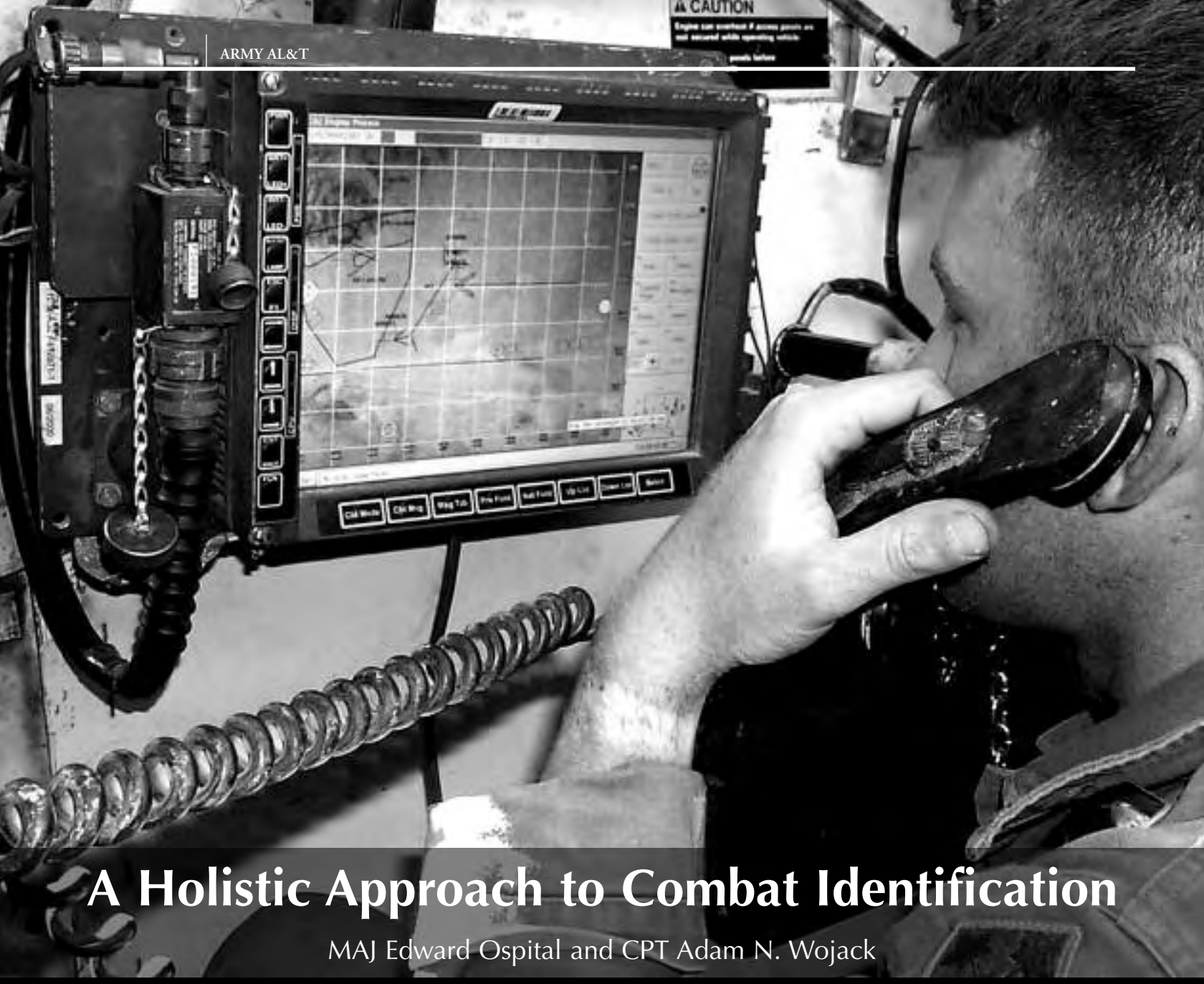

A Holistic Approach to Combat Identification

MAJ Edward Ospital and CPT Adam N. Wojack

Combat identification (CID) is the process of attaining an accurate characterization of detected objects throughout the operational environment sufficient to support engagement decisions. The detected object is correctly identified by proficiently applying a family of situational awareness (SA) and target identification (TI) capabilities. Approved rules of engagement (ROE) and tactics, techniques and procedures (TTPs) are then used to support combatant shoot/don't shoot decisions for detected objects in their operational environment.

A 4th Infantry Division Soldier uses FBCB2/BFT during a predeployment training exercise to maintain friendly force and non-combatant SA. (U.S. Army photo by David Brackman, Program Executive Office, Command, Control and Communications Tactical.)

CID's purpose is to improve unit combat effectiveness and minimize collateral damage while simultaneously preventing fratricide. CID is the process that human shooters and sensors go through to identify battlefield entities prior to making shoot/don't shoot decisions. To perform CID, warfighters use all available means at their disposal to sort battlefield entities prior to applying combat power. The process enables the warfighter to maximize the effects of lethal fires against the enemy, while at the same time reducing or eliminating fires effects on friendly or neutral personnel, equipment or facilities. CID is a complex series of networked systems, procedures and doctrine — when it is effective, it is simple and transparent to warfighters, but when it's rendered ineffective, the results can be disastrous.

