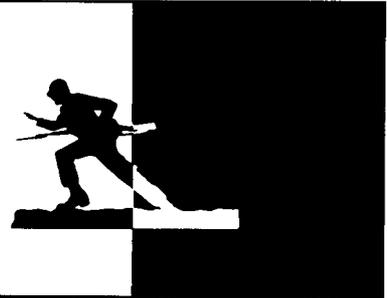


INFANTRY NEWS



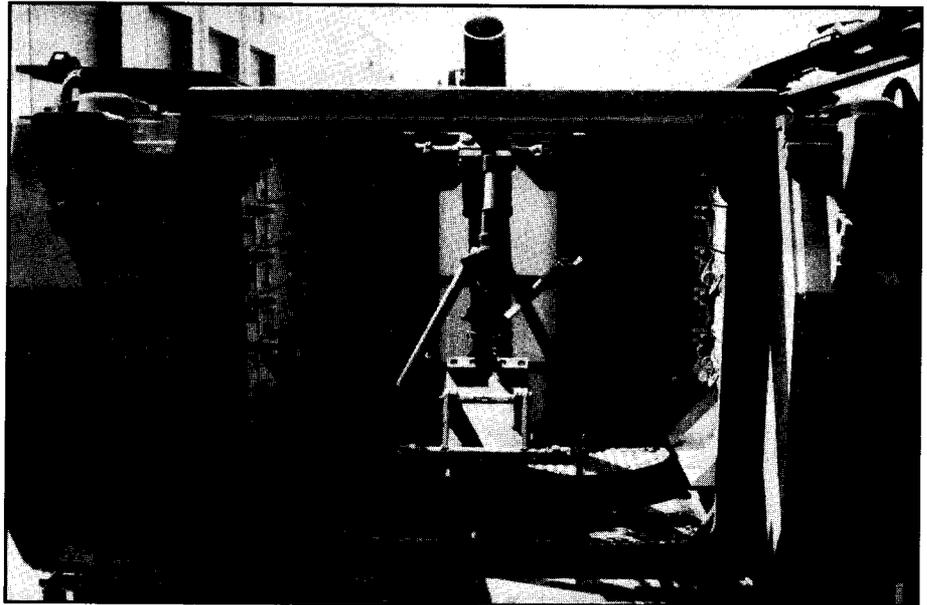
THE NEW M121 MORTAR, a carrier-mounted version of the M120, is scheduled for fielding during the third quarter of Fiscal Year 1994. It will replace the M30 4.2-inch mortar in mechanized and armor battalions and cavalry squadrons. In addition to its primary employment as a carrier mounted system on the M1064 carrier, the M121 can be dismounted into a ground mount firing posture by its four-man crew.

The M120 towed version was fielded in some units in 1991. The aging of the 4.2-inch mortar and its family of munitions, in addition to the imposition of other firing safety constraints, led to the decision to replace the M30 with the M121 on a one-for-one basis.

The enhanced performance characteristics and lethality of the 120mm over the 4.2-inch mortar will give maneuver commanders considerably more indirect fire capabilities. With the introduction of the 120mm smoke round, we have achieved both range equivalence with the high explosive round and a 100-percent increase in smoke obscuration effectiveness over the 4.2-inch smoke round it replaces.

Continuing developments will make this mortar even better: Look for improvements in the 120mm family of mortar ammunition, upgrades of the M1064 carrier, and a new family of fuses. Advanced ammunition types including infrared illumination, rocket-assisted, and smart round technologies are to be investigated for FY 2000 and beyond.

For training, an 81mm mortar training insert, M303, will be issued, one for each two guns. The M300 series of 81mm service ammunition, plus the M880 short-range training round can be fired from the M303 insert. For FY 2000 and beyond, the development of a full-caliber 120mm, full-range practice



COMPARATIVE MORTAR CHARACTERISTICS

WEAPON SYSTEM	120MM BATTALION MORTAR SYSTEM	
	M120 and M121	M30 4.2-INCH MORTAR
Assembled Weight	716.1 lbs—M120 on Trailer 316.8 lbs—M120/M121 399.3 lbs—M1100 Trailer	672.5 lbs
Elevation	800 to 1511 mils	800, 900, or 1065 mils
Rate of Fire		
Maximum	16 rds/min—1st minute	18 rds/min—1st minute
Sustained	4 rds/min	3 rds/min
Cannon	Smooth bore	Rifled tube
Ammunition	Fin stabilized	Spin stabilized
Combat Load (Rds)	36 (M120), 69 (M121)	88
High Explosive		
Maximum Range	7,200 meters w/NDI*	6,840 meters (M329A2)
Minimum Range	200 meters w/NDI*	770 meters
Bursting Radius	60 meters	40 meters
Width of Final Protective Fire	480 meters (6 tubes)	320 meters (6 tubes)
Smoke (WP)		
Maximum Range	7,200 meters	5,650 meters (M328A1)
Minimum Range	200 meters	920 meters
Illumination		
Maximum Range	7,100 meters	5,490 meters (M335A2)
Minimum Range	200 meters	400 meters
Burn Time	60 seconds	90 seconds
Candlepower	1,000,000 lumens	850,000 lumens
Area Illuminated	1,500 meters	800 meters

*Non-developmental item (Israel)

round will be pursued.

