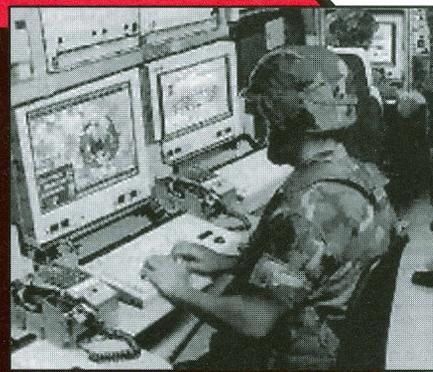


Quartermaster

PROFESSIONAL BULLETIN
SPRING 2002
WARFIGHTERS' LOGISTICIAN

PB 10-02-1

Learning from the Past



Leading into the Future



Commanding in the Present

PETROLEUM & WATER
SPECIAL EDITION





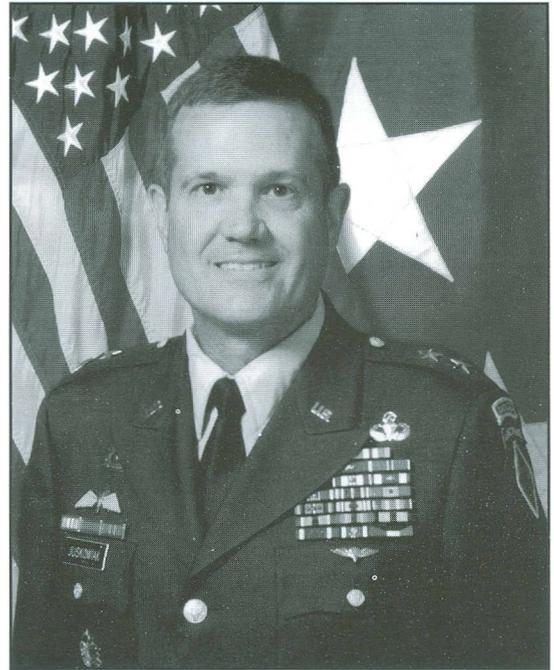
From The Quartermaster General

This quarterly edition of the *Quartermaster Professional Bulletin* is the first in 2002 with themes designed to focus on each of the five training departments in the US Army Quartermaster Center and School (QMC&S). In Spring 2002, we provide a comprehensive look at the Petroleum and Water Department (PWD).

As the Army's proponent for all petroleum and water training, the QMC&S trains not only Active and Reserve Component soldiers, but also thousands of students from the Air Force, Navy and Marine Corps, as well as foreign service officers and Department of Defense civilians. This year we project that we will train more than 6,300 officers, noncommissioned officers (NCOs), junior enlisted soldiers and civilians in petroleum, petroleum laboratory, and water operations at Fort Lee, VA. To ensure a joint perspective, we maintain 21 Marine Corps personnel and one Navy Master Chief on staff at the Quartermaster School's PWD.

Water and petroleum are the lifeblood of the two most lethal weapons in the Army's arsenal: the American soldier and his combat vehicle. This has been true since the first warrior stepped onto the battlefield thousands of years ago and since the first combat vehicle rolled across the battlefields of Europe in World War I.

World War II in the 1940s was the debut of maneuver on a grand scale and *Operation Desert Shield/Storm* in the early 1990s was its pinnacle. During *Desert Storm*, the planned fuel requirements for VII Corps and XVIII Airborne Corps exceeded 4 1/2 million gallons daily, representing more short



Major General Terry E. Juskowiak

tons than any other commodity. It would require nine hundred 5,000-gallon truckloads of fuel each day to sustain this consumption rate. Theater estimates of total fuel consumption for all services exceeded one billion gallons during *Desert Shield/Storm*. At peak movement times preceding the ground attack, 18 vehicles per minute passed a single point on the main supply route (**that's one every 3-4 seconds**).

Today, we and our joint brethren stand on the precipice of radical changes in how we will fight our nation's wars of the future and the equipment we will use. Quantum leaps in technology will make possible future combat systems that are faster, more lethal and more deployable than ever previously imagined. As logisticians, we face the unique challenge of supporting the existing Legacy Force, while incorporating new combat service support systems to support the Interim Brigade Combat Team (IBCT) and ultimately the Objective Force.

The science and technology program is the linchpin of a successful transformation. It cannot merely affect the materiel and the equipment currently being developed. It must also challenge current, deeply imbedded paradigms that constrain Quartermaster possibilities.

The petroleum and water systems presently being developed and fielded represent significant improvements to existing capabilities. However, most of these improvements are *incremental* and do not have far-reaching impacts across the logistics continuum. Logistics is *cumulative*...in both requirements and savings.

(Continued on Page 48)

Quartermaster

PROFESSIONAL BULLETIN



Warfighters' Logician

- 3 **The Value of Standards**
Command Sergeant Major Bradley J. Peat

PETROLEUM AND WATER

Learning from the Past

- 5 **Liquid Logistics: A Brief History of the Petroleum and Water Missions**
Dr. Steven E. Anders, Quartermaster Corps Historian

Commanding in the Present

- 11 **Petroleum and Water Department - The Basic Facts**
12 **The Core of Knowledge**
13 **Important Facts for Leaders**



Soldiers

- 14 **262d Quartermaster Battalion - Lifeline to Victory**
CSM Stephen R. Ball
- 15 **Training To Fuel the Force - Basic Petroleum Logistics Division**
CPT Candy A. Campbell LT Jodie E. McFee

- 16 **Training Quality Surveillance - Laboratory Training Division**
SFC Sylvester Cammon



- 17 **Supporting the Ultimate Weapon - Water Training Division**
CPT Paul J. Watkins

Leaders

- 18 **Forging the Backbone - Petroleum and Water Leaders at the NCO Academy**
CPT Chris Lange CPT Clarence Penny
SFC Glenn Hawkins SFC Clarence Richardson



- 19 **Shaping Liquid Logistical Leaders - Advanced Petroleum and Water Division**
MAJ Reed E. Hudgins

Facilities

- 20 **Tactical Petroleum Equipment Training - Military in the Field Training Site**
SFC Gregory A. Sabo



- 21 **Petroleum Training at Fort Pickett**

- 22 **Storage and Pipeline Training - Petroleum Training Facility Division**
CPT Melvin Davis III Arthur J. LeMire

- 23 **Marine Corps Petroleum Training Division**

- 24 **Realistic Water Training Environments - Water Training Division's Field Sites**
CPT Todd P. Jackson



Commanding

- 25 **Petroleum Supply in a Theater of Operations - Current Army of Excellence Petroleum Doctrine**
James A. Turgeon

(Continued on Page 2)

The Quartermaster General
Major General Terry E. Juskowiak

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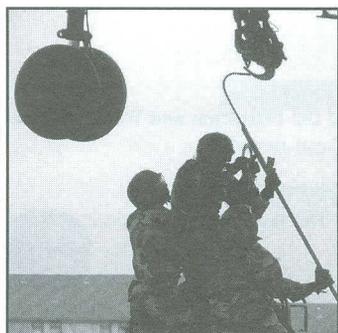
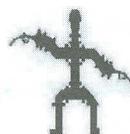
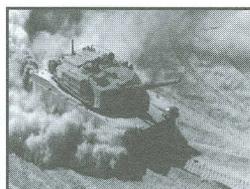
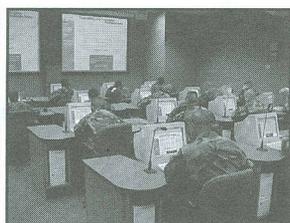
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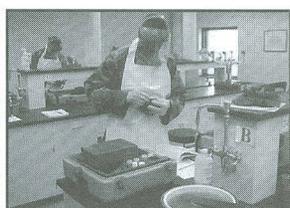
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Special Edition Petroleum and Water Missions

*Learning from the Past,
Commanding in the Present,
Leading into the Future.*



Coming.....
Summer - Army Center of Excellence, Subsistence
Autumn - Aerial Delivery and Field Services
Winter - Logistics Training Division
Mortuary Affairs Center



(Continued from Page 1)

- 27 **Water Support in a Theater of Operations - Current Army of Excellence Water Doctrine**
Linda Williams
- 29 **Preparing for Petroleum Operations in the Balkans DISCOM, 1st Infantry Division's Preparation for Kosovo**
CPT Matthew Urbanic
- 30 **SGM John C. Marigliano Award for Excellence Water Purification Championship**
Richard E. Long
- 31 **Providing Water Support - Operation Bright Star**
MAJ R. Wade Barnes
- 33 **Dredging: Key to Ship-to-Shore Logistics - Training With Industry at Sunoco, Inc.**
CPT Eric J. Sloughfy
- 34 **Defense Energy Support Center**
Melissa Lenard
- 35 **War Reserve and Army Prepositioned Stocks**
LTC Philip R. LoSchiavo
- 36 **The Army School System (TASS)**

Leading into the Future

- 37 **Breaking the 'Liquid Logistics' Paradigm**
MAJ William J. Bettin CPT Houston E. Baker

- 44 **Learning for the Future - Army Transformation and Distance Learning**
Harold A. Williams
- 46 **Operations and Training Management Directorate**
MSG Scott L. Brown
- 49 **CALL Presents Petroleum and Water 'Lessons Learned' Online**
- 63 **Metric Survey of Military Occupational Specialty Series 77**

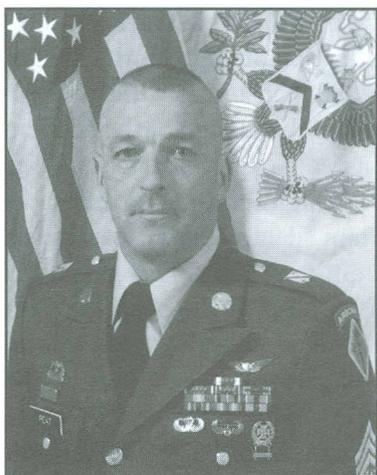
INSIDE BACK COVER: The full pages on battalion-size units that Keith K. Fukumitsu, Quartermaster, has researched and illustrated for each edition since 1991 now are archived on the Quartermaster Home Page under BULLETIN, Quartermaster Unit Lineages, at www.quartermaster.army.mil.

- 50 **Safety Saves Soldiers Risk Management Assessment: Hot/Cold Refuel Mission**
LT Stephen C. Anderson
- 52 **Career News**
- 58 **Quartermaster UPDATE**
- 62 **Directory**

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The Value of Standards



Command Sergeant Major Bradley J. Peat

My first 90 days serving as the Quartermaster Corps Regimental Sergeant Major have been fast-paced and enjoyable. It's been a constant learning environment. I look forward to visiting with many Quartermaster soldiers in the field during the next year. The purpose of the visits will be twofold: first to assess the training, spirit and standards of Quartermaster soldiers as they perform their mission providing support to the warfighter, and secondly to inform, mentor and educate soldiers about Quartermaster Corps initiatives and training that will impact them now and into the future. ***We are the standard-bearers of our nation's values and heritage.***

I wish I had a dollar for every time I heard a noncommissioned officer (NCO) or officer mention the word "standard" during my career. I've heard all the variations: You have to meet the standard, you have to maintain the standard, you have to exceed the standard, the standard is attainable, I will not accept sub-standard performance, you've just set a new standard, and I could go on and on. We tell our soldiers that a professional Army that is physically fit and mentally tough survives in combat because of standards.

We're always reading about young soldiers and how they must adjust to meet the standards of the Army. I pulled out the old Webster's dictionary to acquaint myself with the meaning of the word. I opened the dictionary and found the correct page but my eyes immediately honed in on the word "standard-bearer" instead of "standard." I looked at the meaning of standard-bearer: "one in the forefront of a movement" or "one that bears the colors of a military

unit." I couldn't help but think about how these two meanings represent the Quartermaster Corps and especially Quartermaster soldiers. Isn't it quite appropriate that the Quartermaster Corps continues to lead the way in Army Transformation, while also producing quality soldiers at our training base and at our career progression schools? Also, Quartermaster soldiers in the field continue to lead from the front, supporting warfighters around the world.

Then I came to the word "standard." The word has several meanings, but two meanings stood out: one, an accepted measure of comparison for quantitative or qualitative values, and a second meaning of average but acceptable quality. The second meaning threw me for a loop. I attach average but acceptable quality to soldiers who can easily maintain the standard, but refuse to push themselves above the standard. Then there are those who bust their backsides just to meet the standard. They give 100 percent effort 100 percent of the time. Do you know anyone who identifies with these two groups? ***We are the standard-bearers of our nation's values and heritage.***

Once standards are achieved, does the bar need to be adjusted upward or do we continue at the same level of achievement? When does a standard need to be changed? Instead, should the question be: Does a standard ever need to be changed? Should our standards be set so high that only some will be able to achieve or should our standards be low enough for every soldier to meet the challenge? ***We are the standard-bearers of our nation's values and heritage.***



The Army has established standards for all military activities. Standards are formal, detailed instructions that can be stated, measured, and achieved. (FM 22-100, Army Leadership)

“The Army is a values-based institution. Army leaders must set high standards, lead by example, do what is legally and morally right, and influence other people to do the same.” (FM 22-100) It is the responsibility of all NCOs to train (to standard) the soldiers under their charge. NCOs are the primary influence at the direct level of leadership. Their influence can either have a positive or negative impact on an organization, depending on their level of training, the values they hold and the standards they keep. ***We are the standard-bearers of our nation’s values and heritage.***

Setting goals and maintaining standards are central to assessing mission accomplishment. Whenever you talk about accomplishing the mission, always include the phrase “to standard.” (FM 22-100)

Quartermaster soldiers are assigned to every type of unit in the Army. Most of the time, Quartermaster soldiers are a low-density military occupational specialty (MOS) in the unit. So if you look and act in a professional manner, live the Army Values and maintain Army standards, you will demonstrate the essence of Quartermaster soldiers. Remember that standards are established and non-negotiable. Standards are meant as a baseline that must be achieved. Every good soldier, team and unit has standards in place to follow. As leaders, we should not carry that burden of enforcing standards lightly. ***We are the standard-bearers of our nation’s values and heritage.***

Standards are the foundation of our Corps and our Army. We need to work hard today, learn from yesterday and have a vision of the future. Leaders

need to see and be seen. Soldiers learn from their leaders. They are a reflection of you. Show a soldier what right looks like, and that soldier will do what’s right. Make time to counsel and mentor the soldiers under your care. When a soldier performs to standard, let him know. When a soldier’s performance is substandard, counsel him, identify the correct actions required, and then train him and follow up. NCO leadership is a “24/7” business. If you do all the right things, maintain standards and live the Army Values, you will have a fruitful career. I tell soldiers all the time that “if you earn it, you deserve it, and you’re going to get it.” I’m reminded of what General Erik K. Shinseki often says, “we train soldiers and grow leaders.” ***We are the standard-bearers of our nation’s values and heritage.***

I want to congratulate our newest class of NCOs selected for promotion to sergeant major, those appointed as command sergeant major, and those chosen for the resident and nonresident phase of schooling at the Sergeant’s Major Academy, the final step in the Noncommissioned Officer Education System. The Quartermaster Corps and our Army expects great things from these great Americans. I know they will hold up their end of the bargain and continue to fuse the Quartermaster Enlisted Corps into a vibrant, cohesive regiment with emphasis on providing support to our nation’s Army.

Quartermasters play an integral part in the defense of our nation, supporting all soldiers with a variety of missions. Our vision for the future should be based on events of the past, centered on values, and cemented into our being with standards. ***We are the standard-bearers of our nation’s values and heritage.***

Lastly, I want to thank CSM Larry W. Gammon, my predecessor here at the US Army Quartermaster Center and School, for his guidance and support during our transition. His numerous contributions over his 30 years of dedicated service to the Quartermaster Corps and our Army will be felt for many years. He was a standard-bearer for our nation and an enforcer of standards. Let’s continue to build upon what he has done for the Quartermaster Corps and our Army.

(Continued on Page 32)



Liquid Logistics: A Brief History of the Petroleum and Water Missions

Dr. Steven E. Anders, Quartermaster Corps Historian



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PETROLEUM MISSION

Black Gold. When Colonel Edwin L. Drake pushed that drill bit another six inches deeper into the ground on the afternoon of August 27, 1859 – to a depth of 69½ feet – *and struck oil*, he not only put Titusville, Pennsylvania, squarely on the map as the birthplace of the petroleum industry. He also launched a technological revolution.

The 19th Century had already witnessed more than its share of breathtaking inventions, with the advent of steamships, canals, railroads and the telegraph. Now with the discovery of oil on the eve of the Civil War and the invention of the combustible engine in the decades that followed, the coming 20th Century was poised to become truly the Machine Age. Then too the Automobile Age. What a revolution indeed.

All this had tremendous impact on the future of military logistics as well. For it signaled a gradual end to the age-old reliance on animals for

transporting men and materiel to the battlefield. In their place, *machines* would do the heavy lifting, motorized vehicles instead of Army mules. That was only the beginning. Tanks, self-propelled artillery, airplanes and more would follow. Altering forever the look, power and reach of the tools of modern warfare.

After 1900, *petroleum* emerged as the new lifeblood of a rapidly transforming US Army. An item of such critical import, such a vital supply mission, who should handle it?

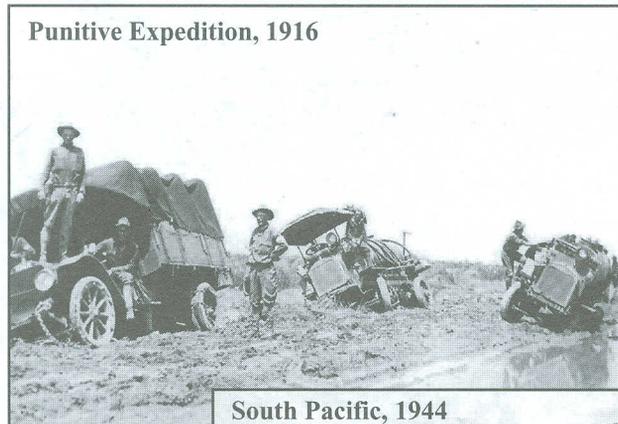
Who else. The Quartermaster Corps.

On the Eve of Change. The US automotive industry got off to a slow start compared to Europe. By 1895, only 20 or so gasoline-powered automobiles were in the entire country. Even so, Commander of the Army Major General Nelson A. Miles saw potential military use where others did not. In his *Report* that year he strongly recommended the purchase and testing of a few “motor wagons.” Too



expensive, said the critics, plus there had not been enough tests to validate their military worthiness.

In truth though, it wasn't the lack of tests, but rather a lack of vision that delayed the Army's initial investment in motorized vehicles. In spite of its many reservations, the Quartermaster Corps did consent to purchase a small but growing number of trucks and cars annually, between 1905 and 1910, mostly for use at Army depots. The Signal Corps, Medical Corps, Ordnance Corps and others did likewise. Their experience paid off and ultimately led to a turnaround in thinking.



Until the spring of 1911 the Quartermaster Corps had been the chief foot-dragger. Tests that year and the next, however - including a 1,500-mile truck convoy during the winter from Washington to Atlanta, then up through the mountains to Indianapolis, over all kinds of roads in just 45 days - finally convinced even the most skeptical observers that the time for motorized vehicles had arrived. With that, the Quartermaster Corps began leading the charge.

Thanks to Pancho Villa. The US military did not have to wait long for a real-world test of the viability of trucks. Upon learning that a group of Mexican nationals had "sacked" Columbus, New Mexico, on the night of 8 March 1916, killing innocent civilians and destroying American property, the War Department sent a combined expeditionary force under Brigadier General John J. Pershing to punish the perpetrators and bring them to heel.

Twenty-seven commercially built trucks arrived the first week of the Punitive Expedition and were organized into a Quartermaster Truck

Company. By July 1916, the Army had purchased another 560 flatbed trucks, 57 tanker trucks (to haul gasoline and water), 10 machine-shop maintenance trucks, 6 wrecking trucks, 75 automobiles, 61 motorcycles, and 8 tractors for road repair. "The use of these vehicles on the Mexican border," wrote one recent historian, "was such a success that there were no longer any doubts that the truck would replace animal-drawn transportation." Moreover, the experience provided invaluable lessons for a much larger conflict just over the horizon - World War I.

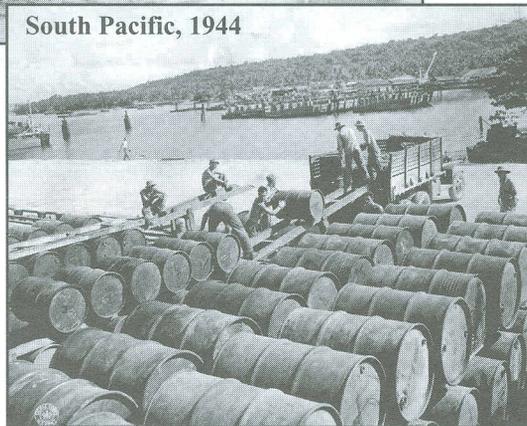
Le Sang Rouge de Guerre. By the time the US declared war on Germany in April 1917, the

Army owned more than 3,000 trucks, nearly 500 automobiles, a handful of tractors, several hundred motorcycles, and also an expanding fleet of airplanes. These and countless other machines depended upon a steady and ever-growing flow of petroleum, oils and lubricants (POL, as it would later be known) being skillfully pushed

into the theater of operations.

Accompanying the American Expeditionary Force to France was a burgeoning line of tank steamers that piped huge amounts of gasoline over the shore into bulk storage facilities, notably at the ports of Pallice and Bordeaux. From there, gasoline was decanted into French railway tank cars and moved further inland from the Base Section to the Intermediate Section.

French policy initially called for all gasoline destined for the Advance Section to first be decanted into 50-liter cans and then placed on trucks or wagons for shipment to the front. Such a laborious and time-consuming procedure met with opposition from the



Americans and proved largely unworkable in any case, because of an acute shortage of cans. When not enough gasoline reached Allied units during the push at Chateau-Thierry, that policy was abruptly changed. Thereafter, railway tank cars were allowed to carry petroleum products directly to the Advance Section where large portable bulk storage facilities were set up closer to the front.

World War I saw the introduction of specialized Quartermaster units and trained personnel on the Western Front (such as cooks, butchers and bakers, delousing squads, and graves registration soldiers). No rank and file soldiers, however, were yet schooled in the handling of petroleum. General service troops, stevedores, depot units, and supply trains distributed petroleum in the field. However, their accomplishments were not insignificant. From January to December 1918, Quartermaster doughboys delivered nearly 50 million gallons of motor gasoline to the front. Also 5 million gallons of aviation gasoline, 1½ million gallons of kerosene, 4 million gallons of lubricating oil, and 2 ½ million gallons of grease.

Following the armistice, the chief German strategist, General von Ludendorff, claimed that it was “chiefly because of insufficient oil reserves that the German General Staff was forced to sue for peace in 1918.” As for the successful Allies, Winston Churchill simply remarked that they had “floated on a sea of oil to victory.”

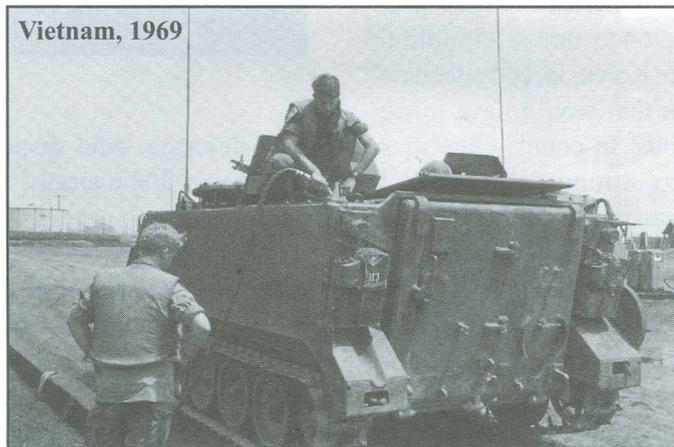
World War I had proven beyond a shadow of doubt the importance of gasoline in modern warfare. What the French so aptly termed *le sang rouge de guerre* – “the red blood of war.”

Fueling a Global Force. The challenge facing Allied forces 20 years later in World War II was infinitely greater: namely, how to supply the millions

and millions of gallons of POL needed to ensure victory against a global enemy.

Even the relatively small North African campaign, code-named *Operation TORCH*, required no less than 10 million gallons of gasoline. A single medium tank used more than a gallon and a half of gasoline for each mile driven. An armored division required 1,000 gallons to cover the same distance and habitually used more than 18,000 gallons every hour it was on the move.

It’s been rightly said that World War II was the first “truly gasoline-combustible engine war.”



Mechanization of the US armed forces drove POL consumption rates to dizzying heights, at times calling for upwards of 800,000 gallons of gasoline *per day* in the European Theater alone. In the end, it required no less than one *billion* gallons of gasoline, 75 million gallons of lubricating oil, and 45 million pounds of grease to keep Allied

planes, tanks, trucks, jeeps and other vehicles and equipment moving on the road to victory.

World War II for the first time saw the fielding of thousands of Quartermaster soldiers specifically trained to carry out petroleum supply functions. Their newly created Quartermaster Base Petroleum, Laboratory, and Gasoline Supply Companies (with the aid of countless Truck and Service Companies, and pipe-laying Engineer outfits) ensured that these unprecedented worldwide demands were fully met. Moreover the miles upon miles of “jerricans” that lined the roads from Cherbourg to the Rhine and beyond - not to mention heroic efforts of POL soldiers on the famed “Red Ball Express” and during the Battle of the Bulge - testified to the Corps’ petroleum mission having come of age.

The Road to Transformation. In the nearly 60 years since the end of World War II, the Quartermaster



petroleum supply mission has continued to evolve, even as the nation has gone to war time and again.

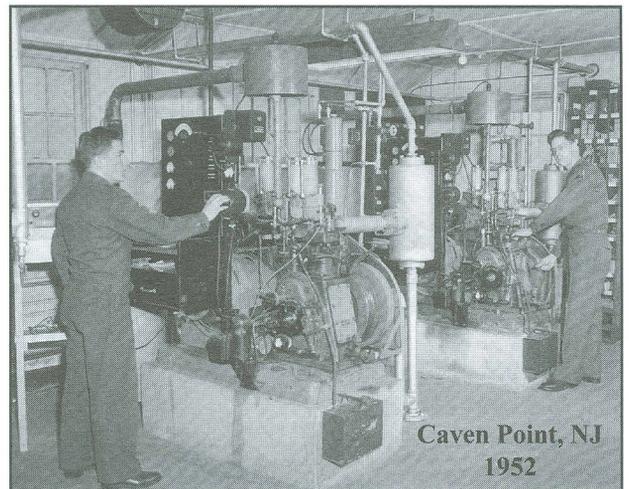
Korea. In the darkest days of the Korean Conflict, as United Nations forces clung to the tip of the Pusan peninsula, Quartermaster POL units received tens of thousands of gallons of gasoline in anticipation of the eventual breakout. Brutal winters, harsh terrain and a severely underdeveloped rail system made distribution all the more challenging. Yet they succeeded. The biggest symbol of their success in this so-called “war of drums” - was the ever-present 55-gallon drum.

Vietnam. The appetite for petroleum products grew even larger in Vietnam, America’s longest war, from 2.7 million barrels in 1964 to almost 44 million barrels in 1968. Vietnam, like Korea, lacked adequate roads and a railway system that would have made POL distribution less onerous. In-country facilities were also vulnerable to enemy attack. Yet Quartermaster POL troops and units routinely stored at least 20 days of supply at all times. They also ran pipelines through guerrilla-infested jungles and made POL available for airdrop to besieged units. These “Log Warriors” helped protect and defend their precious cargo in base depots, and on perilous convoy duty – often paying for it with injuries and lives lost.

