

U.S. Army Center for Army Lessons Learned
Task Force Devil Combined Arms Assessment Team
(Devil CAAT)



The Modern Warrior's Combat Load

Dismounted Operations in Afghanistan
April - May 2003

Task Force Devil
Coalition Task Force 82, Coalition Joint Task Force 180

OPERATION ENDURING FREEDOM III

Author's Note

This report is significant to the United States Army in many ways. The findings found within its pages represent not only a record of what modern warriors carry into battle during dismounted operations, but also could comprise the first recorded battlefield study of combat load undertaken by the United States Army during its 228-year history. Over the decades of the 20th Century, the Army conducted periodic combat load studies during peacetime training events; never before, however, did the Army gather and record such data during combat operations. The Army to full advantage, therefore, should use this report in order to reduce the Soldier's combat load, to modernize Army doctrine, and to accurately train dismounted formations for the physical rigors of war.

The author is extremely appreciative of both the 82nd Airborne Division for its full support of this study and the six volunteer data collectors and their parent organizations who were willing to devote close to six months to this mission that included intensive preparatory field training for combat followed by deployment to Afghanistan in order to gather this rare data during the conduct of small unit actions against the enemy. Without the support of multiple Army organizations, the contributions of the superb paratroopers in Task Force Devil, and the quality, willingness, and dedication of the data collectors themselves, this study would never have been possible.

STRIKE HOLD!

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“On the field of battle man is not only a thinking animal, he is a beast of burden. He is given great weights to carry. But unlike the mule, the jeep, or any other carrier, his chief function in war does not begin until the time he delivers that burden to the appointed ground...In fact we have always done better by a mule than by a man. We were careful not to load the mule with more than a third of his weight.”

S.L.A. Marshall, The Soldier's Load and the Mobility of a Nation, 1950

1.0 INTRODUCTION

In 1950, Colonel S.L.A. Marshall published what was to become a treatise on the Soldier's combat load in his book The Soldier's Load and the Mobility of a Nation (Association of the United States Army). Marshall's book, based upon insights and histories that he had collected during the Normandy Invasion in 1944, was to become mandatory reading for many U.S. Army and Marine Corps officers over the course of the remainder of the 20th Century. After several reprints, his book continues to be highly read today. Though many changes have occurred in Soldier equipment since the Second World War, the foot Soldier continues to carry his mission load on his back and that load can prove excessive based upon the equipment and his mission requirements. With improvements in and enhancements of individual equipment over the years, the total weight and bulk of modern equipment has not been significantly reduced and the modern Soldier can be even more heavily burdened with mission equipment today than he was in previous military conflicts.

This report focuses on the modern warrior's combat load as experienced by a U.S. Army light Infantry brigade task force fighting a low intensity conflict in the deserts and mountainous regions of Afghanistan. Data was collected over a two month period in the Afghan spring of 2003, as the task force conducted continuous, hard hitting combat operations to not only deny maneuver and safe haven to the enemy, but to capture or destroy Anti-Coalition Militants (ACM) composed of hostile Taliban and Al Qaeda elements. The data presented in this report are neither all inclusive of all Army units nor should any of the data be considered a criticism of the units surveyed. The data stands as a snapshot of the modern dismounted Soldier's combat load. This data, a mirror of our Army today as it fights a war in Afghanistan, can thus serve as baseline data for making significant combat load weight and bulk reductions and improvements over the course of the first decade of the 21st Century.

A team of experienced Infantrymen collected the data and observations reported in this study while accompanying and soldiering with the units of Task Force Devil during numerous combat operations. As such, this study provides a rare insight into what Soldiers carry into battle and what logistical measures were taken and executed to supply the Soldier in the field.

The members of the data collection team remain extremely appreciative and indebted to the paratroopers of Task Force Devil, 82nd Airborne Division, for warmly welcoming the team into their elite ranks as full and participating members. Without the considerable support provided by these troopers, this study would never have been possible. We thank these fine warriors and we consider ourselves forever fortunate for their allowing the Devil Combined

Arms Assessment Team (Devil CAAT) member to stand in their ranks, to take the fight to the enemy with them, and to call ourselves "Devils in Baggy Pants" too. STRIKE HOLD!

2.0 SUMMARY OF FINDINGS

The dismounted Infantryman continues to be over-burdened while conducting modern combat operations. The excessive weights that U.S. Army light Infantry forces are carrying on their backs in Afghanistan are neither the fault of poor unit discipline nor Soldiers taking too much gear into operations. The fault lies in the fact that these Soldiers are carrying mission essential equipment that simply weighs too much. The excessive weights on the backs of these fit Soldiers, coupled with the harsh environments found in Afghanistan, prove detrimental to maximizing Soldier performance. Despite units going to great lengths to minimize the loads that their Soldiers are carrying while still ensuring that they could accomplish their assigned combat missions, the weight of the Infantryman's combat load is far too great and considerably exceeds the upper envelopes established by Army doctrine.

In order for the U.S. Army to significantly reduce the combat load of the Infantryman prior to the introduction of the Future Force at the end of this first decade of the 21st Century, significant advances must be made in reducing the weight of both Soldier borne technologies and logistics, and significant steps must be made in reshaping Army doctrine so that the net result is that the Infantryman's combat load is so drastically reduced that he can much more easily accomplish his combat missions regardless of the enemy, the terrain, and the weather encountered. If an aggressive Soldier equipment weight loss program is not undertaken by the Army as a whole, the Soldier's combat load will continue to increase and his physical performance will continue to be even more severely degraded by the loads that he carries in the world's harshest environments.

The weight of the combat load borne by the dismounted warrior can only be reduced through a combination of providing the Soldier with lighter systems while also off loading any and all equipment that is not immediately needed in a firefight, to alternate forms of transportation.

3.0 BACKGROUND

In March 2002, Coalition Forces operating in Afghanistan attacked large-scale ACM concentrations located in the Shah-Ei-Kowt region of Afghanistan. Operation Anaconda proved to be the first major mountainous winter operation conducted by the U.S. Army and its coalition partners since the Italian Campaign in World War II. While the Anaconda fight was underway, the idea was born to conduct a combat study of the modern loads carried by the U.S. Army's dismounted forces in Afghanistan. The results of such a study would not only assist the Army's materiel developers in producing improved, lightweight, mission essential equipment, but such a study would also help the Army's combat formations learn from the units fighting in the rugged Afghan climates and terrains. As the idea of such a study gelled, the Commanding General of the U.S. Army's Soldier and Biological Chemical Command (SBCCOM) requested that the U.S. Army's Center for Army Lessons Learned (CALL) conduct a Soldier load study in Afghanistan. The capturing of modern day combat load data was essential to SBCCOM for accomplishing its

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science and technology efforts to support the Soldier. Likewise, such information was equally valuable to the Program Executive Office Soldier (PEO Soldier) in its final development, testing, and fielding of enhanced, lightweight equipment for the Army's Future Force. In 2001, the Chief of Staff of the U.S. Army stated that the combat load of the individual Soldier serving in the Future Force was not to exceed 50 pounds. SBCCOM and PEO Soldier recognized that in order to achieve this significant weight reduction by the introduction of the Future Force in 2010, baseline data on current loads needed to be collected. The most accurate place to collect such data would be in combat.

The CALL at Fort Leavenworth, KA accepted the mission for recording this critical data and asked SBCCOM's Natick Soldier Center to provide the team leader for the effort. Once identified, the team leader immediately went to work to build a team composed of experienced Soldiers. Knowing that the most accurate means of collecting combat load data would require immersion in tactical units, and that this immersion would require that the data collectors face the same dangers as their fellow soldiers while carrying the same combat loads as the Infantrymen that they would be studying in Afghanistan, the team leader chose a team composed of volunteer Infantrymen with extensive light Infantry and airborne experience. The team leader further required that all team members were ranger qualified. The resulting team came from PEO Soldier, SBCCOM, and the Infantry School and Center, with half of the men having served in previous combat operations and all having held leadership positions within light Infantry units. The team leader and the team sergeant then ran the team through combat refresher training at both Fort Bragg, NC and Fort Benning, GA prior to deploying the team through the CONUS Replacement Center at Fort Benning and then into Afghanistan at the end of March 2003 (see Annex D). On 2 April 2003, the CALL's Soldier Load Combined Arms Assessment Team (CAAT) was formally attached to Task Force Devil, Coalition Task Force 82, Kandahar, Afghanistan. The team re-designated itself the "Devil CAAT" in honor of the elite parachute regiment in which they were now serving. In the early morning hours of 8 April 2003, four members of the Devil CAAT participated in the team's first major combat mission, air assaulting with a battalion task force into Sangin, Afghanistan.



Paratroopers of C/3-504 prepare to load CH-47 Helicopters.
Operation Resolute Strike, 8 April 2003

4.0 PURPOSE

The purpose of the Soldier Load Study was to conduct a combat study in Afghanistan of the modern dismounted Soldier's combat load in order drive Army reductions over the course of the first decade of the 21st Century to the bulk and weight of critical individual and small unit equipment while enhancing Soldier capabilities. The resulting data and findings of this study would then be available to (1) directly support development of the Objective Force Warrior and (2) assist field commanders and the U.S. Army Training and Doctrine Command (TRADOC) to accurately understand the combat loads being carried in dismounted warfare in Afghanistan. Such insights could then help in updating Army doctrine and in assisting combat commanders in training their personnel for similar dismounted operations.

5.0 DATA COLLECTION OBJECTIVES

5.1 Collect combat load weights, equipment inventories, and photographs of fully equipped Soldiers holding all military occupational specialties (MOS) found within Infantry rifle companies having habitual combat arms attachments.

5.2 Collect combat load data for both offensive and defensive operations, as possible.

5.3 Collect issues relating to the performance of individual Soldier equipment during the conduct of combat operations.

5.4 Record data on small unit resupply plans and actual resupply operations during combat operations and how those plans and actions impacted combat loads.

5.5 Record data on small unit lessons learned as related to combat loads.

6.0 OPERATIONAL OVERVIEW

6.1 The Battlefield Environment

Since November 2001, the war in Afghanistan has progressed from defeating major formations of Taliban and Al Qaeda forces, to a war of strike operations that safeguard the birth of a free and democratic Afghanistan by preventing the enemy from safely operating again within Afghanistan. At the time of this research, the Coalition Joint Task Force 180's tactical operations centered on capturing or destroying ACMs operating in Afghanistan. Coalition operations focused on quick strike tactical missions in addition to humanitarian assistance missions to local towns and communities.

Task Force Devil's area of responsibility within Afghanistan required that the majority of their operations took place in high desert environments that were typically hilly or mountainous. These barren expanses were populated with small Afghan villages and towns where farming or the selling of farm products was common. Most Afghan villages were very primitive with no running water or electricity. The villagers lived in adobe or mud brick dwellings that were often encircled by 10-foot mud walls to keep farm animals corralled. During the course of this study,

daytime temperatures were normally in the 90s but could surpass 115F, and nighttime temperatures were often in the upper 40s to lower 60s.

6.2 Operational Data Collection

The Devil CAAT collected Soldier load data during the following combat operations:

Operation Name	Dates	Maneuver Unit	Devil CAAT Participants
AO Truman Checkpoint	4 Apr 03	118 th MPs	MAJ Glenn, SFC Dougherty
Opn Resolute Strike	8-9 Apr 03	C/3-504 PIR	LTC Dean, SFC(P) Donaldson
Opn Resolute Strike	8-9 Apr 03	C/2-504 PIR	CPT Covert, MSG Sanchez
Firebase Orgun-E	8-10 Apr 03	D/3-504 PIR	MAJ Glenn, SFC Dougherty
Opn Crackdown	16-17 Apr 03	A/2-505 PIR	MAJ Glenn, SFC Dougherty
Opn Vigilant Guardian I	16 Apr 03	HQ/TF 2-504 PIR	LTC Dean
Opn Vigilant Guardian I	22-26 Apr 03	B/2-504 PIR	LTC Dean
Opn Vigilant Guardian I	22-26 Apr 03	C/2-504 PIR	CPT Covert, SFC(P) Donaldson
Opn Vigilant Guardian I	22-26 Apr 03	D/1-504 PIR	MSG Sanchez
Opn Vigilant Guardian I	22-26 Apr 03	Combat Trains, TF 2-504 PIR	Mr. Fred DuPont
Opn Desert Ascent	23-25 Apr 03	C/2-505 PIR	MAJ Glenn, SFC Dougherty
Opn Vigilant Guardian II	3 May 03	HQ/TF 2-504 PIR	LTC Dean
Opn Vigilant Guardian II	3-4 May 03	C/2-504 PIR	CPT Covert, SFC(P) Donaldson
Opn Vigilant Guardian II	1-3 May 03	D/1-504 PIR	SFC Dougherty
Opn Vigilant Guardian II	5 May 03	118th MPs, TF 2-504 PIR	Mr. Fred DuPont
Team Village Operation			

Table 6.1 Devil CAAT Combat Operations

6.3 Operational Graphics for Devil CAAT Missions

See Annex G

7.0 DATA COLLECTION METHODOLOGY

7.1 Pre-Mission Coordinations.

Prior to participating in any combat operations, the Devil CAAT Team Leader worked closely with the Task Force Devil Executive Officer and Operations Officer, as well as the Infantry battalion commanders and their staffs, to determine which future combat operations would produce the best data for the Soldier Load Study. Of greatest interest were dynamic operations that forced the dismounted elements to carry their equipment cross-country. Once the appropriate upcoming missions were identified, the Devil CAAT Team Leader identified which data collection team members would tie in with the various maneuver units. These units would then be informed of which Devil CAAT team members would be operating with them. The team members would thereafter be included in unit troop leading procedures and manifested for air and ground movement. The Devil CAAT Team Leader attended all brigade and battalion level operations orders and briefed the corresponding members of the team on their units' missions. Wherever possible, the Devil CAAT would attempt to align one to two team members with each rifle company participating in an operation.

7.2 Initial Unit Linkup and Pre-Mission Data Collection.

At the earliest possible opportunity, each data collection team would linkup with the Infantry company to which the members were assigned for the mission. The team would brief the unit as required on their purpose and what information they were seeking from the operation. The company would include the team in all of its planning meetings, orders, and rehearsals. Each member of the team would subsequently join an appointed rifle platoon and rifle squad for final mission preparations and rehearsals. At a time that best fit the platoon's schedule, all available Devil CAAT members would cover down on the unit in order to inventory the gear that the members of the platoon would be carrying on the operation. Once the inventories were complete, the Soldiers and their equipment were weighed with digital scales brought from CONUS by the Devil CAAT. Three weights were recorded for each Soldier: his weight in just his uniform, his Fighting Load weight, and his Approach March Load weight. Only on a few occasions did Soldiers also have an Emergency Approach March Load and on those occasions, these weights were also collected. Following the weigh-in, each platoon's load data was entered into spreadsheets. Copies of the spreadsheets were provided to the units so that they could make any and all load adjustments that they felt were necessary prior to the combat mission. Rarely, however, did units feel that adjustments were required since they had already closely checked their Soldiers' gear and had made cross-loading adjustments of the mission-essential equipment within the small units.

7.3 During Mission Data Collection.

Devil CAAT members fully participated in the execution of their companies' and platoons' missions. As each mission proceeded and when not involved in small unit operations, the data collectors would record observations on how the Soldiers were proceeding in carrying their loads, how, when, and why the units were resupplied, any medical conditions that arose from bearing the combat loads, and the sufficiency of the equipment and supplies that the Soldiers were carrying. Devil CAAT members also took extensive photographs of Soldiers and their loads throughout each operation.

7.4 Post Mission Data Collection.

After the units returned to their primary bases following each mission, the data collectors attended their after action reviews (AARs) in order to record the lessons that the unit learned concerning their loads, their equipment, and their resupply operations. These sessions proved a superb forum for Soldiers to discuss problems and observations that they had concerning their individual and small unit equipment. The Devil CAAT members provided their units with CD-ROMs of the photographs that they took of that unit during the operation. Team members also recorded major lessons that they had learned that they felt were of note to the Army as a whole and these were sent to the CALL at Fort Leavenworth, KS as separate CALL Observation Reports.

8.0 COMBAT LOAD DEFINITIONS

8.1 Combat Load

The combat load is the minimum mission-essential equipment, as determined by the commander responsible for carrying out the mission, required for Soldiers to fight and survive immediate combat operations. The combat load is the essential load carried by Soldiers in forward subunits or the load that accompanies Soldiers other than fighting loads. Combat load consists of three categories: Fighting Load, Approach March Load, and Emergency Approach March Load (FM 21-18, Foot Marches, 1990). [NOTE: FM 21-18 was most recently published prior to the introduction of the Interceptor Body Armor system, which has recently become a staple of the Fighting Load].

8.2 Fighting Load

The Fighting Load includes bayonet, weapon, clothing, helmet, Load Bearing Equipment (LBE), and a reduced amount of ammunition. (FM 21-18)

- ❑ For hand-to-hand combat and operations requiring stealth, carrying any load is a disadvantage. Soldiers designated for any mission should carry no more than the weapons and ammunition required to achieve their task; loads carried by assaulting troops should be the minimum.
- ❑ Unless some form of CLOHE [Combat Load Handling Equipment] is available, cross-loading machine gun ammunition, mortar rounds, antitank weapons, and radio operator's equipment causes assault loads to be more than the limit of 48 pounds. This weight restricts an individual's ability to move in dynamic operations. Extremely heavy Fighting Loads must be rearranged so that the excess weight can be redistributed to supporting weapons or can be shed by assaulting troops before contact with the enemy.

8.3 Approach March Load

The Approach March Load includes clothing, weapon, basic load of ammunition, LBE [Load Bearing Equipment], small assault pack, or lightly loaded rucksack or poncho roll (FM 21-18). [NOTE: FM 21-18 was most recently published prior to the introduction of the Interceptor Body

- ❑ On prolonged dynamic operations, the Soldier must carry enough equipment and munitions for fighting and existing until resupply. In offensive operations, Soldiers designated as assault troops need equipment to survive during the consolidation phase, in addition to carrying munitions for the assault. A limit of 72 pounds for a Soldier load should be enforced.
- ❑ Normally, the Soldier's large rucksack is not part of the Approach March Load. If the fieldpack internal frame is issued, only the small assault pack section is carried--the

large section should be kept at battalion level. If the ALICE system is used, either a partly loaded small ALICE should be carried individually with a duffle bag or one large ALICE for each man should be kept at battalion level.

