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Calculation of Manpower Requirements For Vehicle Maintenance at U.S. Army Installation Directorates of Engineering and Housing, Based on Air Force, Navy, and Army Reserves Staffing Techniques

by

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Manpower requirements for the vehicle maintenance section under the Director of Engineering and Housing (DEH) at U.S. Army installations are determined by applying a staffing formula which was developed for activities performing maintenance on real property. However, a staffing method specifically for Army DEH vehicle maintenance sections is needed. Since there is much demand for revised guidance, the Office of the Chief of Engineers suggested investigating staffing techniques already in use.

As part of research to develop recommendations for the future revision of the Army's staffing guide for vehicle maintenance shops, the work reported here compared various staffing procedures used for vehicle maintenance in the U.S. Air Force, U.S. Navy, and U.S. Army Reserve with those used in the U.S. Army, and developed a proposed staffing guide based on the comparison.

Based on the results of the research, the proposed staffing guide should provide an average representation of the quantity and types of personnel the DEH vehicle maintenance sections need. Future revisions to the staffing guide should reflect actual Army historical data and improved efficiency of the shops due to the advent of the commercial activities (CA) process.

Recommended improvements to the guide include developing and implementing a computer-based management system with bar coded entry in the DEH vehicle maintenance sections and investigating the possibility of using fuel consumption as a utilization rate for some types of vehicles.

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Recommended improvements to the guide include developing and implementing a computer-based management system with bar coded entry in the DEH vehicle maintenance sections and investigating the possibility of using fuel consumption as a utilization rate for some types of vehicles.

Keywords: ground vehicles; maintenance management; staffing levels; maintenance personnel; personnel management; military facilities; (KT)

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FOREWORD

This investigation was performed for the U.S. Army Engineering and Housing Support Center (USAEHSC) under Project 4A162731AT41, "Military Facilities Engineering Technology"; Task Area C, "Operations Management and Repair"; Work Unit 056, "DEH Equipment Maintenance Management." The USAEHSC Technical Monitor was Mr. Walter Seip, CEHSC-FB-I.

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CALCULATION OF MANPOWER REQUIREMENTS FOR VEHICLE MAINTENANCE AT U.S. ARMY INSTALLATION DIRECTORATES OF ENGINEERING AND HOUSING, BASED ON AIR FORCE, NAVY, AND ARMY RESERVES STAFFING TECHNIQUES

1 INTRODUCTION

Background

Manpower requirements for the vehicle maintenance section* under the Directorate of Engineering and Housing (DEH) at U.S. Army installations are determined by applying a staffing formula which was developed for activities performing maintenance on real property. However, a staffing method specifically for Army DEH vehicle maintenance sections is needed. To be most effective, the system would incorporate the age, type, and amount of use of vehicles in a fleet to determine manpower requirements.

The Deputy Chief of Staff for Personnel Initiative MS3 (Manpower Staffing Standards System) called for an investigation of staffing techniques in the Army. Although this study is in progress, it will not address vehicle maintenance staffing until the early 1990s. Since there is much demand for revised guidance now, the Office of the Chief of Engineers suggested the idea of investigating staffing techniques already in use. A comparison with the methods used by the U.S. Air Force (USAF), U.S. Navy (USN), and U.S. Army Reserves (USAR) was proposed as an important step in determining manpower requirements for the DEH's vehicle maintenance section. This comparison could help the U.S. Army determine whether its maintenance shops are overstaffed, understaffed, or on target with respect to the other organizations' shops. The results will form the basis for establishing a revised staffing guide and a Most Efficient Organization (MEO) for commercial activities (CA) reviews. Previous U.S. Army Construction Engineering Research Laboratory (USA-CERL) work on this subject was reported in USA-CERL Interim Report P-86/09.¹

Objective

The objective of this research is to develop recommendations for the future revision of the Army's staffing guide for vehicle maintenance shops. The objective of this report was to compare various staffing procedures used for vehicle maintenance in the USAF, USN, and USAR with those used in the U.S. Army and to present a proposed staffing guide, based on the comparison.

*Vehicle maintenance sections are staffed in the same way as portable equipment item maintenance shops. The term "vehicle maintenance" is used in this report for convenience to mean both sections.

¹Patrick J. Tanner and Kaan R. Aytogu, *Vehicle Maintenance Manpower Requirements for Army Installation Directorates of Engineering and Housing Based on Air Force, Navy, and Army Reserves Staffing Techniques*, USA-CERL Interim Report P-86/09/ADA172181 (U.S. Army Construction Engineering Research Laboratory [USA-CERL], 1986).