Operation Desert Shield/Storm. The scope and scale of the US-led multinational force that went to Saudi Arabia in August 1990 to expel Iraqi occupiers from neighboring Kuwait dwarfed anything seen since the height of Vietnam, since World War II actually. More than half a million American troops, from all services, deployed with weapon systems largely introduced since Vietnam – including M1A1 tanks (that consumed around five gallons of gas *per mile*), Bradley fighting machines, multiple types of attack helicopters, HEMTTs and HUMMVs, HETs, hardwall tankers, SMFTs and more. The VII Corps alone had more than 7,000 tracked vehicles and an additional 40,000 wheeled vehicles. Together this spelled an enormous need for POL.

Ten POL Companies assigned to the 22d Support Command (SUPCOM) skillfully handled the Class III storage and distribution. They moved upwards of 900 truckloads of fuel each day, helped set up

provisional stockpiles during the ground war phase, and validated Refuel on the Move (ROM) principles



and doctrine. And dispensed more than a *billion* gallons of fuel overall.

Kudos to Foxes and Limas. The Quartermaster petroleum mission has come a long way since its humble beginnings at the start of the last century. World War II had demonstrated the need for some sort of program to train qualified petroleum technicians, officers and enlisted personnel. The Quartermaster Petroleum School, set up at Caven Point, Jersey City, New Jersey, offered a 21-week Petroleum Lab Technician Course (MOS 3388) for warrant officers and a 21-week Products Analysis and Control Course for officers (MOS 4960). And for enlisted soldiers a 6-week Petroleum Storage Course (MOS 3485).

The Petroleum Training Department was moved from Caven Point, NJ, to the Quartermaster School at Fort Lee, VA, on 1 July 1954. Instruction commenced on August 1st that year, and has continued at this location ever since. Course offerings have changed many times over, likewise the department’s name and military occupational specialty (MOS) designations. Still, today’s Petroleum Supply Specialists (MOS 77F) and Petroleum Laboratory Specialists (MOS 77L) can look to the past with pride and to the future with great hope – as they continue to provide the Army of the 21st Century with its “lifeline to victory.”



WATER MISSION

Water in Military History. Throughout the ages, from ancient times to the fairly recent past, armies in all parts of the world have suffered far more from either water shortages or contaminated water supplies than from the actual weapons of war. Even the greatest of the Great Captains have had their plans upended for lack of water or have fallen victim to the ravages of waterborne illness.

In 325 BC, Alexander the Great lost an estimated three-quarters of his entire Macedonian army when their water supply ran out. They were swallowed by an ocean of sand in the Gedrosian desert, in present-day southern Pakistan. That was more than he had lost in all of his previous campaigns combined. Thirteen hundred years later (in 1096 AD), the so-called People's Crusade was easily defeated by the Turks when they, too, ran out of water and had to surrender.

Typhus, dysentery and acute diarrhea - often stemming from contaminated water - have led to the deaths of countless soldiers during the last millennium. Such "camp diseases" were thought to be virtually inevitable while on the march. At the Battle of Crecy (1346 AD), for example, King Edward's knights and archers were so sorely afflicted with dysentery that the French scoffingly referred to them as the "bare-bottomed" army. Five hundred years later in

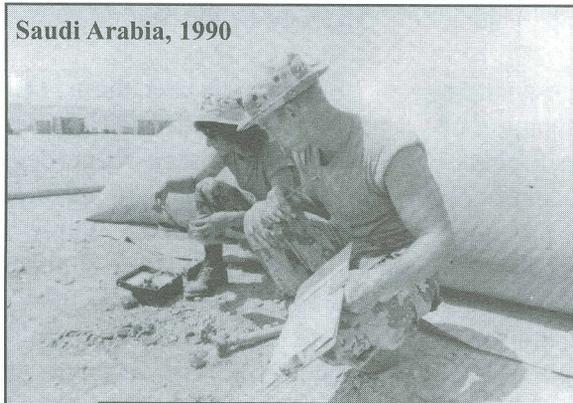
1812, Napoleon lost thousands to typhus and dysentery during his ill-fated Russian campaign.

Here in the US, the Battle of Little Big Horn in 1876 offers a near Kiplingesque example of the absolute necessity of water in the heat of combat.

In the immediate wake of Custer's demise, the Sioux and Cheyenne turned on the remaining companies of the 7th Cavalry Regiment under Major Marcus A. Reno and Captain Frederick W. Benteen, isolated in the hills nearby. On the verge of collapse, the Reno-Benteen contingent, the wounded in particular, were suffering terribly for lack of water. The situation was saved only when 16 troopers (all of whom were subsequently awarded Medals of Honor) voluntarily served as water carriers.

The 20th Century also affords many examples of water's wartime importance. British General Allenby had to overcome a series of water hurdles to succeed during his World War I campaign in Palestine. Rommel's World War II Afrika Corps was halted along the El Alamein Line, in part at least, by a severe shortage of water. During the 1967 Six Days War, the Egyptian Army suffered more than 20,000 heat casualties, partly because of insufficient water consumption.

For the US Army in World War II, the Corps of Engineers carried the brunt of the water supply mission. They located water sources, tested and purified water, and supervised distribution to the troops. Various arms and services usually provided



their own trucks to haul water from Engineer water points. In North Africa, for example, the 518th Engineer Water Supply Company found multiple water points and - using a series of pumps, chemical disinfectants and 3,000-gallon collapsible canvas tanks for temporary storage - played a critical role during the Allied drive through Tunisia. On its peak day, the 518th distributed 72,840 gallons of water.

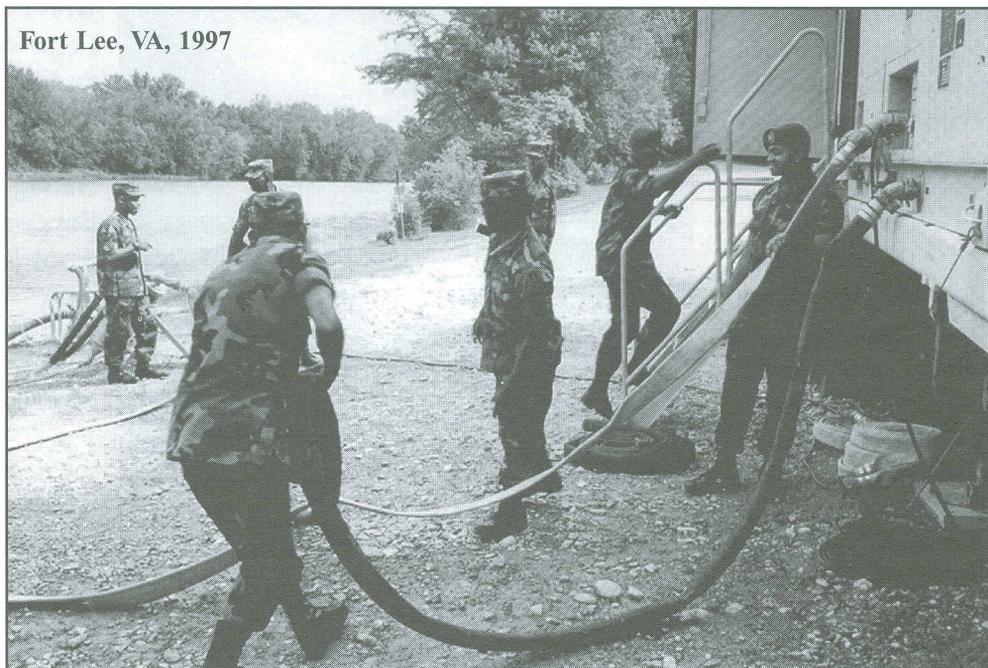
A New Quartermaster Mission. Events in more recent decades – notably the Soviet occupation of Afghanistan in 1979, the seizure of the US Embassy in Iran about the same time, and subsequent efforts to protect US interests in the Persian Gulf – prompted defense planners and doctrine writers alike to reconsider the importance of water supply, especially in arid or semi-arid environments. And to rethink how that vital mission might be better accomplished. As a result, in February 1981, the US Army Training and Doctrine Command (TRADOC) transferred most water supply functions from Engineer to Quartermaster organizations.

Between 1981 and 1986 water supply personnel and equipment were moved into Quartermaster Supply and Service Companies, as new Table of Organization and Equipment (TOE) units were designed. The training of Water Supply Specialists (MOS 51N) migrated from the Engineer School at Fort Leonard Wood, Missouri, to the Petroleum

Department at Fort Lee, Virginia, and was assimilated into the Petroleum Supply Career Management Field (CMF 92). Water purification equipment designed in the 1950s was gradually replaced by new systems based on reverse osmosis technology. The new doctrine, units and equipment were successfully tested together for the first time in Egypt during Exercise Bright Star 85 (July-August 1985).

Five years later, during *Operation Desert Shield/Storm*, both Active and Reserve Quartermaster water supply units and personnel deployed to Saudi Arabia. Armed with 600- and 3,000-gallon per hour (GPH) Reverse Osmosis Water Purification Units (ROWPUs) and a new generation of collapsible storage tanks and drums, they ensured that no Allied troops lacked adequate supplies of fresh water. Not only that, one unit in particular, the 14th Quartermaster Detachment, after suffering 13 dead and many more wounded in an Iraqi SCUD missile attack, became a broad symbol of the sacrifice made by Quartermaster soldiers throughout history.

Since that time, Quartermaster Water Treatment Specialists (MOS 77W) have provided humanitarian assistance and life-sustaining support to both uniformed and civilian communities, at home and abroad, in peace and in war. These Quartermasters have marked a splendid record of achievement along the way.



Petroleum and Water Department

The Basic Facts

The Petroleum and Water Department is a part of the US Army Quartermaster Center and School at Fort Lee, Virginia. Students and Army instructors are assigned to the 262d Quartermaster Battalion. Our cadre of over 125 instructors include Army, Navy and Marine officers, noncommissioned officers (NCOs) and civilians. The bottom line is to provide the best training possible to ensure that our soldiers are assets and combat multipliers on the battlefield.

Mission

- Proponent for petroleum and water training and doctrine
- Conduct resident training for proponent and contributing courses
- Provide responses to the field on all petroleum and water issues
- Develop military occupational specialty (MOS) related materials

Petroleum and Water Department

- Basic Petroleum Logistics Division (BPLD)
- Advanced Petroleum & Water Division (APWD)
- Laboratory Training Division (LTD)
- Water Training Division (WTD)
- Marine Corps Petroleum Training Division (MCPTD)

Training Sites

- Military in the Field (MIF)
- Petroleum Training Facility (PTF)
- Water Training Sites

Military Occupational Specialties

- 77F Petroleum Supply Specialist
- 77L Petroleum Laboratory Specialist
- 77W Water Treatment Specialist
- 92F Petroleum Management Officer
- 1390 Bulk Fuel Officer (Marine Corps)
- 1391 Bulk Fuel Specialist (Marine Corps)

FY02 Projected Student Load

MOS	Projection
77F	3,868
77L	200
77W	689
92F	104
1390/1391 (Marine Corps) Officer Courses	499
	<u>998</u>
Total	6,358

Mission Essential Task Listing

- Train the petroleum and water force. Develop solution sets to petroleum and water issues.
- Train and sustain a technically proficient workforce.
- Assist in the development of petroleum and water training and doctrinal material.
- Assist in the development of operational concepts, force design and equipment.

Proponency Classes

- 77F Petroleum Supply Specialist
- 77L Petroleum Laboratory Specialist
- 77W Water Treatment Specialist
- 92F/1390 Petroleum Officers Course
- 1391 Bulk Fuel Specialist (Marine Corps)
- 1391 Advanced Petroleum Staff NCO Course (Marine Corps)

Training

- Operational Readiness Assessment (Navy)

Contributing Courses

- Quartermaster Officer Basic Course
- Combined Logistics Captains Career Course
- Supply & Service Management Officer's Course
- Reserve Component Officer's Advanced Course
- Warrant Officer's Basic Course
- Warrant Officer's Advanced Course
- Pre-Command Course

The Core of Knowledge

Student training focuses on specific critical tasks. These tasks and the associated equipment and systems form the core of knowledge that soldiers must master in order to graduate. The following charts are designed to provide leaders an understanding of the common core of knowledge of soldiers in the advanced individual training courses.

77F Petroleum Supply Specialist			<i>Training: 8 weeks/4days</i>
General Subjects <ul style="list-style-type: none"> • Environmental Stewardship • Fire Fighting • Identify Class III Package Products • Measure API Gravity • Sample Product • Sling Load Operations 	Pipeline Operations <ul style="list-style-type: none"> • Interface Cut Operations • Maintain & Assemble Pipeline • Operate Tank Valves • Operate & Maintain Pumps • Prepare Accountability Forms • Scraper Operations 	Systems <ul style="list-style-type: none"> • Fuel System Supply Point (FSSP) • Forward Area Refueling Equipment (FARE) • Assault Hose Line • Refuel on the Move (ROM) Kit • Railcars and Barges • Pump & Filter Separators 	
Tankers <ul style="list-style-type: none"> • M967 • M967A1 • M969A1 • M970 • M970A1 	Equipment <ul style="list-style-type: none"> • M978 Heavy Expanded Mobility Tactical Truck (HEMTT) • HEMTT Tanker Aviation Refueling System (HTARS) • Advanced Aviation Forward Area Refueling System (AAFARS) • Twin Agent Unit (TAU) • Collapsible Fabric Tanks 	<ul style="list-style-type: none"> • Fixed Facility Storage Trunks • Sampling and Gaging Kit • Tank and Pump Unit (TPU) • Inland Petroleum Distribution System (IPDS) 	
<ul style="list-style-type: none"> • Soldiers graduate at apprentice level. They require driver's training and certification on systems or equipment. 			

77L Petroleum Laboratory Specialist				<i>Training: 9 weeks/4days</i>
Test Most Often Conducted			Test Kits	Laboratories
<ul style="list-style-type: none"> • Appearance • API Gravity and Density • Acid Number • Color (visual) 	<ul style="list-style-type: none"> • Color (Saybolt) • Conductivity • Copper corrosion • Freezing Point • Distillation 	<ul style="list-style-type: none"> • Existent Gum • Filtration Time • Flash Point • Fuel System Icing Inhibitor (FSII) 	<ul style="list-style-type: none"> • Particulate Contamination • Thermal Stability • Water Reaction • Water Separation 	<ul style="list-style-type: none"> • Aviation Fuel Contamination • Ground Fuels • Captured Fuels • AQUA-GLO
<ul style="list-style-type: none"> • The Army prescribes to a total of 98 laboratory tests that could be conducted in the course of operations. • 77Ls graduate proficient in 54 of the resident lab tests. These 54 tests account for 95% of field tests conducted. • Of these 54 tests, 16 account for 80% of the testing conducted in the field that soldiers perform (listed above). • The remaining 44 tests on which soldiers are not trained account for only 5% of the testing that could be required. First line supervisors (77L20) are capable of training any of these remaining tests that the unit requires. • Training is not conducted on used products (engine oil). Army Oil Analysis Program (AOAP) and testing is a different training regime. • Soldiers require driver's certification on the vehicles that are associated with their duties. 				

77W Water Treatment Specialist				<i>Training: 10 weeks/4days</i>
Determine	Tests	General	Equipment	
<ul style="list-style-type: none"> • Potential Hydrogen Value (pH) • Color Amount • Chlorine Residual • Total Dissolved Solids (TDS) 	<ul style="list-style-type: none"> • Cyanide • Lewisite • Mustard Gas • Nerve Agent • Radiological 	<ul style="list-style-type: none"> • Water Site Reconnaissance • Identify Water Sources • Water Treatment Processes • Water Quality Analysis Test Kit • XM1098 Tanker 	<ul style="list-style-type: none"> • 600-GPH ROWPU • 3,000-GPH ROWPU • Potable Water Storage & Distribution System • Semi-trailer Mounted Fabric Tank (SMFT) 	<ul style="list-style-type: none"> • Tactical Water Distribution System (TWDS) • Forward Area Water Point Supply System (FAWPSS)
<ul style="list-style-type: none"> • Soldiers require driver's certification on the vehicles and equipment that are associated with their duties. • Soldiers have Skill Level 1 knowledge of tests and procedures. Supervisors must conduct reinforcement training. • Training at Fort Lee, VA, is conducted in fresh water conditions. Soldiers also require brackish and salt water training. • The US Army Coastal Water Purification Training Center at Fort Story, VA, conducts training in salt water. • The center trains over 1,100 troops annually from the Total Force with 1/3 of the slots going to each component. • 10 courses annually on 3,000-GPH & 600-GPH ROWPU/TWDS plus 3 organization maintenance classes for 63J. • For information on the US Army Coastal Water Purification Training Center, call SFC McGhee, (404) 464-5934. 				



Important Facts for Leaders

Training Level

Soldiers and officers graduating from advanced individual training (AIT) and the Officer Basic Course have apprentice-level knowledge. They are not experts. Their training does not certify them for immediate licensing on equipment. Soldiers are familiar with procedures, employment of equipment, safety and maintenance. They are ready for in-depth and specific training from their first line supervisors in their assigned units. Supervisors of new soldiers must train and certify the knowledge of new soldiers before licensing them on equipment or assigning them multiprocedural military occupational specialties (MOSs) related to their tasks.

Additional Skill Identifier (ASI) H7

Some units receive soldiers who have completed the five-week Motor Transport Operator School at Fort Leonard Wood, MO. These soldiers have the H7 ASI identifier. What does this mean? A soldier with a H7 ASI is a Petroleum Vehicle Operator. These soldiers have extensive driver's training on the M978 Heavy Expanded Mobility Tactical Truck, the M931 Tactical Tractor and the M969A1 5,000-gallon tanker. More than 850 77F soldiers a year receive this training. Most are on active duty and assigned to divisional units. These soldiers are not licensed on equipment. They are ready for post-specific driver training and master driver certification for these three pieces of equipment.

Unit Training Requirements

- **Driver Training:** According to AR 600-55 (Army Driver and Operator Standardization Program) units are responsible for training, certifying and licensing their soldiers on equipment that they operate. Leaders should develop a list of all the equipment that the soldier will operate. The soldier should arrive at driver's training with a complete list of equipment he needs to be licensed on, from the heaviest piece to the lightest. Trainers can then ensure that the soldier receives all the required training. Soldiers with the H7 identifier should bring their certificates of training awarding the H7 identifier. The training that these soldiers have already received will preclude many of the core training requirements that soldiers without the identifier require.
- **Fuel Handlers Certification:** This course is not required or available at all units, posts, camps or stations. This course and the requirement for training have developed out of local needs to train soldiers on local regulations. Most courses cover transportation of hazardous cargo, environmental regulations, spill control, hazardous material handling and safety. There is no one, single regulation that covers all requirements applicable to the entire Army because local regulations differ from place to place. If a Fuel Handlers Certification Course is a requirement at your post for handling fuel or chemicals associated with water treatment equipment, the training is not waivable.
- **Individual Tasks and Battle Drills:** Soldiers graduate from AIT with a working knowledge of the basic individual and collective tasks that the MOS requires. First line supervisors must certify them on their proficiency in individual tasks and integrate the new soldiers into the team on collective tasks. Soldiers are only as good as the rehearsals and reinforcement training they receive.

Petroleum and Water Department (PWD) Information

Have a Question? Get the answers at the PWD web site: <http://www.quartermaster.army.mil/pwd/>

This site provides for the downloading of a number of papers from sources in the US Army Quartermaster Center and School as well as from other agencies, such as US Army Tank-automotive and Armaments Command and US Army Petroleum Center. Topics of special interest are safety, operations, equipment and publication links. Also available for downloading from the web site are:

- **Automated Fuel Accounting Program (AFAP):** Aids units in their fuel accounting operations and procedures.
- **Joint Petroleum Logistics Planning Guide (JPLPG)** Enables planners to identify and assess capabilities, and to identify petroleum storage and distribution requirements to support joint military operations.
- **Potable Water Planning Guide (PWPG),** Enables planners to identify requirements, assess capabilities, and to identify water purification, storage and distribution requirements to support military, enemy prisoners of war and civilian internee/refugee, and Force Provider force operations projections.
- Petroleum and Water stock number listings.

For information, E-mail or call James Turgeon at turgeonj@lee.army.mil or phone DSN 687-1332 or (804) 734-1332.



262d Quartermaster Battalion

Lifeline to Victory

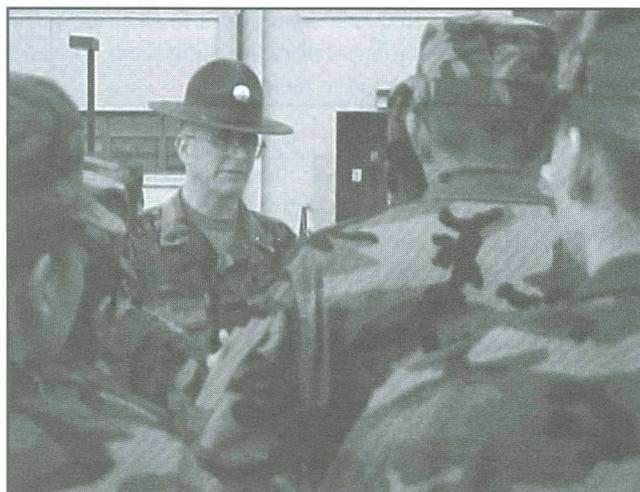
CSM Stephen R. Ball

The 262d Quartermaster Battalion ensures training to standard for the soldiers who are ready to provide fuel and water to America's Fighting Force. Through excellent leadership and positive command and control, the 262d supports five companies and three training departments responsible for six Quartermaster military occupational specialties (MOSs). Two of the five companies are advanced individual training (AIT) units for these military occupational specialties (MOSs): 77F (Petroleum Supply Specialist), 77L (Petroleum Laboratory Specialist) and 77W (Water Treatment Specialist). Soldiers in these fuel and water MOSs train at the Petroleum and Water Department (PWD), US Army Quartermaster Center and School.

Soldiers in training at PWD are assigned to the battalion's Uniform and Victor Companies. The 262d's drill sergeants are assigned directly to the AIT companies and are qualified in the MOS in which their soldiers are training. Drill sergeants are role models and subject matter experts (SMEs) who lead by example in a positive training environment.

The battalion's drill sergeants use three basic components to make sure that AIT students become MOS qualified: academics, physical fitness training, and Army Values. Academics are taught at PWD by noncommissioned officers (NCOs) who are SMEs in their MOSs. The PWD instructors give the 262d drill sergeants weekly academic reports for weekly counseling sessions with their soldiers. Drill sergeants lead physical fitness training with assistance from PWD's NCOs. This "one team, one fight" concept works. Instilling and reinforcing the seven Army Values at every turn is not only the responsibility of the drill sergeants, but also the responsibility of everyone who comes in contact with soldiers in training.

In weekly face-to-face counseling, both verbal and written, students identify ways to improve performance. Solutions are planned. Written



Orientation briefing to AIT soldiers

academic reports and the drill sergeant's assessment of the soldier's overall development in the Army Values system are part of the critical soldierization process. The system, which includes awarding progressive privileges for achievement, keeps soldiers motivated to progress further each week toward the goal of becoming fully MOS qualified.

At the end of week four, AIT soldiers who meet the criteria for success in all areas are ready for the Rites of Passage Ceremony. This ceremony is the halfway point on the way to becoming a 77 series soldier. Soldiers receive individual Quartermaster Regimental Crests from their company commanders and an official welcome into the Regiment.

At every step, the 262d Battalion's drill sergeants and PWD NCOs work together as a team. These Army professionals provide units with mentally capable, physically fit, highly dedicated and motivated soldiers who are proud to serve. Above all else, these Quartermasters look, think and act like soldiers, always.

CSM Stephen R. Ball is the Battalion Command Sergeant Major for the 262d Quartermaster Battalion (Airborne) at Fort Lee, Virginia.



Training To Fuel the Force

Basic Petroleum Logistics Division

CPT Candy A. Campbell

LT Jodie E. McFee

The Basic Petroleum Logistics Division (BPLD) trains to standard more than 3,000 soldiers and marines annually to meet 77F (Petroleum Supply Specialist) requirements in the US Army and the US Marine Corps. The BPLD's facilities include classrooms, an operating pipeline terminal tabletop model, the Petroleum Training Facility (PTF) and the Military in the Field (MIF) site.

The 8-week, 4-day course trains students in environmental safety, basic and tactical petroleum operations, fuel accountability, tactical petroleum terminal operations, tank vehicle operations, and Refuel on the Move (ROM) procedures. After successful completion of each phase, Quartermasters exhibit their skills during the Logistics Warrior Field Training Exercise (FTX). This FTX validates student knowledge and demonstrates "fit to fight" proficiency.

The primary mission of most 77Fs is fuel distribution, fuel storage, and operation and maintenance of tactical petroleum equipment within the divisional force structure. Students receive intensive hands-on training on the systems they will most likely operate, such as the Forward Arming and Refueling Point (FARP), Fuel System Supply Point (FSSP) and the assault hose line. Ground vehicle refueling systems are a major part of every 77F mission. Students train extensively on these systems, including the tank pump and unit (TPU), M969 5,000-gallon tanker, the 2,500-gallon Heavy Expanded Mobility Tactical Truck (HEMTT) tanker, and the ROM kit.

However, knowing equipment is not enough. For example, soldiers also learn the health hazards of petroleum products, first aid procedures, fire fighting, safety and spill contingency planning specific to fuel missions. Alert and capable fuel handlers save lives and keep down maintenance costs through accurate sampling. Quartermasters learn the basics of fuel quality analysis and visual examinations for contamination.



Soldiers training on aviation refueling

Instructors stress tank gauging, product sampling, and supply accountability procedures. Leaders can trust the information that 77Fs provide.

Nothing moves without fuel. Mastery of distribution and delivery systems is key. Soldiers learn waterfront operations, offshore petroleum discharge systems, railcar, depot, and truck stand transfer operations. Pipeline maintenance and operations training focuses on ensuring that students can keep these vital systems flowing. Preventive maintenance training on pumps, filters and monitors ensures that soldiers can properly receive, store and issue fuel.

Commanders require well-rounded and knowledgeable petroleum specialists on today's fast-moving battlefield where fuel is often critical to success. Graduates of BPLD are competent in their skills and ready for the mission.

Both authors currently are students in the Combined Logistics Captains Career Course at Fort Lee, Virginia. CPT Candy A. Campbell's next assignment is Fort Hood, Texas. LT Jodie E. McFee's next assignment is Logistics Officer, 237th Forward Support Battalion, Ohio National Guard.

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Training Quality Surveillance

Laboratory Training Division

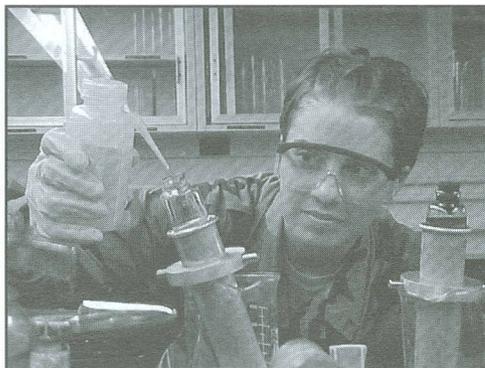
SFC Sylvester Cammon

The Laboratory Training Division (LTD) trains a small group of professionals with a large mission that has operational impact on the Army and other services using fuel from Army systems. The LTD provides soldiers with the military occupational specialty (MOS) 77L (Petroleum Laboratory Specialist) to the Army and the same high-quality graduates to the Marine Corps. Only 140 students graduate from this 9-week/4-day course each year. Currently, only about 130 soldiers of all ranks have the 77L MOS in the force structure.