8.4 Emergency Approach March Load

Circumstances could require Soldiers to carry loads heavier than 72 pounds such as approach marches through terrain impassable to vehicles or where ground/air transportation resources are not available. Therefore, larger rucksacks must be carried. These Emergency Approach March Loads can be carried easily by well-conditioned Soldiers. When the mission demands that Soldiers be employed as porters, loads of up to 120 pounds can be carried for several days over distances of 20 km a day. Although loads of up to 150 pounds are feasible, the Soldier could become fatigued or even injured. If possible, contact with the enemy should be avoided since march speeds will be slow.

9.0 RIFLE COMPANY COMPOSITION

The light Infantry rifle company is composed of three rifle platoons, a mortar section, and a company headquarters section. Habitual attachments include a Field Artillery Fire Support Team (FIST) and three combat medics. The Infantry company may also receive other attachments such as combat engineers and Air Force close air support controllers, as well as battlefield enablers to include interpreters, psychological operations personnel, counter-intelligence personnel, female searchers, civil affairs team members, and an Advanced Trauma Lifesaving Team from the Infantry battalion's Medical Platoon. Figure 9.1 depicts a common light Infantry company in its purest state.

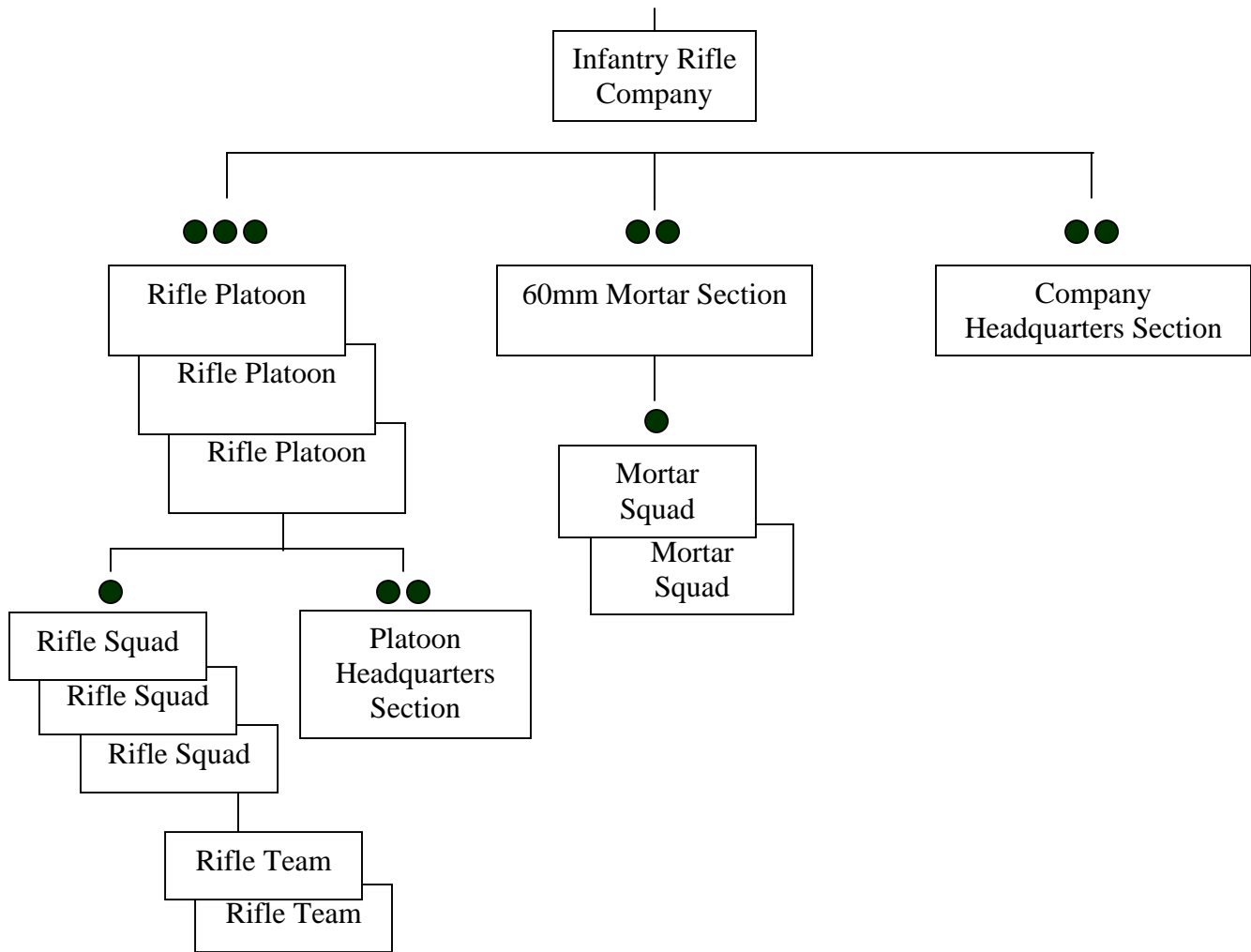


Figure 9.1 Rifle Company Wiring Diagram

10.0 THE MODERN WARRIOR'S COMBAT LOAD

Chapter 10 of this report is divided into the various duty positions within a light Infantry rifle company. Each sub-section defines the duties of that position, the Soldier's major combat tasks while participating in combat operations in Afghanistan, the items of equipment that each Soldier carried, and the average load weights for Soldiers holding the same duty position within Task Force Devil. Chapter 10 first addresses the members of the Rifle Squad, the remaining members of the Rifle Platoon, and then concludes by covering the light Infantry Company Headquarters. The sections entitled Special Equipment describe all common pieces of special equipment that numerous Soldiers were seen to carry. No one Soldier ever carried all of these items simultaneously and any one Soldier might only carry a couple of these additional pieces of equipment on any one particular mission as determined by METT-T. The letters in parenthesis after each item of Special Equipment denotes where that item was traditionally carried, with the

location letter referring to the paragraphs above (e.g. "D" denotes that the item was carried in the Main Rucksack).

10.1 The Rifle Platoon

10.1.1 The Rifle Squad

10.1.1.1 The Rifle Squad Leader

Description: The Rifle Squad Leader serves a key leadership role within each Rifle Platoon. The Squad Leader's primary responsibility is controlling the actions of his nine-man squad while responding to the directions of the Rifle Platoon Leader. The Squad Leader may engage targets of opportunity as appropriate. There exist three Rifle Squads within each Infantry Rifle Platoon, identified as 1st, 2nd, and 3rd squads. As a member of the Rifle Platoon, the Rifle Squad Leader moves as a member of the squad, provides security within his assigned sector, and engages targets of opportunity as required. The Rifle Squad Leader is often called upon to serve on and lead special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams. The Rifle Squad Leader must remain flexible, carefully balancing his leadership responsibilities with those of a warfighter. The Rifle Squad Leader often carries additional ammunition for crew served weapon systems as well as specialty equipment.

Common Tactical Tasks:

- Moves as a member of a Rifle Squad.
- Controls movement of two Fire Teams as part of a Rifle Squad and Platoon.
- Engages Targets.
- Enters and clears a room, hallway, stairwell as a member of a Rifle Squad.
- Enters and clears caves, tunnels, and man-made fortifications.
- Supervises breaching and/or bypassing of obstacles.
- Leads Security Checkpoint operations as the leader of a Rifle Squad.
- Supervises the search of personnel under custody (PUCs).
- Leads patrols.

Equipment Common to Rifle Squad Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.

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- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM)

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.

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- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B).
- Concussion grenade (B).
- Smoke grenade (B).
- Incendiary grenade (B).
- Global Positioning System (B).
- Lock pick (B).
- Collapsible Riot Baton (B).
- Infrared Strobe Light. (B).
- Bolt cutters (C or D).
- Metal detecting wand (C or D).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Ground Control Laser Pointer.

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Rifle Squad Leader	62.43 lbs	34.90%	94.98 lbs	52.59 %	128.35 lbs	73.62 %

Table 10.1 Average Rifle Squad Leader Statistics

10.1.1.2 The Fire Team Leader

Description: The Fire Team Leader serves a key leadership role within each Rifle Squad as there is no other position that has as much leadership and active warfighting responsibilities within the Infantry Rifle Company. The Fire Team Leader is constantly balancing his responsibilities as a leader with his role as a member of a team that directly engages the enemy. There are two Fire Teams within each Infantry Rifle Squad, identified as Alpha and Bravo Teams. The Alpha Team Leader is frequently the most senior Team Leader within the squad and must be prepared to take charge as the Squad Leader in the event that the Squad Leader is incapacitated or unavailable. As a member of the Fire Team, the Fire Team Leader provides security within his assigned sector and engages targets of opportunity as required. Additionally, the Fire Team Leader is responsible for controlling the actions of his four-man team while responding to the directions of the Rifle Squad Leader. The Fire Team Leader is often called upon to serve on and lead special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams. The Fire Team Leader must remain flexible, carefully balancing his leadership responsibilities with those of a warfighter. The Fire Team Leader often carries additional ammunition for crew served weapon systems as well as specialty equipment.

Common Tactical Tasks:

- Moves as a member of a Fire Team.
- Controls movement of a Fire Team as part of a Rifle Squad.
- Engages Targets.
- Breaches an obstacle.
- Enters and clears a room, hallway, stairwell as a member of a Rifle Squad.
- Enters and clears caves, tunnels, and man-made fortifications.
- Breaches and/or bypasses obstacles.
- Leads Security Checkpoint Operations as a member of a Rifle Squad.
- Searches personnel under custody.

- Leads patrols.

Equipment Common to Fire Team Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Whistle (B) .
- Concussion grenade (B).
- Smoke grenade (B).
- Incendiary grenade (B).
- Global Positioning System (B).
- Lock pick (B).
- Collapsible Riot Baton (B).
- Infrared Strobe Light. (B).
- Bolt cutters (C or D).
- Metal detecting wand (C or D).

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- 60mm mortar round (C or D).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Hooligan Tool (C or D).
- Sledgehammer (C or D).
- Shotgun with Buckshot ammunition.
- M18 Claymore Mine (C or D).
- 200 rounds of 5.56mm linked ammunition for M249 SAW. (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Fire Team Leader	63.32 lbs	35.61 %	93.78 lbs	52.43 %	130.27 lbs	80.65%

Table 10.2 Average Fire Team Leader Statistics

10.1.1.3 The Rifleman

Description: There is one Rifleman within each Fire Team of a Rifle Squad. As a member of the Fire Team, the Rifleman provides security within his assigned sector and engages targets of opportunity as directed by the Fire Team Leader. The Rifleman is often called upon to serve on special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams. The Rifleman carries perhaps the least casualty-producing weapon within the squad yet this allows the Rifleman more freedom of maneuver and the ability to carry additional ammunition for crew served weapon systems and/or assist in transporting specialty equipment.

Common Tactical Tasks:

- Moves as a member of a Fire Team.
- Engages Targets.
- Enters and clears a room, hallway, stairwell as a member of a Fire Team.
- Enters and clears caves, tunnels, and man-made fortifications.
- Breaches and/or bypasses obstacles.
- Performs Security Checkpoint Operations as a member of a Fire Team.
- Searches personnel under custody.

Equipment Common to Riflemen:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.

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- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Lock pick (B).
- Collapsible Riot Baton (B).
- Bolt cutters (C or D).
- Metal detecting wand (C or D).

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- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- AT4 Anti-armor Weapon. (C or D).
- SMAW-D Bunker Defeat Weapon. (C or D).
- Hooligan Tool. (C or D).
- Sledgehammer. (C or D).
- Entrenching Tool. (C or D).
- M18 Claymore Mine. (C or D).
- Pole-less Litter. (C or D).
- 200 rounds of 5.56mm linked ammunition for M249 SAW. (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Rifleman	63.00 lbs	35.90 %	95.67 lbs	54.72 %	127.34 lbs	71.41 %

Table 10.3 Average Rifleman Statistics

10.1.1.4 The Grenadier

Description: The Grenadier serves a key role within each Fire Team of a Rifle Squad through his employment of organic indirect 40mm fires. There is one Grenadier within each Fire Team of a Rifle Squad. As a member of the Fire Team, the Grenadier provides security within his assigned sector and engages targets of opportunity with direct and/or indirect fires as directed by the Fire Team Leader. The Grenadier is often called upon to serve on special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams. The Grenadier carries a weapons system that allows him to engage targets with both direct 5.56mm fires and a M203 40mm Grenade Launcher which provides the Fire Team with limited organic indirect fires. The Grenadier is also capable of employing non-lethal munitions as directed by the Fire Team Leader.

Common Tactical Tasks:

- Moves as a member of a Fire Team.
- Engages targets with direct fires.
- Engages targets with indirect fires.
- Marks a target for supporting fires.
- Employs non-lethal effects.
- Obscures enemy observation.
- Provides illumination.
- Enters and clears a room, hallway, stairwell as a member of a Fire Team.
- Enters and clears caves, tunnels, and man-made fortifications.
- Breaches and/or bypasses obstacles.
- Performs Security Checkpoint Operations as a member of a Fire Team.
- Searches personnel under custody.

Equipment Common to Grenadiers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- M203 40mm Grenade Launcher on M4 Carbine with one 40mm grenade.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- 24-26 assorted 40mm grenades.
- Bayonet.

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- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Lock pick (B).
- Collapsible Riot Baton (B).
- Bolt cutters (C or D).
- Metal detecting wand (C or D).
- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- AT4 Anti-armor Weapon. (C or D).
- SMAW-D Bunker Defeat Weapon. (C or D).
- Hooligan Tool. (C or D).
- Sledgehammer. (C or D).
- Entrenching Tool. (C or D).
- M18 Claymore Mine. (C or D).
- Pole-less Litter. (C or D).
- 200 rounds of 5.56mm linked ammunition for M249 SAW. (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Grenadier	71.44 lbs	40.95 %	104.88 lbs	60.25 %	136.64 lbs	77.25 %

Table 10.4 Average Grenadier Statistics

10.1.1.5 The Squad Automatic Rifleman

Description: The Squad Automatic Rifleman serves a key role within each Fire Team of a Rifle Squad as he employs the squad's most casualty producing weapons system. The M249 Squad Automatic Weapon is the only fully automatic weapon in the Rifle Squad. There is one Squad Automatic Rifleman within each Infantry Rifle Squad Fire Team. As a member of the Fire Team, the Squad Automatic Rifleman provides security within his assigned sector and engages targets of opportunity with automatic fires as directed by the Fire Team Leader. Additionally,

the Squad Automatic Rifleman is capable of providing overwatch and suppressive fires in support of team, squad, and platoon movement and assault. The Squad Automatic Rifleman is often called upon to provide overwatching fires for special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams. The Squad Automatic Rifleman carries the M249 Squad Automatic Weapon.

Common Tactical Tasks:

- Moves as a member of a Fire Team.
- Engages targets with direct automatic fires.
- Provides target suppression.
- Provides overwatch while obstacles are breached.
- Enters and clears a room, hallway, stairwell as a member of a Fire Team.
- Enters and clears caves, tunnels, and man-made fortifications.
- Breaches and/or bypasses obstacles.
- Performs Security Checkpoint Operations as a member of a Fire Team.
- Searches personnel under custody.

Equipment Common to Squad Automatic Weapon Gunners:

A. Worn on Body/Uniform:

- M249, 5.56mm Squad Automatic Weapon with PEQ-2 Laser/PAQ-4 Laser and M145 Machine Gun Optic.
- 100 rounds of 5.56mm linked ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- M249 Spare Barrel Bag.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 700 rounds of 5.56mm linked ammunition.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M249 SAW Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- M249 Spare Barrel Bag.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear of Fleece Jacket and Bibs.

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- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Lock pick (B).
- Collapsible Riot Baton (B).
- Bolt cutters (C or D).
- Metal detecting wand (C or D).
- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- AT4 Anti-armor Weapon. (C or D).
- SMAW-D Bunker Defeat Weapon. (C or D).
- Hooligan Tool. (C or D).
- Sledgehammer. (C or D).
- Entrenching Tool. (C or D).
- M18 Claymore Mine. (C or D).
- Pole-less Litter. (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Squad Automatic Rifleman	79.08 lbs	44.74 %	110.75 lbs	62.71%	140.36 lbs	79.56%

Table 10.5 Average Squad Automatic Rifleman Statistics

10.1.2 The Weapons Squad

10.1.2.1 The Weapons Squad Leader

Description: The Weapons Squad Leader serves a key leadership role within each Rifle Platoon. The Weapons Squad Leader is responsible for controlling and emplacing two three-man M240B 7.62mm Machine Gun Teams and focuses on control of the gun teams and their fires at the direction of the Rifle Platoon Leader. There is one Weapons Squad Leader per Rifle Platoon, and since he is often the most experienced and senior Squad Leader within the Platoon, he controls the two most casualty producing weapons within the Rifle Platoon. The Weapons Squad Leader moves as a member of the Platoon where he can best control the actions of both gun teams, provides security within his assigned sector, and engages targets of opportunity as required. Additionally, the Weapons Squad Leader deploys the gun teams to provide overwatch while the Platoon is on the move. During deliberate attacks, the Weapons Squad is often placed under the control of the Platoon Sergeant and is frequently placed in support-by-fire positions. The Weapons Squad Leader must remain flexible, carefully balancing his leadership responsibilities with those of a warfighter. The Weapons Squad Leader often carries additional ammunition for his crew served weapon systems as well as specialty equipment that aids in target identification and control of fires.

Common Tactical Tasks:

- Moves as a member of a Rifle Platoon.
- Controls movement of two M240B Machine Gun Teams as part of a Rifle Platoon.
- Engages targets.
- Establishes support by fire positions.
- Leads Security Checkpoint Operations as the leader of a Rifle Squad.
- Supervises placement of crew-served weapons positions.

