phase I – Summary Characteristics of Different Enlistment Standards, CY 1974**
(Males: N = 64,405; Females: N = 8,952)

Enlistment Standard	BMT		TT		Total Eliminee Training Cost	Total Cost Avoidance	% Rejected by Standard	BMT Success Rate of Rejectees
	Eliminee Cost	Cost Avoidance	Eliminee Cost	Cost Avoidance				
Actual	$9,339,400	–	$12,339,000	–	$21,678,400	–	–	
1975	$9,069,200	$270,200	$11,874,600	$ 464,400	$20,943,800	$ 734,600	M 17 F 17	M 90 F 94
COMP-HI	$9,028,600	$310,800	$11,785,500	$ 553,500	$20,814,100	$ 864,300	M 18 F 19	M 90 F 93
COMP-LO	$9,112,600	$226,800	$11,790,900	$ 548,100	$20,903,500	$ 774,900	M 16 F 15	M 90 F 94
MAGE 175	$9,076,200	$263,200	$11,796,300	$ 542,700	$20,872,500	$ 805,900	M 12 F 17	M 89 F 93
MAGE 170	$9,118,200	$221,200	$11,847,600	$ 491,400	$20,965,800	$ 712,600	M 10 F 14	M 89 F 93
MAGE 165	$9,146,200	$193,200	$11,337,300	$1,001,700	$20,483,500	$1,194,900	M 8 F 12	M 88 F 93
GAI 55	$9,158,800	$180,600	$12,106,800	$ 232,200	$21,265,600	$ 412,800	M 25 F 17	M 90 F 93
GAI 50	$9,284,800	$ 54,600	$11,866,500	$ 472,500	$21,151,300	$ 527,100	M 16 F 10	M 90 F 94
GAI 45	$9,130,800	$208,600	$11,207,700	$1,131,300	$20,338,500	$1,339,900	M 10 F 4	M 88 F 91
HSC	$9,213,400	$126,000	$10,794,600	$1,544,400	$20,008,000	$1,670,400	M 0[a] F 0[a]	M 92 F 94
HSG	$8,663,200	$676,200	$11,580,300	$ 758,700	$20,243,500	$1,434,900	M 6 F 2	M 85 F 81
AGE	$9,098,600	$240,800	$11,709,900	$ 629,100	$20,808,500	$ 869,900	M 4 F 0[a]	M 85 F 93

[a]Less than 1 percent.

Table 9. **Phase II – Cost Comparison of Enlistment Standards, BMT – CY 1974**

Col 1 Enlistment Standard	Col 2 Cost per Elim	Col 3 Total Input[a]	Col 4 Graduation Rate	Col 5 Number Grads	Col 6 Number Elims	Col 7 Total Cost of Elims[b]	Col 8 Cost Avoidance[c]
		M 64,219	.9082110	58,324	5,895	$8,253,000	
1975	$1,400	F 8,945	.9348205	8,362	583	816,200	
		T				$9,069,200	$270,200
		M 63,929	.9123260	58,324	5,605	$7,847,000	
165/Age	$1,400	F 8,936	.9357996	8,362	574	803,600	
		T				$8,650,600	$688,800
		M 63,934	.9122589	58,324	5,610	$7,854,000	
165/HSC	$1,400	F 8,944	.9349407	8,362	582	814,800	
		T				$8,668,800	$670,600
		M 63,575	.9174080	58,324	5,251	$7,351,400	
165/HSG	$1,400	F 8,911	.9383918	8,362	549	768,600	
		T				$8,120,000	$1,219,400
		M 63,793	.9142729	58,324	5,469	$7,656,600	
165/Age/HSC	$1,400	F 8,939	.9354358	8,362	577	807,800	
		T				$8,464,400	$ 875,000
		M 63,440	.9193592	58,324	5,116	$7,162,400	
165/Age/HSG	$1,400	F 8,906	.9388766	8,362	544	761,600	
		T				$7,924,000	$1,415,400
		M 64,062	.9104319	58,324	5,738	$8,033,200	
GAI 45/Age	$1,400	F 8,941	.9352830	8,362	579	810,600	
		T				$8,843,800	$ 495,600
		M 64,071	.9103090	58,324	5,747	$8,045,800	
GAI 45/HSC	$1,400	F 8,948	.9344831	8,362	586	820,400	
		T				$8,866,200	$ .473,200
		M 63,713	.9154220	58,324	5,389	$7,544,600	
GAI 45/HSG	$1,400	F 8,917	.9377760	8,362	555	777,000	
		T				$8,321,600	$1,017,800
		M 63,928	.9123316	58,324	5,604	$7,845,600	
GAI 45/Age/HSC	$1,400	F 8,944	.9349208	8,362	582	814,800	
		T				$8,660,400	$ 679,000
		M 64,089	.9100422	58,324	5,765	$8,071,000	
GAI 45/Age/HSG	$1,400	F 8,946	.9347411	8,362	584	817,600	
		T				$8,888,600	$ 450,800

[a]Input required to obtain same number of graduates as ACTUAL standard.