Approach

To accurately compare the staffing techniques, each technique was used to determine staffing needed to meet the Army workload, then compared with existing Army staffing levels. Comparisons were based on authorized staffing. Furthermore, input requirements were determined for staffing techniques used by the USAF, USN, and USAR. After the input requirements were determined, the necessary data were collected from the DEH vehicle maintenance organizations at various Army installations. The data were stored in a microcomputer and computations were made to determine manpower requirements using USAF, USAR, and USN staffing methods. Some adjustment factors were developed to permit meaningful comparisons between the U.S. Army staffing methods and those of the other services. A staffing comparison with the National Guard's technique was not possible since it is under revision.

Scope

This report makes the step from comparison to recommendation by presenting a proposed staffing guide. However, it does not address task scheduling, which is an operational problem that depends on maintenance requirements, available work force, and existing workload.

Mode of Technology Transfer

The recommendations generated by this research will be used by the Office of the Deputy Chief of Staff for Personnel (DCSPER) in developing an interim staffing guide that can be implemented at the DEH vehicle maintenance shops. The recommended staffing levels will also be helpful to installation DEHs required to establish an MEO for CA reviews. The staffing guide is to be used in generating staffing levels of mechanics and overhead positions.

2 STAFFING METHODS AND APPLICATION FOR DEHs

For the analysis, manpower requirement techniques used by the USAF, USN, and USAR were reviewed. Adjustment factors were developed for computing the manpower requirements for DEH maintenance shops based on these methods.

U.S. Air Force Staffing Method

The USAF uses Air Force Manpower Standards (AFMS) to compute the manpower required to accomplish the tasks described in Appendices A through D for varying levels of workload in vehicle maintenance. The AFMS apply to all active USAF installations performing all levels of maintenance on vehicles. These standards are based on the concept of vehicle equivalents: a "vehicle equivalent" is defined as a unit of measure that denotes the maintenance complexity of a vehicle or equipment item based on the maintenance complexity of a sedan (general-purpose and commercial design).

The USAF uses four different standards to compute manpower requirements. These standards apply to specific manpower requirements:

1. AFMS 4241--mechanics
2. AFMS 4240A--maintenance controllers
3. AFMS 4240B--materiel controllers
4. AFMS 4240--maintenance managers.

In addition to these four AFMS, the USAF uses another standard--Tactical Air Command Manpower Standard (TACMS) 4241 for groups that perform organizational maintenance* only.

AFMS 4241--Mechanics

AFMS 4241 computes the number of mechanics needed to perform the tasks described in Appendix A. This standard authorizes a 100 percent in-house capability for vehicle maintenance operations. For installations that use contract services in part to maintain vehicles, contract personnel equivalents are determined to adjust in-house manpower requirements. Contract man-year equivalents are calculated based on the same specifications, level of effort, and performance standards indicated in the statement of work. After they are determined, these equivalents are subtracted from the total manpower requirements. AFMS 4241 uses the Standard Man-hour Equation (Equation 1) to compute the total required man-hours per month:

$$Y_1 = 470.8 + 4.6571X_1 \quad [\text{Eq 1}]$$

where Y_1 is the total required man-hours per month and X_1 is the total number of vehicle equivalents for vehicles and equipment items assigned to the maintenance shop, regardless of owning command or using organization.

*A definition of this term appears in the glossary at the end of this report.

To use the Standard Man-hour Equation, first list all assigned vehicles and equipment items. Then, using Air Force Manual (AFM) 77-310, Volume 2,² determine the vehicle equivalents for each vehicle and equipment item. Multiply the quantity by the vehicle equivalent for each vehicle and equipment item to yield the total number of vehicle equivalents (X_1). Once X_1 is known, compute the total required man-hours (Y_1) using Equation 1. Next, compute the number of required manpower spaces (Z_1) by dividing the total man-hours per month by a man-hour availability factor (MAF). This factor is obtained from the definition of available time in Equation 2:

$$\text{Available time} = \text{Assigned time} - \text{Nonavailable time} \quad [\text{Eq 2}]$$

Tables 1 and 2 show calculations for monthly assigned and nonavailable time, respectively, for USAF military personnel. The USAF uses 167.929 hr/month as assigned time and 22.7618 hr/month as nonavailable time for its personnel. Based on these values and Equation 2, the available time is 145.1672 hr/month. This value is used as the MAF in calculating Z_1 . For civilian personnel, a figure of 145 hr/month is used as the MAF. Table 3 shows the calculation for civilian MAF. Once the MAF is defined, the number of manpower spaces (Z_1) can be computed using Equation 3:

$$Z_1 = \frac{Y_1}{\text{MAF}} \quad [\text{Eq 3}]$$

Table 1

Calculation of Monthly Assigned Time for USAF Military Personnel*

Variables	Time
Calendar days/mo	+ 30.4375**
Holidays/mo	- 0.7500
Relief days/mo	- 8.6964***
Total assigned days/mo	20.9911
Total times hr/day	x 8.0
Total assigned hr/mo	167.9290

*Based on CONUS/OS data for a normal 40-hr work week (8 hr/day, 5 days/wk).