Equipment Common to Weapons Squad Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.

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- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X .
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment: (Some, but not all of these carried on any one operation by one person based upon METT-T. Letters in parentheses indicate location where the items were carried – see above).

- Map (A).
- Whistle (B) .
- Concussion grenade (B).
- Smoke grenade (B).
- Incendiary grenade (B).
- Global Positioning System (B).
- 60mm mortar round (C or D).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Weapon Range Cards (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Weapons Squad Leader	62.66 lbs	34.02%	99.58 lbs	54.37%	132.15 lbs	69.19%

Table 10.6 Average Weapons Squad Leader Statistics

10.1.2.2 The M240B Machine Gunner

Description: The M240B Machine Gunner serves a key role within each Rifle Platoon by operating the Platoon's most casualty producing weapon system. There are two M240B Machine Gunners within each Infantry Rifle Platoon's Weapons Squad. As a member of the Infantry Rifle Platoon, the M240B Machine Gunner moves as a member of the Platoon, provides security within his assigned sector, and engages targets of opportunity with automatic fires as directed by the Weapons Squad Leader, Platoon Sergeant, or Platoon Leader. Additionally, the M240B Machine Gunner is capable of providing overwatch and suppressive fires in support of team, squad, and platoon movement and assault. The M240B Machine Gunner is often called upon to provide overwatching fires for special teams, such as breaching, demolition, aid and litter, personnel under custody (PUC) search and control, and anti-armor/bunker teams.

Common Tactical Tasks:

- Moves as a member of a Rifle Platoon.
- Engages targets with direct automatic fires.
- Provides target suppression.
- Provides overwatch obstacles are breached.
- Performs Security Checkpoint Operations as a member of a Rifle Platoon.

Equipment Common to M240B Machine Gunners:

A. Worn on Body/Uniform:

- M240B, 7.62mm Machine Gun, PEQ-2/PEQ-4 Laser and M145 Machine Gun Optic.
- 100 rounds 7.62mm linked ammunition.
- M9 9mm Pistol with 15 9mm rounds.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.

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- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X .
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 30 rounds of 9mm ammunition.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- M9 or commercial leg holster (preferred).

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 200 rounds 7.62mm linked ammunition.
- M240B Machine Gun Cleaning Kit.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.

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- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- Weapon Range Cards (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
M240B Machine Gunner	81.38 lbs	44.46%	113.36 lbs	62.21%	132.96 lbs	68.92%

Table 10.7 Average M240B Machine Gunner Statistics

10.1.2.3 The M240B Assistant Machine Gunner

Description: The M240B Assistant Machine Gunner serves a key role within each Rifle Platoon by assisting with the Platoon's most casualty producing weapon system. There are two M240B Assistant Machine Gunners within each Infantry Rifle Platoon's Weapons Squad. As a member of the Infantry Rifle Platoon, the M240B Assistant Machine Gunner moves as a member of the Platoon while remaining at all times near the Machine Gunner, provides security within his assigned sector, and engages targets of opportunity as directed by the Weapons Squad Leader, Platoon Sergeant, or Platoon Leader. To be effective, an Assistant Gunner must maintain an appropriate distance from the Gunner, so when in contact with the enemy, the Assistant Gunner can perform his duties quickly and efficiently. The M240B Assistant Machine Gunner is also responsible for scanning and verbally directing the Gunner's fire and identifying targets of opportunity. In addition, the Assistant Gunner feeds 7.62mm linked ammunition into the M240B Machine Gun. The Assistant Gunner is always prepared to replace the Gunner in the event the Gunner is incapacitated.

Common Tactical Tasks:

- Moves as a member of a Rifle Platoon.
- Assists Gunner with identification and target engagement with automatic fires.
- Assists Gunner with target suppression.
- Assists Gunner with overwatch while obstacles are breached.
- Performs Security Checkpoint Operations as a member of a Rifle Platoon.
- Assists with Gun Team's local security.

Equipment Common to M240B Assistant Machine Gunners:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X .

- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 400 rounds 7.62mm linked ammunition.
- M240B tripod.
- Traverse and Elevation Mechanism.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- Binoculars.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- Weapon Range Cards (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
M240B Assistant Machine Gunner	69.94 lbs	38.21 %	120.96 lbs	66.11 %	147.82 lbs	80.08 %

Table 10.8 Average M240B Assistant Machine Gunner Statistics

10.1.2.4 The M240B Machine Gun Ammunition Bearer

Description: The M240B Machine Gun Ammunition Bearer serves a key role within each Rifle Platoon in assisting with the Platoon's most casualty producing weapon system. There are two M240B Machine Gun Ammunition Bearers within each Infantry Rifle Platoon's Weapons Squad. As a member of the Infantry Rifle Platoon, the M240B Machine Gun Ammunition Bearer moves as a member of the Platoon while remaining near the 240B Machine Gunner and Assistant Gunner, provides security within his assigned sector, and engages targets of opportunity as directed by the Weapons Squad Leader, Platoon Sergeant, or Platoon Leader. To be effective, an Ammunition Bearer must remain near the Gunner and Assistant Gunner, so when in contact with the enemy, the Gun Team can perform its duties quickly and efficiently. The M240B Ammunition Bearer is also responsible for providing local security for the Gunner and Assistant Gunner. The Ammunition Bearer is always prepared to replace the Gunner or the Assistant Gunner in the event that either is incapacitated.

Common Tactical Tasks:

- Moves as a member of a Rifle Platoon.
- Assists Gunner with identification and target engagement with direct fires.
- Assists Gunner with Target suppression.
- Assists Gunner with overwatch while breaching obstacles.
- Performs Security Checkpoint Operations as a member of a Rifle Platoon.
- Assists with Gun Team local security.
- Carries Additional Ammunition in support of Team Mission.
- Provides local security to the Gun Team.

Equipment Common to M240B Machine Gun Ammunition Bearers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.

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- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 300 rounds 7.62mm linked ammunition.
- M240B spare barrel.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- M14 Rifle with 140 rounds of 7.62mm ammunition (A and B).
- 60mm mortar round (C or D).
- Combat Lifesaver Kit (C).
- Personnel Under Custody (PUC) Kit (sand bags, flex cuffs, trash bags, PUC cards, rubber gloves) (C).
- AT-4 or SMAW-D (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
M240B Assistant Machine Gunner	68.76 lbs	36.59 %	117.06 lbs	62.19 %	144.03 lbs	78.46 %

Table 10.9 Average M240B Machine Gun Ammunition Bearer Statistics

10.1.3 The Antitank Section

No Soldiers of Task Force Devil were found to carry the Javelin Missile System into battle due to the absence of an enemy armor threat. The two-man Antitank Section within the Rifle Platoon was used as either additional riflemen for the Rifle Squads or they were used within the Weapons Squad or the Company 60mm Mortar Section to assist in carrying ammunition. Some Rifle Platoons equipped their Antitank Sections with AT-4s, SMAW-Ds, and or M14 Rifles for manning overwatch-by-fire positions with the Weapons Squad. The load data for these men while serving in other functions were coupled with the data for Soldiers holding those same duty positions.

10.1.4 The Rifle Platoon Headquarters

10.1.4.1 The Rifle Platoon Leader

Description: The Rifle Platoon Leader is responsible for all that his platoon does and fails to do. He has the ultimate responsibility for preparing the platoon for combat operations and then leading the platoon during the same. The Rifle Platoon Leader plans platoon level combat missions in order to meet the Company Commander's intent as well as to accomplish all specified and implied tasks found within the company operations order. The Platoon Leader bears the ultimate responsibility for the discipline, training, and well-being of the Soldiers assigned and attached to his platoon. As with all Infantry leaders, the Rifle Platoon Leader leads from the front through his examples to his men.

Common Tactical Tasks:

- Accomplishes platoon missions through the use of platoon fire and maneuver.
- Cordons and searches sensitive sites.
- Conducts combat patrols against the enemy.
- Conducts offensive and defensive operations against the enemy.
- Manages the local operations of Psychological Operations and Human Intelligence attachments.
- Enforces the Rules of Engagement.
- Looks after the health, welfare, and morale of his men.

Equipment Common to Rifle Platoon Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.

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- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- MBITR Radio.
- Internal Communications Radio (ICOM).
- Ground Control Laser Pointer.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.

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- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B) .
- Smoke grenade (B).
- Global Positioning System (B).
- Infrared Strobe Light . (B)
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Binoculars. (A or C).
- Ranger Handbook. (C).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Rifle Platoon Leader	62.36 lbs	34.02%	93.04 lbs	50.33%	117.62 lbs	65.44%

Table 10.10 Average Rifle Platoon Leader Statistics

10.1.4.2 The Rifle Platoon Sergeant

Description: The Rifle Platoon Sergeant assists the Rifle Platoon Leader in training the platoon's Soldiers for combat and in executing the platoon's missions. The Platoon Sergeant is the senior noncommissioned officer within the platoon and as such is the primary trainer of the platoon's noncommissioned officers as well as the enlisted personnel. The Platoon Sergeant works with the Company Executive Officer and Company First Sergeant to execute platoon level logistical operations. The Platoon Sergeant oversees the daily operations of the platoon headquarters and manages the headquarters personnel. As required, the Platoon Sergeant establishes and leads platoon security elements in support-by-fire positions. The Platoon Sergeant is trained to lead the platoon in the absence or incapacitation of the Platoon Leader.

Common Tactical Tasks:

- Assists the Platoon Leader in running the daily operations of the Rifle Platoon.
- Assists in planning and executing platoon level logistical operations.
- Oversees the medical support to and evacuation of injured Soldiers within the platoon.
- Trains and mentors subordinate noncommissioned officers within the Rifle Platoon.
- Oversees the training of individual skills within the Rifle Platoon.
- Oversees the daily operations of the Platoon Headquarters.
- Leads the platoon in the absence or incapacitation of the platoon leader.

Equipment Common to Rifle Platoon Sergeants:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.

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- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B).
- Concussion grenade (B).
- Incendiary grenade (B).
- Smoke grenade (B).
- Global Positioning System (B).
- Infrared Strobe Light. (B).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Ranger Handbook. (C).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Rifle Platoon Sergeant	60.66 lbs	31.53%	89.96 lbs	46.35%	119.16	62.67%

Table 10.11 Average Rifle Platoon Sergeant Statistics

10.1.4.3 The Radio Telephone Operator

Description: The Radio Telephone Operator (RTO) carries and operates the platoon radio for the Platoon Leader and assists in providing local security for the Platoon Headquarters Section.

Common Tactical Tasks:

- Operates the ASIP Radio.
- Maintains continuous communications with Company Headquarters.
- Maintains the ASIP Radio and its components.
- Employs field expedient antennae as required to improve communications.
- Emplaces wire communications as required.
- Provides local security to the Platoon Leader and the Platoon Headquarters Section.

Equipment Common to Radio Telephone Operators:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.

- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- ASIP Radio (can be carried in MOLLE Radio Pouch on Fighting Load Carrier).
- ANCD.
- W2 Cables.
- Extra handmike.
- Long and Short Whip Antennas.
- Extra Radio Batteries.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Global Positioning System (B).
- Infrared Strobe Light. (B).
- Field Expedient Antennae. (C or D).

Fighting Load = A+B
Approach March Load = A+B+C
Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Comments: The RTO is in need of a rucksack system designed for his unique mission. RTOs are forever juggling their ASIP Radios between their main rucksack, their assault rucksack, and the removable MOLLE Radio Pouch. The RTO is frequently over-burdened because he cannot easily drop his personal equipment as other Soldiers do when they drop off their assault rucksacks at an assault position.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Radio Telephone Operator	64.98 lbs	35.60%	98.38 lbs	54.08%	No Data	No Data

Table 10.12 Average Radio Telephone Operator Statistics

10.1.4.4 The Combat Medic

Description: The Rifle Platoon's Combat Medic provides critical life saving medical care to injured members of the platoon. Immediately upon injury, a Soldier is most commonly first attended to by either the closest Soldier ("Buddy-Aid") or a fellow Infantryman within his squad who is trained as a Combat Lifesaver. The casualty is then either evacuated to the platoon's Casualty Collection Point run by the platoon's Combat Medic, or the Combat Medic comes forward to the location of the injured Soldier. The Combat Medic stabilizes the casualty, and if necessary, prepares the casualty for evacuation to the Battalion Aid Station, to the Rifle Company's Advanced Trauma Team, or via air or ground medical evacuation to a rear area medical facility. The Combat Medic will carry only one weapon, either the M9 Pistol or the M4 Carbine, for personal and patient protection.

Common Tactical Tasks:

- Provide front line emergency medical treatment to battlefield casualties.
- Provide routine medical treatment to members of the Rifle Platoon.
- Advise the Platoon Leader and Platoon Sergeant on medical issues and the conditions of the Soldiers within the platoon.
- Establish platoon Casualty Collection Points.
- Prepare Soldiers for medical evacuation.
- Attend casualties during evacuation as required.
- Protect the lives of casualties.

Equipment Common to Combat Medics:

A. Worn on Body/Uniform:

- M9 Pistol with 15 rounds of 9mm ball ammunition or M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 30 rounds of 9mm ammunition or 180 rounds of 5.56mm ball ammunition.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- M9 or commercial pistol holster.
- Extra field dressings in MOLLE Pouches.
- Extra intravenous fluids bags in MOLLE Pouches with extra starter kits.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol or M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Entrenching Tool.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear of Fleece Jacket and Bibs.
- Two Undershirts.

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- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

E. Carried in Aid Bag:

- MOLLE or "M82" Aid Bag containing:
 - Stethoscope
 - Sphygmamometer with Case
 - Field Dressings (8)
 - Cravats (12)
 - Israeli Dressings (4)
 - Tourniquets (2)
 - 1000cc NaCl (2)
 - 4x4 Gauze (20)
 - 2x2 Gauze (20)
 - Bandaid (15)
 - Kerlix (6)
 - Chest Seal (2)
 - Water Seal (3)
 - J-Tube (4)
 - Nasopharyngeal (3)
 - IV Starter Kits (4)
 - 14g Needle (8)
 - Scalpel 10 Blade (2)
 - Scalpel 12 Blade (2)
 - Latex Gloves (10 pr)
 - Pen Light (2)
 - VS-17 Panel.
 - Chemlite (4)
 - Foot Powder (4)
 - 4" Tape (2)
 - 2" Tape (2)
 - 9-Line Medevac Card (1)
 - Scissors (2)
 - Restricting Band (2)
 - Oral Thermometer (1)
 - Anal Thermometer (1)
 - DD Form 1380 (8)
 - Surgilube (8)
 - Sharps Container (1)
 - Pocket Mask (1)
 - Acetomenophin (1)
 - Aspirin (1 bottle)

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- Lopermide (1 bottle)
- Zithromax (3 pack)
- Ibuprophen (1 bottle)
- Naproxne (1/2 bottle)
- Psuedophedrine (1/2 bottle)
- Medical quick reference books.

Special Equipment:

- Global Positioning System (B).
- Pole-less or folding Israeli Litter. (C or D).

Fighting Load = A+B+E

Approach March Load = A+B+C+E

Emergency Approach March Load = A+B+C+D+E

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day. Medics could expect resupply of expendable medical items every 24 hours.

Comments: Medical platoons within some of the Infantry battalions within the 82nd Airborne Division recently purchased "M82" Medical Rucksacks. These special order items are manufactured in the Fayetteville, NC area and are not type classified. The M82 system was designed through collaborative efforts of Fort Bragg medics during the period of 1999-2002. Not all medical platoons have the M82 bag. Of the three Infantry battalion medical platoons in Task Force Devil, at most two platoons used the M82 bags. The other combat medics used the MOLLE Medic Bag. Medics were satisfied with both medical bags. The most significant problem with the combat load of medics is that they tend to pack as much emergency gear and supplies as their bags will hold. The M82 bag holds greater volumes of such materials than does the MOLLE Medic Bag. Medics carry these extra supplies due to their professional commitment to making the best effort to save the life of every casualty within the Rifle Platoon. Like the RTO, the Medic always carries his mission equipment found in his Medic Bag portion of his Approach March Load as is frequently over burdened.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Combat Medic	54.53 lbs	31.08%	91.72 lbs	51.58%	117.95 lbs	69.88%

Table 10.13 Average Combat Medic Statistics

10.1.4.5 The Field Artillery Forward Observer

Description: The Field Artillery Forward Observer (FO) supports the Rifle Platoon by assisting the Rifle Platoon Leader in planning and executing the platoon's indirect fire support missions and close air support missions. The FO utilizes indirect fires from the Rifle Company, Infantry Battalion, and supporting Field Artillery assets, as well as close air support from the U.S Air Force, U.S. Army, and the U.S. Navy to destroy, neutralize, or suppress enemy targets.

Common Tactical Tasks:

- Destroys, neutralizes, or suppresses enemy targets through the employment of indirect fires and close air support.
- Assists the Rifle Platoon Leader in planning fire support missions.
- Assists in providing security for the platoon headquarters.

Equipment Common to Forward Observers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.

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- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- PSN-11 PLGR

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- ASIP Radio. (The ASIP radio can also be carried in the MOLLE Radio Pouch attached the Fighting Load Carrier).
- Spare radio batteries.
- Spare radio components (handmikes, etc.)
- PSN-11 PLGR.
- Viper Binoculars.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.

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- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Infrared Beacon. (B).
- Smoke grenade (B).
- Global Positioning System (B).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Forward Observer	57.94 lbs	33.00%	91.40 lbs	52.12%	128.56 lbs	76.59%

Table 10.14 Average Forward Observer Statistics

10.2 The Rifle Company Headquarters

10.2.1 The Rifle Company Commander

Description: The Rifle Company Commander is responsible for all that the company does and fails to do. He has the ultimate responsibility for preparing the company for combat operations and then leading the company during the same. The Company Commander plans company level combat missions in order to meet the Battalion Commander's intent as well as to accomplish all specified and implied tasks found within the battalion operations order. The Company Commander bears the ultimate responsibility for the discipline, training, and well-being of the Rifle Company.

