

USMC Capability: Mountain/Cold Weather Operations

CSC 2005

Subject Area Operations

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**TITLE:**

**USMC CAPABILITY: MOUNTAIN/COLD  
WEATHER OPERATIONS**

**SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF  
MILITARY STUDIES**

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AY 04-05

# Report Documentation Page

Form Approved  
OMB No. 0704-0188

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1. REPORT DATE <b>2005</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2005 to 00-00-2005</b>	
4. TITLE AND SUBTITLE <b>USMC Capability: Mountain/Cold Weather Operations</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>United States Marine Corps, Command and Staff College, Marine Corps University, 2076 South Street, Marine Corps Combat Dev Command, Quantico, VA, 22134-5068</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>45</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

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**Title:** USMC Capability: Mountain/Cold Weather Operations

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**Thesis:** The USMC's failure to doctrinally codify the appropriate mountain/cold weather warfare capability to meet DOD requirements has induced an organizational lack of preparedness for these operations. This paper will conclude that a USMC Mountain/Cold Weather technical capability is critical to future readiness and will make recommendations to properly train and equip such a force.

**Discussion:** Three areas are discussed:

- Level of technical capability required by the USMC. Author rejects abrogation of USMC participation in M/CW operations to USSOCOM or US Army and rejects nominating a specific USMC unit to the task. Concludes USMC, as a whole, must have organizational capability to perform these missions. The USMC can use "status quo" criteria from the summer/winter battalion training packages at the USMC Mountain Warfare training center as adequate but must incorporate more MAGTF flavor.

- Ground Mobility and Logistical Support. Author rejects adding a specialized asset to the USMC inventory and concludes M/CW training must be conducted with organic assets. Augmenting standard tables of equipment with additional engineering assets to facilitate road-clearing operations in the winter may be necessary.

- Specialized Individual Equipment. The density of items required (one MEB per MEF) is adequate. These items should be centrally fielded, managed, and distributed by the consolidated issue facility. Critical items should be added to Maritime Prepositioned Ship inventories.

**Conclusion:** The USMC would currently have great difficulty conducting conventional M/CW operations such as the interdiction of Al Qaida between Afghanistan and Pakistan. Though mission accomplishment may be possible, the cost in American lives would be exorbitant in comparison to the same mission with a properly trained and equipped force.

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Mountain/Cold Weather Warriors

### Preface

The author examines the relationship between current USMC mountain/cold weather doctrine, training, and equipment relative to a capabilities based requirement and identifies shortfalls.

A correlation is drawn between the current USMC capability and the failure of combatants in the case studies.

Recommendations for the USMC to succeed in the mountains and cold weather are recommended. The likelihood of a future expeditionary engagement in these conditions is emphasized.

## Introduction

Future expeditionary conflict calls for an agile force that can quickly respond and effectively operate in mountainous/cold weather terrain that has traditionally provided sanctuary to insurgents. The 1986 Goldwater Nichols Act mandated a "capabilities based approach to joint warfare."<sup>1</sup> However, such capabilities must continue to consider likely geographical environments to allow adequate skills training and provide direction for equipment procurement.

The Marine Corp's failure to doctrinally codify a coherent mountain/cold weather (M/CW) warfare capability has induced an organizational lack of preparedness for these operations.

The Marine Corps Intelligence Agency asserts,

*"Nearly 2/3 of the future expeditionary environments have severely restricted terrain in the littoral penetration area. Most of these restrictions are due to highly compartmented rugged coastal mountain chains."*<sup>2</sup>

Further, 68% of these potential threat environments have terrain elevations ranging from 8,000-14,000 feet; over half have extreme elevation of 14-18,000 feet coupled with

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<sup>1</sup> *Joint Operations Concepts (JOC)*, November 2003, 4

<[http://www.dtic.mil/jointvision/secdef\\_approved\\_jopsc.doc](http://www.dtic.mil/jointvision/secdef_approved_jopsc.doc)>

<sup>2</sup> Frank, Harry. *Marine Corps Midrange Threat Assessment 2001-2010, Full Spectrum Chaos: No-Tech, Low tech, and High tech Conflict at the Millenium and Beyond*. Quantico,VA : MCIA 1586-001A-01. August 2001, 24



temperatures in the intense/extreme range. Finally, many regions have snowpack in excess of one foot.<sup>3</sup> While some cold climates exist which do not pose the added difficulties of the mountains, few mountainous regions exist without accompanying cold climate.<sup>4</sup> These factors predict a future USMC fight in M/CW conditions.

This paper will consider three issues with regards to improving the USMC M/CW capability.

(1) Why is a focused M/CW capability necessary for success in future expeditionary operations?

(2) How does the USMC plan to maneuver and logistically support a ground force in the M/CW?

(3) How much special equipment is necessary to support M/CW operations and how should the inventory be managed?

Background information will provide further relevance of this capability and describe the status of current USMC M/CW preparedness. This paper will conclude that a USMC M/CW technical capability is critical to future readiness and make recommendations proposing solutions to maneuver, logistical support, and special equipment management.

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<sup>3</sup> Frank, Harry. *Marine Corps Mid-Range Threat Assessment 2001-2010 Supplement : States of Concern*. Defense Intelligence Report. Quantico, VA : MCIA 1586-001A-01. August, 2001. pp. 5-175

<sup>4</sup> *Acquisition Strategy for the Marine Corps Mountain/Cold Weather Clothing and Equipment Program*. Director, Combat Equipment and Support Systems (CESS) Approved ACAT IV-M. CG, MCSC December 2002,4

## Background

Marine Corps Strategy 21 describes the future fight.