**Calculated as 365.25 days/yr ÷ 12 mo.

Table 2

Calculation of Monthly Nonavailable Time for USAF Military Personnel*

<u>Nonavailable Activities</u>	<u>Days</u>
<u>Leave</u>	
In unit	9.7330
Subtotal	9.7330
<u>PCS Related</u>	
In-out processing	0.6366
Family settlement	1.0090
Subtotal	1.6456
<u>Medical</u>	
Pregnancy related	0.1745
Inpatient and quarters	1.6695
Outpatient	0.4711
Physicals	0.1996
Dental	0.3966
Subtotal	2.9113
<u>Organizational Duties</u>	
Commander's call	0.9123
Physical fitness testing	0.1152
CBPO (counseling/reviews)	0.7670
Boards and councils	0.4224
Subtotal	2.2169
<u>Additional Duties</u>	
Board or group rep	0.1592
Program mgr/monitor/coordinator	0.2762
Details	0.7594
Sponsor/intro	0.2190
Subtotal	1.4138

*Based on CONUS data for a normal 40-hr work week.

Table 2 (Cont'd)

Nonavailable Activities	Days
<u>Education and Training</u>	
Testing	0.4300
Ancillary training	1.5208
PME	1.1385
AFIT/AU	0.2845
TDY tech training survey	0.2526
Subtotal	4.4714
<u>Social Actions</u>	
Drug rehabilitation	0.0111
Alcohol rehabilitation	0.0227
Subtotal	0.0338
<u>Miscellaneous</u>	
Voting	0.0691
Court	0.2287
AWOL/deserter	0.0382
Subtotal	0.3360
<u>Overseas Only</u>	
Car shipment	n/a
Non-PCS-related household move	n/a
Subtotal	n/a
TOTAL NONAVAILABLE TIME	22.7618

Table 3

Calculation of Man-hour Availability Factor
for Civilian Personnel

Congressionally mandated workyear	=	2087 hr/yr
Less holidays (10 x 8 hr = 80 hr)	=	2007 hr/yr
÷ 12 months	=	167.25 hr/month
Total Nonavailable Civilian Time	=	22.25 hr/month
Monthly Man-hour Availability Factor	=	167.25 - 22.25 = 145.0 hr

Computing DEH Needs Using AFMS 4241

When manpower requirements were calculated for Army maintenance organizations using the USAF technique, the civilian MAF (145 hr/month) was used instead of the military value (145.1672 hr/month). Also, since the AFMS are designed based on USAF maintenance organizations doing all levels of maintenance, an adjustment factor, a_1 , was developed for Army maintenance organizations that perform both organizational- and intermediate-level* maintenance. Finally, another adjustment factor, a_2 , was needed for the required manpower strength to authorized manpower strength. Appendix E describes how a_1 and a_2 were derived. After these adjustments, the number of manpower spaces needed for Army maintenance organizations based on the USAF method is:

$$Z_{1 \text{ adjusted}} = (a_1)(a_2) \frac{Y_1}{\text{MAF}_{\text{civilian}}} \quad [\text{Eq 4}]$$

Equation 4 gives the number of authorized manpower spaces for DEH organizations performing organizational- and intermediate-level maintenance. Once the number of manpower spaces is known, the distribution of skills among those spaces is obtained from the tables in Appendix F.