The LTD's basic mission is training soldiers in the physical and chemical hydrocarbon testing procedures for petroleum turbine fuels, oils and lubricants. Learning quality surveillance requires extensive technical expertise and long hours of hands-on training. Soldiers spend about 80 per cent of their time in the laboratory learning test regimes and perfecting skills, and about 20 per cent of their time in the classroom studying the exacting academic standards.

The LTD bases its curriculum on Military Standard 3004, a Department of Defense publication that establishes practices for quality surveillance of petroleum fuels and products. The LTD instructors guide, mentor and provide extensive one-on-one interaction. The final four days of the course, students are tested. They must demonstrate proficiency on a wide range of laboratory tests and properly analyze the results. The final "product" is a confident and capable laboratory technician ready to ensure the quality and safety of the petroleum products that move the force.

The core task of a 77L is to test products and allow only correct fuel to move forward. Two of the



Using centrifuge for testing fuel

most important procedures are testing for contaminants and testing the flash point of fuel. Water in fuel is a dangerous contaminant, for example. Water and sediment can cause fuel filters and injectors to clog and engines to fail. Also, fuel products for airframes are extensively tested. Safeguarding the lives of aircrews is one of the 77Ls most important jobs. Flash point is a test that determines the lowest temperature at which fuel will burn. Fuel with a lower-than-prescribed flash point can cause engine damage. Fuel with a higher-than-standard flash point does not burn completely in the engine. This makes the engine work ineffectively, causing wear to the engine and sending heavy exhaust emissions from unburned fuel and oil into the atmosphere.

Soldiers spend extensive time with the three main pieces of test equipment present in the field: the Airmobile Laboratory, the Mobile Laboratory and test kits. Instructors make sure that all 77Ls are well-versed in Aviation, Water Separator and Ground Fuel test kits. These test kits are the basic tools to provide protection and quality assurances. Commanders cannot hope to achieve success if their equipment is down for maintenance due to poor fuel quality. Commanders can be sure that a capable 77L force is trained and ready to safeguard lives and equipment in the field. Quality fuels and lubricants are the driving forces of our modern, mobile Army.

SFC Sylvester Cammon has held many logistical positions at Fort Hood, Texas, Fort Campbell, Kentucky, Korea and Germany. He is currently the Noncommissioned Officer in Charge of the Laboratory Training Division, Petroleum and Water Department, US Army Quartermaster Center and School, Fort Lee, Virginia.

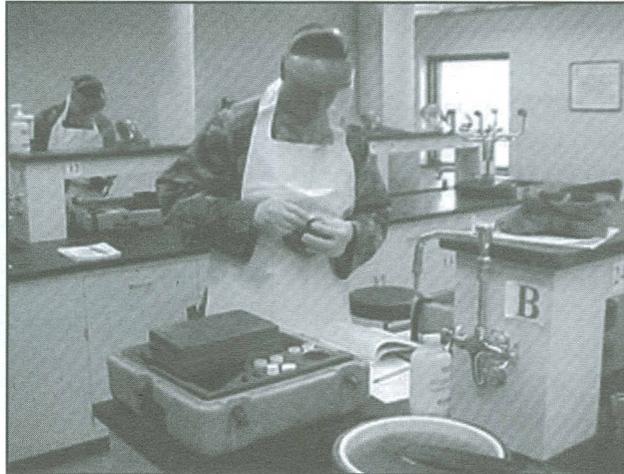


Supporting the Ultimate Weapon

Water Training Division

CPT Paul J. Watkins

The Water Training Division (WTD) prepares Quartermasters to support the ultimate weapon - the soldier - with potable water. Purified water is a combat multiplier. In 10 weeks and 4 days of training, students work in the military occupational specialty (MOS) of 77W (Water Treatment Specialist). Soldiers learn to operate and maintain water production and storage equipment, gain technical proficiency and confidence, and perform their 77W duties in various environments.



Working with the Water Quality Analysis Test Kit

Combat-ready soldiers are a commander's credentials. Water is a critical factor that keeps soldiers fit and ready for the mission. To give commanders the assets they need, the Water Treatment Specialist course has four phases: laboratory, equipment operations, production and storage. Soldiers must successfully complete each phase to move on to the next one.

The laboratory phase teaches basic water testing, water quality analysis, and equipment maintenance. Instructors emphasize preventive maintenance on testing equipment throughout. Testing water for nerve agents, cyanide and mustard gas are some of the nuclear, biological, and chemical (NBC) tests. Such tests are critical to the success of the 77W's mission. There are no second chances when it comes to water quality. Water site reconnaissance is this phase's final block of instruction. Sites must support the water production requirement and customer movements, while not inhibiting force protection measures.

The second phase introduces soldiers to the 600-gallon per hour (GPH) Reverse Osmosis Water

Purification Unit (ROWPU). Soldiers learn how to operate the ROWPU using fresh, brackish and saline water sources. As with all equipment, preventive maintenance on the 600-GPH ROWPU is stressed.

The third phase emphasizes the 3,000-GPH ROWPU. Training ramps up by validating soldier skills from the previous phases. Site

selection, production reports, logbook procedures, and meeting maintenance standards provide this check on learning.

The final phase focuses on the Tactical Water Distribution System (TWDS). The TWDS includes a hose line that can cover 10 miles overland. The system can distribute up to 720,000 gallons of water per day. Soldiers learn the techniques for packing, laying, operating, maintaining and retrieving the TWDS, as well as site selection and preparation using 20,000-gallon collapsible fabric tanks.

Training culminates in a comprehensive examination that tests a soldier's ability to successfully employ all systems. Students who graduate with the 77W MOS know that soldiers are counting on them. These Quartermasters ensure that the flow of potable water continues regardless of the operational situation.

CPT Paul J. Watkins has served as a Company Executive Officer, 111th ASMB; Logistics Liaison J4, Joint Task Force Bravo, Honduras; and Exercise Plans Officer J3, Headquarters, US Army Southern Command, Miami, Florida. His next assignment is Fort Bragg, North Carolina.

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Forging the Backbone

Petroleum and Water Leaders at the NCO Academy

CPT Chris Lange

CPT Clarence Penny

SFC Glenn Hawkins

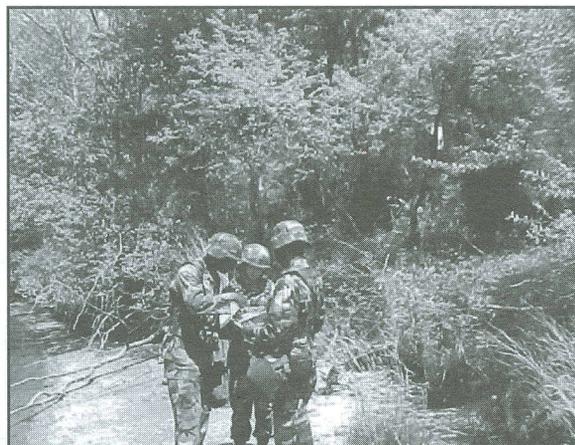
SFC Clarence Richardson

The future of Army operations lies in the hands of the leaders being trained at the Noncommissioned Officer Academy (NCOA) at Fort Lee, VA. The NCOA annually increases the leadership skills of 250 NCOs in both the Basic and Advanced Noncommissioned Officer Courses (BNCOC and ANCOC) in the military occupational specialties (MOSs) of 77F (Petroleum Supply Specialist), 77W (Water Treatment Specialist) and 77L (Petroleum Laboratory Specialist).

The eight-week BNCOC is foremost in leadership development. Students are deeply involved in their own growth. Small group leaders are classroom facilitators who reinforce the basic principles of discipline and leadership. In small group settings, the junior NCOs monitor, evaluate and learn from one another. The product is an NCO Corps ready to lead, train and mentor soldiers with confidence and integrity.

The ANCOC goals are the same as the BNCOC goals, but the ANCOC training continues at higher levels of managerial skill and technical proficiency. The small group leader's interaction with NCOs is the strength of the ANCOC training system. Shaping and polishing the skills of the senior NCO Corps is conducted by the Corps itself.

Students in the 77W MOS conduct water planning operations, storage and distribution. They have classes in operations, management and integration of the 600- and 3,000-gallon per hour (GPH) Reverse Osmosis Water Purification Units (ROWPUs) in a field environment. They train with the Semi-trailer Mounted Fabric Tank (SMFT), Tactical Water Distribution System (TWDS), and the Forward Area Water Point Supply System (FAWPSS). The result is competent 77W leaders prepared to hold positions as water treatment supervisors, storage and distribution chiefs, and water operations NCOs.



NCOs leading the way at Logistics Warrior FTX

Although small, the 77L community has a major impact in leadership because supervision of petroleum laboratory operations affects the entire Army. Quality fuel is the lifeline of the force. Testing and supervising laboratory operations requires flawless execution. Clean fuel products ensure that aircraft stay flying and aircrews stay safe. Fuel testing saves countless hours of maintenance and millions of dollars in repair parts.

During the Logistics Warrior field training exercise (FTX), NCOA students instruct and supervise advanced individual training (AIT) soldiers. Leading the way are the 77F NCOs. These NCOs lead soldiers on fuel support missions and they manage reports. Students brief the FTX commander on current statuses. In all, the NCO Academy refreshes NCO expertise and provides commanders with professional and well-rounded leaders.

CPT Chris Lange and CPT Clarence Penny are currently attending the Petroleum Officer's Course. CPT Lange's next assignment is Korea. CPT Penny's next assignment is the 49th Quartermaster Group, Fort Lee, Virginia. SFC Glenn Hawkins and SFC Clarence Richardson serve as the Senior Small Group Leaders at the Noncommissioned Officer Academy, Fort Lee, Virginia.



Shaping Liquid Logistical Leaders

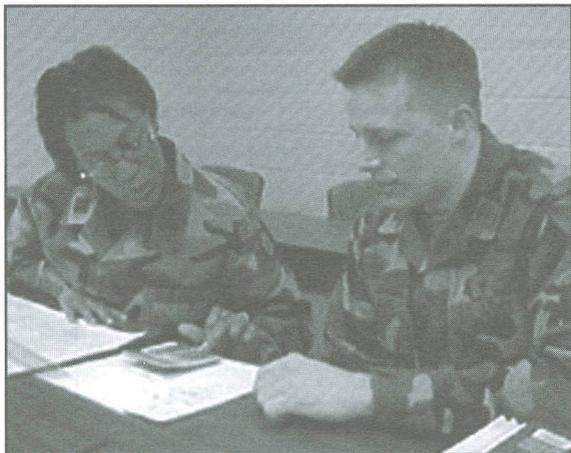
Advanced Petroleum and Water Division

MAJ Reed E. Hudgins

The mission of the Advanced Petroleum and Water Division (APWD) is to provide Army commanders with capable and combat-ready logistical leaders who understand and execute fuel and water operations on the battlefield from the joint level down to the platoon. The APWD trains individuals in the Army, Air Force, Navy and Marine Corps, foreign officers and Department of Defense civilians in petroleum and water equipment, planning, doctrine and operations. The division instructs more than 1,500 personnel each year in more than six different courses.

Providing commanders with timely, accurate and innovative support requires Quartermasters trained by a mixture of techniques. Students get hands-on education with a variety of equipment including the Fuel System Supply Point (FSSP), Inland Petroleum Distribution System (IPDS) at Fort Pickett, VA, and saltwater Reverse Osmosis Water Purification Unit (ROWPU) training at Fort Story, VA. Off-site visits to the Defense Energy Support Center (DESC), Langley Air Force Base, VA, and the BP-AMOCO refinery at Yorktown, VA, give students a firm grasp of joint requirements and civilian industry's role in the military's logistical infrastructure.

The Officer Basic Course (OBC) and Supply and Service Management Officer's (SSMO) Course



Officers working pipeline hydraulics problems

training focuses on liquid logistics at the division level. These lieutenants are ready for a supply and service company in the main, forward or aviation support battalion. Officers arriving at corps-level units are primed for service in water platoons and petroleum supply company operations.

Officers graduating from the Combined Logistics Captains Career Course (CLC3) are well-versed in liquid logistics. Training focuses on skills to successfully command a Quartermaster company at any level with petroleum and water missions. These officers receive instruction on preparing, planning and executing missions at a brigade or battalion staff level as a member of the support operations staff.

The Petroleum Officer's Course (POC) prepares captains for joint operations and theater-level logistics. These officers can operate in the joint arena as planners, operations officers and/or purchasing officers at every staff level. Logistical planning exercises validate skills at the theater level. Students receive hands-on computer systems training in Operations Logistical (OPLOG) Planner, Fuels Automated System (FAS), and the Pipeline Automated Planning Aid (PAPA). Training is extensive in planning, operating and managing pipeline and terminal activities. Officers who complete the POC course receive the 92F identifier.

The APWD provides commanders with the Quartermaster leaders necessary to ensure that the liquid lifeline of logistics continues to flow in a timely, effective and safe manner. These officers are prepared to lead, plan, supervise and perform at the highest level.

MAJ Reed E. Hudgins' assignments include Training With Industry at ExxonMobil in the United States, and Supply and Service Officer, 16th Corps Support Group in Bosnia. He is currently the Chief, Advanced Petroleum and Water Division, Petroleum and Water Department, Fort Lee, Virginia.

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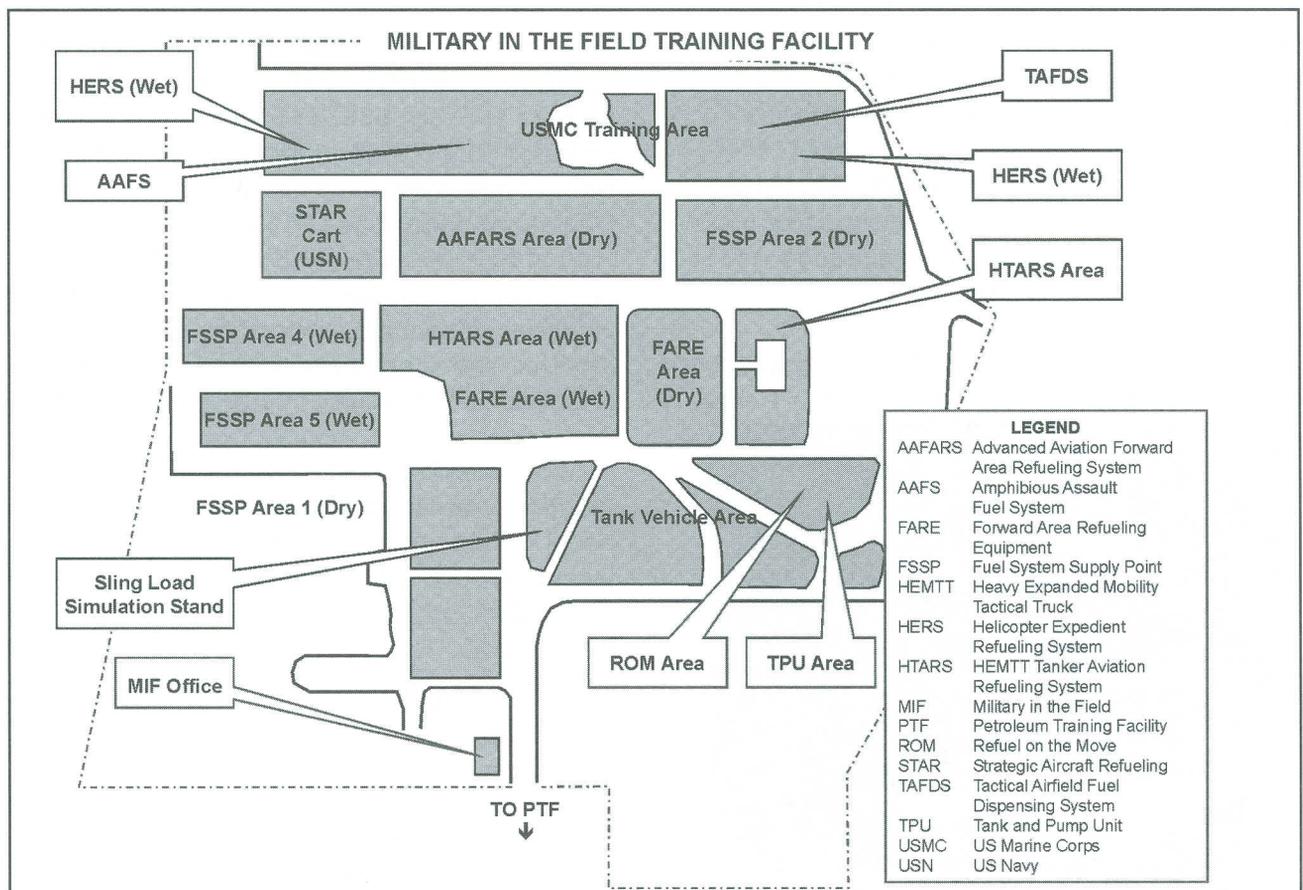
Tactical Petroleum Equipment Training

Military in the Field Training Site

SFC Gregory A. Sabo

The Military in the Field (MIF) site is a tactical training facility of the Petroleum and Water Department. After MIF training, commanders receive mission-ready soldiers who can operate and maintain equipment to standard. The MIF provides the necessary facilities and equipment to train Army, Air Force, Navy, Marine Corps, Department of Defense civilians and foreign military personnel. Soldiers, officers, warrant officers and noncommissioned officers train at the MIF site in almost every course taught at Fort Lee, VA.

The state-of-the-art MIF facility offers realistic hands-on training that delivers highly skilled and confident soldiers and leaders to commanders in the field. Students train on current Army, Marine Corps and Navy equipment. Instructors emphasize the movement and mobility of modern warfighters and the need to keep the force constantly supplied with fuel. Dispersed across the forested, 33-acre MIF site are 16 Army, 8 Marine and 2 Navy tactical training areas. The MIF incorporates many collapsible storage tanks, collapsible fabric drums, fuel trucks and semitrailers (ranging in capacity from 1,000 to 7,500 gallons), assault hose lines, and a wide variety of ground and aircraft refueling systems. Completely mobile, these fueling systems can be delivered by road, rail, air and sea. Various refueling vehicles are necessary for many of the systems, such as the Heavy Expanded Mobility Tactical Truck (HEMTT) for transporting fuel and the HEMTT Tanker Aviation Refueling System (HTARS) for aircraft refueling.



Realistic “wet” training occurs daily. The MIF is designed and constructed to minimize the effects of petroleum spills while maximizing training. Each collapsible tank is surrounded by an earthen berm lined with an impermeable fabric liner to contain fuel spills and runoff water. Spill kits are positioned throughout the training facility for containment and cleanup. About 2,500 feet of concrete-lined channels divert runoff into a spill containment pond. The pond has about 30 minutes of retention time, which allows separation of water and diversion to containers. When spills occur, contaminated soil and waste is collected in approved containers for removal by a certified hazardous materials (HAZMAT) carrier to processing by a licensed Thermal Treatment Facility.

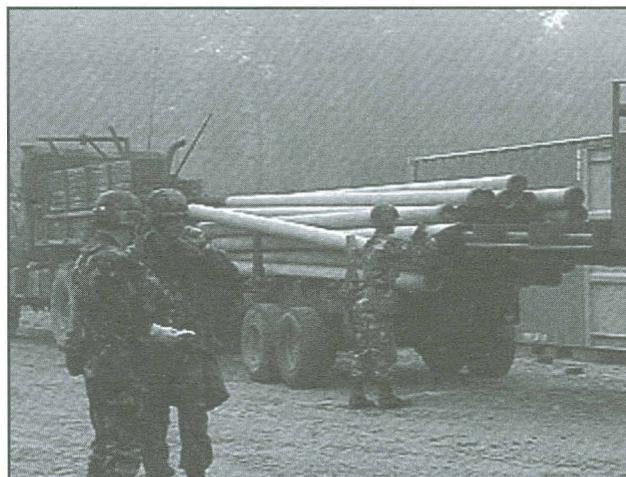
Providing commanders trained and ready soldiers requires the MIF to continuously upgrade and develop innovations. A competent soldier is always the outcome. Another MIF priority is identifying and resolving issues from the field and incorporating these resolutions into Army doctrine and petroleum training.

Environmental stewardship is integral to operations. On a regular basis, the MIF frequently hosts an extensive array of experimental programs and future concept testing, as well as a wide range of tours, conferences and displays within the petroleum arena. Training at the MIF in state-of-the-art facilities by professional instructors on current systems and equipment produces a combat-ready and capable force.

SFC Gregory A. Sabo is Training Management Noncommissioned Officer, Military in the Field (MIF) Training Branch, Petroleum and Water Department, Fort Lee, Virginia.

Petroleum Training at Fort Pickett

Petroleum pipeline construction and operating units are not authorized the Inland Petroleum Distribution System (IPDS) equipment on their Modification Table of Organization and Equipment (MTOE). To meet their training requirement, the US Army Forces Command (FORSCOM) Petroleum Training Module (FPTM) was established at Fort Pickett, VA, for annual training of both active duty and reserve soldiers on the IPDS. The FPTM provides petroleum and Engineer units with realistic, hands-on training on the installation, operation, maintenance, disassembly, cleaning and storing of the major IPDS components. Each year, 700-1,200 soldiers from 12-17 active and reserve units train at this site.



Loading IPDS pipe at Fort Pickett

Annual training has four phases. The initial phase is classroom training at the unit's home station. The second phase requires Engineer construction companies to construct and install 23 miles of petroleum pipeline with associated pump stations and terminals. Phase three consists of each Quartermaster petroleum pipeline and terminal operating company conducting two weeks of intensive, hands-on collective training. The fourth phase entails recovery, cleaning and repacking all equipment.

In undeveloped theaters, the IPDS consists of tactical petroleum pipelines and storage terminals for bulk fuel support to deployed forces. The pipeline's design throughput is 720,000 gallons per day. The IPDS daily reduces the logistical footprint on theater rear supply routes by the equivalent of 1.6 medium truck companies. Tactical Petroleum Terminals (TPTs) provide storage along the pipeline. Each TPT can store 3.8 million gallons of fuel. In developed theaters, the IPDS can supplement an existing petroleum distribution infrastructure.



Storage and Pipeline Training

Petroleum Training Facility Division

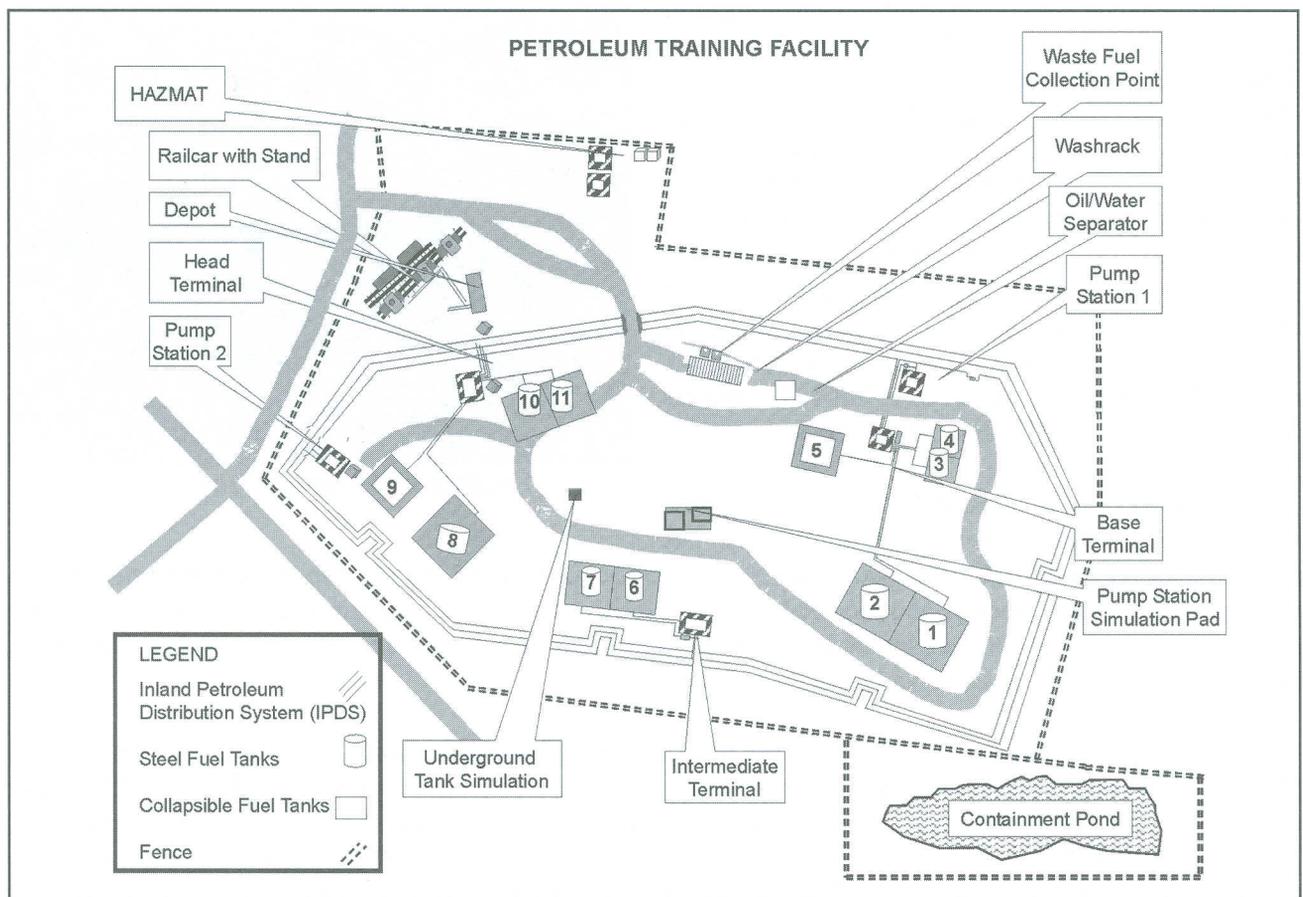
CPT Melvin Davis III

Arthur J. LeMire

The Petroleum Training Facility (PTF) is a branch of the Petroleum and Water Department. At the PTF site, military personnel train by using equipment and the latest technologies as well as tried-and-true methods. The staff at the PTF maintains more than 14 acres of facilities and instructs more than 3,000 soldiers, sailors, airmen and marines of all ranks each year. Ensuring that students can safely and effectively receive, store and issue petroleum products on a wide range of fixed sites and mobile equipment is the PTF mission.

The PTF system consists of 4 terminals, 2 pump stations and 11 storage tanks with a total storage capacity of 2.1 million gallons. Environmental responsibility is a major training objective. Classes in spill prevention, containment and fire safety are practiced and reinforced at the PTF. Each storage tank is encompassed by a concrete berm that contains 100 per cent of the tank's capability plus one foot. A concrete drainage system surrounds the facility and leads to a containment pond to trap fuel if a fuel leak occurs.

Providing commanders the fuel they need is the primary mission of the petroleum community. One of the systems that offers this capability is the Inland Petroleum Distribution System (IPDS). The IPDS is a lightweight, aluminum pipeline consisting of pipes, fittings and pumps. The IPDS can be rapidly deployed to move large quantities of bulk petroleum products. Students are trained in IPDS operation and maintenance.



