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Photos by USAF and DOD photographers

USAF's AGGRESSORS

For 45 years, fighter pilots have learned to survive by getting beaten up by "Red Air."

Almost continuously since 1972, the Aggressors have been the Air Force's in-house sparring partners. These pilots, expert in both US and adversary tactics, give the service's fighter units a heavy dose of realism in air exercises. Their success is indisputable: Since their founding, no USAF aircraft has lost a dogfight, in dozens of real-world engagements.

Thousands of aviators, from USAF and scores of guest countries, have tangled with the Aggressors and emerged as better pilots, having received from them a graduate course in basic fighter maneuvers and dissimilar air combat training (DACT). Before ever engaging in a real dogfight, these students have been stressed by the best. Knowing the sights, sounds, and sensations of a thoroughly realistic engagement, the younger pilots emerge seasoned enough to avoid beginner's mistakes in real war, and with newfound lethal proficiency.

The Aggressors were an answer to the dismal results of air-to-air combat in Vietnam, where the service lost almost as many fights as it won. The track record was a big step down from USAF's performance in the Korean War, where it had enjoyed a kill ratio of 10 to one—and even higher by some counts.

A study called Red Baron was ordered to find out why the Air Force edge had slipped so badly. In multiple volumes, it scrutinized every air-to-air experience in Vietnam, considering everything from rules of engagement to the combat loads being carried by the fighters to tactics and the training pilots had received.

What it all boiled down to was that USAF fighter pilots had not been prepared for the kind of air combat they encountered in Vietnam. They had practiced for missile warfare at long distances, but the rules of engagement often dictated visual target identification, forcing combat at close range. At that proximity, heavy Air Force F-105s and F-4s struggled against quick and light Soviet-built MiG-17s and MiG-21s.

Moreover, fighter training in the 1960s had often emphasized not only bombing but, in some cases, nuclear attack. The machines had been shaped by the nuclear mission, offering limited agility, and the pilots usually trained against squadron mates flying nearly identical aircraft. Given that the aircraft and tactics in these practice dogfights were the same, the value of the train-

An F-16 from the 18th Aggressor Squadron lifts off on afterburner at Eielson AFB, Alaska. KC-135 tankers are lined up in the background.

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ing was limited. In real air-to-air warfare over Vietnam, pilots had labored to maximize the advantages of their own jets while exploiting the shortcomings of their adversaries' machines. The enemy also closely coordinated his aircraft and surface-based anti-aircraft guns and missiles, creating a layered and complex environment in which to fight.

The Navy, similarly smarting from a poor showing in Vietnam, did its own study and came up with a program called Top Gun. It emphasized a return to close-in dogfight training—against dissimilar aircraft—and was taught by pilots who'd had the most success in modern jet combat. Top Gun started in 1969, and in the few years remaining in the Vietnam conflict, the Navy saw a sharp uptick in the dogfight kill ratio. Red Baron came to a similar conclusion, and the Air Force launched its own Aggressor squadron in 1972.

The first of these was the 64th Aggressor Squadron (AGRS), based at Nellis AFB, Nev. It was equipped with the T-38 Talon. Although almost every fighter pilot in the Air Force had trained

/1/ SrA. Michelle Park of the 354th Aircraft Maintenance Squadron readies an 18th Aggressor Squadron F-16 and its pilot for a mission from Eielson AFB, Alaska, in April 2015. /2/ A 2007 shot of a 65th AGRS F-15C. /3/ A flight of Aggressor F-15s and F-16s in 2008 over Nevada. Aggressor paint schemes change regularly, often mimicking the markings of foreign air forces. This group shows schemes from Russia, South America, and South Asia. /4/ From 1977 to 1988, the Constant Peg program acquired and flew Soviet-designed fighters so US pilots could wring them out and teach their colleagues the best ways to defeat them. Here, a MiG-17 (lead) and a MiG-21 (trail) of the Red Eagles squadron are flanked by two F-5Es. /5/ A MiG-21 acquired under the Have Doughnut program. The jet was used to verify and expand data available on the MiG-21, widespread in Soviet-Bloc air forces. /6/ A Red Eagles MiG-23 on the ramp at Tonopah Test Range, Nev., in 1988. Air Combat Command chief Gen. Hawk Carlisle flew with the unit in the late 1980s and ejected from this aircraft.

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on the T-38, it was chosen because of its small size, different handling qualities from the big fighters then in service, and the fact that it was already in the inventory, making it an affordable platform. Hard to see and similar in performance to the small Soviet fighters, the T-38 made a good adversary.

A few years later, after the fall of Saigon, F-5E Tiger IIs that had been meant to serve with the South Vietnamese air force were redirected to the Aggressors. Agile, difficult to spot, and relatively inexpensive to operate, the F-5Es were a good choice for the Aggressors, with performance not unlike that of the MiG-21, then the most ubiquitous fighter in Soviet Bloc air forces.