AFMS 4240A—Maintenance Controllers

AFMS 4240A computes the number of maintenance control personnel needed to perform the tasks described in Appendix B. It uses Equation 5 to compute total required man-hours per month (Y_2):

$$Y_2 = \frac{X_2}{0.4908 + 0.0001127X_2} \quad [\text{Eq 5}]$$

where X_2 is the average monthly number of vehicles and equipment items assigned to the maintenance shop. Once Y_2 is computed, the number of manpower spaces (Z_2) can be calculated using Equation 6:

$$Z_2 = \frac{Y_2}{MAF} \quad [\text{Eq 6}]$$

Computing DEH Needs Using AFMS 4240A

Using the civilian MAF of 145 hr/month, and adjustment factors a_1 and a_2 , Equation 6 takes the final form:

$$Z_{2\text{ adjusted}} = (a_1)(a_2) \frac{Y_2}{MAF_{\text{civilian}}} \quad [\text{Eq 7}]$$

Equation 7 yields the number of authorized manpower spaces for maintenance control personnel such as vehicle maintenance control and analysis technicians, vehicle maintenance control and analysis specialists, administration specialists, and apprentice administration specialists. Once the number of manpower spaces is known, the distribution of skills among manpower spaces is found using the tables in Appendix G.

AFMS 4240B—Materiel Controllers

AFMS 4240B computes the number of materiel control personnel needed to perform the tasks described in Appendix C. It uses Equation 8 to compute total required man-hours per month:

$$Y_3 = \frac{X_2}{0.8886 + 0.0005856X_2} \quad [\text{Eq 8}]$$

where Y_3 is the total required man-hours per month and X_2 is the average monthly number of vehicles and equipment items assigned. After Y_3 is determined, the number of manpower spaces (Z_3) can be computed using Equation 9:

$$Z_3 = \frac{Y_3}{MAF} \quad [\text{Eq 9}]$$

Computing DEH Needs Using AFMS 4240B

Using the civilian MAF of 145 hr/month and adjustment factors a_1 and a_2 , Equation 9 takes the following form:

AFMS 4240—Maintenance Managers

AFMS 4240 computes the number of management personnel needed to perform the tasks described in Appendix D. It uses Equation 11 to compute total required man-hours per month:

$$Y_4 = 87.38 + 1.536 (Z_{2\text{ adjusted}} + Z_{3\text{ adjusted}}) + 0.08106X_2 \quad [\text{Eq 11}]$$

where Y_4 is the total required man-hours per month, $Z_{2\text{ adjusted}}$ is the number of manpower spaces computed by AFMS 4240A, $Z_{3\text{ adjusted}}$ is the number of manpower spaces computed by AFMS 4240B, and X_2 is the average monthly number of vehicles and equipment items. After computing Y_4 , compute the number of manpower spaces Z_4 using Equation 12:

$$Z_4 = \frac{Y_4}{\text{MAF}} \quad [\text{Eq 12}]$$

Computing the DEH Needs Using AFMS 4240

Using the civilian MAF of 145 hr/month and adjustment factors a_1 and a_2 , Equation 12 takes the following form:

$$Z_{4\text{ adjusted}} = (a_1)(a_2) \frac{Y_4}{\text{MAF}_{\text{civilian}}} \quad [\text{Eq 13}]$$

Equation 13 yields the number of authorized manpower spaces for maintenance management personnel such as vehicle maintenance manager, vehicle maintenance superintendent, and supervisor. Once the adjusted Z_4 is computed, determine staffing using the manpower table in Appendix I.

Next, with the calculated values for the adjusted Z_1 , Z_2 , Z_3 , Z_4 , find the total number of authorized manpower spaces for Army maintenance organizations by using Equation 14:

$$Z = Z_{1\text{ adjusted}} + Z_{2\text{ adjusted}} + Z_{3\text{ adjusted}} + Z_{4\text{ adjusted}} \quad [\text{Eq 14}]$$

At this stage, a comparison can be made between staffing based on the USAF method and authorized U.S. Army manpower strength. This comparison will show if the U.S. Army maintenance organizations which perform organizational- and intermediate-level maintenance are overstaffed, understaffed, or on

is to use the MIS table in Appendix N to determine the required MIS for a particular vehicle or equipment item. These MIS values are based on three different categories, depending on the ECC. For some vehicles, such as pickup cargo trucks, MIS is based on 1000 mi of operation. For others, such as a semitrailer tank, the MIS is based on 1 hr of operation, and for still others, such as a centrifugal pump, it is based on the quantity. Equations 17 through 19 are used to compute the required annual man-hours, depending on the ECC:

$$\text{Annual Man-hours} = \frac{\text{Unit target*}}{\text{mile}} \times \text{Quantity} \times \text{MIS/mi} \quad [\text{Eq 17}]$$

$$\text{Annual Man-hours} = \frac{\text{Unit target}}{\text{mile}} \times \text{Quantity} \times \text{MIS/hr} \quad [\text{Eq 18}]$$

$$\text{Annual Man-hours} = \frac{\text{Unit target}}{\text{mile}} \times \text{Quantity} \times \text{MIS/yr} \quad [\text{Eq 19}]$$

Once the annual man-hours are computed using Equations 17 through 19 for all assigned vehicles and equipment items, the total required annual man-hours can be determined for the maintenance shop by summing the individual annual man-hour requirements for each assigned vehicle and equipment item.