Pushing fuel forward keeps the force moving. The PTF is equipped with three rail tank cars and base, intermediate, head and depot terminals. These terminals are placed in the pipeline to direct and regulate the product flow. The system can perform three pumping missions simultaneously. Students produce a pumping order that moves the fuel through the pipeline. Students also learn basic pump-operating procedures on 600-gallon per minute (GPM) and 800-GPM mainline pumps. These pumps maintain positive suction and discharge pressures that keep the pipeline flowing.

Communications is the key to all logistical missions. Each pumping station and terminal is equipped to communicate with all the other stations. Learning communication techniques and passing fuel requirements ensures that students understand the importance of information during, before and after operations.

Accountability is as important as moving fuel. Training in manual tank gauging and obtaining fuel samples ensures accurate inventory figures and quality products in the field. The Fuel Automated System (FAS) and Automated Tank Gauging (ATG) System collect real-time inventory data and report it to a desktop computer program. This system is used by the Defense Energy Support Center worldwide.

Army leaders rely on the 77F (Petroleum Supply Specialist) soldiers for the most current techniques, tactics and principles in the fuel arena. Soldiers leave the PTF with the most current doctrine and practices available.

CPT Melvin Davis III is currently a student in the Combined Logistics Captains Career Course at Fort Lee, Virginia. His next assignment is Fort Bragg, North Carolina.

Arthur J. LeMire, a retired sergeant major with more than 42 years in petroleum operations, is the Petroleum and Pipeline Advisor for the Petroleum Training Facility (PTF), Petroleum and Water Department, Fort Lee, Virginia.

Marine Corps Petroleum Training Division

The Marine Corps Petroleum Training Division (MCPTD) annually trains more than 500 enlisted US Marines and warrant officers in basic and advanced petroleum operations. The Marine Corps trains all of its 1391 Bulk Fuel Specialist Marines and 1390 Bulk Fuel Officers with the Army at the Petroleum and Water Department (PWD) at Fort Lee, VA. Marine Corps staff noncommissioned officers (SNCOs) instruct both Marine Corps and US Army courses of instruction across the PWD's petroleum curriculum. The MCPTD is also responsible for Marine Corps bulk fuel doctrine and publications.

Entry-level Marines and reclassified Marines train for six weeks to become 1391s. Their first phase consists of three weeks of joint training on core curriculum with Army soldiers and both Marine and Army instructors. The second phase is three weeks of training on the Marine Corps mission and unique Marine equipment.

Marine NCOs attend the nine-week Petroleum Laboratory Course taught at the Laboratory Training Division by Marine and Army instructors. SNCOs in the grades of E-6 through E-9 attend the three-week SNCO course solely taught by the Marine Corps.

In the Marine Corps, warrant officers lead the petroleum community. Newly appointed Marine warrant officers attend the eight-week Petroleum Officers Course taught by the PWD's Advanced Petroleum and Water Division. These warrant officers provide invaluable technical expertise, experience, management and leadership to petroleum operations.



Realistic Water Training Environments

Water Training Division's Field Sites

CPT Todd P. Jackson

The Water Training Division's (WTD) field sites provide realistic tactical training environments for Quartermasters with the military occupational specialty of 77W (Water Treatment Specialist). The division combines the genuine field conditions with hands-on water equipment training to produce 77W10s ready to meet their commanders' needs.

Commanders deploy their soldiers under a wide range of conditions in vastly different terrain. The WTD's five training areas expose students to diverse situations to prepare them for these challenges. The 14th Quartermaster Detachment site simulates water production at a wellhead. The Military in the Field (MIF) site focuses on storage and distribution operations. The Voit and Mechling training sites, named after two Medal of Honor awardees, provide locations for water production from a flowing stream, a dammed water source and a large water production source.

The 14th Quartermaster Detachment site has a threefold training objective: operate at a wellhead site, purify water and store potable water. The site introduces students to two Reverse Osmosis Water Purification Unit (ROWPU) systems. Training emphasizes production of potable water using both the 600- and 3,000-gallon per hour (GPH) ROWPUs.

Distribution and transportation are part of the 77W's support of fellow soldiers. The MIF training site sharpens soldier skills on a variety of water equipment. The Tactical Water Distribution System (TWDS) provides training on this corps-level asset. Water is transported to storage or a Semi-trailer Mounted Fabric Tank (SMFT). The SMFT downloads the water to the 40,000-gallon collapsible fabric tanks at the Forward Area Water Point Supply System (FAWPSS). This unique training aspect of receiving and transporting water is invaluable to 77Ws.

Instructors combine hands-on training in real world environments to hone the problem-solving skills of their soldiers. The Voit sites on Bailey's



Mastering skills on the 600-GPH ROWPU

Creek and dam are high-order probability sites that water teams use in many undeveloped areas of operation. The stream is low-yield and requires mastery of damming techniques for water production, especially during summer months. Bailey's Creek provides fundamental training on the 600-GPH ROWPU. The Bailey's dam site is set up for water production using the 3,000-GPH ROWPU.

The Mechling site on the Appomattox River focuses on production from a large water source such as a lake, river or reservoir. This site is the capstone for realistic training using the 3,000-GPH ROWPU. Students must use all the techniques and skills learned from previous exercises to accomplish the mission. Soldiers must demonstrate proficiency in site selection, setup, ROWPU operations, solvent mixing, cleaning, and testing of raw and product water with the Water Quality Analysis Test Kit. Supporting fellow soldiers with pure water is the mission that graduates of 77W training are primed and ready to do.

CPT Todd P. Jackson is currently a student in the Combined Logistics Captains Career Course. His next assignment is in the Division Support Command, 1st Infantry Division, Germany.



Petroleum Supply in a Theater of Operations

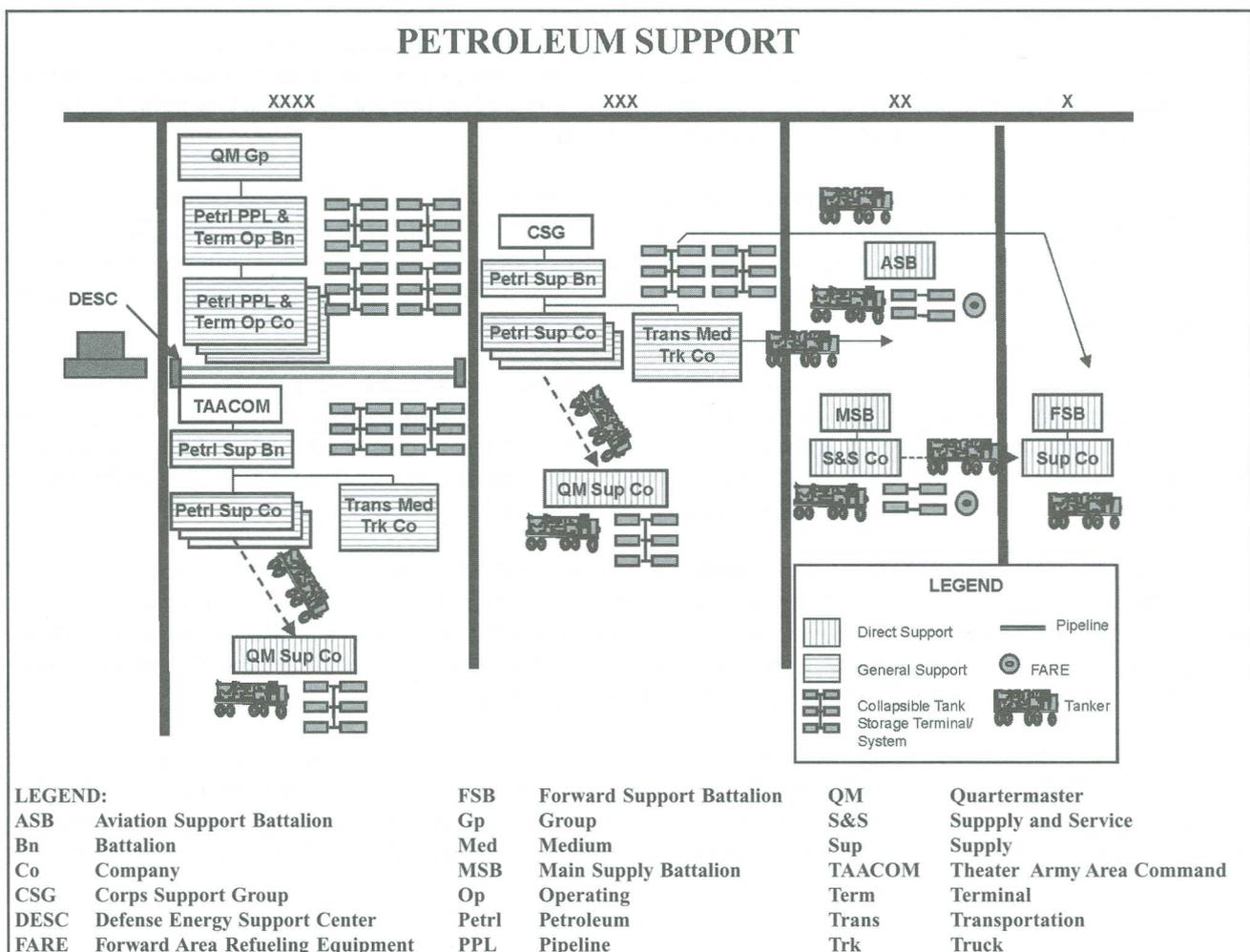
Current Army of Excellence Petroleum Doctrine

James A. Turgeon

Today's Army requires a responsive and proactive petroleum supply system. The basic core of the Army's force structure depends on the transportation of firepower, soldiers and logistics. Fuel is the lifeline that ensures effectiveness of all operations.

Petroleum is a push commodity in the current doctrinal petroleum distribution system in a Theater of Operations (TOPNS), from the Communications Zone (COMMZ) to the division's Forward Edge of the Battle Area (FEBA). Units report status one level higher and distribute one level downward within a TOPNS. Both combat service support (CSS) general support (GS) and direct support (DS) organizations, augmented by host nation support, provide theater petroleum storage and distribution. The petroleum GS (wholesale level) organization provides a four-day stockage level to support DS organizations. The DS (retail level) organization provides a one-day stockage level to support area customer units.

Fuel forecasts from consuming units are the basis for projecting fuel requirements. The anticipated requirement is then distributed as far forward as possible. Any remaining fuel goes into storage.



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The Area Support Group (ASG), Corps Support Group (CSG) and Division Support Command (DISCOM) customer units submit their status through their battalions. The DS and GS units submit their forecasts through logistics channels to their Materiel Management Center (MMC).

The Division MMC (DMMC) submits its status report to the Corps MMC (CMMC). The CSG also forwards its forecasts to the CMMC. The ASG submits its requirements to the Theater Army Area Command MMC (TAACOM-MMC).

The CMMC and TAACOM-MMC forward those DS unit requirements to the Petroleum Supply Battalion. The two MMCs submit the GS unit requirements to the Theater Army Material Management Center (TAMMC) and Quartermaster Group. The Quartermaster Group provides requirements to the Petroleum Pipeline and Terminal Operating Battalions (GS) to resupply Petroleum Supply Battalions (GS), US Air Force, Marine Corps and Navy forces ashore. Then, Quartermaster Group requirements are submitted to the Joint Petroleum Office (JPO). The JPO submits the monthly requirements to Defense Energy Support Center (DESC) for continual resupply of all theater fuel requirements.

The DESC manages bulk fuel contracts and coordinates fuel resupply to the TOPNS. The theater unified command JPO advises the theater commander and staff. The theater unified command JPO also consolidates all US Theater forces' fuel requirements and forwards those requirements as a "slate" (electronic request for fuel by product, quantity and location) to DESC. The Joint Chiefs of Staff designated the US Army as the responsible agent for planning, resourcing and executing the inland distribution of bulk petroleum to all US Forces in a TOPNS.

Petroleum Units in a Theater of Operations (TOPNS)

The Quartermaster Group (Petroleum and Water) plans petroleum distribution for the theater and also commands and controls the bulk petroleum distribution system extending from ports of entry through the COMMZ as far into the combat zone (corps area) as practicable. The Petroleum Pipeline and Terminal Operating Battalions maintain most of the theater petroleum stocks in the COMMZ.

Each Petroleum Pipeline and Terminal Operating Battalion (GS) commands and controls more than 450 miles of pipeline with pump stations and terminals, from the COMMZ into the corps area. The battalion commands from three to five Pipeline and Terminal Operating Companies (GS). Each company is responsible for up to 90 miles of the pipeline system. Pipeline, hose line, truck and rail provides fuel distribution to airfields and petroleum GS units.

Transportation Battalions command and control three to seven Medium Truck Companies (Petroleum) under the Quartermaster Group. The Medium Truck Company (Petroleum) transports bulk petroleum to GS units and airfields in the COMMZ and the corps area with 7,500-gallon or 5,000-gallon tank semitrailers. Petroleum products are picked up at host nation and petroleum pipeline terminals and delivered to Petroleum Pipeline Companies, Petroleum Supply Companies (GS) and airfields.

Petroleum Supply Battalions (GS) are under the TAACOM in the COMMZ and the Corps Support Command (COSCOM) in the combat zone. The battalion commands three to five Petroleum Supply Companies (GS) that provide CSS bulk petroleum to the divisional and nondivisional DS companies on a 24-hour basis. Petroleum Supply Companies (GS) receive fuel from a Petroleum Pipeline and Terminal Operating Company or host nation for storage and issue to the divisional and nondivisional DS companies.

The ASG in the COMMZ and the CSG in the combat zone provide DS and GS area support to units assigned, located in or passing through their area of operations. Petroleum mission units in the ASG and CSG areas are the Petroleum Supply Company (GS) and the Quartermaster Supply Company (DS). The Quartermaster Supply Company (DS) receives fuel from the Petroleum Supply Company (GS) and provides direct support to area customer units.

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Water Support in a Theater of Operations

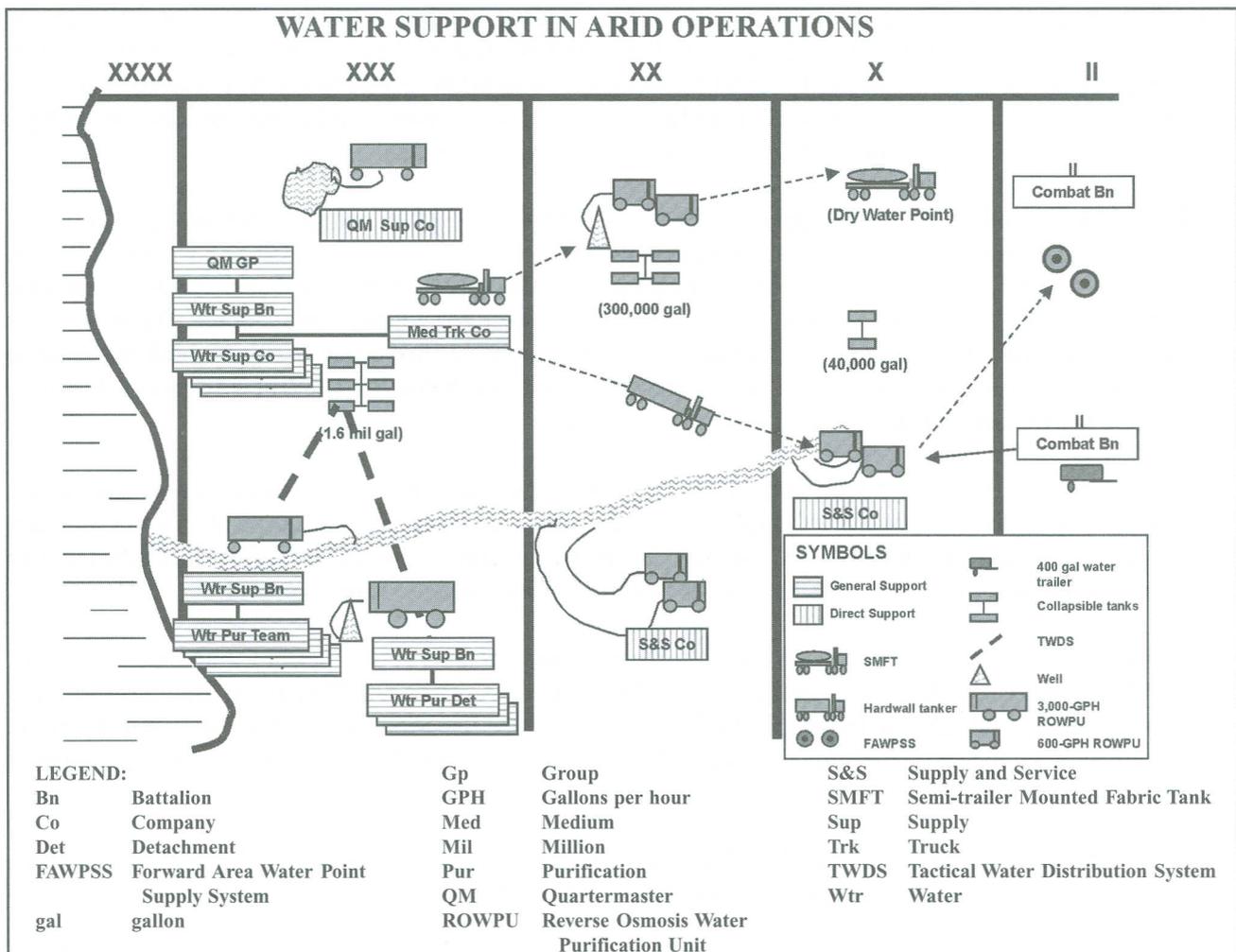
Current Army of Excellence Water Doctrine

Linda Williams

Water support is critical to success on the battlefield. Lack of water cripples a fighting force. Water not only sustains the individual soldier, but also key military operations. Water planners need adequate water supplies ready to support soldiers and military operations whether the mission is combat or humanitarian assistance.

Water planners calculate initial estimates with figures in the *Potable Water Planning Guide* and revise those estimates as requirements are established. Potable water (fit for human consumption) is necessary for drinking, field feeding, medical treatment and personal hygiene as well as several organizational requirements. Support and stability operations, because they are often stand-alone operations, use potable water for all requirements.

Estimates for water support dramatically increase in arid operations. Though users of nonpotable water are responsible for procuring their own water supply in an arid environment, water is simply not available in sufficient quantities to do so. Under those conditions, water planners must expand their potable water requirements to include nonpotable water users for additional storage and bulk water support. The planning factor, for example, for an extended operation for a corps in a temperate zone is 7.25 gallons per person per day. That factor increases



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to 18.66 gallons per person per day in an arid zone. The increase in individual soldier consumption is 1.50 gallons for drinking water. The remaining 9.91 gallons of water in the arid zone estimate will support the operations that normally use nonpotable water.

Throughout the theater in all environmental zones, direct support (DS) provides potable water to using units. In most cases, water is purified and issued on site through supply point distribution. Water must meet standards established in the joint service publication, Technical Bulletin Medical (TB Med) 577 (Sanitary Control and Surveillance of Field Water Supplies). In addition to tests performed on site, a preventive medicine specialist tests the water for bacteriological contamination before issue. The using unit picks up its daily ration in its organic water equipment, normally a 400-gallon water "buffalo" trailer. Lack of transportation assets limit delivery by the water supplier to the consuming unit.

Water Units in a Theater of Operations (TOPNS)

The nondivisional DS unit, the Quartermaster Supply Company (DS), can establish three separate water points with its 3,000-gallon per hour (GPH) Reverse Osmosis Water Purification Unit (ROWPU). Once purified by the ROWPU, product water receives a chlorine injection to ensure continued potability.

Each 3,000-GPH ROWPU is authorized a total of ten 3,000-gallon collapsible fabric tanks to store purified water for issue. Limited distribution assets include the Forward Area Water Point Supply System (FAWPSS) and the Semi-trailer Mounted Fabric Tank (SMFT). The FAWPSS, comprised of six 500-gallon collapsible drums, was originally designed to resupply isolated units by sling loading two drums at a time. The drums also can be transported by truck or even towed short distances. The SMFT is a line-haul asset. The collapsible tank must be transported completely full or empty. The SMFT comes in two sizes: the 3,000-gallon tank usually at division level and the 4,570-gallon tank at corps level or higher. The XM1098 hardwall tanker may be used for multiple deliveries, although its load capacity may not exceed 3,000 gallons of water.

The Main Support Battalion's Supply and Service Company (DS) is responsible for divisional DS in a heavy/Infantry division (or its counterpart in other divisions). Generally, heavy divisions have ten 600-GPH ROWPUs and light divisions have six. Water points use two 600-GPH ROWPUs, and each ROWPU has three 3,000-gallon tanks. Of the three collapsible tanks, only two are used for potable water storage. The third stores nonchlorinated water for equipment maintenance. The division establishes water points for both the division support and the brigade support areas. Usually one team with two 600-GPH ROWPUs is assigned to each brigade, and the remaining teams support the divisional area.

General support (GS) is typically required only in an arid environment where natural water sources are scarce. Units that require nonpotable water for their operations, such as Engineer units, depend on water suppliers for support. The GS units augment DS units to meet increased demand. Additional storage is established in both the divisional and brigade areas to meet the needs that exceed what organic support provides.

The Quartermaster Group (Petroleum and Water) establishes GS units in the Theater Communications Zone (COMMZ) and the Corps Support Command (COSCOM) in the Corps COSCOM areas. The Quartermaster Headquarters and Headquarters Detachment of the Water Supply Battalion commands 2 to 5 Water Supply Companies for storage and distribution or 5 Water Purification Detachments or 10 Water Purification Teams if additional purification is needed.

For distribution missions, one Medium Truck Company is assigned to the Water Supply Battalion. The company consists of 60 prime movers and 120 trailers. In one lift under perfect conditions, the company can

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Preparing for Petroleum Operations in the Balkans

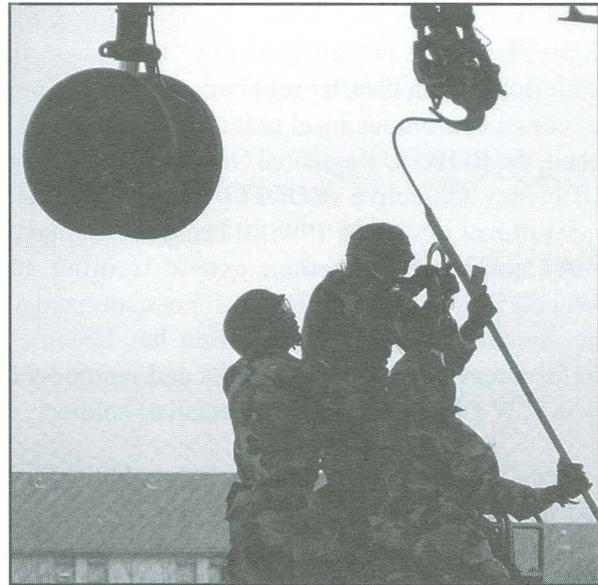
DISCOM, 1st Infantry Division's Preparation for Kosovo

CPT Matthew Urbanic

The 1st Infantry Division's upcoming mission to the Balkans requires commanders to evaluate their Mission Essential Task List (METL) and subtasks against their petroleum support mission. The division support command (DISCOM) focused its 77F (Fuel Supply Specialist) training on convoy operations, sling load, Forward Area Refueling Equipment (FARE) and the Forward Arming and Refueling Point (FARP) operations. Mission rehearsal exercises allow units to validate training status on critical tasks before deployment and to retrain on tasks that need additional focus.

The rugged terrain of the Balkans makes convoy missions difficult, so 77Fs undergo extensive training in this area. Convoy defense procedures are rehearsed through specially designed battle drills and validated during the mission rehearsal exercises. Reinforcement training on satellite-based convoy tracking technology is necessary because the terrain hampers line-of-sight radio systems. In Kosovo, aerial delivery is the only way to refuel some observation points and operational sites. Quartermasters accomplish this mission by sling loading a FARE system to the sites. The FARE system, with 500-gallon collapsible fabric tanks for fuel, is offloaded, refueling is conducted, and the fuel team redeploys to its base camp. Sling load proficiency is essential for this and other contingency resupply operations.

Unit 77F training tasks can be unique, but many are universal across the DISCOM. This training includes receiving and issuing product from bulk dispensing vehicles; maintaining, operating and reacting with petroleum fire-fighting equipment; conducting gaging and sampling; using the Aqua-Glo and Millipore test sets; operating pumps and filter/separators; conducting operations with the HEMTT Tanker Aviation Refueling System (HTARS); preparing accountability paper work; using proper



Training to sling load the FARE

Personal Protective Equipment (PPE); conducting tanker vehicle inspection checklists; and completing mission risk assessments.

Soldiers in the Aviation Support Battalion (ASB) focus training on the FARP. The aviation brigade sometimes requires FARPs to jump. These operations sustain aircraft without forcing them to return to the aviation assembly area. When this happens, the ASB assumes responsibility for the base FARP and augments the jump FARP with M967 or M969 tankers. Similarly, the divisional Cavalry squadron may require multiple FARPs. The ASB must be flexible in task organization to support operations. In the Balkans, the unit locations are somewhat static, so soldiers require additional training to maintain perishable skills.

CPT Matthew Urbanic is Commander, Company A, 299th Forward Support Battalion (FSB), 1st Infantry Division, Schweinfurt, Germany.

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SGM John C. Marigliano Award for Excellence Water Purification Championship

Richard E. Long

Reverse Osmosis Water Purification Units (ROWPUs) have proven their effectiveness on the battlefield and in disaster relief operations. Training remains a continuous focal point for readiness. As a result, the ROWPU Regulated On-site Demonstrated Efficiency Objective (RODEO) was created as a motivational device in 1998 to bring the military's water community together, extend training and compete in a wide range of events. For commanders, the annual two-phase competition has become a useful tool to measure the skills and readiness of their 77W (Water Treatment Specialist) soldiers.

The idea for the ROWPU RODEO originated in 1997 from ROWPU lane training that the commander of the 196th Quartermaster Company at Fort Campbell, KY, wanted to conduct for his unit. Ten ROWPU teams competed during the first ROWPU RODEO in 1998 at Fort Campbell. The late Major General James W. Wright requested expanding the competition to include all Active and Reserve Components.

ROWPU Rodeo 1999, Phase I, grew to 32 teams from the Active Army, US Army Reserve, Army National Guard and the US Marine Corps competing for two weeks at Fort Stewart, GA, in more than 10 evaluated lanes. Non-evaluated lanes, added to enhance water treatment skills, included sling load operations. The top six teams from Phase I in 1999 went to Phase II at Fort Lee, VA, to compete for the top honor: the SGM John C. Marigliano Tactical Water Award of Excellence. The championship in 1999 was a one-week event hosted by the Petroleum and Water Department.

The 530th Supply and Service Battalion hosted ROWPU RODEO 2000, Phase I, at Fort Bragg, NC. The top six teams in 2000 advanced to the Phase II championship at Fort Lee. In 2001, the 11th Transportation Battalion at Fort Story, VA, hosted Phase I. Fort Story is home to the US Army Coastal Water Purification Training Center, US Army Forces



Water team conducting site reconnaissance

Command's saltwater training site. Ever-changing ocean tides and active surf conditions made competition in 2001 more challenging. The Phase II championship with the 600-gallon per hour (GPH) ROWPU and the 3,000-GPH ROWPU took place at Fort Lee, as will the upcoming 2002 championship. Last May, the ROWPU RODEO effectively became the SGM John C. Marigliano Award for Excellence competition after an official name change by Major General Terry E. Juskowiak.

