

Airpower in the Gulf War

Early on the morning of 17 January 1991, waves of coalition aircraft took off into the dark Arabian night, Air Force tankers and strike aircraft began the largest air campaign since the Second World War. Aloft, 160 tankers at multiple refueling tracks outside of Iraqi radar range awaited the strikers so they could “tank” before entering Iraqi air space. Airborne warning and control system (AWACS) aircraft kept track of friendly forces and focused their probing radar eye deep into Iraqi territory. The challenges facing the AWACS were considerable; the young E-3 crews had to act as lookouts, fighter directors, and airborne air traffic controllers.

As the clock edged towards 3:00 A.M. Baghdad time, the scheduled opening of the air offensive, a number of events took place. In the dark skies, a greater diversity of aircraft flew towards Iraq than had been airborne at any time since the Second World War. In the first hours of the air war, nearly 400 coalition strike aircraft stormed across Iraq, supported by hundreds of others over the Gulf region and over the fleet at sea. At sea, ships launched Tomahawk and land-attack cruise missiles and carriers launched aircraft to protect the fleet and hit selected targets ashore. Altogether, in that first night, 668 aircraft attacked Iraq—530 from the Air Force (79 percent), 90 from five Navy carriers and the Marine Corps (13 percent), 24 from Great Britain (4 percent), and 12 each from France and Saudi Arabia (2 percent each). In the first 24 hours, American and coalition airmen flew 1,300 combat sorties.

In one F-117 cruising over Baghdad, a stealth pilot carefully kept the crosshairs of his laser designator on a building the principal master attack planner had dubbed the AT&T building: a telecommunications center vital to Iraqi military command and control. The weapons bay snapped open, disgorging a 2,000-pound laser-guided bomb (LGB), which sank away from the black arrowhead, streaming wisps of vapor off its fins as it maneuvered to pick up the “basket” and plunge at high speed toward a little spot of laser light fixed unerringly on the top of the center. In Riyadh, Gen Charles Horner and his Black Hole staff

were waiting for Cable News Network (CNN), broadcasting via telephone from Baghdad, to go off the air. In Washington, planners and senior defense officials alike counted the minutes, fascinated at the irony of events about to unfold. If all went well, the first bomb-damage assessment (BDA) would be inadvertently transmitted in real time directly to the people most responsible for executing the strike as well as to the world at large. In Baghdad, CNN correspondents Bernard Shaw and Peter Arnett were reporting the anti-aircraft fire over the city to American audiences. Observed Shaw, “We have not heard any jet planes yet, Peter.” To which Arnett responded, “Now the sirens are sounding for the first time. The Iraqis have informed us. . . .” Nothing but abrupt static. CNN’s link went off the air. The US Air Force had delivered the first air weapon to strike into the heart of Saddam Hussein’s city. In both the Black Hole and in the depths of the Pentagon, wild cheers erupted.

All over Iraq that night, men and women from many nations and varied religions laid their lives on the line. Suited up, breathing hard, strapped into their ejection seats, and plugged into their aircraft with radio leads, oxygen hoses, and G-suit connections, they fought solitary wars—while peering through their head-up displays and at the often frightening spectacle outside—as they sought to impose by force what Saddam Hussein had refused to grant by reason. From below, long fingers of bright tracer weaved towards them. Coalition pilots could see dense flak over Baghdad from more than 100 miles away. Across the border, safe themselves from Iraqi defenses, sophisticated EC-130H Compass Call electronic warfare aircraft jammed communications, hindering the effectiveness of Iraq’s already crumbling integrated air defense network. Surface-to-air missiles (SAM) raced off their launch rails and snaked upwards, most fooled by electronic warfare standoff jamming or by pods on the strike aircraft themselves, though some missiles came close enough to send aircrews into violent breaks to escape their lethal paths. Regrettably, one destroyed a Navy F/A-18C, and its pilot became the first coalition airman to die in combat. Such losses, fortunately, were a rarity. Indeed, over the entire war, only 10 coalition aircraft fell to SAMs

despite thousands of SAMs fired against them—thanks to the heavy investment in electronic warfare technology and protection pods that had been made since the Vietnam conflict.

