

COLLEGE OF AEROSPACE DOCTRINE, RESEARCH, AND EDUCATION

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THE BATTLE OF KHAFJI:

AN OVERVIEW AND PRELIMINARY ANALYSIS

by

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Introduction

“Here at Air University it’s your business to read the lessons of the past with your eye on the far horizon.”

President George Bush
13 April 1991

In the early evening of 29 January 1991, Iraqi armor and mechanized infantry in eastern and southern Kuwait attacked US Marine Forces, Central Command (MARCENT) and Arab Joint Forces Command-East (JFC-East) units at several points along the Kuwaiti-Saudi Arabian border. The Iraqi offensive lasted a little over four days, continuing until 2 February. Known collectively as the Battle of Khafji, the series of engagements between Iraqi forces and the US-led anti-Iraq coalition represented the first significant ground action of the Gulf War.

At the time it was fought, the Battle of Khafji was viewed as a small and relatively inconsequential attack on an abandoned Saudi border town. In fact, Khafji was a very significant engagement, since described in one highly regarded study as the “defining moment” of Operation Desert Storm. Other than Scud attacks, Khafji was the only major Iraqi offensive of the war and its outcome demonstrated the impotence of the Iraqi army in the face of Coalition (primarily American) airpower.¹

The Battle of Khafji was preeminently an airpower victory. Coalition air furnished offensive and defensive support to friendly ground forces and, by effectively isolating the battlefield, prevented the reinforcement of engaged Iraqi units. Although the Iraqis achieved tactical surprise and may have initially achieved certain limited objectives, in the end the Battle of Khafji was a devastating defeat for the army of Saddam Hussein. When the battle ended on 2 February, Coalition forces had stopped elements of three

Iraqi divisions (forcing two of them to retreat in disarray back to Kuwait and never allowing the third even an opportunity to properly form), destroyed in the vicinity of 600 enemy vehicles, and recovered all lost territory with minimal friendly losses. In each of these outcomes, airpower was the decisive element.²

Impressive in themselves, these “facts-on-the-ground” were transcended by the larger strategic-operational effects of Coalition air strikes. Exploiting an unprecedented detection-targeting-strike capability based on the new joint surveillance target attack radar system (JSTARS), Coalition air wreaked havoc on enemy follow-on forces forming north of the Kuwaiti border and imposed on the Iraqis a grim view of their military prospects. Denied the ability to maneuver on the battlefield even at night, the Iraqi army of occupation in Kuwait was left with three bleak alternatives: fight and most likely die, surrender, or retreat.

In hopes of stimulating additional research on an important airpower victory, this paper traces the major events associated with the battle and offers a preliminary analysis of the role and impact of airpower. Three issues are considered in some detail: the apparent influence of airpower on Iraqi strategy and military behavior in the days before the battle; close air support (CAS) operations along the Kuwaiti-Saudi border; and most importantly, the use of airpower to isolate the battlefield and attack Iraqi follow-on forces. Finally, some consideration is given to the implications of the Khafji battle for professional airmen.

Prologue to Battle

A serious inquiry into airpower's influence on Iraqi military plans prior to the Battle of Khafji might well begin with an assessment of Iraqi intentions in launching an offensive into Saudi Arabia. Lacking access to Iraqi sources, it is impossible to specify those intentions precisely. But of one thing we may be sure: before the Coalition initiated hostilities on the night of 17 January, Saddam Hussein had expressed little regard for the capabilities of airpower. In an oft-quoted comment made a few months before Operation Desert Storm began, the Iraqi leader scoffed, "The air force has never decided a war." Confident in Iraqi air defenses and in the unwillingness of the United States to "accept 10,000 dead in one battle," Saddam preferred to believe that the military issue would be decided on the ground.³

That the Coalition arrayed against him chose to commence hostilities with air attacks probably came as no surprise to the Saddam Hussein. What probably did surprise--indeed likely dismayed--Saddam and his generals was that those air attacks were so devastatingly effective and, in particular, that they lasted much beyond the three to seven days the Iraqi high command had anticipated.⁴

Notwithstanding Saddam's elaborate air defense system, for all practical purposes Coalition airmen dominated the skies from the first night of war. As the fighting entered its second week, air strikes were taking their toll of Iraqi military forces, causing massive disruptions in logistical support, and eliminating what was left of Saddam's command and control apparatus. The Iraqi air force in the meantime either had fled to Iran or was being systematically destroyed in the coalition's "shelter busting" campaign. No doubt the

Iraqis were further disconcerted when their Scud attacks against Israel failed to disrupt the political unity of the Coalition.⁵

It was against this general background of intense and punishing air strikes that some two weeks into the war, the increasingly desperate Iraqis decided to take the initiative and launch the ground offensive now known as the Battle of Khafji. Students of the Gulf War generally agree that by launching attacks on MARCENT and JFC-East forces deployed in northeastern Saudi Arabia, Saddam hoped to provoke a major ground engagement and with it an opportunity to impose heavy casualties on American forces. Saddam's presumed objective was to inflict American losses so high that congressional and public opinion would turn against the war. There is also general consensus that by taking the offensive, Saddam hoped to capture prisoners and thereby obtain much needed intelligence on Coalition intentions. Not least, exacting heavy American casualties could produce a propaganda victory for the Ba'athist regime that might raise Saddam's sagging stock in the Arab world. That such an offensive might have been considered feasible in the first place presumably was based on the Iraqis' belief that by moving their forces forward and attacking under cover of darkness--a tactic much used in their long war with Iran-- they could effectively neutralize the ability of Coalition airpower to detect and attack them. What the Iraqis did not realize was that the Coalition had at hand the means to deny the sanctuary afforded by the night and to employ airpower with deadly accuracy against large units moving after dark.⁶

