

Air Interdiction

By Phillip S. Meilinger

The mission began in World War I and has been employed with varying success but increasing importance.

The F-111 was an effective tool for interdiction in the 1991 Gulf War.

USAF photo by SSgt. David Nolan

The interruption, delay, or destruction by air of enemy forces and supplies approaching the battle area is termed air interdiction (AI), a core mission of air forces since World War I. Ground commanders usually assume that a land battle is imminent, and air interdiction is designed to either prevent that battle altogether or lower its threat to friendly forces by shaping or isolating the battlefield.

During World War I, all belligerents saw the advisability of interdiction, and special types of aircraft and tactics were devised to accomplish this important but dangerous mission. At St. Mihiel, France, Brig. Gen. William "Billy" Mitchell commanded more than 1,400 aircraft whose mission was to gain air superiority and then interdict German reinforcements. If this were done, the chances of an Allied breakthrough on the ground would be greatly enhanced. This was achieved.

In 1918 the British established an "Independent Force" under the command of Maj. Gen. Hugh M. Trenchard, who used his air assets primarily for interdiction. His aircraft bombed German airfields to gain air superiority by either destroying the enemy air fleet on the ground or preventing it from taking off. Other targets struck included rail lines and marshaling yards.

Between the wars, Trenchard and Mitchell gravitated toward a theory of strategic bombing, but the vital air interdiction mission was never abandoned.

One RAF officer, Wing Cmdr. John C. Slessor, studied the problem closely. In 1936, he posited a major land campaign on the European continent, as in the first World War. In such an event, he wrote, "valuable results may be achieved by carefully organized attack on the enemy system of supply, maintenance, and transportation. The more highly organized the enemy is, the more vulnerable will he be to actual interference with his supply."

Slessor assumed the German army would be highly mechanized and therefore demand continuous resupply to feed its appetite. The more goods flowing to the battlefield, the more targets to attack and the more effective interdiction would be.

There were numerous AI campaigns in World War II. One of these occurred in Italy during spring 1944. The Allies had launched a major offensive against German lines, and airmen proposed a campaign, Operation Strangle, to isolate



The hulks of Iraqi tanks, trucks, and personnel carriers litter a road in Iraq during Operation Desert Storm. Of the 40,000 sorties flown by coalition airpower during Desert Storm, 38,000 were deemed air interdiction.

the battlefield by cutting enemy supply lines to northern Italy and Germany.

Italy

The question of what to target to achieve this goal was problematic. Should airpower focus on the forces moving toward the front—men and equipment—or concentrate on supplies? A third alternative was to destroy the mobility infrastructure, thus inhibiting movement of both forces and supplies.

In Strangle, air leaders elected to focus on supplies, leading to the next question of how best to disrupt its flow. Railroads were an obvious choice, but even here debate arose over whether the most lucrative rail targets were the trains themselves, marshaling yards, or key choke points such as rail bridges. The other main supply line target was the roads that carried hundreds of trucks and other vehicles. Air planners decided on hitting the roads and marshaling yards.

Studies after the operation revealed surprises. The airmen had hoped to cut off supplies to the German army, causing them to retreat or cease offensive operations. This did not occur, but other unexpected effects proved valuable. The German army was noted for its ability to strike quickly, withdraw, and then attack again elsewhere, and Strangle prevented this level of mobility.

Air interdiction played havoc with German plans and timetables, forcing the employment of large numbers of personnel to repair the extensive damage caused by aircraft to roads, bridges, and rail yards. Another lesson of Strangle was

the importance of intelligence—both in determining what routes were used most extensively and to ascertain the effects of the air strikes themselves. This last function, today termed bomb damage assessment, would prove a difficult nut to crack.

These lessons were useful in the planning and conduct of another major AI campaign: the preparation for the D-Day invasion of Normandy.

