



Composite graphic by Chris Gardner, Army University Press; original photo courtesy of the U.S. Army

# Flash to Bang

Maj. Jamie L. Holm, U.S. Army

A flash of light in the corner of her eye. Spec/6 Gutierrez turned around and saw a still-frame pillar of chalky brown smoke towering hundreds of feet above the city skyline. Green reticles framed the billowing column and a small line of text underneath spelled out the assessment: “multiple 82mm impact.” The sound of the impact washed over her position and rattled windows. She focused on the explosion—she was just there. In the debris cloud, she caught something else, two more rapid flashes.

“Renegade Steel, what the hell was that?”

Her reply came over an individual channel. “Renegade Three, looks like 82s. Looks to be open sheaf; we didn’t get the point of origin, but probably those local mortars we saw earlier. It took down the

node you set up at Checkpoint One-Six-Three this morning. We lost it.”

“No, there was another hit, but no explosion.”

“Three, probably just secondaries.”

“Arjun, I know how to read secondaries. This was something else,” she said with a tinge of annoyance. Ever since the latest software update, her HUD GUI was all wrong. She had her settings set up to auto record on a snap impact analysis, but Raytheon either dropped the feature or hid it. She didn’t know how to set it up again. “It’s recorded on your end; play it back and see for yourself.”

The low cackle of a burst of indiscriminate small arms fire popped off ahead of her.

“Renegade Steel, are you seeing anything en route to Two-Two-Niner?” she asked. She turned back around, got

up from the blown-out car she was crouched behind, and cantered to a position in an alleyway. This part of the city had seen some local fighting in the past few weeks. Walls were pockmarked by small arms fire, and debris choked

convoy. She looked ahead and saw the recommended pathway indicated by a large golden image of a footpath leading her toward a spinning objective marker, which towered eighty feet high. She guessed that the large red arrow would

“ This part of the city had seen some local fighting in the past few weeks. Walls were pockmarked by small arms fire, and debris choked the streets. ”

the streets. She could tell that people were returning to their homes, but they were not interfering. Her lance had not come across any direct contact yet. Yet. She knew what the OPORD said, and what the Two briefed, but this wasn't her first mission on the Corps Long Range Reconnaissance and Shaping team. She was the most experienced member of her lance, and experience made her doubt any mission briefed as a simple EMS mapping area recon.

“Three, we're not seeing anything. SATfeed looks quiet, but we'll move a few trash cans along your route. What are you thinking?” Steel radioed back. Arjun was new to the team, but he was savvy. What Gutierrez liked about him was that he never took no for an answer, and he was clever enough to get what he wanted retasked surreptitiously. He may say no, but he trusted a comrade's gut, and never thought his eye-in-the-sky view was gospel over what the comrade saw on the ground.

“Renegade Three, this is Four.” A new voice. Spec/5 Hallway. “I'm seeing technical moving your way. Three vics, probably fifteen pax. They're popping off shots but no targets—I'm thinking they're just juiced.”

Spec/6 Gutierrez blink activated a reply of thanks over the IVAS to Renegade Four. She saw a large red arrow appear, superimposed in the skyline, pointing down several streets over to indicate the location of this moving militia

cross the golden path but not deviate toward the objective marker. She smiled when she remembered first hearing the integrated HUD system referred to as Lucky Charms for the eyes. She estimated the movement would take fifty minutes with no interference.

She let go over her M8 rifle with its M52 Counter Defilade Target Engagement System launcher and let it hang on its strap from her shoulder. She twisted her back in a stretch, readied her weapon again, did five quick squats, and shook out each leg. “Alright Steel. Ready to move.”

“Roger Three.”

“Moving,” she said, and she was off. Moving from cover to cover down the wreckage of this market

street. A burst of speed to a defensible position. Wait. Move. She knew her dad used to do this syncopated drill, waiting for a fellow soldier, a battle buddy to make their

move, then his, then the buddy. They would call out, “moving,” “Ready buddy,” and all sorts of other silliness. Her nearest lance-mate was over a kilometer away, but in three blinks and



Photo courtesy of the U.S. Army

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a hand gesture, she could summon a battery of automated mortar carriers that fired multiple aimpoint rounds on the move to annihilate a city block. Or she could reach back to her virtual fire support section of the lance, which was a hundred kilometers back with the corps main, and in minutes get a swarm of drones over her, feeding the exact location of every warm