As the second week of Desert Storm wore on, what the Iraqis did know was that continued military inactivity simply would accelerate what one senior US Central Command (CENTCOM) officer later termed the "death spiral their army was caught up

in as it was locked in place in the desert and pounded from the air.” Thus the Iraqis had little choice but to fight. Put another way, the effectiveness of the Coalition air campaign had, in effect, provoked Saddam Hussein into committing what for the Iraqis became a very costly operational blunder.⁷

Ironically, by this time a rather more sanguine view had come to prevail within the Coalition about the nature of the Iraqi threat. Once the air campaign began on 17 January, Coalition leaders largely discounted the likelihood of a major Iraqi ground attack. Their confidence on that score was pointed up by the decision to shift the XVIII Airborne Corps and VII Corps some 300 miles to the west in a deployment that, until complete, would markedly increase the vulnerability of US Army, Central Command (ARCENT) forces. Should an Iraqi ground offensive occur, ARCENT planners believed it would begin in the border area below the al-Wafra oil fields in southern Kuwait and progress southwestward down the Wadi al-Batin where the topography would help mask the movement of Iraqi troops.⁸

Whether or not the intelligence then available to the Coalition pointed conclusively to an impending enemy offensive, there were repeated indications of significant enemy troop movements during the week preceding the Iraqis’ cross-border attack on 29 January. While orbiting over the MARCENT area of operations (AO) below southeastern Kuwait on the night of 22 January, JSTARS, a new airborne radar platform that had arrived in the theater less than two weeks before, sighted over 70 Iraqi vehicles moving toward the Saudi border. Three nights later JSTARS observed a convoy of about 80 enemy vehicles entering the Wafra oil fields, just a few miles north of the Saudi frontier. The night before the attack, JSTARS reported medium to heavy Iraqi vehicular traffic

along the Kuwaiti-Saudi border. But did this activity, detected over the period of a week, necessarily portend an invasion of Saudi Arabia? In war, the intentions of one's adversary are always difficult to discern, and after-the-fact interpretations of events can be unjust to commanders who had to act on intelligence that at the time was ambiguous at best. Thus, to describe, as did one MARCENT spokesman, the Iraqi movements of 28 January as a probable training exercise was to make a not wholly unreasonable inference based on what was known at that point.⁹

As is usually the case in such matters, several converging factors help to explain the Iraqis' success in achieving tactical surprise in the Battle of Khafji. In the first place, relatively little significance was attached to Iraqi ground activity in southern and southeastern Kuwait simply because the attention of Coalition leaders was strongly focused elsewhere. In accordance with the priorities established by the CENTCOM commander, Gen H. Norman Schwarzkopf, and by his superiors in Washington, the single JSTARS airborne each night devoted much of its flying time to reconnoitering the western reaches of the theater in support of Scud suppression, strikes on Republican Guard divisions, and the ongoing redeployment of two US Army corps.

Therein lay a second problem: the limited availability of an important new battlefield asset. With only two JSTARS E-8As in the theater, both still in engineering development, the Coalition was hard pressed to keep even one of them in orbit each night. And since General Schwarzkopf was regularly sending that lone E-8A off to hunt for Scuds and the Republican Guard, coverage of any one particular area was intermittent and uneven. That gave the Iraqis a fair chance of moving a portion of their forces up to the Saudi border without being detected. As chance would have it, when the Iraqis actually crossed the

border and attacked MARCENT and JFC-East forces on the evening of 29 January, the one JSTARS aloft was in orbit over the ARCENT area far to the west.¹⁰

Nor can we discount entirely the lulling effects of inertia and perhaps excessive confidence on the part of Coalition leaders that once the air campaign had begun, the military initiative would remain securely with them. One American general stated later, “We never thought they were going to do anything because they hadn’t done anything in so long.”¹¹

The Battle

Based on a number of postbattle assessments, it appears that Iraqi plans called for their 3rd Armored Division and 5th Mechanized Division to make the actual attack while the 1st Mechanized Division handled the task of guarding the attacking units’ western flanks. The 3rd Armored Division’s mission was to cross the Saudi-Kuwaiti border due south of Wafra and then turn east to attack the Saudi port of Mis’hab on the Persian Gulf (see map). Moving out of its positions about 30 miles to the west, the 1st Mechanized Division would head south-southwest and serve as a screening force between the “elbow” and the “heel” of Kuwait where that country’s border with Saudi Arabia angles northwest. Simultaneous with these movements, the 5th Mechanized Division would attack straight down the coast, rout Saudi forces posted on the border, and press due south with the presumed intention of linking up with the 3rd Armored in the vicinity of Mis’hab. In support of the 5th Mechanized Division, an Iraqi commando force would move south along the coast by boat with orders to infiltrate and create havoc in the Coalition’s rear. Once the battle was joined, reinforcements would proceed south to

follow up and exploit the initial successes achieved by the lead battalions. With the ground battle under way, the Iraqis presumably planned to retire behind their defenses in the southern Kuwaiti theater of operations (KTO) and draw American ground forces after them into killing zones where Iraqi artillery and counterattacks would impose massive casualties.¹²

The 5th Mechanized Division's attack route pointed directly at Ra's al Khafji, a Saudi oil and resort town on the shore of the Persian Gulf about eight miles below the Kuwaiti border. Khafji was all but deserted at the time of Iraqi incursion. Because the town was located within range of Iraqi artillery in southern Kuwait, the Saudi government had evacuated its 15,000 inhabitants on the first day of the war.¹³