Current fielding plans call for all Force Package-1 units to be re-equipped with the M121 mortar during the fourth quarter of FY 1994. All remaining Active Army and Reserve Component units are programmed to complete fielding no later than the third quarter of FY 1997.

In support of the fielding plan, training on the 120mm should begin during the third quarter of FY 1994 for one-station unit training (OSUT) soldiers in MOS 11C and for officer and noncommissioned officer courses.

(This item was prepared by Walter P. McCann, Directorate of Combat Developments, U.S. Army Infantry School.)

THE FOLLOWING PUBLICATIONS will be distributed to the field in March or April 1994:

Field Manual 23-10, *Sniper Training and Employment*, provides information needed to train and equip snipers and to aid them in their missions and operations. It is organized as a reference for snipers and leads the trainer through the material needed to conduct sniper training.

Field Manual 23-14, *M249 Light Machine Gun in the Automatic Rifle Role*, provides technical information, training techniques, and guidance on the M249, formerly known as the squad automatic weapon (SAW), in the automatic rifle role. Unit leaders and designated automatic riflemen will find this information invaluable in their efforts to integrate this weapon into their combat operations.

Field Manual 23-31, *40mm Grenade Launcher, M203*, provides technical information, training techniques, and combat techniques on the M203 grenade launcher. This manual discusses gunnery training and train-the-trainer techniques and includes an appendix on the M79 40mm grenade launcher.

In a correction to the publications update that appeared in INFANTRY's November-December 1993 issue, page 4, **STP 7-11C14-SM-TG, *Soldier's***

Manual and Training Guide, MOS 11C, Indirect Fire Infantryman, is scheduled for publication in June or July 1994.

THE LIGHTWEIGHT LEADER computer (LLC), now being developed under the Soldier Enhancement Program, will integrate leaders from squad to company level into the digital battlefield of the future.

The LLC will improve the situational awareness of these small-unit leaders and enable them to plan and disseminate

operational information faster and more accurately. They will be able to react to changes in plans and the enemy and friendly situation, and to call fire on enemy locations more quickly.

The characteristics required of the LLC include the following:

- Size of less than 9x6x2 1/2 inches to fit in the side pocket of BDU trousers.
- Weight of less than four pounds (less than two pounds desired).
- Powered by 12 VDC and 24-32 VDC or internal batteries for at least 16 hours (110/220 VAC, 60/50 Hertz capability desired).

BRADLEY CORNER

THE BRADLEY INSTRUCTOR Company, 1st Battalion, 29th Infantry, at Fort Benning, is the institutional training unit for all Bradley fighting vehicle technical tasks. The company trains the Basic Bradley Transition Course, the Master Gunner Course, sergeants through lieutenant colonels in the Bradley Leader Course, and the Infantry Pre-Command Course trains battalion and brigade command and command sergeant major designees.

During the past year, the company has trained more than 4,500 students. All of them met the institutional training standards and are now stationed in units throughout the world. The instructor company would like to know whether the soldiers going to your units are sufficiently trained in the right areas. Any input will increase the quality of the courses and also provide you with soldiers who are better able to meet mission requirements.

Soldiers coming to your unit from the Basic Bradley Course are of particular concern. Are they capable of performing the tasks you ask of them? If not, what tasks do you feel should be deleted, added, or given more attention? Examples of this are driving and swimming the Bradleys. Considering your unit's required driver training programs, is it an effective use of institutional training time and resources to familiarize each of these students with

driving? Is swimming Bradleys for each student during the course worth the time and resources involved, or would a demonstration of the Bradley's swim operations and drive capabilities be a better use of time?

Please look at newly trained master gunners in the same manner. Are they capable of performing the tasks asked of them? Are they proficient in these tasks? Again, what areas do you feel should be added, deleted, or given added emphasis?

Most of the students graduating from the Bradley Leader Course are either newly commissioned second lieutenants or captains who have completed light infantry assignments. During the first four weeks, the course trains these students to perform as Bradley vehicle commanders and, in the last two weeks, concentrates on tactics. The same questions apply to these officers.