Common Tactical Tasks:

- Commands the Rifle Company and bears responsibility for all the company does or fails to do.
- Plans and leads the execution of company level operations.
- Trains and mentors subordinate officers within the Rifle Company.

Equipment Common to Rifle Company Commanders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- M9 Pistol with 15 rounds of 9mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- 30 rounds of 9mm ammunition.
- M9 or commercial pistol holster (preferred).
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.

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- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Ground Control Laser Pointer.
- MBITR Radio.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol and M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B).
- Smoke grenade (B).
- Infrared Strobe Light (B).
- Individual Pocket Flares (B).
- Internal Communications Radio (ICOM) (B).
- Global Positioning System (B).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).
- Binoculars (B, C, or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Company Commander	66.10 lbs	37.08%	96.41 lbs	53.77%	111.20 lbs	70.83%

Table 10.15 Average Rifle Company Commander Statistics

10.2.2 The Rifle Company First Sergeant

Description: The Rifle Company First Sergeant assists the Rifle Company Commander in running the daily operations of the company and serves the commander as his senior enlisted advisor. The First Sergeant works with the Company Executive Officer to execute company level logistical operations. The First Sergeant is the senior trainer of the noncommissioned officers and enlisted personnel within the Rifle Company. The First Sergeant oversees the daily operations of the company headquarters and manages the personnel and financial matters of the unit relating to the individual Soldiers.

Common Tactical Tasks:

- Assists the Company Commander in the running of the daily operations of the Rifle Company.
- Assists in planning and executing company level logistical operations.
- Oversees the medical support to and evacuation of injured Soldiers within the company.
- Trains and mentors subordinate noncommissioned officers within the Rifle Company.
- Oversees the training of individual skills within the Rifle Company.
- Marshals the Rifle Company for land and air movements.
- Oversees the daily operations of the Company Headquarters.

Equipment Common to Rifle Company First Sergeants:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- M9 Pistol with 15 rounds of 9mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- 30 rounds of 9mm ammunition.
- M9 or commercial pistol holster (preferred).
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.

- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- MBITR Radio.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol and M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B).
- Smoke grenade (B).
- Incendiary Grenade (B).
- Infrared Strobe Light (B).
- Individual Pocket Flares (B).
- Internal Communications Radio (ICOM) (B).
- Global Positioning System (B).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Company First Sergeant	62.88 lbs	33.69%	90.42 lbs	48.11%	126.00 lbs	86.30%

Table 10.16 Average Rifle Company First Sergeant Statistics

10.2.3 The Rifle Company Executive Officer

Description: The Rifle Company Executive Officer is the second in the company's chain of command and therefore plays a very significant role in assisting the Company Commander in planning and executing company level operations. The Executive Officer, with the support of the company headquarters personnel and the battalion staff, provides logistical support to the company. The Executive Officer also assists the Company Commander in combat by serving as the company's second in command and as such, the Executive Officer can assist in leading a portion of the company during combat operations. Upon the absence or incapacitation of the Company Commander, the Executive Officer takes command of the company.

Common Tactical Tasks:

- Serves as second in command of a Rifle Company.
- Manages and leads the Company Headquarters personnel.
- Plans and executes the company's logistical plan.
- Plans and executes the company's maintenance operations.
- Leads supporting efforts in company level tactical operations.
- Assumes command of the Rifle Company in the absence or incapacitation of the Company Commander.

Equipment Common to Rifle Company Executive Officers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- M9 Pistol with 15 rounds of 9mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X Goggles.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- 30 rounds of 9mm ammunition.
- M9 or commercial pistol holster (preferred).
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.

- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Ground Control Laser Pointer.
- MBITR Radio.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol and M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Aerial Photographs (A).
- Whistle (B).
- Smoke grenade (B).
- Infrared Strobe Light (B).
- Individual Pocket Flares (B).
- Global Positioning System (B).
- 60mm mortar round (C or D).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Comments: None.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Company Executive Officer	60.50 lbs	34.03%	93.65 lbs	52.81%	No data	No data

Table 10.17 Average Rifle Company Executive Officer Statistics

10.2.4 The 60mm Mortar Section

10.2.4.1 The 60mm Mortar Section Leader

Description: The 60mm Mortar Section Leader is responsible for the training and the tactical employment of his 60mm Mortar Section consisting of two Mortar Squads, each with one 60mm Mortar Weapon System. The Mortar Section Leader ensures that the two mortars are properly emplaced and fired during fire support missions. The Mortar Section Leader ensures that the section is properly secured and supplied. The Mortar Section Leader is the Rifle Company Commander's advisor for mortar fires and the Section Leader assists the FIST in planning

company level indirect fires. The Mortar Section Leader additionally serves as the leader of one of the section's two Mortar Squads.

Common Tactical Tasks:

- Oversees the employment of the Rifle Company Mortar Section.
- Leads one Mortar Squad.
- Places accurate mortar fires upon the enemy in order to destroy, neutralize, and suppress enemy forces.
- Assists the FIST in planning and executing company mortar fires.

Equipment Common to 60mm Mortar Section Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- M203 40mm Grenade Launcher on M4 Carbine with one 40mm grenade.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- 18 40mm grenades.
- M2 Compass.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.

- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack: (most mortar sections used the Large ALICE Rucksack for their Assault Rucksack).

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments or Large ALICE Rucksack.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- ASIP Radio with extra components and batteries.
- 60mm Mortar Rounds (up to 5).
- Binoculars.

D. Carried in Main Rucksack:(Since the Main Rucksack was already loaded, many of these items proved difficult to add for sustained operations)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.

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- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Incendiary grenade (B).
- Global Positioning System (B).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Comments: All 60mm Mortar Section Leaders and each of their Soldiers were seen to carry the Large ALICE Rucksack. When asked why they did not carry the main MOLLE rucksack, they stated that the ALICE met their needs for carrying their mortar and personal equipment while the MOLLE rucksack's main cargo area was too small.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
60mm Mortar Squad Leader	58.31 lbs	30.59%	109.99 lbs	57.34%	149.30 lbs	85.64%

Table 10.18 Average 60mm Mortar Section Leader Statistics

10.2.4.2 The 60mm Mortar Squad Leader

Description: The 60mm Mortar Squad Leader is responsible for the training and the tactical employment of his 60mm Mortar Squad. He ensures that the mortar is properly emplaced and fired during fire support missions. In addition, the Mortar Squad Leader ensures that the squad is properly secured and supplied. The Mortar Squad Leader is trained to lead the 60mm Mortar Section in the absence or incapacitation of the 60mm Mortar Section Leader.

Common Tactical Tasks:

- Oversees the employment of one 60mm Mortar System.
- Leads the Mortar Squad.
- Places accurate mortar fires upon the enemy in order to destroy, neutralize, and suppress enemy forces.

Equipment Common to 60mm Mortar Squad Leaders:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- M2 Compass.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.

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- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack: (most mortar sections used the Large ALICE Rucksack for their Assault Rucksack).

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments or Large ALICE Rucksack.
- Mortar Ballistic Computer.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- ASIP Radio with extra components and batteries.
- 60mm Mortar Rounds (up to 5).
- Binoculars.

D. Carried in Main Rucksack:(Since the Main Rucksack was already loaded, many of these items proved difficult to add for sustained operations)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.

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- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Incendiary grenade (B).
- Global Positioning System (B).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

<p>Fighting Load = A+B Approach March Load = A+B+C Emergency Approach March Load = A+B+C+D</p>

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
60mm Mortar Squad Leader	60.98 lbs	37.89%	127.24 lbs	78.26%	142.30 lbs	96.80%

Table 10.19 Average 60mm Mortar Squad Leader Statistics

10.2.4.3 The 60mm Mortar Gunner

Description: The 60mm Mortar Gunner teams with the Assistant Gunner to transport the components of the 60mm Mortar System as well as its ammunition, to prepare the mortar firing position, to emplace the 60mm Mortar, and to fire the 60mm Mortar. In addition, the Gunner participates in providing local security to the Mortar Squad.

Common Tactical Tasks:

- Assists in transporting 60mm Mortar System.
- Assists in transporting 60mm Mortar ammunition.

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- Assists in emplacing the 60mm Mortar into its firing positions.
- Fires the 60mm Mortar.
- Assists in providing security to the Mortar Squad.
- Places accurate mortar fires upon the enemy in order to destroy, neutralize, and suppress enemy forces.
- Assumes the role of Squad Leader when required.

Equipment Common to 60mm Mortar Gunners:

A. Worn on Body/Uniform:

- M225 Mortar with Bipod.
- M9 Pistol with 15 rounds of 9mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 30 rounds of 9mm ammunition.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.

- Canteen Cup.
- Earplugs.
- M9 or commercial pistol holster (preferred).

C. Carried in Assault Rucksack: (most mortar sections used the Large ALICE Rucksack for their Assault Rucksack).

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments or Large ALICE Rucksack.
- M8 Small Mortar Baseplate.
- Mortar Sight and box.
- Mortar Aiming Lights.
- Mortar Bore Sight.
- 60mm Mortar Rounds (up to 5).
- 60mm Mortar Cleaning Kit.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M9 Pistol Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack:(Since the Main Rucksack was already loaded, many of these items proved difficult to add for sustained operations)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment: (Some, but not all of these carried on any one operation by one person based upon METT-T. Letters in parentheses indicate location where the items were carried – see above).

- Map (A).
- Combat Lifesaver Kit (C).
- Star Cluster (C).
- VS-17 Panel.

Fighting Load = A+B
Approach March Load = A+B+C
Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
60mm Mortar Gunner	63.79 lbs	38.06%	108.76 lbs	64.22%	143.20 lbs	88.14%

Table 10.20 Average 60mm Mortar Gunner Statistics

10.2.4.4 The 60mm Mortar Assistant Gunner

Description: The 60mm Mortar Assistant Gunner teams with the Gunner and the Squad Leader to transport the components of the 60mm Mortar System as well as its ammunition, to prepare the mortar firing position, to emplace the 60mm Mortar, and to fire the 60mm Mortar. In addition, the Assistant Gunner participates in providing local security to the Mortar Squad.

Common Tactical Tasks:

- Assists in transporting 60mm Mortar System.
- Assists in transporting 60mm Mortar ammunition.
- Assists in emplacing the 60mm Mortar into its firing positions.
- Assists in firing the 60mm Mortar.
- Assists in providing security to the Mortar Squad.
- Places accurate mortar fires upon the enemy in order to destroy, neutralize, and suppress enemy forces.
- Assumes the role of the Gunner should the Gunner become incapacitated in combat.

Equipment Common to 60mm Mortar Assistant Gunners:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Bayonet.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack: (most mortar sections used the Large ALICE Rucksack for their Assault Rucksack).

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments or Large ALICE Rucksack.
- Mortar Aiming Poles (8).
- M7 Large Mortar Baseplate.
- Mortar Sight and box.
- Mortar Aiming Lights.
- Mortar Bore Sight.
- 60mm Mortar Rounds (up to 5).
- 60mm Mortar Cleaning Kit.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack:(Since the Main Rucksack was already loaded, many of these items proved difficult to add for sustained)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Combat Lifesaver Kit (C).
- Star Cluster (C).
- VS-17 Panel.

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
60mm Mortar Assistant Gunner	55.34 lbs	31.93%	122.16 lbs	70.28%	No data	No data

Table 10.21 Average 60mm Mortar Assistant Gunner Statistics

10.2.4.5 The 60mm Mortar Ammunition Bearer

Description: The 60mm Mortar Ammunition Bearer assists in transporting mortar rounds for his Mortar Squad. In addition, he assists, as required, in emplacing the 60mm Mortar into its firing positions, in firing the mortar as required, in providing security to the Mortar Squad, and in maintaining the squad's equipment. The 60mm Mortar Ammunition Bearer serves in a non-TO&E position and may traditionally be a Rifleman or an Antitank Specialist.

Common Tactical Tasks:

- Assists in transporting 60mm Mortar ammunition.
- Assists in emplacing the 60mm Mortar into its firing positions.
- Assists in firing the 60mm Mortar.
- Provides security to the Mortar Squad.
- Assumes the role of the Assistant Gunner should the Assistant Gunner become incapacitated in combat.

Equipment Common to the 60mm Mortar Ammunition Bearers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack: (most mortar sections used the Large ALICE Rucksack for their Assault Rucksack).

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments, or Large ALICE Rucksack..
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- 60mm Mortar Rounds (up to 5).
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Since the Main Rucksack was already loaded, many of these items proved difficult to add for sustained operations)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Combat Lifesaver Kit (C).
- 60mm Mortar Projectiles (up to 5).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
60mm Mortar Ammo Bearer	53.13 lbs	30.14 %	101.13 lbs	60.59 %	No data	No data

Table 10.22 Average 60mm Mortar Ammunition Bearer Statistics

10.2.5 The Company Fire Support Officer

Description: The Company Fire Support Officer is responsible for planning and executing the company's indirect and close air support fire plans. The Fire Support Officer leads the attached Field Artillery Fires Support Team (FIST) within the company that includes all platoon level Forward Observers, Forward Observer Radio Telephone Operators, the Fire Support Officer's Radio Telephone Operator, and the Company Fire Support NCOIC.

Common Tactical Tasks:

- Leads the Company FIST and supervises the Fire Support NCO and Platoon Forward Observers.
- Places accurate indirect and Close Air Support fires upon the enemy in order to suppress, destroy, or neutralize the enemy.
- In accordance with the Company Commander's intent, plans company level indirect fires and Close Air Support.

Equipment Common to Company Fire Support Officers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.

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- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- ASIP Radio with additional components and batteries.
- Binoculars.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.

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- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment:

- Map (A).
- Smoke grenade (B).
- Infrared Strobe Light (B).
- Global Positioning System (B).
- Star Cluster (C or D).
- VS-17 Panel (C or D).

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Fire Support Officer	54.11 lbs	27.32%	93.08 lbs	46.81%	No data	No data

Table 10.23 Average Company Fire Support Officer Statistics

10.2.7 The Company Communications Chief

Description: The Company Communications Chief is the senior Radio Telephone Operator within a Rifle Company and serves within the Company Headquarters Section. The Company Communications Chief is responsible for the training of Platoon Radio Telephone Operators and is responsible for ensuring the company's radios are properly maintained and cared for.

Common Tactical Tasks:

- Maintains radio communications with company platoons and battalion headquarters.
- Provides unit level/operator maintenance of company radios.
- Provides security to company command post.
- Erects unit antennas at command post as required.

Equipment Common to Company Communications Chiefs:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.

- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.
- OE254 Antenna.
- Additional radio batteries.
- Additional radio components (hand mikes, antennas, etc.).

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment: no additional items of particular note.

<p>Fighting Load = A+B Approach March Load = A+B+C Emergency Approach March Load = A+B+C+D</p>

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When under fire, Soldiers could expect a resupply of their basic load of ammunition each day.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Commo Chief	68.13 lbs	38.16 %	109.69 lbs	61.67 %	No data	No data

Table 10.24 Average Company Communications Chief Statistics

10.3 The Combat Engineer Sapper Team

Description: The Combat Engineer Sapper and his Sapper Team are commonly attached to light Infantry Rifle Companies and/or Rifle Platoons. The Sapper is a specialist in breaching obstacles to include minefields in order to enhance unit mobility. The Sapper assists in the preparation of defensive positions and creating obstacles. The Sapper emplaces high explosives to destroy caches and threat mines. The three Sappers in a Sapper Team carry similar equipment to one another except for the mine detector and the Launch Grapnel Hook, which are spread amongst the team.

Common Tactical Tasks:

- Destroys enemy equipment and munitions.
- Destroys enemy emplacements and caves.
- Detects, marks, and destroys enemy mines and other explosive devices.
- Breaches obstacles.
- Creates obstacles.
- Assists in preparing defensive and/or other static positions.
- Fights as Infantry when required.

Equipment Common to Sappers:

A. Worn on Body/Uniform:

- M4 Carbine with PEQ-2 Laser/PAQ-4 Laser, ACOG/CCO, and 30 rounds of 5.56mm ball ammunition.
- Desert Camouflage Uniform with Infrared Tape on left sleeve (1"x1").
- Desert Combat Boots.
- Dog Tags.
- ID Card.
- Undershirt.
- Socks.
- Tactical gloves.
- Interceptor Body Armor with two Small Arms Protective Inserts.
- Advanced Combat Helmet with night vision mounting plate.
- Rigger belt.
- Notebook and pen.
- Watch.
- Knee and elbow pads.
- Sun, Sand, and Dust type Goggles or Wiley-X.
- Folding Knife/Multi-tool.

B. Worn on Fighting Load Carrier/Interceptor Body Armor:

- MOLLE Fighting Load Carrier with modular MOLLE pouches.
- 180 rounds of 5.56mm ball ammunition.
- Bayonet.
- Fragmentation grenade.
- 64 ounces of water in two 1-quart canteens.
- 100 ounces of water in a hydration bladder.
- Casualty and witness cards.
- Flex cuffs for personnel under custody.
- Night vision equipment (PVS-14/PVS-7).
- Iodine tablets.
- Lensatic compass.
- Flashlight.
- Chemlight.
- First Aid dressing and pouch.
- Canteen Cup.
- Earplugs.
- Internal Communications Radio (ICOM).

C. Carried in Assault Rucksack:

- MOLLE Assault Rucksack or commercial assault rucksack, with MOLLE attachments.
- Four 1.25 lb blocks of C4 Explosive.
- 50 feet of Detonation Cord.
- 30 feet of Engineer Tape.
- Electrical Tape.
- Three Time Initiating Systems.
- 500ml intravenous fluids bag with starter kit.
- 70 ounces of water in a second hydration bladder.
- Two Meals, Ready to Eat (MREs).
- Poncho and/or Bivy Sack.
- Poncho liner.
- Undershirt.
- Spare batteries.
- Two pair of socks.
- Polypropylene or silk long sleeve undershirt.
- M4/M16 Rifle Cleaning Kit.
- Personal hygiene kit.
- Rubber gloves.
- Sling rope with two snap links.