Severed from its leadership and attacked where it lived, the Iraqi Air Force (IQAF) was largely preempted from fighting. Those few pilots who did go aloft did not fare well. Capt Steve Tate, the flight leader of four F-15s from the 1st Tactical Fighter Wing, saw solid streams of tracers over Baghdad—arcing like colored snakes—with bombs going off everywhere. An E-A AWACS aircraft warned him of an Iraqi Mirage F-1, which had just taken off and was closing on the four Eagles from astern. He broke hard, turned behind the Mirage, fired an AIM-7 Sparrow, and watched it track the Iraqi fighter, which disintegrated in a huge fireball—one of 35 Iraqi aircraft that eventually fell to American and Saudi fighters. With runways cratered and many aircraft destroyed as ground crews readied them for flight, Iraqi commanders chose to keep their remaining planes sealed in bunkers, safe until they could be used at a moment of Iraq's own choosing. Thus, the IQAF never really got into the air.

By the time dawn broke on 17 January, Iraq was well on the way to losing the war, thanks to the strategic air campaign. That morning, a humane leader would have sued for peace, for all he could expect now would be the continued dismembering of the Iraqi infrastructure and its remaining military forces by virtually Olympian air power. The previous night's attacks separated Saddam Hussein and his leadership from their military forces. It drove his regime underground, where it no longer could control events or react to coalition initiatives. The most critical military support networks—command, control, communications, and intelligence (C³I), integrated air defenses, and power generation—were in shambles.

Indeed, the major damage occurred in the first 10 minutes. Minutes after H-hour, the lights went out in Baghdad and did not come on again until well after the cease-fire. Communications—the microwave towers, telephone relay exchanges, cables, and land lines—had been transformed into rubble. (Eventually, by the end of the second week, with backup communications systems disrupted, Saddam

Hussein was reduced to sending orders from Baghdad to Kuwait by messenger; the trip took at least 48 hours.) The coalition air attack had paralyzed the Hussein regime. Within the first hour, the integrated air defense network had collapsed; SAM sites and interceptor airfields were no longer under centralized control; and radar sites were destroyed or intimidated. Sector control stations and air defense headquarters were blasted into rubble. Antiaircraft forces were operating on their own, without broader information or support. Within several hours, attacks had left key Iraqi airfields with cratered runways, taxiways, and ramps. The IQAF remained in its bunkers. Known facilities for the research and manufacture of weapons of mass destruction had been destroyed or rendered unusable.

Overall, the coalition air campaign accumulated a total of 109,876 sorties over the 43-day war, an average of 2,555 sorties per day. More than 27,000 of them targeted Scuds, airfields, air defenses, electrical power, biological and chemical weapons headquarters, intelligence assets, communications, the Iraqi army, and oil-refining centers. Aerial tanking was crucial to producing these sortie figures. During Desert Storm, Air Force tankers exceeded even their Desert Shield support record, flying 15,434 sorties of nearly 60,000 hours, refueling 45,955 aircraft (20 percent of which were Navy or Marine airplanes), and off-loading 110.2 million gallons of aviation fuel. American airmen dropped 84,200 tons of bombs in the course of approximately 44,145 combat sorties, 67 percent of which were flown by the Air Force, 19 percent by the Marine Corps, and 14 percent by the Navy. Of the total bomb tonnage dropped, the Air Force dropped 72 percent, roughly 60,624 tons of both “smart” and “dumb” weapons, the Navy and Marine Corps sharing the remaining 28 percent. The Air Force dropped 90 percent (6,660 tons) of the precision munitions (7,400 tons) American forces expended in the war, the Marine Corps and the Navy accounting for the remaining 10 percent. Roughly 30 percent of the Air Force smart bomb tonnage was dropped by F-117s. The Air Force dropped 70 percent (53,964 tons) of the dumb bomb tonnage (76,800 tons) expended in the war, the Marine Corps and the Navy roughly splitting the remaining 30 percent.