To better explain CID, you must first understand its basic formula: SA + TI = CID and increased Combat Effectiveness (CE). CE, as related to CID, is the ability of a friendly unit to rapidly and accurately sort and characterize detected objects within the operational environment and then apply the necessary combat power and fires effects against an enemy force or target with the least risk of death, injury or damage to friendly and neutral forces, entities, facilities and equipment.

Battle Command and SA

SA consists of reported friendly (blue), enemy (red), neutral and unknown entities normally displayed on a computer screen or manually posted to a map. For CID purposes, we will only describe SA as it relates to automated and reported information using available battle command/SA systems. SA has the following attributes:

- Accuracy/timeliness of reporting.
- Density of blue position, location and information generating systems.
- Interoperability of friendly force battle command/SA systems in the affected operational environment.

SA is sent to and displayed in two places — the common operational picture located in command posts for battle command purposes, and the individual vehicle, aircraft and Soldier platform battle command/SA display devices for both command and control and CID. The latter directly supports shoot/don't shoot decision making by shooters in close proximity to enemy forces on the battlefield. When coalition and U.S. forces in the operational environment lose SA of where their subordinate elements are in relation to each other, the situation can deteriorate. Two friendly forces can converge, especially if they do not share the same communications network or graphic control measures.

> TI is the process of determining the affiliation (blue, red or neutral) of detected objects at the point of engagement in one's immediate operational environment.

TI Capabilities

TI is the process of determining the affiliation (blue, red or neutral) of detected objects at the point of engagement in one's immediate operational environment. This is normally conducted within line-of-sight visual range and its purpose is to apply combat power or fires effects against enemy forces or targets, while preventing fratricide and minimizing collateral damage. There are two categories of TI — cooperative target identification (CTI) and non-cooperative target identification (NCTI).

NCTI systems exploit the physical characteristics of entities in an operational environment and use optics that include FLIR, TWS and ENVG. Here, an Aviation Warfare Systems Operator scans for surface contacts using a FLIR system aboard the USS Princeton, a Guided Missile Cruiser stationed in the Persian Gulf and providing mission support to ground troops during *Operation Iraqi Freedom*. (U.S. Navy photo by PH2 Michael J. Pusnik Jr., Fleet Combat Camera, Pacific.)

CTI includes any method or materiel solution that allows a human shooter or sensor to "interrogate or question" a potential target, and allows the same potential target to "respond or answer" the interrogator in a timely manner. Air-to-air and ground-to-air (G-A) systems use identification, friend or foe (IFF) as a means to sort entities in their airspace. Ground-to-ground (G-G) systems, in the near future, may use Battlefield Target Identification Device (BTID) and Radio-Based Combat Identification (RBCI) CTI systems. IFF is a misnomer because none of the CTI technologies identify foe, they only identify friend or unknown entities.

NCTI involves methods or systems that exploit the physical characteristics of entities in the operational environment to help identify and determine affiliation. NCTI does not require a cooperative response or answer from the target. NCTI systems include optics, such as forward-looking infrared (FLIR), Thermal Weapon Sights (TWS) Enhanced Night Vision Goggles (ENVG), Synthetic Aperture

Enhanced FBCB2, 2nd and 3rd generation FLIR and JCIMS capabilities are enabling quicker response time and accuracy for sensor-to-shooter weapon system engagements. Here, SFC Kenneth R. Dawson with Charlie Co., 2nd Battalion, 3rd Infantry Regiment, checks friendly force positioning on his FBCB2 during a live-fire exercise. (U.S. Army photo by CPT Tim Beninato, 28th Public Affairs Detachment Commander.)

Radar/Assisted Target Recognition; and vehicle and personnel markings, such as Joint Combat Identification Marking Systems (JCIMS), which include CID Panels, Thermal ID Panels (TIPs), Phoenix Beacons (IR lights) and Dismounted-CID Marking Systems. JCIMS are used in conjunction with FLIR, TWS and ENVG and assist in friendly identification at the point of engagement.

Better CID Capabilities

The CTI technology's ability to service multiple domains has gained importance since *Operation Desert Storm*. Fratricide studies conducted in the Army Marine Corps Board (AMCB) G-G Study have illustrated a 25 percent increase in "platform-to-Soldier" incidents and a 10 percent increase in "Soldier-to-Soldier" incidents during recent major combat operations in support of *Operation Iraqi Freedom* (*OIF*). The two CTI technologies recently approved for acquisition strategy do not address or fill this CID gap. BTID services only the "platform-to-platform" domain (M1, M2/M3, Stryker and Long-Range Advance Scout Surveillance System), whereas RBCI addresses the G-G and air-to-ground (A-G) domains from an indirect and close air support perspective.