Coalition forces along this portion of the front consisted of troops from Saudi Arabia, Qatar, and the United States. JFC-East had primary responsibility for the eastern portion of the Coalition line. Defense of the coastal road leading to Khafji was entrusted to one battalion of the Saudi Arabian National Guard (SANG) and a Qatari tank battalion. By late January small US Navy and Marine reconnaissance units and Air and Naval Gunfire Liaison Company (ANGLICO) teams were also reconnoitering the area around Khafji. About 30 miles to the west, the 2d Marine Light Armored Infantry (LAI) Battalion, 2d Marine Division, was screening the area south of Wafra. The 2nd LAI's base of operations was observation post 2 (OP-2), one of a series of old Saudi police posts located at about 15-mile intervals along the Kuwaiti border. Some 30 miles further west, units assigned to Task Force Shepherd, a battalion-sized Marine LAI screening force drawn from the 1st Marine Division, occupied OP-4 in the Umm Hjul sector below the heel of

Kuwait. Another smaller Task Force Shepherd contingent was based 30 miles beyond at OP-6 near the elbow of Kuwait.¹⁴

The Iraqis crossed the border in three columns, battalion sized or larger, on the evening of 29 January. The westernmost column consisted of a T-62 tank battalion and armored personnel carriers (APC) drawn from the 1st Mechanized Division. Proceeding southwest out of the area between the elbow and the heel of Kuwait, this force headed directly toward the area occupied by the marines of Task Force Shepherd. Elements of the 3rd Armored Division constituted the central column, which came due south from Wafra. Composed of about 50 tanks and 30 APCs, this spearhead made little progress before colliding at OP-2 with the marines backed up by coalition airpower. The eastern column of 40 or more tanks and APCs proceeded directly down the coastal road toward Khafji. In support of the eastern task force, the Iraqis dispatched the aforementioned commando force to conduct seaborne raids behind Coalition lines. In the event, soon after departing Kuwait in 15 small patrol boats, the commando force was sighted and destroyed or scattered by US Navy and British Royal Navy fixed-wing aircraft and helicopters. It should be noted that air support for the Iraqis was totally absent due to the Coalition's early and complete success in winning air superiority.¹⁵

The Battle of Khafji began at approximately 2000 hours local time on the evening of 29 January, soon after the marines at OP-4 sighted advance elements of the Iraqi 1st Mechanized Division approaching out of the darkness. The lightly armed marines promptly engaged the Iraqis with TOW antitank missiles and called for air support.¹⁶

Marine and Air Force CAS began to arrive in front of OP-4 by 2130 local time. By 2300, three AC-130 gunships, two F-15Es, two LANTIRN-equipped¹⁷ F-16Cs, and four

A-10s had joined the battle at OP-4. (Two additional A-10s were placed on alert at King Fahd International Airport, outside Riyadh.) The fighting at OP-4 continued for several hours before the Iraqis broke off the action and retreated northward into Kuwait. This initial response notwithstanding, it apparently took the US Air Force, Central Command (CENTAF) Tactical Air Control Center (TACC) at least four hours to realize that a significant engagement was developing along the Kuwaiti-Saudi border. Absorbed with SCUD suppression, the Republican Guards, and the demands of executing an intricate air tasking order (ATO), TACC personnel were described by one source as initially exhibiting a “business as usual” attitude. The same source reports that attitude lasted only as long as it took Lt Gen Charles A. Horner, the CENTCOM joint force air component commander (JFACC), to arrive on the scene. When he reached the TACC shortly after midnight, Horner quickly sensed an opportunity was at hand to attack Iraqi forces in the open and promptly ordered additional diversions of theater air to support the Marine and Air Force “shooters” already attacking the Iraqi columns.¹⁸

CENTCOM leaders initially viewed the Iraqi incursion as a feint presaging a larger attack. ARCENT feared a more ambitious follow-on strike aimed at the repositioning VII Corps while MARCENT was worried about an assault on its exposed logistics base at Kibrit. To provide real-time indications and warning, Horner’s solution was to give ARCENT 20 minutes of JSTARS coverage for every 40 minutes spent orbiting the MARCENT AO.¹⁹

Well-conducted air strikes during the night of 29/30 January were essential to repulsing the Iraqi attacks on OP-4. The victory at OP-4 was marred, though, when two Marine light armored vehicles (LAV) were destroyed by “friendly fire.” One LAV was

hit by friendly surface fire; the other was struck by a malfunctioning Maverick missile fired by an A-10. A total of 11 marines died in the first case of coalition fratricide in Desert Storm.²⁰

Soon after the attack began on OP-4, advance elements of the Iraqi 3rd Armored Division proceeded out of Wafra and descended on OP-2. Like their comrades at OP-4, the marines at OP-2 responded with TOW missiles, automatic cannon fire, and a call for air support. Shortly before 2240 hours word reached the TACC that some 50 Iraqi tanks were approaching the besieged outpost. Marine F/A-18s, A-6s, and AH-1s and Air Force A-10s and F-16s were vectored into the area. Beginning about 2300 and for the next three hours Air Force and Marine air attacked the Iraqi forces in front of OP-2. The Iraqis broke off the engagement shortly after 0200 and straggled back toward Wafra.²¹

Off to the northwest, OP-6 came under fire shortly after 0100. Giving way to about a dozen Iraqi tanks and APCs, the commander of the single LAV company at the outpost requested air support. Marine and Air Force CAS drove off the attackers during the night. By daylight only the residue of battle remained: destroyed Iraqi armor and surrendering enemy troops.²²