*"As we begin the 21st century, regional powers, rogue elements, and non-state actors will pose security challenges embracing conventional military and non-traditional capabilities. Regional and internal instability will create situations where ethnic, economic, social, and environmental stresses accentuate violence."*<sup>5</sup>

The potential proliferation of weapons of mass destruction wielded by an opponent with no traditional state affiliation makes conflict against such adversaries relevant to global stability and American economic survival. The Global War on Terrorism has already stretched American military power into dispersed arenas like the Horn of Africa, Afghanistan, and Iraq pitting the remaining superpower against a numerically and technologically inferior foe.

Such enemies have and will continue to use mountainous areas and arduous cold conditions to level the technological playing field.

*"Osama bin Laden travels in Pakistan's untamed borderlands. Here the subcontinent pushes relentlessly skyward toward the high wastes of Central Asia, but it is not a trackless land. If anything, there are far too many tracks."*<sup>6</sup>

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<sup>5</sup> *Marine Corps Strategy 21*. Department of the Navy, Headquarters United States Marine Corps. November 2000, 3.

<https://www.doctrine.quantico.usmc.mil/strategy21.htm>

<sup>6</sup> Robinson, Linda/Mazetti, Mark/ and Latif, Aamir. *The Hunt for Bin Laden*. US News and World Report, May 2004. Vol 136, Issue 16, 30.

In order to combat the current threat, the DOD must have a coherent M/CW capability. For the USMC, the potential to contribute to this requirement resides at the confluence of effort between Marine Corps Combat Development Command (MCCDC), USMC Mountain Warfare Training Center (MCMWTC), and Marine Corps Systems Command.

MCCDC considers current and future capabilities by examining requirements through the Doctrine, Organization, Training, Materiel, Leadership (and education), Personnel, and Facilities (DOTMLPF) process. MCCDC then approves doctrine for implementation through training and mandates requirements for equipment acquisition.

MCMWTC is an installation in the Sierra Nevada Mountains near Bridgeport, CA at about 6000ft in elevation.



**Illustration 2: Marines Training at MCMWTC Winter 2002, Courtesy MCMWTC**

The Center offers training areas up to 10,000 feet and presents demanding conditions that acclimate Marines to altitude and require them to learn special skills for

mobility, survival, and competence in this environment. The MCMWTC mission statement is, "to prepare Marines and sailors, to develop doctrine and test equipment for MAGTF operations in a mountainous and cold weather environment."<sup>7</sup>

Marine Corps Systems Command (MCSC) provides research, development, and acquisition of all USMC equipment as directed by MCCDC.

#### Current Capability Status

The USMC has traditionally maintained some M/CW capability. Many active duty Marines have earned the mountain leader school code and many units have experienced training at Bridgeport. 2<sup>nd</sup> Marine Division has one regiment that annually trains at MCMWTC with their headquarters element. Though not formally mandated, this unit is sometimes dubbed the "cold weather regiment."

The Marine Corps conducts annual bilateral training on the Korean peninsula in exercises such as Ulchi Focus Lens, Reception, Staging, and Onward Integration, and Korean Incremental Training Packages. The USMC maintains principle items of equipment in the Norway Airlanded Marine Expeditionary Brigade (NALMEB).<sup>8</sup> Housed in the caves of

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<sup>7</sup> USMC Mountain Warfare Training Center, Table of Organization (T/O) Number 7671. Headquarters United States Marine Corps, updated 2003.

<sup>8</sup> *Norway Airlanded Marine Expeditionary Brigade (NALMEB) Prepositioning Objective*. NAVMC 2926. Headquarters US Marine Corps. May 2001

Norway, \$420 Million worth<sup>9</sup> of equipment was originally designed to facilitate hasty reaction to Soviet offensive action. Each Marine Expeditionary Force (MEF) maintains a contingency allowance of individual equipment. However, current training curricula and equipment inventories lack doctrinal relationship.

Failure to doctrinally describe the capability has caused precedent to become the most important factor in shaping the USMC M/CW capability. Training curricula for battalion operations, mountain leader, survival, and medical students have evolved based on the experience and mission analysis of each MCMWTC Commanding Officer. Further, the capability provided by MCMWTC to the Marine Air Ground Task Force (MAGTF) is not clear. Although MCMWTC provides premiere small unit cohesion training, the Center does not currently facilitate focused MAGTF preparedness for M/CW missions because such a mission has not been adequately described to them in doctrine.

Ground Mobility and logistic support provide extremely challenging issues in M/CW warfare. The USMC neither trains nor equips appropriately because of cost and over-emphasis on infantry focused training. Transporting systems like

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<sup>9</sup> *Norway Airlanded Marine Expeditionary Brigade (NALMEB) and Norway Airlanded marine Expeditionary Task Force (NALMAGTF)*, June, 2001. <[www.globalsecurity.org/military/facility/nalmeb.htm](http://www.globalsecurity.org/military/facility/nalmeb.htm)>

tanks and assault amphibian vehicles to Bridgeport is extremely expensive. Few units bring CSS assets such as trucks and heavy equipment. Most training is focused on teaching individual Marines in the infantry battalions how to ski, climb, or survive in the environment.

The absence of approved comprehensive doctrine in M/CW operations<sup>10</sup> manifests as \$178 Million inventory of equipment that only loosely corresponds to approved training curricula. Two publications are currently used as reference material but are not approved doctrine<sup>11</sup> and the valid procurement guidance is based on a cold war paradigm that assumed a defense of northern Norway against the Soviets.<sup>12</sup> Equipment inventories are not visible to planners because of outdated equipment management procedures.