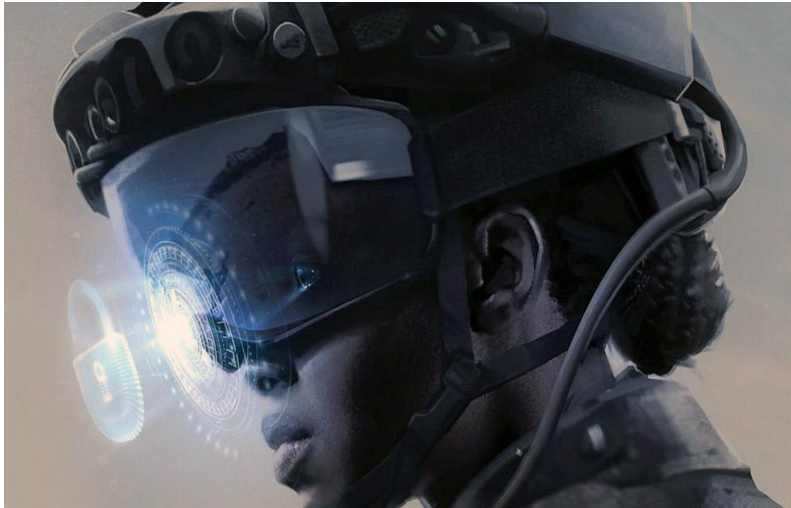


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body, EMS signature, or Bluetooth device in her sector. If things got really hairy, her lance could dispatch HMF, hyper-mobile-firepower. She heard that people used to joke that the A-10 Thunderbolt II, or “Warthog,” as users affectionately called it, was a gun they built a plane around. Well, soldiers had their own affectionate name for the HMF, but there was nothing loving about what it did. It was a scaled-up quadcopter, built to carry a M240B. It would speed at waist height to a soldier’s position, take the soldier’s target, and be an instant fire support team that could go vertical. One could be the difference between being pinned down and breaking contact. But two though, dancing and spitting out bursts of rounds—two could break open any defensive position.

“Three, this is Steel.” There was urgency in Arjun’s voice. “Something’s coming through.”

A throbbing, synthesized trumpet note blared in her ear. Then a lower one. Then another. Each note hammered in her head and shook her entire HUD. She could see her Terabit rate dropping in the corner of her eye. “We’re getting hit. They’re playing the god-damn theme to *The Shining!*” Arjun said as his voice quality broke apart. BMMM. BMMM. BUM. BUM.

The resonant notes continued to crash into her ear. She cut the link and the awful noise stopped. Silence. The HUD flickered and settled, but the battlefield geometry symbols turned into dotted outlines.

Gutierrez turned back into the shade of the alleyway between cement tenements. She lifted her IVAS and rubbed her eyes. “Every time,” she said to herself.

She blinked rapidly and took in her surroundings. Nothing had changed—not really. She was still in a bombed-out war zone, and she still needed to move about another kilometer and a half to set up the next EMS surveillance and shaping node to help corps prepare for the main effort to conduct its joint forceable entry. Even though her lance was here already and could deliver more precise firepower, EMS, or cyber effects on a target than a legacy infantry battalion could, she knew that big Army still needed brigade combat teams to fall out of planes or drive up in Stryker IIs to begin humanitarian assistance. Her lance could deliver all those effects, all that Hollywood super-soldier

power to the battlefield—if she didn’t have to cut the link. Now she was alone in an alley. Times like this always reminded her to check her kit. Her left hand patted her radio, her fragmentation grenades, her EMS grenades, her antenna. She shook her whiskey-two-two cable; losing connection to the destructive arsenal of democracy due to a cyberattack was one thing, but having a cable shaken loose due to poor operative maintenance? That was stupid.

“Alright. Okay. Let’s go,” she said to herself. She readied her weapon, did five quick squats, shook her legs out, and set off down the block.

A rapid spattering of tiny cement clouds exploded in front of her and around her feet, accompanied by the shrill whine of gunfire. She leapt back and crashed into the relative safety of the dark alleyway. Silence. There it was. She could hear the ominous sound of four small engines growing louder. She pulled a grenade from her chest rig, primed it, and threw it into the street. The grenade exploded in a muffled burst with a flash of bright light. She pushed her rifle around the corner and looked through her IVAS while staying behind the safe cover of the thick cement wall. There. Twenty meters

back and six up, hovering: an armed quadcopter. She balanced the rifle up as the fire control system calculated a solution and automatically fired in her hands. Her grenade shot low, but the variable time fuse, which she always thought was a silly name for a radar-tipped grenade, detonated. The fragmentation ripped through the drone, which wobbled, lost power, and careened into the street with a crash.

Gutierrez took a few breaths, then ran over to the wrecked enemy. She could hear the whirring of other small engines approaching over the rooftop. She ducked back behind cover. In her HUD, in the

bottom right, a small symbol of a circle spun, and a text readout blinked on: “CONNECTING.”

“CONNECTED.”

“Three?” Arjun asked.

“You got me up on FM?”

“Yeah, the link will be back up in about five.”