ROWPU Championship in 2002

This year 16 teams will compete for the SGM John C. Marigliano Award for Excellence 2002. Phase I of the competition will take place, 12-17 May 02, at Fort Story, VA. Only six teams will advance to the finals, 20-24 May, at Fort Lee, VA. For more information, contact Richard Long at (404) 464-5370 or SFC Robert McGhee at (404) 464-6703.

Richard E. Long, a retired master sergeant, is the US Army Forces Command, Deputy Chief of Staff for Logistics (DCSLOG), Program Manager for Petroleum and Water.



Providing Water Support

Operation Bright Star

MAJ R. Wade Barnes

Every other year, the US Army Central Command (CENTCOM) Commander in Chief conducts Bright Star, a joint multinational exercise in Egypt. This exercise brings together military forces from several nations to include Italy, Jordan, Greece, the United Kingdom, Germany, Australia, France and Kuwait. The US Army's only active duty water battalion, the 559th Quartermaster Battalion (Water) from Hunter Army Airfield, GA, under the command of the 24th Corps Support Group at Fort Stewart, GA, provided water support to United States and Coalition forces during Bright Star 2001.

Planning

The battalion began planning for the mission in December 2000, after the initial planning conference by the 377th Theater Support Command (TSC). The 559th based many of its plans on experience from Bright Star 1999. One key difference between Bright Star 2001 and previous exercises was the use of bottled water. The TSC mandated that bottled water for drinking would be purchased only for the early entry and trail forces. This made accurate planning imperative so that water purification systems would be fully operable on the target date.

Deployment

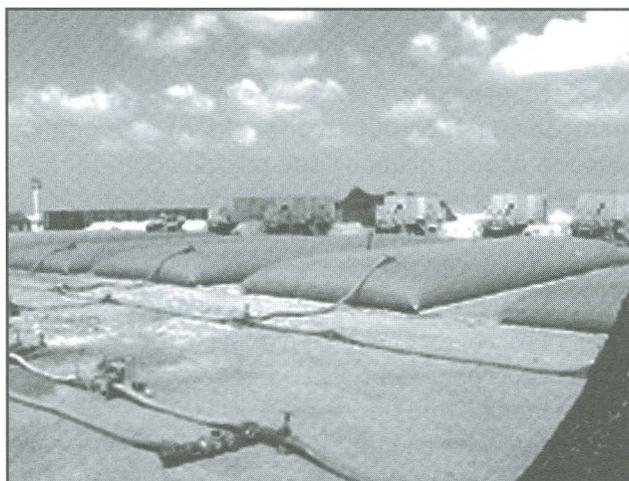
The mission required the battalion to deploy in two different groups. An advanced echelon (ADVON) deployed 5 Sep 01. The main body was scheduled to depart two weeks later. The ADVON's mission was to establish a connection with the water source and provide purified drinking water via supply point distribution by 14 Sep 01. The 512th Quartermaster Company [Tactical Water Distribution System (TWDS)] quickly tied into the Egyptian water source, a standpipe that connected to the water pipe supplying the city of Alexandria. After the 512th Quartermaster Company completed laying 0.7 miles of six-inch collapsible TWDS hoseline to the water purification point, the 202th and 205th Quartermaster Detachments were to purify water with two 3,000-

gallon per hour (GPH) Reverse Osmosis Water Purification Units (ROWPUs) the next day.

However, after the September 11 terrorist attacks in the United States, force protection requirements increased and restricted the movement of personnel. Two water support concerns related directly to force protection. The first was how to provide water from the purification point four miles away to Mubarek Military City (MMC), where the supported personnel were. The off-limits designation of the water purification point during darkness also was a problem. Both issues were resolved by moving a ROWPU to the MMC billeting area and coordinating with an Engineer unit in the US Army Reserve to transport water from the standpipe to the ROWPU.

The 559th Quartermaster Battalion's main body deployed to Egypt on September 26. The main body immediately prepared to occupy the field site and provide water and ammunition support to all Bright Star forces. On October 1, the entire battalion moved from the MMC garrison area to the field site at Pyramid Log Base (PLB).

The focal point for water operations was called "Four Corners." Located at the intersection of the



Purified water in 50,000-gallon fabric tanks

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roads that led to MMC and PLB, Four Corners was four miles from MMC and 0.25 mile from PLB. The Egyptian standpipe that was the source water was 0.7 mile from Four Corners. The 512th Quartermaster Company set up 50,000-gallon collapsible fabric tanks at Four Corners to store water from the standpipe delivered by the TWDS. These 50,000-gallon tanks provided the source water that the ROWPUs purified. The water storage tanks also ensured adequate water if the standpipe was sabotaged or access was restricted. The 202th and 205th Quartermaster Detachments deployed with 11 ROWPUs with the 3,000-GPH capacity. The detachments set up and operated six ROWPUs that purified water from the source tanks. The purified water was then pumped into 50,000-gallon fabric tanks and issued to customers.

The 512th Quartermaster Company had the task of laying TWDS lines across the Egyptian desert in two different locations. About four miles of TWDS were required to reach MMC to support laundry and bath operations. The 512th Quartermaster Company laid another three miles of TWDS to PLB, the 3d Armored Cavalry Regiment (ACR) and US Marines. At PLB, the 512th operated a water distribution point with two 50,000-gallon collapsible tanks for the 1,300 troops staying there. In addition, the PLB water point supported the US Army Forces Command (FORSCOM) ice machine, which provided ice to US forces at both MMC and PLB. The TWDS from the 512th Quartermaster Company also provided water for showers at Rifles Base, the 3d ACR's base camp, and to the US Marine base camp.

Redeployment

Bright Star ended in October 2001 and forces began redeployment. Collapsing water support equipment during the first two weeks of November required careful planning and coordination. Simultaneously, the battalion provided drinking water to the dwindling number of troops remaining at MMC, provided water to the wash rack for cleaning equipment before port call, and recovered its own equipment. As more units redeployed, customer demand decreased and ROWPUs were removed incrementally from operation. The TWDS recovery, a labor-intensive and time-consuming task, was synchronized to ensure that customers had access to bulk water until the day their units redeployed.

The final challenge of redeployment was getting the battalion's internal equipment washed and moved to the port of Agami for return by sea to Savannah, GA. Each piece had to be steam-cleaned and inspected by US customs officials. The battalion departed Egypt on 15 Nov 01 and returned to Hunter Army Airfield.

The 559th "Water Dogs" purified more than 3.4 million gallons of water and issued more than 3.1 million gallons during the course of Bright Star 2001. Once purification units were operating, costly bottled water was no longer a requirement. Despite increased security requirements, Bright Star 2001 was a great success for the 559th.

MAJ R. Wade Barnes is S3, 559th Quartermaster Battalion (Water), Hunter Army Airfield, Georgia. Previous assignments include Supply and Service Officer, 24th Corps Support Group, Fort Stewart, Georgia.

(Continued from Page 4)

The Value of Standards

Command Sergeant Major Bradley J. Peat has served in a variety of leadership positions. These include Armorer, 2/75 Ranger Battalion; Property Book Team Noncommissioned Officer in Charge, 8th Infantry Division (Mechanized), Baumholder, Germany; Property Book Team, Headquarters and Headquarters Company, Camp Casey, Korea; First Sergeant, Headquarters and Headquarters Company, National Training Center, Fort Irwin, California; First Sergeant, 247th MEDEVAC, Fort Irwin, California; First Sergeant, Headquarters and Headquarters Company, Division Support Command, Fort Drum, New York; Command Sergeant Major, 548th Corps Support Battalion, Fort Drum, New York; and Command Sergeant Major, 24th Corps Support Group, Fort Stewart, Georgia. His military education includes the Primary Leadership Development Course, Basic Noncommissioned Officer Course, Noncommissioned Officer Course, Battle Staff Course, First Sergeants Course, and the Sergeant's Major Academy, Class 49. He is a member of the Distinguished Order of Saint Martin, and he holds a bachelor's degree in management from Regents College.



Dredging: Key to Ship-to-Shore Logistics

Training With Industry at Sunoco, Inc.

CPT Eric J. Sloughfy

The Army's Training With Industry (TWI) program at Sunoco, Inc., provides branch-qualified Quartermaster captains with valuable corporate experience available almost nowhere else. In addition, this one-year TWI tour provides soldiers with knowledge the military needs to succeed.

For one Sunoco assignment, for example, I managed planning for dredging to deepen harbors and waterways. I quickly learned the impact of dredging on a ship-to-shore-based industry. The military also relies heavily on ship-to-shore operations. Most logistical support and combat packages are delivered over the shore. Logistics is the lifeline of victory for both the military and industry. Serviceable ports, harbors and waterways are basic needs, but also time-consuming and expensive investments that few people consider as a most critical part of land operations.

For hundreds of years, nature removed the sediment from river bottoms, creating deep channels. Sailing vessels held less cargo than today and drew less water called "draft." These vessels had no problem clearing the channels. Times have changed and vessels keep getting larger. Nature can no longer handle the mission. A case in point is the *Stena Vision* of Sweden. This oil tanker made a 5,400-mile journey from the port of Qua Iboe in Nigeria to the mouth of the Delaware Bay in just under 14 days carrying two million barrels of crude oil. This 1,108-foot-long and 231-foot-wide vessel required "lightering," removing crude oil from the tanker onto barges. "Lightering" reduced the draft in order for the ship to carry the crude oil up the Delaware River's 40-foot-deep shipping channel into Sunoco's Fort Mifflin Terminal Dock. Dredging the channels and port keeps ocean-going vessels, such as the *Stena Vision*, economical and safe to operate at the inland port.

As one of my responsibilities at Sunoco, I am the Dredge Material Management Plan (DMMP) Team Coordinator. The DMMP Team consists of marine



Unloading crude oil Fort Mifflin

services, legal, environmental, contracting and operations managers from the six Sunoco dock facilities. The team must analyze the dredge depths and monitor the types of vessels that deliver crude oil to the refineries and transport Sunoco's end products to the marketplace. During my first week, I met with Sunoco's dredging environmental engineer consultant, Army Corps of Engineers Philadelphia District, the hydrographic surveyor, New Jersey and Pennsylvania Environmental Protection Agencies, and the Sunoco DMMP Team. I was amazed how one task - dredging - required technical expertise and coordination throughout Sunoco and outside agencies.

Dredging is essential for movement of raw materials by ship. Dredging minimizes costly "lightering" missions and maximizes offloading at docks, thus reducing overall transportation costs. Cost reduction is smart business. As with any industrial or military operation, understanding the issues that can create unanticipated costs is critical for a successful mission.

CPT Eric J. Sloughfy is in the Training With Industry program at Sunoco, Inc. Previous assignments include Task Force 2A Supply and Transportation Company Commander (Kosovo), 501st Forward Support Battalion, 1st Armored Division.

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Defense Energy Support Center

Melissa Lenard

The Defense Energy Support Center (DESC) is one of five inventory control points in the Defense Logistics Agency (DLA). The DESC at Fort Belvoir, VA, specializes in purchasing and managing the Department of Defense's energy products.

As the petroleum materiel manager, the DESC supports customers in the military services and in federal agencies at more than 4,000 locations. The center purchases more light refined petroleum product than any other single organization or company in the world. The DESC manages jet fuels, missile fuels, aviation and automotive gasoline, heating oils, power generation and naval propulsion fuels, lubricants, natural gas and coal.

DESC is divided into six commodity business units, each specializing in a specific product or service. With DESC's integrated teaming concept, customers can expect "one stop shopping" for all their energy needs, whether developing requirements, transportation, contracting or quality management.

The DESC spends more than \$300 million annually to transport fuel worldwide. The DESC transports refined petroleum products by pipeline, ocean tanker, barge, truck and rail car. The center also transports natural gas by pipeline.

Strategically located DESC energy regions and offices (Americas, Middle East, Europe and Pacific)



Dual replenishing of the *USS Nimitz* CVN-68 and a guided missile frigate by oiler at sea



Dual refueling of Navy F/A 18s and EA-6B by Air Force KC 10A tanker in the sky

manage most transportation requirements, serving as focal points for arranging and coordinating fuel deliveries. During *Operation Desert Storm/Shield* in the early 1990s, DESC-Middle East arranged fuel issues totaling more than 45 million barrels. Currently, the DESC regions are working around the clock to support *Operation Enduring Freedom*.

The DESC recently launched several innovative programs in fuel delivery. For example, the Aviation Into-Plane Reimbursement (AIR) Card Program allows pilots to purchase fuel at commercial airports, replacing the more complicated, paper-based methods of the past. In another paperless program, the Fleet Card allows drivers of military vehicles to refuel quickly with a credit card. In addition, contractor owned and operated Automated Fuel Dispensing Facilities stations at Fort Bragg, NC, and Schofield Barracks, HI, provide not only government-mandated environmental compliance and cleanup, but also considerable cost savings to military installations.

At the DESC, the number one priority is fueling the forces. The DESC's "no excuses" philosophy helps to accomplish this mission around the globe.

Melissa Lenard is Editor of Fuel Line, an official quarterly publication of the Defense Energy Support Center, Fort Belvoir, Virginia.



War Reserve and Army Prepositioned Stocks

LTC Philip R. LoSchiavo

War reserve stocks are acquired during peacetime to meet anticipated requirements for deployment. These reserve stocks meet sustainment needs until the Army can expand the supply base or industrial base to meet increased demands. War reserve stocks are not intended to fill unit shortages in the field. Operational Project Stocks (OPSTOCK) are designated for initial provisioning, in contrast to war reserves for replacement and sustainment purposes. Because war reserves are low on the Army Order of Precedence for Fielding, asset shortages occur. The Army often assumes risks associated with the inability to fill war reserve requirements at 100 per cent.

The Product Manager (PM) for Petroleum and Water Systems (PM PAWS) is a member of the Force Projection Team at the US Army Tank-automotive and Armaments Command (TACOM). The PM fields major systems to units and to the Army Prepositioned Stocks/War Reserve program. The PM works closely with the War Reserve Office to field stocks against validated unit requirements.

The Inland Petroleum Distribution System (IPDS), the Army's tactical pipeline, is the largest of the current OPSTOCK stored in four locations worldwide on land and on Army prepositioned ships. Deploying the IPDS forward on prepositioned ships alleviates considerable sealift requirements for the IPDS. However, keeping the IPDS ready on prepositioned ships requires a tremendous investment in periodic maintenance, inspection, replacement of expired items, preservation and repacking.

In the past several years, the Army has reconfigured many of the items stored individually on prepositioned ships as unit sets. Units arriving in theater can fall in on equipment in sets configured to their specific needs. Unfortunately, some unit sets may not be 100 per cent complete. As the ships rotate through port, equipment is downloaded, reconfigured into sets if incomplete and then redistributed among various ships. This allows greater flexibility in



Coupling the IPDS pipeline

deploying ships and lessens the loss of a unit set in instances of ship delay or catastrophic loss. Some of the systems onboard ships are the 3,000-gallon per hour Reverse Osmosis Water Purification Unit (ROWPU), Forward Area Water Point Supply System (FAWPSS) and the Water Storage and Distribution System (WSDS).

Water support equipment prepositioned as OPSTOCK includes small mobile water chillers, 3,000- and 5,000-gallon Semi-trailer Mounted Fabric Tanks and well completion kits. Sustainment stocks comprise most of the Class IX (repair parts) expendables, items consumed during a deployment. Whether designated as war reserve stocks for sustainment, OPSTOCK for initial deployment or as unit-configured sets for specific operating units, strategically placed petroleum and water equipment is critical to success on the battlefield or in humanitarian assistance efforts.

LTC Philip R. LoSchiavo is Product Manager for Petroleum and Water Systems at the US Army Tank-automotive and Armaments Command. His previous positions include, Staff Officer, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

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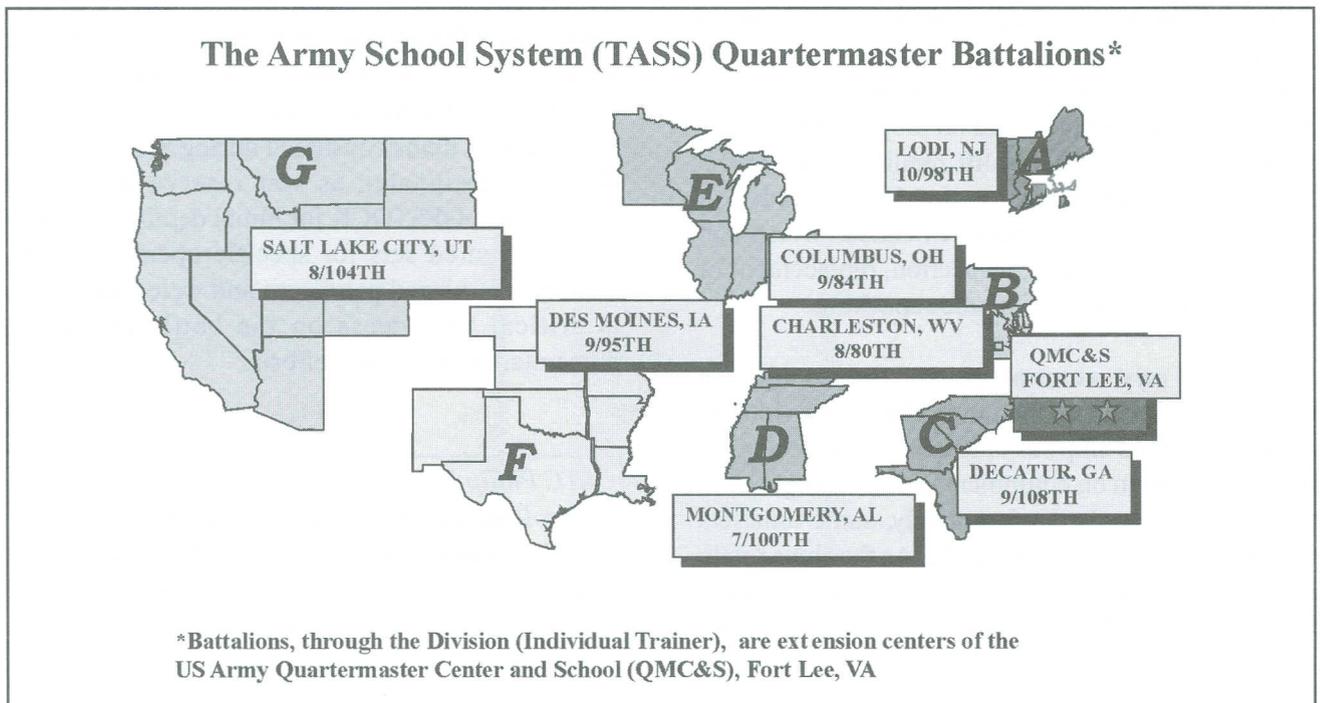
The Army School System (TASS)

The US Army Training and Doctrine Command (TRADOC) began The Army School System (TASS) as a Force XXI initiative in the mid-1990s to streamline the Army's education system. TASS (originally called the Total Army School System) interfaces with Active Army, US Army Reserve and Army National Guard teaching institutions at more than 900 locations.

TASS divides the continental United States into seven geographic regions, "A-G." Six Reserve Component (RC) brigades in each region oversee instruction in leadership, officer education, health services, combat arms, combat support and combat service support training. The Quartermaster RC battalion in each region, functionally aligned with the US Army Quartermaster Center and School, manages instructor groups and decentralized teaching sites. The intent is for each region to be self-contained. Any soldier, in the Active or Reserve Component (AC or RC), can attend any school. TRADOC, responsible for institutional training, is the sole accreditation authority for all its schools. Force's Command, Army is responsible for unit and collective training.

With one TRADOC standard and one set of lesson plans, all soldiers, whether AC or RC, will receive the same training. This training standard makes integration of RC units into military operations easier when the RC mobilizes. All schools, with a few exceptions such as basic training, advanced individual training and officer basic courses, regardless of region, use the standard Total Army Training System Courses. All AC and RC soldiers have the opportunity to attend schools in their regions.

TASS instruction leverages Distance Learning techniques, CD-ROM courses, correspondence courses, video monitoring and classroom instruction. Also, TASS partnerships between the AC proponent schools and the RC regional training battalions lead to more efficient use of facilities, equipment, personnel and time. As one of TRADOC's proponent schools, the US Army Quartermaster Center and School has a critical role. The Quartermaster school shares subject matter proficiency, makes sure the seven Quartermaster battalions are training to standard, and evaluates the functionally aligned schools in TASS.

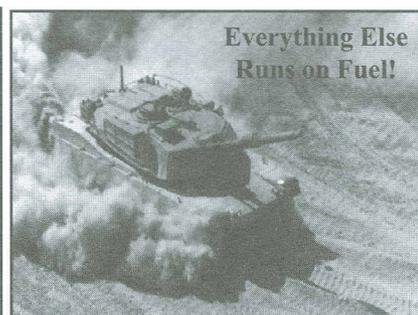
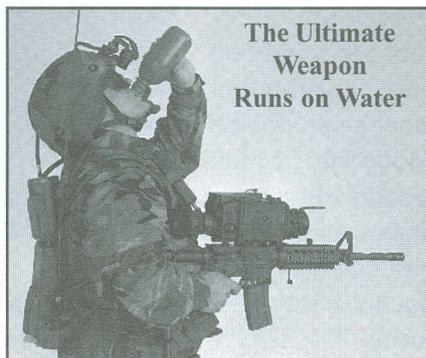


Breaking the 'Liquid Logistics' Paradigm —

MAJ William J. Bettin

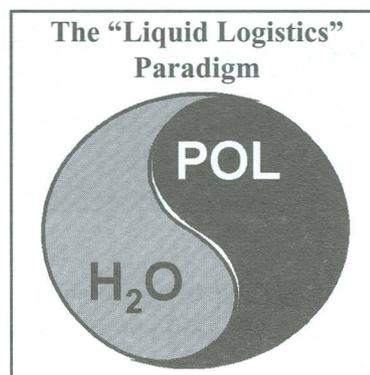
CPT Houston E. Baker

Fuel and water are the two most important sustainment commodities on the battlefield and comprise more than 70 per cent of resupply short tons. The ultimate weapon - the soldier - runs on water, and everything else runs on fuel. Water decided the battle of Little Big Horn and fuel shaped the outcome of Patton's campaign across France during World War II. Without these commodities, warfighting systems will grind to a halt.



The Fuel and Water Paradigm

How did the Quartermaster role in the Army's fuel and water mission evolve? Since the Army first began purchasing motorized vehicles as early as 1905, the Quartermaster Corps has naturally assumed and maintained the petroleum supply mission. Today, Joint Publication 4-03 states: "The U.S. Army has the responsibility to plan, resource and execute the inland distribution of bulk petroleum to all U.S. Forces in a theater of operations." Likewise for the water mission, Department of Defense (DOD) Directive 4705 identifies the Army as the DOD executive agent for land-based water resources in a theater of operations. However, the water mission evolved within the past 20 years as a Quartermaster responsibility. The Army first conducted water training under the Engineer School's direction and then transferred proponency in 1981 to the Quartermaster School at Fort Lee, VA. More importantly, at the time of the water mission's transfer to the Quartermaster Corps, the Army decided to *combine career management fields with petroleum because water, like petroleum, was a liquid logistics function.*



This was the start of the parallel development - or the paradigm - of fuel and water support as "liquid logistics."

The "liquid logistics" paradigm led to the similar management of fuel and water on the battlefield: a bulk supply or source in the rear feeding a distribution network that brings the liquid commodity forward to the point of use. The supply and distribution of fuel and water look and feel about the same to the warfighter and to the logistician. For the Quartermaster, the equipment, concepts and training for executing these fuel and water missions have developed along parallel paths.

Initiatives Through 2010

Current Quartermaster initiatives in fuel and water support focus on improvements in bulk supply, the distribution network, and the management of this supply and distribution network. Improvements in the fuel and water missions follow parallel paths, again illustrating the "liquid logistics" paradigm.

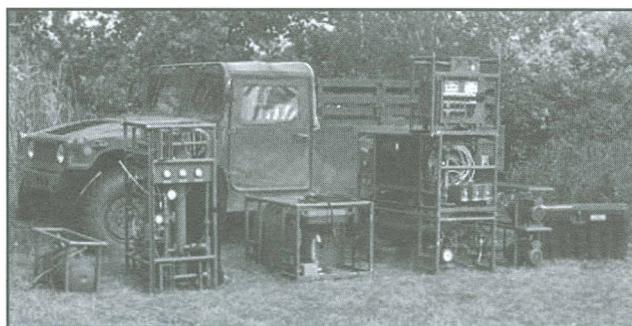
Bulk Supply. Fuel initiatives to improve bulk supply include the Fuel System Supply Point (FSSP), the primary means of storage for the petroleum supply unit. The FSSP includes collapsible fabric tanks, pumps,

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filter/separators, hoses, valves, couplings and fittings for deploying a complete system to receive and dispense fuel. The FSSP will be available in 30,000-gallon, 60,000-gallon, 120,000-gallon, 300,000-gallon and 800,000-gallon sizes. The FSSP's location on the battlefield will determine which size is authorized.

For bulk supply during the water mission, the 1,500 gallon per hour (GPH) Tactical Water Purification System (TWPS) will be an improvement to replace the existing 600-GPH Reverse Osmosis Water Purification Unit (ROWPU). As the next generation water purification system, the TWPS produces 1,500 GPH on fresh water and 1,200 GPH on salt water, treats water during cold weather operations, and includes state-of-the-art pretreatment (microfiltration) to extend the life of the reverse osmosis filtering components. The TWPS will be in a flatrack configuration compatible with the Army's new load handling system (LHS). With protective cover, the TWPS can survive nuclear, biological, chemical attack. Developers expect to field the first TWPSs in Second Quarter, Fiscal Year (FY) 2004.



The Lightweight Water Purifier (LWP) provides further innovation in water supply. The LWP is a highly mobile water purifier designed for modular, flexible support across the battle spectrum – especially in support of remote units, early entry units, and the Interim Brigade Combat Team. The LWP purifies 125 GPH from fresh and 75 GPH from saltwater sources. The skid-mounted system weighs less than 2,000 pounds, for transport by High Mobility Multipurpose Wheeled Vehicle (HMMWV) and also UH-60 helicopter. The LWP requires only one Quartermaster soldier with the

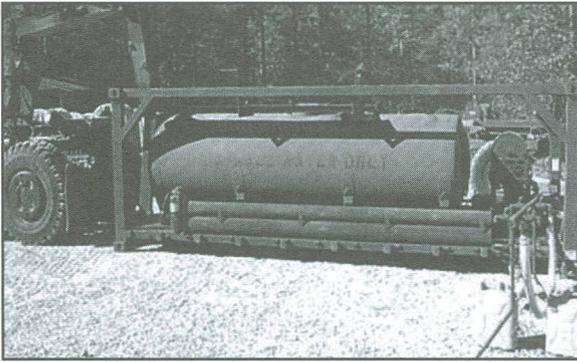
military occupational specialty (MOS) 77W (Water Treatment Specialist) for operation. Developers expect to field the first LWPs in First Quarter, FY04.

Distribution Network. For improving the fuel and water distribution network, initiatives include the Load handling system Modular Fuel Farm (LMFF) and the HIPPO, a water tankrack compatible with the Army's LHS. The LMFF is a rapidly installed, rapidly recovered multipurpose fuel storage and issue system. Planners can easily change the LMFF's capacity for mission requirements by adding or subtracting storage modules. The LMFF's 2,500-gallon storage module, when married with the Army's Heavy Expanded Mobility Tactical Truck (HEMTT) and LHS, can be used as a fuel linehaul tanker to transport 5,000 gallons of fuel on all types of terrain. The LMFF's pumping filtration module can issue bulk and retail petroleum products to all types of vehicles and aircraft. Developers expect to begin fielding the LMFF in FY05.



