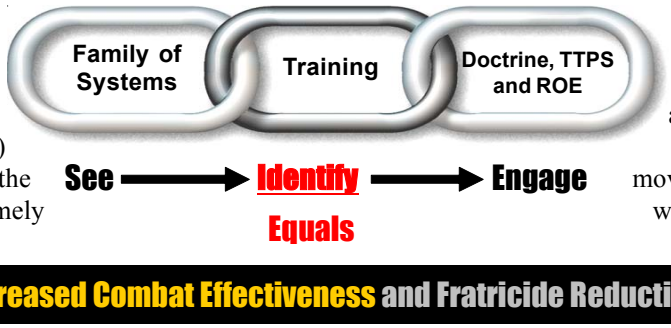
A Holistic Approach to Combat Identification

MAJOR EDWARD J. OSPITAL AND CAPTAIN ADAM N. WOJACK



Combat Identification (CID) is the process of attaining an accurate characterization of detected objects (friendly, enemy or neutral) throughout the Joint battlespace to the extent that with high confidence, timely application of military options and weapons resources can occur. Combat Identification is achieved through proficient application of a family of situational awareness and target identification capabilities, and adherence to doctrine, unit tactics, techniques and procedures (TTPs), and approved rules of engagement (ROE) that directly support a combatant's shoot/don't shoot decision for detected objects in their battlespace.

The purpose of CID is to improve unit combat effectiveness while at the same time preventing fratricide and minimizing collateral damage. CID is the process that human shooters or sensors go through to identify entities on the battlefield prior to making shoot/don't shoot decisions. To perform CID, the warfighter uses all available means at his disposal to sort the entities on the battlefield prior to applying combat power or fires effects. The whole point is to enable the warfighter to maximize the effects of lethal fires against the enemy, while at the same time reducing or eliminating the effects of fires on friendly or neutral personnel, equipment or facilities.

While CID is a complex series of linked systems, procedures and doctrine — when it is effective, it is simple and transparent. When it is ineffective, its results can be tragic and disastrous. A recent example of the "links" in the CID chain (Family of Systems ["See" the entity] + Training ["Identify" the entity] + Doctrine/TTP/ROE ["Engage" the entity]) being broken in the global war on terrorism is a highly publicized incident involving the 2nd Battalion, 75th Ranger Regiment.

Fratricide in Afghanistan

While on patrol in a Taliban-infested sector of Afghanistan's Paktia Province in April 2004, an element of the 2nd Battalion, 75th Ranger Regiment became bogged down because of a broken HMMWV. A segment of the platoon, Serial 1, passed through a canyon and was near its north rim. The other segment, Serial 2, changed route plans because of poor road conditions that hindered the recovery of a broken HMMWV being towed by a locally acquired vehicle. Serial 2 entered the same canyon from the south. Serial 2 did not have the ability to communicate their situation and change of route to Serial 1 due to the rugged terrain. Upon entering the canyon, Serial 2 came under mortar and small arms fire from Afghan Taliban fighters. Rangers in Serial 1 heard the initial explosion that preceded the attack. Three Rangers were ordered to head toward the attackers. The canyon's walls prevented them from radioing their positions to their colleagues, just as Serial 2 had not radioed its change in plans. One group moved toward the north-south ridge to face the canyon.

The light was dimming. The presumed Taliban guerrillas were about half a mile away.

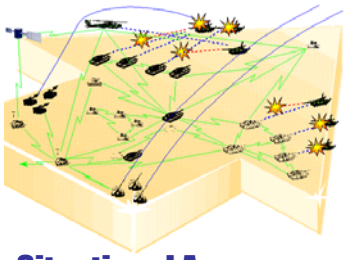
Two Rangers and an Afghan ally moved down the slope into a position where they could engage the enemy.

As Serial 2 pulled alongside the ridge, the gunners fired into the area where members of Serial 1 had taken position. The first to die was the Afghan, whom the Rangers in Serial 2 mistook for a Taliban fighter. Under fire, Rangers on the ridge shouted and waved their arms. They then used a smoke grenade to mark their position and firing ceased for a few moments. The Rangers in Serial 1 thought the engagement was over and got up from their position. The HMMWV then moved to a position of advantage and resumed firing killing one of the Rangers in the second engagement.