Then, using Equation 20, the required number of mechanics is computed:

$$\text{Required mechanics} = \frac{(\text{Total annual manhours})}{(\text{Effective MAF})} \quad [\text{Eq 20}]$$

The USN defines the Effective MAF as 91 percent of the MAF and uses an annual MAF of 1728 hr/yr, which is designed for military personnel. For a civilian workforce, the MAF would be 1676 hr/yr. Therefore, the effective man-hour availability factor for civilian personnel is:

$$\text{Effective MAF civilian} = (91\%)(1676) = 1525.16 \text{ hr/yr}$$

When the above figure is substituted into Equation 20, the expression becomes:

$$\text{Required mechanics} = \frac{(\text{Total annual manhours})}{(1525.16)} \quad [\text{Eq 21}]$$

of authorized manpower spaces for the maintenance organization is determined by summing the number of authorized mechanics and overhead personnel.

At this stage, a comparison can be made between staffing based on the USN method and authorized U.S. Army manpower strength. Chapter 3 gives the results of this comparison.

U.S. Army Reserves Staffing Methods

USAR uses an annual man-hour allowance (AMA) to compute manpower requirements for vehicle maintenance. Vehicle maintenance in USAR is performed under the Area Maintenance Support Activity (AMSA) as discussed in detail in DA Pamphlet 570-560.⁵ This staffing technique, like the others, calculates the required number of manpower spaces for vehicle maintenance organizations. The staffing method described in DA Pamphlet 570-560 considers only maintenance organizations that perform organizational maintenance; therefore, it does not apply to organizations performing support maintenance. For this reason, comparisons were made only for organizational maintenance cases. The USAR procedure for computing manpower requirements starts with the AMA (see tables in Appendix O). By using Equation 23, the total AMA for each type of equipment item and vehicle assigned is determined:

$$\begin{array}{lcl} \text{Total AMA} & \text{Quantity of} & \\ \text{for vehicle/equipment} & = & \text{vehicle equipment} \times \text{AMA} \end{array} \quad [\text{Eq 23}]$$

Once the total AMA is computed for each vehicle and equipment item, the total AMA for the maintenance organization can be computed by adding each individual allowance. After the total AMA has been computed for the maintenance organization, the number of required mechanics can be calculated using Table 4. Note that Table 4 applies only to organizational maintenance. Furthermore, manpower requirements determined using this table include allowances for direct labor, inspection, technical assistance, and travel time. (Technical Manual 38-750-1 and Army Regulation 140-5 contain details.⁶) An example of interpolating using Table 4 is:

<u>Equipment Description</u>	<u>Quantity</u>	<u>AMA</u>	<u>Total AMA</u>
Truck and truck tractor, 2-1/2 ton	20	72.5	1450
Station wagon	10	49.3	493
Sedan	90	24.4	2196
Truck, 2-1/2 ton cargo	25	45.0	1125
Total AMA = 5264			

Table 4

Required Mechanics Based on Total AMA*

Yardstick	Annual Man-hour Allowance (AMA)	4230	7050	22515	39950
	Manpower Requirement	3	5	15	25
	Interval Rate	0.00071	0.00065	0.00059	

*Source: DA Pam 570-560, *Staffing Guide for U.S. Army Reserve Technician* (HQ, Department of the Army, 1 June 1978), Table 560-41a, p 2-16.

The total AMA of 5264 is between 4230 and 7050 in Table 4, which translates into a manpower requirement yardstick of three to five with an interval rate of 0.00071. Then, the number of manpower spaces is computed as:

$$3 + (5264 - 4230)(0.00071) = 3 + 0.734 \approx 4.$$

In this example four mechanics are needed.