Viewed in this fashion, the Gulf War was not, as some have alleged, an exercise in massive bombing unparalleled in previous air war history; neither the sortie rates nor the bomb-tonnage statistics made it so. The Air Force's tonnage expenditure in the Gulf War was only 11 percent of that expended against Japan (537,000 tons), less than 4 percent of that expended against Nazi Germany (1,613,000 tons), and less than 1 percent of the tonnage dropped in Southeast Asia. In measures of tonnage dropped per month, the Gulf air war ranked significantly below Vietnam and was only 85 percent of that in the Second World War. Yet the bombing achieved more this Gulf campaign than it did in any of these previous wars.

What made bombing decisive was what the strategic air campaign managed to accomplish. One can comprehend what strategic air power achieved in the Gulf War by looking at five separate categories of effort against military significant targets: attacks on command and control, power generation, refined fuel and lubricants production, the transportation infrastructure, and the IQAF.

First, the strategic air campaign struck 45 key military targets in the Baghdad area and drove the Hussein regime underground in disorientation, confusion, and ignorance, preventing Iraqi decision makers from controlling events or reacting to coalition initiatives. Yet the strategic air campaign did this without "carpet bombing" Baghdad or inflicting massive civilian casualties as with the bomber raids on Berlin that forced Hitler underground during the Second World War. Indeed, as was reported by one physician who visited Iraq after the war, the strategic air campaign hit with "neurosurgical precision."

Second, the strategic air campaign shut down the Iraqi electrical power grid by attacking selected generation plants across the country. One aircraft dropping two precision-guided bombs sufficed to destroy a power-generation station's transformer yards. During the Second World War, in contrast, the Eighth Air Force found it took two full combat wings, a force of 108 B-17 bombers (flying in six combat boxes of 18 aircraft each), dropping a total of 648 bombs (six 1,100-pound bombs per aircraft) to guarantee a 96-percent chance of getting just two hits (the minimum necessary to disable a

power-generating plant measuring 400 by 500 feet). Thus, by the time of the Gulf War, a single strike airplane carrying two smart bombs could function as effectively as 108 World War II B-17 bombers carrying 648 bombs and crewed by 1,080 airmen. Further, using the number of bomber sorties in the Second World War required to disable just two power stations, the coalition disabled the transformer capacity of every targeted power-generation facility in Iraq.

Third, the strategic air campaign targeted fuel and lubricants, the lifeblood of any military machine. Iraq was a major petroleum and electrical power exporter, with some of the most modern petroleum extraction, cracking, and distillation plants in the world. Before the war, it already possessed 50 times more reserve oil per person than the United States; after seizing Kuwait's oil assets, the government of Saddam Hussein controlled more than 10 percent of the world's oil production capacity and 20 percent of the world's known oil reserves. Thus, for less than one-half the tonnage dropped on a single German refinery during the Second World War, coalition strike aircraft destroyed the Iraqi refineries targeted for attack, a clear indication of the greater precision and destructiveness of modern air attack.

Fourth, the strategic air campaign achieved—for the first time in military aviation history—clear-cut interdiction of Iraqi transport into the Kuwaiti theater of operations. At the start of the war, there were 54 railroad and highway bridges in Iraq, most on roads running southeast from Baghdad into Basra and Kuwait. At the end of the war, 41 of the 54 bridges had been dropped (others had not been targeted for various reasons), and 32 pontoon bridges hastily built to offset the coalition air attacks had been destroyed as well. It had taken only 450 bomb-dropping sorties to accomplish this feat.

Fifth, the strategic air campaign destroyed the IQAF, preventing it from aiding the Hussein regime and its fielded forces in Iraq. As mentioned previously, the IQAF played little role in the war, mainly for two reasons. First, Saddam Hussein evidently believed that the coalition could not sustain its air effort beyond four or five days, and then the Iraqis could come out of their shelters and fight.