To use this tragic example to better explain CID, you must first understand its basic formula: Situational Awareness (SA) + Target Identification (TI) = Combat Identification (CID).

Situational Awareness (SA)

SA consists of reported friendly (blue), enemy (red), neutral and unknown entities normally displayed on a computer screen or manually posted on a map. For the purposes of CID, we will only describe SA as it relates to automated and reported information using available command and control (C2)/SA systems. There are three key attributes of SA – accuracy/timeliness of reporting; density of blue position, location, information (PLI) generating systems; and interoperability of friendly force C2/SA systems in the affected battlespace. SA is sent to and displayed in



Situational Awareness

PLUS

Target Identification

Equals

Combat Identification: The process of attaining an accurate characterization of detected objects (friendly, enemy, neutral) in the joint battlespace to the extent that with high confidence, timely application of military options and weapons resources can occur (CID MA ICD). Combat ID is achieved through proficient application of a family of situational awareness and target identification capabilities, and adherence to doctrine, unit TTP, and approved ROE that directly supports a combatant's "shoot/don't shoot" decision for detected objects in his/her battlespace.

And Increased

Combat Effectiveness: (as related to Combat ID) The ability of a friendly unit to rapidly and accurately sort and characterize detected objects within the battlespace in order to allow for the timely application of combat power and fires effects against an enemy force or target (to destroy, neutralize, suppress or disrupt), with the least risk of death, injury or damage to friendly and neutral forces, entities, facilities and equipment (prevention of fratricide and collateral damage) definition by the TRADOC Capability Manager Platform Battle Command/Combat Identification (TCM PBC/CID).

two places — to the common operational picture (COP) located in command posts for C2 purposes; and to individual vehicle/aircraft/Soldier platform C2/SA display devices for both C2 and Combat ID purposes. The latter directly supports shoot/don't shoot decision making by human shooters and sensors in close proximity to enemy forces on the battlefield.

When the Ranger unit lost SA of where its subordinate elements were in relation to each other, the situation deteriorated: two friendly forces converged on one another without communications. Several systems could have prevented this loss of SA in the Ranger element. A FBCB2/Blue Force Tracker (GPS-fed, vehicle-mounted or hand held C2/SA system) capability would have given all elements involved a visual depiction of where mounted and dismounted friendly forces were located — assuming, of course, that all vehicles and dismounted elements involved were so equipped. Knowing where blue entities were in the battlespace in combination with the proper mix of target identification systems would have enabled vehicle commanders to properly guide their element's crew-served weapon gunners onto enemy targets — as well as to prevent them from engaging friendly forces.

Target Identification (TI)

TI is the process of determining the affiliation (blue, red, neutral) of detected objects at the point of engagement in one's immediate battlespace. This is normally conducted within line of sight visual range and is for the purpose of applying combat power or fires effects against enemy entities 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).

CTI includes any method or materiel solution that allows a human shooter/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 systems use of IFF (identification friend or foe) Mode 4, and ground-to-ground systems, in the near future, may use Battlefield Target Identification Device (BTID) and Radio-Based Combat Identification (RBCI) CTI systems. IFF is a misnomer as none of the CTI technologies identify foe, they only identify friend or unknown (IFU) entities.

NCTI involves methods or systems that exploit the physical characteristics of entities in the battlespace to help identify and determine affiliation, and does not require a cooperative response or answer from the target. NCTI systems include optics (forward-looking infrared [FLIR], night vision goggles [NVGs] and binoculars), vehicle and personnel markings (Joint Combat Identification Marking Systems [JCIMS], which include Combat ID Panels [CIPs], Thermal ID Panels [TIPs], Phoenix Beacons [infrared lights lights] and Dismounted Combat Identification Marking System [DCIMS] - a TIP panel that is form fitted to a Kevlar helmet, giving a reverse polarity image through a FLIR device), and Automated Target Recognition (ATR) devices. JCIMS marking systems are used in conjunction with FLIR optics and night vision goggles and assist in friendly identification at the point of engagement.