The marines at OP-2 and OP-6 faced no further threats, but fighting at OP-4 flared up sporadically throughout the night and repeated strikes were flown against enemy concentrations massing in the nearby heel of Kuwait. An Iraqi armored force consisting of an estimated 15 tanks reappeared before OP-4 at 0720 to attempt a final assault. Several flights of A-10s and a flight of Marine F/A-18s arrived a few minutes later. For the next hour a combination of air and antitank missiles imposed mounting losses on the enemy. Deciding at last to withdraw, the retreating Iraqis were subjected to an even more intense

level of fire for several hours as they made their way back to Kuwait. When the shooting finally stopped, Marine ground troops counted a total of 22 destroyed tanks, and they spent the next several days rounding up several hundred prisoners of war.²³

Although the Coalition decisively repulsed the Iraqis' western and central columns, the 5th Mechanized Division's eastern thrust down the coast road proved more successful. Shortly after it crossed the Saudi border at approximately 2300, elements of this force were engaged by an AC-130 gunship and Marine AH-1 helicopters. The Iraqis lost some 13 vehicles but encountered only light opposition on the ground from screening elements of the 2nd SANG. By 0030 the Iraqis had reached the outskirts of Khafji and proceeded to occupy the town. A continuing series of engagements over the next three days consisted of Iraqi efforts to reinforce their troops in Khafji and of Coalition efforts to repulse those reinforcements, attack Iraqi units in defensive positions along the border, and reoccupy the town of Khafji. Khafji remained under enemy control until the afternoon of 31 January when, effectively isolated by continuous air strikes on units attempting to come to their relief, the beleaguered Iraqis surrendered to Saudi and Qatari ground forces.²⁴

CAS at Khafji

As noted above, the lightly armed Marine screening forces at the various OPs began calling for air support almost immediately after they sighted the Iraqi advance elements coming across the border. Coalition air continued to provide extensive CAS for engaged ground units throughout the four-day battle.

Command and control procedures for CAS operations proved generally effective. These arrangements provided for a fire support coordination line (FSCL) well north of the Saudi-Kuwaiti border. As is customary, aircraft striking targets inside the FSCL had to work under the direction of forward air controllers (FAC). The distant FSCL was intended to ensure an ample margin of safety for FACs and ANGLICO teams working targets along the border. However, during the battle of Khafji the FSCL was moved back to the Saudi border and on one occasion brought down below it. This resulted in a free-fire zone along the border, a situation which enabled the coalition to increase the number of strikes in areas where the Iraqis had concentrated their forces.²⁵

Together with Air Force and Marine fixed wing and Marine rotary wing aircraft, the new JSTARS system proved a vital asset in beating back the Iraqi attacks. An airborne radar that could monitor enemy vehicle traffic at night with impressive clarity, JSTARS was an indispensable element in ensuring the efficient and effective use of coalition aircraft. Then in a prototype configuration, JSTARS conveyed an accurate picture of Iraqi troop dispositions on the night of 29/30 January and, in conjunction with the airborne battlefield command and control center (ABCCC), redirected strike aircraft against them. JSTARS repeatedly demonstrated its value during the days that followed. By furnishing a real-time, theater-wide “picture” of Iraqi movements along the Kuwaiti-Saudi border, JSTARS enabled commanders to formulate strategies and allocate sorties with an impressive understanding of where they would do the most good. As commanders learned during the Battle of Khafji, there was an interesting reciprocal dimension to JSTARS-derived information. Although JSTARS’ major function was to report where enemy traffic

was moving, Coalition leaders found it could be no less useful to know where the enemy was not moving.²⁶

Although the coalition had a large number of CAS assets, many of these aircraft—USAF A-10s in particular—had limited capability at night. Close coordination with ground and airborne FACs helped mitigate the problem, but not without difficulty. Limited night capability certainly contributed to several fratricide incidents. As mentioned earlier, during the first hours of the battle of Khafji, so-called friendly air-to-ground fire claimed the lives of seven marines at OP-4.²⁷

A few tragic mishaps notwithstanding, well-coordinated air strikes during the night of 29/30 January were critical to the success of US Marine Corps and Saudi units in meeting and stopping larger and heavier Iraqi forces. At General Horner's behest, in the early morning hours of 30 January air planners began retasking a growing number of strike sorties to perform CAS on behalf of Coalition ground forces. By 31 January approximately 260 sorties had been flown in and around the town of Khafji alone.²⁸

Most of the CAS flown in the immediate area of the town of Khafji was performed by Marine Corps air. Khafji was located in an area controlled by the Marine direct air support center (DASC) and, as General Horner later explained, Marine controllers "were more comfortable working with their Marine assets." For its part, the Air Force concentrated on interdicting Iraqi follow-on forces in southern Kuwait, which prevented reinforcements from relieving the battalion-sized force occupying the besieged town. So intense and deadly did the Air Force attacks become that Iraqi forces caught north of Khafji soon were reduced to firing antitank rockets skyward in a frantic effort to defend themselves.²⁹

As much for political as for military reasons, the Iraqi occupation of Khafji was a matter of intense concern to the Saudis. Already angered by the failure of the Marine Corps to furnish CAS to JFC-East units during the initial Iraqi attacks on 29 January, Saudi Prince Khaled bin Sultan, senior commander of the Coalition's Arab forces, called General Horner in the CENTAF TACC at 1500 on 30 January and personally requested air support for a planned counterattack on Khafji. After an hour passed and the promised strike aircraft still had not appeared, Khaled angrily threatened to withdraw all Saudi air from Coalition control. Immediately thereafter the aircraft Horner already had diverted arrived to support the Saudi-Qatari assault. The first JFC-East counterattack on Khafji was launched at 1800 on 30 January. That attack failed but a second assault succeeded, and the Saudis retook Khafji the following afternoon.³⁰

Interdiction in the Battle of Khafji

In the military sense, air interdiction consists of “operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces.”³¹ Coalition airpower performed this function with impressive results during the four-day Battle of Khafji in northeastern Saudi Arabia and southern Kuwait. Purists might argue that the classical distinctions between CAS and pure interdiction operations sometimes were blurred during this battle, but few would deny the spectacular success of air attacks against Iraqi follow-on forces moving toward Khafji or congregating in troop assembly areas in southern Kuwait.