D. Carried in Main Rucksack: (Main rucksacks were rarely taken on operations during study)

- MOLLE main rucksack with Sleeping Bag Carrier or Large ALICE rucksack.
- Modular Sleeping Bag (one bag per two men).
- Long Polypropylene Underwear or Fleece Jacket and Bibs.
- Two Undershirts.
- Two pairs of socks.
- Cold Weather Gloves.
- Knit/Fleece Cap.
- Additional ammunition.
- Two Meals, Ready to Eat (MREs).
- Sleeping pad.

Special Equipment: (Some, but not all of these carried on any one operation by one person based upon METT-T. Letters in parentheses indicate location where the items were carried – see above).

- Map (A).
- Smoke grenade (B).
- Incendiary grenade (B).
- Global Positioning System (B).

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- Combat Lifesaver Kit (C). (1 per team).
- Launch Grapnel Hook (1 kit per team).
- MineLab Mine Detector (1 per team).
- Mine probe.

Fighting Load = A+B

Approach March Load = A+B+C

Emergency Approach March Load = A+B+C+D

Average Mission Duration: 48-72 hours

Resupply Items: Soldiers were resupplied with 2-3 MREs per day and up to 8 liters of water per day. When expending Class V items, Sappers could expect a resupply of their basic load of ammunition each day as well as a daily resupply of high explosive components.

Duty Position	Average Fighting Load (lbs)	Average FL % Body Weight	Average Approach March Load (lbs)	Average AML % Body Weight	Average Emergency Approach March Load (lbs)	Average EAML % Body Weight
Sapper	59.02 lbs	33.05%	95.70 lbs	53.50%	132.08 lbs	77.92%

Table 10.25 Average Sapper Statistics

11. UNIT RESUPPLY OPERATIONS

11.1 Initial Supplies

Based upon unit standard operating procedures (SOPs), each Soldier deployed on tactical operations with one day of Meals, Ready to Eat (MREs) (2-3 meals) packed into his assault rucksack, one day's basic load of ammunition for his assigned weapon, one 500mL intravenous fluids bag with starter kit carried in his assault rucksack, and at least 164 ounces of water carried in a combination of one 100 ounce hydration-on-the-move bag and two one quart canteens. During most operations, a second hydration-on-the-move bag was also carried (either a 70 ounce or 100 ounce bag) bringing total water carried by each Soldier up to a maximum of 264 ounces (approximately 16 pounds of water).

Weapon Type	Basic Load	Carried By
M9 Pistol	45 rounds	Individual
M4 Carbine	210 rounds	Individual
M203 Grenade Launcher	24 rounds	Individual
M249 Squad Automatic Weapon	800 rounds	Individual
M240B Machine Gun	900 rounds	Crew
60mm Mortar	21 rounds/32 rounds	Crew/Platoon

Table 11.1 Basic Loads of Ammunition

11.2 Unit Level Resupply

Each combat operation in which the Devil CAAT participated, involved committing initial assault elements by helicopter air assault while a Ground Assault Convoy (GAC) simultaneously entered the operational area. The GACs were used to deliver combat, combat support, and combat service support elements that were most easily and efficiently brought in by ground movement rather than by air. GAC movements were highly protected by weapon systems mounted to GAC vehicles as well as through the escort support of Military Police (MP) up-armored HMMWVs and/or battalion level TOW platoon HMMWVs. The TOW and MP vehicles mounted either M2 .50 Caliber Machine Guns or MK19 40mm Automatic Grenade Launchers.

Class of Supply	Item	Companies Supported	Quantity of Items
I	Water	2 (B/2-504, C/2-504)	10,800 Liter Bottles
I	Food	2 (B/2-504, C/2-504)	1476 MREs
III	Diesel Fuel	2 (HHC/2-504, D/2-504)	500 Gallons

Table 11.2 Example of Resupplies Transported by GAC Trucks During Operation Vigilant Guardian I

During the conduct of Operation Vigilant Guardian I, the maneuver companies requested the supplies outlined in Table 11.3.

Unit	Day	Water	MREs
B/2-504	2	912 Liters	240 Meals*
C/2-504	2	936 Liters	480 Meals
B/2-504	3	768 Liters	408 Meals
C/2-504	3	960 Liters	336 Meals

*B/2-504 deployed with one day's extra MREs already loaded onto accompanying trucks

Table 11.3 Example of Resupplies Requested Daily During Operation Vigilant Guardian I

During all combat operations, each battalion's GAC LMTV trucks carried an additional two days of Class I, III, IV, and V supplies for all elements participating in an operation that did not have their own organic transportation to haul their own supplies. These GAC hauled supplies were namely for rifle companies. Included in this logistics package were an additional two days of three MREs per Soldier per day and up to 16 half liter bottles of water per Soldier per day. Water bottles were preferred over towing water trailers due to ease of quickly dropping off cases of water with multiple units, ease of rapid individual/buddy canteen refill with the half liter bottles, and difficulties in maneuvering water trailers across complex terrain. All vehicles on an operation carried 30 gallons of diesel fuel in six five-gallon fuel cans. A Battalion Aid Station, or a portion thereof, always moved with the GAC and in addition to providing medical services, also carried limited medical resupplies for the medics within the assault elements. The operational units were also resupplied with on-request Class IX repair parts which could be flown into the operational area as required on a daily basis by helicopters. Limited Class IV barrier materials, primarily Concertina Wire, were carried on each of the vehicles in the GAC.



C/3-504 paratroopers quickly conduct hasty water resupply in Sangin, Afghanistan. Operation Resolute Strike, 8 April 2003

11.3 Emergency Resupply

Should the supplies carried on a GAC prove insufficient during an operation, helicopters positioned at a nearby coalition airfield were on standby to deliver emergency resupplies. These prepackaged supplies were pre-positioned close to the helicopters and included food (MREs) and water, diesel fuel in 500-gallon fuel blivets, ammunition, and medical supplies. None of these supplies were brought forward during the course of the operations that occurred during this study.

12. FINDINGS AND RECOMMENDATIONS FOR REDUCING THE SOLDIER'S COMBAT LOAD

12.1 Materiel Developer Communities

12.1.1 The foot Soldier remains overburdened with the weight of his technologies And the Army Chief of Staff's 50 pound maximum weight limit will never be achieved by 2010 unless (1) significant breakthroughs take place in reducing the weight of many Soldier borne technologies, (2) the Army assigns a Weight Czar who has the authority and responsibility to keep a tight grip on the weight and bulk of all developing Soldier born equipment items, (3) all contributing acquisitions programs are forced to participate in the weight reduction program, and (4) efforts are made to offload items of equipment currently carried by Soldiers onto squad or platoon vehicles that remain close at hand during combat operations.

Discussion: While carrying one of the lighter combat loads in a Rifle Company, the average light Infantry Rifleman is still transporting over 95 pounds of critical combat equipment in his Approach March Load when he conducts short duration, mild to hot weather, dismounted operations in Afghanistan. The weight of his Approach March Load increases even further during cold weather operations and his Emergency Approach March loads are averaging over 127 pounds. The three battalions surveyed as part of this study had all gone to considerable lengths to minimize every article of equipment that their Soldiers carried on operations without impairing mission success. Rucksacks were inspected during pre-combat checks to ensure that only the items specified on the units' packing lists were carried into the field. Commanders and

senior noncommissioned officers knew that because of these measures, their men often carried insufficient personal clothing items to remain comfortable at night and in inclement weather. Comfort items were minimized whenever reasonable in order to reduce the load.

The products carried by the light Infantryman come from numerous program offices within the Army's Acquisition Corps. The overall load borne by the dismounted Infantryman will never be significantly reduced if there is not a systematic commitment to making a global impact on the total weight and total bulk of his equipment. In order to control the weight of these varying products, some central individual within the Army needs to be empowered as the Weight Czar. This Weight Czar would be authorized to demand that programs meet weight goals before they proceed along their developmental paths. The Weight Czar needs the requisite background to understand the needs and burdens of the dismounted Infantryman.

Though weight reduction programs are needed across the full spectrum of Soldier borne equipment, technological efforts will not achieve the full reduction in combat load required. In order to achieve the final, and most significant reductions, equipment must be taken off the back of the Soldier and placed on supporting transportation assets that remain near at hand during combat operations (see follow-on recommendations).

Recommendation: In order to significantly reduce the Soldier's combat load, the Army must collectively agree that it truly wants to solve this age-old problem. This revolution in load cannot take place if only a few product managers or a few program managers participate. This must be a team endeavor across the Army. Given that commitment, a Weight Czar from the user community needs to be identified who not only embodies the drive to reduce weight and bulk, but who is empowered by charter to tell acquisition program managers that they cannot proceed with their programs until their load related Key Performance Parameters (KPP) are met. The Weight Czar must manage weight and bulk at the human system level in order to allow trade space while tracking the individual item weight increases and decreases to the overall warrior system over time. The reach of this Weight Czar's powers must extend to all systems that the individual Soldier wears, carries, or consumes and the Weight Czar should report directly to the senior levels of the Army. Weight and bulk must become KPPs on every requirements document for Soldier borne technologies.

12.1.2 The emphasis to increase the ballistic protection of the Infantryman has increased his survivability while hindering his mobility and endurance.

Discussion: A major component to the total weight of the Infantryman's load is his body armor. Of the Rifleman's overall Approach March Load weight that averages over 95 pounds, the Interceptor Body Armor (IBA) with its Small Arms Protective Plates (SAPI) and his Advanced Combat Helmet account for roughly 21% of his total load. Likewise, the IBA with plates and his helmet account for close to 31% of his Fighting Load. Unlike his Assault Rucksack that can be dropped off in assault positions during some tactical operations, the IBA is always worn. The weight and bulk of the IBA wears down on the Soldier, exhausting him, abrading him, and overheating him. While his unprotected adversary carries little more than an assault rifle, ammunition, and grenades, the American Infantryman is encumbered by his gear.

While all Soldiers greatly value the protection that their IBA and their Advanced Combat Helmet provide, they continue to pay a high physical price for that protection.

During Operation Resolute Strike, 8-9 April 2003, the combination of high desert temperatures, bright sunlight, and Approach March Loads averaging over 101 pounds per man, quickly wore out the physically fit paratroopers. Each Soldier carried close to 234 ounces of water and these water supplies were exhausted within the first 12 hours of the operation. The combined affects of the heat and the weight of the Soldier's combat load during this operation made moving even relatively short distances of a few kilometers on relatively flat terrain, to be a challenge. The units involved in the operation recognized the impact that these conditions were having on the men and the small unit leaders took proactive steps to provide rest breaks and to resupply water. The fact remains, however, that combat loads, combined with climatic and terrain conditions, and mission requirements, can quickly exhaust a force of physically fit Soldiers.

When operating in hot climates, the Soldier's uniform beneath his body armor becomes saturated with perspiration and remains wet throughout the operation. The sweat-soaked uniform proves very uncomfortable at night as the desert cools. Even nighttime temperatures between 60-70°F can feel frigid to a Soldier in wet clothing when he was operating in 116°F temperatures only a few hours earlier, as was the case during Operation Resolute Strike.

Recommendation: The Army must fund and encourage efforts to dramatically reduce the weight and bulk of individual body armor while making the design of such armor much more flexible and comfortable to wear. Considerable effort must go into replacing hard protective plates with flexible, lightweight systems that form to the Soldier's body, minimally impede motion, and permit cooling of his torso and drying of his clothing.

12.1.3 Insufficient efforts have been made toward providing the Infantryman with lightweight, compact, mission essential equipment that remains current with commercial state-of-the-art equivalent systems.

Discussion: When one closely examines the Infantryman's combat equipment, they note that much of his mission essential gear has not changed considerably over the past few decades and continues to be both heavy and bulky. Today's Soldier carries more than his forefathers. As S.L.A. Marshall wrote in The Soldier's Load and the Mobility of a Nation, "Armies through the past 3,000 years have issued equipment to the soldier averaging between fifty-five and sixty pounds." While there have been great advances in some of the uniform items, radios, and weapon systems that the Soldier carries today, the Soldier carries much of the same bulk that his forefathers carried in addition to carrying new gear relating to his ever-increasing battlefield capabilities. What has not taken place for the Infantryman is a serious, universal campaign to reduce the overall weight of his equipment. We keep adding to his tool kit, and with each addition comes another need for space on his person (or in his rucksack) as well as a greater compounded weight on his shoulders. Technology has outpaced the Army's rate for equipping the Soldier. Lightweight materials are on the market such as miniaturized electronic items of equipment that could easily be introduced to replace his older, slower, heavier items of kit. Examples are everywhere - take the artilleryman's PLGR GPS used in conjunction with his

VIPER binoculars to pinpoint the geographical location of a target. While the VIPER binoculars are relatively new, the PLGR, well over a decade old, is huge and 20 fold heavier than the commercial Garmin eTrex® or Rhino® GPS systems available on the market today. Were the Army to tie VIPER in with a pocket-sized GPS, the Soldier would not only have a state-of-the-art GPS and would save two pounds in his combat load, but the Army would pay far less per GPS and could easily replace these systems as GPS technologies continued to evolve. Security issues may need to be addressed with these commercial products but in many cases industry can incorporate such technologies wherever necessary within their off-the-shelf products. Another example: the tripod for the M240B Machine Gun. The M240B's tripod and associated Traverse and Elevation Mechanism have changed little since the .30 Caliber Machine Gun of the Second World War. The rapid advances in lightweight metals over the last few decades have passed by this 11.75 pound tripod. One has to ask why is the Assistant Machine Gunner still carrying an awkward, heavy tripod? General Dynamics Ground Systems, as an example, demonstrated an extremely lightweight tripod for the Objective Crew Served Weapon. Similar strides could be made for the smaller M240B tripod that would significantly reduce its weight. These savings, measured in whole pounds, could significantly help the dismounted Soldier.

Recommendation: The Army must seek ways to quickly take advantage of advancing technologies and technological capabilities. We need to be able to accept the “good enough” item, such as commercial radios for squads or commercial GPSs for leaders, that can simply be discarded when they break or become obsolete, and not develop requirements documents that demand “ultimate” end items that take years to develop. The Army must be willing to invest in reducing the load on the Soldier's back -- weight savings cost money.

12.1.4 The Infantryman's system for carrying his combat load needs to be further evolved in order to better meet his changing combat needs.

Discussion: For many years the Army has been juggling different methods for enabling the dismounted Soldier to carry his combat loads. The knapsack, backpack, haversack, or rucksack has been a staple of the Infantryman's tool kit for centuries. Load bearing harnesses, worn over the Soldier's uniform and easing his transport of his Fighting Load were largely an advent of the 20th Century, and in particular, the First World War. Within the past 30-40 years, the Army has introduced several different load carriage systems to replace the World War II equipment that lasted well into the 1960s. All of these systems have had their successes and their shortcomings, and systems that worked well for some military occupational specialties, or for some sized individuals, fell flat for others. The Infantryman of 2003, fighting in Afghanistan and Iraq, has been equipped with yet a newer, more advanced, more capable load bearing system known as MOLLE (Modular Lightweight Load Bearing Equipment). MOLLE is innovative in its approach to giving the Soldier a modular assembly that permits him to piece together his gear in such a manner as to enhance its usefulness to his individual needs. The Infantryman likes both this approach as well as many of the components of MOLLE. What the Soldiers of Task Force Devil learned in Afghanistan while using their new MOLLE systems, however, is that they like neither the MOLLE Rucksack nor the MOLLE Assault Rucksack (see Annex A: Problems in Current Load Carriage). In general, these Soldiers liked the new Fighting Load harness (Fighting Load Carrier) and the moveable MOLLE pouches. Most of these Soldiers would prefer to use their long-loved large ALICE Rucksack with the addition of a commercial assault

rucksack. Despite the introduction of MOLLE, many of the Task Force Devil units purchased commercial assault rucksacks prior to deployment and they learned in Afghanistan that these off the shelf products were preferable to the MOLLE assault rucksack. Soldiers operating with MOLLE in other theaters or even within Afghanistan might have more positive impressions of MOLLE's performance, but within Task Force Devil, the general feeling was that MOLLE was not ready for fielding. As the Task Force's Logistics Officer stated, "I regret that we brought MOLLE Rucksacks and that I did not have the foresight to pack a shipping container full of ALICE Rucksacks."

Recommendation: Pause the fielding of MOLLE. Utilize data from all units that have been using MOLLE in combat as operational test data in order to execute thorough after-action analyses of MOLLE's performance. If the data supports a redesign effort, then provide the Infantryman with a load carriage family of systems that better meets his requirements. The final solution for the main rucksack might be a commercial system or even an upgrade to the long-adored large ALICE Rucksack. Fundamentally, the ALICE is a fairly good rucksack that at a minimum is in need of both a modern frame and improved shoulder strap/waist belt system. If ALICE were upgraded, it should gain MOLLE type nylon stowage bars for attachment of MOLLE pouches. The MOLLE Assault Rucksack should be discarded for the best choice amongst commercially available assault rucksacks.

12.1.5 The Army needs to pay more attention to what industry has to offer before the Army finds it necessary to design new load carriage equipment.

Discussion: After accompanying fighting units on their combat operations in Afghanistan, listening to Soldiers expressing their needs, desires, and dislikes, and seeing what equipment individual Soldiers and their units had purchased prior to deploying overseas, it was very evident that oftentimes Soldiers prefer items available on the commercial market in lieu of items of equipment that the Army has developed. This observation was never clearer than with assault rucksacks. Soldiers appreciated the London Bridge rucksacks, Blackhawk rucksacks, and Tactical Tailor rucksacks that they or their units purchased, but few Task Force Devil paratroopers liked the MOLLE Assault Rucksack. The lesson learned from this was that the Army should consider commercial items, or variations thereof, whenever possible and permit the Soldiers to test these items and to down-select these items. Only when industry has failed to demonstrate an acceptable product should the Army initiate its own design effort.