None of these technologies directly address the platform-to-Soldier and Soldier-to-Soldier domains. Regardless of what CTI technology is used, the combatant must still make the final determination whether to engage the unknown entity based on blue, red or neutral status. Once determined, the combatant must incorporate the ROE criteria and restrictions into his "shoot/don't shoot" decision. Positive visual identification of the entity to determine if it is a legitimate military target must also be ascertained. No technology exists today that identifies friend or foe. CTI technologies only identify friend or unknown. A CTI technology should not be used as the sole criteria for engagement because of its mechanical/electronic nature or because enemy action, such as electronic countermeasures, might render the CTI technology inoperative or ineffective. In addition, partial CTI technology fielding, either through design or system failure, has been proven to increase fratricide — not decrease it — as crews rely on the technology as the sole criteria to engage or not engage an unknown entity.

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A Holistic CID Solution

Progress has been made since the onset of *Operation Enduring Freedom* and *OIF*. Per the AMCB G-G CID Study recommendation, the Training, Doctrine and Combat Development Division at Fort Knox, KY, assisted by the U.S. Army Training and Doctrine Command (TRADOC) Capability Manager Platform Battle Command (TCM PBC)/CID and the TRADOC Centers, selected a vendor in March 2006 to address issues associated with CID's incorporation into Army doctrine. Comprehensive CID doctrine will be developed for inclusion into *Field Manual 3.90, Tactics*, that explains how to increase combat effectiveness in relation to CID requirements, including SA, TI, TTPs and ROE. The CID input will address the G-G (platform-to-platform, platform-to-Soldier, Soldier-to-Soldier, Soldier-to-platform), A-G (rotary-wing aircraft platform-to-Soldier and unmanned aircraft systems platform-to-Soldier) and G-A mission areas.

Gunnery doctrine will be updated to incorporate CID requirements, including insertion of friendly, allied/coalition and neutral targets, and refinement of direct-fire target engagement processes. This doctrine shall be for the entire Heavy Brigade Combat Team (BCT), including armor, infantry, mortar gunnery, engineers and combined air support. It will be used as a template for the Infantry BCT and Stryker BCT manuals. Expected completion of doctrinal effort is September 2007. This effort will strengthen existing TTPs and ROE and the Engage/Do Not Engage "link" of the SA and TI chain.

Improvements in the current family of systems — Force XXI Battle Command Brigade and Below (FBCB2), Joint Battle Command-Platform,

U.S. Marine Corps (USMC) CPL Kevin Hoxworth, 7th Marines, operates a Precision Lightweight Global Positioning System Receiver for his BFT system during combat support operations from his base at Camp Ripper, Kuwait. (USMC photo by GySGT Eric S. Hansen, 1st Marine Division Combat Camera.)

optics, 2nd and 3rd generation FLIR and JCIMS — enable the "sensor-to-shooter kill-chain" to be shortened, and can be enhanced through the acquisition of a CTI that services all of the G-G domains. Future CTI should also address the A-G mission area, such as RBCI. Future CTI systems that enter into an acquisition strategy should service as many domains as possible to fully address the Current Forces' CID gaps.

Fratricide incidents are still occurring during stability operations in Iraq and are being committed by platforms other than armored. A system like BTID would have no positive impact on these incidents. Acquiring a CTI technology that services all domains will, ultimately, strengthen the family of systems link in the CID equation. Until that occurs and the doctrinal and facility gap mitigation measures are in place, fratricides in full-spectrum operations will likely continue to occur, albeit at reduced rates.

The fog of war and human factors make total elimination of fratricide impossible. Marksmanship and the ability to conduct crew battle drills under stressful, near-combat conditions dictate that training will remain the ultimate force multiplier in maintaining lethal crews and Soldiers and protecting the force from fratricide. Contemporary urban operating environments drive the need for target discrimination skill sets for all Soldiers. This standard of training, grounded in solid doctrinal principles, will hone the warfighter's judgment at the point of engagement. Future Combat Systems and doctrinal improvements, coupled with improved training devices, training aid device simulators and simulations, and realistic training/maneuver ranges will enable Soldiers to make better engage/do not engage decisions. Combatants must be able to ask themselves the following questions before they pull the trigger:

- Am I or my comrades in mortal danger?
- What is the worst thing that can happen if I pull the trigger?
- Am I positive that my target is hostile?

There is no "silver-bullet" solution to end all fratricide incidents. The emphasis should be placed upon improving density of SA and TI systems in the Army inventory, preparing the combatant for full-spectrum operations and acquiring a CTI technology to service all domains in the G-G mission area. This can only be accomplished by looking at CID through a holistic lens and by strengthening every link of the CID chain. It is imperative that we do everything possible to prevent potential fratricide incidents from occurring in the future.

SSG Shawn Smith, Bravo Co., 2nd Battalion, 35th Infantry Regiment, 25th Infantry Division, monitors his BFT during a patrol in Kirkuk, Iraq, Nov. 4, 2006. (U.S. Air Force photo by SSGT Samuel Bendet, 30th SCS.)

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