The silhouette of a tiny five-gallon bucket appeared in her HUD through the wall. The drones Arjun had

but a few panels had crumpled in the crash, exposing the computer behind it.

“Yes. It looks like someone is doing counter recon with some pretty advanced stuff. This goes beyond anything Two said local militia forces would have.”

Gutierrez listened, barely. She was a trained cavalry scout and took enemy system identification seriously. All those flashcards of silhouettes. She was also trained in radio, signal, and cyber theory. All drone images and subsequent layered network diagrams produced by autonomous systems could not put together what she was looking at now. This

is what a human in the loop brought. She saw the motherboard, the chipset. It was all there.

“Renegade Steel, you can’t see this, but I’m looking at a Yotaisc X500.”

“Three, well that’s not a surprise. We knew the militia had equipment

bought from China.”

“No, this isn’t something they have ever leased out. It’s meant to look like a 450, but it’s a 500. This is PLA



Image by Chris Gardner, adapted from photo in *South China Morning Post*

“The drones Arjun had sent out automatically came to her last known position to establish a line-of-sight link. Good for voice, but bad for data.”

sent out automatically came to her last known position to establish a line-of-sight link. Good for voice, but bad for data. She stepped back out into the street and approached the crashed enemy drone.

“We looked at those flashes you saw earlier. You were right,” Arjun stated.

Spec/6 Gutierrez looked down on the drone wreckage. Grease pencil doodles and words were scrawled on the body by local militia. If it was meant to intimidate, it failed.

“There was another hit, masked by the mortar strike. It was timed to mask it, but it looks like a direct-fire drone delivered an EMS missile that specifically targeted the surveillance node you planted,” Arjun explained.

“Yeah?” She replied inattentively as she knelt and examined the drone. Its plastic body was mostly intact,

only.” Gutierrez peeled aside a broken plastic panel. There it was. The motherlode. She set her rifle down, opened a MOLLE pouch from her hip, and produced a black phone-like device in a coyote tan case and a spool of CAT5 cable. Her trash can drone lazily drifted overhead, transmitting her FM data and voice back to Arjun. She smiled up at it, then looked back down. She plugged the cable into her phone device and the other end into the modem port of the computer inside the wrecked drone. A few taps on her phone and her smile turned into a grin.

“Steel, are you seeing this?”

There was a pause. “Lisa, is this for real?”

She lifted her head and looked back down the street toward her objective. Quiet. Nothing had changed, and yet everything had changed.

Another connecting symbol appeared in her HUD, and the dotted objective markers flashed. MOSAIC was recalculating. “I think we have a change of mission, Arjun.”

“I’m getting it now. You’ve got a link to a PLA recon-strike net. We are at amber, but when data goes green, we can brute force Kaiju on it and map their whole network. I can already see there are ... thirty, forty, sixty nodes.”

form hundreds upon hundreds of PowerPoint slides created by millions of man-hours of staff work. It did all this in the blink of an eye and reconciled its outputs against the corps commander’s intent. The corps commander may not know it yet, but Arjun did, Gutierrez did, and MOSAIC did. The HUD read out, “STAND BY FOR CHANGE OF MISSION. CCIR #3, presence of uniformed enemy



Each symbol would be a firefight, and a small pocket of hell for those infantrymen in a few days.



Spec/6 Gutierrez rested the phone device inside the wreckage and picked up her rifle. “Those poor bastards in the BCTs aren’t going to be handing out sacks of protein bars.”

In her HUD, a new symbol swirled, and a small label appeared. “MOSAIC CALCULATING.”

“No,” Arjun’s voice trembled. “Wait one,” he paused.

The symbol in the HUD changed. MOSAIC, the automated mission command, deep-learning artificial intelligence aid that had replaced most Army unit staffs, was calculating teraflops of mission variables, environmental data, troop locations, logistics throughputs, and all the minutiae that used to

forces on the battlefield.”

Astonished, Arjun continued, “The corps is going to have to fight,” he paused. “At least a brigade of PLA regulars.”

“Looks like it,” Gutierrez replied. Her entire HUD began swirling in an update. Her objective marker disappeared and was replaced by new arrows and tactical mission task symbols cascading over them. They read out, “Secure. Seize. Control. Defend,” and more. There were dozens of them with units in the corps’ brigade attached to each one. Each symbol would be a firefight, and a small pocket of hell for those infantrymen in a few days. “Looks like we’ve got a real war on our hands.”

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## Glossary

**BCT**—Brigade combat team

**EMS**—Electromagnetic spectrum

**GUI**—Graphic user interface

**HUD**—Head-up display

**IVAS**—Integrated visual augmentation system

**MOLLE**—Modular lightweight load-carrying equipment

**OPORD**—Operation order

**PLA**—People’s Liberation Army

**TWO**—Intelligence officer