INFANTRY NEWS

COMBAT IDENTIFICATION for dismounted soldiers is part of the overall U.S. Army Combat Identification Program, aimed at preventing fratricide. The objective is to enable a soldier to identify friendly forces on the battlefield and also to be recognized by the systems supporting those friendly forces.

Millimeter wave query-answer technology will be the basis of a near-term combat identification system. Although this system will initially be developed first for selected helicopters and ground vehicles, it is also being investigated for use by dismounted soldiers.

Many factors must be examined in regard to the soldier as a weapon system. These include equipment weight, bulk, human factors, manpower and personnel integration, and human safety. Another important consideration is the way a dismounted soldier operates in his battlespace. The fact that he often fights at short range, in built-up areas, in heavy foliage, or other confined spaces may require different approaches to combat identification.

In addition to these soldier considerations, the program will also address the technology's compatibility with other combat identification systems, the weight and logistic burden for the soldier, and integration with planned future systems, such as Land Warrior and 21st Century Land Warrior. *(See "Enhanced Land Warrior Program," by Captain Mark A. Conley, INFANTRY, March-April 1994, pages 20-22.)* Millimeter wave technology appears promising for use on soldiers if the components can be made small enough.

The combat identification effort for the dismounted soldier will begin with a comprehensive analysis of fratricide incidents, their causes and potential solutions, and recommended technical approaches. The analysis of this data will allow for the development of solutions in terms of doctrine, training, leader development, organizational structures, and materiel. It will help materiel developers, in particular, identify existing or emerging technology that can be applied to the problem. In addition, the program will investigate and develop combat identification technologies that can improve the dismounted soldier's situational awareness and reduce potential fratricide through target identification.

The problem of fratricide will be difficult to overcome because of the technical challenge of fielding a device that can distinguish friend from foe without also disclosing life-threatening information to the enemy in the chaos of battle.

THE ARMY ALL-WEATHER coat (black, double-breasted) should be professionally treated for water repellency after each cleaning.

The U.S. Army Natick Research, Development, and Engineering Center made this recommendation after receiving reports of incidents in which the coat lost its water repellency after dry cleaning.

Anyone with questions may call the Natick Hotline, DSN 256-5341 or commercial (508) 651-5341.

AN/PRC-140 (Saturn) radios have been delivered to the U.S. Army Joint Surveillance Target Attack Radar System (JSTARS) Light Ground Station Module program. A UHF satellite applique used in conjunction with the radio allows for continuous data distribution while the ground station is on the move.

This radio also provides anti-jam, fast frequency-hopping voice and data functions for maximum tactical communications advantage. The AN/PRC-140 is scheduled for integration into JSTARS

AN/PSN-10 GPS (global positioning system) units that can operate and display data in either Arabic or English have been produced and delivered to the Saudi Arabian National Guard. With one of these units, a user can switch between Arabic and English operation using a simple toggle switch.

The AN/PSN-10 GPS, which was used successfully during Operation DESERT STORM, is in its third generation of upgrades and now has six channels for continuous tracking.

The display is also available in French, German, Italian, and Spanish and will soon be available in Korean and Chinese as well.

Block I ground station modules.

The AN/PRC-140 provides single channel AM and FM VHF communication as well as single-channel AM, FM, and anti-jam electronic countermeasures voice and data in the UHF band. The AN/PRC-140 also features a data interface for digital message transfer and is compatible with most encryption devices.

CHAMELEON-LIKE CAMOUFLAGE for uniforms is still many years away, but the Army's Natick Research, Development, and Engineering Center is working on various technologies that will eventually make this kind of camouflage possible:

Thermochromic and Photochromic Colorants. Commercially available thermochromic (heat sensitive) and photochromic (light sensitive) colorants are being considered as an environmentally dependent, passive camouflage solution. Both offer limited background adaptive camouflage properties, as they rely on environmental conditions to make the changes. For example, in thermochromics the change is controlled by an integrated heating or cooling device. For both of these materials, the uniform could adapt from day to night or in response to subtle terrain changes. Although these technologies have been widely used commercially in novelty items, applying them to military performance criteria, such as color stability and durability, requires continued research.

Electrochromic Colorants. Another possible approach is electrochromic (electrically stimulated) colorants. Using this system, the camouflage uniform would change color according to the information it obtained from the surrounding landscape. Ideally, miniaturized spectrophotometers would act as "cameras" to gather information from the surrounding terrain. That data would then be processed through a computer "matrix" effect that sends out the appropriate electrical signals and translates the information into a specific

BRADLEY CORNER

Shortages in ammunition, training time, and range availability for live fires demand that units use training devices to sustain gunnery proficiency. Two Bradley training devices will become available in the near future:

Thru-Sight Video (TSV). The TSV is a vehicle-appended system that provides real-time video and audio recordings of the gunner's sight picture during gunnery training and tactical engagement exercises. It consists of an audio-video recording sub-system and an after-action review (AAR) sub-system.

The audio-video recording sub-system is a compact, clamp-on, beam-splitter that creates a high-resolution image on a miniaturized solid state television camera. The image is recorded by an environmentally enclosed video cassette recorder (VCR) bolted to the vehicle's bustle rack. A monitor in the vehicle turret adjusts the camera to the vehicle's sight picture and also allows for on-board playback of the crew engagements.

The AAR sub-system, which is located at the designated AAR area, consists of a high-resolution monitor, a VCR, and a video digitizer. It allows playback of the engagements with freeze-frame and zoom capabilities.