Second, when they did venture out, they ran into a veritable buzzsaw of Eagle pilots ready to do battle. During the immediate prewar period, the first two weeks of January, the IQAF had averaged approximately 55 shooter sorties per day, and another 40 or so sorties by support aircraft. On the first night of the war, it flew about 25 shooter sorties and 90 or so support ones. For the first week, IQAF fighter sorties averaged about 30 per day, but the IQAF quickly found that US Air Force fighters—and pilots—were better. Altogether, 14 Iraqi fighters fell before F-15s during that first week. Quickly, the Iraqis decided not to fight.

Coalition air leaders initially were uncertain of their success in so effectively shutting down Saddam Hussein's air force. Accordingly, they were on the lookout for a possible "Air Tet" that Iraq might spring for maximum destructive and propaganda effect. Thus, on 23 January, day seven of the war, the coalition began an active program of shelter busting. If the IQAF would not fight, it would be bombed in-place. Coalition aircraft carrying LGBs began striking Iraqi shelters, which had been designed to withstand the nuclear attack. The impact was immediate. On day nine, 25 January the IQAF appeared to stand down to take stock of what was happening to it. Then, the next day, it flushed to Iran. Why the IQAF fled to Iran may never be fully known. In any case, Iraqi fighters and support aircraft fled for the border. More than 120 left, trying desperately to evade the probing eye of AWACS and the F-15's powerful air-to-air radar. Some ran out of fuel and crashed over Iranian territory. Others fell to Air Force F-15 barrier patrols (the last on 7 February), raising total coalition fighter versus fighter victories by the end of the war to 35 enemy versus no friendly losses. Meanwhile, back in Iraq, more than 200 aircraft were destroyed on Iraqi airfields, and hardened 2,000-pound bombs devastated Iraq's supposedly impregnable shelters (patterned on Warsaw Pact models designed to withstand nuclear blast pressures) and the aircraft within many of them. Eventually day-and-night air strikes destroyed or seriously damaged 375 shelters out of a total of 594.

Key to the success of the air campaign was maintenance. From the suppliers to the line crews sweating under the desert sun, the Air

Force's maintainers worked miracles, enabling ever higher sortie rates as the war progressed. As a result, wartime mission capability rates actually exceeded peacetime rates. These rates, and generally similar ones for the Navy and Marine Corps, validated the DOD's investment in high-technology, high-leverage systems, refuting prewar critics who suggested that such policy had resulted in acquisition of overly complex and unreliable systems that could not be maintained in the operational intensity of actual war.

One of the major challenges confronting coalition attackers was ensuring that significant numbers of Iraqi tanks and artillery were destroyed so that when G-day—the onset of ground operations to reoccupy Kuwait—came, coalition ground forces would face minimal resistance and suffer minimal casualties. Four problems were inextricably bound up within that challenge: locating the tanks, mechanized vehicles, and artillery; discriminating between real targets and decoys; successfully attacking the real targets; and getting reliable BDA that could give Gen H. Norman Schwarzkopf accurate information on which to base his subsequent actions.

The first problem was by no means an easy one. Iraq's ground forces were superb combat engineers, adept at digging in, camouflaging, and hiding forces and weapons. Locating vehicles in the open was obviously not as difficult as locating ones buried in defensive positions. Various overhead systems, including the E-8A, joint surveillance target attack radar system (JSTARS), and the Lockheed TR-1 and U-2R, possessed optical and electronic sensors that could image a tank or artillery piece against its background. Finding dug-in tanks and artillery was a different matter, made more complex by Iraq's heavy investment in decoy technology.

During the Gulf War, smart weapons overwhelmed tank, artillery, and mechanized vehicle targets. After the war, General Horner recalled that one Iraqi general, a prisoner of war, stated during interrogation that “during the Iran War, my tank was my friend because I could sleep in it and know I was safe. . . . During this war my tank became my enemy . . . none of my troops would get near a tank at night because they just kept blowing up.” Swing-wing F-111F

