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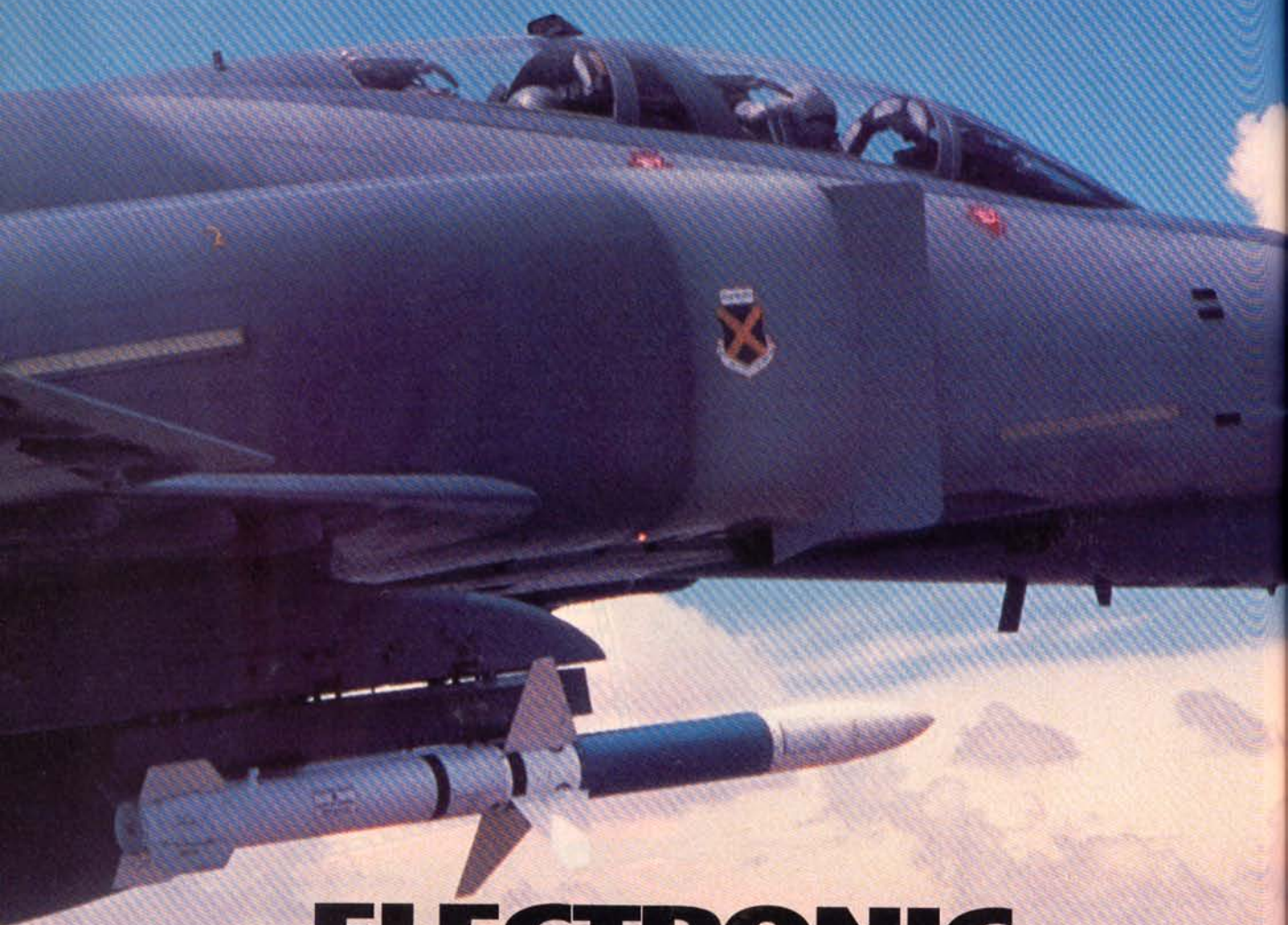
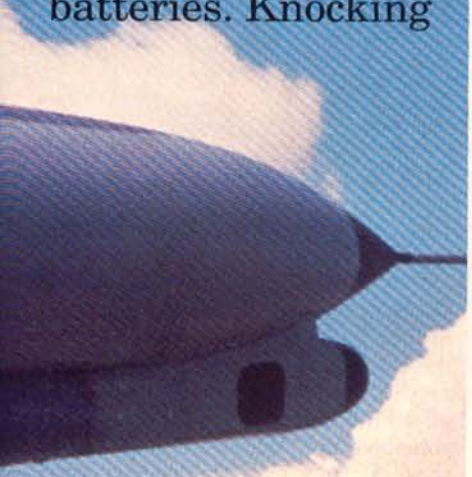


ELECTRONIC WIZARDS OF DESERT STORM

In the early hours of the air war against Iraqi forces, steel-nerved U.S. Wild Weasel crews flew electronics-packed jets into the teeth of deadly surface-to-air missile batteries. Knocking them out with radar-homing missiles, the specially trained weasels cleared the way for following waves of aircraft—and ultimate air superiority.