The Aggressor program arrived too late to make much difference in the Air Force's performance in Vietnam, but pilots who came up against the Aggressors swore by the experience,

/1/ A Red Eagles MiG-23 forms up with two A-10s in the 1980s. **/2/** An F-16 wearing a new Splinter scheme used on Russia's T-50 and Su-35 makes a backdrop at a 57th Adversary Tactics Group change of command ceremony in 2016. **/3/** SSgt. Wesley Ott, 57th Aircraft Maintenance Squadron, snaps a salute as F-16 Aggressors launch during a Red Flag exercise in 2014. **/4/** On a walk-around of his F-16, Capt. A. J. Roper of the 18th Aggressor Squadron checks an Air Combat Maneuvering Instrumentation pod. The ACMI looks like a missile and tracks and records engagements so they can be replayed during the debrief. **/5/** A Red Flag-Alaska F-16 wearing an Arctic scheme in a 2011 photo. **/6/** An F-15 parked on the Eielson tarmac during a 2007 Red Flag-Alaska. The F-15s were added as Aggressors to simulate high-end threat aircraft such as the Su-27 Flanker family, which has comparable performance. **/7/** A mixed flight of Aggressor F-15s and F-16s in 2008. **/8/** SrA. Demonte Outlaw of the 354th Operations Support Squadron checks 18th AGRS helmets in 2016. Red Air pilots are experts in adversary tactics and assume the personae of the opposition.

4 USAF photo by SrA. Ashley Nicole Taylor

7 USAF photo by MSgt. Kevin J. Gruenwald

and the program was expanded. In 1975, a second squadron was added—the 65th Aggressor Squadron, also based at Nellis—and in 1976, two more units were stood up. These were at Clark AB, Philippines (the 26th AGRS), and at RAF Alconbury, UK (the 527th AS). The latter two units did "road shows," traveling around their respective theaters to tangle with frontline units.

Aggressors adopted Soviet-style tactics and procedures, becoming experts in how the Soviet Union and its client states (such as Iraq) used their fighters in collaboration with ground control units. They carried this impersonation to the point of adopting Soviet-style name badges and helmets, their squadron ready rooms festooned with Russian propaganda posters labeled with Cyrillic lettering.

The jets themselves were painted to mimic Soviet aircraft and those of Soviet Bloc countries, wearing schemes known as "Flogger" and, later, "Flanker." Some schemes were generic and went by names such as "Lizard," "Pumpkin," and "Grape," but

/1/ A1C Kierrea Clary updates the hallway monitor at the 18th AGRS headquarters at Eielson. The digital bulletin board tracks pilot training, maintenance, and schedules. /2/ For many years, USAF Aggressors flew the F-5E Tiger II to simulate the MiG-21, as seen in this 1984 photo. Navy and Marine Corps Aggressor units still fly this fighter, among others. /3/ 757th Aircraft Maintenance Squadron techs ready an F-16 during a 2014 Red Flag at Nellis. /4/ Sgt. William Heines of the 18th AGRS holds up the unit's Red Star patch, symbolizing the Soviet air force, USAF's Cold War adversary. /5/ 18th AGRS F-16s tank up over Alaska from a KC-135. /6/ Maj. Brian Bragg, 18th AGRS assistant director of operations, keeps his hands off the controls while crew chiefs ready his F-16 at Eielson in June 2016. /7/ A rare two-seat F-16D Aggressor over Alaska in 2011.

5 USAF photo by SSgt. Shawn Nickel

7 USAF photo by SSgt. Christopher Boitz

others were clearly meant to suggest specific aircraft of the air arms of dozens of adversary and nonaligned countries.

Three years after the Aggressors first stood up, the Air Force—again relying on Red Baron and subsequent studies—launched the Red Flag series of exercises, aimed at giving combat pilots experience participating in a large-scale air operation with many elements. Red Baron had concluded that once a pilot had survived 10 combat missions, his life expectancy increased sharply. Red Flag simulated those first 10 missions in a controlled environment before the pilots flew their first real-world combat mission.

So effective were the Aggressors, even against vastly superior aircraft like the F-15, that for a time in the 1970s Congress dallied with the idea of buying vast numbers of inexpensive F-5Es rather than pricey F-15s. Air Force leaders patiently explained that the F-15s lost early engagements with the Aggressors because Eagle pilots were not yet proficient in DACT.

