REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
26 October 2015	Technical Report	

4. TITLE AND SUBTITLE

Physical Demands Study - Focus Groups

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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Natick, MA 01760-5007

8. PERFORMING ORGANIZATION REPORT NUMBER

T16-3

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army Medical Research and Materiel Command
Fort Detrick
Frederick, MD 21702-5012

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for Public Release; unlimited distribution

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The U.S. Army Research Institute of Environmental Medicine (USARIEM) was tasked by the U.S. Army Training and Doctrine Command (TRADOC) to develop criterion-based physical requirements for entry into the seven physically demanding combat MOSs. TRADOC tasked each of the proponent schools (Infantry, Field Artillery, Armor, Combat Engineer) to develop a list of critical physically demdanding tasks and detailed standards of performance for each combat MOS. In order to ensure that these standards were acceptable, accurate and complete, USARIEM conducted small focus group sessions with both junior and senior enlisted memebers from each combat arms MOS. The majority of Soldiers in each focus group agreed that the minimum acceptable standards for each task were reasonable as written by TRADOC, and the Soldiers currently serving in a combat MOS perform most of the tasks either in training or while deployed. Additional tasks described by Soldiers in the focus groups were determined by TRADOC to be equally or less physically demanding than those previously identified.

15. SUBJECT TERMS

Physical demands, focus groups, Infantry, Field Arillery, Combat Engineers, Armor

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Leila A. Walker
UNCL	UNCL	UNCL	UL	101	*19b.* TELEPHONE NUMBER *(Include area code)* 508-233-4800

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USARIEM TECHNICAL REPORT T16-3

PHYSICAL DEMANDS STUDY- FOCUS GROUPS

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LIST OF ACRONYMS

AKV	Armored Knight Vehicle
APOBS	Anti-Personnel Obstacle Breaching System
BFV	Bradley Fighting Vehicle
CAT	Carrier Ammunition Track
FAASV	Field Artillery Ammunition Supply Vehicle
FS3	Fire Support Sensor System
GLPS	Gun Laying and Positioning System
HEI-T	High Explosive Incendiary Tracer
IOTV	Improved Outer Tactical Vest
JAQ	Job Analysis Questionnaire
LLDR	Lightweight Laser Designator Rangefinder
LRAS3	Long Range Advance Scout Surveillance System
MK19	Mark 19 Grenade Launcher
MOPMS	Modular-Pack Mine System
MOS	Military Occupational Specialty
NCO	Non-Commissioned Officer
SME	Subject Matter Experts
TOW	Tube-Launched, Optically-Tracked, Wire-Guided
TRADOC	Training and Doctrine Command
USARIEM	U.S. Army Research Institute of Environmental Medicine

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TRADOC	Training and Doctrine Command
USARIEM	U.S. Army Research Institute of Environmental Medicine

BACKGROUND

The U.S. Army does not currently use a physical employment test to assign Soldiers to a military occupational specialty (MOS). This can lead to situations in which the physical demands of the job exceed the physical capabilities of the Soldier, thus increasing risk of injury. The need for physical performance tests to predict performance in a particular MOS became evident when Mr. Leon Panetta, the former Secretary of Defense, recommended the services rescind the direct combat exclusion rule for women in order to eliminate sex-based barriers to service on January 23, 2013. As a result, the Training and Doctrine Command (TRADOC) tasked the U.S. Army Research Institute of Environmental Medicine (USARIEM) with developing valid, safe and legally defensible physical performance tests to predict the ability of Soldiers to perform the critical, physically demanding tasks of Combat Arms MOSs.

In preparation for this work, TRADOC conducted a job analysis to identify the critical, physically demanding tasks for each of the seven Combat Arms MOSs. TRADOC tasked each of the proponent schools (Office of the Chief of Infantry, Field Artillery School, Armor School and Engineer School) with developing a list of the critical, physically demanding tasks for each MOS along with detailed conditions and standards of performance. This was an iterative process with oversight by TRADOC as well as input from experienced senior military and civilian leaders in each career field.

Following receipt of the critical physically demanding task list from TRADOC and in response to the TRADOC tasking, USARIEM developed a plan to identify safe, legally defensible physical performance standards for the critical tasks performed by

Soldiers in seven Combat Arms MOSs (11B Infantryman, 11C Infantryman-Indirect Fire, 12B Combat Engineer, 13B Cannon Crewmember, 13F Fire Support Specialist, 19D Calvary Scout and 19K Armor Crewman). The overall project was composed of three separate studies. The objective of Study 1 was a thorough job analysis and included a widely distributed Job Analysis Questionnaire (JAQ), focus group interviews and physiological measurements of Soldiers performing the tasks. Based on this information, the most physically demanding critical tasks were identified and criterion measure task simulations were developed. The objective of Study 2 was to assess the test-retest reliability of the criterion measure task simulations. Study 3 was the validation phase in which Soldiers from each MOS performed the criterion measure task simulations, as well as field-expedient predictor tests to develop prediction equations to estimate performance on the task simulations.

The purpose of this report is to summarize the focus group discussions that were conducted during the job analysis as part of Study 1. The JAQ data and the physiological data collected during Studies 1, 2 and 3 for each MOS or series of MOSs will be presented in separate technical reports.

ACKNOWLEDGMENTS

The authors would like to thank the following individuals for their assistance in preparing this technical report: Mr. Jay Hydren and Ms. Maria Canino.

DISCLAIMERS

The opinions or assertions contained herein are the private views of the author(s) and are not to be construed as official or as reflecting the views of the Army or the Department of Defense.

The investigators have adhered to the policies for protection of human subjects as prescribed in Army Regulation 70-25, and the research was conducted in adherence with the provisions of 32 CFR Part 219. Protocol # 9300.

This research was supported by an appointment to the Student Research Participation Program at the U.S. Army Medical Research Institution of Environmental Medicine administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and USAMRC. The opinions or assertions contained herein are the private views of the author(s) and are not to be construed as official or as reflecting the views of the Army or the Department of Defense.

EXECUTIVE SUMMARY

The Training and Doctrine Command (TRADOC) tasked the U.S. Army Research Institute of Environmental Medicine (USARIEM) with developing valid, safe and legally defensible physical performance tests to predict the ability of Soldiers to perform the critical, physically demanding tasks of the seven Combat Arms military occupational specialties (MOSs). TRADOC used a scientifically valid procedure to identify 32 critical, physically demanding tasks for the MOSs. TRADOC then provided the task descriptions and standards to USARIEM (see Appendix B for greater detail). To ensure these standards were acceptable, accurate and complete, USARIEM conducted small focus group sessions with both junior and senior enlisted members from each Combat Arms MOS. The results of the focus group discussions are included in this report. Overall, the Soldiers present for each of the focus groups had experience completing the majority of the critical, physically demanding tasks identified by TRADOC. These results suggest that Soldiers currently serving in these MOSs perform most of these tasks either in training or while deployed, and therefore they are relevant to include as part of this project. The majority of Soldiers in each focus group agreed that the minimum acceptable standards for each task were reasonable, as written by TRADOC. The volunteers were also able to identify and describe additional physically demanding tasks that they perform regularly and believe should be considered when developing physical performance standards for each of their respective MOSs. Many of these tasks involved vehicle maintenance, such as changing tires and track on vehicles and carrying tools needed for equipment maintenance.

INTRODUCTION

Soldiers' occupational and combat-related duties often include physically demanding tasks, such as repetitive lifting, carrying heavy loads over long distances and quickly performing battlefield maneuvers (1). The efficiency, effectiveness and safety of Soldiers are all dependent upon their ability to meet the physical demands of their military occupational specialty (MOS). As such, Soldiers should be selected and trained for a MOS only after careful consideration of their physical ability to perform the critical tasks of the job. However, the U.S. Army does not currently select Soldiers for a MOS based on their physical capabilities. This is problematic because training recruits who do not have the physical potential to successfully perform the critical tasks of a MOS is a misuse of resources and may result in increased injury and disability rates, ultimately reducing military readiness.

Physical employment test batteries have been developed by the Armed Forces of Canada (2), the United Kingdom (3) and Australia (4), using the methods of Payne and Harvey (5). Payne and Harvey's sequential research strategy to develop fitness-for-duty standards consists of: a) performing a job analysis to quantify the needs of the occupation; b) developing criterion measure tasks that simulate the critical tasks required of the job; c) establishing the reliability of the criterion measure tasks and predictor tests; d) collecting representative data on the criterion measure tasks; e) identifying minimal performance thresholds for the criterion measure tasks and predictor tests; and f) determining the prognostic accuracy of the predictor tests for predicting performance on the criterion measure tasks (5).

The first step in this process, conducting a job analysis, is critical to the success of the entire project. The Army Training and Doctrine Command (TRADOC) began the process using subject matter experts (SMEs) to identify the critical physically demanding tasks of each of the Combat Arms MOSs. This process was carefully conducted with scientific oversight and resulted in the identification of 32 tasks. More details of the TRADOC methodology can be found in Appendix D. Some tasks were common to multiple MOSs, while some were specific to a single MOS. The task list was distributed to high-ranking commanders and non-commissioned officers (NCOs) with recent combat experience to ensure the accuracy and completeness of the task list before it was provided to USARIEM. In order to further ensure that the critical tasks and standards were accurate and tasks had not been overlooked, focus groups were conducted by USARIEM. This technical report documents findings from the focus groups.

PURPOSE

Overall Purpose: To gain a thorough understanding of the physically demanding tasks of each of the seven Combat Arms MOSs by speaking directly with Soldiers currently serving in each MOS who have experience performing the identified tasks.

Purpose 1: To determine the frequency at which Soldiers complete the physically demanding tasks of each Combat Arms MOS in both training and deployed environments.

Purpose 2: To ensure that the minimum standards for each physically demanding task provided by TRADOC are reasonable as written.

Purpose 3: To identify any additional critical physically demanding tasks performed by Soldiers in each MOS.

METHODS

The focus group interviews took place in August 2013 at Ft. Hood, Killeen, TX and consisted of two groups of five to nine volunteers per MOS. The first group was comprised of junior enlisted Soldiers (E1-E5) who typically perform the physically demanding tasks within the MOS. The second group consisted of senior enlisted (E6-E7) who typically have experience performing and supervising the tasks in both training and deployed environments.

Prior to the start of each focus group interview, the volunteers received an overview of the project and were notified that their input was critical to the success of the project. Those who chose to volunteer signed an informed consent document approved by the Institutional Review Board of USARIEM. Volunteers also completed a demographic questionnaire, which included their age, rank, time in the military service, deployment history, and number of times they have completed each task in both training and deployed environments during their military career (Appendix A).

During the focus group interviews, two members of the research team provided volunteers with PowerPoint slides outlining the task, condition (i.e., uniform worn and equipment worn or carried) and standard of each of the physically demanding tasks both common to the Combat Arms MOSs (Appendix B) and specific to their MOS or MOS series (i.e., 11 series, 13 series, etc.) (Appendix C). These slides, which were produced by TRADOC, are described in detail in Appendix D. Volunteers in the focus groups were asked to review the outlines and determine: 1) whether or not each task was regularly performed by personnel within the MOS; 2) whether or not the descriptions and equipment lists were accurate; and 3) whether or not the minimum

standards for each task were reasonable. If they believed the description of the task was not accurate or reasonable, they were asked to provide study staff with additional information. After reviewing each task, volunteers were also asked to identify and describe any other physically demanding tasks that they typically perform that were not identified by the TRADOC SMEs. A third member of the study staff took detailed notes of the conversations using a laptop computer.

Additionally, to ensure the information discussed was accurately documented, each focus group interview was video recorded. In order to maintain volunteer confidentiality, Soldiers were asked to remove the outer blouse of their uniform and patrol cap, which contained their name and rank, and were referred to by a name they selected (usually their first name only). Any volunteer who wished to be excluded from video recording was positioned out of the camera's view.

Statistical Analysis

From the questionnaire data, mean ± standard deviation (SD) were calculated for the amount of time volunteers in each focus group interview spent in the military (years), in their current MOS (years) and deployed (years). The amount of time (years) Soldiers spent in a training environment during their military career was calculated by subtracting their time spent deployed (years) from their total time in the military (years). For each MOS, independent samples t-tests were used to examine differences between the junior and senior enlisted Soldiers with respect to these demographics.

The average number of times Soldiers annually completed each task specific to their MOS in training and deployed environments was calculated by dividing the total number of times during their military career they reported completing the task in each

environment by the number of years they spent in each environment, respectively. These variables were reported as mean ± SD as well as minimum and maximum values:

Yearly task frequency during training = total career frequency during training ÷ # of years in training

Yearly task frequency during deployment = total career frequency during deployment ÷ # of years deployed

Finally, the percentage of volunteers who completed each task in training and deployed environments as well as the percentage of volunteers who believed each task standard was reasonable was calculated. All statistical analyses were performed with Microsoft Excel 2010 (Microsoft, Albuquerque, NM) and the Statistical Package for the Social Sciences (SPSS) Base 14.0 for Windows (SPSS Inc, Chicago, IL) with $p<0.05$ established as the level of statistical significance.

RESULTS

Infantryman (11B)

A total of 15 Soldiers participated in the Infantryman (11B) focus group interviews. Of this sample, the 11B junior enlisted focus group (n=8) consisted of three Privates First Class (PFC; E3) and five Specialists (SPC; E4), while the senior enlisted focus group (n=7) consisted of six Staff Sergeants (SSG; E6) and one Sergeant First Class (SFC; E7). The average (± SD) age (years), time in the military (years), time in

their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are shown in Table 1. On average, Soldiers in the senior enlisted focus group were older (29.0 ± 6.7 vs. 22.4 ± 1.8, p=0.018) and had spent more time in the military (9.3 ± 3.9 vs. 2.4 ± 1.1, p<0.001), in their current MOS (9.3 ± 3.9 vs. 2.4 ± 1.1, p<0.001), and deployed (2.7 ± 1.0 vs. 0.5 ± 0.5, p<0.001) than Soldiers in the junior enlisted focus group. Deployment locations for all Soldiers who took part in the 11B focus groups included Iraq, Afghanistan, Kuwait, Jordan and Panama.