In this example, Serial 2 (or the platoon for that matter) did not have adequate optics. Thermal sights for HMMWV-mounted crew-served weapons (AN/PAS-13s or Enhanced Night Vision Goggles [ENVG], for example) combined with reverse-polarity markings and/or thermal ballistic helmet covers on all Soldiers would have enabled turret gunners to identify the dismounted Rangers in Serial 1 as friendly entities. Technology combined with a rehearsed TTP to avoid fratricide and adherence to ROE could have prevented this occurrence. Each "link" of the CID chain was broken.

The unit fired on would have benefited from other NCTI devices such as infrared (IR) beacons for limited visibility operations (seen through AN/PVS-7B/D or PVS-14 night vision goggles that Soldiers are currently issued) or a day-visible strobe light.

A CTI technology that services Ground-to-Ground domains ("platform to platform," "platform to soldier," "soldier

to soldier," "soldier to platform") would have been an additional tool at the point of engagement that would have enabled both serials to identify unknowns as friendly. Unfortunately, the direct fire CTI technology (Battlefield Target Identification Device [BTID]) currently being recommended for an acquisition strategy for the U.S. Army and U.S. Marine Corps services only one domain — "platform to platform" — and interrogates only targets from M1, M2/M3, and Stryker vehicles.

In the earlier example, even if the HMMWVs are replaced by armored vehicles equipped with BTID, the fratricide still could have occurred — since BTID does not work within the platform-to-soldier domain. This weakness in the CID "link" does not enable the firer to gain positive identification (PID) of the unknown *dismounted* entity. In the example, Serial 2 in turn broke both the second ("Identify") and third links ("Shoot/Don't Shoot"): ROE was not satisfied by the gunners manning the crew-served weapons on the HMMWVs; and PID was not gained by the firing element. In addition, a TTP (i.e. smoke grenade signal), was not established or trained prior to the engagement (or not comprehended during the engagement) as a signal to cease fire in case of friendly fire situations.

The Serial 2 firing platform could have used additional procedures to prevent the fratricide: transmitting the location of the unknown entity to another element (e.g. higher headquarters) to gain PID; by maneuvering to a position of advantage until PID could be acquired; or by using the proposed DIDEA (Detect, Identify, Decide, Engage, and Assess) Target Engagement Process.

In this highly publicized incident, well-trained Rangers were placed in a situation where they did not have the proper CID family of capabilities and in the heat of battle failed to correctly implement their training and ROE procedures. The end result was a costly decision that led to a fatal fratricide incident.

Better CID Capabilities

The ability of a CTI technology to service multiple domains has gained importance since Operation Desert Storm (ODS). Fratricide studies have illustrated a 25-percent increase in platform-to-soldier incidents and an increase in soldier-to-soldier incidents by 10 percent 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 LRAS3) where as Radio-Based Combat Identification (RBCI) addresses the Ground-to-Ground and Air-to-Ground 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.

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Positive visual identification (PID) of the entity to determine if it is a legitimate military target must also be ascertained. There does not exist a technology that identifies friend or foe (IFF). CTI technologies only identify friend or unknown (IFU). A CTI technology should not be used as the *sole* criteria for engagement due to its mechanical/electronic nature or due to enemy action (electronic countermeasures [ECM]) that might render the CTI technology inoperative. In addition, partial fielding (either through design or system failure) of CTI technology 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.

A Holistic CID Solution

Progress has been made since the incident in Paktia. Per the recommendation of the AMCB G-G CID Study, the Training, Doctrine and Combat Development Division at Fort Knox, Ky., assisted by the TRADOC Capability Manager Platform Battle Command/Combat Identification (TCM PBC/CID) and the TRADOC Centers, selected a vendor in March 2006 to address issues associated with the incorporation of CID into Army doctrine. Comprehensive CID doctrine will be developed for inclusion into FM 3.90, *Tactics* (publication date: 4 July 2001), that explains how to increase combat effectiveness in relation to combat identification requirements, including but not limited to SA, TI, TTP and ROE. The CID input will address the Ground-to-Ground ("platform to platform," "platform to soldier," "soldier to soldier," "soldier to platform"), Air-to-Ground (rotary-wing aircraft-platform to soldier and UAV-platform to soldier), and Ground-to-Air mission areas.