As the proponent for all institutional Bradley training, the Bradley Instructor Company would appreciate feedback from any level on the quality of the soldiers being trained.

Please send replies to Commander, Bradley Instructor Company, 1st Battalion, 29th Infantry, ATTN: ATSH-INA-BI, Fort Benning, GA 31905; telephone DSN 784-6136/6433 or commercial (706) 544-6136/6433.

• Operational functions accomplished by use of both voice and digital data information (LLC will be compatible with both the AN/PRC-126 and SINC-GARS radio systems). The data may be in formatted messages, free-text messages, or graphics.

• The initial LLC will include preparation, transmission, and reception capabilities for several reports—as a minimum: call for fire, situation, contact, spot, and position update reports.

Some of the more desirable features of the LLC will be its ability to interface with the Global Positioning System (GPS), the laser range finder, and the new digital compass, and also to transmit and receive military overlays.

The LLC is projected for initial fielding in Fiscal Year 1997.

ADDITIONAL PROTECTIVE BODY ARMOR for soldiers has been developed in response to events in Mogadishu, Somalia, in October 1993. Two-thirds of the injuries suffered by U.S. troops there were from shrapnel or bullet wounds in the lower abdomen, arms, and legs—areas not protected by the PASGT (personal armor system, ground troop) vests the soldiers were wearing. Officials in Somalia made an urgent request for additional ballistic protection for the extremities that would not add more than 17 pounds to the weight the soldier carried.

A team from the U.S. Army Natick Research, Development, and Engineering Center; the Training and Doctrine Command's Project Manager-Soldier; the Army Research Laboratory; and industry responded. In 11 days after the original request, the team developed and shipped two such items to Somalia.

Leg Protection. The team addressed leg protection by modifying the trousers from the Body Armor System Individual Countermine (BASIC) armor, which had been developed for combat engineers. The modified trousers offer ballistic protection equal to that of the PASGT vest. The modified trousers are slightly shorter and lighter to allow

ground troops the mobility they need to react quickly. An arm protection design was provided by a manufacturer from a similar on-the-shelf product.

Variable Body Armor. In response to another request for more armor and more protective equipment from combat engineers in Somalia, Natick provided 60 additional BASIC sets and augmented that protection with 60 sets of variable body armor (VBA). The VBA boron carbide ceramic plates, worn over the PASGT vest, will stop high-speed projectiles, including fragments and small rounds such as that of the AK-47.

Head Protection. Combat vehicle crewmen (CVC) assigned to Somalia needed better ballistic protection than the older model fiberglass helmets they



The modified BASIC trousers offer protection equal to that of the PASGT vest.

were wearing. As a quick response to this need, add-on ballistic upgrade kits, along with Kevlar CVC helmets, were shipped to Somalia to replace the older helmets. (This item had been requested

earlier for CVC crews in Operation DESERT STORM, but was not used because of the quick resolution of that conflict.) Combined, the upgrade kit and the Kevlar helmet offer the same level of ballistic protection as an infantryman's PASGT helmet. Like the body armor, the upgrade kit and Kevlar helmet are meant for combat situations only, not for everyday use.

Meanwhile, however, a new improved CVC helmet shell that incorporates the protection of both the Kevlar helmet and the ballistic upgrade kit into one less bulky item was developed and recently shipped to Somalia. This helmet shell is meant to be worn on a regular basis.

SEVERAL AN/PRC-139(C) tactical radios have been modified for use in tests to provide direct voice and data communications between computers and sensors for the Land Warrior/Next Generation Soldier test bed. The modification has added a digital data transmission capability to the radio system for direct high-speed RS-232 data transfer between computers without modems.

The test bed is exploring concepts that will eventually define the equipment U.S. soldiers will carry into battle in the early 21st century. Operational tests of the Land Warrior test beds will be performed by the National Training Center. The tests will demonstrate the transfer of both voice and digital information between soldiers in a combat environment. The digital information consists of imagery and data that include location, situational awareness, and command and control.

The basic AN/PRC-139(C) tactical radio system is now in full production and in use by all of the U.S. armed services. The system provides tactical multiband, encrypted communications in a hand-held package. It is part of an overall tactical communications system that includes the AN/GRC-238 base station, the AN/TRC-199 tactical repeater, and the OF-228/U vehicle adapter.

MICROCLIMATE COOLING (MCC) systems have been used for many years to help prevent heat casualties in soldiers wearing protective garments, and the development of such systems continues.