Recommendation: Defense acquisition regulations already require that commercial off-the-shelf products be considered first prior to developing new military technologies. These policies need to be applied to load carriage systems. The Army has historically developed its own load carriage systems due to the uniqueness of its business, but today there exist many commercial tactical systems worth considering. To solve the current issues with MOLLE, and its Assault Rucksack in particular, the Army must establish a process for first determining whether or not industry already has acceptable rucksacks before the Army designs a new product or redesigns the current MOLLE system. This approach has been successfully followed in a number of Special Operations clothing programs as well as PEO-Soldier's Rapid Fielding Initiative. The design of new equipment should be a last resort and only pursued when industry proves that they have nothing close to an acceptable solution.

12.1.6 Wherever possible, equipment needs to be multifunctional while not encumbering the Soldier.

Discussion: In developing new Soldier equipment or in redesigning current Soldier equipment to reduce its weight and bulk, common sense attempts should be made to combine more than one capability into items as long as these efforts neither overly complicate the development process nor create technological elephants. An example comes from the Devil CAAT's observations in Afghanistan. Many Soldiers, privates to colonels, were found to be carrying civilian Garmin global positioning systems (GPS). All of the same Soldiers were also carrying Lensatic Compasses and many carried Internal Communications Radios (ICOMs). If the GPS were accepted as a common piece of Soldier equipment, the Army could provide GPSs to its Soldiers that include both electronic compasses and radios, such as the Garmin Rhino®. Many of these modern GPSs also include maps, utilize the Military Grid Reference System, and can be loaded with operational graphics.

Recommendation: The TRADOC combat developers need to encourage multi-functional items of equipment in order to reduce the overall weight and bulk of the equipment that Soldiers carry in combat.

12.2 Training and Doctrine Command

12.2.1 The nature of modern combat operations permits the rethinking of logistical resupply operations and supply doctrine.

Discussion: Our enemies of old had considerable air power that forced Armies like ours to conduct logistical resupply operations after dark. The convoys of supply trucks, lightly defended with their machine guns and escorts, were especially vulnerable in daylight to enemy air attack. Our former enemies also lacked night vision equipment so nightly resupply operations were safer. On our modern battlefield, however, no nation's air force can currently withstand the onslaught of the U.S. Air Force and our air supremacy is guaranteed. Despite our technological advances, however, our modern enemies, such as in Afghanistan, prefer to operate at night in order to attack or ambush our forces and to avoid the higher threats of operating in daylight. The night gives these technologically inferior enemy forces a greater chance to successfully conduct their operations without being detected or successfully pursued as they would have during the hours of daylight. These two observations then offer the U.S. Army an opportunity to re-look its doctrine of when to conduct logistical resupply operations. If we resupplied our light Infantry forces in the daytime, the supply trucks might be less prone to enemy ambush. In addition, we may be able to resupply each Infantry unit twice a day rather than once per night. With two logistics packages arriving each day, the Infantryman could carry half of the water he currently carries, half of the meals that he currently carries, perhaps less ammunition that he currently carries, etc. These savings equate to many pounds removed from the Soldiers' shoulders.

Recommendation: Given acceptable risk, commanders can significantly reduce their Soldiers' combat loads by redesigning their resupply practices. Rethinking the frequency of their unit's resupply operations and deciding how to maintain mounted immediate resupplies with the

troops, will go a great way toward reducing the combat load. Such doctrinal changes to logistics practices will be essential if the Army is to achieve the Chief of Staff's weight standard of no more than 50 pounds by 2010.

12.2.2 Dismounted Infantry forces need methods for dynamically maintaining their approach loads near at hand, but off their shoulders, during combat operations.

Discussion: Traditionally, the dismounted Infantryman carries on his back almost everything that his unit feels he will need daily over the course of an operation. In addition, the Soldier can expect to receive daily resupplies of food, water, and ammunition. The net result is that the Infantryman continues to be overburdened and can easily become exhausted given terrain and weather challenges. Were Infantry companies able to maintain some type of vehicular transportation near at hand throughout the majority of their dismounted movements, then these trucks, robots, or something else, would carry the Soldiers' sustainment items, freeing the Infantryman from carrying his thermal layers, sleeping covers, water, some ammunition, hygiene kits, etc. This "mule" vehicle could then provide these items as well as resupplies to the Infantry platoon as and when needed. The goal should be that the Fighting Load becomes the standard combat load during dismounted movement and not the Approach March Load as today, and that the Infantryman is rarely encumbered with a rucksack.

Recommendation: In the near term, unit commanders could consider utilizing their organic or borrowed LMTV trucks and HMMWVs to support their units as surrogate mules. These efforts may require modifications to Tables of Organization and Equipment (TO&E) or they may simply require the reallocation of existing on-hand resources within a task force. The Army needs to look at varying approaches to providing this at-hand logistical support to units and this might involve purchasing more light tactical vehicles and increasing TO&E authorizations. In the mid-term, the Army needs to accelerate the development of small mule type robots or manned systems for light Infantry units. These robots or manned light all-terrain vehicles need to be airdroppable by parachute and slingable by helicopters.

12.2.3 FM 21-18, Foot Marches, needs to be rewritten to reflect the realities of modern operations and the loads and equipment that today's Soldiers are carrying.

Discussion: FM 21-18 was last published in 1990. Since that time, the U.S. Army has fought several major wars, Soldier technologies have changed, several peacetime Soldier load studies have been completed, and this combat study has been executed. Not only is the field manual therefore out of date, but the standards for combat loads and the instructions to units for carrying the Soldier's combat load should be completely rethought in order to help shape the Army for the Future Force.

Recommendation: FM 21-18 should be updated at the soonest possible time in order to drive the Army toward new approaches for reducing the Soldier's combat load. TRADOC needs to be as revolutionary in its approach to modernizing the doctrine for combat load as the Army's Chief of Staff was in demanding that the Soldier's combat load not exceed 50 pounds by 2010.

12.3 Operational Forces

12.3.1 Unit chains of command are working aggressively to minimize the equipment carried by their Soldiers during combat operations.

Discussion: The Devil CAAT was very impressed in how hard the Infantry battalions within Task Force Devil were working to reduce the loads carried by their Soldiers. The data collection team saw no examples of Soldiers carrying excessive gear and the gear that they were carrying had been closely reviewed and approved by the platoon, company, and battalion chains of command. The noncommissioned officers closely administered combat loads within Task Force Devil. Though the 2nd Battalion, 505th Parachute Infantry Regiment had an especially aggressive and detailed program for monitoring and controlling their Soldiers' combat loads, all three Infantry battalions in the task force were doing admirable work to reduce the equipment carried by their men. The Devil CAAT found that these battalions had reduced their Soldiers' loads about as far as they could while still ensuring that their Soldiers had the means to successfully execute their assigned missions. The loads that these men carried, however, were still too heavy due to the fact that the equipment simply weighs too much and doctrinal resupply operations were too infrequent.

Recommendation: Units must continue their emphasis on minimizing the loads that their Soldiers are carrying while ensuring that their missions can still be accomplished. The Soldier's load must always be on the conscience of every Infantry leader. As recommended by S.L.A. Marshall in *The Soldier's Load and the Mobility of a Nation*, and repeated by the 1998, load study by the U.S. Army Research Institute for Environmental Medicine, units should set a maximum load of 1/3 of a Soldier's body weight and then enforce that weight as the Soldier's maximum Approach March Load. Any equipment that exceeds the maximum weight should be brought forward to the Soldier through unit transportation assets. Units should be issued weight scales and actively measure and be aware of the loads carried by their men. When weights exceed 1/3 of a Soldier's body weight, the unit should accept that moving the rest of that load forward in a timely manner to the Soldier has become a matter of unit responsibility.

12.3.2 Operations in arid desert regions drive requirements to carry considerable volumes of water, greatly adding to the Soldier's combat load and thus further degrading the Infantryman's mobility and endurance.

Discussion: During winter operations in Afghanistan, the battalion logistics officers within Task Force Devil resupplied their Soldiers with approximately 3.5 liters of water per day. This figure jumped to 8 liters per day in the heat of late April and that was shy of the height of the Afghan summer that comes in June and July. The weight of this water is considerable and can exceed 16 pounds per man. Water resupply came in the form of cases of half-liter water bottles that the Army bought commercially. Soldiers would empty these bottles into their hydration-on-the-move bladders (100 ounce or 70 ounce bladders). Many Soldiers continued to carry their two one-quart standard Army canteens, but these were used more often as another means for refilling the bladders than they were used for immediate water consumption. The excessive weight of 16 pounds of water helped to wear down the Soldiers during operations, such as

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Operation Resolute Strike. Water was a two edged sword: the Soldiers needed it for hydration, but its weight helped to physically exhaust them.

Recommendation: Without hampering the safety and hydration of dismounted Soldiers, means or methods must be developed to permit the off-loading of water from the Soldier's back. A Soldier should never have to carry more than one 100-ounce hydration bag. His unit needs to be able to maintain additional water close at hand during both static and dynamic operations. These immediate resupplies should not be maintained more than one terrain feature behind the Infantryman and the water should remain uploaded on light transport for immediate delivery to the Infantry Squad.

Annex A: Problems in Current Load Carriage

Task Force Devil deployed to Afghanistan with the newly produced Modular Load Bearing System (MOLLE) and the Interceptor Body Armor. Both of these items were issued to the task force during the November-December 2003 timeframe by members of the Program Executive Office – Soldier. Some Soldiers chose to deploy to Afghanistan with their ALICE Rucksacks. Observations on the performance of these items follow.

1. MOLLE:

MOLLE consists of several modular components, including:

- **Fighting Load Carrier (FLC):** A tactical vest that replaces both the Army's Load Bearing Equipment (LBE) and the Load Bearing Vest (LBV). The FLC has multiple nylon stowage bars that permit the modular attachment of accessory pouches of varying sizes and purposes. The MOLLE system provides a family of equipment pouches for use with the vest for transporting magazines of ammunition, compasses, canteens, hand grenades, etc.
- **Main MOLLE Rucksack System:** A full size rucksack system with an external plastic frame that includes a main rucksack compartment and a lower, separable, Sleeping Bag Carrier. The main rucksack compartment includes a removable radio pouch as well as a removable small arms ammunition magazine bandoleer. The outside of the main rucksack compartment has a zippered pouch dimensioned for carrying one M18 Claymore Mine. The main MOLLE Rucksack is designed to replace the large ALICE Rucksack and frame that have been used by the U.S. Army since the 1970s.
- **Assault Rucksack:** A small rucksack that can be worn by a Soldier as a separate rucksack or attached to the main MOLLE Rucksack for transportation of the two rucksacks simultaneously. The Assault Rucksack includes nylon stowage bars for attaching accessory MOLLE pockets as well as attaching the MOLLE Butt Pack underneath. The Assault Rucksack includes a zippered main compartment that contains a removable 100-ounce water bag for on-the-move hydration, and an external pocket.
- **Butt Pack:** A small zippered bag with its own waist belt that can either be worn around a Soldier's waste or it can be attached to either the Main MOLLE Rucksack or the Assault Rucksack.
- **Modular Accessory Pouches:** Designed to be modularly attached to the outside of either the Assault Rucksack or the main MOLLE Rucksack. These pouches can also be detached from MOLLE and used individually with a shoulder strap.

While conducting training operations prior to and during the unit's deployment to Afghanistan, and while conducting combat operations during the task force's service in Afghanistan, the various internal organizations within Task Force Devil identified some strengths and many shortcomings of the MOLLE System. In general, these include:

Strengths:

a. **Fighting Load Carrier (FLC).** Soldiers in general appreciate the FLC and its versatility. The FLC enables the individual Soldier to tailor his own load bearing equipment so that he has the appropriate MOLLE cargo pouches in areas that are most easily accessible to him. Many Soldiers prefer to wear the FLC's belt backwards so that they can use the reversed FLC belt as a rack system in their front for MOLLE magazine pouches. 2-504 PIR incorporated the backwards FLC belt as a battalion standard operating procedure (SOP). When the FLC is worn in this manner, however, the extraction handle on the FLC is pulled forward due to the weight on the front of the FLC and this nylon handle digs into the back of a Soldier's neck and creates considerable discomfort.



Figure B.1 MOLLE FLC modified as rack system

b. **Modular Accessory Pouches.** The troopers of the task force appreciated the modular nature of the MOLLE accessory pouches and their ability to arrange them as they desired on their FLCs. They did state that they wished that they had access to more of the standard pouches as well as access to specialized pouches, such as for civilian Global Positioning Systems (GPS). The Soldiers within the battalions especially appreciated the large MOLLE side accessory pouches that can be fit to either the main MOLLE Rucksack or the Assault Rucksack.

c. **Medic MOLLE Rucksack.** Medics generally appreciated the modularity of the Medic MOLLE Rucksack. The Medic Rucksack gave them sufficient flexibility in packing their assorted medical equipment to meet their emergency needs. The attachment of the Assault Rucksack on top of the Medic Rucksack, however, made for a very awkward load that not only was cumbersome in dismounted travel and adversely offset the medic's center of gravity, but also made getting into and out of buildings and helicopters difficult.

Weaknesses:

a. **MOLLE Frame.** The plastic frame for the Main MOLLE Rucksack is far too fragile and breaks easily upon impact with the ground and when being lifted overhead by Soldiers. The frame breaks at both the horizontal upper and lower frame members as well as the vertical side members. About 5% of all MOLLE frames in the task force's Infantry battalions were found to be broken and others had previously been replaced by the CIF at Kandahar. The MOLLE frame needs to be replaced with a much more robust frame that can survive the rigors of dismounted Infantry operations.

b. **Main MOLLE Rucksack.** Soldiers noted that the MOLLE Rucksack has many deficiencies that make them greatly prefer their ALICE rucksacks. The Task Force Devil S4 stated that in hindsight he wished that he had brought an ISO container of ALICE Rucksacks so that his Soldiers would not have to carry the MOLLE Rucksacks. Soldiers of the task force pointed out the following shortcomings with the main MOLLE Rucksack:

(1) Main cargo pouch is too small. Soldiers need more cargo space within their rucksack and the MOLLE's main pouch fills up too quickly, especially when bulky items, such as thermal clothing or a poncho liner are stuffed into the main compartment. Besides the frame, this lack of volume is the principle complaint that Soldiers have with the main MOLLE Rucksack.

(2) Straps on top flap are improperly positioned. The straps on the top flap are positioned too far to the left and right and as such, the top flap rides up in the middle and the straps no longer hold it down. Some Soldiers choose to crisscross these straps in order to attempt to hold the top flap down. If the top flap had nylon stowage bars, as found on the FLC and the IBA, Soldiers could pick the routing for the two straps on the top flap in order to best meet the needs of holding the flap down given their particular load.

(3) Straps on top flap tighten in the wrong direction. Soldiers note that the ALICE straps tightened in the opposite direction to the MOLLE straps and that much preferred the ALICE method of pulling up on the free running ends of these two straps in order to cinch the flap down.

(4) No stowage bars on top flap. Soldiers would like to have nylon stowage bars on the top flap of their MOLLE so that they could easily attach accessory pockets of other items to the outside of their MOLLE Rucksack.

(5) Cinch bag is sewn too close to top of main cargo pouch. The cinch top to the main MOLLE Rucksack is sewn too close to the top of the main camouflaged cargo pouch and thus prevents the top bag from more aggressively cinching down on the cargo. The shallow cinch bag top also hinders the stowage of the pull string once the bag is cinched closed.

(6) Lack of properly sized waterproof bags. The MOLLE System does not come with waterproof bags and the Soldier is forced to purchase on his own waterproof bags that were either designed for the ALICE Rucksack, for military duffle bags, for civilian hiking, or for trash

cans. There are many commercial waterproof bags on the market for civilian rucksacks and these could be introduced as accessories for the MOLLE System.

c. **Assault Rucksack.** The MOLLE Assault Rucksack is insufficiently designed to properly support dismounted Infantry operations. Operations in Afghanistan have proven that the Infantryman needs an assault rucksack but does not necessarily need an assault rucksack that attaches to the outside of the main MOLLE Rucksack. The idea of carrying two rucksacks simultaneously is better left for airports than it meets the needs of the foot Soldier on the battlefield. Almost every unit operating in Task Force Devil used assault rucksacks during all of their operations. A couple examples were either seen or heard about where the main MOLLE Rucksacks were brought forward as contingency loads but the intent was never for the Soldiers to march with both rucksacks simultaneously. The principle shortcomings of the MOLLE Assault Rucksack are:

(1) Assault Rucksack volume is too small. The MOLLE Assault Rucksack, even with two accessory pouches is far too small and awkward in design for adequately carrying the Infantryman's Approach March Load. The zippered top to the Assault Rucksack is extremely cumbersome to close when the pack is filled and the zipper tends to self-open when the pack is very full. Soldiers and units much prefer commercial assault rucksacks and the London Bridge rucksack was used by all troopers in 2-504 Parachute Infantry.



Figure B.2 Soldier's Assault Rucksack Zipper Has Self-Opened

(2) Assault Rucksack's stitching breaks too easily. The thread used in all components of the MOLLE system breaks easily. Examples of broken threads were seen in all MOLLE components and especially in relation to the nylon stowage bars on the Assault Rucksack. One platoon leader, heading into a helicopter, inadvertently dropped his Butt Pack that had been attached to the underside of his Assault Rucksack when the stitching suddenly failed on the stowage bars beneath the Assault Rucksack.

(3) Shoulder straps are too narrow. A common complaint with the Assault Rucksack was that the shoulder carrying straps are too narrow, not padded enough, and too short for comfortable wear with the IBA and a CamelBak on the back of the IBA (common unit SOP). One Soldier was seen to have used the shoulder straps for his main MOLLE Rucksack on his Assault Rucksack.

(4) Chest straps cut into Soldiers' necks and are therefore not used. The chest strap that joins the two shoulder carrying straps on the MOLLE Assault Rucksack is completely useless when wearing the IBA. The strap is too short to span the chest and the chest strap cannot be lowered low enough on the shoulder straps to keep from cutting into the Soldier's neck. With the chest strap out of commission, the narrow Assault Rucksack shoulder straps slip off the IBA's shoulder pads and cut into the Soldier's shoulders.