For comparison the authorized staffing was used instead of required staffing. Therefore, adjustment factor a_4 was used the same way as the factor a_3 in Equation 22. (The adjustment factor a_4 is based on data from the USAR.⁷ It is discussed in Appendix P.)

$$\text{Authorized mechanics} = (a_4) \times (\text{Required mechanics}) \quad [\text{Eq 24}]$$

In addition to mechanics, USAR also considers overhead personnel for vehicle maintenance manpower requirements. These personnel include foremen, maintenance administrative technicians, tools and parts attendants, and supply clerks. DA Pam 570-560 requires one foreman for each organization with six to 20 maintenance technicians, plus one for each additional 15 technicians. For organizations with fewer than six mechanics, supervision is provided by a mechanic. This pamphlet also requires one maintenance administrative technician for six or more technicians, one supply clerk for six or more technicians, and one tools-and-parts attendant for 15 to 44 technicians. Organizations with 45 or more technicians require two tools-and-parts attendants

2. Sixty-six percent of the required USAR staffing is authorized; hence a_4 is 0.66 (USAR-supplied data).

3. Authorized and actual USAR staffing are the same.¹⁰

Table 10 shows the relationships between Army and USAR staffing for the DEH maintenance shops. These results show that the Army's authorized staffing for DEH vehicle maintenance shops is 130 percent of the authorized USAR staffing. Moreover, the actual Army staffing is 127 percent of the actual USAR staffing. Based on USAR's method, the Army is overstaffing its DEH vehicle maintenance shops.

Analysis

The results of these comparisons vary widely with respect to the Army's current staffing policy--the USAF method would increase the DEH workforce by some 30 percent, and the USAR would decrease the DEH workforce by about 60 percent.

The USN method closely approximates the current DEH staffing. On this basis, the USN staffing guide could be used as a staffing guide for the Army.

¹⁰Letter from Carolyn J. Rosenberg, Assistant Adjutant General, HQ FORSCOM, Fort McPherson, GA, to Kaan Aytogu, USA-CERL, subject: Manpower Strength for Vehicle Maintenance, dated 8 February 1985.

Table 5

**Staffing Comparisons for DEH Vehicle Maintenance Shops
Using Army and USAF Techniques**

Installation	Major Command*	Maintenance Performed by DEH**	Authorized Army Staffing	Actual Army Staffing	Authorized Air Force Staffing	Actual Air Force Staffing
A.P. Hill	T	O	4	4	18	20
Benning	T	O	25	24	39	43
Bliss	T	O	16	14	24	26
Campbell	T	O + I	19	19	36	40
Carlisle Barracks	T	O	2	2	9	10
Chaffee	T	O	8	8	14	15
Devens	F	O + I	9	9	38	42
Dix	T	O + I	14	13	47	52
Eustis	T	O	11	11	16	18
Greely	F	O + I	6	6	15	17
Hood	F	O + I	26	26	66	73
Indiantown Gap	F	O + I	3	3	14	15
Knox	T	O + I	24	24	34	37
Leavenworth	T	O	13	13	17	19
Leonard Wood	T	O	12	8	24	26
Lewis	F	O + I	19	19	60	66
McCoy***	F	O + I	6	8	21	

Table 6

Army Versus Air Force Staffing for DEH Vehicle Maintenance Shops

Authorized Army staffing (overall)	=	[43%]	Authorized Air Force staffing
Actual Army staffing (overall)	=	[39%]	Actual Air Force staffing
Authorized Army staffing for DEHs doing org maint only	=	[54%]	Authorized Air Force staffing
Actual Army staffing for DEHs doing org maint only	=	[45%]	Actual Air Force staffing
Authorized Army staffing for DEHs doing org and int maint	=	[40%]	Authorized Air Force staffing
Actual Army staffing for DEHs doing org and int maint	=	[36%]	Actual Air Force Staffing
Authorized Army staffing for TRADOC DEHs	=	[49%]	Authorized Air Force staffing
Actual Army staffing for TRADOC DEHs	=	[42%]	Actual Air Force staffing
Authorized Army staffing for FORSCOM DEHs	=	[39%]	Authorized Air Force staffing
Actual Army staffing for FORSCOM DEHs	=	[36%]	Actual Air Force staffing

Table 7

**Staffing Comparisons for DEH Vehicle Maintenance Shops
Using Army and USN Techniques**

Installation	Major Command*	Maintenance Performed by DEH**	Authorized Army Staffing	Actual Army Staffing	Authorized Navy Staffing	Actual Navy Staffing
A.P. Hill	T	O	4	4	11	11
Benning	T	O	25	24	21	21
Bliss	T	O	16	14	11	11
Campbell	T	O + I	19	19	13	13
Carlisle Barracks	T	O	2	2	3	3
Chaffee	T	O	8	8	6	6
Devens	F	O + I	9	9	15	15
Dix	T	O + I	14	13	31	31
Eustis	T	O	11	11	7	7
Greely	F	O + I	6	6	4	4
Hood	F	O + I	26	26	24	24
Indiantown Gap	F	O + I	3	3	4	4
Knox	T	O + I	24	24	12	12
Leavenworth	T	O	13	13	8	8
Leonard Wood	T	O	12	8	13	13
Lewis	F	O + I	19	19	40	40
McCoy***	F	O + I	6	8	8	8
Monroe	T	O				