During the early phases of the battle, CENTAF directed the aerial interdiction effort at two areas: eastern and southeastern Kuwait, from whence had come the attacks on

Khafji and the Marine OPs, and central and western Kuwait where JSTARS imagery, attack mission reports, and other intelligence indicated a significant buildup of Iraqi forces. Based on the direction and relative distribution of traffic flows at that point (about 2000 hours on 30 January), the weight of evidence suggested the Iraqis were massing to move down the Wadi al-Batin. In CENTAF's opinion, their likely target was the Egyptian-Syrian forces in JFC-North, a 50-mile-wide sector of the front separating the ARCENT and MARCENT AOs. Intelligence gathered on the nights of 30 and 31 January showed significant Iraqi vehicle movement flowing in two streams from central Kuwait. An estimated two-thirds of the traffic was moving southwest toward the intersection of the Kuwaiti, Iraqi, and Saudi frontiers (the so-called tri-border area); the remainder was moving southeast toward Khafji.³²

Acting in his capacity as the CENTCOM JFAAC, General Horner devised an effective distribution of theater air assets to meet the Iraqis' surprise cross-border attack. Such careful orchestration was essential to ensuring the availability and smooth flow of a finite number of night-capable assets. Night interdiction operations saw F-15Es, operating in conjunction with JSTARS, conducting armed reconnaissance from the tri-border area to Al Jahrah in central Kuwait. Although concentrated in the MARCENT area, Marine air was employed widely across southern Kuwait as well. Marine F/A-18D Fast FACs played a particularly notable role in controlling night interdiction strikes along the Saudi-Kuwaiti border. Elsewhere, Air Force A-10s and AC-130s and Marine AH-1s flew in support of JFC-East and patrolled the coast road above and below Khafji. A steady stream of A-10s were also directed into the MARCENT sector while LANTIRN-equipped F-16s were employed against JSTARS-developed targets in western Kuwait. Making the most of their

valuable night systems, LANTIRN-equipped F-16s also were diverted as necessary to support JFC-East forces in the area between Khafji and the Kuwaiti border. These diverse and high-tempo night interdiction operations were further augmented by B-52 strikes against choke points and troop assembly areas in southern and central Kuwait.³³

High intensity combat operations are rarely sustained without costs. It was during this period that the majority of USAF combat fatalities in Desert Storm occurred when an AC-130 gunship (callsign *Spirit 03*) was shot down. Engaged in attacking targets a few miles north of Khafji, *Spirit 03* was hit by a SAM just after sunrise on 31 January and crashed in the Persian Gulf with its entire 14-person crew. In spite of sometimes heavy SAM and AAA fire, *Spirit 03* was the only Coalition aircraft lost during the Battle of Khafji.³⁴

The operational pattern of the daylight interdiction effort varied slightly. Both A-10s and non-LANTIRN F-16s were heavily tasked for daylight missions, and much use was made of the “push-CAS” system, particularly in eastern Kuwait. Under the push-CAS concept, strike aircraft for which no CAS targets were available were flowed or “pushed” on to preplanned targets or “kill boxes” in the KTO or “handed off” to USAF or Marine Fast FACs for employment against interdiction targets. On 30 January, as air operations associated with Khafji approached full intensity, A-10s alone flew a total of 293 sorties, a sortie rate they would never exceed on any single day for the remainder of the war. During the height of the battle (29-31 January) more than 1,000 attack sorties were flown against targets in southeastern Kuwait. An additional 554 strike sorties were flown in the southern KTO between 1 and 3 February.³⁵

So heavy and effective did this virtual air envelopment become that barely 24 hours after his troops first came across the sand berm in front of OP-4, Maj Gen Salah Aboud

Mahmoud, the respected commander of the Iraqi III Corps and the man designated by Saddam Hussein to direct the Khafji offensive, repeatedly requested permission to terminate the operation. Denied permission to withdraw on the grounds that he was fighting the “Mother of All Battles,” Mahmoud bitterly advised Baghdad that “the mother is killing her children.” About 12 hours later, on the morning on 31 January, Mahmoud unilaterally directed his forward brigades to break contact and return to central Kuwait. Another Iraqi radio communication intercepted the following day (31 January) reported that two divisions headed for Saudi Arabia had been turned around while still inside Kuwait after losing 2,000 troops and 300 vehicles, mostly to air strikes. The cumulative horrific effect of heavy and sustained air attacks was grimly conveyed by two A-10 pilots. Surveying the aftermath of a B-52 strike on a troop assembly area near Wafra on 1 February, the pilots described the frantic maneuverings of surviving Iraqi vehicles as visually equivalent to the results of “turning on the light in a cockroach-infested apartment.”³⁶