Table 1. Infantryman (11B) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=8)	Senior Enlisted (E6-E7; n=7)
Age, years	25.5 ± 5.7	22.4 ± 1.8*	29.0 ± 6.7
Time in Military, years	5.6 ± 4.4	2.4 ± 1.1*	9.3 ± 3.9
Time in MOS, years	5.6 ± 4.4	2.4 ± 1.1*	9.3 ± 3.9
Time Deployed in MOS, years	1.5 ± 1.4	0.5 ± 0.5*	2.7 ± 1.0

*Data are presented as mean ± SD and were analyzed by independent samples t-test with p<0.05 considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

The mean frequency for annual performance of each of the tasks specific to the 11B MOS (Tasks 9-12) and common to other Combat Arms MOSs (Tasks 1-8) in both training and deployed environments is presented in Table 2. The tasks most frequently performed in training environments reported by both junior and senior enlisted Soldiers include: 1) conduct a tactical movement (foot march); 2) move over, through or around obstacles (obstacles); and 3) move under direct fire (move under fire). Both groups of Soldiers reported both foot march and move over, through or around obstacles as the most frequently performed tasks in deployed environments. Soldiers in the junior enlisted focus group reported never performing the prepare a dismounted tube-launched, optically-tracked, wire-guided (TOW) missile firing position task in both

training and deployed environments. Similarly, Soldiers in the senior enlisted focus group reported the prepare a dismounted TOW missile firing position task as being the least frequently performed task in both training and deployed environments.

Table 2. The frequency with which volunteers in the 11B MOS performed each of the critical tasks, in both training and deployed environments.

	Junior Enlisted (E1-E5; n=8)				Senior Enlisted (E6-E7; n=7)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
1: Foot March	25.7± 21.5	5-50	200.0 ± 173.0	100-400	16.4 ± 64.6	3-33	57.6 ± 64.6	15-200
2: Employ Hand Grenades	1.4 ± 1.0	1-3	0.0 ± 0.0	0-0	2.1 ± 1.2	1-3	2.7 ± 1.9	1-5
3: Fill and Carry Sandbags	7.1 ± 10.1	2-25	0.3 ± 0.6	0-1	4.3 ± 3.4	1-10	0.7 ± 0.9	0-2
4a: Casualty Drag	9.0 ± 9.1	0-25	0.4 ± 0.9	0-2	7.0 ± 6.6	1-17	1.0 ± 1.2	0-3
4b: BFV Casualty Evacuation	3.1 ± 4.8	0-10	0.0 ± 0.0	0-0	5.6 ± 4.4	1-13	0.8 ± 1.3	0-3
5: 25 mm Barrel Install	17.9 ± 25.0	0-50	0.2 ± 0.5	0-1	2.9 ± 3.9	0-11	0.8 ± 1.6	0-4
6: Feeder Assembly	16.8 ± 25.8	0-50	0.0 ± 0.0	0-0	3.2 ± 3.7	0-11	0.8 ± 1.6	0-4
7: Ammo Can Carry	14.5 ± 20.9	0-50	0.0 ± 0.0	0-0	2.5 ± 4.0	0-11	0.7 ± 1.5	0-4
8: Load TOW Missile	0.1 ± 0.2	0-1	0.0 ± 0.0	0-0	2.1 ± 4.1	0-11	0.3 ± 0.9	0-2
9: Obstacles	22.8 ± 24.9	2-50	80.0 ± 90.9	0-200	28.9 ± 36.1	6-100	16.2 ± 19.8	0-50
10: Move Under Fire	22.9 ± 20.3	1-50	0.0 ± 0.0	0-0	21.9 ± 18.0	6-53	13.9 ± 16.5	0-46
11: Prepare Dismounted TOW	0.0 ± 0.0	0-0	0.0 ± 0.0	0-0	0.4 ± 0.6	0-1	0.1 ± 0.4	0-1
12: Engage Targets with M2	1.5 ± 1.5	0-3	0.3 ± 0.5	0-1	6.2 ± 7.8	1-20	1.5 ± 2.6	0-7

Table 3 lists the number of both junior and senior enlisted Soldiers in the focus groups who had experience performing the physically demanding tasks of the 11B MOS in both training and deployed environments, as well as the number who believe each task standard is reasonable. All of the senior enlisted 11B Soldiers agreed that Task 12 is not a realistic task as written because they typically carry the .240 caliber weapon instead of the .50 caliber weapon. When they do carry the .50 caliber weapon, it is

usually disassembled. However, the volunteers did believe an 11B should be able to carry both weapons in uniform. Soldiers in both focus groups identified moving over terrain at high altitudes, carrying a casualty on a litter and carrying a machine gun for long distances and/or long periods of time as additional physically demanding tasks of the 11B MOS.

Table 3. Prevalence of volunteers in the 11B MOS who performed each task in both deployed and training environments, and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=8)			Senior Enlisted (E6-E7; n=7)		
	% Deployed at least once: 62.5 (5)			% Deployed at least once: 100 (7)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (5)	100.0 (8)	100.0 (8)	100.0 (7)	100.0 (7)	100.0 (7)
2: Employ Hand Grenades	0.0 (0)	100.0 (8)	100.0 (8)	57.1 (4)	100.0 (7)	100.0 (7)
3: Fill Sandbags	60.0 (3)	100.0 (8)	100.0 (8)	57.1 (4)	100.0 (7)	100.0 (7)
3: Carry Sandbags	60.3 (3)	100.0 (8)	100.0 (8)	57.1 (4)	100.0 (7)	100.0 (7)
4a: Casualty Drag	20.0 (1)	87.5 (7)	100.0 (8)	71.4 (5)	100.0 (7)	100.0 (7)
4b: BFV Casualty Evacuation	0.0 (0)	62.5 (5)	100.0 (8)	42.9 (3)	100.0 (7)	100.0 (7)
5: 25 mm Barrel Install	20.0 (1)	62.5 (5)	100.0 (8)	28.6 (2)	85.7 (6)	100.0 (7)
6: Feeder Assembly	0.0 (0)	50.0 (4)	100.0 (8)	28.6 (2)	85.7 (6)	100.0 (7)
7: Ammo Can Carry	0.0 (0)	75.0 (6)	100.0 (8)	28.6 (2)	57.1 (4)	100.0 (7)
8: Load TOW Missile	0.0 (0)	25.0 (2)	100.0 (8)	14.3 (1)	42.9 (3)	100.0 (7)
9: Move through Obstacles	80.0 (4)	100.0 (8)	100.0 (8)	85.7 (6)	100.0 (7)	100.0 (7)
10: Move Under Fire	100.0 (5)	100.0 (8)	100.0 (8)	85.7 (6)	100.0 (7)	100.0 (7)
11: Prepare Dismounted TOW	20.0 (1)	25.0 (2)	100.0 (8)	14.3 (1)	28.6 (2)	85.7 (6)
12: Engage Targets with M2	40.0 (2)	87.5 (7)	100.0 (8)	71.4 (5)	100.0 (7)	0.0 (0)

Infantryman Indirect Fire (11C)

A total of 13 Soldiers participated in the Infantryman Indirect Fire (11C) focus group interviews. Of this sample, the 11C junior enlisted focus group (n=8) consisted of two Privates (PVT2; E2), four PFCs, and two Sergeants (SGT; E5), while the senior enlisted focus group (n=5) consisted of four SSGs and one SFC. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are displayed in Table 4. On average, Soldiers in the senior enlisted focus group were older (31.0 ± 6.1 vs. 21.9 ± 2.5, p=0.018), had spent more time in the military (11.1 ± 5.0 vs. 2.8 ± 2.8, p=0.003), in their current MOS (11.1 ± 5.0 vs. 2.8 ± 2.8, p=0.003) and deployed (3.0 ± 0.4 vs. 0.5 ± 1.0, p<0.001) than Soldiers in the junior enlisted focus group. Deployment locations for all Soldiers who took part in the 11C focus groups included Iraq, Afghanistan, Kuwait, Egypt and Bosnia.

Table 4. Infantryman-Indirect Fire (11C) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=8)	Senior Enlisted (E6-E7; n=5)
Age, years	25.4 ± 6.1	21.9 ± 2.5*	31.0 ± 6.1
Time in Military, years	6.0 ± 5.6	2.8 ± 2.8*	11.1 ± 5.0
Time in MOS, years	6.0 ± 5.6	2.8 ± 2.8*	11.1 ± 5.0
Time Deployed in MOS, years	1.5 ± 1.5	0.5 ± 1.0*	3.0 ± 0.4

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

Table 5 lists the mean number of times volunteers reported performing each of the tasks specific to the 11C MOS (Tasks 9, 10, 13-16) and common to other Combat Arms MOSs (Tasks 1-4a) in both training and deployed environments each year. Soldiers in both 11C focus groups reported completing each task at least once in both

training and deployed environments. The tasks most frequently performed in training and deployed environments reported by both groups of Soldiers include: 1) foot march; 2) move over, through and around obstacles; 3) lay a 120 mm mortar-emplace base plate; 4) lay a 120 mm mortar-emplace cannon; 5) lay a 120 mm mortar for deflection and elevation (traverse a mortar); and 6) fire a mortar.

Table 5. The frequency with which volunteers in the 11C MOS performed each of the critical tasks, in both training and deployed environments.

Task	Junior Enlisted (E1-E5; n=8)				Senior Enlisted (E6-E7; n=5)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
1: Foot March	51.5 ± 42.3	3-100	48.6 ± 12.1	40-57	31.3 ± 34.5	9-83	156.6 ± 46.4	126-210
2: Employ Hand Grenades	1.7 ± 1.1	0-3	4.1 ± 6.4	0-11	1.8 ± 1.3	1-3	3.4 ± 6.5	0-15
3: Fill and Carry Sandbags	3.5 ± 3.2	0-8	25.4 ± 24.7	2-43	2.9 ± 1.1	2-4	2.4 ± 1.8	0-5
4a: Casualty Drag	13.1 ± 17.1	0-40	16.3 ± 17.4	4-29	6.0 ± 3.1	4-10	20.5 ± 34.2	1-60
9: Move through Obstacles	12.1 ± 10.2	1-29	44.9 ± 57.8	4-86	50.7 ± 43.0	3-87	36.9 ± 30.8	4-63
10: Move Under Fire	21.0 ± 20.2	0-50	19.2 ± 32.9	0-57	11.1 ± 13.5	2-21	39.9 ± 62.7	0-150
13: Emplace Base Plate	44.1 ± 38.8	2-100	85.7 ± 121.2	0-171	8.0 ± 7.2	2-16	36.3 ± 43.7	0-95
14: Emplace Cannon	44.9 ± 37.8	8-100	91.7 ± 112.7	12-171	8.2 ± 3.1	6-10	131.8 ± 109.1	6-200
15: Traverse a Mortar	74.7 ± 52.3	10-154	56.0 ± 62.2	12-100	13.3 ± 10.4	6-21	115.5 ± 129.8	6-253
16: Fire a Mortar	199.0 ± 316.0	20-900	306.0 ± 376.0	40-571	94.7 ± 57.5	35-160	740.0 ± 756.0	63-1556

Table 6 lists the number of volunteers who had experience performing the physically demanding tasks of the 11C MOS in both training and deployed environments, as well as the number who believed each task standard was reasonable.

All Soldiers in each of the 11C focus groups believed the minimum standards for each task were reasonable as written. Additional physically demanding tasks identified by these Soldiers include moving/breaking rounds for the mortar and completing a 24 km foot march carrying the 81 mm mortar.

Table 6. Prevalence of volunteers in the 11C MOS who performed each task in both deployed and training environments and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=8)			Senior Enlisted (E6-E7; n=5)		
	% Deployed at least once: 37.5 (3)			% Deployed at least once: 100 (5)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (3)	87.5 (7)	100.0 (8)	100.0 (5)	100.0 (5)	100.0 (5)
2: Employ Hand Grenades	66.7 (2)	100.0 (8)	100.0 (8)	80.0 (4)	100.0 (5)	100.0 (5)
3: Fill Sandbags	100.0 (3)	87.5 (7)	100.0 (8)	80.0 (4)	100.0 (5)	100.0 (5)
3: Carry Sandbags	100.0 (3)	87.5 (7)	100.0 (8)	80.0 (4)	100.0 (5)	100.0 (5)
4a: Casualty Drag	100.0 (3)	87.5 (7)	100.0 (8)	60.0 (3)	100.0 (5)	100.0 (5)
9: Move through Obstacles	100.0 (3)	100.0 (8)	100.0 (8)	100.0 (5)	100.0 (5)	100.0 (5)
10: Move Under Fire	66.7 (2)	75.0 (6)	100.0 (8)	80.0 (4)	100.0 (5)	100.0 (5)
13: Emplace Base Plate	66.7 (2)	100.0 (8)	100.0 (8)	80.0 (4)	100.0 (5)	100.0 (5)
14: Emplace Cannon	100.0 (3)	100.0 (8)	100.0 (8)	100.0 (5)	100.0 (5)	100.0 (5)
15: Traverse a Mortar	100.0 (3)	100.0 (8)	100.0 (8)	100.0 (5)	100.0 (5)	100.0 (5)
16: Fire a Mortar	100.0 (3)	100.0 (8)	100.0 (8)	100.0 (5)	100.0 (5)	100.0 (5)

Combat Engineer (12B)

A total of 17 Soldiers participated in the Combat Engineer (12B) focus group interviews. Of this sample, the 12B junior enlisted focus group (n=9) consisted of two PFCs, five SPCs, and two SGTs, while the senior enlisted focus group (n=8) consisted of five SSGs and three SFCs. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are reported in Table 7. Soldiers in the senior enlisted focus group were older (32.0 ± 3.5 vs. 24.6 ± 2.8, $p<0.001$) and had spent more time in the military (11.7 ± 2.8 vs. 4.3 ± 3.0, $p<0.001$), in their current MOS (11.2 ± 3.3 vs. 3.8 ± 2.9, $p<0.001$) and deployed (3.2 ± 0.7 vs. 0.8 ± 0.5, $p<0.001$) than Soldiers in the junior enlisted focus group. Deployment locations for all Soldiers who took part in the 11C focus groups included Iraq, Afghanistan, Kuwait, Kosovo, Korea and Bosnia.

Table 7. Combat Engineer (12B) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=9)	Senior Enlisted (E6-E7; n=8)
Age, (years)	28.1 ± 4.9	24.6 ± 2.8*	32.0 ± 3.5
Time in Military, (years)	7.8 ± 4.7	4.3 ± 3.0*	11.7 ± 2.8
Time in MOS, (years)	7.3 ± 4.8	3.8 ± 2.9*	11.2 ± 3.3
Time Deployed in MOS, (years)	1.9 ± 1.4	0.8 ± 0.5*	3.2 ± 0.7

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

The mean annual frequency for performance of each of the tasks specific to the 12B MOS (Tasks 27-31) and common to other Combat Arms MOSs (Tasks 1-7) in both training and deployed environments are reported in Table 8. The tasks reported by junior enlisted 12B volunteers as most frequently performed in training environments included: 1) foot march; 2) remove the feeder assembly; and 3) loading 25 mm HEI-T

ammunition cans on a Bradley Fighting Vehicle (BFV; ammo can carry). Soldiers in the senior enlisted 12B focus group reported the tasks most frequently performed in training environments as: 1) foot march; 2) fill and carry sandbags; 3) drag a casualty to immediate safety (casualty drag); and 4) carry and emplace H6 40lb cratering charges. Soldiers in both the junior and senior enlisted 12B focus groups reported that the foot march was the most frequently performed task in deployed environments. Soldiers in both focus groups reported that they either did not perform or infrequently performed the following tasks in both training and deployed environments: 1) carry/employ the anti-personnel obstacle breaching system (APOBS); 2) assist in the construction of a Bailey bridge; and 3) load/install a Volcano.