Although the USMC is "mission capable" to some degree, the capability advertised must accurately describe M/CW environments for which the Corps is prepared and candidly reject those requiring a different DOD force. Preparing a division for dismounted infantry operations requiring skiing and rock climbing is vastly different than

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<sup>10</sup> Mountain/Cold Weather Requirements. Functional Area Analysis (FAA) Report and Functional Needs Analysis (FNA) Report. MTC Technologies. December 2004. FAA, 3

<sup>11</sup> MCWP 3-35.2 (Draft)

<sup>12</sup> Operational Requirements Document, Marine Assault Climbers Kit (ORD Log 42.1) and Operational Requirements Document, Cold Weather Clothing and Equipment (ORD Log 42.4), MCCDC

isolating a mountainous region to enable special operations raids. Foot patrols at minus 50<sup>0</sup>F are considered impossible by some experts yet the Corps buys some individual equipment purported to protect in this extreme. Even if the combat units are ready for such diverse extremes, CSS units are not routinely trained at MCMWTC.

The USMC recognizes four types of cold conditions and varying degrees of rock difficulty (Tables 1 and 2) that generally define mountain/cold weather (M/CW) conditions. The Corps must define their M/CW capability in terms of required Ground Combat, Combat Service Support, and Aviation Combat requirements then train and equip to that standard. Without such focus, the force will remain dangerously dependent on personalities and precedent.

Wet Cold	+40 <sup>0</sup> F to +20 <sup>0</sup> F
Dry Cold	+20 <sup>0</sup> F to -5 <sup>0</sup> F
Intense Cold	-5 <sup>0</sup> F to -25 <sup>0</sup> F
Extreme Cold	-25 <sup>0</sup> F to -60 <sup>0</sup> F

**Table 1<sup>13</sup>**  
**USMC Doctrinal Cold Conditions, MCWP 3-35.2 (Draft)**

Class 1	Hiking Trail
Class 2	Off-Train Scramble
Class 3	Easy Climbing, rope assisted for beginners
Class 4	Moderate Climbing, rope required for beginners
Class 5	Technical, requires rope and anchoring equipment

**Table 2<sup>14</sup>**  
**U.S. Army Doctrinal Rock Conditions, FM 3-97.61**

<sup>13</sup> *Cold Weather Operations, MCWP 3-35.2 (Draft)*. Headquarters United States Marine Corps. Unsigned. [www.doctrine.usmc.mil/htm/doc7.htm](http://www.doctrine.usmc.mil/htm/doc7.htm)

<sup>14</sup> *Military Mountaineering, FM 3-97.61*. Headquarters, Department of the Army. Washington, DC. August 2002.

## Part 1: Specialized Technical Capability.

The USMC must decide what degree of technical expertise is sufficient to meet the Strategy 21 mandate. MCMWTC can prepare conventional infantry forces to operate and perform special missions unique to the environment that are not taught in infantry schools, (Infantry Officers Course and School of Infantry). Qualified summer/winter mountain leaders possess these skills at an entry level comparable to their allied counterparts who specialize in mountain warfare. The basic level of competence is achieved through two courses of six weeks duration. Not every summer mountain leader is winter qualified nor vice versa.

Technical competencies focus on survival and mobility using skis, snowshoes, and mountaineering equipment such as special boots, ropes, and rock climbing safety gear. The twelve weeks of instruction is longer than some Marine Occupational Specialty (MOS) schools. The key element for these skills is experience and such experience can only be gained through training.

*"The Pakistani army acclimates their personnel (for physical effectiveness at altitude) over 7 weeks."*<sup>15</sup>

In Norway, *"Great emphasis is laid on winter warfare in the training of all conscripts; all must complete a 30*

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<sup>15</sup> Grau, Lester W. and Vazquez, LtCol Hernan. *Ground Combat at High Altitude*. Foreign Militaries Studies Office, Military Review, Jan-Feb 2002, 3



*kilometer cross country ski test, and they are taught to survive blizzards without artificial shelter on the arctic uplands.”<sup>16</sup>*

The body's physical preparation for altitude will quickly atrophy following return to lower elevations and mountaineering technical skills must be recertified after a period of three years. Maintaining an active force, particularly with high turnover rates would represent a significant commitment.

At least three options exist that would adequately meet USMC M/CW needs. First, the capability could simply be defined as the historical performance of infantry battalions following their participation in the four-week summer and winter unit operation packages. These units, assisted by qualified mountain leaders, are capable of survival and mobility; they are trained in the basic infantry core competencies unique to the environment. They can conduct some specialized operations such as a cliff assault and battalion cross-country ski movement. However, while such a course of action may provide adequate capability with regards to dismounted infantry operations, MAGTF integration remains unaddressed since few headquarters or CSS organizations complete Bridgeport

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<sup>16</sup> Keegan, John. *World Armies*, 2<sup>nd</sup> Edition. Detroit, MI:Gale research Company 1983, 246

training. This option would require MAGTF integration in the mountains as opposed to the current focus on infantry battalions.

The second option is removal of technical M/CW operations from the USMC task list. This option would force U.S. Special Operations Command (USSOCOM) to support all technical M/CW missions. Conventional USMC operations could still support isolation and blocking operations and provide security to special operators. This course of action would alleviate the cost of specialized equipment and focus battalion training on basic skills in the mountains. This view presumes that if the nation needed a moderately large, technical M/CW force that the mission could be deferred to the U.S. Army.

A final option is for the USMC to specifically mandate a particular unit to be the "mountain/cold weather battalion/regiment;" whichever size unit MCCDC deemed appropriate to meet Strategy 21. Such action would focus the commander of this unit to meet a mandated mission essential task list (METL). Subordinate commanders within the unit would be required to attain mountain leader school codes as prerequisites. This mandate would allow the unit's commander to focus training on time consuming technical skills required for success in the mountains.

This paper rejects abdicating the mission to USSOCOM/US Army and the notion that the USMC could afford such a specialized unit. USSOCOM requires M/CW expertise to be one of their core competencies. Unfortunately, their size is necessarily limited while demand for USSOCOM in non-conventional profiles has already stressed their operational tempo. Further, while deferring M/CW missions to the conventional US Army seems fiscally appealing, this paper supports USMC fulfillment of the M/CW mission because of the number of mountainous regions close to littoral penetration areas.