By any measure, the interdiction campaign which continued against increasingly scattered clusters of Iraqi vehicles in the southern KTO through 2 February, was an astounding success. The most visible result of the battle was the virtual elimination of the Iraqi 5th Mechanized Division. Definitive numbers are hard to come by, but by all indications this unit suffered enormous losses. Ground engagements alone cost the 5th Mechanized at least 40 tanks and almost as many APCs. The volume of air attacks north of Khafji and in troop assembly areas around Wafra suggests significantly higher attrition was imposed, a conclusion supported by a number of enemy prisoner of war (EPW) reports. Indeed, following the Battle of Khafji there are indications that the 5th

Mechanized, heretofore considered one of the better units in the Iraqi army, simply had been eliminated as an effective fighting force.³⁷

For the four-day period beginning 29 January, CENTAF reported destroying 544 tanks, 314 APCs, and 425 artillery pieces theater-wide. Subsequent analysis disclosed as much as two-thirds of that overall attrition was due to interdiction associated with the Battle of Khafji. To further underscore the significance of those numbers, during the two weeks of fighting that preceded Khafji, air strikes had destroyed only 80 tanks, 86 APCs, and 308 artillery pieces.³⁸

First-hand confirmation of airpower's effectiveness is available from Iraqis who participated in the Khafji offensive and from members of the Coalition ground forces who faced them. Although the contents of interrogation reports always need to be treated with a measure of care, one cannot help being struck by the constant number of references to the devastating physical and psychological effects of air strikes. The consensus among Iraqi prisoners was that airpower was decisive in stopping the invasion and in literally shattering the units which had participated in the effort. Perhaps the most revealing comment of all came from a member of the Iraqi 5th Mechanized Division who had fought in the Iran-Iraq War. This veteran soldier stated that coalition airpower imposed more damage on his brigade in half an hour than it had sustained in eight years of fighting against the Iranians.³⁹

US Marines who opposed the Iraqis on the ground also testified to the vital role played by airpower, first in stopping the Iraqi invaders and then in defeating them in detail. One Marine platoon leader said of the Iraqis his men captured at the conclusion of the fight at OP-4: "It appeared to us that these Iraqis surrendered after fleeing their

vehicles because of the presence of A-10s on the battlefield.” Reflecting on 30 January about the previous night’s battles along the Kuwaiti border, General Walter E. Boomer, the MARCENT commander, observed, “Other than our loss[es], I am not unhappy with last night.... I think our air[power] probably stopped them; so whatever it was they were trying to do, [it] wasn’t very successful.”⁴⁰

JSTARS was a star performer on the first CAS-intensive night and on the three nights that followed when interdiction operations ranged across the breadth of southern Kuwait. Indeed, during the Battle of Khafji, the JSTARS system appears to have played the role of something approaching a *deus ex machina*.⁴¹ An airborne radar that could detect and track moving enemy vehicle traffic at night, JSTARS proved indispensable in ensuring the effective around-the-clock use of strike aircraft.⁴²

In a sequence of almost unbelievably fortuitous events preceding the Iraqi offensive, two E-8A JSTARS aircraft in prototype configuration had arrived in Saudi Arabia in mid-January. Neither crew training, doctrine, nor the ATO envisioned that JSTARS would assign targets directly to strike aircraft. JSTARS was viewed at first simply as a surveillance platform. Accordingly, ATO procedures initially specified that JSTARS must pass all targets it detected to the ABCCC, which customarily exercised direct control over the “shooters.” Then, almost on the very eve of the Battle of Khafji, a concept was tested which gave JSTARS direct control over F-15Es attacking ground targets. The experiment was a success and the ATO for 28 January was amended to authorize JSTARS control of strike aircraft performing interdiction missions.⁴³

Over the four-day period of the Battle of Khafji, almost all F-15E night sorties (100 out of 104 sorties flown) and a significant number of F-16 night sorties (40 out of 142

sorties flown) were either controlled by JSTARS or directed against JSTARS-developed targets. JSTARS redirected fully half of these sorties against moving targets in the KTO. In a few instances, even B-52s were diverted to strike JSTARS-developed targets. By 31 January senior US officers, who in some cases originally tended to view the new system as a “toy,” had revised their opinions and were voicing high regard for JSTARS capabilities.⁴⁴

Implications of the Interdiction Campaign

In retrospect, there were at least three battles fought during the Iraqis’ Khafji offensive. The first was conducted at the OPs along the Saudi-Kuwaiti border and consisted of a 12-hour long series of probing attacks beaten back by US Marines and Coalition CAS. The second was conducted within and around the town of Khafji, a battle fought on the ground largely by the Saudis and one in which air support again played a vital part. The third battle, most destructive of all for the Iraqis, was waged solely by Coalition air as it attacked the enemy’s follow-on forces along the roads and in assembly areas between Kuwait City and the Saudi border. Fought mostly at night when the Iraqis would attempt to move, this battle destroyed the enemy’s troop formations and supply convoys, sometimes when they had barely formed up. In the process, this aerial interdiction effort delayed and disrupted attack schedules and made it impossible for some principal units (e.g., most of the 3rd Armored Division) to get into the fight at all. Increasingly unable to move without risking high losses, the Iraqis found themselves in the battle that inspired General Mahmoud’s despairing comment about the mother “killing

her children.” This was the battle in which airpower provided a new answer to an ancient military question: how to defeat an enemy army.⁴⁵