Table 8. The frequency with which volunteers in the 12B MOS performed each of the critical tasks, in both training and deployed environments.

Task	Junior Enlisted (E1-E5; n=9)				Senior Enlisted (E6-E7; n=8)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
1: Foot March	14.7 ± 18.4	2-50	78.4 ± 137.0	4-365	6.5 ± 5.3	0-17	17.0 ± 16.6	0-40
2: Employ Hand Grenades	1.6 ± 1.2	0-4	0.1 ± 0.3	0-1	0.7 ± 0.5	0-2	0.3 ± 0.4	0-1
3: Fill and Carry Sandbags	4.0 ± 3.0	1-8	3.1 ± 3.8	0-10	2.8 ± 2.5	0-7	2.9 ± 4.9	0-14
4a: Casualty Drag	3.1 ± 2.9	1-8	0.3 ± 0.8	0-2	2.5 ± 1.7	0-5	0.7 ± 0.9	0-3
4b: BFV Casualty Evacuation	1.5 ± 1.1	0-3	0.4 ± 0.8	0-2	2.1 ± 1.7	1-5	0.6 ± 0.9	0-3
5: 25mm Barrel Install	4.6 ± 3.7	1-11	1.0 ± 2.2	0-5	2.0 ± 1.4	0-4	2.7 ± 2.8	0-8
6: Feeder Assembly	10.7 ± 16.3	1-50	2.0 ± 4.0	0-10	2.0 ± 1.4	0-4	2.7 ± 2.8	0-8
7: Ammo Can Carry	14.0 ± 20.6	0-50	1.7 ± 4.1	0-10	1.7 ± 1.4	0-4	2.2 ± 2.8	0-8
27: Carry/Emplace APOBS	0.4 ± 1.0	0-3	0.0 ± 0.0	0-0	0.1 ± 0.1	0-0.3	0.1 ± 0.1	0-0.3
28: Cratering Charges	1.2 ± 1.1	0-3	0.7 ± 1.2	0-3	2.6 ± 1.7	1-5	1.2 ± 1.4	0-4
29: Carry/Emplace MOPMS	1.4 ± 2.2	0-5	1.1 ± 2.6	0-7	0.3 ± 0.3	0-1	0.2 ± 0.4	0-1
30: Bailey Bridge	0.8 ± 0.7	0-2	0.0 ± 0.0	0-0	0.7 ± 0.4	0-1	0.0 ± 0.0	0-0
31: Volcano	0.0 ± 0.0	0-0	0.0 ± 0.0	0-0	0.5 ± 0.5	0-2	0.0 ± 0.1	0-0.3

Table 9 lists the number of both junior and senior enlisted Soldiers participating in the 12B focus group interviews who had experience performing the physically demanding tasks of the 12B MOS in both training and deployed environments, as well as the number who believed each task standard was reasonable. All of the junior enlisted 12B volunteers agreed that 30 cans was too many for Task 7. All senior

enlisted 12B volunteers reported that it typically requires more than 52 minutes to fill 26 sandbags. Furthermore, additional physically demanding tasks identified by these Soldiers included picket pounding, detecting mines, carrying a tow bar, and changing tires on wheeled vehicles.

Table 9. Prevalence of volunteers in the 12B MOS who performed each task in both deployed and training environments, and prevalence of those who believed the standard for each task was reasonable as written.

Task	Junior Enlisted (E1-E5; n=9)			Senior Enlisted (E6-E7; n=8)		
	% Deployed at least once: 77.8 (7)			% Deployed at least once: 100 (8)		
	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (7)	100.0 (9)	100.0 (9)	87.5 (7)	100.0 (8)	100.0 (8)
2: Employ Hand Grenades	14.3 (1)	100.0 (9)	100.0 (9)	50.0 (4)	100.0 (8)	100.0 (8)
3: Fill Sandbags	71.4 (5)	100.0 (9)	100.0 (9)	50.0 (4)	87.5 (7)	0.0 (0)
3: Carry Sandbags	71.4 (5)	100.0 (9)	100.0 (9)	50.0 (4)	87.5 (7)	100.0 (8)
4a: Casualty Drag	14.3 (1)	100.0 (9)	100.0 (9)	50.0 (4)	100.0 (8)	100.0 (8)
4b: BFV Casualty Evacuation	28.6 (2)	88.9 (8)	100.0 (9)	62.5 (5)	100.0 (8)	100.0 (8)
5: 25mm Barrel Install	42.9 (3)	100.0 (9)	100.0 (9)	75.0 (6)	87.5 (7)	100.0 (8)
6: Feeder Assembly	42.9 (3)	100.0 (9)	100.0 (9)	75.0 (6)	87.5 (7)	100.0 (8)
7: Ammo Can Carry	42.9 (2)	88.9 (8)	0.0 (0)	62.5 (5)	75.0 (6)	100.0 (8)
27: Carry/Emplace APOBS	0.0 (0)	22.2 (2)	100.0 (9)	12.5 (1)	37.5 (3)	100.0 (8)
28: Cratering Charges	28.6 (2)	77.8 (7)	100.0 (9)	62.5 (5)	100.0 (8)	100.0 (8)
29: Carry/Emplace MOPMS	28.6 (2)	55.6 (5)	100.0 (9)	25.0 (2)	62.5 (5)	100.0 (8)
30: Bailey Bridge	0.0 (0)	77.8 (7)	0.0 (0)	0.0 (0)	100.0 (8)	100.0 (8)
31: Volcano	0.0 (0)	11.1 (1)	100.0 (9)	12.5 (1)	87.5 (7)	100.0 (8)

Cannon Crewman (13B)

A total of 16 Soldiers participated in the Cannon Crewman (13B) focus group interviews. Of this sample, the 13B junior enlisted focus group (n=8) consisted of three

PV2s, three PFCs, one SPC and one SGT, while the senior enlisted focus group (n=8) consisted of eight SSGs. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are shown in Table 10. Soldiers in the senior enlisted focus group were older (34.0 ± 7.0 vs. 22.4 ± 4.2, p=0.001) and had spent more time in the military (10.9 ± 4.8 vs. 2.2 ± 2.6, p=0.001), in their current MOS (10.0 ± 4.8 vs. 1.2 ± 0.9, p=0.001) and deployed (3.0 ± 1.0 vs. 0.1 ± 0.4, p<0.001) than Soldiers in the junior enlisted focus group. Deployment locations for all Soldiers who participated in the 13B focus group included Iraq, Afghanistan, Kuwait and Bosnia.

Table 10. Cannon Crewman (13B) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=8)	Senior Enlisted (E6-E7; n=8)
Age, years	28.2 ± 8.2	22.4 ± 4.2*	34.0 ± 7.0
Time in Military, years	6.5 ± 5.8	2.2 ± 2.6*	10.9 ± 4.8
Time in MOS, years	5.6 ± 5.6	1.2 ± 0.9*	10.0 ± 4.8
Time Deployed in MOS, years	1.5 ± 1.5	0.1 ± 0.4*	3.0 ± 1.0

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

Table 11 shows the average (±SD) number of times volunteers reported performing each of the tasks specific to the 13B MOS (Tasks 27-30) and common to other Combat Arms MOSs (Tasks 2-4a) each year in both training and deployed environments. Soldiers in the junior enlisted 13B focus group reported that the most frequently performed task in both training and deployed environments is transferring ammunition with an M992 Field Artillery Supply Vehicle (FAASV), also known as the Carrier Ammunition Track (CAT) task. Soldiers in the senior enlisted 13B focus group reported the most frequently performed tasks in training environments are: 1)

transferring ammunition with an M992 FAASV; 2) emplacing the 155mm Howitzer/lift wheel assembly; and 3) casualty drag. Soldiers in the senior enlisted focus group reported that the tasks most frequently performed in deployed environments are displace the 155mm Howitzer/recover spade trail arm and blade and emplace the 155mm Howitzer/lift wheel assembly.

Table 11. The frequency with which volunteers in the 13B MOS performed each of the critical tasks in both training and deployed environments.

Task	Junior Enlisted (E1-E5; n=8)				Senior Enlisted (E6-E7; n=8)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
2: Employ Hand Grenades	1.1 ± 0.8	0-2	0.0 ± 0.0	0-0	0.7 ± 0.6	0-2	2.8 ± 4.7	0-12
3: Fill and Carry Sandbags	2.9 ± 3.0	0-8	0.0 ± 0.0	0-0	0.6 ± 1.1	0-3	1.7 ± 2.7	0-7
4a: Casualty Drag	2.6 ± 1.2	1-5	0.0 ± 0.0	0-0	2.6 ± 2.3	0-6	1.3 ± 1.7	0-5
21: Transfer with a FAASV	37.2 ± 28.8	0-60	20.0 ± 0.0	0	6.9 ± 10.0	0-27	0.7 ± 1.2	0-3
22: Lift Wheel Assembly	0.9 ± 0.8	0-2	0.0 ± 0.0	0-0	6.4 ± 9.7	0-27	18.6 ± 27.7	0-70
23: Lift Spade Trail Arm and Blade	1.7 ± 1.6	0-5	0.0 ± 0.0	0-0	0.5 ± 1.1	0-3	28.0 ± 54.6	0-144
24: Set Up GLPS	0.3 ± 0.5	0-1	0.0 ± 0.0	0-0	2.2 ± 4.3	0-12	0.3 ± 0.6	0-2

Table 12 lists the prevalence of volunteers who had experience performing the physically demanding tasks of the 13B MOS in both training and deployed environments, as well as the prevalence of those who believed each task standard was reasonable. All Soldiers in each of the 13B focus groups believed the minimum standards for each task were reasonable as written. Additional physically demanding tasks identified by these Soldiers included repairing broken tracks on tracked vehicles

(i.e., tanks), performing multiple round fire missions, opening the breech of a 155 mm Howitzer, and mounting the .50 caliber machine gun onto a Paladin.

Table 12. Prevalence of volunteers in the 13B MOS who performed each task in both deployed and training environments, and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=8)			Senior Enlisted (E6-E7; n=8)		
	% Deployed at least once: 12.5 (1)			% Deployed at least once: 100 (8)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
2: Employ Hand Grenades	0.0 (0)	87.5 (7)	100.0 (8)	50.0 (4)	75.0 (6)	100.0 (8)
3: Fill and Carry Sandbags	0.0 (0)	100.0 (8)	100.0 (8)	62.5 (5)	62.5 (5)	100.0 (8)
3: Fill and Carry Sandbags	0.0 (0)	100.0 (8)	100.0 (8)	62.5 (5)	62.5 (5)	100.0 (8)
4a: Casualty Drag	0.0 (0)	100.0 (8)	100.0 (8)	37.5 (3)	75.0 (6)	100.0 (8)
21: Transfer with a FAASV	100 (1)	87.5 (7)	100.0 (8)	37.5 (3)	75.0 (6)	100.0 (8)
22: Lift Wheel Assembly	0.0 (0)	75.0 (6)	100.0 (8)	25.0 (8)	37.5 (3)	100.0 (8)
23: Lift Spade Trail Arm and Blade	0.0 (0)	87.5 (7)	100.0 (8)	37.5 (3)	75.0 (6)	100.0 (8)

Fire Support (13F)

A total of 13 Soldiers participated in the Fire Support (13F) focus group interviews. Of this sample, the 13F junior enlisted focus group (n=7) consisted of one PFC, three SPCs, and three SGTs, while the senior enlisted focus group (n=6) consisted of three SSGs and three SFCs. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are reported in Table 13. Soldiers in the senior enlisted focus group were older (34.0 ± 6.0 vs. 26.6 ± 4.0, p=0.022) and had spent more time in the military (13.4 ± 5.1 vs. 4.7 ± 3.1, p=0.003), as well as in their current MOS

(13.1 ± 5.5 vs. 4.6 ± 3.3, p=0.006), than Soldiers in the junior enlisted focus group. No significant difference in deployment time was observed between the two focus groups (3.1 ± 1.3 vs. 1.6 ± 1.4, p=0.072). Deployment locations for all Soldiers who took part in the 13F focus groups included Iraq, Afghanistan, Kuwait, Kosovo and Bosnia.

Table 13. Fire Support (13F) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=7)	Senior Enlisted (E6-E7; n=6)
Age, years	30.0 ± 6.1	26.6 ± 4.0*	34.0 ± 6.0
Time in Military, years	8.7 ± 6.0	4.7 ± 3.2*	13.4 ± 5.1
Time in MOS, years	8.5 ± 6.1	4.6 ± 3.3*	13.1 ± 5.5
Time Deployed in MOS, years	2.3 ± 1.5	1.6 ± 1.4	3.1 ± 1.3

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

Table 14 lists the average number of times volunteers reported performing each of the tasks specific to the 13F MOS (Tasks 25-26) and common to the other Combat Arms MOSs (Tasks 1-7) each year in both training and deployed environments. Soldiers in the junior enlisted 13F focus group reported the most frequently performed tasks in training environments were the foot march and establish an observation point. They also reported the most frequently performed tasks in deployed environments were the foot march and fill and carry sandbags. Soldiers in the senior enlisted 13F focus group reported foot march, fill and carry sandbags, and establish an observation point as being the most frequently performed tasks in both training and deployed environments.

Table 14. The frequency with which volunteers in the 13F MOS performed each of the critical tasks, in both training and deployed environments.