The USMC response requirement is too wide to dedicate a sizeable unit to a particular environmental threat spectrum. The limitations imposed by designating a specific M/CW unit preclude units from maintaining adequate proficiency in their other core competencies.

Part 1 Case Study.

The need for conventional M/CW forces is best illustrated by the rugged Petsamo-Kirkenes campaign. In the fall of 1944, German Forces had been pushed west nearly to their pre-war borders in the Northern sector. Hitler had occupied Norway and the Northern part of Finland since April of 1940. Hitler's forces had been stopped short of their October 1941 goals which precipitated a three year

stalemate at the Litsa River while both German and Soviet high commands focused attention elsewhere<sup>17</sup>.

By the fall of 1944, the Soviets were able to mount sufficient force to conduct offensive operations against the German 20<sup>th</sup> Mountain Army and hoped to encircle and destroy this relatively undamaged German force threatening Soviet territory. Preparatory Soviet offensive operations on the Karelian Front in the vicinity of Lakes Ladoga and Onega had precipitated a Finnish/Soviet armistice.<sup>18</sup> By the terms of the armistice, Finland was required to expel German forces by September 15<sup>th</sup>, 1944. After some brief skirmishes, the Germans withdrew to the north setting the stage for the Petsamo-Kirkenes campaign.<sup>19</sup>

At the tactical level, as with all Soviet offensive strategy during this period, the Soviets brought overwhelming firepower to the effort. An approximate 4:1 Soviet advantage in mortars and artillery,<sup>20</sup> a nearly a 2:1 ratio in manpower and machine guns, and air superiority throughout the Petsamo-Kirkenes operation made for a seemingly unfair fight. However, Soviet success during prior campaigns on the Eastern Front had resulted from

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<sup>17</sup> Gephardt, 2

<sup>18</sup> Gephardt, 3

<sup>19</sup> Gephardt, 2

<sup>20</sup> Gephardt, 30

their ability to mass fires using mobile armored forces.

The terrain permitted advance by infantry over a wide frontage supported by pack animals. Planners predicted difficulties with resupply so each Soviet infantryman carried "enough food for eight days, personal weapons and ammunition, and additional ammunition for crew served weapons - up to ninety pounds."<sup>21</sup> An individual kit also included sheepskin coats, underwear, mittens, blankets, sleeping bags, and a white camouflage smock.<sup>22</sup> The Soviets were forced to pause following the capture of Petsamo in order to prepare logistically for the follow on operation at Kirkenes. The Germans had been defeated tactically, but each delay in the Soviet advance permitted withdrawal of German combat power and destruction of valuable resources denying their future use by the Soviets.

Units accustomed to fighting outside M/CW theatres, even Soviet troops who had weathered three Soviet winters, can be expected to use tactics, techniques, and procedures developed in the theatres from which they arrived. In this case, the requirement for heavy assets to remain road-bound, despite a herculean engineering effort, negated Soviet armor.

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<sup>21</sup> Gephardt, 33

<sup>22</sup> Gephardt, 33

The conditions also measurably curtailed Soviet operational tempo from planning expectations. Although the temperature was permissive with respect to Moscow in 1941 or Stalingrad in 1942, the rocky and marshy terrain exhausted the infantry and made displacement of artillery and mortars difficult. The time required to displace fire support assets was exacerbated by limitations on close air support (CAS) due to fog and long hours of arctic night. Such conditions often resulted in Soviet infantry finding themselves well in advance of artillery and without CAS or heavy ground assets.

It should be noted that while delaying this operation was considered by Soviet high command in order to permit the ground to freeze (enhancing mobility), the rigors of the Arctic Circle's winter were deemed less permissive than the autumn marshy swamps.<sup>23</sup>

#### Part 1 Conclusion.

*"Where the reindeer has gone, there also will the Russian soldier go, and where the reindeer will not go - just the same the Russian soldier will go."*<sup>24</sup>

Such a dictum is implied in the USMC Strategy 21.

Petsamo-Kirkenes teaches that conventional forces will be used in any environment the nation requires. The DOD must

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<sup>23</sup> Gephardt, 115

<sup>24</sup> Gephardt, xiii

retain the ability to operate at altitude, in a snow-covered environment, and at temperatures in the intense and extreme range. The proximity of mountainous regions to the littorals and the propensity of insurgent fighters to use these regions as refuge make a USMC M/CW operational capability mandatory.

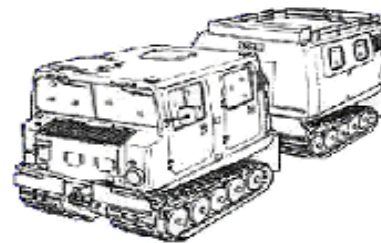
Therefore, the option recommended for the USMC is to maintain a conventional M/CW technical capability, using historical infantry battalion performance during MCMWTC training as a baseline, but integrating CSS assets to produce MAGTF preparedness. Agreement with this first conclusion is required to avoid Soviet shortcomings at Petsamo-Kirkenes.

## Part 2: Ground Mobility and Logistical Support.

Accepting a USMC role in technical M/CW missions quickly generates the question of ground mobility. Mobility and logistical support problems are endemic to the M/CW environment and will not be overcome through current Ship to Objective Maneuver technologies such as the MV-22 Osprey, Expeditionary Fighting Vehicle (EFV), or the High Speed Vessel. Training infantry battalions to negotiate rocky terrain with ropes is important at the tactical level but fails to answer basic battalion-size mobility

questions. The over-the-snow environment poses further doubt about USMC ground mobility preparedness. The USMC does not train to support ground operations with organic equipment nor does it maintain specialized equipment to support a force in the snow.

