

SOUTHWEST AVIATION REVIEW



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WE BE JAMMIN'

THE 55TH ECG BRINGS THE NOISE TO **RED FLAG 13-3**



Along with the fighter and strike units that participated in Red Flag 13-3, the exercise also included a variety of aircraft specializing in electronic warfare. The EC-130H 'Compass Call' is one of these aircraft that specializes in electronic warfare and has been specifically adapted to compromising an enemy's ability to communicate.

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DISORIENTING COMPASS

In war, the ability to effectively communicate with friendly forces is critical for coordinating any type of movement or action, be it offensive, defensive, or logistical. The degradation of this ability to communicate can severely hamper a military's combat effectiveness, rendering it partially or completely blind to enemy movement, deaf to orders from commanders, and mute to any attempts to call for reinforcements or to warn friendly units of enemy activity. Fortunately, the capability to interrupt an adversary's command and control communications is something the United States has invested heavily in since the Cold War, and has had several opportunities to employ and refine over the past 30 years.

One of the most effective tools the U.S. has for disrupting enemy communications is the EC-130H Compass Call. Based on the venerable Lockheed C-130 Hercules, the Compass Call employs the Rivet Fire electronic countermeasures system, an array of electronic sensors and transmitters to receive, classify, analyze, and jam enemy communications signals. The Air Force's EC-130H fleet is based at Davis-Monthan Air Force Base in Tucson, Arizona, with fourteen aircraft divided between two Electronic Combat Squadrons (ECS): the 41st and the 43rd, all falling under the control of the 55th Electronic Combat Group (ECG).

While the Compass Call's jammers can be used against a wide spectrum of enemy communications, the EC-130H's primary tasking is the Suppression of Enemy Air Defenses (SEAD). For the SEAD mission, three types of aircraft form a triad of capability – the communications jammers, the



An EC-130H returns to Nellis Air Force Base, near Las Vegas, NV while participating in Red Flag - photo by Ned Harris.

radar jammers, and the HARM shooters. Communications jamming is handled by the Air Force's Compass Call fleet, while radar jamming is the forte of Navy and Marine Corps assets such as the EA-6B Prowler and EA-18G Growler. HARM shooters – aircraft tasked with using AGM-88 High-Speed Anti-Radiation Missiles to destroy radars guiding Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) sites – are typically represented by aircraft like the Air Force's F-16CM Fighting Falcon and Navy/Marine Corps F/A-18 Hornets, though the Prowler and Growler, as well as numerous allied aircraft such as the Panavia Tornado possess this capability as well.

COMBAT PROVEN

Entering U.S. Air Force service in 1982, the Compass Call's first taste of combat came in late 1989, with EC-130Hs jamming Manuel Noriega's command and control networks during the invasion of Panama. Just over a year later, the 41st and 43rd ECS were deployed to Saudi Arabia and Turkey to participate in combat operations against Iraqi forces in Operation Desert Storm. During Desert Storm, General John Galvin, Supreme Allied Commander, declared "Schwarzkopf was able to dismantle the electromagnetic spectrum so that he effectively closed Saddam's eyes and ears." It was the Compass Call aircraft that closed his ears. The 41st and 43rd ECSs were able to jam Iraqi

communications, forcing their air defense radars, which were not receiving targeting information due to the jamming, to go active and search for targets. This made them vulnerable to aircraft, which jammed their SAM and AAA fire-control radars and attacked their radar sites with HARM missiles. The communications jamming provided by Compass Call EC-130Hs was so extensive and effective that the diary of an Iraqi air defense officer captured after the war revealed that there had been no

contact between him and his superiors during the closing three weeks of the war.(1)

The EC-130H Compass Call aircraft were utilized in many deployments throughout the 1990s including Bosnia, Kosovo and Desert Fox. They were rapidly deployed in support of Operation Iraqi Freedom (OIF) and flew in support of every major engagement. In addition to the SEAD missions, they also supported Special Operations Forces and POW rescue missions. Compass Call crews flew over 23,000 flight hours on 3300 combat sorties in direct support of Operation Iraqi Freedom, providing a shield of protection to the coalition troops stationed in Iraq. The Compass Call aircraft have also played a significant role in operations in Afghanistan. As of November 2011, they had flown more than 24,000 hours in 4,000 sorties, assisting ground troops in capturing high value targets, seizing weapons caches and countering IEDs.

Lieutenant Colonel Chris Kirshman, 55th ECG Deputy Commander, provided the following insight to their recent operations: "Our weapons system has been deployed to Operation Enduring Freedom (OEF) since 2001, as well as the entirety of Operation Iraqi Freedom. Over the past 12 years we have been extremely focused on the counter-insurgency/counter-terrorism



The 55th ECG's flagship EC-130H on the ground at Phoenix-Mesa Gateway Airport. The 55th relocated to Gateway for a week during 2011 when D-M's runway was being resurfaced. Note the wire antenna on the tail and the large aerials protruding from the rear fuselage, both components of the Rivet Fire electronic warfare system. - photo by Joe Copalman.



Turning to land at Davis-Monthan Air Force Base in Tucson, Arizona, this EC-130H also belongs to the 55th ECG - photo by Ned Harris.

missions were a secondary training objective and SEAD dominated the majority of our training focus. We quickly adapted to this new form of fighting as OEF and OIF evolved.”