Task	Junior Enlisted (E1-E5; n=7)				Senior Enlisted (E6-E7; n=6)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
1: Foot March	33.2 ± 45.3	5-100	178.0 ± 146.0	17-300	4.2 ± 4.9	1-10	20.4 ± 30.8	4-67
2: Employ Hand Grenades	1.4 ± 0.9	0-2	0.2 ± 0.4	0-1	0.5 ± 0.3	0-1	0.4 ± 0.5	0-1
3: Fill and Carry Sandbags	3.3 ± 1.1	2-5	77.9 ± 94.7	10-218	2.3 ± 2.4	0-5	5.0 ± 7.1	0-15
4a: Casualty Drag	2.6 ± 1.5	1-5	2.6 ± 5.3	0-12	1.1 ± 0.7	0-1	0.4 ± 0.5	0-1
4b: BFV Casualty Evacuation	1.2 ± 1.7	0-5	1.4 ± 2.6	0-6	0.9 ± 0.7	0-1	0.4 ± 0.9	0-2
5: 25mm Barrel Install	4.4 ± 7.1	0-15	0.0 ± 0.0	0-0	0.6 ± 1.3	0-3	1.0 ± 2.5	0-6
6: Feeder Assembly	1.4 ± 1.1	1-3	10.0 ± 20.0	0-40	0.8 ± 2.0	0-5	1.0 ± 2.5	0-6
7: Ammo Can Carry	1.3 ± 1.9	0-4	10.0 ± 20	0-40	0.8 ± 2.0	0-5	1.0 ± 2.5	0-6
25: Establish Observation Point	16.0 ± 19.1	0-48	11.3 ± 19.3	0-40	2.2 ± 1.1	1-3	4.8 ± 6.0	0-13
26: Install/Remove FS3	0.7 ± 1.6	0-4	2.0 ± 4.0	0-8	0.2 ± 0.3	0-1	0.0 ± 0.0	0-0

Table 15 lists the prevalence of volunteers who had experience performing the physically demanding tasks of the 13F MOS in both training and deployed environments, as well as the prevalence of those who believed each task standard was reasonable. All Soldiers in each of the 13F focus groups believed the minimum standards for each task were reasonable as written. One additional physically demanding task that was identified by these Soldiers was carrying the Lightweight Laser Designator Rangefinder (LLDR) to establish an observation point.

Table 15. Prevalence of volunteers in the 13F MOS who performed each task in both deployed and training environments and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=7)			Senior Enlisted (E6-E7; n=6)		
	% Deployed at least once: 71 (5)			% Deployed at least once: 100 (6)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (5)	100.0 (7)	100.0 (7)	100.0 (6)	100.0 (6)	100.0 (6)
2: Employ Hand Grenades	20.0 (1)	85.7 (6)	100.0 (7)	50.0 (3)	100.0 (6)	100.0 (6)
3: Fill Sandbags	100.0 (5)	100.0 (7)	100.0 (7)	66.7 (4)	100.0 (6)	100.0 (6)
3: Carry Sandbags	100.0 (5)	100.0 (7)	100.0 (7)	66.7 (4)	100.0 (6)	100.0 (6)
4a: Casualty Drag	40.0 (2)	85.7 (6)	100.0 (7)	66.7 (4)	100.0 (6)	100.0 (6)
4b: BFV Casualty Evacuation	40.0 (2)	71.4 (5)	100.0 (7)	33.3 (2)	100.0 (6)	100.0 (6)
5: 25mm Barrel Install	40.0 (2)	85.7 (6)	100.0 (7)	16.7 (1)	50.0 (3)	100.0 (6)
6: Feeder Assembly	40.0 (2)	100.0 (7)	100.0 (7)	16.7 (1)	16.7 (1)	100.0 (6)
7: Ammo Can Carry	40.0 (2)	71.4 (5)	100.0 (7)	16.7 (1)	16.7 (1)	100.0 (6)
26: Install/Remove FS3	40.0 (2)	28.6 (2)	100.0 (7)	16.7 (1)	50.0 (3)	100.0 (6)

Cavalry Scout (19D)

A total of 15 Soldiers participated in the Cavalry Scout (19D) focus group interviews. Of this sample, the 19D junior enlisted focus group (n=8) consisted of three PFCs, three SPCs and two SGTs, while the senior enlisted focus group (n=7) consisted of three SSGs and four SFCs. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are shown in Table 16. Soldiers in the senior enlisted focus group were older (35.7 ± 8.6 vs. 23.8 ± 4.9, p=0.005) and had spent more time in the military (15.5 ± 7.8 vs. 3.4 ± 3.6, p=0.002), as well as in their current MOS (11.9 ± 2.3 vs. 1.7 ± 0.8, p<0.001) and deployed (2.9 ±0.9 vs. 0.7 ± 0.7, p<0.001), than Soldiers in the junior

enlisted focus group. Deployment locations for all volunteers who participated in the 19D focus groups included Iraq, Kuwait, Cuba and unspecified locations in support of Operation Desert Storm.

Table 16. Cavalry Scout (19D) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=8)	Senior Enlisted (E6-E7; n=7)
Age, years	29.3 ± 9.1	23.8 ± 4.9*	35.7 ± 8.6
Time in Military, years	9.0 ± 8.5	3.4 ± 3.6*	15.5 ± 7.8
Time in MOS, years	7.7 ± 5.6	1.7 ± 0.8*	11.9 ± 2.3
Time Deployed in MOS, years	1.8 ± 1.4	0.7 ± 0.7*	2.9 ± 0.9

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

Table 17 displays the mean number of times volunteers reported performing each of the tasks specific to the 19D MOS (Tasks 1-9) each year in both training and deployed environments. Soldiers in the junior enlisted focus group reported foot march as the most frequently performed task in both training and deployed environments. Soldiers in the senior enlisted focus group reported the most frequently performed tasks in training environments were: 1) foot march; 2) maintain the 25 mm gun on a BFV (25 mm barrel install); and 3) remove the feeder assembly. Furthermore, they reported that the foot march was the most frequently performed task in deployed environments.

Table 17. The frequency with which volunteers in the 19D MOS performed, in both training and deployed environments, each of the critical tasks both specific to the 19D MOS and common to all Combat Arms MOSs.

Task	Junior Enlisted (E1-E5; n=8)				Senior Enlisted (E6-E7; n=7)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deployed (# of times/tour)	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	Range
1: Foot March	15.5 ± 16.4	5-54	53.8 ± 25.3	25-82	23.4 ± 20.7	3-53	45.9 ± 21.7	15-75
2: Employ Hand Grenades	1.3 ± 0.7	0-2	0.0 ± 0.0	0-0	0.9 ± 0.3	0-1	1.6 ± 1.3	0-4
3: Fill and Carry Sandbags	10.6 ± 9.1	1-24	9.3 ± 6.5	0-15	7.4 ± 5.6	3-12	3.1 ± 1.3	1-5
4a: Casualty Drag	8.9 ± 9.7	0-24	1.6 ± 3.6	0-8	7.4 ± 4.9	1-12	0.8 ± 0.7	0-2
4b: BFV Casualty Evacuation	5.1 ± 7.9	0-24	1.4 ± 2.6	0-6	6.0 ± 5.9	0-12	1.4 ± 1.4	0-4
5: 25mm Barrel Install	11.7 ± 7.2	2-24	2.6 ± 4.3	0-10	22.4 ± 22.3	0-53	3.2 ± 4.5	0-9
6: Feeder Assembly	9.3 ± 8.4	0-24	3.8 ± 6.5	0-15	20.6 ± 19.8	0-53	7.1 ± 13.4	0-33
7: Ammo Can Carry	5.6 ± 7.6	0-24	1.6 ± 2.6	0-6	1.7 ± 1.8	0-4	2.1 ± 3.7	0-9
8: Load TOW Missile	4.1 ± 8.1	0-24	1.0 ± 1.4	0-3	2.7 ± 4.6	0-12	0.6 ± 0.9	0-2

Table 18 lists the prevalence of volunteers who had experienced performing the physically demanding tasks of the 19D MOS in both training and deployed environments, as well as the prevalence of those who believed that each task standard was reasonable. All senior enlisted 19D volunteers agreed that the grenade throw task was not reasonable based on the standard. Volunteers indicated that Soldiers should be able to throw the grenade; however, they would be allowed to drop their gear if necessary. They also agreed that filling sandbags would be conducted on a forward operating base without gear rather than in an observation position. Additional physically demanding tasks identified by these volunteers included: changing tires on a Caiman, vehicle recovery, carrying and mounting the Long Range Advance Scout Surveillance

System (LRAS3), changing track on a BFV, changing tires on a Stryker and carrying the Mark 19 grenade launcher (MK 19).

Table 18. Prevalence of volunteers in the 19D MOS who performed each task in both deployed and training environments and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=8)			Senior Enlisted (E6-E7; n=7)		
	% Deployed at least once: 62.5 (5)			% Deployed at least once: 100 (7)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (5)	100.0 (8)	100.0 (8)	100.0 (7)	100.0 (7)	100.0 (7)
2: Employ Hand Grenades	0.0 (0)	87.5 (7)	100.0 (8)	85.7 (6)	100.0 (7)	0.0 (0)
3: Fill Sandbags	80.0 (4)	100.0 (8)	100.0 (8)	100.0 (7)	100.0 (7)	0.0 (0)
3: Carry Sandbags	80.0 (4)	100.0 (8)	100.0 (8)	100.0 (7)	100.0 (7)	100.0 (7)
4a: Casualty Drag	20.0 (1)	87.5 (7)	100.0 (8)	71.4 (5)	100.0 (7)	100.0 (7)
4b: BFV Casualty Evacuation	40.0 (2)	87.5 (7)	100.0 (8)	71.4 (5)	100.0 (7)	100.0 (7)
5: 25mm Barrel Install	40.0 (2)	100.0 (8)	100.0 (8)	42.9 (3)	100.0 (7)	100.0 (7)
6: Feeder Assembly	40.0 (2)	100.0 (8)	100.0 (8)	42.9 (3)	100.0 (7)	100.0 (7)
7: Ammo Can Carry	40.0 (2)	100.0 (8)	100.0 (8)	42.9 (3)	100.0 (7)	100.0 (7)
8: Load TOW Missile	40.0 (2)	75.0 (6)	100.0 (8)	42.9 (3)	100.0 (7)	100.0 (7)

Armor Crewman (19K)

A total of 16 Soldiers participated in the Armor Crewman (19K) focus group interviews. The 19K junior enlisted focus group (n=8) consisted of one PVT, one PFC, three SPCs and three SGTs, while the senior enlisted focus group (n=8) consisted of

five SSGs and three SFCs. The mean age (years), time in the military (years), time in their current MOS (years) and total time spent deployed in their current MOS (years) for each focus group are reported in Table 19. Soldiers in the senior enlisted focus group were older (34.4 ± 4.0 vs. 22.9 ± 2.9, $p<0.001$), had spent more time in the military (14.5 ± 3.6 vs. 3.9 ± 2.9, $p<0.001$), as well as in their current MOS (13.8 ± 3.1 vs. 3.9 ± 2.9, $p<0.001$) and deployed (39.8±19.5 vs. 13.8±10.5, $p=0.005$), than Soldiers in the junior enlisted focus group. Deployment locations for all Soldiers who participated in the 19K focus groups included Iraq, Kuwait, Bosnia and Saudi Arabia.

Table 19. Armor Crewman (19K) focus group volunteer demographics

	All Volunteers	Junior Enlisted (E1-E5; n=8)	Senior Enlisted (E6-E7; n=8)
Age, years	28.6 ± 6.8	22.9 ± 2.9*	34.4 ± 4.0
Time in Military, years	9.2 ± 6.3	3.9 ± 2.9*	14.5 ± 3.6
Time in MOS, years	8.8 ± 5.8	3.9 ± 2.9*	13.8 ± 3.1
Time Deployed in MOS, years	2.2 ± 1.7	1.2 ± 0.9*	3.3 ± 1.6

*Data are presented as mean ± SD and were analyzed by independent samples t-test with $p<0.05$ considered statistically significant. *Junior enlisted significantly different from senior enlisted.*

Table 20 shows the average (±SD) number of times volunteers reported performing each of the tasks specific to the 19K MOS (Tasks 17-20) and common to other Combat Arms MOSs (Tasks 1-4a) each year in both training and deployed environments. Soldiers in the junior enlisted focus group reported the most frequently performed tasks in training environments were: 1) load the 120mm main gun (load the main gun); 2) mount the M2 .50 caliber machine gun on an Abrams tank; and 3) and foot march. They also reported that the foot march was the most frequently performed task in deployed environments. Soldiers in the senior enlisted focus group reported that the most frequently performed tasks in both training and deployed environments are 1)

foot march; 2) mount the M2 .50 caliber machine gun receiver on an Abrams tank; and 3) stow ammunition on an Abrams tank (stow ammo).

Table 20. The frequency with which volunteers in the 19K MOS performed, in both training and deployed environments, the critical tasks both specific to the 19K MOS and common to all Combat Arms MOSs.

Task	Junior Enlisted (E1-E5; n=8)				Senior Enlisted (E6-E7; n=8)			
	Training (# of times/year)		Deployed (# of times/tour)		Training (# of times/year)		Deploy (# of time	
	Frequency	Range	Frequency	Range	Frequency	Range	Frequency	
1: Foot March	12.5 ± 7.5	5-25	213.0 ± 141.0	87-365	16.4 ± 21.8	0-54	68.1 ± 115.0	
2: Employ Hand Grenades	1.1 ± 1.0	0-3	0.9 ± 2.0	0-5	0.6 ± 0.4	0-1	0.7 ± 0.6	
3: Fill and Carry Sandbags	2.5 ± 3.2	0-9	10.6 ± 20.1	0-50	1.0 ± 1.8	0-5	0.5 ± 1.0	
4a: Casualty Drag	5.2 ± 3.0	1-10	0.5 ± 0.5	0-1	3.2 ± 2.0	1-6	1.4 ± 1.2	
17: Mount .50 Caliber Machine Gun	13.5 ± 11.6	3-38	2.5 ± 4.3	0-10	15.7 ± 16.1	1-50	109.0 ± 114.0	
18: Stow Ammo	5.5 ± 3.9	3-13	6.6 ± 9.6	0-22	16.1 ± 12.8	1-38	33.0 ± 39.1	
19: Load the Main Gun	19.5 ± 16.6	0-50	13.7 ± 32.5	0-80	11.9 ± 13.7	1-38	15.8 ± 10.1	
20: Abrams Casualty Evacuation	2.7 ± 1.5	1-5	0.7 ± 1.0	0-3	2.7 ± 2.0	1-6	0.9 ± 0.5	

Table 21 displays the prevalence of volunteers who had experienced performing the physically demanding tasks of the 19K MOS in both training and deployed environments, as well as the prevalence of those who believed each task standard was reasonable. Senior enlisted 19K volunteers agreed that the minimum standard for the foot march task was unreasonable as written and that this task is not commonly performed in the 19K MOS. However, when tactical movements are performed, the distance is typically between 8 and 10 kilometers and is only performed in training environments. Additionally, 19K volunteers reported they would carry the Improved Outer Tactical Vest (IOTV), camelback and weapon during a foot march rather than a ruck sack. Additional physically demanding tasks identified by these volunteers included

tank recovery, lifting and mounting tires for the Caiman, changing track on a tracked vehicle and lift and carry the sprocket carrier.

Table 21. Prevalence of volunteers in the 19K MOS who performed each task in both deployed and training environments and prevalence of those who believed the standard for each task was reasonable as written.