Aardvarks dropping LGBs were particularly successful. Carrying the Pavé Tack targeting pod, F-111Fs would cruise over Iraqi lines, using the swiveling FLIR pod to sweep-search back and forth across the ground, a technique they had refined before the war. Twilight and night attacks proved particularly devastating because the differential cooling rate of metal vehicles and equipment against a desert background produced a heat pulse well above the heat of the desert at night. With a tank or vehicle located, the F-111F weapons system operator would designate it with a laser then drop a 500-pound GBU-12 LGB. Using these tactics, the F-111Fs became an outstanding anti-armor airplane. In the last days before G-day, F-111Fs achieved up to 150 armor kills *per night*. In one concentrated period of attacks over a single target area, F-111Fs destroyed 77 armored vehicles and tanks. Overall, F-111Fs were credited with more than 1,000 verified kills of Iraqi tanks and armored vehicles throughout the conflict. Other strike airplanes were also effective using LGBs; on one occasion, a two-ship of low-altitude navigation and targeting infrared for night (LANTIRN) equipped F-15Es destroyed 16 tanks with an expenditure of 16 GBU-12 bombs.

The GBU-12, ideally sized for destroying Iraqi vehicles, constituted nearly 50 percent of all smart bombs dropped by American forces, but the Maverick missile also played a major role in the destruction of Iraq's mechanized forces, artillery, and fortified positions. From F-4Gs, F-16s, and primarily A-10s, the Air Force fired over 99 percent of the nearly 5,500 Mavericks American airmen employed in the war. Two-thirds of these were AGM-65GD imaging infrared (IIR) versions of the missile, 30 percent were TV-guided AGM-65Bs, and 3 percent were larger warhead IIR AGM-65Gs. (The Marines fired the remaining Mavericks used in the Gulf, the laser-guided AGM-65E.) When employed against tanks, the \$70,000 AGM-65D IIR missile routinely destroyed \$1.5 million T-72 tanks in one missile, one tank exchanges, an example of the high-leverage and cost-effectiveness of smart weapons of the modern battlefield.

Many Iraqi divisions suffered severely under coalition air attack, as prisoner interrogations revealed. Over time, the effective strength

of these Iraqi divisions sank to about the 50 percent combat strength level from deaths, wounding, desertions, and surrenders. At that point, a military unit—even a remarkably resilient and motivated one—is so damaged as to be essentially unusable; thus there was no real point in continuing to bomb them. In mid-February, more than a week before the launching of the ground operations, General Schwarzkopf issued guidance directing that Iraqi units not be bombed below the 50 percent strength level. He was convinced of the success of the air campaign, and his timely action prevented waste of sorties.

To understand what air power enabled the land operation to accomplish, it is worth examining what it was intended to do via the air campaign's phase 3 attacks. The air campaigners had targeted Iraq's fielded military forces with a view to reducing their effective combat strength, cutting off their supplies, and destroying their command and control. To the ground forces, these strikes constituted "preparing the battle field;" but joint force air component commander planners saw it differently. "We are not 'preparing the battlefield,'" the director of the strategic planning cell in Riyadh declared emphatically, "we are destroying it."

And so Air Force airmen were in around-the-clock strikes with their American and coalition colleagues. More than 35,000 coalition attack sorties pounded Iraqi troops, including 5,600 directed against the Republican Guards. Every day, all day, and every night, all night, a constant parade of shooters, from such old war-horses as the B-52 to high-tech F-15Es and stealth fighters, entered Iraqi and Kuwaiti airspace. No aircraft received more attention during the war than the A-10, the least sophisticated aircraft to operate in the Gulf. Flown with rare courage, dedication, and fierce loyalty—as befitted men who saw themselves the heirs of the P-47 tradition from the Second World War—the A-10 demonstrated its versatility and value in a variety of missions, although its vulnerability to gun-and-missile systems eventually caused General Horner to limit its use in high-threat areas. Throughout the war, the 144 A-10s in the Gulf flew almost 8,100 sorties. Due to the low-altitude, ground-to-air threat and the greater precision necessary to hit targets from higher altitudes, the

Maverick missile, rather than its much-touted 30-mm GAU-8 rotary cannon, proved to be the A-10s principal weapon. Overall, Warthog pilots destroyed 1,000 tanks, 2,000 other vehicles, 1,200 artillery pieces, and two helicopters (shot down by the cannon).