Normandy

Debate took place again among air

planners, over the best targets to strike to ensure the success of the invasion. Some, notably Gen. Carl A. “Tooey” Spaatz, pushed for a focus on oil, arguing that all vehicles ran on gasoline, so the elimination of this vital resource would prevent German reinforcement of the beachhead.

The Supreme Allied Commander, Gen. Dwight D. Eisenhower, rejected this idea, arguing that the oil campaign’s effects would be important but too long-range. He wanted something more immediate. The alternative was the transportation plan.

As in Italy, questions arose on how best to disrupt German resupply to Normandy. Planners decided on the destruction of bridges to prevent the movement of trains and trucks.

This transportation plan seriously interfered with German reinforcements to Normandy. All bridges on the Seine river south of Paris were destroyed before D-Day, and rail traffic in France declined by 70 percent. Attacking train repair facilities then made it impossible to fix damaged locomotives. As a result, three German divisions within a day’s march of the beachhead were delayed up to four days with a heavy loss of equipment—especially fuel trucks crucial to German mobility.

The commander of the Panzer Lehr division later stated that by the end of the first day of travel, air attacks had knocked out 40 of his fuel trucks and 90 others, five tanks, and 84 half-tracks and artillery pieces. Two weeks following the landings, the Germans had only moved five armored



B-52s at Andersen AFB, Guam, during preparations for Operation Linebacker II. Although air interdiction missions were successful in destroying much of North Vietnam’s mobility infrastructure—such as rail yards—they were not as successful in halting the movement of supplies by the Viet Cong.

divisions into the area. Air interdiction decisively solidified the beachhead.

Korea

When the Korean War broke out in 1950, interdiction's importance came to the forefront once again. During the North Korean drive south, pushing UN forces into the Pusan Perimeter, airpower was used both to pound enemy positions at the front but also to attack their supply lines stretching back into North Korea. After the Chinese intervention in November, this dual tasking resumed. Once the situation stabilized, AI came to the fore. Could airpower so disrupt the flow of reinforcements and supply to the front that Chinese offensive operations would become impossible? As in Italy, the name given to the air interdiction campaign of 1951 was Strangle.

The commander of Far East Air Forces, Lt. Gen. Otto Paul Weyland, was a tactical airman with an outstanding reputation. He argued strongly for interdiction over close air support, stating the most effective way to prevent enemy supplies from reaching the front was to hit them as far back as possible.

Weyland likened CAS to attempting to dam a river at the bottom of a waterfall. Wiping out the trains and trucks carrying supplies to the Chinese would be far more economical of American lives than would allowing a reinforced and resupplied enemy to engage with our troops and then only using airpower in close support.

As in World War II, AI was never able to completely dry up enemy supplies and reinforcements, but it was able to severely curtail their delivery. Strangle in Korea reprised an issue noticed in the previous war: Too often American planners assumed the enemy would need as much supply tonnage as would a typical US division. In fact, the Germans had gotten by with half the supplies needed by the US Army. The Chinese were even more frugal.

US planners did not learn. Vietnam would prove that AI operations grossly overestimated the needs of the Viet Cong and North Vietnamese while simultaneously exaggerating the effect air attack had on the flow of supplies and reinforcements.

Vietnam

The Rolling Thunder air campaign against North Vietnam lasted from 1965 to 1968. It was an interdiction campaign: Approximately 90 percent of all targets struck were transportation targets, and most of those were located south of the 20th parallel—well below the industrial and transportation centers of Hanoi and



AAF photo

B-17s during a raid over Stuttgart, Germany, in 1943. The effects of air interdiction forced Germany to divert large groups of personnel to repairing the damage to rail yards, roads, and bridges.

Haiphong. The latter, North Vietnam's major seaport through which it received 85 percent of all supplies, was not closed by mining until 1972. Supplies could not, therefore, be halted near their source. Both cities were usually off-limits to US aircraft and restricted zones were placed around them—up to 30 miles for Hanoi and 10 miles for Haiphong.