TRAINING FOR WAR

Whether in Panama, Iraq or Kosovo or Afghanistan, American and Allied successes were made possible by the elimination of the air defense threat, and it was the SEAD triad that was largely responsible for that. One of the reasons US and Allied Forces have been so successful at SEAD is that they have trained for the mission in large-force exercises like Red Flag.

Red Flag was established in 1975 to better prepare USAF forces for combat. It has evolved into a realistic training exercise involving the air forces of the United States and its allies. Red Flag is coordinated by the 414th Combat Training Squadron at Nellis AFB and conducted on and above the vast Nevada Test and Training Range. Multiple exercises are run each year to maximize the survivability and combat effectiveness of the US and Allied units that participate, and giving them a realistic ground, air, space, and electronic environment in which to train for war.



A HARM equipped US Air Force F-16CM, from Shaw Air Force Base, turning final for landing at Nellis Air Force Base, as part of Red Flag 13-3 - photo by Ned Harris.

The Nellis Range Complex offers Red Flag participants the ability to fly against one of the world's most realistic simulated Integrated Air Defense Systems (IADS), with a wide assortment of simulated SAM and AAA sites and acquisition radars, in addition to a variety of radar units and communications jamming equipment. “Train as you fight” has always been a guiding principle for Red Flag exercises, and this extends to the aircraft types that comprise the SEAD triad. The electronic warfare range allows supporting units to train with live EW systems, which is something that rarely happens elsewhere due to the sensitivity of consumer electronics to the types of jamming performed in the SEAD mission.

At Red Flag 13-3, which ran from February 25th through March 15th, 2013 the 55th ECG flew both BLUE AIR (friendly forces) and RED AIR (aggressor forces) missions. The BLUE AIR sorties focused on the SEAD mission, which targets the enemy's ability to bring his IADS to bear against U.S. and coalition forces. Compass Call aircraft jammed the communications links being used to command and control the Red Force fighter aircraft as well as the SAM and AAA units. During Red Flag 13-3 the other components of the SEAD triad were Marine Corps EA-6B Prowlers from VMAQ-2, Navy EA-18G Growlers from VAQ-135, and Air Force F-16CMs from Shaw AFB. The Shaw contingent



A Grumman EA-6B Prowler, from VMAQ-2, participates in Red Flag 13-3 - photo by Ned Harris.

included fifteen F-16CM aircraft and thirty-five pilots who flew throughout the three-week long exercise. Due to sequestration, Red Flag 13-3 appears to be the final Red Flag exercise of Fiscal Year 13.

The RED AIR missions during Red Flag 13-3 saw the Compass Call aircraft being flown in support of the Red Force adversaries and jamming the U.S. and coalition air forces. This provided a contested and degraded operational environment, which was a critical component of Red Flag 13-3. As the DOD's strategic focus shifts further from the Middle East and Central Asia to the Pacific Rim, where prospective adversaries have much more advanced technology at their disposal, training to operate in contested/degraded conditions is sure to increase, which may again put the Compass Call community in the unique position of being “switch-hitters” in future Red Flag exercises.



Photographed in August of 2009, this EC-130H displays its recently added SPEAR pods (one mounted under each wing) while on approach to land at Davis-Monthan Air Force Base, Tucson, Arizona - photo by Ned Harris.

THE FUTURE

There are currently no plans to replace the EC-130H aircraft with any other airframe in the foreseeable future. The flight-deck avionics are scheduled to be upgraded in the next few years. The Compass Call weapons System is constantly evolving to keep pace with the changing communications environment in which it operates. Having evolved through Blocks 10, 20, and 30, the current standard is the Block 35 Baseline 2, with test and evaluation on Baseline 3 systems being conducted with the intent of integrating these systems once they are ready. One of the more notable upgrades to the Compass Call fleet was the addition of two new underwing-mounted SPEAR (special emitter array) pods. These are high power jamming pods capable of generating four independent steerable beams from each pod allowing multiple emitters to be jammed simultaneously. Regardless of block number or baseline, the Compass Call has been an indispensable tool for American and Allied commanders for over thirty years, and will continue to be an essential component of future operations, especially as the US military shifts its focus from low-tech insurgent forces to nation-states with modern militaries and high-tech weapons systems. It is also clear that relevant upgrades and realistic training exercises like Red Flag will help keep the Compass Call crews prepared to meet nearly any electronic threat our forces may encounter.

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References:

(1) Gulf Air War Debrief. World Airpower Journal 1991



An EA-18G Growler, seen here shortly after takeoff from Nellis Air Force Base, heads out on a mission during Red Flag 13-3 - photo by Ned Harris



Another VMAQ-2 EA-6B Prowler taking part in Red Flag 13-3 returns to Nellis at the end of a mission - photo by Ned Harris.



A pair of EA-18G Growlers returning to Nellis Air Force Base after taking part in a Red Flag 13-3 training mission - photo by Ned Harris.



A HARM equipped F-16CM, from the 79th Fighter Squadron, based at Shaw Air Force Base, departs on a mission during the Red Flag exercise - photo by Ned Harris