In the early 1980s, an ambient air cooling system (called protective outfit, toxicological, microclimate controlled) demonstrated the feasibility and benefit of providing MCC to the individual soldier. This ensemble was a completely self-contained chemical-biological protective suit for explosive ordnance disposal (EOD) personnel working in contaminated environments. A forced flow of filtered ambient air was channeled into the suit for body heat regulation and breathing.

In 1985 a combat vehicle crewman MCC air vest was developed and adopted for Army use. It is currently fielded with the M1A1 tank and is being used with the developmental cooling system of the M9 armored combat earthmover (ACE).

The U.S. Army Natick Research, Development, and Engineering Center—the Army's lead organization for clothing and individual equipment—has continued working with other agencies and industry in the development of microclimate cooling systems.

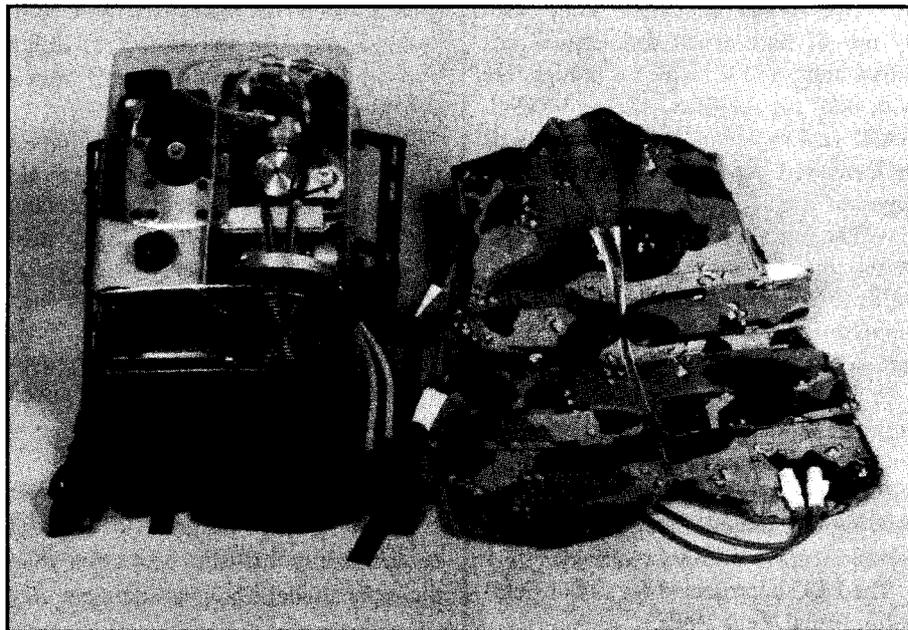
Currently in advanced development are two major MCC programs:

The STEPO (self-contained, toxic environment, protective outfit) cooling system, which began as a quick-fix system for EOD personnel, is man-portable and powered by a brushless DC motor and lithium batteries. In a tethered mode, it can operate on vehicle electric power.

The Individual Microclimate Cooling System (IMCS) is a self-contained, portable, liquid cooling system, whose vapor compression components were developed and improved by Natick personnel working with industry.

These two programs use many of the same components—cooling garment, compressor, condenser, evaporator, thermal expansion valve, water pump, and fans/blades.

Looking toward next-generation systems, an ambient air MCC system is one



Individual microclimate conditioning system (IMCS) back pack cooler and vest.

component of the Soldier Integrated Protective Ensemble (SIPE), which was completed successfully in Fiscal Year 1993. SIPE, a modular, head-to-toe individual fighting system for the dismounted soldier was designed to improve combat effectiveness while

providing balanced protection against multiple battlefield hazards.

The major emphasis of Natick's current technology-based efforts is to support the cooling requirements of Land Warrior, the integrated soldier system of the future.

"GATOR" AIR-DELIVERED MINE systems will be produced under a recently awarded contract. The contract calls for the production of approximately 1,400 systems to be delivered in early 1996.

The Gator system consists of 94 mines in a tactical munitions dispenser. (See "The CBU-89 'Gator' Minefield," by Captain Daniel L. Thomas, *INFANTRY*, January-February 1992, pages 18-19.)

SUPPLIES OF NERVE-GAS ANTI-DOTE auto-injector systems to meet possible future needs will be maintained under a recent contract. The contract is the first in a series of programs designed to make sure adequate supplies of critical items are kept available.

The agreement calls for the retention of key personnel and facilities to ensure expertise in the manufacture of nerve

gas antidotes; the storage of expired auto-injectors that have been returned from the field; the management of a shelf-life extension program; and new orders for auto-injectors. A surge capability provision ensures that defense mobilization requirements will be met in the event of rapid deployment.

These auto-injectors are pen-like medical devices that allow individuals to self-inject precise drug dosages quickly.