U.S. AIR FORCE

THE TECHNOLOGY WAR

It was one of the most important jobs in the Persian Gulf war, yet few people would be interested in this line of work. The assignment involved climbing into fighter-bombers that, while equipped with specialized weapons and up-to-date arrays of electronic black boxes, are essentially refurbished relics of the Vietnam War era.

The mission: flying deep into hostile territory where lethal surface-to-air missiles (SAMs) are known, or suspected, to be located. Standard procedure called for intentionally goading the SAM crews into turning on the radars used to guide their missiles toward intruding aircraft. This was the air-combat equivalent of making vile gestures in the other team's direction, with hopes of starting a brawl. But the stakes were infinitely higher—for both opponents.

The risky tease was part of a tactic called Wild Weasel used by U.S. Air Force jets forming the spearhead of operation Desert Storm's air blitz over Iraq and occupied Kuwait. By disabling the enemy's sophisticated Soviet and French air-defense networks, the daring Wild Weasel crews helped gain the U.S.-led coalition absolute mastery of the skies. And that, in turn, was the key to the allies' breathtakingly quick and overwhelming victory in the 100-hour ground war.

In the first 36 hours of the massive aerial campaign unleashed on Jan. 17, a few dozen F-4G Phantom II Advanced Wild Weasel aircraft led strike groups drawn from the 2,600-plane allied air fleet. The weasels launched approximately 268 (the exact number is classified) radar-homing missiles at SAM emplacements as far behind enemy lines as the outskirts of Baghdad. The crew of one returning F-4G was forced to eject near a Saudi airfield after it ran out of fuel, possibly due to damage inflicted by anti-aircraft artillery. The rest of the weasels made it back to their bases safely.

The principal munition that weasel airplanes pack under their wings is the AGM-88A HARM, or high-speed anti-radiation missile. Once locked onto enemy radar's microwave radiation, the HARM streaks toward the antenna, demolishing it with a fragmentation-type warhead. Thus blinded, a SAM battery is unable to target its missiles.