	Junior Enlisted (E1-E5; n=8)			Senior Enlisted (E6-E7; n=8)		
	Deployed at least once: 75 (6)			Deployed at least once: 100 (8)		
Task	Deployed %(n)	Training %(n)	Reasonable %(n)	Deployed %(n)	Training %(n)	Reasonable %(n)
1: Foot March	100.0 (6)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)	0.0 (0)
2: Employ Hand Grenades	33.3 (2)	87.5 (7)	100.0 (8)	75.0 (6)	87.5 (7)	100.0 (8)
3: Fill Sandbags	33.3 (2)	75.0 (6)	100.0 (8)	37.5 (3)	75.0 (6)	100.0 (8)
3: Carry Sandbags	33.3 (2)	75.0 (6)	100.0 (8)	37.5 (3)	75.0 (6)	100.0 (8)
4a: Casualty Drag	50.0 (3)	100.0 (8)	100.0 (8)	87.5 (7)	100.0 (8)	100.0 (8)
17: Mount .50 Caliber Machine Gun	83.3 (5)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)
18: Stow Ammo	50.0 (3)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)
19: Load the Main Gun	33.3 (2)	87.5 (7)	100.0 (8)	100.0 (8)	100.0 (8)	100.0 (8)
20: Abrams Casualty Evacuation	50.0 (3)	100.0 (8)	100.0 (8)	87.5 (7)	100.0 (8)	100.0 (8)

DISCUSSION

Infantryman (11B)

Soldiers who participated in both of the Infantryman (11B) focus groups reported having at least some experience completing each task in training and/or deployed environments. Both on the questionnaire and during the actual interviews, Soldiers in both the junior and senior enlisted groups reported Task 1: conduct tactical movement, Task 9: move over, through or around obstacles and Task 10: move under direct fire as being the most frequently performed physically demanding tasks. Interestingly, Soldiers in the junior enlisted group reported either never performing or infrequently performing Task 11: prepare a dismounted TOW missile firing position. However, when asked about this task during the interviews, one to two Soldiers from each group reported having experience performing this task in training, as well as during deployment. Therefore, the task is performed occasionally and should still be included in future iterations of this project.

Soldiers in the junior enlisted 11B focus group interview agreed that all of the tasks and minimum standards identified by the SMEs from TRADOC were reasonable as written. The Soldiers in the senior enlisted 11B focus group interview also agreed that all of the tasks were reasonable, except for Task 12: engage targets with a .50 caliber M2 machine gun. These volunteers stated that this should not necessarily be considered when developing performance standards for the MOS because they do not typically carry the .50 caliber M2 machine gun and, when they do carry it, it is disassembled. However, they did agree that any Soldier entering the 11B MOS should

be capable of carrying the weight of the .50 caliber M2 machine gun (153 lb, but prorated to 76.5 lb when carried by two Soldiers).

When asked to identify any additional physically demanding tasks typically performed in the 11B MOS, Soldiers in both groups identified moving over terrain at high altitudes, carrying a casualty on a litter and carrying a machine gun for long distances and/or long periods of time. However, since the foot march was already identified by TRADOC and it would be difficult to simulate a high altitude environment, this was not added to the list of potential tasks. Furthermore, carrying a casualty on a litter was not added to the list of additional tasks because it was considered to be less difficult than Task 4a: drag a casualty to immediate safety. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be representative of the range of tasks performed by the 11B MOS.

Infantryman Indirect Fire (11C)

Soldiers who participated in the Infantryman Indirect Fire (11C) focus group interviews reported having some experience completing each task in training and/or deployed environments. On both the questionnaire and during the actual interviews, Soldiers in both groups identified Task 1: conduct tactical movement, Task 9: move over, through or around obstacles and all the mortar tasks (Tasks 13-16) as the most frequently performed tasks.

All Soldiers in the junior and senior enlisted focus groups agreed the tasks and minimum performance standards identified by the SMEs from TRADOC were reasonable as written and should be considered when developing performance standards for this MOS. When asked to identify any additional physically demanding

tasks typically performed in the 11C MOS, Soldiers in both groups listed and described completing a 24km foot march while carrying an 81mm mortar, as well as moving/breaking mortar rounds. Each box of rounds weighs approximately 70 lb, and they are typically expected to break down 200 to 300 rounds each time the task is performed. Although the SMEs at TRADOC found the 24-km foot march with an 81mm mortar to be a load carriage task above the minimum acceptable standard for an 11C Soldier, it was acknowledged that leader decision on equipment carried depends on many unpredictable factors, such as mission parameters, enemy, terrain and troops available. The SMEs also found that moving/breaking mortar rounds is a difficult task to define, as it is considered a team task, does not have mission/scenario-specific time requirements and the rounds in the boxes weigh 35 lb, which is lighter than equipment handled in the other physically demanding job tasks already identified. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be representative of the critical tasks for the 11C MOS.

Combat Engineer (12B)

Soldiers who participated in the Combat Engineer (12B) focus group interviews reported having some experience completing each task in training and/or deployed environments. On both the questionnaire and during the actual interviews, Soldiers in both 12B focus groups identified Task 1: conduct a tactical movement and Task 7: load 25mm HEI-T ammunition cans on a BFV as the most frequently performed tasks. Interestingly, on the questionnaires, Soldiers in both groups reported that they either rarely (<1 time per year) or never perform Task 30: assist with the construction of a Bailey bridge or Task 31: load and unload the Volcano. During the actual interviews,

Soldiers in both groups maintained that they never or rarely performed either task in deployed environments. However, Soldiers in both groups reported completing Tasks 30 and 31 in training.

Soldiers in both focus groups agreed that the majority of the tasks and standards provided by TRADOC were reasonable as written. However, all of the Soldiers in the junior enlisted focus group felt the standards for Task 7: load 25mm HEI-T ammunition cans on a BFV and Task 30: assist with the construction of a Bailey bridge were not reasonable as written. For Task 7, volunteers reported that 5 to 10 cans per Soldier may be more realistic than 30 cans, as they do not typically perform this as an individual task. Soldiers in the senior enlisted focus group all agreed that Task 3: prepare a fighting position (fill sandbags) was also unreasonable as written. They reported that it usually takes longer than 52 minutes to fill 26 sandbags.

When asked to identify any additional physically demanding tasks typically performed in the 12B MOS, Soldiers in both groups listed and described picket pounding, detecting mines, carrying a tow bar and changing tires on wheeled vehicles. These volunteers reported that picket pounding should definitely be considered when developing performance standards for the 12B MOS because it is a lengthy and exhausting task, one of the most difficult they are expected to perform, requiring 20 to 30 minutes of continuous pounding (approximately 15 pickets). This issue was raised with a group of 12B SMEs, but the experts did not propose a set of task standards and conditions such that the task was testable. The SMEs at TRADOC found that picket pounding and detecting mines are difficult tasks to define, as they are team tasks and do not have mission/scenario-specific time requirements. Carrying a tow bar and

changing tires on wheeled vehicles were identified by the SMEs at TRADOC as being maintenance tasks that Soldiers in the 12B MOS are not expected to perform. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be the minimally acceptable standards for the 12B MOS.

Cannon Crewman (13B)

Soldiers participating in both of the Cannon Crewman (13B) focus group interviews reported having experience performing each task identified by the SMEs from TRADOC in training and/or deployed environments. On the questionnaire, Soldiers in the senior enlisted focus group identified Task 22: emplace 155mm Howitzer/lift wheel assembly and Task 23: displace 155mm Howitzer/recover spade trail arm and blade as the most frequently performed physically demanding tasks. During the actual focus group interview, these volunteers stated that they frequently perform all tasks on the list. The inconsistency in reporting may be attributed to the Soldiers not entirely comprehending the tasks as they were written on the questionnaire. Showing them the task descriptions and standards during the focus group interview may have improved their understanding and, therefore, improved the accuracy of their responses.

On both the questionnaire and during the actual interview, Soldiers in the junior enlisted focus group identified Task 21: transfer ammunition with an M992 FAASV as the most frequently performed task in both training and deployed environments. They then reported that they had experience completing all of the other tasks in training environments but never during deployment. The low frequency of performance of these tasks during deployment may be due to the fact that only one of the eight volunteers in

the junior enlisted focus group had deployment experience. In addition, the recent deployment missions may not involve Field Artillery operations.

Soldiers in both focus groups agreed that the majority of the tasks and standards provided by TRADOC were reasonable as written. When asked to identify any additional physically demanding tasks performed in the MOS, the volunteers listed and described repairing broken tracks on tracked vehicles, performing multiple round fire missions, opening the breech of a 155mm Howitzer and mounting the .50 caliber machine gun onto a Paladin. The SMEs at TRADOC reported that repairing broken tracks is a maintenance task that Soldiers in the 13B MOS are not expected to perform. They also reported that Task 22: emplace 155 Howitzer/lift wheel assembly and Task 23: displace 155 Howitzer/lift spade trail arm and blade are individual tasks within fire missions and that performing multiple round fire missions is a skilled and choreographed team task that cannot reasonably be simulated. Furthermore, opening the breech of a 155mm Howitzer and mounting the .50 caliber onto a Paladin were determined to be less physically demanding than Task 21: transfer ammunition with an M992 FAASV (M795 ME Rounds). Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be the minimally acceptable standards for the 13B MOS.

Fire Support (13F)

Soldiers who participated in both of the Fire Support (13F) focus group interviews reported having experience completing each task identified by the SMEs from TRADOC in training and/or deployed environments. Volunteers identified Task 1: conduct a tactical movement, Task 3: fill and carry sandbags and Task 25: establish an

observation point as the most frequently performed tasks. They also identified Task 26: prepare an M1200 Armored Knight Vehicle (AKV) for Operation (install/remove fire support sensor system or FS3) as being the least frequently performed task.

Soldiers in both focus groups agreed that the majority of the tasks and standards provided by TRADOC were reasonable as written. Volunteers did not identify any additional physically demanding tasks that should be considered when developing performance standards for the 13F MOS. However, they did report that Task 25: establish an observation point required carrying a LLDR (~20 lb) in a pack while wearing a full kit and assault pack is more difficult than Task 1: conduct a tactical movement. The volunteers all felt strongly that every 13F should be able to perform this additional task. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be the minimally acceptable standards for the 13F MOS

Cavalry Scout (19D)

Soldiers who participated in both of the Cavalry Scout (19D) focus group interviews reported having experience performing most of the physically demanding 19D tasks in training and/or deployed environments. Both groups identified Task 1: conduct a tactical movement as the most frequently performed task both in training and while deployed. The volunteers agreed with most of the task standards as written, but the senior enlisted 19D volunteers did not think it necessary to state neither the throwing method nor the required uniform when throwing a grenade. In addition, similar to the Combat Engineers, they reported that the time allotted for sandbag filling was too short. The Soldiers identified several vehicle maintenance tasks, carrying heavy pieces of equipment (MK19 and LRAS3), tank recovery, tire and track changes and carrying

tools, as additional physically demanding tasks for consideration. The SMEs at TRADOC reported that vehicle maintenance tasks, including hanging tires on a Caiman, vehicle recovery, changing track on a BFV and changing tires on a Stryker, were not considered essential job tasks for the 19D. Carrying and mounting the LRAS3 was found to be similar to Task 26: Prepare an M1200 AKV for Operations, which involves mounting a fire support sensor system (FS3) on an AKV. Although this is a 13F task, it was found to have a pro-rated weight of approximately 60 lb, similar to the LRAS3, and is most likely less physically demanding than Task 4b: remove a casualty from a vehicle, which has a pro-rated weight of 103.5 lb. Also, Task 1: conduct a tactical movement, rather than carrying the MK19, is considered the minimally acceptable standard for carrying a weapon in this MOS. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be the minimally acceptable standards for the 19D MOS.

Armor Crewman (19K)

Based on the written questionnaire, the task most frequently performed by the 19K junior and senior enlisted focus group volunteers in both training and deployed environments is Task 1: conduct a tactical movement. However, the volunteers in the senior enlisted focus group did not agree with the task standards. They reported that Armor Crewmen rarely perform a foot march while deployed, and when this task is performed during training, the distance is shorter; and the uniform would include only the IOTV, a camelback and a weapon (no additional pack). The SMEs at TRADOC found that the additional physically demanding tasks identified, which included tank recovery, lifting and mounting tires for the Caiman, changing track on a tracked vehicle

and lift and carry the sprocket carrier, are all maintenance tasks that 19K Soldiers are not expected to perform to meet the minimal physical standard for the MOS. Therefore, the physically demanding job tasks originally identified by TRADOC are considered to be the minimally acceptable standards for the 19K MOS.

CONCLUSION

Overall, the Soldiers present for each of the focus group interviews discussed in this technical report had experience completing the majority of the critical physically demanding tasks identified by SMEs from TRADOC. These results suggest that Soldiers currently serving in these MOSs perform most of these tasks either in training or while deployed and that they are relevant to include as part of this project. Soldiers in each focus group generally agreed that the minimum acceptable standards for each task were reasonable as written by TRADOC. The volunteers were also able to identify and describe additional physically demanding tasks that they perform regularly and believe should be considered when developing physical performance standards for their respective MOSs. Many of these tasks involved vehicle maintenance, such as changing tires and track on vehicles and carrying tools needed for equipment maintenance. SMEs at TRADOC identified these additional tasks as either equally or less physically demanding than those already identified for the MOS. They also determined that some of the tasks did not represent minimally acceptable standards and were too difficult to define in the context of the job, as leader decisions are often based on unpredictable factors, such as mission requirements, enemy, terrain and the availability of troops. Therefore, it is concluded that the 32 tasks originally identified by

TRADOC are the representative physically demanding common and/or essential job tasks of the seven Combat Arms military occupational specialties.

RECOMMENDATIONS

Based on the outcomes of these focus group interviews, the tasks that were identified by the SMEs from TRADOC are reasonable as written and should be included in any future components of this project. Finally, the additional physically demanding tasks identified by Soldiers in each MOS were presented to the SMEs at TRADOC for consideration. Questions regarding how these tasks are performed, the equipment worn/carried while completing them, frequency of performance and overall difficulty should be included in a supplemental section of the JAQs sent to Soldiers in each Combat Arms MOS.