Table 8

Army Versus USN Staffing for DEH Vehicle Maintenance Shops

Authorized Army staffing (overall)	=	[93%]	Authorized Navy staffing
Actual Army staffing (overall)	=	[92%]	Actual Navy staffing
Authorized Army staffing for DEHs doing org maint only	=	[93%]	Authorized Navy staffing
Actual Army staffing for DEHs doing org only	=	[86%]	Actual Navy staffing
Authorized Army staffing for DEHs doing org and int maint	=	[94%]	Authorized Navy staffing
Actual Army staffing for DEHs doing org and int maint	=	[95%]	Actual Navy staffing
Authorized Army staffing for TRADOC DEHs	=	[95%]	Authorized Navy staffing
Actual Army staffing for TRADOC DEHs	=	[90%]	Actual Navy staffing
Authorized Army staffing for FORSCOM DEHs	=	[92%]	Authorized Navy staffing
Actual Army staffing for FORSCOM DEHs	=	[93%]	Actual Navy staffing

Table 9

**Staffing Comparisons for DEH Vehicle Maintenance Shops
Using Army and USAR Techniques**

Installation	Major Command*	Maintenance Performed by DEH**	Authorized Army Staffing	Actual Army Staffing	Authorized Navy Staffing	Actual Navy Staffing
A.P. Hill	T	O	4	4	6	6
Benning	T	O	25	24	16	16
Bliss	T	O	16	14	11	11
Campbell	T	O + I	19	19	12	12
Carlisle Barracks	T	O	2	2	4	4
Chaffee	T	O	8	8	5	5
Devens	F	O + I	9	9	15	15
Dix	T	O + I	14	13	12	12
Eustis	T	O	11	11	9	9
Greely	F	O + I	6	6	3	3
Hood	F	O + I	26	26	20	20
Indiantown Gap	F	O + I	3	3	3	3
Knox	T	O + I	24	24	13	13
Leavenworth	T	O	13	13	13	13
Leonard Wood	T	O	12	8	15	15
Lewis	F	O + I	19	19	15	15
McCoy***	F	O + I	6	8	5	5

Table 10

Army Versus USAR Staffing for DEH Vehicle Maintenance Shops

Authorized Army staffing (overall)	=	[130%]	Authorized Army Reserves staffing
Actual Army staffing (overall)	=	[127%]	Actual Army Reserves staffing
Authorized Army staffing for DEHs doing org maint only	=	[125%]	Authorized Army Reserves staffing
Actual Army staffing for DEHs doing org maint only	=	[116%]	Actual Army Reserves staffing
Authorized Army staffing for DEHs doing org and int maint	=	[130%]	Authorized Army Reserves staffing
Actual Army staffing for DEHs doing org and int maint	=	[132%]	Actual Army Reserves staffing
Authorized Army staffing for TRADOC DEHs	=	[126%]	Authorized Army Reserves staffing
Actual Army staffing for TRADOC DEHs	=	[119%]	Actual Army Reserves staffing
Authorized Army staffing for FORSCOM DEHs	=	[124%]	Authorized Army Reserves staffing
Actual Army staffing for FORSCOM DEHs	=	[126%]	Actual Army Reserves staffing

11. Equipment Maintenance. Maintains office equipment; maintains shop equipment.
12. Cleanup. Prepares work area; puts work away; cleans work area.

<u>Air Force Specialty Title</u>	<u>Grade</u>	<u>Manpower Requirement Distribution</u>					
Vehicle Maintenance Supervisor	MSgt	3	3	3	3	4	4
Vehicle Maintenance Supervisor	TSgt	9	9	9	9	9	9
Vehicle Maintenance Mechanic	SSgt	20	21	21	21	21	21
Vehicle Maintenance Mechanic	Sgt	50	50	50	51	51	52
Apprentice Vehicle Maintenance Mechanic	A1C	18	18	19	19	19	19
Total		100	101	102	103	104	105