In terms of larger operational effects, it was the “third” battle that revealed most clearly that the army of Saddam Hussein was helpless in the face of Coalition airpower. As much as any single event of the war to that point, the memory of Khafji subsequently undermined the Iraqis’ will to fight. For the remainder of the war the Iraqis kept their movements to a minimum, choosing simply to disperse and dig in. Whatever its other attractions to a fighting army, the Iraqis had learned that maneuver merely increased their vulnerability to air attack. Of course, in refusing to maneuver, the Iraqis made unlikely the possibility of staging a successful counterattack or even of executing an organized withdrawal. In sum, it requires no great leap of imagination to conclude that after Khafji a growing feeling of futility must have permeated all ranks of the Iraqi army. That sense of despair could only have increased when “tank plinking” with laser-guided bombs began on 5 February. After that date, even vehicles that were dispersed and dug in were vulnerable to sudden and highly lethal air strikes.⁴⁶

Although the Battle of Khafji made a profound impression on the Iraqis, its immediate effects on the Coalition’s senior leadership were much more muted. In General Schwarzkopf’s opinion, the attack “defied military logic,” and he dismissed it as merely a “propaganda ploy.” CINCCENT was not alone in his failure to immediately grasp the significance of Khafji. Referring to himself and the entire CENTCOM senior staff, General Horner subsequently stated, “We never had an understanding of what was going on until after the battle was over.” Distracted by the enormous press of daily combat operations and increasingly absorbed by preparations for the Coalition ground war,

Coalition leaders had little inclination or even opportunity at that point to contemplate the implications of Khafji.⁴⁷

An additional and ironic reason why the importance of Khafji was not grasped at the time turns on the success of airpower in crushing the invasion so thoroughly before it hardly had begun. Put another way, the very devastating effectiveness of airpower tended to mask the extent of the Coalition victory. So accurate, devastating, and unceasing were the air attacks that relatively few Iraqis even made it up to the border. Thanks to airpower, CENTCOM's retention of the initiative was never threatened, no coalition ground troops had to be repositioned, and the movement of ARCENT's "Great Wheel" to the west went on uninterrupted and unruffled. In a sense, before it was really even noticed, the battle was over. An in-depth postwar study of air operations in the Gulf sums up this irony nicely:

The engagement at Khafji was not designed as a limited attack...it only became that as a result of the impact of air strikes on the Iraqi forces attempting to move. Al Khafji was a major effort to begin the ground war, the only such attempt Iraq made, and the importance of its failure is undeniable. Iraq's only hope was to force an early start to a ground war of attrition before it was itself exhausted. That Iraq's only option was abandoned and not attempted again demonstrated the severity of the loss it had suffered. *At Al Khafji, air power had gained an important victory not fully appreciated at the time.* (Emphasis mine)⁴⁸

Conclusions

In what is widely recognized as the most comprehensive account of the Gulf War, Michael Gordon, chief defense correspondent of the *New York Times*, and retired Marine Lt Gen Bernard Trainor argue that the Battle of Khafji was the "most important" engagement in Operation Desert Storm and constituted nothing less than "the defining moment" of the war. To Gordon and Trainor, the "defining moment" consisted of the

inability of Iraqi forces to maneuver on the battlefield in the face of Coalition airpower. In a word, as employed in the Battle of Khafji, airpower had shown itself capable of stopping, immobilizing, and destroying very sizable segments of a large modern army.⁴⁹

At one level, battles are always unique events, and it can be misleading to generalize too freely from a never-to-be-exactly-repeated set of circumstances. But like the wars of which they are a part, battles also represent crucibles in which weapons and doctrines are tested and refined. Thus the experience of battle needs to be studied closely for what it has to teach us about the effectiveness or shortcomings of new or emerging technologies and concepts of operations.

In that sense, the Battle of Khafji served to highlight several strengths and weaknesses of contemporary airpower technology and doctrine. New assets such as JSTARS and established systems such as the F-15E, LANTIRN-equipped F-16s, F/A-18Ds, and AH-1 attack helicopters provided an impressive capability to detect and strike enemy forces throughout all hours of the day and night. Together, this surveillance-detection-strike capability enabled the coalition to identify, target, and hit enemy forces on the move. Used in combination with older systems such as the A-10, it also served to isolate in-place and make resupply or even retreat all but impossible for advance elements that had managed to cross the border on the first night of the fighting. At the same time, although aircraft such as the A-10 and non-LANTIRN-equipped F-16s contributed significantly to the outcome of this particular battle, at a more general level the experience of Khafji suggests the decreasing value of day VFR-only systems in an era when ground forces can be expected to routinely attempt 24-hour operations.⁵⁰

In contemplating the contributions of revolutionary new systems such as JSTARS, it is worth noting that Khafji served to reaffirm a hallowed lesson of airpower doctrine. That is, the Coalition was able to widely employ its new surveillance assets and freely attack targets of its own choosing in the first place only because it enjoyed the incalculable advantage of air superiority. At Khafji, control of the air made all other operations possible, either in the air or on the surface. Thinking back on the events of late January and early February 1991, General Horner later underscored the critical difference air superiority makes in modern military operations:

...Throughout Desert Storm and particularly in this one very tenuous battle, the Iraqis were denied use of the air where[as] we had complete control of the air. I think the outcome speaks for itself. If you don't control the air you'd better not go to war.⁵¹

In fact, gaining and maintaining air superiority is likely to remain so decisive a military advantage that, if the behavior of the Iraqis in the Battle of Khafji is any guide, the side lacking it may feel compelled to resort to surprise attacks out of sheer desperation.