(5) Assault Rucksack has no waterproof bags. As with the lack of waterproof bags for the main MOLLE Rucksack, the Assault Rucksack is also in need of a suitable system for keeping the Soldier's equipment dry in inclement weather and during river crossings.

d. **Canteen Carrier.** Though Soldiers enjoy using the canteen carrier as a utility pouch for carrying rifle ammunition magazines and night vision devices, as a canteen carrier it has four significant shortcomings:

(1) Canteen Carrier is too small. The canteen carrier fits too tightly around the canteen cup and the dimensioning of the fabric makes it almost impossible to either stow or to remove the canteen cup.

(2) Difficult to stow canteens. When wearing the canteen carrier on the FLC, it is almost impossible for a Soldier to re-stow a canteen once the canteen has been removed from its carrier. Given that the canteen carrier is located on the side of the FLC beneath the Soldier's shoulders, the awkward position and tight fit of the canteen carrier makes re-inserting the canteen into the carrier exceptionally difficult.

(3) Difficult to snap closed. The Fastex clip on the nylon strapping is very hard to snap closed with one hand when attempting to re-stow a canteen into the canteen carrier.

(4) Pockets are too small. The two external pockets on each canteen carrier are too small to handle Army field dressings, especially the new larger dressing, and the pockets are far too small and awkwardly placed for storing and using the Lensatic Compass. Most Soldiers are forced to use a MOLLE grenade pouch for storing their Lensatic Compass.

e. **MOLLE Stitching.** The MOLLE system needs to be sewn with a stronger thread. The members of the Soldier Load Team saw numerous examples of (1) FLCs coming apart at the shoulder where the netting is sewn to the nylon webbing and (2) nylon stowage bars and nylon strapping being pulled off the Assault Rucksack and the main MOLLE Rucksack.

f. **Sleeping Bag Carrier.** Many Soldiers complained that the Sleeping Bag Carrier was both too large and awkwardly attaches to the main MOLLE Rucksack and the MOLLE frame. Whenever the Sleeping Bag Carrier's two straps are detached, the carrier flops down. These two straps also do not have elastic keepers, making their free running ends difficult to stow.

g. **Butt Pack.** The Butt Pack is a convenient size for attaching to the bottom of the Assault Rucksack but it is awkward to wear separately around a Soldier's waist. When worn by itself, the Butt Pack's internal belt must be overly tightened to keep the Butt Pack from slipping around. When so tightened, the nylon belt cuts into the Soldier's hips and proves very uncomfortable. The two straps that pass around the Butt Pack are centered too far toward the two ends of the Butt Pack and do not grab the majority of the contents. These straps frequently slip off either or both ends of the Butt Pack.

h. **Carrier for On-the-Move Hydration Bag.** The on-the-move hydration system's carrier bag is convenient for carrying the bladder when not wearing either the Assault Rucksack or the main MOLLE Rucksack. The bag's shoulder straps are too narrow, however, and after riding off the shoulder straps of the IBA proceed to cut into the Soldier's shoulders. The shoulder straps lack a chest strap and also lack quick release buckles for (1) attaching the shoulder strap to the bottom corners of the carrier bag and separate Fastex buckles for quickly snapping the carrier onto the rear of the FLC, the IBA, or the Assault Rucksack. Soldiers are forced to use nylon cord or zip ties to create their own methods for attaching the carrier bag to the back of their equipment. Once the carrier is so attached to the back of the IBA or the FLC, it is very hard to remove and to fill and a buddy is needed to make this possible. When Soldiers wear their on-the-move hydration system on the rear of their FLC or their IBA, the rucksack sits on top of the bladder, making for a very awkward load on their backs.

i. **Water leakage from On-the-Move Hydration Bag.** Though Soldiers prefer on-the-move-hydration to the older plastic canteens, CamelBak bags leak. Their loss of water often soaks both the Soldier's rucksack and its contents. These bags leak for four reasons:

(1) It is very easy to improperly screw the refill cap back onto the CamelBak. The rubber gasket then is not compressed and water leaks out around the refill cap.

(2) The male nozzle on the bottom of the bag that couples with the drink tube often leaks or pops off and some Soldiers were forced to use their older two-quart canteens because their 70-ounce CamelBaks steadily dripped from this poor connection. Pushing the drink tube as far as it would go onto the male nozzle did not assist in preventing the constant dripping from this joint.

(3) Some CamelBak bags experienced the patch on the bottom of the bag that holds the male nozzle for the drinking tube, peeling off the bag and thus causing a complete loss of water.

(4) CamelBak bags are too fragile and Soldiers frequently popped their bags as they sat on their Assault Rucksacks while riding inside helicopters or when dropping their rucksacks to the ground.

j. **Magazine Pouches.** Soldiers would like to be able to store three 30-round rifle magazines inside the MOLLE ammunition pouches. This was possible with the older ALICE pouches. Soldiers would like to be able to carry their six magazines inside two rather than three ammunition pouches, thus freeing up more real estate on the FLC or the IBA.

2. **Interceptor Body Armor (IBA).**

Interceptor Body Armor (IBA) is a protective vest that is worn underneath the MOLLE FLC and provides torso protection to Soldiers against small arms and shrapnel threats. The vest by itself is designed to stop a 9mm bullet while the vest with its Small Arms Protective Insert (SAPI) plates is designed to provide protection in the plate area against 7.62mm ball ammunition. Members of Task Force Devil in Afghanistan always wore the IBA while operating away from friendly firebases and airfields.

Strengths:

a. **Ballistic protection.** The IBA continues to demonstrate its ability to stop small arms bullets and shrapnel. Soldiers and their leaders so appreciate the added protection of the IBA that they are willing to put up with its excessive weight and discomfort.

b. **Quick don/doff.** Soldiers appreciate the IBA's easy front Velcro closure. Many Soldiers do not fasten the additional snaps on the front of the IBA. The Velcro closure enables the quick donning and doffing of the IBA, and also permits Soldiers to crack open the front to quickly relieve themselves of some of the built up heat.

c. **Stowage bars on front.** Some Soldiers prefer to attach some or all of their MOLLE pouches to the front of their IBA. The stowage bars on the front of the IBA enable modular placement of these pouches.

Weaknesses:

a. **Weight.** The IBA remains far too heavy and accounts for one quarter of the weight of the average Soldier's Approach March Load and 50% of the weight of his Fighting Load.

b. **Shoulder exposure/shoulder strap retention.** Shoulder straps on the Assault Pack and the On-the-Move Hydration Bag Carrier easily ride off the shoulders of the IBA and then cut into the Soldier's shoulders. These straps prove very painful to wear and the two keeper straps on the shoulders of the IBA only offer partial support for minimizing this problem.

c. **Freedom of arm movement.** Soldiers stated that their IBAs often restricted their arm movement and caused their arms to go numb.

d. **Heat retention.** The IBA is very hot to wear in desert warfare. The Soldier begins to sweat as soon as he don's the IBA and soon his uniform blouse, his undershirt, and the top of his pants are soaking wet. When Soldiers stop moving for the evening, and as the temperatures

begin to drop, it is impossible for them to dry out, often causing them to remain wet and cold all night long. The IBA needs some way to vent heat while being worn.

e. **Lack of flexibility in SAPI Plates.** The shape of the SAPI plate is not correct. The two plates that are worn on the front and the back of the IBA are shaped the same while the Soldier's chest is shaped differently from his back. The result is that some Soldiers complain that the rear SAPI plate digs into their shoulders while other Soldiers complain that the front SAPI plate digs into their collarbone. If the SAPI plates were flexible and could conform to the soldier's dimensions, then these plates would be far more comfortable to wear in both the front and the back.

f. **Integration with MOLLE Frame.** Soldiers complained that the MOLLE frame and the IBA did not ride well together. Despite the fact that these two pieces of equipment were designed to work together, Soldiers complained that this was not the case and that the poor interface caused the main MOLLE Rucksack and frame to flop around on the back of the IBA.

g. **Integration with MOLLE waist belt.** Many Soldiers complained that it was too difficult to wear the MOLLE waist belt on the frame beneath their IBA. This was especially true with shorter Soldiers whose IBA vests hung over their waists.

h. **Pressure on Soldier's collar area.** The IBA's weight makes it very painful to wear over extended periods of time. Besides constantly pulling down on the shoulders with 60 or so pounds of IBA, FLC, water, and gear and exhausting the shoulder muscles, the vest presses into the collar bone area and forces the Soldier's dog tags, undershirt collar, uniform lapel, and buttons into the collar bone and upper chest. As one Sapper said to a fellow Sapper, "I am going to cut this damn lapel button off and then re-sew it back on in the rear." Without wearing the IBA for extended periods of time under these conditions, one will never know how truly painful it is to wear.

i. **Lack of nylon stowage bars on back.** Soldiers would like nylon stowage bars on the back of the IBA as they have on the front side. These rear stowage bars would enable attachment of accessory pouches, the Butt Pack, and the radio pocket to the rear of the IBA.

j. **SAPI Plates dig into bottom of rib cage while in prone firing position.** When Soldiers assume the prone firing position they find that the front SAPI plate is driven up into their lower rib cage, causing significant discomfort. Were the SAPI plate able to flex to the Soldier's posture, this problem would be reduced.

k. **Neck hole binds with Soldier's neck while in prone firing position.** Soldiers complained that even without the neck attachment in their IBA and while wearing the Advanced Combat Helmet (ACH), the neck hole in the IBA severely rubbed with the skin of their neck and restricted their ability to sufficiently raise their head to comfortably assume a prone firing position.

l. **Neck piece irritates Soldier's neck when worn.** Only a few Soldiers in the brigade task force were seen wearing their IBA's neck pieces. Most Soldiers find the neck piece to be too uncomfortable as it wears against the neck, causing abrasion and soreness.

m. **Difficult to adjust size while wearing.** Though the IBA contains sizing straps on each side, it is close to impossible for a Soldier, while wearing his IBA, to adjust his vest's sizing. Often Soldiers' IBAs are worn too loosely, but the Soldier rarely makes the necessary adjustments because that would require the help of another Soldier or it would require removing all of his Fighting Load, to include the IBA.

Annex B: Data Collection Team Membership

Name	Rank	Position	Unit
Charles Dean	LTC	Team Leader/Data Collector/Author	SBCCOM Natick Soldier Center
Eric Glenn	MAJ	Team Executive Officer/Data Collector	PEO-Soldier APM Sensors and Electronics
Richard Covert	CPT	Team Operations Officer/Data Collector	6 th Ranger Training Battalion, Eglin AFB
Henry Sanchez	MSG	Team NCOIC/Data Collector	11 th Infantry Regiment, USAIC
Kurt Donaldson	SFC(P)	Asst Team NCOIC/Data Collector	6 th Ranger Training Battalion, Eglin AFB
Michael Dougherty	SFC	Data Collector	6 th Ranger Training Battalion, Eglin AFB
Frederick DuPont	GS-13	Team Historian/Data Collector	SBCCOM Natick Soldier Center

Annex C: Pre-Mission Training

Due to the combat environment in which the Soldier Load data was to be collected, the team conducted pre-deployment training at individual's home stations as well as at Fort Bragg, NC and Fort Benning, GA during the period of November 2002 – March 2003. The training included the following:

Home Station:

Weekly physical fitness training from November 2002 – end of March 2003, of no less than 25 miles per week. Rigorous physical fitness training continued while overseas.

Fort Bragg, NC:

- Foot marches.
- Land navigation.
- Emplacement of M18 Claymore Mine.
- Operation of the ASIP Radio.
- Airborne Refresher Training at the Advanced Airborne School.
- Airborne operations (2).
- Small unit battle drills.
- Hand and arm signals.
- Call for and adjustment of indirect fires.
- Disassembly and assembly of the M249 and M240B.
- Load, clear, and reduce stoppage of the M249 and M240B.
- Employment of the AT4 rocket.
- First aid.
- Donning and doffing the M40A1 Protective Mask.
- Employment of the PLGR.
- Linkup Operations.
- Bore-sighting of electro-optical weapon systems.
- Physical fitness training.
- Employment of MineLab Metal Detector.
- Setup and use of the MOLLE System.

Fort Benning, GA:

- Qualification on the M4 Carbine.
- Familiarization on the M249 Squad Automatic Weapon.
- Familiarization on the M240B Machine Gun.
- Close Quarters Battle (CQB) firing techniques.

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Annex D: Equipment Weight Table (all weights in pounds)

Advanced Combat Helmet	3.25
Airborne Items (Harness and Lowering Line)	3.75
ALICE Rucksack	6.00
Antenna, (Modified) OE 254	20.00
Antenna, Tactical Satellite	5.25
AN/PEQ 2	0.58
Anti-Tank Weapon (AT4)	14.50
Anti-Tank Weapon (Javelin) w/CLU	49.8125
Aviator Gloves	0.81
Battery, AA	0.81
Battery, AAA	0.94
Battery, BA30 (D)	0.31
Battery, BA1574 (Strobe Light)	0.375
Battery, BA 3058/U (PVS7B/14/PAQ4B/PEQ2)	0.375
Battery, BA 3090 (9 Volt Miles)	0.375
Battery, BA 5347/U (AN/PAS 13B(V))3	0.75
Battery BA 5374 (Strobe Light)	0.375
Battery BA 5567/U (PAQ-4B/PVS-7/14/PEQ-2)	0.375
Battery, BA 5588 (Speaker Phone)	0.31
Battery BA 5590/U (PRC 119/ASIP/CL Javelin)	2.25
Battery BA 5800/U (PSN 11 PLGR)	0.47
Battery BA 6516 (GVS-5 Melios Laser RF)	0.59
Battery BB 516 (GVS-5 Melios Laser RF)	0.59
Battery BP 196 (ICOM NiCad)	0.38
Battery DL 1/3N (M-68 CCO)	0.06
Battery EL 123 (ANCD Battery)	0.034
Battery L91 (PAS 13-B Light Thermal Sight)	5.50
Bayonet M9 w/Scabbard	1.62
Belt, Rigger Rescue	0.1875
Bivy Sack (MOLLE)	1.31
Bivy Sack Cover (MOLLE)	2.25
Black Belt (Standard Issue)	0.0625
Binoculars	1.375
Binoculars, Viper	3.50
Black Gloves	0.1875
Black Heavy Sleeping Bag	4
Black Silk Underwear Bottoms	0.31
Black Silk Underwear Tops	0.44
Bolt Cutters 18" Commercial Issue	3.31
Boots, Desert Camouflage-Altama Brand	3
Boots, Desert Camouflage-Belville Brand	3.75
Boots, Combat Black	4.0625
Boots, Winter w/Inserts	4.9375
Boots, Rubber Overboots	2
Bunker Buster, SMAW-D	16.50
Butt Pack, MOLLE	0.50

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Camera	0.44
Canteen Cup	0.50
Canteen, Plastic 1 QT w/Water	2.50
Chapstick	0.0625
Chemical Light (ChemLite)	0.125
Claymore Mine	7
Close Combat Optics M-68	0.375
Cold Weather Fleece Bibb Overalls	1.25
Cold Weather Fleece Top	2.31
Cold Weather Gloves	0.25
Cold Weather Glove Liners	0.125
Combat Life Saver Bag	6.75
Compass, Lensatic	0.25
Compass, M2 (Mortars)	0.25
Cover, Field Pack	0.81
Demolition Initiating System	0.25
Desert Boonie Cap	0.1875
Desert Camouflage Uniform Bottom	1.5625
Desert Camouflage Uniform Top	1.50
Desert Patrol Cap	0.1875
Detonation Cord 50'	1.50
Drawers, Cotton	0.1875
Elbow Pads	0.0625
Entrenching Tool	2.50
Entrenching Tool Carrier	0.50
Enemy Prisoner of War Kit	0.75
Engineer Demolition Bag	7.25
Expandable Baton (Large)	1.25
Expandable Baton (Small)	0.75
Explosives, Composition Four	1.25
Field Dressing, Israeli	0.1875
Field Dressing, Standard	0.25
Field Dressing Pouch	0.25
Flashlight, Under-The-Barrel	0.25
Flex Cuffs	0.0625
Foot Powder	0.1875
Fuze Igniter, M60/81	0.0625
Glint Tape	0.0625
Global Positioning System (Civilian)	0.3125
Global Positioning System (PLGR)	2
Gloves, NBC Butyl Rubber	0.3125
Gloves, Intermediate Cold Weather	0.25
Gloves, Intermediate Cold Weather (Flyers)	0.375
Gloves, Leather, Wire Handlers	1.3125
Sun, Sand, and Dust type Goggles, ESS Model	0.875
Sun, Sand, and Dust type Wiley-X Goggles	0.1875
Gortex, Cold Weather Bottom Desert	3.4375
Gortex, Cold Weather Top Desert	4.0625
Gortex, Light Weather Bottom	1.25
Gortex, Light Weather Top	2.5625