The HIPPO does for water distribution what the LMFF does for fuel. Also compatible with the Army's LHS, the HIPPO consists of a 2,000-gallon, hard-walled, water tankrack with an integrated water pump. The

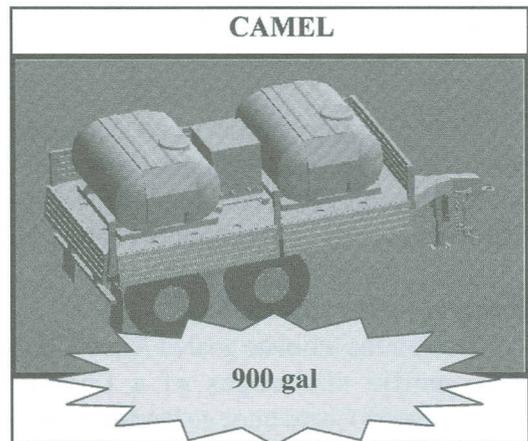




HIPPO will fully function whether mounted on its prime mover or dismounted and will be mobile whether filled, partially filled or empty. The HIPPO performs both retail and bulk water distribution. The current equipment for bulk distribution, the Semi-trailer Mounted Fabric Tank (SMFT), cannot distribute potable water at the unit level and has limited tactical mobility. Because of these shortcomings, the SMFT cannot support emerging operational concepts. The HIPPO meets the Army's critical need for a mobile, flexible, hardwall water distribution system for the Legacy, Interim and Objective Forces.

The parallel development of the LMFF for fuel and the HIPPO for water illustrate the "liquid logistics" paradigm. Both the LMFF and the HIPPO are LHS-compatible tankrack innovations in bulk distribution.

Quartermaster initiatives in unit-level storage and distribution systems also illustrate parallel development in "liquid logistics" with the Versatile Tank and Pump Unit (VTPU) for fuel and the CAMEL for water. The VTPU is a unit-level retail fuel system designed to replace the Tank and Pump Unit that is not easily transported. The VTPU consists of two 525-gallon fuel containers, a 50-GPM pumping assembly, a filter/separater, and related hoses and fittings. Soldiers can upload the VTPU onto all Army cargo transport platforms that meet the weight-carrying capabilities. The VTPU's counterpart in water supply, the CAMEL, replaces the current M149 water trailer at the unit level. The CAMEL has a 900-gallon capacity, an integrated heater/chiller, and filling stands for individual soldiers - all on a trailer platform. The CAMEL eliminates the current special-purpose water trailer, increases a unit's water storage capacity, and increases water trailer mobility. Together, the VTPU and the CAMEL initiatives improve fuel and water delivery to the individual vehicle and soldier – the final 1,000 meters of liquid logistics.



The Petroleum Quality Analysis System (PQAS) is a current initiative in monitoring fuel quality. The PQAS enables more efficient use of fuel on the battlefield. The PQAS will replace the Airmobile Petroleum Laboratory. The only fuel laboratory in the division area, the PQAS is mounted in a height-reducible shelter on a HMMWV. The HMMWV allows the PQAS to travel to the fuel storage sites and also allows the fuel laboratory's equipment to rapidly relocate with the divisional elements that the PQAS supports. The PQAS will automatically catalog and print the fuel test results.

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Supply and Distribution Management. Automation will improve how Quartermasters manage fuel and water in the future. The stringent requirements for accountability of fuel will be completely automated one day. Using sensors in storage tanks that feed into the future combat service support (CSS) computer databases will monitor fuel and water stocks. Although the petroleum community has made significant progress during the past year in automation, fuel is one of the few battlefield commodities that remains completely manual in management today. In fact, Quartermasters with the MOS of 77F (Fuel Supply Specialist) still use clipboards to account for fuel! The Quartermaster petroleum community is trying to change this with the development of a Tactical Fuel Automation System (TFAS).



As a cumulative effort, these current initiatives will lead to better ways to provide fuel and water support to the Legacy, Interim, and Objective Forces. The emerging benefits of these fuel and water improvements, even as the Army pushes forward with its transformation, are important because the Legacy and Interim Forces will maintain a critical role as the Army's go-to-war forces through the year 2015. However, although these fuel and water initiatives will lead to reductions in the logistics footprint, they will be incremental improvements at best because they are framed by the existing "liquid logistics" paradigm. The parallel development of fuel and water initiatives will fall short of the leap-ahead improvements required for the logistics transformation set forth by the current Army Vision.

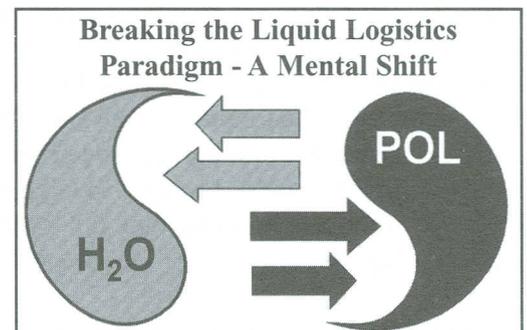
Army Transformation

In October 1999, leadership unveiled the Army Vision that encompasses the key factors of people, readiness and transformation for the future Army: the Objective Force. In this vision, the Chief of Staff, Army (CSA) established three broad but vital metrics. Logistics Revolution is the third of these metrics or measurements. The CSA specified the Logistics Revolution as the need to "aggressively reduce the logistics footprint and replenishment demand. This will require us to revolutionize the way in which we transport and sustain people and materiel." The result? Units will be able to maintain the pace and scope of operations envisioned for the Objective Force, the final goal of Army Transformation.

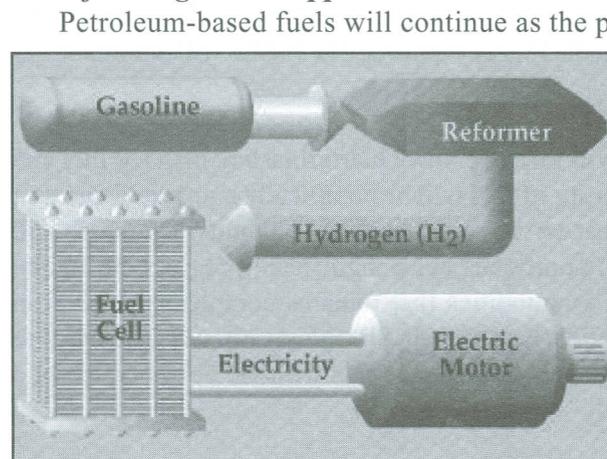
Quartermaster fuel and water support initiatives align with the transformation described by the Army Vision statement. However, Interim Brigade Combat Team successes with fuel and water are just a beginning. Even with the leaner system of "liquid logistics" in the Interim Force, the fuel and water support burden still translates into a substantial footprint on the battlefield.

Breaking the Paradigm

To meet the ultimate goal of Army Transformation and to meet the specific challenges of a Logistics Revolution, the Quartermaster Corps must go beyond business as usual. To achieve success, Quartermasters can no longer simply slap solutions from new technology over the old "liquid logistics" paradigm. Quartermasters must break the paradigm - must break the parallel development of fuel and water initiatives in a combined "liquid logistics" strategy. The successes with the Interim Brigade Combat Team must be a springboard to transform both fuel support and water support independently of each other for the Objective Force.



Transforming Fuel Support



Petroleum-based fuels will continue as the primary fuel for combat vehicles and aircraft well into the 21st Century. A historical examination of combat vehicle evolution reveals that major changes, such as introducing an alternative fuel, require significant investments of time and money. Then the military requires a long transition period before replacing old assets. Realizing this, efforts to improve the storage, distribution and issue of petroleum-based fuels must continue for the foreseeable future. Four basic tenets will guide the evolution of the fuel distribution network.

The first and most obvious tenet is **reduced fuel consumption**. Reducing the need for a commodity in order

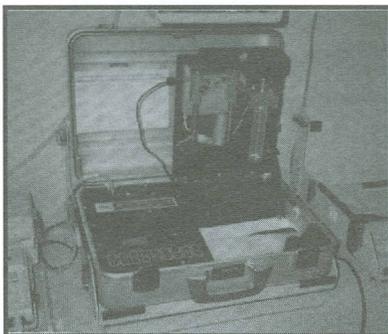
to reduce the logistics footprint is particularly relevant to petroleum distribution. However, to date the Army's new combat vehicles with superior fire power and mobility characteristics require more fuel for the mission. To achieve Army Transformation objectives, this trend must end. Technology exists today that can improve fuel efficiency and result in a reduction in fuel consumption of 50 percent or more. However, incorporating these technologies requires a significant dollar investment in product development. Hybrid electric propulsion and petroleum fuel cells are two programs related to fuel consumption that are currently in development.

Another tenet is *support with fewer assets*. The fuel distribution system must improve without any degradation in service. Selecting equipment that is deployable, flexible, mobile and multifunctional will lead to a reduction in the number of personnel and individual pieces of equipment necessary for the mission. In the past, the Army has used a fleet of fuel tankers, for example, with different capacities and each with a specific mission. This approach, while effective, required fuel transfer as many as seven or eight times before use. A repetitive transport/transfer/store cycle is expensive, labor-intensive and time-intensive. Future petroleum distribution concepts must be based on equipment flexibility and multifunctionality, such as the LMFF. Another example of future improvement in fuel distribution is the Rapidly Installed Fuel Transfer System (RIFTS) that will revolutionize bulk fuel transfer on the battlefield. Soldiers can emplace the RIFTS at rates of more than 20 miles per day. The RIFTS is an augmentation/replacement for the Inland Petroleum Distribution System (IPDS) aluminum pipeline. The RIFTS will require less trace preparation, less equipment and fewer personnel than the IPDS pipeline for emplacement and operation. Also, deploying the RIFTS to the theater of operation will require about 50 percent less strategic lift than the IPDS.



A third tenet is *asset visibility*. Idle assets increase the logistics footprint. Many operational efficiencies result from the ability to determine the status and location of fuel distribution assets. Selectively assigning missions to the best possible vehicle reduces both idle and operating times. To be successful, all vehicles must have an asset-tracking capability, such as the Tactical Fuel Automation System (TFAS) now under development. In one demonstration, a prototype TFAS successfully operated as a component of the Global Combat Support System-Army (GCSS-A). For the first time, logisticians saw the locations of fuel stocks and the quantities of fuel on hand in near-real time. This is a significant breakthrough as the fuel community continues to push fuel automation into the 21st Century.

The fourth tenet is *embedded quality surveillance*. One primary task of the petroleum distribution network is ensuring that all fuels meet minimum quality standards. Real-time, continuous testing of fuel reduces the need for separate laboratories, eliminates waiting time and increases point-of-use quality surveillance. Quality control at the point of use becomes increasingly important as the Army relies more upon host nation support and contractor deliveries. A simple, rapid analysis for the most likely contaminants in a fuel source shows fuel quality immediately, on site. This capability improves the petroleum distribution network's speed and flexibility.



An example of future quality surveillance is the Petroleum Test Kit (PTK), a self-contained system that provides the 77F (Fuel Supply Specialist) a green/amber/red indication of the acceptability of a bulk fuel supply. The PTK comes in a single, suitcase-sized container that one soldier can transport. The PTK operates on 24-volt power readily available from vehicles or ground equipment. The PTK will require the smallest practical sample size and limit the quantity and type of supplies required for the test. The PTK will use state-of-the-art technology to determine multiple fuel properties with a single testing device.



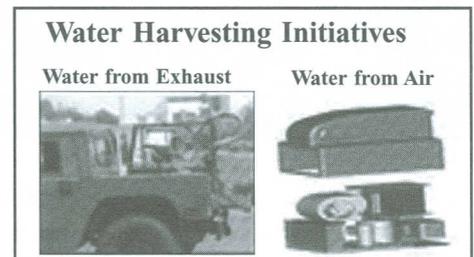
Developing all four of these transformation tenets for fuel support will dramatically reduce the petroleum distribution footprint on the future battlefield. Ultimately, this will enable the Logistics Warrior to fuel the Army's Objective Force.

Transforming Water Support

The transformation of Quartermaster water support will require new, underlying tenets to effectively support the Objective Force. One such tenet is *harvesting water* from nontraditional sources instead of delivering water to the soldier. Eliminating a bulk purifier in the rear that supplies a large distribution network will reduce dependence on large, complex, mechanical purifiers and the free-standing body of water required to supply the equipment. Two promising nontraditional sources for water harvesting are engine exhaust and atmospheric humidity.

Water-from-exhaust technology captures and purifies water vapor from engine exhaust. When hydrocarbon fuels are burned to produce energy, a product of the combustion is water. This water can be purified to become drinkable. This water-harvesting potential extends to future hydrogen-based engines that will produce water vapor in the same manner. Thus, the potential applications of harvesting water will include internal combustion engines and other advanced fuel and fuel-cell engines across the battlespace.

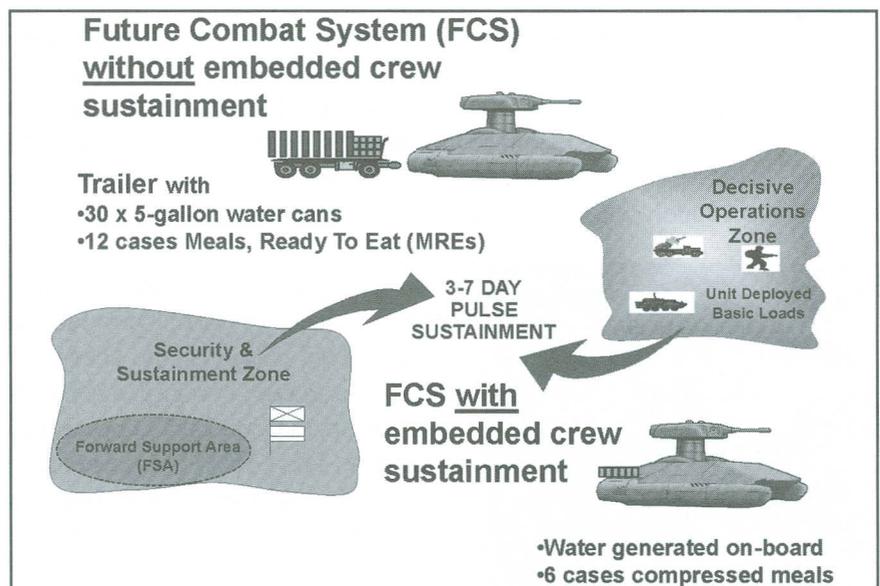
Another water-harvesting potential is water-from-air technology that captures and purifies the atmospheric humidity surrounding us at all times. This potential also extends to systems that will harvest water from confined areas rich in humidity such as Objective Force crew, shelter or protective suit spaces.



The second tenet is *decentralize and embed*. The Army needs to embrace the idea of decentralized water purification or generation, especially as a capability embedded into future vehicle and crew systems. By producing and purifying water near or at the point of consumption (embedded in future vehicle, crew or soldier systems), technology eliminates the need for the large distribution network. Eliminating distribution requirements reduces the water support burden, which in turn reduces the overall logistics footprint.

The third tenet is *recycle and reuse*. The Army needs to embrace the idea of developing more water-efficient field service systems, especially systems that recycle or reuse water. Along with the technology required for application of this tenet, the Army must address the mental shift required for its acceptance. Recycling and reusing water will reduce bulk water requirements in the security and sustainment zone. This will further drive down the water support burden and the logistics footprint.

Together, the three tenets of water support transformation will dramatically reduce the water



logistics burden and enable a successful Logistics Revolution. Water support will look very different on the Objective Force battlefield. Science and technology (S&T) initiatives will be key to realizing the tenets of water transformation and enabling Objective Force support. Currently, S&T applications of funding and basic research are targeting individual soldier water purification, a next generation water purification system, and a water-from-exhaust system.

The ultimate goal is eliminating water distribution forward into the decisive operations zone. Within this zone, future combat elements will be self-sustaining for many days. If needed, water will be resupplied to these combat elements in a pulsed manner. In fact, an Army White Paper titled *Concepts for the Objective Force* describes this very concept of pulsed sustainment: "...units will organically sustain themselves for 3 days of high tempo operations without replenishment from external sources in continuous combat in mid-to-high intensity conflict or be self-sustainable for up to 7 days in low-end conflict and peacetime military engagement."

In addition to enabling the concept of pulsed sustainment, realization of these tenets will result in direct payoff to the warfighter. Future warfighter platforms will have increased agility and mobility, and will be more able to sustain combat power because they will not be encumbered with the large-volume liquid storage requirements that would be required under the liquid logistics (supply and distribution) paradigm.

The "liquid logistics" paradigm has guided the parallel development and execution of the fuel and water support missions ever since the transfer of water proponentcy to the Quartermaster Corps in 1981 and consolidation with fuel proponentcy. In this paradigm of accomplishing the fuel and water missions in a parallel manner, a bulk supply or source in the rear feeds a distribution network to bring the liquid commodity forward to the point of use.

Time To Break the 'Liquid Logistics' Paradigm

Fuel and water support have become leaner and more efficient under the "liquid logistics" paradigm. The paradigm not only helped bridge the gap between today's capabilities and the Interim Force, but also propelled Quartermasters toward the ultimate transformation goals of the Objective Force. However, Army leadership, the Quartermaster Corps and industry now must all work together to break the "liquid logistics" paradigm by pursuing mindset changes and technological solutions across the Doctrine, Training, Leader Development, Organization, Materiel, and Soldier (DTLOMS) spectrum in order to achieve the transformational goals of fuel and water support on the future battlefield.

MAJ William J. Bettin works on the Water Team, Directorate of Combat Developments-Quartermaster, US Army Combined Arms Support Command, Fort Lee, Virginia. A preventive medicine officer within the Medical Service Corps, he has a master's degree in chemical and bioresource engineering from Colorado State University. Previous assignments include Executive Officer, 255th Preventive Medicine Detachment, and Project Officer with the Army Center for Health Promotion and Preventive Medicine (CHPPM).

CPT Houston E. Baker is a Materiel Modernization Developer, Directorate of Combat Developments-Quartermaster, US Army Combined Arms Support Command, Fort Lee, Virginia. He has a bachelor of science degree in education (agribusiness). Previous assignments include Rifle Platoon Leader, Company B, and Executive Officer, Company A, 4th Infantry Battalion, Hohenfels, Germany; Company Commander, Company B, 266th Battalion, 23d Quartermaster Brigade, Fort Lee, Virginia; and Detachment Commander/Battalion S4, 3d Battalion, 10th Special Forces Group, Fort Carson, Colorado.



Learning for the Future

Army Transformation and Distance Learning

Harold A. Williams

Today's Army faces greater challenges than ever because of increased force restructuring, personnel reductions and severe budget restraints. The new Army requires training that is progressive, proactive and positioned to incorporate automation technology into its overall strategy. This training challenge will be achieved through the Total Army Distance Learning Program (TADLP). As a cohesive tool, the TADLP system will provide training to individuals and units when and where needed. Both standardized courses for the Army and the application of information technology characterize the TADLP.

The US Army Training and Doctrine Command (TRADOC) Regulation 350-70 (Training Develop-

ment Management, Processes, and Products) defines distance learning as the delivery of standardized individual, collective and self-development training to soldiers and units at the right place and right time through the application of multiple means and technologies. Distance Learning includes training by paper-based correspondence courses; video teletraining (VTT); simulations; and interactive multimedia instruction (IMI) courseware via electronic media for completion at home, in a learning center or in a unit deployed at an operational site.

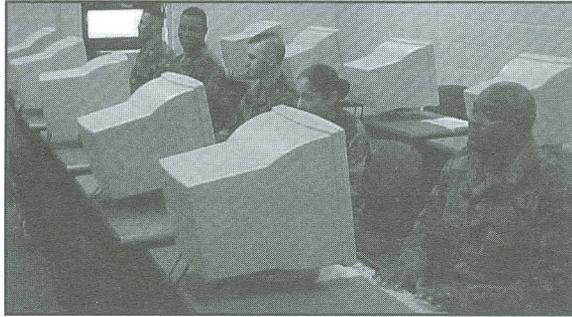
Instructors and students as users of the TADLP system will access training and reference materials stored in the Army Doctrine and Training Digital

Status of Distance Learning Courses for Petroleum and Water Training

Course	Title	Completion Date	Hours Converted to DL
720-77W10DL	Water Treatment Specialist Reclassification DL Course	27 Jan 01	25.7
821-77F10DL	Petroleum Supply Specialist Reclassification DL Course	FY02	16.0
821-77F30DL	Petroleum Supply Specialist BNCOC DL	FY02	73.0
8-77-C42DL	Petroleum and Water Specialist ANCOC DL	FY02	117.0
491-77L10DL	Petroleum Laboratory Specialist Reclassification DL	FY02	8.5
720-77W30DL	Water Treatment Specialist BNCOC DL	FY06	TBD
491-77L30DL	Petroleum Laboratory Specialist BNCOC DL	FY08	TBD
8B-92F	Petroleum Officer DL	FY06	TBD

LEGEND:		DL	Distance Learning
ANCOC	Advanced Noncommissioned Officer Course	FY	Fiscal year
BNCOC	Basic Noncommissioned Officer Course	TBD	To be determined

Library (ADTDL). Training materials may be located by task, job (duty position) and product identification. Instructors and students may access course materials, with an approved authorization, by using the Reimer Digital Library (<http://www.adtdl.army.mil/atdls.htm>).



specialties involve hands-on, equipment-based training and do not lend themselves to Distance Learning. Therefore, only the lessons supporting cognitive skills could be developed for Distance Learning. The chart on the *Status of Distance Learning Courses for Petroleum and*

Water Training shows courses currently under development or projected for development.

The TADLP continues to be a priority with the US Army Combined Arms Support Command (CASCOM) Training Directorate. The Quartermaster Training Division has been developing Distance Learning courseware for petroleum and water specialties since Fiscal Year 1999. Most of the blocks of instruction for training petroleum and water

Harold A. Williams is Chief, Petroleum and Water Branch, Quartermaster Training Division, Training Directorate, US Army Combined Arms Support Command (CASCOM) at Fort Lee, Virginia. He has worked in the petroleum and water training development arena since 1985.

(Continued from Page 26)

Petroleum Supply in a Theater of Operations

The DISCOM provides division-level CSS support to all the division's organic and attached elements. Petroleum mission units in the division support area (DSA) are the Supply and Service (S&S) Company (DS) of the Main Support Battalion (MSB) and the Headquarters and Supply Company (HSC) of the Aviation Support Battalions (ASBs). In the brigade support area (BSA), the Forward Support Battalion (FSB) Supply Company provides petroleum to all organic and attached elements. The division receives fuel from the corps-level Petroleum Supply Company (GS) with backup distribution provided by the division's S&S Company. The ASB will operate forward area refueling points in the BSA to minimize time required to refuel aircraft during combat operations.

James A. Turgeon, a retired master sergeant who is an Instructor/Writer in the Advanced Petroleum and Water Division, has served in the Petroleum and Water Department, Fort Lee, Virginia, for the past 17 years.

(Continued from Page 28)

Water Support in a Theater of Operations

transport more than 205,000 gallons of water with the 4,570-gallon SMFT at 75 per cent fleet availability. The Water Supply Company can store a total of 1.68 million gallons of water: 1.6 million stored in two potable water storage/distribution systems (PWS/DS) comprised of 50,000-gallon collapsible tanks, and two 20,000-gallon collapsible tanks as components of the two authorized Tactical Water Distribution Systems (TWDS). Each TWDS consists of 10 miles of hose line and can distribute 720,000-gallons per day (GPD) of water. Doctrinally, the TWDS is found no farther forward than the corps rear boundary. A Water Purification Detachment and Team produce, respectively, 600,000 GPD and 240,000 GPD from fresh water sources using 3,000-GPH ROWPUs. The detachment can store 300,000 gallons in its 3,000-gallon collapsible tanks; the team, 120,000 gallons. With these assets, the Water Supply Battalion provides bulk water to the DS units to continue to support using units on the battlefield.

Without water, soldiers cannot live. From combat support to peacekeeping operations, water treatment specialists ensure that water is potable and palatable - and in sufficient quantities to support the mission.

Linda Williams, an Instructor/Writer in the Advanced Petroleum and Water Division, has held various positions in the Petroleum and Water Department, Fort Lee, Virginia, for the past 13 years.

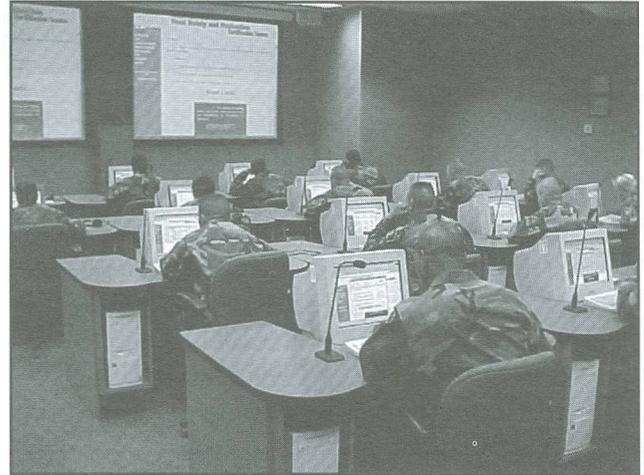


Operations and Training Management Directorate

MSG Scott L. Brown

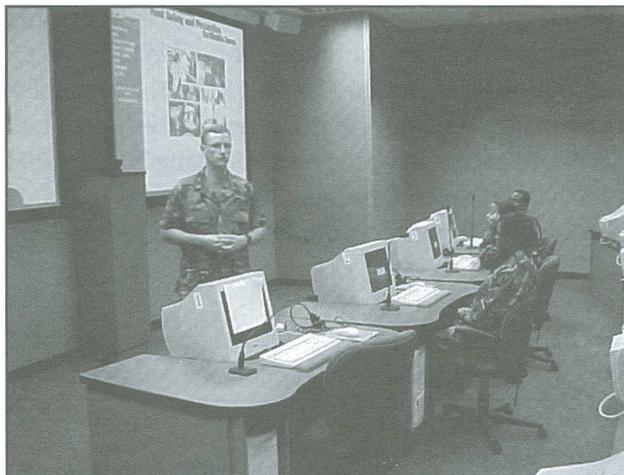
The Operations and Training Management Directorate (OTMD) processes more than 20,000 students a year in 69 different resident courses at the US Army Quartermaster Center and School (QMC&S). The OTMD maintains all course schedules in the Army Training Requirements and Resources System (ATRRS) and serves as the liaison with the US Army Training and Doctrine Command (TRADOC). Resources are coordinated at Department of the Army (DA) level. Based on training requirements, the OTMD builds and maintains school course schedules.

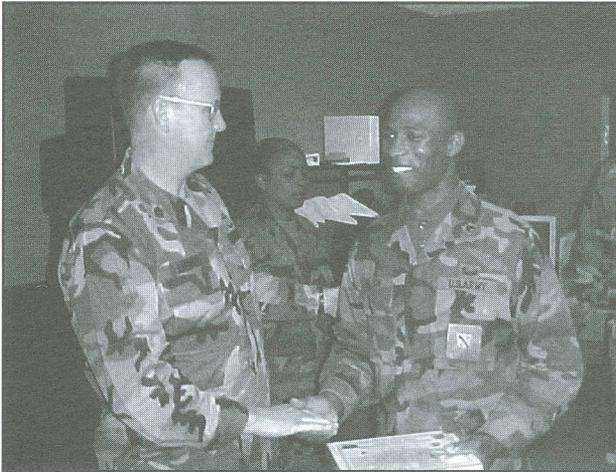
The directorate provides the central focus for the QMC&S while working across all other organizational elements involved in training at Fort Lee, VA. The OTMD has full responsibility for planning, directing, coordinating and supervising all activities of the Department of the Army Distance Learning Program (ADLP), Classroom XXI training, execution of the Instructor Development Model, training support, classroom management, scheduling, QMC&S hotline, central distribution center, academic records, automation and facility support. Coordinating the implementation of training programs by the OTMD includes the application of new technologies. The OTMD serves as proponent for staff and faculty



training, maintenance of resident student records, mobilization training, academic review boards, and obtaining out-year resources through the Structure Manning Decision Review process.