After training with the Aggressors and in Red Flag, the F-15 pilots became unbeatable, however. The F-15, in fact, was de-

/1/ A formation of F-16C aircraft from the 64th AGRS returns to Tyndall AFB, Fla., during a William Tell aerial gunnery exercise in 2004. /2/ Maj. Michael Kuzmuk (left) of the 18th AGRS prepares to give an orientation ride to electronic and environmental systems journeyman A1C Victoria Ortaleza of the 354th Aircraft Maintenance Squadron. Such flights help techs understand how the equipment they maintain on the ground works in the air. /3/ The 64th AGRS unit badge on an F-16. /4/ Road show F-5Es from RAF Alconbury, UK, during a 1987 exercise. The outlined digits on the side of the nose are called "bort" numbers; they mimic markings on Russian jets. /5/ An F-15 breaks right over Nellis in 2008. /6/ SSgt. Darryl Bowie, 57th Aircraft Maintenance Squadron, checks write-ups on a 64th AGRS F-16 in a 2009 Gunfighter Flag exercise at Mountain Home AFB, Idaho. /7/ A 64th AGRS F-16 disconnects from a KC-135 refueling boom in 2016. /8/ An F-5E from Alconbury in the Grape camouflage scheme, in 1983. Increasingly, USAF turns to contractors to provide supplemental Red Air for training and exercises.

signed around lessons learned from the Red Baron study: It was a machine designed exclusively to achieve air superiority, with excellent maneuverability, speed, acceleration, radar range, and visibility for the pilot. In US and foreign service, the F-15 has racked up more than 100 dogfight victories over nearly 40 years, without any losses.

USAF's heavily one-sided victory during the first Gulf War in 1991 validated the success of the Aggressors and Red Flag. Many pilots even reported that the reality of combat did not quite match the stress and challenge they had faced during training in Red Flag.

Red Eagles

In parallel with the Aggressor program, the Air Force wanted more information about the aircraft it would face in combat. In the 1970s, USAF began secretly acquiring Soviet-designed fighters from Israel—which had captured them in wars with Egypt and other Middle East adversaries—and from Soviet client states willing to either sell or lend aircraft to the US for evaluation. This was not a new idea: During the Korean War, a North Korean pilot had defected with his MiG-15, and none other than Chuck Yeager, the pilot who first flew faster than sound, was chosen to fly it and discover its secrets.

The first MiG-21 was acquired under a program called Have Doughnut, and what was learned from this aircraft was translated into how Aggressor F-5E pilots would maneuver their aircraft in mock dogfights with USAF fighters. Other aircraft followed, including MiG-23s and MiG-27s.

A secret squadron, dubbed the Red Eagles, was charged with obtaining these aircraft, learning their capabilities, and flying them against frontline USAF fighters to find the best tactics to defeat them. The overall program, declassified in 2006, was known as Constant Peg, and thousands of USAF, Navy, and Marine Corps fighter pilots were exposed to real Soviet-designed aircraft in secret drills over restricted areas of USAF's Nevada test ranges.

As the threat posed by the Soviet Union declined in the late 1980s, and the F-5Es began to suffer from structural stress due to heavy usage, the 65th Aggressor Squadron was stood down in 1989. However, as Russia began to restore its air force in

The hammer and sickle and red star of this 64th AGRS pilot's helmet identifies a special breed of pilot.

the early 2000s and field a growing number of combat-capable aircraft in the Su-27 Flanker family, the 65th was reactivated in 2005 and equipped with F-15 Eagles. These aircraft simulated top-line Russian and Chinese aircraft, as China had bought and license-built variants of the Flanker. As opponents, these F-15s also helped evaluate and refine the capabilities of the F-22 and F-35.

Meanwhile, F-16s were brought in as Aggressors to replace the F-5E starting in 1988. The initial aircraft were F-16As drawn from existing squadrons but units were later equipped with newer F-16C/Ds.

Red Flag Goes North

Together, the F-15s and F-16s form the core of opposition forces in Red Flag wargames. In 2006, Red Flag was franchised, and the regular Cope Thunder exercise held in Alaska was renamed Red Flag-Alaska.

The 18th Aggressor Squadron and its F-16s became the resident Red Air at Eielson AFB, Alaska, while the 64th AGRS flew F-16s at Nellis.

In recent years, budget cuts and the evolution of Red Flag brought more churn to the Aggressor community. In the wake of the 2013 budgetary debacle of sequester that grounded many USAF fighter squadrons, the 65th inactivated on Sept. 26, 2015, giving up its F-15s to Air National Guard units.

At the same time, Air Combat Command was beginning to envision a new kind of Red Flag—one still having a substantial live-fly element, but heavily supplemented with virtual elements and simulation. Though F-22s and (as of January) F-35s participate in Red Flags, the true scope of what they can do must be hidden from potential opponents closely monitoring the wargames. As a result, Red Flag will move increasingly into the virtual realm.

For the moment, however, no one has forecast a time when the live-fly Aggressors will disappear, completely replaced by phantom digital aircraft on a virtual battlefield. Exposing fighter pilots to the physical experience of skilled "bad guys" in real aircraft will likely remain an Air Force priority. ✪