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Grappling Hook, Collapsible, 50' Nylon Rope	2.75
Grappling Hook, Manual Launch	3.25
Grenade, Concussion	0.75
Grenade, Fragmentary	1
Grenade, Incendiary	2
Grenade Launcher, M203	7.24
Grenade Launcher M203 WP Round	0.50
Grenade Launcher M203 HE Round	0.50
Grenade Launcher, M203 Smoke Round	0.50
Grenade, Smoke	1.1875
Hammer, Commercial, Yellow Fiberglas Handle	3.50
Handset, H250/U	0.6875
Hatchet	3
Hooligan Tool (Breach Device)	10.75
Holster, Weapon M9	1.50
Identification Tags	0.3125
Infrared Signal Beacon	0.0625
Interceptor Body Armor with SAPI plates (2) and no neck guard and no crotch guard	17.50
Intravenous Therapy Kit	1.50
IBOT (Unmanned Robot)	65
Javelin Command Launch Unit	13.1875
JSLIST Chemical and Biological Suit	5.50
Kevlar Ballistic PASGT Helmet	3.35
Knee Pads	0.9375
Laser, PEQ-2A	0.47
Laser Range Finder, Melios, GVS-5	4.3125
Launch, Grappling Hook	3
Laundry Bag	0.75
Liner, Seal	0.125
Machine Gun, 7.62MM, M240B	14.75
Machine Gun, 7.62 MM, M240B, Belly Bag	29
Machine Gun, 7.62 Gas Regulator	0.125
Machine Gun, 7.62 MM, T&E	4
Machine Gun, 7.62 MM, Tripod, M240B	11.75
MagLight	0.1875
Magazine M9	0.25
Magazine M4/M16 w/ 30 Rounds	1.375
Magazine, M4/M16 w/30 Rounds (Canadian)	1
Mask, Protective M45 w/Carrier	3.0625
Meal, Long Range Patrol	1
Meal, Ready To Eat	1.50
Medic Bag	19.50
Mine Detector, PSS12	10
Mine Detector, Mine Lab	9.50
Mine Detector, HSTAMIDS	20
MOLLE, Ammunition Pouch 5.56MM	0.1875
MOLLE, Assault Pack	3.0625
MOLLE, Bandoleer	0.375
MOLLE, Canteen Pouch	0.375
MOLLE, Grenade Pouch	0.0625

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MOLLE, Rucksack	8.25
MOLLE, Side Pouches	0.50
MOLLE, Sleeping Bag Carrier	1.0625
Mortar Tube, 60MM	19
Mortar Base Plate, 60MM	14.50
Mortar Bipod, M170, 60MM	15.50
Mortar Aiming Poles, 60MM	9.75
Mortar Cans, 60 MM, Mixed, (Non-Standard 8 rounds)	47
Mortar Computer, M23, 60MM	8.25
Mortar Round, 6MM, White Phosphorous	4.25
Mortar Round, 60MM Illumination	5
Mortar Round, 60MM Infrared	4.75
Mortar Round, 60 MM High Explosive	4.25
Mortar Site Box, 60MM	8
Multi-Tool (e.g., Leatherman)	0.50
Neck Gator	0.0625
Night Vision Goggle, PVS-7D	1
Night Vision Goggle, PVS-14	1.25
On-The-Move Hydration System (MOLLE)	0.75
Pace Cord	0.0625
Pad, Sleeping, Self-Inflating	1.3125
Patrol, Sleeping Bag	2.4375
Pistol, M9, 9MM	2.50
Pocket Knife, Personal	0.25
Poly Pro Bottom	0.5625
Poly Pro Top	0.6875
Poncho	1.3125
Poncho Liner	1.875
Radio, AN/PRC-126	3.125
Radio, AN/PRC-148	1.5625
Radio, EPLRS	5
Radio, AN/PRC 117F	9.50
Radio, AN/PRC 119 ASIP	7.50
Radio, H250 Remote Long Whip Base	11.25
Rifle, M4, 5.56MM	4.24
Rifle, M4,5.56 MM, Ammunition (30)	1.375
Rifle, M14, 7.62MM	12
Scope, Spotter M144	2.75
Sewing Kit	0.0625
12 Gauge Shotgun, Breaching	5.25
12 Gauge Shotgun Round	0.0625
Skedco Litter	17.50
Sling Rope	0.75
Sling, Weapons, 3 Point Harness	0.375
Small Arms Protective Insert Plates (SAPI), each	4.50
Snap Link	0.25
Socks, Wool, Pr.	0.1875
Socks, Various Fabric, Pr.	0.3125
Speaker Phone, 2931C	2.375
Spotter Scope, M144	2.75

The Modern Warrior's Combat Load--Dismounted Operations in Afghanistan

Squad Automatic Weapon, M249	16.3125
Squad Automatic Weapon, M249 Ammunition (100)	3.46
Squad Automatic Weapon, M249 Spare Barrel	6.25
Squad Intercom	1.43
Stuff Sack	0.8125
Thermal Weapons Site, AN/PAS 13B	7.75
Toilet Articles	2.50
Towel	0.50
Undershirt, Brown	0.375
Weapons Cleaning Kit, M16	0.3125
Watch Cap	0.125
Water (1 Qt. Canteen with water)	2.50
Waterproof Bag	0.1875
Well Camera	4
Wrist Watch	0.1875

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Annex E: Summary of Data Collected by Duty Position

Position in Unit	PLT	CO	BN	REGT	QRF1	DC01	DC02	DC03	DC04	DC05	DC06	DC07	DC07	DC08	DC09	DC10	Total Collected	Total Needed	%Regt Collected	Green % of Regt	Status
Rifleman	6	18	54	162	2	6	3	2	10	9	2	16	4	Ž	Ž	Ž	54	32	33%	20%	GREEN
M203 Grenadier	6	18	54	162	2	6	6	Ž	21	5	6	16	11	Ž	Ž	Ž	73	32	45%	20%	GREEN
Automatic Rifleman	6	18	54	162	2	6	6	2	21	12	6	18	12	Ž	Ž	Ž	85	32	52%	20%	GREEN
Antitank Specialist*	2	6	18	54	1	2	Ž	Ž	5	1	2	Ž	3	Ž	Ž	1	15	22	28%	40%	AMBER
Rifle Team Leader	6	18	54	162	2	6	6	2	20	12	6	18	12	Ž	Ž	Ž	84	32	52%	20%	GREEN
Rifle Squad Leader	3	9	27	81	1	3	3	1	12	6	3	10	6	3	3	5	56	49	69%	60%	GREEN
Forward Observer	1	3	9	27	1	1	1	Ž	4	2	1	3	2	2	2	2	21	16	78%	60%	GREEN
Forward Observer RTO	1	3	9	27	Ž	1	Ž	Ž	4	Ž	1	2	1	1	1	1	12	11	44%	40%	GREEN
Weapons Squad Leader	1	3	9	27	Ž	1	1	Ž	3	2	1	2	2	2	2	2	18	16	67%	60%	GREEN
M240B Gunner	2	6	18	54	1	2	2	1	8	4	2	6	5	4	4	4	43	32	80%	60%	GREEN
M240B Asst Gunner	2	6	18	54	1	2	2	1	8	4	2	6	4	4	4	4	42	32	78%	60%	GREEN
M240B Ammo Bearer	2	6	18	54	1	2	2	Ž	8	3	2	6	4	3	4	4	39	32	72%	60%	GREEN
Rifle Platoon Sergeant	1	3	9	27	Ž	1	1	1	5	2	1	3	2	2	2	2	22	22	81%	80%	GREEN
Rifle Platoon Leader	1	3	9	27	Ž	1	1	1	5	2	1	3	2	2	2	2	22	22	81%	80%	GREEN
Platoon Medic	1	3	9	27	1	1	1	Ž	3	2	1	3	3	3	3	2	23	22	85%	80%	GREEN
Radio/Telephone Operator	1	3	9	27	1	1	1	Ž	3	2	1	Ž	2	1	1	Ž	13	11	48%	40%	GREEN
Mortar Section Leader	0	1	3	9	Ž	1	1	Ž	1	1	Ž	1	1	1	1	Ž	8	7	89%	80%	GREEN
Mortar Squad Leader	0	1	3	9	Ž	1	1	Ž	1	Ž	Ž	1	1	1	1	Ž	7	7	78%	80%	GREEN
60mm Mortar Gunner	0	2	6	18	Ž	2	2	Ž	3	2	Ž	2	2	2	2	Ž	17	14	94%	80%	GREEN
60mm Mortar Assistant Gunner	0	2	6	18	Ž	2	2	Ž	1	2	Ž	2	2	2	2	Ž	15	14	83%	80%	GREEN
60mm Mortar Ammo Bearer	0	2	6	18	Ž	Ž	2	Ž	Ž	Ž	Ž	2	1	2	2	Ž	9	7	50%	40%	GREEN
Rifle Company Commo Chief	0	1	3	9	Ž	1	Ž	Ž	Ž	Ž	Ž	Ž	1	1	1	Ž	4	4	44%	40%	GREEN
Fire Support Officer	0	1	3	9	Ž	1	1	Ž	1	1	Ž	1	1	1	1	Ž	8	7	89%	80%	GREEN
Fire Support NCO	0	1	3	9	Ž	Ž	1	Ž	1	Ž	Ž	1	1	1	1	Ž	6	7	67%	80%	GREEN
Sapper Engineer	0	3	9	27	3	3	3	Ž	8	8	Ž	8	5	Ž	Ž	Ž	38	22	141%	80%	GREEN
Company Executive Officer	0	1	3	9	Ž	1	1	Ž	Ž	Ž	Ž	1	1	1	1	Ž	6	5	67%	60%	GREEN
Company First Sergeant	0	1	3	9	Ž	1	1	Ž	2	Ž	Ž	1	1	1	1	Ž	8	7	89%	80%	GREEN
Company RTO	0	2	6	18	Ž	2	1	Ž	2	Ž	Ž	Ž	1	1	Ž	Ž	7	7	39%	40%	GREEN
Rifle Company Commander	0	1	3	9	Ž	1	1	Ž	2	1	Ž	1	1	1	1	Ž	9	7	100%	80%	GREEN
Total	42	145	435	1305	19	58	53	11	162	83	38	133	94	42	42	29	764	535			
					QRF	Res-Sik	Res-Sik	Orgun-E	Crcdwn	DesAscst	VlgGrd1	VlgGrd1	VlgGrd1	VlgGrd2	VlgGrd2	VlgGrd2					

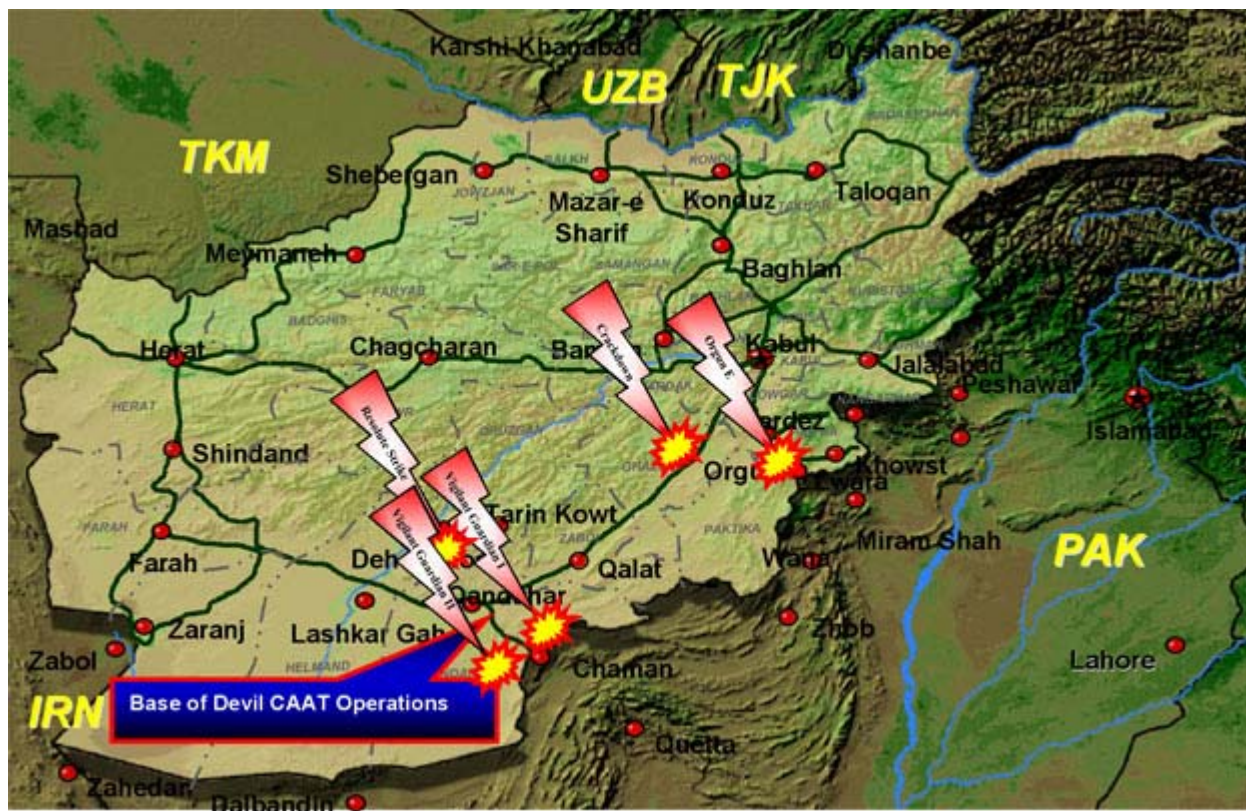
***Antitank Specialist:** This position was rated Amber due to the fact that Javelin Missile Systems were not being carried on operations in Afghanistan during this study. The data represents these Soldiers carrying the loads associated with their temporary functions as Riflemen, 60mm Mortar Ammunition Bearers, or Platoon Snipers with the M14 Rifle.

The Modern Warrior's Combat Load--Dismounted Operations in Afghanistan

Annex F: Average Load Data by Duty Position

Position in Unit	Fighting Load	FL % Body Wgt	Approach March Load	AML % Body Wgt	Emerg Approach March Load	EAML % Body Wgt
Rifleman	63.00	35.90%	95.67	54.72%	127.34	71.41%
M203 Grenadier	71.44	40.95%	104.88	60.25%	136.64	77.25%
Automatic Rifleman	79.08	44.74%	110.75	62.71%	140.36	79.56%
Antitank Specialist	67.66	37.57%	99.04	55.02%	130.20	79.65%
Rifle Team Leader	63.32	35.61%	93.78	52.43%	130.27	80.65%
Rifle Squad Leader	62.43	34.90%	94.98	52.59%	128.35	73.62%
Forward Observer	57.94	33.00%	91.40	52.12%	128.56	76.59%
Forward Observer RTO	60.13	35.37%	87.07	51.42%	119.13	74.94%
Weapons Squad Leader	62.66	34.02%	99.58	54.37%	132.15	69.19%
M240B Gunner	81.38	44.46%	113.36	62.21%	132.96	68.92%
M240B Asst Gunner	69.94	38.21%	120.96	66.11%	147.82	80.08%
M240B Ammo Bearer	68.76	36.59%	117.06	62.19%	144.03	78.46%
Rifle Platoon Sergeant	60.66	31.53%	89.96	46.35%	119.16	62.67%
Rifle Platoon Leader	62.36	34.02%	93.04	50.33%	117.62	65.44%
Platoon Medic	54.53	31.08%	91.72	51.58%	117.95	69.88%
Radio/Telephone Operator	64.98	35.60%	98.38	54.08%	no data avail	no data avail
Mortar Section Leader	58.31	30.59%	109.99	57.34%	149.30	90.49%
Mortar Squad Leader	60.98	37.89%	127.24	78.26%	142.30	96.80%
60mm Mortar Gunner	63.79	38.06%	108.76	64.22%	143.20	88.14%
60mm Mortar Assistant Gunner	55.34	31.93%	122.16	70.28%	no data avail	no data avail
60mm Mortar Ammo Bearer	53.13	30.14%	101.13	60.59%	no data avail	no data avail
Rifle Company Commo Chief	68.13	38.16%	109.69	61.67%	no data avail	no data avail
Fire Support Officer	54.11	27.32%	93.08	46.81%	no data avail	no data avail
Fire Support NCO	52.10	31.92%	90.08	55.22%	143.30	98.83%
Sapper Engineer	59.02	33.05%	95.70	53.50%	132.08	77.92%
Company Executive Officer	60.50	34.03%	93.65	52.81%	no data avail	no data avail
Company First Sergeant	62.88	33.69%	90.42	48.11%	126.00	86.30%
Company RTO	64.70	35.65%	98.09	54.27%	130.00	72.13%
Rifle Company Commander	66.10	37.08%	96.41	53.77%	111.20	70.83%
AVERAGE ACROSS REGIMENT	63.08	35.27%	101.31	56.74%	131.74	77.82%

Annex G: Operational Graphics for Devil CAAT Missions



Annex H: Abbreviations

AAR	After Action Review
ACM	Anti-Coalition Militant
AFB	Air Force Base
ALICE	All-Purpose, Lightweight, Individual Carrying Equipment
AML	Approach March Load
AO	Area of Operations
APM	Assistant Product Manager
EAML	Emergency Approach March Load
CAAT	Combined Arms Assessment Team
CALL	U.S. Army Center for Army Lessons Learned, Fort Leavenworth, Kansas
Class I	Food and water supplies
Class III	Petroleum supplies (fuels, oils, lubricants)
Class IV	Barrier materials
Class V	Ammunition supplies
Class IX	Repair parts
CLOHE	Combat Load Handling Equipment
CQB	Close Quarters Battle
FIST	Fire Support Team
FL	Fighting Load
FLC	Fighting Load Carrier
FM	Field Manual
FO	Forward Observer
GAC	Ground Assault Convoy
GPS	Global Positioning System
IBA	Interceptor Body Armor
ICOM	Individual Communications Radio
KPP	Key Performance Parameter
LBE	Load Bearing Equipment
LMTV	Light Tactical Vehicle
METT-T	Mission, Enemy, Time, Terrain, and Troops Available.
MOS	Military Occupational Specialty
MOLLE	Modular Lightweight Load-Carrying Equipment
MP	Military Police
MRE	Meal, Ready to Eat
NCOIC	Noncommissioned Officer in Charge
OFW	Objective Force Warrior
Opn	Operation
PEO Soldier	U.S. Army Program Executive Office for Soldier, Fort Belvoir, Virginia
PIR	Parachute Infantry Regiment
PLGR	Military GPS
PUC	Personnel Under Custody
SAPI	Small Arms Protective Insert
SAW	Squad Automatic Weapon, M249
SBCCOM	U.S. Army Soldier and Biological Chemical Command*, Edgewood, Maryland
SOP	Standard Operating Procedure
TO&E	Table of Organization and Equipment
TOW	Tube Launched, Optically Tracked, Wire Guided Missile System
TRADOC	U.S Army Training and Doctrine Command, Fort Monroe, Virginia

*SBCCOM was redesignated the U.S. Army Research, Development, and Engineering Command in October 2003.