**Air Force
Specialty Title**

GradeManpower Requirement Distribution

Vehicle Maint Con & Analysis Technician	MSgt	1	1	1	1	1	1	1
Vehicle Maint Con & Analysis Technician	TSgt	3	4	4	5	5	5	6
Vehicle Maint Con & Analysis Technician	SSgt	3	3	3	3	3	4	4
Vehicle Maint Con & Analysis Specialist	Sgt	3	3	4	4	4	4	4
Administration Specialist	SSgt	1	1	1	1	1	1	1
Administration Specialist	Sgt	2	2	2	2	3	3	3
Apr Administration Specialist	A1C	1	1	1	1	1	1	1
Total		14	15	16	17	18	19	20

APPENDIX H:

MANPOWER SPACES FOR 4240B

<u>Air Force Specialty Title</u>	<u>Grade</u>	<u>Manpower Requirement Distribution</u>						
Inventory Management Supervisor	MSgt					1	1	1
Inventory Management Specialist	TSgt				1	1	1	1
Inventory Management Specialist	SSgt		1	1	1	1	1	1
Inventory Management Specialist	Sgt	1	2	2	2	2	2	2
Apprentice Inventory Management Specialist	A1C			1	1	1	2	2
Total		1	3	4	5	6	7	7

APPENDIX I:**MANPOWER SPACES FOR AFMS 4240**

<u>Air Force Specialty Title</u>	<u>Grade</u>	<u>Manpower Requirement Distribution</u>			
Transportation Officer	Cpt	1	1	1	
Vehicle Maintenance Manager	CM Sgt		1	1	
Vehicle Maintenance Superintendent	SMSgt	1	1		
General Purpose and Body Maintenance Supervisor	TSgt		1	2	
Total		1	2	3	4

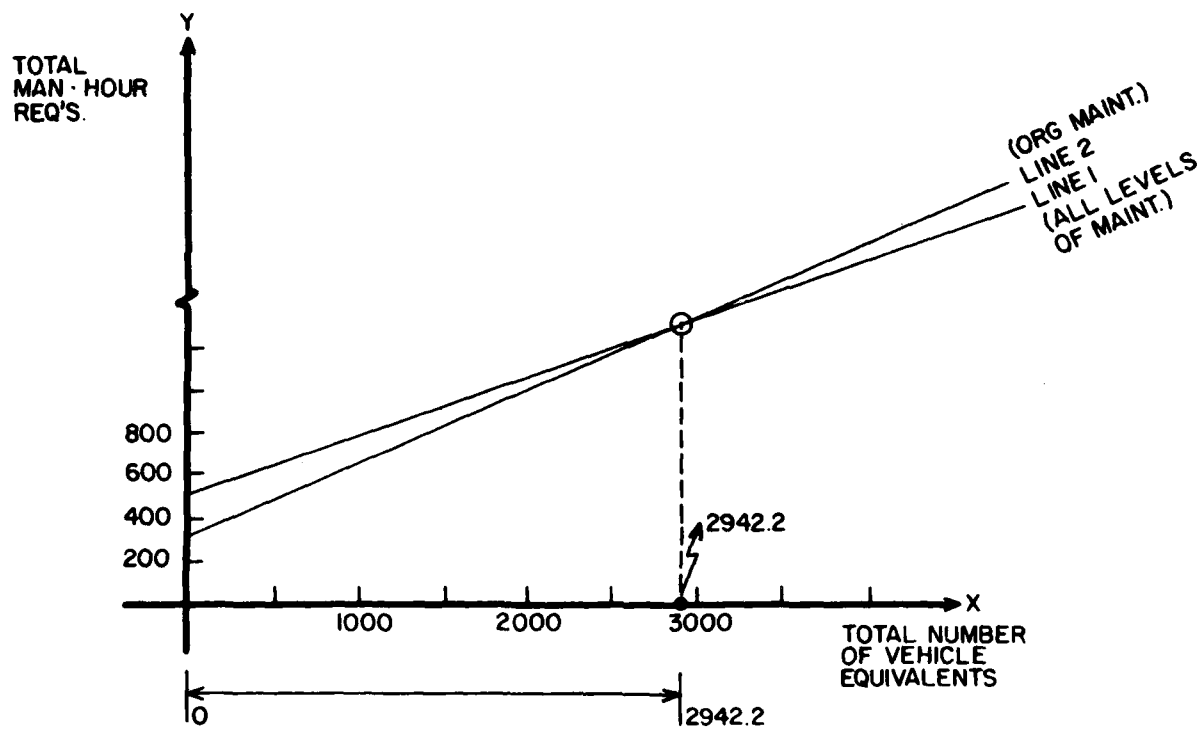


Figure K2. Intersection of All Maintenance Levels (Line 1) With Organizational Maintenance Only (Line 2).