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Appendix A: Questionnaires Completed by Volunteers prior to each Focus Group Interview

MOS – 11B

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	***Training (Y/N)***	***# of times***	***Deployed (Y/N)***	***# of times***
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
4b	*Remove casualty from a vehicle (mounted)*				
5	*Lift, carry, and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
8	*Load TOW Missile Launcher on BFV*				
9	*Move Over, Through, or Around Obstacles (2m)*				
10	*Move Under Direct Fire (3-5 sec rushes)*				
11	*Prepare Dismounted TOW Firing Position*				
12	*Engage Targets with a .50 caliber M2 Machine Gun*				

MOS – 11C

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	**Training (Y/N)**	**# of times**	**Deployed (Y/N)**	**# of times**
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
5	*Lift, carry and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
8	*Load TOW Missile Launcher on BFV*				
9	*Move Over, Through, or Around Obstacles (2m)*				
10	*Move Under Direct Fire (3-5 sec rushes)*				
13	*Lay a 120mm Mortar-Emplace Base Plate*				
14	*Lay a 120mm Mortar-Emplace Cannon*				
15	*Lay a 120mm Mortar for Deflection and Elevation*				
16	*Fire a Mortar (lift and hold round, place in tube)*				

MOS – 12B

Demographic Data: Please complete the following items.

Subject ID_____ Birthdate_____ Rank_____
Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	**Training (Y/N)**	**# of times**	**Deployed (Y/N)**	**# of times**
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
4b	*Remove casualty from a vehicle (mounted)*				
5	*Lift, carry, and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
27	*Carry and emplace the APOBS*				
28	*Carry and emplace the H6 cratering charge*				
29	*Carry the Modular-Pack Mine System*				
30	*Lift and carry rocking roller for Bailey Bridge*				
31	*Load and install a Volcano*				

MOS – 13B

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each.

		Performed During			
Master Task Number/Master Task		**Training (Y/N)**	**# of times**	**Deployed (Y/N)**	**# of times**
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
21	*Transfer ammunition with an M992 Carrier (load M795 HE rounds)*				
22	*Emplace 155mm Howitzer (lift wheel assembly)*				
23	*Displace 155mm Howitzer(recover spade trail arm and blade)*				
24	*Set up Gun Laying Positioning System (GLPS)*				

MOS – 13F

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	***Training (Y/N)***	***# of times***	***Deployed (Y/N)***	***# of times***
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
4b	*Remove a casualty from a wheeled vehicle (mounted)*				
5	*Lift, carry, and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
8	*Load TOW Missile Launcher on BFV*				
25	*Establish observation point [carry AN/PED-1 (LLDR)]*				
26	*PrepareM1200 Armored Knight Vehicle for operation [Install Fire Support Sensor System (F3S)]*				

MOS – 19D

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	***Training (Y/N)***	***# of times***	***Deployed (Y/N)***	***# of times***
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
4b	*Remove casualty from a vehicle (mounted)*				
5	*Lift, carry, and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
8	*Load TOW Missile Launcher on BFV*				

MOS – 19K

Demographic Data: Please complete the following items.

Subject ID_____ Age_____ Rank_____ Race_____

Total time of military service (years) _____

Total time in current MOS (years) _____

Total time deployed in current MOS (months) _____

Deployment locations:_____ _____ _____

Directions: Please indicate whether you have performed these tasks in training or while deployed and the number of times you have performed them in each setting.

		Performed During			
	Master Task Number/Master Task	***Training (Y/N)***	***# of times***	***Deployed (Y/N)***	***# of times***
1	*Conduct a tactical movement*				
2	*Employ hand grenades*				
3	*Prepare a fighting position*				
4a	*Drag casualty to safety (dismounted)*				
5	*Lift, carry, and install the barrel of a 25mm gun*				
6	*Remove the feeder assembly of a 25mm gun*				
7	*Load 25mm HEI-T tracer ammunition cans*				
8	*Load TOW Missile Launcher on BFV*				
17	*Mount .50 caliber M2 machine gun receiver on Abrams Tank*				
18	*Stow Ammunition on an Abrams Tank*				
19	*Load the 120mm Main Gun*				
20	*Remove a casualty from an Abrams Tank (mounted)*				

Appendix B: PowerPoint Slides Outlining the Tasks Common to all the Combat Arms MOS

Task 1: Conduct Tactical Movement
11B, 11C, 19D, 19K, 13F, 12B

Task: Conduct a 24 Kilometer Tactical Movement

Condition:
•Wearing 94-110 lbs of equipment evenly distributed across the entire body

Standard:
• Complete in 22-24 hours moving at a 3-4 km per hour pace.

• Soldiers do not have to complete the entire 24 km in a single segment as long as they complete the entire distance in less than 24 hours.

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 2: Employ Hand Grenades
11B, 11C, 19D, 19K, 13B, 13F, 12B

Task: Employ 1 lb Hand Grenades

Condition:
- Wearing an 80 lb Fighting Load (no weapon)
- Given two M69 Practice Hand Grenades

Standard:
- Throw at least one Hand Grenade 30 meters

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 3: Prepare a Fighting Position (Fill and Emplace Sandbags)
11B, 11C, 19D, 19K, 13B, 13F, 12B

Task: Fill Sandbags

Condition:
- Wearing an 80 lb Fighting Load (no weapon)
- Given an entrenching tool and 26 empty sandbags

Standard:
- Fill 26 empty sandbags 55 to 60% full in 52 minutes

Task: Carry / Emplace Sandbags

Condition:
- Wearing an 80 lb Fighting Load (no weapon)
- Given 26 sandbags weighing 30-40 lbs.

Standard:
- Lift and carry 26 sandbags 10m and build a fighting position within 26 minutes.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 4a: Drag a Casualty to Immediate Safety (Dismounted)
11B, 11C, 19D, 19K, 13B, 13F, 12B

Task: Lift, drag and carry a casualty to immediate safety

Condition:
- Wearing a 76-91 lb Fighting Load
- Given a casualty (~188 lbs) with an 83 lb Fighting Load for a total weight of ~271 lbs

Standard:
- Casualty dragged 15 m as quickly as possible.

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 4b: Remove a Casualty from a Vehicle (Mounted)
11B, 19D, 13F, 12B

Task: Remove a Casualty from a Vehicle; Three Soldier Task

Condition:
- Wearing a 68 lb Fighting Load (no weapon)
- Given a casualty weighing ~207 lbs (69 lbs/Solider)
- Given a Bradley Fighting Vehicle or Buffalo
- Two Soldiers on top, one Soldier inside vehicle

Standard:
- Pull a casualty from the commander's seat through the turret (height of 1.5m) of a wheeled vehicle as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 5: Maintain 25mm Gun on a BFV – Install the Barrel
11B, 19D, 13F, 12B

Task: Install an M242 25mm Barrel on the M242 Gun on a BFV; Two Soldier Task

Condition:
- Wearing a 91 lb Fighting Load
- Given a BFV with an M242 Gun and an M242 25mm Barrel

Standard: Barrel weighing 107 lbs (53.5 lbs/Soldier) is carried 25 m, ~~and~~ lifted 1 m onto BFV hull and mounted onto the gun as quickly as possible.

19D Standard: Barrel weighing 107 lbs is carried 3 m, lifted onto BFV hull and mounted as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 6: Maintain 25mm Gun on BFV – Remove Feeder Assembly
11B, 19D, 13F, 12B

Task: Remove the Feeder Assembly on a BFV

Condition:
- In a seated position.
- Wearing 30-44 lbs of equipment.
- Given a BFV with an M242 Gun and an M242 Feeder Assembly.

Standard:
- M242 Feeder Assembly (59 lbs) is removed from the M242 Gun on a BFV and placed on the floor in the rear of the vehicle as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 7: Load 25mm H-EIT Ammunition Can on BFV
11B, 19D, 13F, 12B

Task: Load 30 25mm High-Explosive Incendiary Tracer (H-EIT) Ammo Cans onto a BFV

Condition:
- Wearing a 64–80 lb Fighting Load
- Given a BFV and 30 Ammo Cans

Standard:
- 30 Ammunition Cans (45 lbs each) are lifted and carried 15 m and loaded onto a BFV as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 8: Load the TOW Missile Launcher on BFV
11B, 19D

Task: Load the TOW Missile Launcher on a BFV

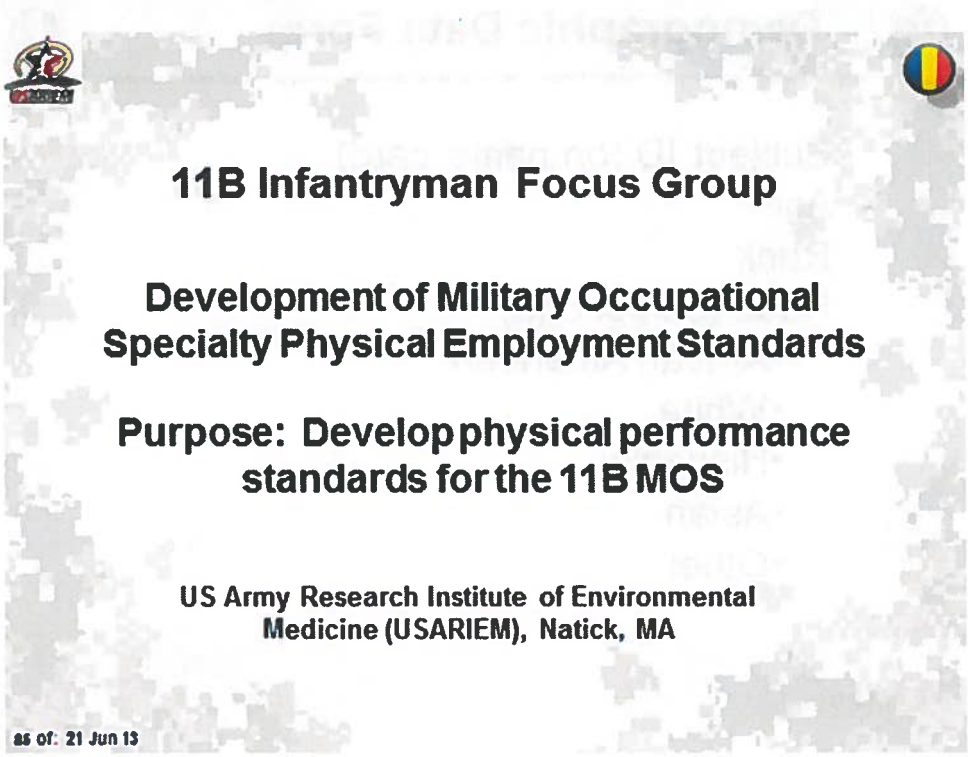
Condition:
- Wearing a 64–80 lb Fighting Load (no weapon)
- Given a BFV with a TOW Missile Launcher and 2 TOW-2B Aero Missiles

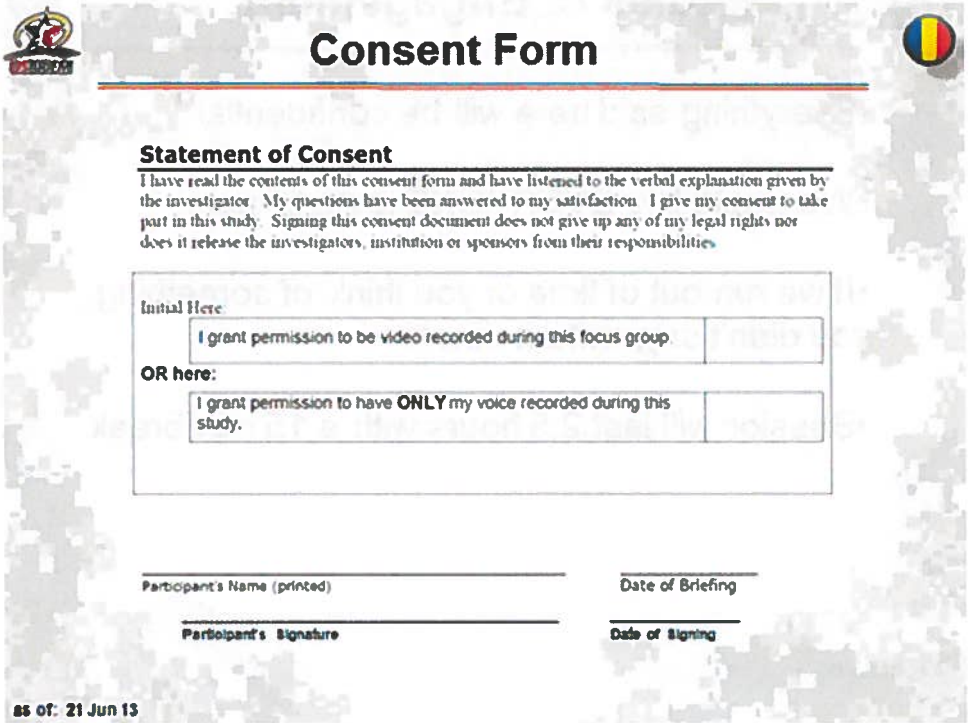
Standard:
- Load two TOW-2B Aero Missiles (65 lbs each) into a BFV Mounted TOW Weapon System as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Appendix C: PowerPoint Slides Outlining the Physically Demanding Tasks Specific to each of the Combat Arms MOS





Demographic Data Form

Subject ID (on name card)
Age
Rank
Race (select one)
- African American
- White
- Hispanic
- Asian
- Other

as of: 21 Jun 13

Rules of Engagement:

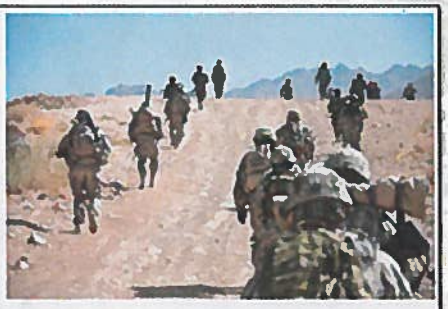
- Everything said here will be confidential
- We would like EVERYONE to participate
- If we run out of time or you think of something you didn't say, write it down.
- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3
	19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

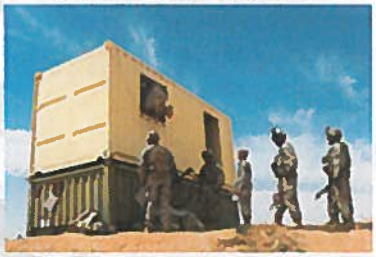
100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Pwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic Insert set with Side Plate Carrier	7.60

(Uniform)	12.4 lbs
+ (PPE)	63.03 to 77.60 lbs*
(Fighting Load)	75.43 to 90.00 lbs*

as of: 21 Jun 13

Task 9: Move Over, Through, or Around Obstacles
11B, 11C



Task: Move Over, Through, or Around Obstacles

Condition:
- Wearing 76–91 lbs of equipment.
- Given a 2m Vertical Obstacle

Standard:
- Scale/climb over 2m high obstacle as quickly as possible with assistance from other squad members (if needed).
- If necessary, equipment may be removed during task, but must be worn after obstacle is cleared.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 10: Move Under Direct Fire
11B, 11C

Task: Move Under Direct Fire (Rise from a Prone, Kneeling, or Crouched Position; Sprint 3 to 5 Seconds; Return to a Prone, Kneeling, or Crouched Position)

Condition:
- Wearing a 76–91 lb Fighting Load

Standard:
- Sprint 100 meters (in 3 to 5 second increments) as quickly as possible.