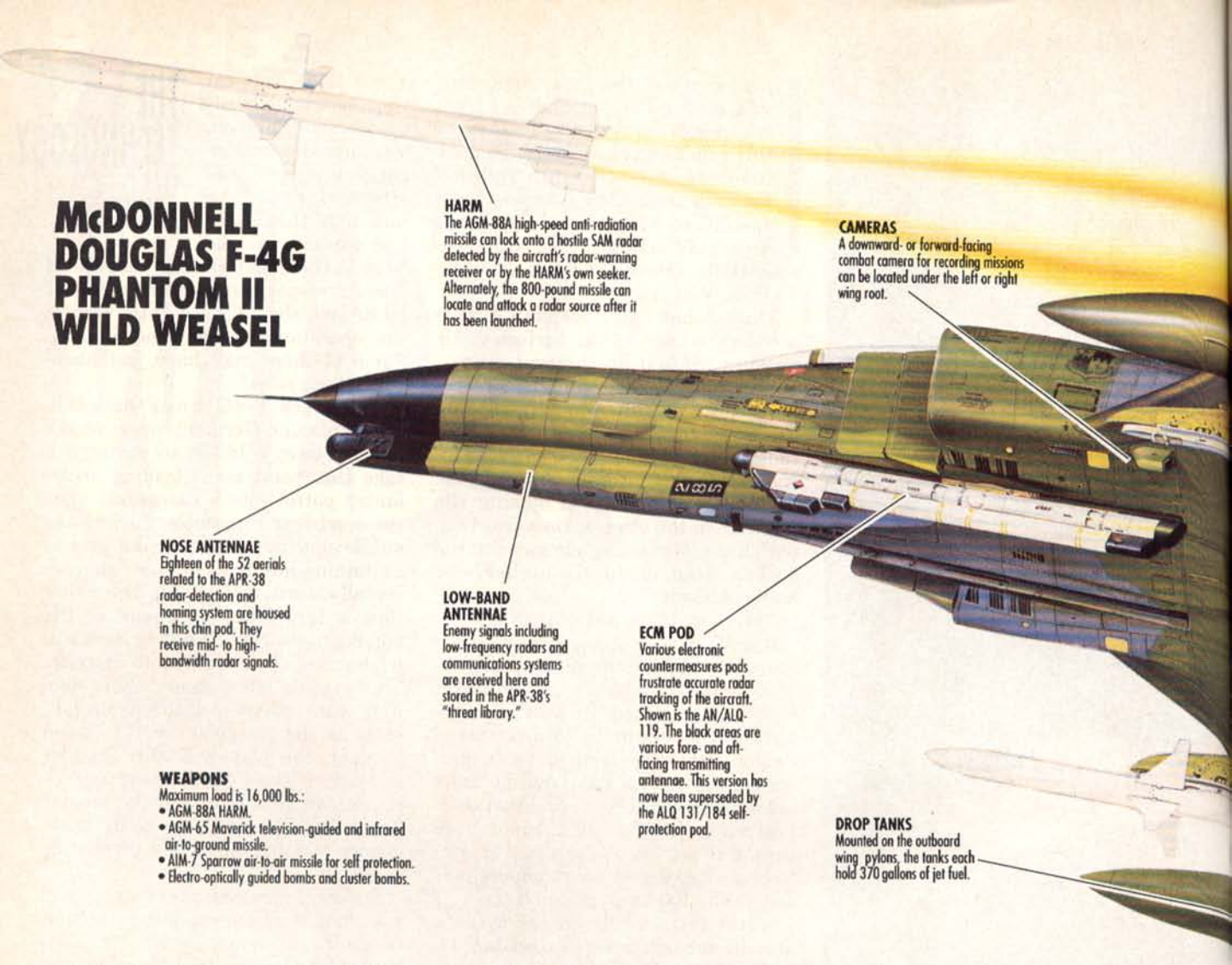
Experienced SAM crews know that their acquisition radar's search beam can suddenly become a pathway to self-destruction if an anti-radiation missile zooms down it to the source. Air Force Capt. John Trauernicht, an expert on weasel operations who manages F-4G tactics and training at Langley Air Force Base Tactical Air Command headquarters in Hampton, Va., says that intimidation is a major goal of weasel work. "The fact that the F-4Gs had a specific mission to go in there and confront those SAM operators—yet none were reported hit by SAMs—should attest to the respect the operators have for the weasels. Some of them may have just abandoned their sites."

Air Force F-4G units based in California and Germany made up the Desert Storm Wild Weasel contingent. Like the "point man" leading an infantry patrol into a dangerous area, the modified Phantoms formed the vulnerable apexes of strike groups containing hundreds of other aircraft. Usually working in pairs, the F-4Gs flew a fair distance ahead of the bombers, attacking SAM batteries or frightening their crews into inaction. The weasels often shared point-man duty with other specialized aircraft, such as the powerful EF-111 Raven jammer, the Navy's EA-6B Prowler jammer, or the F-117A stealth attack plane, which could launch "smart" bombs at key targets with little chance of being effectively tracked by radar.

A weasel crew consists of a seasoned pilot and a back-seat electronic-warfare officer known as an EWO, or "bear." EWOs have been likened to the guy in every barroom who instinctively gravitates to the pinball machines and video games. A primary element of their special electronic gear is a highly sensitive radar-detection and homing system, the APR-38. Fed with signals harvested by 52 antennae sprouting from the aircraft's fuselage, wings, and tail, the black boxes identify and display the locations and types of radars in the area, while determining which pose the most danger.

The worst-case scenario is an onrushing SAM launched by a wily operator. Then, for too many nerve-wracking seconds, the EWO uses all of the defenses he's got: an electronic countermeasures (ECM) pod that muddies the airplane's radar image; dispensers loaded with tinsel-like chaff; and infrared-spoofing flares, in case the SAM also has a heat-seeking capability. Meanwhile, up in the front seat, the pilot snaps his jet through missile-dodging maneuvers rehearsed many times in training. If the crew does everything right, the SAM heads off in a benign direction. One F-4G pilot reportedly outmaneuvered a swarm of *six* early-generation Soviet SAMs pursuing him over southern Iraq.