At least two options would mitigate ground mobility issues. The first is a material solution. The USMC maintains about 70 Small Unit Support Vehicles (SUSV) at MCMWTC to support training. The asset is used at Bridgeport to provide operational maneuver and conduct logistical functions. However, the asset is not a currently managed USMC end item and none are found in the operating forces. Such practice masks the problem of M/CW ground maneuver



**Illustration 2: Small Unit Support Vehicle (SUSV) BV Model 206** <sup>25</sup>

and precludes organizational understanding of maintenance and supply matters in M/CW conditions.

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25 Small Unit Support Vehicle.  
<[www.globalsecurity.org/military/systems/ground/images/bv\\_206\\_02.jpg](http://www.globalsecurity.org/military/systems/ground/images/bv_206_02.jpg)>



As an option, the USMC could maintain an adequate stock of the SUSV (or a similarly capable over the snow platform such as the CV-9030 Infantry Fighting Vehicle) as a USMC principle end item. This versatile asset would provide better over-the-snow mobility than any of our current assets including assault amphibians or the forthcoming EFV to enable snowbound operations. Some Marines are familiar with the asset because it is stocked in the NALMEB (owned by the Government of Norway) for use in the defense of Northern Norway. Many allied countries operate this tandem-tracked vehicle and it is a very capable asset in the snow.

However, the BV-206S at \$0.6 Million/vehicle<sup>26</sup> and The CV-9030 at \$5.31 Million/vehicle are cost prohibitive to the USMC. Because of the commitment to the EFV, an additional tracked vehicle program is highly unlikely.

A second option was suggested by a former MCMWTC Commanding Officer who advocated a "train as you fight" solution. Colonel Robert Strahan suggested MAGTF training with current organic assets. Summer/winter battalion training packages could be modeled after the Combined Arms

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<sup>26</sup> BAE Systems Press releases, 10 Dec 2004 and 21 Dec 2004  
<<http://www.haggve.se/default.asp>>

Exercise (CAX).<sup>27</sup> This would require the establishment of a moderate equipment allowance pool (EAP) at MCMWTC to offset the costs of moving equipment to Bridgeport. The EAP would include motor transport, engineer, mechanized, and armored assets to provide an accurate sample of mobility difficulties. Such a course of action would give commanders a realistic assessment of supply class III and IX requirements (fuel and repair parts), mobility, and counter-mobility engineer issues.

Either option requires a close look at other mobility concerns such as engineer capabilities, CSS training, and rotary wing lift capacities. The tremendous engineering effort to open roads in a snow-bound environment will limit the number of main supply routes (MSR). These few roads will be clogged with both operational and logistic traffic and the paucity of mountain passes makes them vulnerable. American Forces must address the density of engineering equipment to support M/CW mobility. The Norwegians have a high density of snow clearing equipment (high blade graders and hydraulic buckets) compared to US Tables of Equipment.

Skills that are generally taken for granted such as putting tire-chains on trucks and High Mobility Multi-

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<sup>27</sup> Strahan, Colonel Robert, What Good if the Marine Corps Mountain Warfare Training Center? Marine Corps Gazette Volume 85, Number 3. Quantico, VA : Marine Corps Association, March 2001.

Wheeled Vehicles (HMMWV's) prove very difficult for Marines who have not lived in a cold climate or ever worked on a vehicle. Fuel will be consumed at three times the normal rate. Knowledge of extended timelines for basic mobility like skiing, and equipment maintenance/supply in the cold is critical to the USMC unit that will operate in the M/CW.

Preparation can only be facilitated by more frequent opportunities to train Marine units as MAGTFs. MCMWTC has a cadre of mountaineering instructors who have met the rigorous requirements designating them as summer/winter mountain leader instructors that can teach these skills.

MCMWTC can support regimental unit training tailored to meet the needs articulated by MCCDC. But, MCMWTC has its own limitations. The base property and training areas are not Marine Corps owned; it is a joint use, land-lease agreement with the National Forest Service. Under this agreement, live fire training is restricted. Aviation and artillery ordnance is prohibited; mortar training is limited to illumination rounds in the winter. Bridgeport, CA is a high desert environment that gets adequate annual snowfall to provide mobility training but the Center does not typically experience the extreme cold temperatures that cause equipment to fail because of temperature alone. Fort

Drum, NY and Ft Ripley, MN both offer training opportunities in different M/CW conditions.

Rotary wing aviation capability diminishes quickly at altitude. Helicopter support is often integrated with training at MCMWTC and Marines quickly become familiar with the reduced load but this issue has not been addressed in future rotary wing systems; MV-22 Osprey is no exception.

<b>Aircraft</b>	<b>Lift Profile</b>	<b>External Lift Capacity (lbs)</b>
MV-22	Sea level @ 59° F to sea level	10,000
	Sea level @ 59° F to 4,000 feet	10,000
	Sea level @ 59° F to 8,000 feet	4650
CH-53E with 12% Engine Degradation	Sea level @ 59° F to sea level	18,028
	Sea level @ 59° F to 4,000 feet	14,982
	Sea level @ 59° F to 8,000 feet	9,026
CH-53E with Special Engines	Sea level @ 59° F to sea level	24,262
	Sea level @ 59° F to 4,000 feet	20,683
	Sea level @ 59° F to 8,000 feet	13,857
CH-53X with Current Baseline Engines	Sea level @ 59° F to sea level	30,890
	Sea level @ 59° F to 4,000 feet	30,803
	Sea level @ 59° F to 8,000 feet	29,106

**Table 3: Helicopter External Lift Capacity for 110 Nautical Mile Mission Radius<sup>28</sup>**

Part 2 Case Study.