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 11: Prepare a Dismounted TOW Firing Position
11B

Task: Prepare a Dismounted TOW Firing Position

Condition:
- Wearing 64–80 lbs (no weapon)
- Given a TOW Missile Launcher
- Given 1 TOW 2B Missile located 15 m from dismounted TOW launcher.

Standard:
- Lift/Carry 1 TOW-2B Missile (weighing 65lbs) 15m and load into the TOW launcher as quickly as possible.

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 12: Engage Targets with a Caliber .50 M2 Machine Gun
11B

Task: Engage Targets with a .50 M2 Machine Gun; Two Soldier Task

Condition:
- Wearing 76–91 lbs uniform, weapon, and PPE
- Given a .50 M2 Machine Gun with Tripod

Standard:
- Lift and carry the .50 M2 Machine Gun with Tripod weighing 153 pounds (76.5 lbs/ Soldier) 10m as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

11C Infantryman Indirect Fire Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 11C MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

Consent Form

Statement of Consent

I have read the contents of this consent form and have listened to the verbal explanation given by the investigator. My questions have been answered to my satisfaction. I give my consent to take part in this study. Signing this consent document does not give up any of my legal rights nor does it release the investigators, institution or sponsors from their responsibilities.

Initial Here:

I grant permission to be video recorded during this focus group.	

OR here:

I grant permission to have **ONLY** my voice recorded during this study.	

Participant's Name (printed) _____ Date of Briefing _____

Participant's Signature _____ Date of Signing _____

as of: 21 Jun 13

Demographic Data Form

Subject ID (on name card)
Age
Rank
Race (select one)
- African American
- White
- Hispanic
- Asian
- Other

as of: 21 Jun 13

Rules of Engagement:

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- If we run out of time or you think of something you didn't say, write it down.
- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual/Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Fwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.65
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic Insert set with Side Plate Carrier	7.60

(Uniform)	12.4 lbs
+ (PPE)	63.03 to 77.60 lbs*
(Fighting Load)	75.43 to 90.00 lbs*

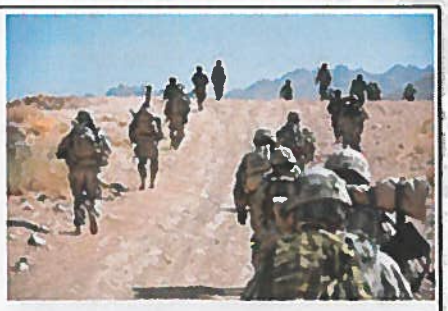
as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13

Task 9: Move Over, Through, or Around Obstacles
11B, 11C

Task: Move Over, Through, or Around Obstacles

Condition:
- Wearing 76–91 lbs of equipment.
- Given a 2m Vertical Obstacle

Standard:
- Scale/climb over 2m high obstacle as quickly as possible with assistance from other squad members (if needed).
- If necessary, equipment may be removed during task, but must be worn after obstacle is cleared.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 10: Move Under Direct Fire
11B, 11C

Task: Move Under Direct Fire (Rise from a Prone, Kneeling, or Crouched Position; Sprint 3 to 5 Seconds; Return to a Prone, Kneeling, or Crouched Position)

Condition:
- Wearing a 76–91 lb Fighting Load

Standard:
- Sprint 100 meters (in 3 to 5 second increments) as quickly as possible.

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 13: Lay a 120mm Mortar – Emplace Base Plate
11C

Task: Emplace the Base Plate of a 120mm Mortar; Two Soldier Task

Condition:
- Wearing a 76–91 lb Fighting Load
- Given a 120mm Mortar Base Plate located 25 meters from emplacement site

Standard:
- Lift and carry the 120mm Mortar Base Plate weighing 136 lbs (69 lbs/Soldier) 25m and emplace it as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 14: Lay a 120mm Mortar – Emplace Cannon
11C

Task: Emplace the Cannon of 120mm Mortar; Two Soldier Task

Condition:
- Wearing 76–91 lbs Fighting Load
- Given a 120mm Mortar Cannon located 25m from an emplaced 120mm Mortar Base Plate

Standard:
- Lift and carry the 120mm Mortar Cannon weighing 110 lbs (55 lbs/Soldier) a distance of 25 m.
- Insert the cannon into the base plate as quickly as possible

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 15: Lay a 120mm Mortar for Deflection and Elevation (Traverse)
11C

Task: Lay a 120mm Mortar for Deflection and Elevation; Two Soldier Task

Condition:
- Wearing a task specific uniform weighing 46 lbs
- Given a 120mm Mortar Cannon with site and bipod

Standard:
- Assistant gunner lifts the cannon and bi-pod (combined weight 183 lbs) and rotates it until the deflection is properly changed.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 16: Fire a 120mm Mortar
11C

Task: Fire a 120mm Mortar Soldier must Lift a Round and Place in cannon.

Condition:
- Wearing a task specific uniform weighing 46 lbs
- Given a 120mm Mortar and 5 120mm HE rounds

Standard:
- Five rounds (weighing 29lbs each) fired in 1 minute 15 seconds.
- First round is held above the cannon for 10 seconds before firing.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

12B Combat Engineer Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 12B MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

Consent Form

Statement of Consent

I have read the contents of this consent form and have listened to the verbal explanation given by the investigator. My questions have been answered to my satisfaction. I give my consent to take part in this study. Signing this consent document does not give up any of my legal rights nor does it release the investigators, institution or sponsors from their responsibilities.

Initial Here

I grant permission to be video recorded during this focus group.	

OR here:

I grant permission to have **ONLY** my voice recorded during this study.	

Participant's Name (printed) _____ Date of Briefing _____

Participant's Signature _____ Date of Signing _____

as of: 21 Jun 13

Demographic Data Form

Subject ID (on name card)
Age
Rank
Race (select one)
- African American
- White
- Hispanic
- Asian
- Other

as of: 21 Jun 13

Rules of Engagement:

- Everything said here will be confidential
- We would like EVERYONE to participate
- If we run out of time or you think of something you didn't say, write it down.
- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual/Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Fwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic insert set with Side Plate Carrier	7.60

(Uniform)	12.4 lbs
+ (PPE)	63.03 to 77.60 lbs*
(Fighting Load)	75.43 to 90.00 lbs*

as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

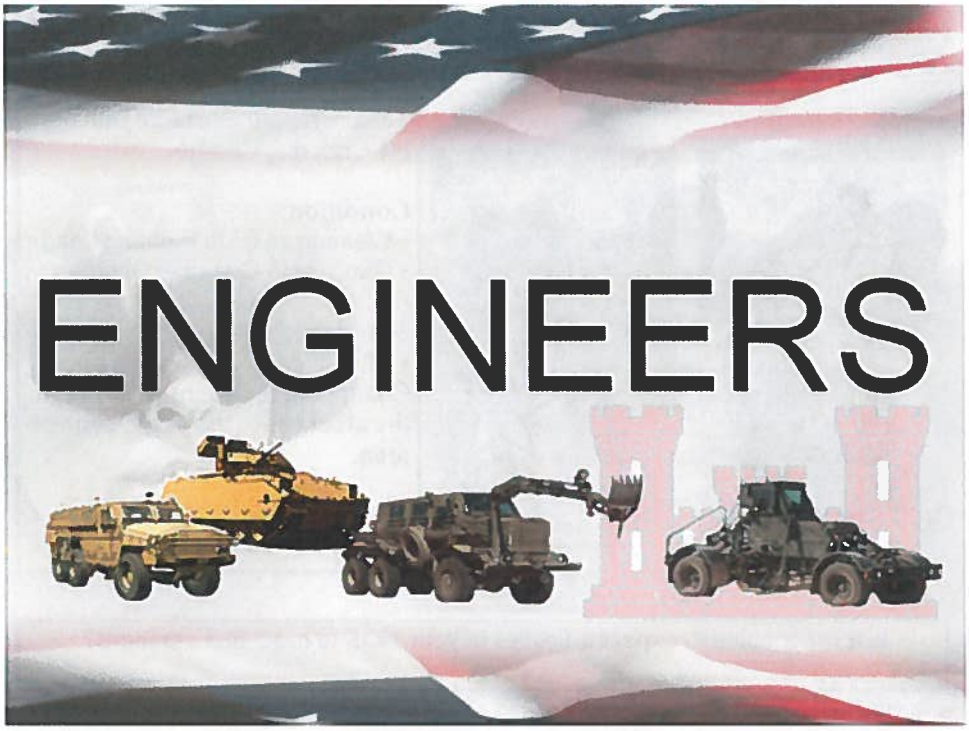
Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

19.0 lbs

Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13



Task 27: Quickly Create a Footpath Through Various Obstacles
12B

Task: Move from vehicle to Obstacle with Antipersonnel Obstacle Breaching System (APOBS); Two Soldier Task

Conditions:
- Wearing an 83 lb Fighting Load plus APOBS (60 lbs/Soldier), Total Weight: 143 lbs

Standard:
- Move APOBS 2 kilometers in 60 minutes

Terrain: Various

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 28: Prepare Obstacle with the H6 40 Pound Cratering Charge 12B

Task: Prepare Obstacle with the H4 Cratering Charge

Condition:
- Wearing an 83 lb Fighting Load
- Given 3 H6 Cratering Charges.

Standard:
- Lift and carry an H6 Cratering Charge (40 lbs each) 100 m from the stockpile to the emplacement area.

- Repeat a total of 3 times as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 29: Operate a Modular-Pack Mine System(MOPMS) 12B

Task: Two Soldier Task; Operate a Modular-Pack Mine System

Conditions:
- Wearing an 83 lbs Fighting Load
- Given a vehicle with a MOPMS

Standard: Lift and Carry the MOPMS weighing 160 lbs (80 lbs/Soldier) a distance of 100m from the vehicle to emplacement site as quickly as possible

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 30: Assist in the Construction of a Bailey Bridge
12B

Task: Two Soldier Task; Assist in the Construction of a Bailey Bridge

Condition:
- Wearing an 83 lb Fighting Load
- Given a Rocking Roller Template, Bridge Bearing, and a Rocking Roller

Standard:
- Lift and carry the Rocking Roller Template, Bridge Bearing and Rocking Roller a distance of 50 m as quickly as possible.

- Heaviest Lift is the 206 Pound Rocking Roller (103 lbs/Soldier).

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 31: Install a Volcano Mine System
12B

Task: Install a Volcano; Two Soldier Task

Conditions:
- Wearing a 16 lbs Fighting Load
- Given a Volcano (on the ground) and a cargo vehicle

Standard: As quickly as possible

Set up Volcano

Lift Beam Frame, two Tripod Assemblies and two Launcher Racks (2 Soldier lift ranging from 151-370 pounds) from ground, carry to the bed of the cargo vehicle and lift 2 meters in the air to give to the receiving team on the cargo vehicle.

Task	Max Payload Ind / Team (lb)	Max Distance (m)	Max Height (m)	Reps
Lift, receive, Install Beams	185 / 370	5	2	4
Lift, receive, Install Tripod Assembly	75.5 / 151	5	2	2
Lift, receive, Install Launcher racks	113 / 226	5	2	4

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

13B Cannon Crewman Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 13B MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

Consent Form

Statement of Consent

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Participant's Signature _____ Date of Signing _____

as of: 21 Jun 13

Demographic Data Form

Subject ID (on name card)
Age
Rank
Race (select one)
- African American
- White
- Hispanic
- Asian
- Other

as of: 21 Jun 13

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- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Fwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neckgroin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic Insert set with Side Plate Carrier	7.60

(Uniform)	12.4 lbs
+ (PPE)	63.03 to 77.60 lbs*
(Fighting Load)	75.43 to 90.00 lbs*

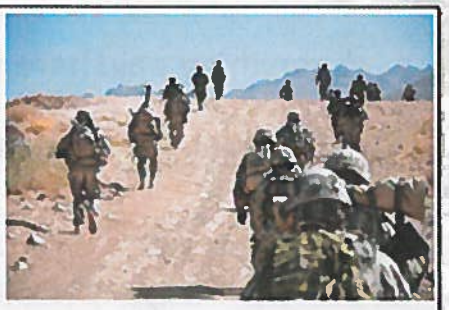
as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13

Task 21: Transfer Ammo with an M992 Carrier Ammunition Tracked (CAT) 13B

as of:

Task: Transfer Ammunition with an M992 Carrier Ammunition Tracked (CAT); Three Soldier Task

- A Soldier lifts and carries a round weighing 105 lbs a distance of 3 m to the CAT and hands to Soldier in CAT
- Soldier in CAT takes round and loads in the bustle rack
- A third Soldier will maintain security over watch at all times.

Conditions:
- Wearing mission specific equipment
- Given a M992 CAT and 90 x M795 / M107 HE Rounds 3 meters from CAT

Standard:
- 90 Rounds loaded onto CAT in 45 minutes

Is it reasonable to expect a Soldier in your MOS to meet this standard?