The OTMD serves as the mobilization planner for the QMC&S when the school's primary function is to expand the training base to train the Individual Ready Reserves (IRR) during a mobilization. The directorate coordinates all mobilization requirements with TRADOC and DA, as well as the installation's mobilization planners. The OTMD coordinates resource availability with the school's five training departments, the Noncommissioned Officer Academy (NCOA), and the 23^d Quartermaster Brigade. Personnel create the Mobilization Army Program for Individual Training (MOB ARPRINT) via the ATRRS through coordination with the Adjutant General (AG). Also, the OTMD represents the QMC&S at all Emergency Operations Center (EOC) installation meetings once mobilization is declared and participates in DA, TRADOC and installation mobilization exercises.





Honoring Excellent Instructors

- Network administration and system interface with the installation.
- Out-year resource procurement and allocation.
- Allocations for force protection and mobilization resources.
- Historical tracking of downsizing initiatives.

to identify the QMC&S level of readiness on a 30-day cycle basis.

The OTMD manages and supervises the Classroom XXI (Distance Learning) for the QMC&S. Distance Learning allows the QMC&S to conduct business and effective training with the Reserve and Active Components (RC and AC) without their personnel physically located at Fort Lee, VA. In addition to proving a digital link to the field, the Classroom XXI initiative houses a massive automated library for personal and professional research.

The directorate also manages and instructs the Total Army Instructor Training Course (TAITC) for QMC&S and Fort Lee. This training provides both military and civilian personnel with the proper technique of platform instruction, lesson plan development, and Microsoft Word and PowerPoint usage. TAITC is a subject that DA mandates before award of the (ASI) Additional Skill Identifier (H) Army Instructor. The course instructs 240 students per year and additional 50 students on how to be effective Small Group Leaders (SGL).

The following are OTMD's other areas of responsibility:

- Distinguished Instructor and Total Army Instructor of the Year Program.
- Packaging correspondence for a response to specific issues that represents the total school.
- Recurring schoolwide reports to higher headquarters.
- Automation maintenance and accountability.

MSG Scott L. Brown is a Military Analyst, Operations Training and Management Directorate, US Army Quartermaster Center and School, Fort Lee, Virginia. He previously served as Commander, Advanced Noncommissioned Officer Course, Fort Lee, Virginia, and First Sergeant, 540th Field Service Company, Schofield Barracks, HI. He is a graduate of the US Army Sergeant's Major Academy, Class 51.

Petroleum and Water Information Ready for Download at Web Site

The web site for the Petroleum and Water Department (PWD) has publications; briefs; papers; and safety, maintenance and technical messages readily available on its web site at www.quartermaster.army.mil/pwd/index.html under "Downloads." For example, the *Joint Petroleum Logistics Planning Guide*, developed at the PWD, US Army Quartermaster Center and School, lists all the petroleum equipment used throughout the Department of Defense, lists equipment capabilities, and lists the interoperability between each of the services' equipment. Other useful information includes a *Potable Water Planning Guide*, a National Stock Numbers List for petroleum and water equipment, and accounting and planning aids (requested by E-mail).



(Continued from Inside Front Cover)

From The Quartermaster General

An example of this far-reaching technology in the water field is the Laundry Advanced System (LADS), which represents the type of innovative thinking that results in cumulative savings across a broad range of resources. The LADS replaces the M85 laundry system on a 1-to-4 basis, thereby reducing the equipment footprint by 75 per cent. Whereas a field service company equipped with the M85 system requires 24,000 gallons of water each day, the LADS requires only 500 gallons per day. That same M85-equipped unit will have to dispose of 20,000 gallons of “gray water” per day, while the LADS-equipped unit generates only 40 gallons of waste water each day. Spread these savings in personnel, water requirements, water disposal, repair parts and deployment requirements across the 22 field service companies in the Army, and we have exponential savings and a dramatic reduction in the logistics footprint.

We must employ this same innovative thinking to all aspects of fuel and water support. As technologies for fuel and technologies for water diverge, so too must concepts of support for fuel and water. ***New technology requires a new mind-set.***

As the Army transitions to the Objective Force, several key tenets must shape our thinking. For fuel, we must improve engine efficiency (thereby driving down demand) and we must increase distribution efficiency.

Fuel efficiency drives fuel demand. Fuel demand drives fuel logistics. Logistics has to apply the laws of physics, weight and cube. Weight and cube drive distribution, and distribution relies on speed.

Quartermasters must make that quantum leap into alternative fuel sources. To this end, some current initiatives include hybrid engines to increase fuel efficiency. We are also exploring the use of hydrogen fuel cells and other alternative fuels to allow us to capitalize on any fuel source that may be readily available on the battlefield.

To make the transformation in water technology, we must make the leap into forward generation of drinking water. Key tenets include harvesting water from nontraditional sources, decentralizing and embedding water production capabilities, and recycling to distribute water in the battlespace.

With the Army Transformation to the Objective Force, units are becoming more rapidly deployable. Soldiers are likely to quickly deploy into the most austere environments, areas where fresh drinking water is not readily available. According to the latest geographical survey, 97.24 per cent of the earth’s water is salt or brackish water that requires purification for drinking. Of the remaining 2.76 per cent that is considered “fresh” water, 2.14 per cent is in the form of ice. That means only 0.62 per cent of the world’s water supply is considered fresh, liquid water.

In Afghanistan, less than 25 per cent of the population has access to fresh drinking water. In some parts of that country, less than 10 per cent of the population has fresh water. In Somalia, Sudan and other African countries, where American soldiers are or *might* deploy, less than 50 per cent of the population (almost 400 million people) have access to safe drinking water.

Current initiatives supporting water transformation tenets include capturing water vapor from vehicle exhaust systems and harvesting water from ambient humidity. The possibilities are limited only by our ability to think outside the lines. American innovation has historically provided the military with a logistics “overmatch” and has been a hallmark of previous Army campaigns. We will *never* field an Army without striving for logistics overmatch. This is the foundation for the critical path of logistics.

The critical path requires that we gain and sustain logistics overmatch to improve soldier and force effectiveness while improving logistics efficiency to reduce the logistics footprint. To conduct Army Transformation, we *will* have logistics overmatch, but we need to improve soldier and force effectiveness while reducing the logistics footprint.

The critical nature of petroleum and water makes the 77-series Career Management Field a dynamic and exciting professional path. A new Petroleum and Water Gallery will open at the US Army Quartermaster Museum during Regimental Week, 15-18 May 02, at Fort Lee. Look for an interesting review of the Army Center of Excellence, Subsistence (ACES) in the Summer edition of the *Quartermaster Professional Bulletin*.

Supporting Victory!

(Continued on Next Page)



CALL Presents Petroleum and Water 'Lessons Learned' Online

Lessons learned from the Army's combat training centers, as well as up-to-date information on petroleum and water operations worldwide, are available online at call.army.mil through the virtual research library of the Center for Army Lessons Learned (CALL). CALL collects and analyzes data from a variety of current and historical sources, including Army operations and training events, for military commanders, staff and students. CALL disseminates these lessons and other related research materials through a variety of print and electronic media. The web site is an easy way to access CALL information on contingency operations and collective training at the combat training centers: the National Training Center, Joint Readiness Training Center, Combat Maneuver Training Center, and the Battle Command Training Program.

For current petroleum operations in Bosnia on CALL's web site, for example, the Support Operations Officer, 1st AD, 127th AV Support Battalion, outlines the Headquarters Supply Company's techniques and procedures for petroleum, oils and lubricants (POL). As another example, an article on *Bulk Water Purification, Storage and Distribution Operations in Cold Weather* by CPT Jesse Morehouse and Carl Hottel was republished on CALL's web site from the Autumn 2000 edition of the *Quartermaster Professional Bulletin*. CALL is expanding its automation capabilities to include the archiving and digital dissemination of photograph, video and audio media.

'Cutting Edge' for Regimental Week

Quartermaster equipment that demonstrates cutting edge, futuristic technologies will be showcased on May 17 during the annual Regimental Week, 15-18 May, at Fort Lee, VA. The Directorate of Combat Developments-Quartermaster at the US Army Combined Arms Support Command (CASCOM) will present displays that include futuristic airdrop, automation, field feeding, shelters, petroleum and water, and transportation initiatives at the Rock Drill Facility. These transformational concepts and technology will enable the Quartermaster Corps to more effectively and efficiently sustain the armed forces.



(Continued from Previous Page)

Major General Terry E. Juskowiak, the 47th US Army Quartermaster General, has served in many command and staff positions. Among early assignments with the 101st Airborne (Air Assault) and the 25th Infantry Divisions, he served in various positions with the Army Materiel Command. In 1984 he was military assistant, junior aide-de-camp to the Secretary of the Army. Then came assignments in Europe where he served with V Corps Headquarters and the 3d Armor Division. As a member of the division staff of the 82d Airborne Division in October 1989, he participated in Operation Just Cause in Panama. During Operations Desert Shield/Storm, he commanded the 407th Supply and Transport Battalion (Airborne), 82d Airborne. After assignment as a special assistant to the Chief of Staff of the US Army, he became Commander of the 10th Mountain Division Support Command and deployed the brigade to Haiti for Operation Uphold Democracy. He then served as the Assistant Division Commander for Support, 10th Mountain Division (Light Infantry), Fort Drum, NY, which included an eight-month rotation to the Bosnian theater with NATO's Stabilization Force for Operation Joint Endeavor/Guard. He was Director of Logistics (J4), US Atlantic Command, during 1997 and 1998. He assumed command of the 1st Corps Support Command, XVIII Airborne Corps, with service as the Commanding General of CJTF-Kuwait (Forward) during Operation Desert Fox in December 1998. During July 2000-01, he was Deputy Chief of Staff for Logistics at Headquarters, US Army Forces Command, Fort McPherson, GA.





SAFETY SAVES

Risk Management Assessment:

Every operation or task requires a risk assessment. The leader is responsible for having a risk assessment done to ensure hazards are identified and personnel are trained to avoid those hazards. The following Risk Management Assessment was completed before training on the hot/cold refuel mission but can be applied to any situation.

LT Stephen C. Anderson is Terminal Operating Platoon Leader, 267th Quartermaster Company, 240th Quartermaster Battalion, US Army Quartermaster Center and School, Fort Lee, Virginia.

RISK MANAGEMENT

A. Mission or Task: Conduct Hot/Cold Refuel		
D. Prepared By: (Rank, Last Name, Duty Position) 1LT Anderson, Terminal Operating		
E. Task	F. Identify Hazards	G. Assess Hazards
1. Conduct Hot/Cold Refuel	Fuel spill	High
	Fire	High
	Dehydration	Low
2. Recirculate Fuel	Fuel on skin/eyes	High
3. Transportation to Range	Vehicle accident	High
4. All Tasks	Warm weather injuries	Moderate
	Inexperienced personnel	Moderate
	Limited medical support on site	High
K. Determine overall mission/task risk level after controls are implemented (circle one)		
LOW (L)		MODERATE (M)
Who Has Risk Decision Authority For Risk Level Identified?		

SOLDIERS

Hot/Cold Refuel Mission



LT Stephen C. Anderson

WORK SHEET

B. Date/Time Group: Begin: 27 Jun 01 End: Indefinite		C. Date Prepared: 4 Jun 01
Platoon Leader, 267th Quartermaster Company		
H. Develop Control	I. Determine Residual Risk	J. Implement Controls ("How To")
Safety briefing, spill kit, rehearsal	Moderate	Chain of command (COC) ensures spill kits are on site, and identifies spill team. Spill response teams will rehearse the day of the refuel. Every soldier will have spill response cards.
Safety briefing, extinguishers on site, rehearsals, bonding and grounding	Moderate	COC ensures that all soldiers are properly trained and experienced. Fire response team will rehearse the day of the refuel. Precombat inspections will be done on all fire extinguishers.
Forced hydration	Low	COC ensures that all soldiers hydrate throughout entire mission, and medic will have combat lifesaver bag on site.
Protective gear, COC supervision	Moderate	COC ensures that all soldiers are in proper uniform and all emergency equipment is on hand. Soldiers will be trained on proper technique to remove fuel from eyes and skin.
Safety briefing, COC supervision	Moderate	COC ensures that vehicles have proper basic issue items (BIIs). Drivers will obey traffic laws. Proper hazardous materials placards will be on tankers.
Safety briefing, COC supervision, frequent hydration	Low	COC ensures that all soldiers hydrate throughout the mission and wear appropriate gear. COC will be in contact with range control for heat index reports.
Training, safety briefing	Low	COC ensures that all soldiers are properly trained and experienced after numerous rehearsals before and the day of refuel. COC thoroughly explains mission and trains new soldiers on all equipment, COC supervision.
Ambulance on site with combat lifesaver and aid/litter bag	Moderate	Strip maps to medical facility, route reconnaissance, aid/litter inventory, communication with range control and Kenner Army Health Clinic (via cell phone).

HIGH (H)

EXTREMELY HIGH (E)

(The Assistant Commandant, US Army Quartermaster Center and School, will sign here.)





CAREER NEWS

Professional Development

As Army Transformation continues in the 21st Century, we at the Quartermaster Branch, US Total Army Personnel Command (PERSCOM) will update Quartermasters about some changes, developments and trends in the assignment and professional development areas. **For more information about Quartermaster Corps officer and noncommissioned officer (NCO) issues, access the PERSCOM web site at www.perscom.army.mil and the Office of the Quartermaster General web site at www.quartermaster.army.mil/oqmg/ (Officer Proponency, Warrant Officer Proponency and Enlisted Proponency). Quartermaster warrant officers can access their PERSCOM Quartermaster Warrant Officer Page at www.perscom.army.mil/OPWod/wod.htm.** To help enlisted soldiers keep track of PERSCOM's new communication tools, the Enlisted Personnel Management Directorate distributed a wallet-sized information card that lists a soldier's career manager's telephone number, E-mail address, FAX number, and telephone Interactive Voice Response System (IVRS) instructions and telephone number. Enlisted soldiers can get their pocket cards at their personnel servicing battalions. Access www.us.army.mil to set up a free E-mail account with Army Knowledge Online.

Assignment Officers' Web Pages, Battalion Commands, and Universal MEL 4

LTC Scott Lang, Chief, Quartermaster Officer Personnel Management

Scott.Lang@Hoffman.Army.Mil, DSN 221-5266

We have a lot going on at Quartermaster Branch. Please visit the web pages of your assignment officers at PERSCOM for more specific information. I encourage you to use your technicians for administrative record updates; your assignment officers for assignments, career and file assessment questions; and the Future Readiness Officer for any Army or Quartermaster program that interests you. Also, always feel free to contact me with any questions or concerns. We are committed to taking care of you in an expedient and professional manner.

FY03 Battalion Commands. I congratulate the 29 Quartermaster officers selected for FY03 Battalion Command. The numbers selected for each type of command are as follows: 18 Quartermaster officers for Functional Area (FA) 90 Commands, 2 for Supply Units Tactical Commands, 6 for Supply Units Training and Strategic Support Commands, 1 for a POL (petroleum, oils and lubricants) Unit Tactical Command and 2 Quartermaster officers for POL Units Training and Strategic Support Commands.

The following is the total breakdown of commands available to Quartermaster officers:

COMMANDS	ODD YEAR	EVEN YEAR	TOTAL
FA 90	*45	34	79
Supply Units Tactical	2	1	3
Supply Units Training and Strategic Support	6	3	9
POL Units Tactical	1	3	4
POL Units Training and Strategic Support	2	1	3
Grand Total	56	42	98

*Quartermaster officers were selected for 18 of the 45 odd-year commands available for FY03.

Universal MEL 4. We are continuing to monitor as the US Army Training and Doctrine Command (TRADOC) develops the Universal MEL 4. As soon as we get information on when it will take effect and how it will be run, we will pass it on through the Quartermaster Home Page at www.Quartermaster.army.mil, PERSCOM Team Visits and the *Quartermaster Professional Bulletin*. For now, we will go forward with the FY03 Command and Staff College (CSC) Board planned for this April. Also, we still recommend that all first time non-selects start completing nonresidential Command and General Staff College (CGSC). Whether or not the MEL 4 will start in FY04 remains undetermined.

FY02 Board Schedule. Also, I would like to remind all Quartermaster officers of the FY02 Board Schedule:

BOARD	DATE
MAJ	16 Apr – 17 May 02
LTC	26 Feb – 29 Mar 02
COL	30 Jul – 23 Aug 02
CSC	20 Aug – 20 Sep 02
SSC	2 Apr – 26 Apr 02

Because of the pages dedicated in this special edition to the petroleum and water missions, please refer to the PERSCOM web site at www.perscom.army.mil for the complete Career News articles for Quartermaster officers. Articles by PERSCOM assignment officers and the Future Readiness Officer will help with successful planing for this year’s promotion, selection and school boards and keep Quartermasters informed on other key issues. The following are the Quartermaster Branch authors and their current topics:

*CPT Michael E. Sloane, Lieutenant/Non-Branch Qualified Captain Assignments Officer
Michael.Sloane@Hoffman.Army.Mil, DSN 221-5281*

Captains in command are strongly advised to contact the Branch-Qualified Captain Assignments Officer, CPT Dina M. Nehring at Dina.Nehring@Hoffman.Army.Mil or DSN 221-5268, to work your next assignment. If you took command within the last six months, begin considering your options after command. Let CPT Nehring know when you will come out of command and what/where you have considered for your next assignment.

Lieutenants who do not have an undergraduate degree are required to complete the degree before promotion to captain. I am getting many questions about the importance of the degree versus your platoon leader experience.

*CPT Dina M. Nehring, Branch-Qualified Captain Assignments Officer
Dina.Nehring@Hoffman.Army.Mil, DSN 221-5268*

FY02 Major’s Board will convene in April 2002 and we must all be prepared. Year Group (YG)92 officers are in the primary zone, while YG93 officers are in the below-the-zone category.

*MAJ Eugene “Chip” Lilliewood, Major Assignments Officer
Eugene.Lilliewood@Hoffman.Army.Mil, DSN 221-5267*

FY02 Command and Staff College Board will meet 20 Aug-20 Sep 02 to consider primary YG91 and YG92 officers for selection to attend either CGSC or a Sister Service College.



FY02 Majors Board. Quartermaster Branch will begin scrubbing the files sometime in July. PERSCOM's pre-board file scrub is a courtesy, and it is important that all officers going before the board have their records ready. See PERSCOM's Quartermaster Branch web page for more information on what you can do to put the best file forward to the promotion board.

The Assignment Process or Why are there never any good assignments on the web page?

What can you do to ensure that you get the position you want?

If you see a position that interests you, contact me as soon as possible. Positions don't go "first come, first served," but you can't get the position if I don't know you are interested.

LTC Lee Hansen, Lieutenant Colonel Assignments Officer

Lee.Hansen@Hoffman.Army.Mil, DSN 221-5269

The Colonels Board will take place 30 Jul-23 Aug 02.

Summer 2002 Assignments. I have received about 90 per cent of my Summer 2002 assignments, and these are posted on my open assignment web page. However, once we know results of pending actions such as MEL 1 distribution and shifting Army operational requirements, officer assignment preferences may dramatically change.

Upcoming Boards. I will send out timely information concerning boards in future mass E-mails. If you have never received one of my mass E-mails and are a Quartermaster lieutenant colonel/major (promotable), please send me your current E-mail address so I can keep you in the information loop. My last mass E-mail was sent 27 Aug 01.

Officer Evaluation Report (OER) Status. Quartermaster Branch is the last one to receive your fully processed OER. To determine if your OER is at PERSCOM, call DSN 221-4191. Original OERs do not come directly to Quartermaster Branch. They must go to the PERSCOM OER Branch for processing. You can call LTC Swisher at 221-9660 to verify your profile.

Department of the Army (DA) Photos. If your DA photograph is more than two years old or you are wearing your previous rank, I recommend that you take a new digital photograph and then send me two copies.

CPT Kevin Gilson, Future Readiness Officer

Kevin.Gilson@Hoffman.Army.Mil, DSN 221-5645

Lessons Learned from Board Preparations. Go to the web page for a checklist and detailed timeline for important actions to take. You are responsible for the condition of your file. At least two months ahead, request a copy of your microfiche for review. For more information on board preparations, follow this link: <http://www.perscom.army.mil/opfamdd/board.htm>

New Warrant Officer Mentorship Guide

The new Quartermaster Warrant Officer Mentorship Guide is available online at www.quartermaster.army.mil, under Warrant Officers, Mentorship. Also, the mentorship feedback form is online for students in the Warrant Officer Basic Course (WOBC) to submit by E-mail. Planned mentorship is required of each WOBC student who must contact a senior warrant officer in writing to request establishing a mentor-mentee relationship upon the student's arrival at the first duty station after WOBC graduation. Printed copies of the new mentorship guide were distributed at the Quartermaster Warrant Officer Conference, 25 Feb-1 Mar 02, at Fort Lee, VA. Also, all WOBC students in the mandated "planned mentorship" program will receive a copy of the guide.



Liquid Logistics - Career Management Field 77 (Petroleum and Water)

MAJ David V. Gillum, Deputy Branch Chief, Enlisted Personnel Management, Quartermaster Assignment Branch, US Total Army Personnel Command

The Army authorizes Career Management Field (CMF) 77 8,500 soldiers: 5,800 are privates and specialists, and 2,700 are noncommissioned officers (NCOs). Duty positions at the NCO level include leadership jobs at all ranks (squad leader through command sergeant major), as well as staff positions at battalion and brigade levels, commodity management jobs at both division and corps levels, and career-enhancing positions in the Active Component/Reserve Component (AC/RC) program, recruiting, Reserve Officers' Training Corps (ROTC), and the combined training centers (Combat Maneuver Training Center, National Training Center and Joint Readiness Training Center).

Career Development

A successful career in CMF 77 is defined as retirement as a sergeant first class (SFC) between the 20th and 24th year of service. Quartermasters who are promoted beyond SFC share a number of characteristics. Most important, these soldiers have a history of exceeding the standard while serving in leadership positions. They served with distinction as squad leaders and section sergeants, then sought jobs as platoon sergeants. There is NO SUBSTITUTE for excellence in leadership positions. Assignment as an observer/controller at one of the combined training centers (CTCs) further demonstrates excellence in the military occupational specialty (MOS). Most also served as either drill sergeants or recruiters. A successful tour in one of these critical jobs can do a lot to set a soldier apart from his or her peers and clearly show potential for increased promotion.

Civilian education beyond a high school diploma shows a commitment to self-improvement. Soldiers who make the effort to earn college credit and a degree clearly demonstrate initiative and a desire to improve themselves.

Assignment Locations

Current Army requirements keep divisions and Armored Cavalry Regiments at 100 percent fill. The following are assignment priorities for CMF 77 within the continental United States (CONUS):

3d Brigade (BDE), 1st Armored (AR) Division (Fort Riley, KS)	1st Cavalry (CAV) Division (Fort Hood)
1st BDE, 1st Infantry (IN) Division (Fort Riley)	3d IN Division (Fort Stewart, GA/Fort Benning, GA)
4th IN Division (Fort Hood, TX/Fort Carson, CO)	10th Mountain Division (Fort Drum, NY)
82d Airborne (ABN) Division (Fort Bragg, NC)	101st ABN Air Assault Division (Fort Campbell, KY)
2d Armored Cavalry Regiment (ACR) (Fort Polk, LA)	3d ACR (Fort Carson)
Initial Brigade Combat Team (Fort Lewis, WA)	

The following are CMF 77 priorities outside the continental United States (OCONUS):

1st AR Division (Germany)	1st IN Division (Germany)
2d IN Division (Korea)	25th IN Division (Hawaii)
172d Separate Infantry Brigade (Alaska)	

Additional assignments are available in AC/RC, recruiting, and as drill sergeants and MOS instructors in a variety of locations across the United States.

Career Maps

The following charts show three new CMF 77 career maps, including recommended assignments and also required and recommended military education:

CAREER DEVELOPMENT MODEL FOR A PETROLEUM SUPPLY SPECIALIST 77F (CMF 77)

YRS OF SVC	1-3 77F10	4-6 77F20	7-9 77F30	10-15 77F40	16-19 77F50	20-30
RANK	PVT/SPC/CPL	SGT	SSG	SFC	MSG/ISG	SGM/CSM
Institutional Pillar	BCT/AIT P I PVOC	DC	BN	COC	ANC	OC
Operational Pillar	Fuel Handler Vehicle Operator Pump STA Operator Aircraft Fuel Handler Squad Leader	Squad Leader Pump STA Operator POL Vehicle Operator Corps/Installation Supply OP POL Inventory Control	POL Supply SGT/Foreman Pump STA Foreman Airfield Supervisor Section Chief Dispatch Sergeant POL Vehicle Supervisor POL Storage Supervisor/OA	Platoon Sergeant POL Supply Foreman/SUP OPS Sergeant DET Sergeant POL REQMTS Sergeant POL Distribution SGT Petroleum Sergeant	First Sergeant OPS Sergeant POL Supply Sergeant Petroleum NCO Water Supply Sergeant QA NCO POL Distribution SGT	CMF 7700Z BN/BDE/GP SGM POL Supply NCO POL Distribution NCO
Assignments	Corporal Recruiter	Recruiter	Recruiter AIT Instructor Small Group Leader Drill Sergeant	Recruiter AIT Instructor Small Group Leader Drill Sergeant EEO/OC/IG/QAR/AC/RC Professional Development Proponent Manager	QAR/IG/AC/RC Proponent Manger	SGM AC/RC TACOM CMF 7700Z School CMDT
Institutional & Special Skills	Airborne Air Assault POL Truck Driver (H7) HAZMAT Hazardous Cargo	Same as Skill Level 1 Sling Load Inspector Master Fitness Trainer	Same as Skill Level 2 Instructor Course Small Group Ldr Course Battle Staff Master Rappelling Jump Master	Same as Skill Level 3 QAR Course POL Barge Course Manpower Course	Same as Skill Level 4 Acquisition Course	Same as Skill Level 5
Recommended Time in TOE Assignments	All at Platoon Level	24 months minimum as Squad Leader	24 months minimum as Section Sergeant or Platoon Sergeant	24 months minimum as a Platoon Sergeant 12 months Operations	24 months minimum as First Sergeant 12 months Operations	

CAREER DEVELOPMENT MODEL FOR A PETROLEUM LABORATORY SPECIALIST 77L (CMF 77)

YRS OF SVC	1-3 77L10	4-6 77L20	7-9 77L30	10-15 77L40	16-19 77F50	20-30
RANK	PVT/SPC/CPL	SGT	SSG	SFC	MSG/ISG	SGM/CSM
Institutional Pillar	BCT/AIT P I	DC	BN	COC	ANC	OC
Operational Pillar	Squad Leader POL Lab Specialist Air Mobile Lab SGT	Squad Leader POL Lab Sergeant Air Mobile Lab SGT	POL Lab Supervisor POL Surveillance Spvrs NCOIC Air Mobile Lab	Platoon Sergeant POL Lab Supervisor POL Lab NCOIC POL Surveillance NCO	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Assignments			Recruiter AIT Instructor Small Group Leader Drill Sergeant	Recruiter AIT Instructor Small Group Leader Drill Sergeant QAR	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Institutional & Special Skills	Airborne Air Assault HAZMAT Hazardous Cargo	Same as Skill Level 1 Sling Load Inspector Master Fitness Trainer	Same as Skill Level 2 Instructor Course Small Group Ldr Course Battle Staff Master Rappelling Jump Master QAR Course/POL Barge Course	Same as Skill Level 3 QAR Course POL Barge Course	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Recommended Time in TOE Assignments	All	All Squad Leader Time When Available	24 months minimum as Section Sergeant or Platoon Sergeant (When Available)	24 months minimum as a Platoon Sergeant (When Available)	SEE 77F50	SEE 77F50 SEE CMF 7700Z



**CAREER DEVELOPMENT MODEL FOR A
WATER TREATMENT SPECIALIST 77W (CMF 77)**

YRS OF SVC	1-3 77W10	4-6 77W20	7-9 77W30	10-15 77W40	16-19 77F50	20-30
RANK	PVT/SPC/CPL	SGT	SSG	SFC	MSG/ISG	SGM/CSM
Institutional Pillar	BCT/AIT	P LDC	BNCOC	ANCO	SGM ACADEMY	
Operational Pillar	Squad Leader Water Treatment Specialist	Squad Leader Water Treatment NCO FAWPSS NCO	Section Sergeant Platoon Sergeant Asst Water Purification Sup Asst Water TRMT Sup Water TRMT Sup	Platoon Sergeant Water Treatment Sup DET Sergeant	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Assignments		Recruiter	Recruiter AIT Instructor Small Group Leader Drill Sergeant	Recruiter AIT Instructor Small Group Leader Drill Sergeant AC/RC	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Institutional & Special Skills	Airborne Air Assault	Same as Skill Level 1 Sling Load Inspector Master Fitness Trainer	Same as Skill Level 2 Instructor Course Small Group Ldr Course Battle Staff Master Rappelling Jump Master	Same as Skill Level 3	SEE 77F50	SEE 77F50 SEE CMF 7700Z
Recommended Time in TOE Assignments	All	All 24 months minimum as a Squad Leader	24 months minimum as Section Sergeant or Platoon Sergeant	24 months minimum as a Platoon Sergeant	SEE 77F50	SEE 77F50 SEE CMF 7700Z

On promotion to master sergeant (MSG), soldiers holding MOSs 77L and 77W migrate to 77F and become senior liquid logistics NCOs. About one in four SFCs in this CMF will be selected for MSG. MSGs who want promotion to sergeant major (SGM/CSM) need to serve as company first sergeants. Without the leadership experience gained at this level, selection for further promotion is unlikely. Only about 1 in 14 MSGs are selected for promotion to SGM/CSM.