McDONNELL DOUGLAS F-4G PHANTOM II WILD WEASEL



Loitering in the vicinity of SAM launchers for 20 minutes, and living to tell about it, is sweaty and exhausting work. "When you get near them [SAMs], you've got four to six g's on your body the whole time. You're in there turning and burning every fifteen or twenty seconds, because you can't afford to be predictable—or they'll nail you," says weasel pilot Trauernicht. "Jink and bank, climb and drop. Roll inverted, pull down, roll back out, then climb to reverse direction. This can easily become very disorienting, and it burns fuel like crazy. It's what we do to let our other airplanes get safely through to their targets."

Is this a specialty uniquely staffed by madmen? "The confidence a weasel needs to do his job doesn't come out of a sense of macho foolishness, or wanting to die," Trauernicht says. "It takes years of training flights at 500 miles per hour, right down at one hundred feet above the ground. Weaseling is a job you may be assigned to if the Air Force needs F-4G crews, and you're qualified by your flying experience."

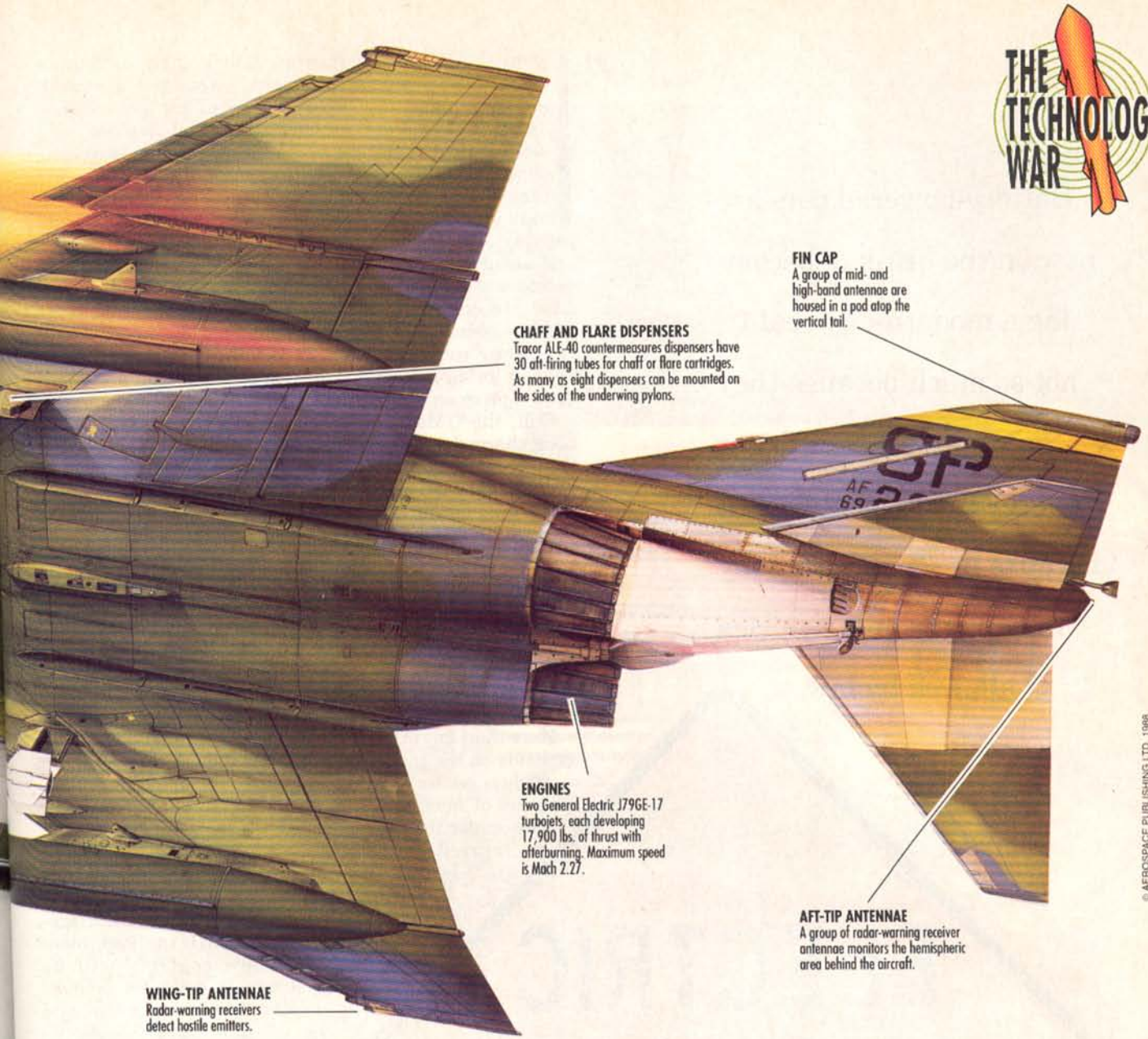
Wild Weasel tactics were developed during the early years of U.S. involvement in Vietnam, when the Viet Cong were using new Soviet-built SAMs to shoot down airplanes in alarming numbers. The Pentagon funded a crash program to develop the first generation of radar-detection and homing equipment, which was installed in two-seat versions of the F-100 Super Sabre fighter.