The 249-large F-16 force generated more sorties—nearly 13,500—than any other aircraft in the Gulf War. It covered an array of targets ranging from Scuds to production facilities through battlefield emplacements and dug-in armor and artillery. The “Electric Jet” flew primarily as a dumb bomb-dropper, though one Air National Guard squadron operating in the close air support role relied upon a 30-mm gun pod carried under the plane’s belly. The F-16s did yeoman’s work, literally swarming over the battle area and earning the nickname killer bees. Killer scouts (F-16s configured as controllers and target markers) marked targets and directed attack aircraft hitting targets within individual 15-by-15-mile kill boxes—grids laid out across the Kuwaiti theater of operations (KTO) in a fashion analogous with the tactics employed by Fast FACs during Vietnam.

These attacks provided a veritable firestorm of munitions raining down upon Iraqi forces. They inflicted operational paralysis upon the soldiers in the KTO, immobilizing them, preventing them from fighting, breaking their will, and reducing many units to a rabble waiting to surrender. Previous attacks on Iraqi communications had so decimated Iraq’s command and control structure that it was unlikely that Saddam Hussein knew how much his forces were actually being hurt. The destruction in Iraqi armored and infantry divisions was severe. On average, each armored division had approximately 250 main battle tanks, 175 armored personnel carriers, and 75 artillery pieces. Infantry divisions also possessed substantial numbers of tanks, mechanized vehicles, and artillery. Repeated air attacks reduced the military effectiveness of these formations from a mid-January level of nearly 100 percent to mid-February average levels of less than 50 percent for units along the Kuwait-Saudi border (the tactical echelon), roughly 70 percent for second-echelon forces farther back (the operational echelon), and approximately 80 percent

for theater echelon forces (primarily Republican Guard), located deeper in Iraq or clustered along the Iraqi-Kuwaiti border near Basra.

As had been true in the Vietnam conflict, prisoner interrogations revealed that the B-52 was the weapon ground forces feared most. Between 20 percent and 40 percent of Iraqi troops attacked from the air deserted their units before G-day, and B-52 strikes appear to have played the major role in forcing their decision. One troop commander, interrogated after the war, stated he surrendered because of B-52 strikes. “But your position was *never* attacked by B-52s,” the interrogator exclaimed. “That is true,” the prisoner replied, “but I saw one that *had* been attacked.”

From the First World War onward, air strikes against military formations have always generated profound psychological effects, and the Gulf War was no different. One deliberate demonstration pointedly hinted at what air power could do. The crew of a Lockheed MC-130E Combat Talon special operations airplane (a modified version of the ubiquitous Hercules transport) dropped a massive 15,000-pound BLU-82 bomb in the midst of barren desert near Iraqi positions. The bomb detonated in an awesome and thunderous explosion that momentarily lit up the entire front. A leaflet drop followed, advertising more such bombs directly on Iraqi positions, causing mass defections, including virtually the entire staff of one Iraqi battalion. In sum, when delivered by long-range bombers, shorter-range fighters and attack aircraft, and specialized attackers such as the MC-130E, air power was decisive in cracking Iraqi morale. One Iraqi prisoner, a division commander, put it bluntly, “Why did your men give up?” his interrogator asked. “You know,” he replied sullenly, “I don’t know.” “Why?” the interrogator persisted. “It was the airplanes!” the Iraqi responded.

As the air campaign pounded Iraq, General Schwarzkopf directed the redeployment of American and attached foreign forces to the far west, beginning his “Hail Mary” maneuver. It was an extraordinary logistical effort; two whole corps—the XVII airborne and the VII armored, totaling 200,000 troops, involving 65,000 American and coalition vehicles—moved 250 and 150 miles, respectively, across

the desert. In any one minute, 18 trucks passed a given spot. The Abrams tank and Bradley fighting vehicle, two systems targeted by some critics for alleged unreliability, experienced no difficulties during the move. The 3d Armored Division, for example, moved approximately 125 miles at night and not a single one of its 300 tanks broke down.