Retention

Retention for initial term soldiers ranges from 34.9 percent for MOS 77W to 44.8 percent for MOS 77L. The average retention rate for CMF 77 is approximately 39 percent. Mid-term retention is about 75 percent, while career retention remains at about 72 percent across the CMF. As a result of high retention, NCO strengths in CMF 77 remain high. In an effort to increase initial term reenlistments, the Selective Retention Bonus (SRB) multiplier was raised from 0.5 to 1.0 in November 2001 (monthly base pay x years of reenlistment x the multiplier = SRB).

Accessions

In order to improve recruiting for MOS 77F, the MOS carries a \$16,000 enlistment bonus (EB) for a six-year enlistment. This is the highest enlistment bonus available for a Quartermaster MOS. Increased accessions are the key to keeping MOS 77F healthy. Soldiers enlisting for MOS 77F and 77L are also eligible for up to \$50,000 in the Army College Fund.

QUARTERMASTER

UPDATE

New Petroleum and Water Gallery Opening During Regimental Week

Tim O’Gorman, Director, US Army Quartermaster Museum

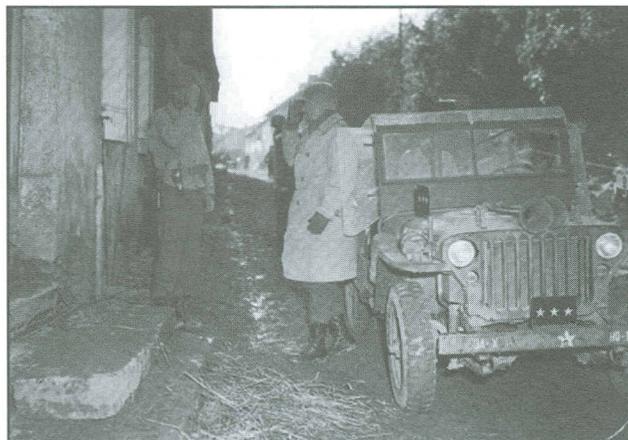
On the eve of the ground war in Southwest Asia in early 1991, LTG Frederick M. Franks Jr., Commanding VII Corps, had many details to consider and contingencies to plan for. His primary concern was fuel. “Our biggest challenge...would be fuel. The divisions would burn up to 800,000 gallons a day [but] the problem would be distribution, not supply. Logisticians can work only so much magic and I was very aware that my tactical decisions would be influenced by logistics.” During World War II, General George S. Patton said it this way: “My men can eat their belts but my tanks got to have gas!” Or as a former Quartermaster put it: “Without fuel, a tank is a 65-ton paperweight.”

As important as fuel is to vehicles, water is equally as vital to sustaining soldiers. Supplies of life-sustaining water, or lack of it, have determined the outcome of battles and sieges throughout history.

The importance of fuel and water is related in the Petroleum and Water Gallery, the newest exhibit at the US Army Quartermaster Museum that will open during Regimental Week, 15-18 May 02.

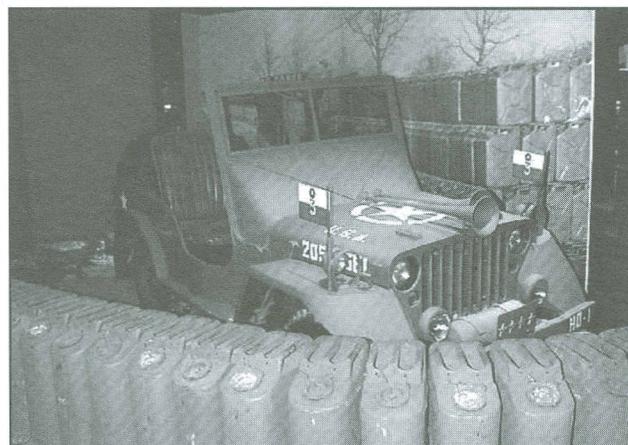
The new gallery traces the changes throughout history in the way Quartermasters have fueled the force and provided water to the Army. Artifacts, graphics and photographs tell the story. The jeep used by General Patton, complete with Patton himself waiting while a Quartermaster Fuel Handler fills up the jeep, tells the story of Patton’s race across France in World War II, brought to a halt when gasoline was diverted to another sector. Graphs depicting the massive consumption of fuels from World War I through *Operation Desert Shield/Desert Storm* illustrate how important the supply of fuel is to success on the modern battlefield.

The gallery tells the story of Quartermasters who process and supply fresh water for fellow soldiers and to those in need during humanitarian relief



1944: Transporting the General in Europe

GENERAL PATTON’S JEEP



2001: Ready for New Exhibit in Museum

operations. Calling themselves “Water Dogs,” their story is one of service and expertise in the performance of this vital mission. The gallery contains a variety of water purification-related objects, canteens and other methods of carrying water, and graphics that show the process whereby water from any source, no matter how foul or brackish, is purified and made drinkable.



Top Army Dining Facilities Worldwide Honored by Philip A. Connelly Awards

The Army's best food service professionals were recognized by the annual Philip A. Connelly Awards, 21-24 March 2002, in Tampa, FL. Five winners and five runners-up won in these five different dining facility categories: small garrison (serving 200 or less), large garrison (serving 201 or more), active Army field kitchens, US Army Reserve and Army National Guard.

The Department of the Army and the International Food Service Executive Association (IFSEA) cosponsor this professional competition strictly for soldiers in the field. Evaluators from the US Army Center of Excellence, Subsistence at Fort Lee, VA, and IFSEA representatives traveled the globe in 2001 to see the finalists on the job in both installation dining facilities and during field operations. Army cooks and their facilities were evaluated in many areas, including food preparation, taste, nutrition, service and sanitation.

The program is named in honor of the late Philip A. Connelly, a past IFSEA president who is considered the driving force behind obtaining IFSEA sponsorship for the Army's recognition in Army food service. Leading up to the prestigious awards ceremony, IFSEA sponsored seminars and special events in Tampa for food service professionals.

Fort Bragg, USAREUR and Fort Lewis Dominate 27th Culinary Arts Awards

Top team honors at the 27th Annual Army Culinary Arts Competition went to Quartermasters from Fort Bragg, NC, United States Army Europe (USAREUR) and Fort Lewis, WA, in 2002. Finalists in all categories at all levels were extremely close in the point spreads this year.

For the third time in a row, Fort Bragg, NC, won Installation of the Year at the military's premier culinary training event hosted by the Army Center of Excellence, Subsistence (ACES), USAQMC&S, 2-14 Mar 02, at Fort Lee, VA. Second place for Installation of the Year went to USAREUR, and Fort Lewis won third. However, in field cooking competition, Fort Lewis took first place. Fort Bragg won second place, and USAREUR took third place.

SFC David C. Russ of Fort Bragg, the Senior Chef of the Year in 1993, was named National Military Culinary Champion.

Fort Bragg's SFC Willie J. Meeks won Chef of the Year. From USAREUR, PFC Scott T. Graves won Junior Chef of the Year, as well as earning a place on the 2002 US Army Culinary Arts Team (USACAT). The other three soldiers selected to work together as members of the 2002 USACAT were SFC Benedict D. Tesoro of Fort Lewis, SSG Paul R. Edwards of USAREUR, and SPC Adam F. Lang of Fort Bragg. The USACAT was crowned world champion at the 2000 Culinary Olympics in Erfurt, Germany.

The team from Fort Drum, NY, won the Culinary Knowledge Bowl by a landslide. SGT Ned N. Cary and SPC David A. Marcelli of USAREUR won the Nutritional Hot Food Challenge.

The American Culinary Federation (ACF) sanctions this annual competition for teams that must enter 14 separate categories, including live cooking, team cold buffet and the Culinary Knowledge Bowl. Nineteen teams with 198 military chefs from 22 installations worldwide entered 264 exhibits in 2002, competing for team and individual honors.

The first culinary competition has its beginnings in 1976 as a way to motivate soldiers pursuing a food service career and has grown through the years. Other goals are to continually raise the standards of excellence and professionalism of the armed forces and to promote camaraderie and educational opportunities among culinary professionals. All judging is performed by strict ACF standards.

Philip A. Connelly Awards		
Category	Unit	Location
Small Garrison Winner	102d Military Intelligence Bn, 2d Infantry Div	Camp Essayons, Korea
Small Garrison Runner-up	HHD, 1st Medical Bde, 13th Corps Support Cmd	Fort Hood, Texas
Large Garrison Winner	95th AG Battalion (Reception)	Fort Sill, Oklahoma
Large Garrison Runner-up	HHC, 45th Corps Support Group (Forward)	Schofield Barracks, Hawaii
Active Army Field Kitchen Winner	HHC, 1/63d Armor, V Corps	Vikseck, Germany
Active Army Field Kitchen Runner-up	HHC, 659th Maintenance Bn, 46th Corps Spt Group, 1st Corps Spt Command	Fort Bragg, North Carolina
Army Reserve Winner	489th Maintenance Co (GS), 63d Reserve Spt Command	San Bernadino, California
Army Reserve Runner-up	HQ Svc Co, 389th Engineer Bn, 89th Reserve Spt Cmd	Dubuque, Iowa
National Guard Winner	HHB, 42d Div Artillery, Massachusetts ARNG	Rehoboth, Massachusetts
National Guard Runner-up	321st Signal Company, Nevada ARNG	Carson City, Nevada

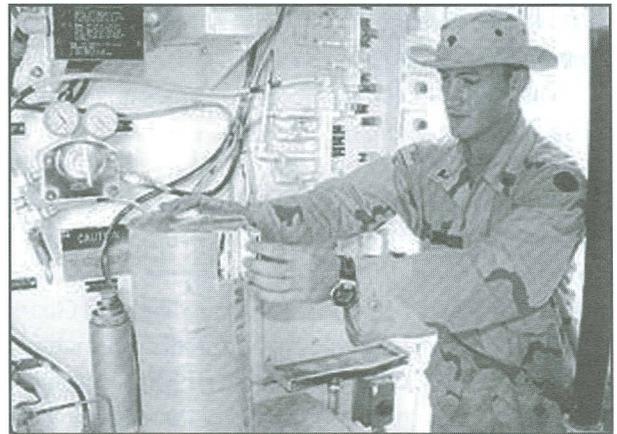
Food Service Contract Training Offered Several Times A Year

The Army Center of Excellence, Subsistence (ACES) offers the Food Service Contract Management (FSCM) Course several times a year at Fort Lee, VA, and at other locations upon request. The course certifies graduates as Contracting Officer's Representatives (CORs) for installation/base contracts. The next class at Fort Lee will be 10-21 Jun 02. Personnel designated as CORs are required by AR 30-1 (The Army Food Program) to be initially certified by this course and updated within five years.

The ever-changing FSCM Course is designed to train individuals in current policies, procedures and techniques to perform as a COR and to better perform duties as a quality assurance evaluator. The course focuses on how to develop performance-oriented work statements, properly administer contracts and how to effectively communicate with contracting officers. Students learn about duties and responsibilities of the COR, fundamentals of contracting, basic contract clauses, contracting policy, and how to use the Army's prototype performance work statement and Quality Assurance (QA) plan. Students learn how to properly administer food service contracts through different surveillance techniques, QA procedures and how to inspect and properly document evaluations. Personnel become familiar with management indicators and surveillance techniques to monitor sanitation requirements and standards. Students learn through practical exercises how to identify critical sanitation control points, document deficiencies and take alternative actions to enforce the contract.

Candidates for the course should have completed a basic course in sanitation and have responsibility for developing or administering a food service contract of some type. Priority is given to individuals who are designated a COR, or who anticipate being a COR, food advisors and QA evaluators. Individuals who want to take the course for professional development purposes will be considered only when ACES needs quotas to fill a class.

Commands must submit nominations offline to Director, ACES (ASTM-CES-OC), 1201 22D Street, Fort Lee, VA 23801-1601. The Army Training Requirements and Resources System (ATRRS) is not used. Point of contact is Mr. McGinniss at (804) 734-4839, DSN 687-4839, FAX (804) 734-4834 or E-mail to mcginnij@lee.army.mil.



Specialist examining ROWPU filter

Thirsty US Soldiers at Bright Star Welcomed 559th Quartermasters

The 559th Quartermaster Battalion, which has the only active water purification unit in the Army, provided about 100,000 gallons of water per day for US armed forces taking part in Exercise Bright Star in Egypt last October. The year 2001 marked the first time that US soldiers provided purified drinking water during Bright Star.

Deployment by about 250 soldiers from the 420-soldier unit at Hunter Army Air Field in Georgia not only saved money by eliminating much of the cost of bottled water for the desert exercise, but also provided a test for the Quartermasters. "It lets us see how we would do in a real-world situation," said LTC Jay Hirata, battalion commander.

Although Egyptian troops drank directly from the local water supply, military personnel from other countries did not. The water became so popular that the French Army provided the US troops about 1,100 pounds of fresh-baked baguettes every day. "It's a question of logistics," said French Army spokesman, Captain Alban des Courtlis. "We have bread. They have water. We need water."

The 559th Quartermaster Battalion, which also was responsible for distributing all ammunition used by US forces during Bright Star, can purify a maximum of about 2 million gallons of water a day. Quartermasters ran the water from nearby Alexandria through 11 ROWPUs. The water was then stored in 50,000-gallon collapsible tanks dug into the desert. Through a system of pipes and hoses, the water was tapped to fill anything from tanker trucks to individual canteens. - Information from David Josar, *Stars and Stripes*.

Commanders Safety Course Also For NCOs and Warrant Officers

The new Commanders Safety Course for officers selected to command units from company through brigade goes online in 2d Quarter, FY02, when the course becomes a precommand requirement. However, every officer, warrant officer, command sergeant major and first sergeant will add to their professionalism with the Commanders Safety Course. After completing the course, online students can either download critical references from the Reimer Digital Library or request a CD-ROM from the Army Training Support Center at Fort Eustis, VA.

The Commander's Safety Course resulted from a directive from General Eric K. Shinseki, Army Chief of Staff, to the Army Safety Center and US Army Training and Doctrine Command. He wanted a program that could help commanders identify and reduce needless soldier accidents and deaths. He also wanted a course that would qualify an officer, sergeant major or a first sergeant to perform safety program duties and would invigorate risk management training and programs within the Army.

The idea behind the course is to allow a brigade commander to know that his company commanders, by completing the course, have been grounded in building and conducting unit safety programs. Officers selected for battalion and brigade command are required to complete the course before beginning the Pre-Command Course and Fort Leavenworth, KS. Also, the risk management portion of the Commanders Safety Course is being considered for addition to the Sergeants Major and First Sergeants Courses.

The course teaches students to incorporate risk management into everything they do. For a Unit Safety Program, the course uses an outstanding example from the 2d Airborne Brigade, Fort Bragg, NC, which was approved by the Forces Command Inspector General. Also, the Commanders Safety Course offers students a resource navigator, a portal through the Army Safety Center, Fort Rucker, AL. The navigator contains the URL (Uniformed Resource Locator) links to a multitude of safety topics. That means, for example, a soldier writing a risk management assessment for a road movement can look up control and hazards for that activity in a constantly expanding Army data bank.

More TASS Schools To Teach BNCOC, ANCOC Common Core

In May the Noncommissioned Officer (NCO) Academy in Alaska and the 25th Infantry Division NCO Academy, Fort Shafter, Hawaii, will enter the pilot program for teaching the stand-alone common core for the Basic and Advanced NCO Courses (BNCOC and ANCOC). Other schools in The Army School System (TASS) began teaching the common core in a pilot program in January.

Branch-specific NCO academies began teaching common core basic leadership tasks as Phase I for both BNCOC and ANCOC in October 2001. Soldiers must pass this Phase I before taking Phase II, specific to their military occupational specialty (MOS), in residence. Expanding throughout TASS gives even more soldiers the opportunity to complete Phase I of BNCOC and ANCOC at or near their home installations. NCOs selected to attend BNCOC and ANCOC may take the stand-alone common core at any location that teaches it, regardless of MOS, as long as it's within 50 miles of where they are stationed. Because more TASS schools will be added each year, the stand-alone common core will be taught in schools convenient to nearly every soldier by 2004.

Correction

In the UPDATE section of the previous edition of the *Quartermaster Professional Bulletin*, the US Air Force's first operational use of the TRIADS was incorrectly identified. The TRIADS used for airdropping Humanitarian Daily Rations during *Operation Enduring Freedom* in Afghanistan last winter was an improved version of this technique. It was first used in Bosnia during *Operation Provide Promise*. See "Emerging Technology in Airdrop Operations" in the Autumn 1997 edition of the *Quartermaster Professional Bulletin*, available online at www.quartermaster.army.mil under Bulletin, *Quartermaster Professional Bulletin Archives*.

2001 Index of Quartermaster Articles

This spring edition, featuring the petroleum and water missions, begins the 15th year of quarterly publication for the *Quartermaster Professional Bulletin*. The 2001 index of Spring, Summer, Autumn and Winter articles will appear online at www.Quartermaster.army.mil under Bulletin, Current Edition, Spring 2002.

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Report delivery problems, changes of address or unit designation to Martha B. Guzman at DSN 687-4382. Requests to be added to direct distribution should be in the form of an E-mail to kinesl@lee.army.mil.

ARTICLE SUBMISSIONS:

For editorial review, E-mail articles to kinesl@lee.army.mil. See BULLETIN, Quartermaster Home Page, at www.quartermaster.army.mil for more details in two articles titled *How To Research and Write for the Quartermaster Professional Bulletin* and *How To Submit Articles for Publication*. Submit articles in double-spaced drafts consisting of no more than 12 pages in Microsoft Word for Windows.

Articles may also be submitted on 3 1/2-inch disk in most common word processing software (Microsoft Word for Windows preferred). Hard copy must be included. Please tape captions to any photographs or diagrams.

QUARTERMASTER HOTLINE:

The Quartermaster HOTLINE collects immediate feedback from the field on issues such as doctrine, training, personnel proponentcy, and Quartermaster equipment development with a 24-hour telephone answering service. The Operations and Training Management Directorate records incoming calls after normal duty hours and responds to the caller the next duty day. DSN: 687-3767, Commercial: (804) 734-3767. Collect calls cannot be accepted.

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Metric Survey of Military Occupational Speciality Series 77

The US Army Quartermaster Center and School seeks constructive input from the field. The training and quality of the soldiers in the military occupational specialties (MOSs) that we produce are critical to mission accomplishment. Please take the time to complete the following survey. Your suggestions will be used to assess our training and make improvements.

1. What is your rank?

E1-E4	E5-E6	E7-E9	O1-O3	O4-O5	O6-Above
<input type="radio"/>					

2. To what level of organization are you assigned?

Company	Brigade	Division	Corps	Theater	Other
<input type="radio"/>					

3. In what type of unit are you assigned?

Combat	Combat Support	Combat Service Support
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Rate the knowledge of soldiers arriving in your unit from advanced individual training (AIT) in the following skill areas. Soldiers graduate AIT with apprentice level knowledge. This survey is a metric to see if soldiers are arriving at units at the apprentice level.

- A. Equipment Operation. Do soldiers have the skills necessary to become proficient on MOS-specific equipment in a reasonable amount of time?
- B. Operator Maintenance. Do soldiers have the skills necessary to be proficient on Preventive Checks and Services of MOS-specific equipment?
- C. Accountability Paperwork. All three MOSs have specific and critical clerical tasks that must be properly performed. Do soldiers understand these procedures?
- D. Environmental considerations are an important and relevant part of daily operations. Are soldiers familiar with the basic principles of environmental protection and corrective actions?
- E. Safety is an integral part of everything soldiers do. Do the soldiers have an understanding of basic MOS-specific safety considerations and procedures?
- F. Product quality surveillance, either fuel or water, ensures the safety of soldiers and equipment. Do the soldiers understand MOS-specific quality surveillance tests and procedures?
- G. Basic soldier skills are the cornerstone of the Logistics Warriors' ability to execute their mission. How do you rate the basic soldier skills of the new soldiers in your unit?
- H. Instilling the seven Army Values is one of the keys to the soldierization process. At what level of indoctrination and adherence to the seven Army Values are soldiers arriving with and exhibiting at your unit?

		Above Average	Prepared	Not Trained	Cannot Evaluate
77F	<input type="radio"/>				
77W	<input type="radio"/>				
77L	<input type="radio"/>				
77F	<input type="radio"/>				
77W	<input type="radio"/>				
77L	<input type="radio"/>				
77F	<input type="radio"/>				
77W	<input type="radio"/>				
77L	<input type="radio"/>				
77F	<input type="radio"/>				
77W	<input type="radio"/>				
77L	<input type="radio"/>				
77F	<input type="radio"/>				
77W	<input type="radio"/>				
77L	<input type="radio"/>				



Fold along dotted lines and mail through your unit mailroom.

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260th Quartermaster Service Battalion soldiers load drums of fuel for transport to the front, Colleville, France, July 1944

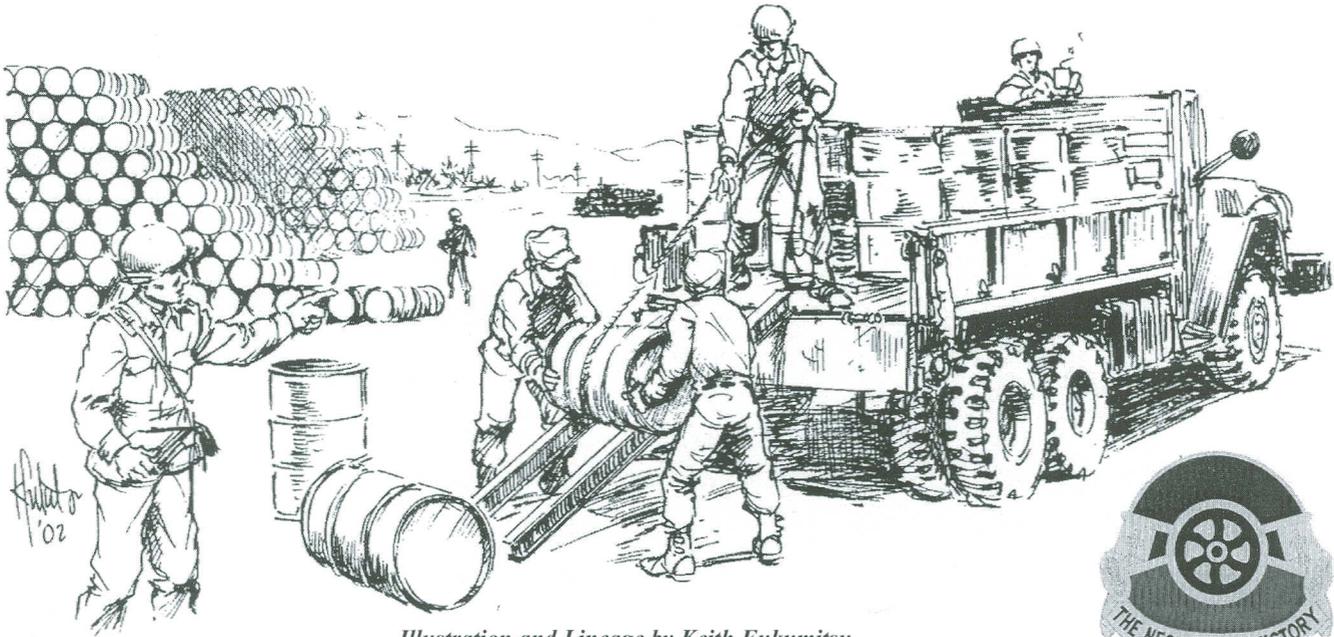


Illustration and Lineage by Keith Fukumitsu



260th Quartermaster Battalion

Constituted 19 December 1942 in the Army of the United States as Headquarters and Headquarters Detachment, 260th Quartermaster Service Battalion

Activated 29 January 1943 at Camp Swift, Texas

Reorganized and redesignated 8 February 1944 as Headquarters and Headquarters Detachment, 260th Quartermaster Battalion; Companies A, B, C, and D as the 4054th, 4055th, 4056th and 4057th Quartermaster Service Companies, respectively – hereafter separate lineages

Inactivated 23 November 1945 at Camp Myles Standish, Massachusetts

Redesignated 13 October 1966 as Headquarters and Headquarters Company, 260th Quartermaster Battalion, and allocated to the Regular Army

Activated 4 January 1967 at Fort Lee, Virginia

Reorganized and redesignated 21 September 1977 as Headquarters and Headquarters Detachment, 260th Quartermaster Battalion

Reorganized and redesignated 16 January 1981 as Headquarters and Headquarters Company, 260th Quartermaster Battalion

Reorganized and redesignated 16 September 1982 as Headquarters and Headquarters Detachment, 260th Quartermaster Battalion

*** NORMANDY * NORTHERN FRANCE * RHINELAND * ARDENNES- ALSACE *
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* CEASE – FIRE ***

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