Task 22: Emplace a 155mm Howitzer / Lift Wheel Arm Assembly 13B

Task: Lift Wheel Arm Assembly; Two Soldier Task

Condition: Wearing / Carrying 83 lbs Fighting Load and given a 155mm Howitzer

Standard:
- Lift a 155mm Howitzer Lift Wheel Arm Assembly weighing 135 lbs (67.5 lbs/Soldier) from ground to emplacement position as quickly as possible

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 23: Displace a 155mm Howitzer / Recover Spade Trail Arm and Blade 13B

Task: Recover Spade Trail Arm and Blade; Two Soldier Task

Condition:
- Wearing an 83 lb Fighting Load
- Given a 155mm Howitzer

Standard:
- Lift a 155mm Howitzer Spade Trail Arm and Blade weighing 204 lbs (102 lbs/Soldier) to displacement position as quickly as possible

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

13F Fire Support Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 13F MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

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as of: 21 Jun 13

Demographic Data Form

Subject ID (on name card)
Age
Rank
Race (select one)
- African American
- White
- Hispanic
- Asian
- Other

as of: 21 Jun 13

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- We would like EVERYONE to participate
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- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual/Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Pwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic insert set with Side Plate Carrier	7.60

(Uniform) 12.4 lbs
+ (PPE) 63.03 to 77.60 lbs*
(Fighting Load) 75.43 to 90.00 lbs*

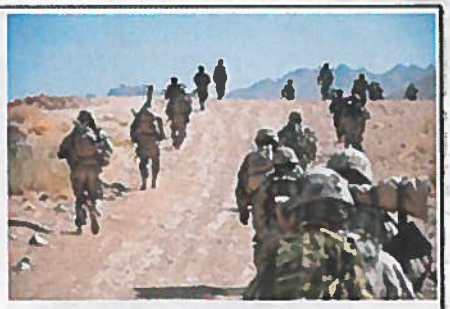
as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

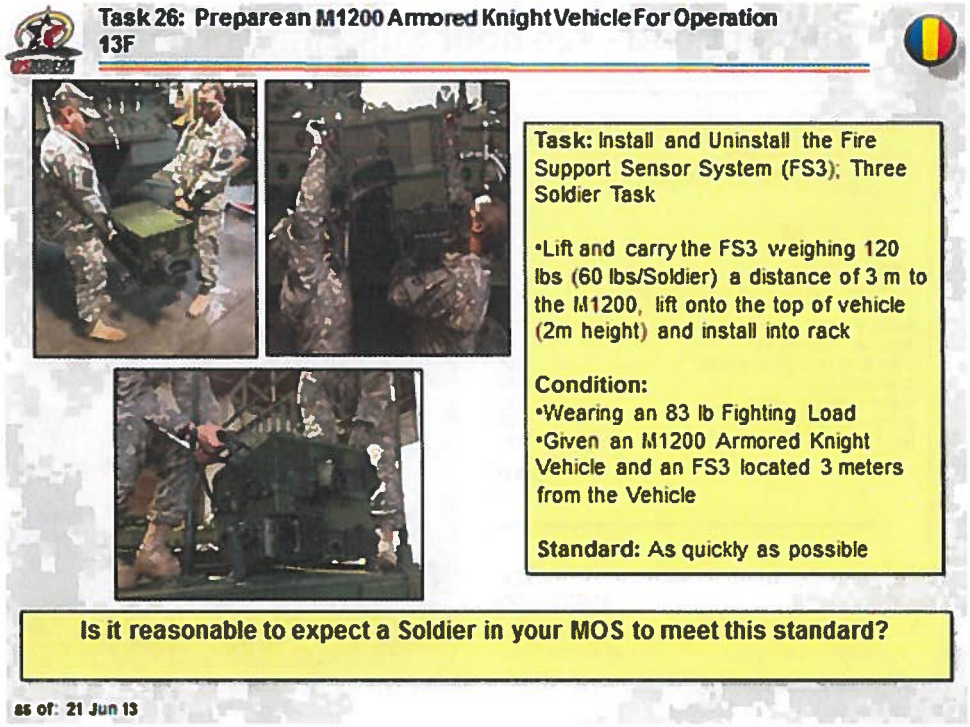
19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13


KING OF BATTLE
4020
Field Artillery


Task 26: Prepare an M1200 Armored Knight Vehicle For Operation
13F
Task: Install and Uninstall the Fire Support Sensor System (FS3); Three Soldier Task
•Lift and carry the FS3 weighing 120 lbs (60 lbs/Soldier) a distance of 3 m to the M1200, lift onto the top of vehicle (2m height) and install into rack
Condition:
•Wearing an 83 lb Fighting Load
•Given an M1200 Armored Knight Vehicle and an FS3 located 3 meters from the Vehicle
Standard: As quickly as possible
Is it reasonable to expect a Soldier in your MOS to meet this standard?
as of: 21 Jun 13

19D Cavalry Scout Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 19D MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

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- Other

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- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual/Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Fwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic Insert set with Side Plate Carrier	7.60

(Uniform) 12.4 lbs
+ (PPE) 63.03 to 77.60 lbs*
(Fighting Load) 75.43 to 90.00 lbs*

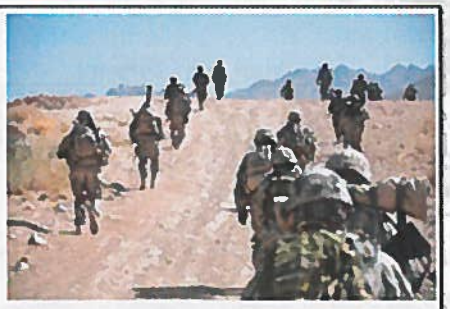
as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Field Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13

19K Armor Crewman Focus Group

Development of Military Occupational Specialty Physical Employment Standards

Purpose: Develop physical performance standards for the 19K MOS

US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA

as of: 21 Jun 13

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- Session will last 2.5 hours with a 15 min break

as of: 21 Jun 13

Soldier Load – Fighting Load

Uniform 12.4 lbs

Boots	5.00
ACU	3.20
Multi tool	0.50
Rigger Belt	0.50
Patches	0.49
Patrol Cap	0.48
ID Tags	0.38
Undershirt	0.35
Gloves	0.25

12.4 lbs

Eye Pro	0.25
Notebook	0.25
Drawers	0.20
Socks	0.20
Wrist Watch	0.19
Ear Plugs	0.13
Chapstick	0.01
ID Card	0.01

Personal Protective Equipment and Weapon (PPE) 63.03 to 77.60 lbs*

100 oz Hydration system (With Water)	7.10
Fighting Load Carrier	1.25
30 round magazine pouch (3 x 0.25)	0.75
Hand grenade pouch (2) with (2) M67 Fragmentation Grenades	1.86
Lensatic Compass w/case	0.27
Individual First Aid Kit (IFAK)	1.08
Mag light flashlight w/2 ea AA battery	0.24
Infrared signal beacon, PHOENIX w/Battery	0.70
Ballistic Knee/Elbow Pads	0.79
Visual Language Translator Card	0.01
Casualty Feeder Report/ Witness Statement	0.01
Advanced Combat Helmet (ACH)	3.25
Helmet Cover w/camouflage cover band	0.28
Night Vision goggle mounting plate	0.20

Ballistic Protection Goggles (ESS)	0.15
M4 Carbine w/fully loaded magazine	7.50
M68- CCO w/ battery	0.71
3 point sling	0.30
Back-Up Iron Sight	0.32
M-4 RAS & Fwd Pistol Grip	1.55
5.56mm Magazine with 30 rounds each (6 ea)	6.42
Sure Fire light w/ battery	0.50
PAQ-4C w/batteries	0.90
IOTV w/ neck/groin protector	11.69-19.66
Enhanced Small Arms Protective Inserts	7.60-14.20
Enhanced Side Ballistic Insert set with Side Plate Carrier	7.60

(Uniform)	12.4 lbs
+ (PPE)	63.03 to 77.60 lbs*
(Fighting Load)	75.43 to 90.00 lbs*

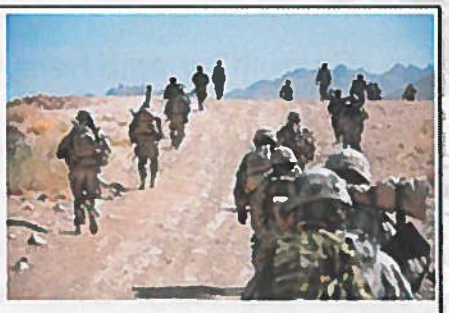
as of: 21 Jun 13

Soldier Load - <24 hour Sustainment Load

Sustainment Load Carried in Assault Pack

Assault Pack w/ waist pack	4.2
2QT Canteen w/Cover and Sling w/water	4.15
Liner Poncho	1.14
Poncho	1.05
Improved Rain suit Top	1.7
Improved Rain suit Bottom	1.7
Neck Gaiter	1
Meal Ready To Eat 1 ea (1.50/0.68 kg)	1.5
Undershirt moisture wicking x 1 ea	0.35
Socks x 1 pr	0.2
Improved Cleaning Kit	1.6
Flexi Cuffs (4 large per soldier)	0.04
Chemlight (2per)	0.04
Water purification tablets	0.02
Camo Face Paint	0.02
VS17 Panel (small)	0.3

19.0 lbs



Uniform	12.4
PPE	63.03 to 77.60
+ <24 Hr Sustainment Load	19.0
Approach March Load	94.43 to 109.0 lbs

as of: 21 Jun 13

Task 17: Mount M2 .50 Cal Machine Gun Receiver on an Abrams Tank 19K

Task: Mount M2 .50 Cal Machine Gun Receiver on an Abrams Tank

- Lift the Receiver weighing 56 lbs from the ground to the hull (height 1.2 m) of an Abrams tank.
- While on top of hull, lift and carry the receiver to the turret (height 1.2 m) of the tank and install

Condition:
- Wearing task specific equipment weighing 30-44 lbs
- Given an Abrams Tank and an M2 .50 Caliber Machine Gun Receiver

Standard:
- As quickly as possible

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 18: Stow Ammunition on an Abrams Tank (Variation 2)
19K

Task: Move 120mm MPAT Rounds from Ammo Point to Tank; Three Soldier Task

- Soldier on ground will lift and carry the 120mm MPAT tank round weighing 55 lbs a distance of 5m and hand it to Soldier on hull
- Soldier on hull receives the round, carries it 0.5m and hands it to Soldier in the turret
- Soldier in the turret receives the round and loads it in the internal ready rack.

Condition:
- Wearing a 71lb Fighting Load (no weapon)
- Given an Abrams Tank and 36 120mm MPAT Rounds 5 meters from Abrams Tank

Standard:
- Load 36 MPAT Rounds from Ammo Point to Ready Rack in 20 minutes

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 19: Load the 120mm Main Gun
19K

Task: Load the 120mm Main Gun

- Lift the 120mm MPAT round weighing 55 lbs from the ready rack (1 m). Rotate round and load into breach.

Condition:
- Wearing 30-44 lbs of task specific equipment
- Given 5 120mm MPAT rounds, M1 Abrams Tank

Standard:
- Successfully load 5 120mm MPAT Rounds in 35 seconds; one round every 7 seconds

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Task 20: Remove a Casualty from an Abrams Tank (Mounted)
19K

Task: 3 Soldier Task; Remove a Casualty from an Abrams Tank

Condition:
- Wearing a 30-44 lb Fighting Load
- Given a casualty (~218-232 lbs; ~75 lbs/Soldier) and an Abrams Tank

Standard:
- With one Soldier inside and two Soldiers on top of tank, pull the casualty through the Gunner's or Commander's Hatch (1.5m height) as quickly as possible.

Is it reasonable to expect a Soldier in your MOS to meet this standard?

as of: 21 Jun 13

Appendix D. TRADOC Procedures for Determining the Critical Physically Demanding Tasks of MOSs Infantry (11B, 11C), Combat Engineer (12B), Field Artillery (13B, 13F) and Armor (19D, 19K) MOSs

A physical job analysis was conducted to identify the physically demanding critical tasks for each of the seven Combat Arms MOSs. TRADOC tasked each of the proponent schools (Infantry, Field Artillery, Armor and Combat Engineer) to develop a list of critical physically demanding tasks and detailed standards of performance. The methodology was guided by a Scientific Review Panel. Each of the schools created a Senior Personnel Working Group to accomplish this task. The Senior Personnel Working Group included the TRADOC Branch Commandants, Command Sergeants Major and other selected subject matter experts (SMEs). The members were required to have worked in the proponent office for at least 12 months, served as an Officer, Warrant Officer or Non-Commissioned Officer (NCO) in the career management field for at least 24 months within the past 12 months and have been deployed within the past 24 to 36 months. The process was initiated using the instructions in Department of the Army Pamphlet 611-21. The current physical demands and DA Form 5643 Physical Demands Analysis Worksheet (see below) were used as a starting point to define the essential tasks. The concept was to update the existing physical demands based on lessons learned from a decade of conflict. The experts examined the information in the Military Pamphlet, identified the tasks represented therein, determined if the list was current and complete, and created specific standards for each of the tasks. This was an iterative process with oversight by TRADOC as well as experienced senior leaders in each career field.

The next step was to determine if adjustments were needed to the physical demands of each task based on data from the Center for Army Lessons Learned, After Action Reports (AARs) from recently deployed Brigade Combat Teams, as well as interviews with recently deployed Battalion and Company level leadership and Soldiers. These experts were asked to provide information regarding whether a task was deemed critical, how often a task was performed and any additional quantifiable information. The list of tasks and standards was peer-reviewed by selected Non-TRADOC Battalion Commanders, Command Sergeants Major and NCOs in each MOS. All of the members of this Branch Peer Review Panel had been deployed, and many had been recently deployed. The final product included the task list, standards and supporting justification for changes to include DA Form 5643 with changes noted. The final list of tasks and standards from each proponent school were approved by the TRADOC Commanding General (GEN Robert W. Cone), as well as the TRADOC Command Sergeant Major (CSM Daniel A. Daily). The list was then forwarded for review and approval to the Sergeant Major of the Army Board of Directors. Upon approval of the tasks and standards, GEN Cone requested they be verified in the field. The definition of verification was that 90% of a randomly selected population of Soldiers in each MOS should be able to successfully complete the tasks to standard.

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PHYSICAL DEMANDS ANALYSIS WORKSHEET

For use of this form, AR 611-1; the proponent agency is DCSPER

PAGE OF PAGES

MOS	CMF	DATE COMPLETED (YYMMDD)

SECTION I - DUTIES

SECTION II - TASK SUMMARY

SECTION III - CRITICAL TASK ELEMENT	SECTION IV - CRITICAL PERFORMANCE MEASURE

SECTION V - ANALYSIS

FACTOR a	WEIGHT/ LOAD b	HORIZ-DISTANCE c	VERTICAL DISTANCE d	WORK RATE/PERFORMANCE STANDARD e	MOS FREQ f			
					NP	O	F	C
1. LIFT/LOWER								
2. CARRY								
3. PUSH								
4. PULL								
5. LOAD BEAR								
6 WALK/MARCH								
7. CLIMB/DESCEND								
8. RUN/RUSH								
9 SWIM/DIVE								
10. DIG								
11 CRAWL								
12. THROW								

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FACTOR e	WEIGHT/ LOAD b	HORIZ-DISTANCE c	VERTICAL DISTANCE d	WORK RATE/PERFORMANCE STANDARD e	MOB FREQ f			
					NP	O	F	C
13. HANDLE								
14 FINGER								
15 HAMMER/POUND								
16. SIT								
17 RECLINE								
18 REACH								
19. STAND								
20. STOOP								
21 KNEEL								
22. CROUCH								

SECTION VI - EXPLANATION/COMMENT - PHYSICAL DEMAND FACTORS

SECTION VII- (PHYSICAL DEMANDS RATING) FOR USE BY APPROVING AUTHORITY

☐ LIGHT ☐ MEDIUM ☐ MOD. HEAVY ☐ HEAVY ☐ VERY HEAVY

EXPLANATION AND SPECIFIC INSTRUCTIONS FOR COMPLETION OF WORKSHEET ARE CONTAINED IN WOMEN IN THE ARMY POLICY REVIEW, DOCSPER, DA 12 NOV 92.

REVERSE OF DA FORM 5643-R, JUN 1987

APD PE v2.00