[b]Total Cost of Elims = Col 2 (Cost per Elim) x Col 6 (Number of Elims).

[c]Total Cost of Elims (ACTUAL STANDARD) – Total Cost of Elims (PROPOSED STANDARD).

Table 10. **Phase II – Cost Comparison of Enlistment Standards, TT – CY 1974**

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
Enlistment Standard	Cost per Elim	Total Input[a]	Graduation Rate	Number Grads	Number Elims	Total Cost of Elims[b]	Cost Avoidance[c]
		M 41,349	.9151929	37,824	3,525	$ 9,517,500	
1975	$2,700	F 6,285	.8610787	5,412	873	2,357,100	$ 464,400
		T				$11,874,600	
		M 41,237	.9172455	37,824	3,413	$ 9,215,100	
165/Age	$2,700	F 6,285	.8611060	5,412	873	2,357,100	$ 766,800
		T				$11,572,200	
		M 41,330	.9151640	37,824	3,506	$ 9,466,200	
165/HSC	$2,700	F 6,288	.8607216	5,412	876	2,365,200	$ 507,600
		T				$11,831,400	
		M 41,070	.9209568	37,824	3,246	$ 8,764,200	
165/HSG	$2,700	F 6,241	.8671011	5,412	829	2,238,300	$1,336,500
		T				$11,002,500	
		M 41,158	.9190061	37,824	3,334	$ 9,001,800	
165/Age/HSC	$2,700	F 6,282	.8615124	5,412	870	2,349,000	$ 988,200
		T				$11,350,800	
		M 41,035	.9217561	37,824	3,211	$ 8,669,700	
165/Age/HSG	$2,700	F 6,240	.8673267	5,412	828	2,235,600	$1,433,700
		T				$10,905,300	
		M 41,270	.9164885	37,824	3,446	$ 9,304,200	
GAI 45/Age	$2,700	F 6,264	.8640093	5,412	852	2,300,400	$ 734,400
		T				$11,604,600	
		M 41,363	.9144417	37,824	3,539	$ 9,555,300	
GAI 45/HSC	$2,700	F 6,266	.8637611	5,412	854	2,305,800	$ 477,900
		T				$11,861,100	
		M 41,101	.9202686	37,824	3,277	$ 8,847,900	
GAI 45/HSG	$2,700	F 6,221	.8699494	5,412	809	2,184,300	$1,306,800
		T				$11,032,200	
		M 41,145	.9192742	37,824	3,321	$ 8,966,700	
GAI45/Age/HSC	$2,700	F 6,253	.8654739	5,412	841	2,270,700	$1,101,600
		T				$11,237,400	
		M 41,066	.9210625	37,824	3,242	$ 8,753,400	
GAI45/Age/HSG	$2,700	F 6,220	.8701392	5,412	808	2,181,600	$1,404,000
		T				$10,935,000	

[a]Input required to obtain same number of graduates as ACTUAL standard.

[b]Total Cost of Elims = Col 2 (Cost per Elim) x Col 6 (Number of Elims).

[c]Total Cost of Elims (ACTUAL STANDARD) – Total Cost of Elims (PROPOSED STANDARD).

Table 11. **Phase II – Percent Rejected by Standards and BMT Success Rate of Rejected Population – CY 1974 (Males: 64,405, Females: 8,952)[a]**

Enlistment Standard	Percent Rejected by Standard		BMT Success Rate for Rejectees	
	Male %	Female %	Male %	Female %
1975	17	17	90	94
165/AGE	12	12	86	92
165/HSC	9	12	88	93
165/HSG	15	14	85	90
165/AGE/HSC	12	12	88	93
165/AGE/HSG	17	14	85	90
GAI 45/AGE	13	5	89	93
GAI 45/HSC	10	4	90	94
GAI 45/HSG	16	6	88	89
GAI 45/AGE/HSC	13	4	88	93
GAI 45/AGE/HSG	18	6	88	89

[a]Actual BMT success rate in 1974 for males was 91%; for females 93%.

Table 12. **Phase II – Summary Characteristics of Different Enlistment Standards, CY 1974 (Males: N = 64,405; Females: N = 8,952)**