The availability of real-time continuous recording allows crew evaluators to critique a crew's fire commands, BOT/TOT (burst on target/time on target), point of aim, lead, time to fire/kill, and driving techniques.

Precision Gunnery System (PGS). The PGS simulator is a "strap-on" precision device that develops and sustains gunnery proficiency while allowing crewmen to train on their own vehicle. Crewmen can train BOT/TOT techniques in a range environment without depending on live-fire gunnery.

The system consists of a tracer burst obscuration system (TBOS) clamped onto the gunner's and the commander's sights. The TBOS provides realistic obscuration, tracer imagery, target hit, target miss, and ground impact, along with the sounds of gunnery sequences, firing, and target impact.

The PGS also has a training data retrieval system. It allows evaluators to remove a "Smart Card" from the control panel on the vehicle and insert it into a computer in the AAR briefing area. The computer displays target and engagement data received from the card, allowing evaluators to critique crew engagements.

The PGS is fully compatible with the MILES (multiple integrated laser engagement system) battlefield. It can send and receive hit, kill, and miss signals from other vehicles equipped with PGS or MILES. During force-on-force training, PGS can distinguish between mobility, firepower, and catastrophic kills. It also interacts with the laser target interface device (LTID). The system comes with an adapter that will interface LTIDs with target mechanisms, allowing for three-round or five-round target hit sensing.

Computer simulations, such as UCOFT, SIMNET, CCTT, continue to be valuable, given the current budget and ammunition restrictions, but Bradley units must not become too dependent on them. The TSV and the PGS training devices allow Bradley crews to continue training on the actual equipment they will use if they go to war. These devices cannot replace live-fire gunnery, but they do provide commanders with a means of assessing training proficiency.

The Thru-Sight Video will be fielded in the 4th quarter of FY 1994, with each battalion receiving one set consisting of four systems. The Precision Gunnery System will be fielded during FY 1995, with each battalion receiving 14 systems.

color system. A spectrographic image of the soldier's background would then instantly appear on the uniform.

Dynamic Visual Camouflage. Dynamic visual camouflage (DVC), a biotechnology approach based on active proteins, may be the ultimate solution. It would allow the soldier's uniform to change colors constantly to blend with his surroundings.

DVC is the transfer of colored light through optical light receptors connected to conductive polymers for electronic signaling. The ultimate goal is to develop a system that can be applied to the soldier's standard camouflage uniform allowing him to move from one landscape to another with the DVC quickly matching all sides to the new environment. For example, the uniform of a soldier in the woods would match the greens and browns of his surroundings; if he then moved to a wheatfield, the same camouflage uniform would translate and transmit the oranges, tans, and browns of the new environment in seconds.

Camouflage techniques that would protect the soldier from night vision and thermal imaging technology are also now being developed.

AERIAL RESUPPLY using parafoils and hang gliders is being examined under a project managed by the Early Entry Lethality and Survivability (EELS) Battle Laboratory. Parafoils or gliders, equipped with guidance systems connected to global positioning system (GPS) satellites, will increase both the safety and the accuracy of airdrops.

An aircraft can release cargo on either parafoils or gliders at 25,000 feet altitude and 10 to 40 miles away from the drop zone. As the cargo descends, an onboard guidance system picks up the GPS signal using ground coordinates loaded into the system while it was in the aircraft. The system activates servomechanisms to guide the parafoil or glider in relation to each navigational reference point on the way to the drop zone.

A large-capacity parafoil is equipped with a braking parachute and reefing system. The chute slows the drop as the foil is gradually extended, or reefed, to its full size.

Drops can be made at night. Since parafoils and gliders have low radar signatures, they can be dropped undetected. Loads that are detectable by radar can be covered with the newly created stealth blankets.

Cargo aircraft do not have to fly in large formations as sizable airdrops now require. Since planes can be a long way from the drop zone, the locations of covert teams are not compromised.

In a demonstration at Fort Bragg, a parafoil with a 1,200-pound load was released from a C-130 aircraft at 8,000 feet; at the same time, paratroops exited another aircraft. With a ground level wind speed of 10 knots gusting to 50 knots at ground level, the jumpers were blown completely off course, but the cargo landed within 100 meters of its target.

EELS is one of six battle labs in the U.S. Army Training and Doctrine Command working to prepare the Army for future battlefields.

THE ARMY'S TUITION Assistance Task Force is developing a policy that will provide soldiers a clear statement of what tuition assistance they can expect to receive, regardless of when or where they use it.

Soldiers use college courses to remain competitive in a smaller Army and to prepare for civilian employment after separation. But increased demand, along with a strain on funds for education, has left soldiers unsure of the tuition assistance money that will be available to them from one semester to the next, and from one installation to another.

The task force's recommendations will be developed over the next few months and should be in place by the end of this fiscal year.

THE GPS-112 RADIO enables rescue aircraft to locate downed pilots almost immediately. It consists of the PRC-112 survival radio and added global positioning system (GPS) technology.

Using this radio, a pilot behind enemy lines can automatically send his location to rescue teams using an electronic signal that takes a fraction of a second and is almost impossible to detect or trace. An interrogator unit—consisting of a computer, modem/GPS receiver and transceiver radio unit and housed in a briefcase aboard an airborne rescue craft—receives and verifies the pilot's location.

Even when a pilot is unable to operate the radio, rescue teams can still receive location readings from the equipment, which is to be switched on before takeoff. The air or ground rescue center can also send messages, shown on the radio's liquid crystal display, to help the pilot evade hostile forces or facilitate his rescue.

The GPS-112 radio has proved successful in simulated pilot search and rescue exercises during large-scale operations

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