Gunnery doctrine will be updated to incorporate combat identification requirements, to include but not limited to, insertion of friendly, allied/coalition and neutral targets, and refinement of direct fire target engagement processes. Existing gunnery manuals for Armor/Cavalry, Infantry, Artillery, Air Defense, and Aviation will be reviewed to identify deficiencies in addressing CID-related tasks. This doctrine shall be for the entire Heavy Brigade Combat Team (HBCT), including Armor, Infantry, mortar gunnery, Engineers, and Combined Arms Support Command (CASCOM) and should be used as a template for the Infantry Brigade Combat Team (IBCT) and Stryker Brigade Combat Team (SBCT) manuals. The doctrinal effort will take approximately 12 months to complete following initiation in March 2006. This effort will strengthen the Doctrine/TTP/ROE ("Engage or Do Not Engage") "link" of the SA + TI chain.

Improvements in the current family of systems (FBCB2/JBC-P, Optics, 2/3 GENFLIR, JCIMS) enabling the "sensor-to-shooter kill-chain" to better see the targeted entity can be enhanced through

the acquisition of a CTI that services all of the Ground to Ground domains and one that addresses the Air to Ground Mission Area, such as RBCI. Future CTI systems that enter into an acquisition strategy should service as many domains as possible to fully address our 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. Acquisition of a CTI technology that services all domains will strengthen the family of systems ("See the entity") link in the CID equation. Until that occurs and the doctrinal/facility gap mitigation measures are in place (identified and funded by the AMCB G-G study), fratricides in full spectrum operations will likely continue to occur.

The fog of war and the human factor makes total elimination of fratricide difficult. Marksmanship and "muscle memory" (the ability to conduct crew drills/ battle drills under stressful conditions, i.e. fire commands, fire control systems switch manipulation) training remains a "must" in order to maintain lethal crews and soldiers, and is necessary to simultaneously protect the force from fratricide. The contemporary operating environment drives the need for target discrimination skill-set for all soldiers. This standard of training grounded in solid doctrinal principles will hone the warfighter's judgment at the point of engagement. Family of system and doctrinal improvements coupled with improved training devices (Recognition of Combat Vehicles (ROC-V), simulations, and realistic ranges with blue, red and neutral targetry incorporating shoot/don't shoot decision making) will enable the soldier to make better decisions on whether or not to engage an unknown entity. The combatant must be able to ask themselves the question if unsure whether to shoot or not:

(1) Am I or my friends in mortal danger?

(2) What is the worse thing that can happen if I pull the trigger?

(3) 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 Ground-to-Ground mission area. This can only be accomplished by looking at CID through a holistic lens and by strengthening every link of the CID (SA+TI [Family of Systems + Training + Doctrine/TTP/ROE]) chain. It is imperative that we do everything possible to prevent unfortunate incidents of fratricide from occurring in the future.

Major Edward J. Ospital is the Combat Identification Branch Chief for the TRADOC Capability Manager Platform Battle Command / Combat Identification (TCM PBC/CID) at Fort Knox, Ky. He is a 1989 Distinguished Military Graduate from the California State University Sacramento ROTC program. During a five-year break in service, he earned numerous Police Officer Standardized Training (POST) Certifications from the State of California as a law enforcement officer. Major Ospital has served in various civilian law enforcement and Armor/Cavalry command and staff positions in the continental United States, Korea, and Germany.

Captain Adam N. Wojack is the S3 Plans Officer for the 2nd "Dagger" Brigade Combat Team of the 1st Infantry Division at Camp Liberty, Iraq. He was a Distinguished Military Graduate from U.S. Army Officer Candidate School in 1997, and commanded Alpha Company, 1st Battalion, 26th Infantry in Schweinfurt, Germany. He has also served in various leadership and staff positions in Iraq, Kosovo, Germany, Hawaii, Fort Campbell, Panama, and Korea.

Photo by Specialist Christa Martin