Enlistment Standard	BMT Eliminee Cost	BMT Cost Avoidance	TT Eliminee Cost	TT Cost Avoidance	Total Eliminee Training Cost	Total Cost Avoidance	% Rejected By Standard	BMT Success Rate of Rejectees
1975	$9,069,200	$ 270,200	$11,874,600	$ 464,400	$20,943,800	$ 734,600	M 17 F 17	M 90 F 94
165/AGE	$8,650,600	$ 688,800	$11,572,200	$ 766,800	$20,222,800	$1,455,600	M 12 F 12	M 86 F 92
165/HSC	$8,668,800	$ 670,600	$11,831,400	$ 507,600	$20,500,200	$1,178,200	M 9 F 12	M 88 F 93
165/HSG	$8,120,000	$1,219,400	$11,002,500	$1,336,500	$19,122,500	$2,555,900	M 15 F 14	M 85 F 90
165/AGE/HSC	$8,464,400	$ 875,000	$11,350,800	$ 988,200	$19,815,200	$1,863,200	M 12 F 12	M 88 F 93
165/AGE/HSG	$7,924,000	$1,415,400	$10,905,300	$1,433,700	$18,829,300	$2,849,100	M 17 F 14	M 85 F 90
GAI 45/AGE	$8,843,800	$ 495,600	$11,604,600	$ 734,400	$20,448,400	$1,230,000	M 13 F 5	M 89 F 93
GAI 45/HSC	$8,866,200	$ 473,200	$11,861,100	$ 477,900	$20,727,300	$ 951,100	M 10 F 4	M 90 F 94
GAI 45/HSG	$8,321,600	$1,017,800	$11,032,200	$1,306,800	$19,353,800	$2,324,600	M 16 F 6	M 88 F 89
GAI 45/AGE/HSC	$8,660,400	$ 679,000	$11,237,400	$1,101,600	$19,897,800	$1,780,600	M 13 F 4	M 88 F 93
GAI 45/AGE/HSG	$8,888,600	$ 450,800	$10,935,000	$1,404,000	$19,823,600	$1,854,800	M 18 F 6	M 88 F 89

Table 13. **Phase III – Enlistment Standards Versus AFQT Performance[a] as Applied to the CY 1974 Population**

Enlistment Standard	AFQT Mean	Cat I %	Cat II %	Cat III %	Cat IV %
1975	63.9	4.1	44.2	51.4	.3
165/AGE	62.7	4.1	42.7	53.0	.2
165/HSC	62.8	4.0	42.6	53.1	.3
165/HSG	62.8	4.0	39.9	55.7	.4
165/AGE/HSC	62.9	4.1	43.9	51.8	.2
165/AGE/HSG	62.9	4.1	43.7	51.9	.3
GAI 45/AGE	62.5	4.1	42.1	53.4	.4
GAI 45/HSC	62.6	4.0	42.4	53.4	.2
GAI 45/HSG	62.5	4.0	40.0	55.8	.2
GAI 45/AGE/HSC	62.7	4.1	42.9	52.8	.2
GAI 45/AGE/HSG	62.6	4.1	44.0	51.7	.2

[a]AFQT Performance: Cat I = 93–99; Cat II = 65–92; Cat III = 31–64; and, Cat IV = 10–30.

Table 14. **Phase III – Enlistment Standards Versus ASVAB Performance as Applied to the CY 1974 Population**

Enlistment Standard	ASVAB Means			
	Mech	Admin	Gen	Elec
1975	59.3	57.9	70.0	67.5
165/AGE	59.0	57.0	68.1	66.6
165/HSC	58.9	57.4	68.4	66.0
165/HSG	58.6	57.2	67.9	66.7
165/AGE/HSC	59.0	57.6	69.0	66.9
165/AGE/HSG	58.8	57.4	68.3	66.4
GAI 45/AGE	58.2	56.9	69.0	65.8
GAI 45/HSC	58.4	57.1	69.2	65.9
GAI 45/HSG	58.0	57.2	68.9	65.3
GAI 45/AGE/HSC	58.5	57.4	69.2	66.0
GAI 45/AGE/HSG	58.7	57.1	69.0	65.8

Table 15. **Phase III – Cumulative Percentage of ASVAB Aptitude Areas and Enlistment Standards as Applied to the CY 1974 Population**

Aptitude Indexes	1975	165/HSC	165/AGE/HSC	GAI 45/AGE/HSC
		Mechanical		
80 and above	23.8	23.4	23.6	22.6
60 and above	54.3	53.7	53.8	51.0
40 and above	82.0	81.5	81.7	79.5
		Administrative		
80 and above	16.3	15.8	16.0	15.4
60 and above	50.5	49.8	50.0	48.2
40 and above	85.9	85.3	85.4	83.5
		General		
80 and above	33.3	32.5	32.6	31.5
60 and above	77.8	76.9	77.2	75.4
40 and above	100	98.7	98.9	100
		Electronics		
80 and above	33.4	32.7	32.8	31.3
60 and above	69.8	69.0	69.2	66.8
40 and above	96.7	96.2	96.3	94.7

Table 16. **Phase III – Impact of Enlistment Standards on Racial Subgroup Mix – CY 1974 (Blacks = 17.6) CY 1975 (Blacks = 11.4)**

Standard	Percent of CY 1974 Blacks Rejected by Standard	Revised Percent of Blacks (CY 1974)	Projected Percent of Blacks (CY 1975)
Actual	–	17.6	11.4
1975	30	12.3	–
165/AGE	25	13.1	12.2
165/HSC	23	13.5	12.6
165/HSG	26	13.0	12.1
165/AGE/HSC	23	13.5	12.6
165/AGE/HSG	27	12.9	12.0
GAI 45/AGE	15	14.9	14.0
GAI 45/HSC	13	15.2	14.3
GAI 45/HSG	16	14.7	13.8
GAI 45/AGE/HSC	13	15.2	14.3
GAI 45/AGE/HSG	17	14.6	13.7

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