In mid- to late 1964 the Joint Chiefs of Staff proposed a series of air strikes against 94 key targets in North Vietnam to be conducted over 16 days. These plans were rejected. Most of the 94 targets were eventually hit, but they were struck over a period of three years, not the 16 days called for by the JCS. Instead, each day US aircraft would head north to strike bridges, road intersections, and especially the Ho Chi Minh Trail, snaking through Laos and delivering supplies to the Viet Cong in South Vietnam. These air missions did little to slow down enemy operations.

A major problem was the practice of counting things and mistaking that for effectiveness. After the Linebacker II strikes of December 1972, the Air Force stated that North Vietnamese rail yards had suffered the greatest amount of damage of all the targets struck: "A damage level of 60 percent or better was achieved against two-thirds of [the railroad yard] targets which were the most important rail facilities, other than bridges, in North Vietnam." USAF also noted, however, that earlier air strikes had driven rail traffic to the roads. What was the effect desired: to limit movement of military supplies or

simply to destroy marshaling yards and rolling stock? If the former, then the air strikes were ineffective, regardless of the amount of damage allegedly produced.

The core issue, as it had been in World War II, revolved around measures of effectiveness: What defined success? The US goal was to defeat the Viet Cong and dry up their supply of troops, ammunition, and equipment from the north. This was never done.

Desert Storm and After

By the 1991 Gulf War, airmen had thought through the problems experienced in earlier interdiction campaigns. Analysis of prospective target sets—and measuring the effect of their neutralization—was an increasingly scientific and accurate endeavor.

More than 40,000 strike sorties were flown by coalition airpower in Desert Storm—more than 38,000 were labeled AI, and nearly 80 percent of those were flown against bridges, rail lines, road junctions, and supply convoys. These strikes proved extremely successful. It was the intent of Gen. H. Norman Schwarzkopf for airpower to reduce all frontline Iraqi divisions below 50 percent before a major ground offensive would begin.

Not only was that requirement met, but some 80,000 Iraqi soldiers fled the battlefield and more than 86,000 additional surrendered virtually without a fight. The Iraqi army had been cut off from supplies, reinforcements, and effective communications with military leaders and Saddam

Hussein in Baghdad. Interdiction was incredibly effective. On the so-called “Highway of Death” leading north out of Kuwait City, for example, 1,400 vehicles were disabled by air.

In most of the operations involving the US since 1991, significant numbers of American ground troops have seldom been employed. This situation raises questions as to whether air strikes can truly be classified as AI—even though they were listed as such on the daily air tasking order. Nonetheless, air operations that struck enemy forces, supply convoys, and transportation infrastructure were enormously successful in Bosnia, Kosovo/Serbia, Afghanistan, and in Iraq in 2003 and the years following. Several factors were key to making these operations effective.

Factors in AI Success

When reviewing interdiction campaigns, several lessons and trends become obvious. First, air superiority is essential. The US has come to expect this condition, but without it air operations such as AI, CAS, ISR, airlift, and air refueling become difficult if not impossible. If these other essential air missions cannot be conducted, the joint force loses.

The air planner must decide the goals of the AI campaign—and more specifically, whether the main targets should be supply lines, military forces themselves or the mobility infrastructure. Each enemy and each situation is different.

- In Italy the supply lines, especially bottlenecks in mountain passes, were the most lucrative targets.

- Endless attacks against supply routes along the Ho Chi Minh Trail over several years had little effect on Viet Cong operations.

- Force interdiction—destroying enemy columns, gun emplacements, or the troops themselves—was very effective in Korea and Iraq.

To make this targeting decision sensibly, air planners must have timely and accurate intelligence regarding the enemy’s supply situation, dispositions, and plans. Sound intelligence enables effective targeting. In addition, effective BDA must be conducted after each attack to determine if the target was indeed neutralized. More importantly, analysis must uncover if neutralization produced the effect desired.