The Nazi invasion of Western Russia in June 1941 was called Operation Barbarossa and constituted the main effort of the Third Reich during World War II. The titanic struggle consumed the overwhelming majority of Hitler's Armed Forces (Wehrmacht) and exacted a gruesome 18 million

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<sup>28</sup> M/CW FNA (Helicopter Lift Table), 5

Soviet casualties by 1945.<sup>29</sup> By obeying the tenets of maneuver doctrine, the Wehrmacht achieved stunning tactical success at the inception of the operation. However, one of the contributing factors to German failure during Barbarossa was that the maneuver doctrine required relentless tempo that could not afford an operational pause.

The Wehrmacht's success in France and Poland in 1939/40 had been impressive. Poland capitulated in days, France in weeks. However, the size and conditions in Russia critically hindered the logistical functions of transportation and aviation support in the USSR. The inability of German mechanized forces to cope with the Russian winter coupled with trafficability problems reduced the effectiveness of the maneuver doctrine.

Blitzkrieg depended on armor and mechanized assets being supported by motorized infantry. The Germans never had enough motorized assets to equip more than a small number of infantry.<sup>30</sup>

*The majority of German combat divisions were horse drawn throughout World War II. The infantry divisions marched to battle on foot, with their weapons and supply trains propelled almost entirely by horse. The light and*

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<sup>29</sup> "World War II." Encyclopaedia Britannica, 2004. Encyclopaedia Britannica Premium Service, 16 Nov 2004.

<http://www.britannica.com/eb/article?tocId=53552>. Table 7

<sup>30</sup> Glantz and House, 28

*mountain divisions had an even greater proportion of animals.*<sup>31</sup>

In France, the developed road infrastructure offset the lack of motor vehicles but in the USSR, the deficiency often resulted in unsupported armor well in advance of their infantry. The horses imposed huge care and feeding requirements and meant that "long haul" assets were susceptible to the cold as well.

Following the unprecedented German success in the summer and fall of 1941, adverse weather in October began to take its toll on Blitzkrieg tactics. The Russian "Rasputiza," literally a time without roads, is a predictable event in Russia between fall and spring when the mud renders roads virtually impassable. This unplanned operational pause was not only due to impassable roads. Where travel was still possible, the conditions caused motorized and mechanized assets to burn fuel at three times normal consumption rates.<sup>32</sup> As the need for logistical materiel increased, the distance it had to travel increased as well. Each German victory extended the Wehrmacht's lines of communications and shrank the Soviet's.

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<sup>31</sup> "German Horse Calvary and Transport." Intelligence Bulletin, march 1946. <http://www.lonesentry.com/articles/germanhorse>

<sup>32</sup> Glantz and House, 80

The German Luftwaffe was never designed to execute the type of campaign that Barbarossa demanded. The Luftwaffe (assault and transport) was inadequate for extended operations in such a large campaign.

*"The famous Luftwaffe was basically a tactical air force, suitable for supporting a short-term ground offensive but not for conducting a deep and effective air campaign."*<sup>33</sup>

The implications of this deficiency were exacerbated by the cold weather. In early December of 1941, the snow and cold were constant. While the remnants of the Soviet air force were operating from fixed, heated airfields, the Luftwaffe was operating from expeditionary airfields with only scanty shelter. Aircraft engines had to be heated for hours before attempting to start them.<sup>34</sup>

Hitler's Russia incursion was to be a rapid, single-stroke campaign that would mitigate the predictable problems incurred if the Wehrmacht had to fight in the USSR through a winter. Members of the German Staff warned Hitler of the consequences of a protracted campaign in Soviet Russia.<sup>35</sup> Hitler wished these problems away by assuming that maneuver tactics and Soviet popular capitulation would allow such a hasty victory that a Russian winter would be

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<sup>33</sup> Glantz and House, 37

<sup>34</sup> Glantz and House, 37

<sup>35</sup> Glantz and House, 287

avoided. Hitler lacked both the mobility (ground and air) and the cold weather organizational capability to fight in such harsh conditions so far away from home.

Part 2 Conclusion.

*"A plan that cannot be logistically supported is not a plan at all, but simply an expression of fanciful wishes."*<sup>36</sup>

Barbarossa is particularly important for the USMC because the Corps wields maneuver doctrine as a remedy to attrition and because US conflicts will mirror Barbarossa's distance issues and difficult road conditions.

This paper supports MCMWTC adopting the CAX model (EAP) and eliminating the SUSV from Bridgeport training. Such action facilitates "training as we fight" and promotes organizational understanding of mobility and logistical support difficulties in a M/CW environment.

Finally, commanders themselves must experience the mobility problems and internalize that the degree to which tempo would normally be used as a weapon will be reduced. Training with organic assets at MCMWTC and other M/CW training locations will precipitate this knowledge. Barbarossa teaches that successful mobility and logistical operations are critical to success in the M/CW environment.

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<sup>36</sup> *Campaigning, MCDP 1-2*. Department of the Navy, headquarters United States Marine Corps. Washington, DC. August, 1997, 88



### Part 3: Equipment Procurement and Storage.

Mountain operations require special equipment such as ropes, safety harnesses, and rock protection contained in the Marine Assault Climber's Kit (MACK). Snow-bound environments call for special clothing, skis, snowshoes, heavy equipment sleds, and suitable shelter for ground troops that can be heated. In the USMC, these special items are called "type III" allowances.