The crews recruited to test the system in combat soon designed a shoulder patch featuring a cartoonish weasel above the letters YGBSM, which stood for "you gotta be sh—ing me." It was an understandable reaction to their new job description. In 1965, these charter weasels began locating SAM sites and attacking them with unguided rockets. F-105 fighter bombers would then drop heavy bombs on the SAMs. Inventing and refining the new tactic was a horrendously risky enterprise. Of the first seven F-100 weasel aircraft, five were quickly lost along with their crews.

Soon F-105s were adapted to the leading weasel role; F-4s later replaced them. Tactics and weapons steadily evolved, and the weasel units became an integral part of bombing missions against SAM-protected targets. The crews' motto, "first in, last out," perfectly described their role as SAM-suppressors who bought the bombers relatively safe passage to their targets. "You went trolling for the SAMs. You wanted them to shoot at you," recalls former F-105 weasel pilot Paul Metz. "It's booga-booga, can you shoot me? Who-o-a-a-a....that was close! If they give themselves away, then you attack them. Weaseling is the ultimate game of chicken."

The Wild Weasels' performance in helping coalition bombers and attack planes has drawn attention to them as a common-sensical adjunct to the costly radar-foiling technology the Air Force has bet on so heavily: stealth.

Newly emboldened weasel supporters within the Pentagon and the Air Force argue that while the 118 patently unstealthy F-4Gs now in inventory may be long in the tooth and relatively expensive to operate, they are nonetheless still effective—and already paid for. So why put them out to pasture as has been proposed? Looking beyond the F-4G, tactical planners like Trauernicht envision a labor-saving single-seat Wild Weasel with artificial intelligence software and advanced cockpit displays, making the airplane more or less its own EWO. SAM designers around the world must be as busy as bees. PS



FIN CAP
A group of mid- and high-band antennae are housed in a pod atop the vertical tail.

CHAFF AND FLARE DISPENSERS
Tracor ALE-40 countermeasures dispensers have 30 aft-firing tubes for chaff or flare cartridges. As many as eight dispensers can be mounted on the sides of the underwing pylons.

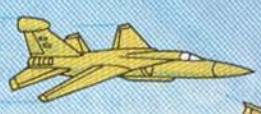
ENGINES
Two General Electric J79GE-17 turbojets, each developing 17,900 lbs. of thrust with afterburning. Maximum speed is Mach 2.27.

AFT-TIP ANTENNAE
A group of radar-warning receiver antennae monitors the hemispheric area behind the aircraft.

WING-TIP ANTENNAE
Radar-warning receivers detect hostile emitters.

AERIAL MENAGERIE: WEASELS, RAVENS, AND EAGLES ON THE PROWL

Bomb-laden F-15E Strike Eagles carried out hundreds of attack missions during Desert Storm. Accompanying air-superiority versions of the F-15 guarded against scarce Iraqi fighters.



EF-111 Raven aircraft are electronic jamming powerhouses that can blanket enemy radar screens many miles away with disinformation or sheer gibberish. They worked with F-4Gs to clear a safe path for the bombers through hostile early-warning and missile radars.

An F-4G Wild Weasel crew plays the "killer" role, firing a HARM anti-radiation missile at a SAM radar tracking its partner. A single radar unit can provide in-flight guidance for SAMs fired from several launchers.

The "hunter" Wild Weasel has done its job: SAM operators are illuminating the F-4G with radar. The accelerating weasel protects itself against SAMs with electronic countermeasures, infrared flares, and clouds of radar-reflecting aluminum-foil chaff.

DRAWING BY MARIO FERRO