C-130 theater transports were vital to the Army's move. During the westward shift, they flew almost 1,200 missions, delivering 14,000 people and over 9,000 tons of equipment; at the height of the airlift, C-130s flew within 10-minute separation between planes, a surge rate that required some airlift units to fly at twice their programmed wartime utilization rate. The Army's airlift needs resulted in the establishment of Logistics Base Charlie—a mile-long strip of the Trans-Arabian Pipeline (Tapline) Road. C-130s flew hundreds of sorties into this base, furnishing fuel and general cargo to the Army's XVII Corps.

The fourth phase of Desert Storm opened at 0400 local time, 24 February. Over the previous several days, a series of air and artillery strikes had destroyed much of the Iraqi artillery that had survived the weeks of air attack, and helicopter attack teams had decimated Iraqi command posts, air defense sites, and gun positions with Hellfire missiles. Thus, when the invasion actually began, it went quickly. The I Marine Expeditionary Force (I MEF) began the assault at 0400, breaching Iraqi defenses and driving towards the Ahmad Al-Jabir airfield. Fixing attacks prevented Iraqi forces from maneuvering; and when they did so, they were pounded unceasingly by air, artillery, and tank fire. Masses of Iraqi soldiers ("ridden down by bombing," as one British spokesman described them) began surrendering, fearful at first, and then running towards coalition troops in great rushes, clutching surrender leaflets or anything white. They were starving; air attacks had cut their supplies of food and water to nothing, and most were infested with lice, covered with sores, sick, demoralized, and in shock from the constant scream of jets and blasts of bombs. More than 8,000 prisoners were in custody by day's end; over 78,000 more eventually would be picked up. The VII and XVII Corps

advanced rapidly as well. Less than eight hours into the operations, the western most coalition forces were poised to threaten the entire region of the Tigris and Euphrates valley. The 24th Mechanized Infantry began an end-run north that eventually sent it hooking around over 250 miles, ending up 27 miles west of Basra, a charge of epic proportions. When Iraqi resistance showed itself, on call Air Force air strikes by F-16s and A-10s, helicopter gunships, battlefield rockets, and artillery battered and shattered it; like other coalition forces, the 24th could hardly keep up with the prisoners that surrendered to it.

On the morning of 24 February, as he recollected after the war, General Schwarzkopf expected the ground operation would take three weeks. Instead, it took 100 hours, then-President George Bush announced a cease-fire. At the end of G+2, the coalition had taken over 30,000 prisoners. Twenty-six of Iraq's 42 divisions in the KTO had been destroyed or, in the laconic words of the military, had been "rendered combat ineffective." The remainder would suffer the same fate over the next day and a half, for there was no way home to Iraq from Kuwait. On the third and fourth days, G+3 and G+4, all coalition forces advanced ahead of schedule, straddling Highway 8 between Baghdad and Basra, and consolidating their hold on the Tigris and Euphrates valley. The road to Baghdad was open, but coalition forces did not advance toward the Iraqi capital. Offensive operations against Iraq ceased at midnight on G+4, 28 February. By that time, coalition forces had taken approximately 86,230 Iraqi prisoners and detainees into custody.

In the final analysis, in its swiftness, decisiveness, and scope, the coalition's victory came from the wise and appropriate application of air power. Not surprisingly, American casualties were lower than in any previous conflict. Overall, the United States lost 113 personnel killed, and 385 wounded. Another 35 were killed and 73 were wounded by accidental friendly fire; 24 were killed and 58 were wounded in ground versus ground exchanges; and 11 were killed and 15 were wounded from air-to-ground fire. The loss or injury of any military member is at once tragic and regrettable, but the casualties

sustained by the United States in the Gulf War must be considered in light of what they could have been—and what some had predicted they would be, before the war—had the bulk of Saddam Hussein’s forces been fit, supplied, intact, and in place, awaiting the onset of ground operations. That they weren’t was primarily due to the success of the air campaign. Speaking at the US Air Force Academy commencement on 29 May 1991, President Bush emphasized that “Gulf Lesson One is the value of air power.”