In lieu of a clear capability requirement, precedent has guided USMC equipment procurement. New inventory items replace older ones but the aggregate of items has not been evaluated as a whole. For most of the 1990's, acquisition focused on improving the Extreme Cold Weather Clothing System (ECWCS) for individual Marines, primarily in the ground combat element (GCE). Lightweight underwear, fleece, an outer shell (commonly called Gore-Tex), and fleece caps are all success stories. Unfortunately, this "by item" approach has led to the untenable four-day M/CW sustainment load of 170.7 pounds of "lightweight equipment" that, on paper, is to be carried by an individual Marine.<sup>37</sup>

The USMC does not retain a "1 per Marine" inventory of type III the same way it does standard issue items like

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<sup>37</sup> M/CW FNA, 15

body armor. Instead, current inventory reflects about 15,000 sets per Marine Expeditionary Force (nominally one brigade/MEF).<sup>38</sup> Actual quantities are not standardized per MEF because they are the fiscal responsibility of each MEF Commander. Since each MEF must equip to support different operational plans, allowances vary. HQMC lacks visibility of these assets through the Status of Readiness and Training Systems (SORTS) because type III allowances are not centrally automated.

The technical capability that MCCDC mandates, as discussed in part one, is critical to defining individual equipment needs. For example, the conduct of dismounted patrols on skis at minus 50<sup>0</sup>F requires a much more protective array of clothing than the same mission at minus 5<sup>0</sup>F. Further, a doctrinal mandate for the Marine Corps such as "be prepared to immediately sustain a single Division in a M/CW environment" would allow a budget constrained procurement team to efficiently prepare and properly equip a brigade per MEF (60,000 total) instead of marginally doing so for the entire Marine Corps.

Finally, a doctrinal mandate that requires "total asset visibility to enable redistribution of assets" would

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<sup>38</sup> Type III Allowance Inventory. Headquarters United States Marine Corps, Deputy Commandant for Installations and Logistics, January 2002

force automated management of type III allowances and mirror what has already been accomplished with other items of individual equipment.

US forces engaged in defeating an insurgency will eventually require conventional ground operations in the M/CW environment. Training issues aside, the equipment needed for such an effort must be uniform across the USMC, readily accessible, and centrally managed in order to facilitate planning and deployment.

There is no reason for type III items to be funded by MEF commanders or maintained by uniformed Marines. Further, there is no reason for pilferable technical equipment such as the Marine Assault Climber's Kit (MACK) to be organic at the infantry battalion level. Such items will only be employed in conjunction with individuals trained and qualified in this area of expertise.

Most individual equipment is currently managed by a contracted entity known as the "Consolidated Issue Facility (CIF)." The common argument for keeping contingency items organic to operational commanders is availability. Assuming the assets are fielded with adequate funding to meet a stated acquisition objective, the CIF's inventory is readily available to operational commanders. Each MEF has a supporting CIF. This method reduces inventory

responsibilities and ensures standardization of equipment types across the MEF's even if required quantities vary in support of commander's operational plans.

Since many M/CW contingency items have shelf lives, their storage needs two separate strategies. The first is a large density of items to support not less than a MEB size deployment per MEF in vacuum packed, survivable storage in order to extend the shelf life and reduce required storage cube. This prepositioned equipment, fielded by MCSC, would be warehoused by the CIF contract. CIF is required to maintain automated, web-based accounting records solving the asset visibility problem and facilitating redistribution of assets should a requirement larger than a MEB emerge. Visibility and readiness would be enhanced by inclusion of these assets on Maritime Prepositioned Ships.

Training needs could be supported at MCMWTC. Most M/CW is either conducted at MCMWTC or units train at MCMWTC before deploying to other training sites like the biennial Battle Griffin exercise. MCMWTC could easily store and maintain a regiment's worth of individual equipment.

MCSC has \$108 Mil across the Future Year's Defense Plan (FYDP, see table 4). If MCCDC arrives at the definition for "USMC mountain/cold weather capability" this expenditure will go a long way towards ensuring operational

capability for the USMC. The money is coming; whether it will be spent wisely or not remains to be seen. The same budget allocation needs evaluation in other functional areas such as ground transportation and engineer systems.

<b>Fiscal Year</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>Total</b>
<b>Active</b>	1760	7515	6272	17611	18781	17810	17987	87736
<b>Reserve</b>	0	1572	1605	4436	3626	4777	4814	20830
<b>TOTAL</b>								<b>108566</b>

**Table 4: FY 2005-2011 Program Objective Memorandum in \$000's  
Source, Program Manager, Infantry Combat Equipment MCSC<sup>39</sup>**

**Note: The \$108 Million Dollars available across the Future Year's Defense Program (FYDP) represents available funding for individual equipment only. This is personal equipment used by individual Marines and does not represent Ground Transportation, Engineer, Weapons, Communications, or Aviation initiatives.**

*The casualties produced by the environment are often harsher than those produced by enemy action in the intense/extreme cold environment.<sup>40</sup>*

The future expeditionary fight will call for effective ground operations against an enemy whose insurgency will use mountainous terrain to negate technological advantage. Such operations will require a conventional ground force that is well acclimated to the altitude and conditions when they arrive, able to operate in small detachments, and equipped to fight in intense/extreme cold conditions. One Bush Administration official commented on the current U.S.

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<sup>39</sup> Marine Corps Systems Command. Family of Mountain Cold Weather Clothing and Equipment, Financial. Command Automated Program System (CAPS). Program Manager, Infantry Combat Equipment - Combat Equipment and Support Systems

<sup>40</sup> MCWP 3-35.2 (Draft), 1

effort in Afghanistan,

*"We've gone to school on the Soviet experience. Some battalion commanders (in Afghanistan) have even been reading dog-eared copies of The Bear Went Over the Mountain, a critique of Soviet military tactics in Afghanistan."*<sup>41</sup>

In fact, Operation Anaconda in March 2002 featured a base elevation of 8500 feet with mountain villages well above that altitude, moderate snowfall, and temperatures between 15-20<sup>0</sup> F.<sup>42</sup> The Soviet-Afghan Campaign certainly has relevance in shaping the USMC M/CW capability. A force deploying today to the Afghanistan/Pakistan border would do so with non-standardized type III allowances most of which were designed to equip a force on the frozen tundra of Norway. The Khyber Pass is a much different environment.