Destruction does not equal success. Too often analysts have taken to counting things—bomb tonnage, sorties, vehicles demolished—and mistaken this for effectiveness. The two are fundamentally different. At times, enormous destruction can have little or no effect on the enemy

if those things destroyed are not essential. Conversely, a few well-placed bombs can have disproportionate effects. Slessor used the analogy of a person’s windpipe: It isn’t necessary to sever it, simply interrupt the flow temporarily to achieve incapacitation.

Associated with this assessment function, intelligence must study closely and objectively the enemy’s system. Too often, an air planner with insufficient knowledge of the enemy will assume systems and networks operate similar to his own. Such mirror-imaging is almost always erroneous.

Air planners in both Strangle campaigns grossly overestimated the amount of supplies needed to keep a German or Chinese division supplied each day. These arbitrary figures were based on what an American division required. However, adversaries of the US are seldom as profligate as US troops are and usually require far less to sustain them. This problem became even more glaring in Vietnam when intelligence estimates regarding what the NVA or Viet Cong required were off by an even greater degree.

Centralized control of the AI campaign is essential to ensure targets are struck effectively and efficiently. During both the Korean and Vietnam wars, there was no single air commander in charge. This resulted in the Air Force and Navy-Marines conducting separate campaigns without centralized guidance. In Vietnam’s aftermath, joint doctrine belatedly introduced the position of the joint force air component commander whose mission was to rationalize and orchestrate all air operations to better achieve the goals of the joint force commander.

Air operations must be coordinated with ground operations. An army expends far more supplies—especially fuel and ammunition—when it is fighting. The ground commander must push the enemy to make him move and fight. This will not only expend his stocks—worsening sustainment problems—but will also expose enemy forces to air attack. If this double blast can be achieved, the enemy will lose strength quickly while also having fewer resources available. This symbiotic relationship was identified by Slessor in the 1930s, which is why he called for coequal air and ground commanders, collocated, who could plan their joint operations to achieve synergistic effects.

The advent of precision guided munitions, or PGMs, has enormously enhanced interdiction’s effectiveness. Weather and nighttime, usually lessening accuracy while also granting the enemy a sanctuary, have been all but removed as problems

by radar, lasers, and GPS. Precision weapons give AI a gratifying “twofer”: Less ordnance and therefore fewer sorties are required to knock out a target—and accuracy ensures low collateral damage. Combine accuracy with instantaneous communications relay and near-real time intelligence, and interdiction targets are now struck with an accuracy and rapidity previously impossible.

Even so, “pop-up” targets remain a concern. Fleeting targets, such as a terrorist leader traveling by car or a truck carrying enemy weapons, may allow only a short window for an air controller to react. He must identify the target; determine its exact location and, if possible, its destination; check the area for civilian personnel and structures that could become collateral damage in the event of a strike; and then identify an available shooter and put him over the target, ensuring the target will be destroyed before it has a chance to reach a safe location. It is a tall order.

Sufficient assets in aircraft, weapons, and personnel must be allocated to the AI campaign. In World War I, there were never enough air assets to ensure success. Part of the reason for this was the great inaccuracy of early weapons.

This was demonstrated during the Vietnam War when aircraft armed with unguided iron bombs attempted to knock out the Thanh Hoa bridge. In April 1965, 94 F-105s attacked the bridge unsuccessfully, with the loss of five aircraft. In May 1972, the bridge was struck heavily by 14 F-4s carrying laser guided bombs. No aircraft were lost. Follow-on attacks would destroy it. Most targets will need to be reattacked if they have been repaired after an air strike. Persistence is essential.

The air interdiction mission was identified as early as World War I, and it has steadily increased in importance. The goal of AI is to prevent the enemy from coming into contact with friendly forces, but if this is impossible, then the enemy should arrive at the battle late, fatigued, hungry, and low on ammunition. This enables military operations with as low a cost in blood and treasure—to both sides—as possible. Air interdiction, combined with PGMs, accurate and timely intelligence, and instantaneous command and control, reduces the cost of military success for all parties. ■

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