### **Part 3 Case Study**

Forces of the USSR's 40<sup>th</sup> Army entered Afghanistan in December 1979 following the overthrow of Communist Prime Minister Taraki. The Soviet mission was to,

*"Render international aid to the friendly Afghan people and establish advantageous conditions to prevent possible actions by the governments of neighboring countries against Afghanistan."*<sup>43</sup>

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<sup>41</sup> Robinson, Mazetti, Latif, 5

<sup>42</sup> Geibel, Adam. Operation Anaconda, Shai-I-Khot Valley, Afghanistan, 2-10 March 2002. Combined Arms Center Military review, 1  
<<http://www.leavenworth.army.mil/milrev/English/MayJun02/almanac%20geibel.htm>>

<sup>43</sup> Grau, Lester W. and Gress, Michael A. The Soviet-Afghan War, how a Superpower Fought and Lost. Lawrence, KS : University Press of Kansas 2002, 3

For ten years, the Soviets fought against the insurgency with little success above the tactical level. The Afghan-Pakistan border includes the 35 mile Khyber Pass at 3500 feet elevation and the Hindu Kush mountains that tower 16,000 feet above Kabul.<sup>44</sup> The Suleiman mountain range occupies 435 miles along the Afghan-Pakistan border."<sup>45</sup> Afghanistan is a land area roughly the size of Texas, eighty-five percent is covered by mountains.<sup>46</sup>

The Soviet problem is familiar to American students of Operation Enduring Freedom (OEF). The Soviet plan called for pacification of a population, installation of a pro-Soviet government, and the building of significant infrastructure. The Mujahideen plan was to patiently inflict casualties on the Soviet force until occupation became too painful. Ejecting the invaders was their only required endstate.

*"Other than their anti-Soviet feelings and irreconcilable enmity toward the (Communist Afghani) government, these clans and their organization lacked a common platform."*<sup>47</sup>

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<sup>44</sup> McGevern Jr., William A. The World Almanac and Book of facts 2001. Mahwah, NJ: World Almanac Books 2001, 760

<sup>45</sup> Grau and Gress, 4

<sup>46</sup> Grau and Gress, 3

<sup>47</sup> Grau and Gress, 55

Their unity existed only to fight the Soviets. The civilian population logistically supported the insurgents.<sup>48</sup> The Soviets reacted by separating insurgents from civilian logistical support by bombing their crops. This created 5.5 million refugees.<sup>49</sup> The United States and her allies established insurgent training camps in Pakistan, Iran, and Egypt. "Every month, some 2500-3000 terrorists graduated from these courses."<sup>50</sup>

*"The normal life of the Afghan people allowed the Mujahideen to withstand burdens and deprivations. They participated in guerilla actions and showed indifference to death. They could move into the mountains quickly on foot"*<sup>51</sup>

The insurgent's were effective small detachment operators; they developed well-honed tactics in the mountains including camouflaged cave networks built in stone that were survivable against Soviet air-strikes.

"Soviet jet aircraft played a significant strategic role, but not a tactically significant one."<sup>52</sup>

The mountains served as the only haven for insurgent activity because firepower was so mismatched. A very powerful Soviet force withdrew from Afghanistan in February of 1989 having failed to achieve their objectives.

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<sup>48</sup> Grau, Lester W. The Soviet-Afghan War : A Superpower Mired in the Mountains. Foreign Military Studies Office. The Journal of Slavic Military Studies, Volume 17 Number 1. Ft Leaveworth, KS: March 2004, 1

<sup>49</sup> Grau, Lester, 4

<sup>50</sup> Grau and Gress, 60

<sup>51</sup> Grau and Gress, 60

<sup>52</sup> Grau and Gress, 313



### Part 3 Conclusion

This paper supports the integration of type III allowances with other items of individual equipment such as backpacks and body armor into the CIF contract. This step standardizes, modernizes, and automates the inventory providing asset visibility by higher-level planners and facilitating redistribution to support expeditionary requirements. A brigade's worth of special equipment per MEF is both sufficient to facilitate immediate action and support a larger force (up to a single division MEF) through redistribution.

More importantly, this paper urges the Marine Corps to define the material capability for logisticians to manage. As detailed in Part 1, failure to describe the expectations of the ground force leads to a procurement strategy based on personality and precedent.

### Final Conclusions and Recommendations

This paper argues that the USMC would have difficulty responding to an expeditionary mission in a mountainous/cold weather environment. Correcting this deficiency is critical because the proximity of mountainous regions to the littorals and the propensity for insurgents to operate from these environments makes such operations

very likely for the USMC. A defined technical capability is the first step towards avoiding unnecessarily high casualties and producing joint doctrine's mandated "capabilities based planning." Further, efficient expenditure of the budgeted \$108 Mil across the FYDP is dependent on USMC M/CW capability definition.

Organizational appreciation for mobility difficulties imposed by the M/CW environment cannot be overstated. A more realistic training environment would result if an equipment allowance pool containing assets organically owned and maintained by the Marine Corps (CAX model) replaced the SUSV. Further, preparation of commanders and their units for a M/CW mission can only be facilitated through more frequent deployments to MCMWTC and other extreme cold environments.

Finally, even well led, properly trained, and experienced forces will experience individual hardships in M/CW operations. The USMC will not have the luxury of training MAGTF's as specialized mountain units. However, given adequate organizational understanding of the mission and some basic training, the USMC can mitigate lack of experience by fielding superior individual equipment and making it readily available to commanders through efficient management systems such as the Consolidated Issue Facility.

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