As always, the experience of battle also pointed up certain limitations and areas requiring improvement. Therein reside a variety of issues and questions awaiting further research and analysis. A modest sampling of such issues might include the following:

Can airpower alone stop advancing ground forces? During the Battle of Khafji airpower indisputably stopped Iraqi mechanized forces in the open at night. As used here, “stopped” means that fielded enemy forces moving south to engage suffered losses so extensive they could not be brought into contact with Coalition ground units. Moreover, this was accomplished at a time and place in which the CBU-87 (combined effects munition) was the most advanced anti armor area munition employed. As we know, the CBU-87 is much less capable than the sensor fused weapon (SFW) or the brilliant

antiarmor submunition (BAT), advanced weapons that since have become readily available. Indeed, perhaps the question is no longer: Can airpower stop advancing ground forces? but rather more simply: How much airpower is required to do so?⁵²

Air Force-Marine Corps Interaction in Joint Operations. Among other things, Khafji was a test of the ability of two quite different services--the Air Force and the Marine Corps--to work together. Much went right, but more intensive studies of operational interaction between the two services doubtless will point up matters requiring adjustment and mutual accommodation. One potentially fruitful area for research would involve identification and analysis of tactical-level methodologies that could facilitate improved cooperation between Air Force and Marine units in a joint war-fighting environment. Essentially, the key question in this context might become: What multiservice tactics, techniques, and procedures are required to promote effective planning and execution of Air Force-Marine air operations?

Refinement of the JFACC Concept. The course and outcome of the Battle of Khafji pointed up one of airpower history's most enduring lessons: unity of command promotes the most effective employment of airpower.⁵³ As the CENTCOM JFACC, General Horner exploited the principle of unity of command to synergistically orchestrate and employ the most effective air assets to accomplish a given mission, without reference to service. With a view toward achieving maximum exploitation of theater air assets in future contingencies, researchers might profitably inquire into how we might further refine and improve the JFACC concept as a mechanism for integrating the airpower capabilities of different services.

JSTARS: Communications and data systems interface. For all of the prototype system's fundamental contributions to the Coalition victory at Khafji (or, perhaps, *because* of them), we may anticipate a continuing effort to enhance the quality and reliability of the sophisticated communications and data systems interfaces that link various JSTARS elements. A key question for war fighters to consider: What operational employment and mission tasking considerations should guide the quest for further technological refinement of this revolutionary new system? Also worth pondering is a no less important corollary issue involving the troubling trade-off between increased reliance on advanced technology and increased vulnerability to one or another form of information warfare.

JSTARS: Doctrine that fully exploits system capabilities. The first tanks of World War I were used primarily as barbed wire crushers, and military aircraft of that day were viewed by most people "merely as an added means of communication, observation, and reconnaissance."⁵⁴ Recognizing that understanding about how best to use new battlefield assets typically lags behind the technological innovations that spawn them, we must get on with the task of developing doctrine that allows us to fully exploit the impressive capabilities of JSTARS. Officers attending the various PME schools of Air University might actively contribute to that process. To that end, AU students could participate in the task of gathering and assessing the experience we have gained to date from employing JSTARS, whether in combat or in training exercises. AU students could then conduct studies that seek to derive from that body of experience reasoned generalizations about "what has usually worked best." Such studies would, in effect, represent proposed doctrinal statements that could be published or otherwise widely circulated, perhaps by

electronic means, in hopes of eliciting an exchange of ideas and the kind of constructive criticism that leads to further refinement and improvement. At some point these studies might influence or even become the basis for the official doctrine that will guide our future employment of JSTARS.⁵⁵

The enduring problem of fratricide. Undoubtedly the most distressing issue highlighted by Khafji involves the continuing problem of fratricide. Khafji amply demonstrated that modern airpower can kill enemy tanks on literally a 24-hour-a-day basis. Regretably, when operating in close proximity to one's own forces, airpower continues to show an equivalent capability to kill friendly tanks as well. Almost one-quarter of the 467 US battle casualties sustained in the Gulf War--35 killed and 72 wounded--were caused by what is ironically termed "friendly fire." Of that total, "friendly" air-to-ground incidents produced 11 U.S. KIA and 15 WIA.⁵⁶

Fratricide is largely a function of proximity. For that reason alone, effectively integrating CAS with maneuver forces on the battlefield is an enormously complex undertaking. The added challenge of devising concepts, operating procedures, and doctrines to minimize fratricide demands of military professionals the very best thinking matched by a strong determination to make such concepts, procedures, and doctrines effective in our combined arms operations. For those called to grapple with this difficult and deeply troubling subject, perhaps not the least instructive feature of the Battle of Khafji is the depth at which most air operations were conducted. As students of airpower can attest, there is a reciprocal relationship between the depth of air operations and the progressively reduced likelihood of inadvertent attacks on friendly surface forces.

Leader Development. Finally, while high technology weapons powerfully influenced the asymmetric nature of the Khafji battle, we should not forget that the disproportionate impact of such weapons ultimately depends on human planning and application. As always, it was highly competent human beings, products of superior military education and training systems, who got the most from modern weaponry and gave the Coalition such clear advantages not only in sheer military power, but in leadership, operational flexibility, tactical adroitness, and overall professional mastery. Having said that, certainly not the least of our future challenges will be to sustain and enhance the quality of our education and training programs while strenuously resisting the hubris that success so often inflicts on the victors in war.

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¹ Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), 268.

² Barry D. Watts, Thomas A. Keaney, et al., *Effects and Effectiveness*, in vol. II, part 2 of *The Gulf War Air Power Survey*, Eliot A. Cohen, et al. 6 vols. (Washington: Government Printing Office, 1993), p. 240 (hereafter cited as *GWAPS*, II, Part 2).

³ (S) Intelligence Information Report (IIR) 6 072 0045 91 and IIR 6 072 0073 91 in "Captured Iraqi Officers," Air Force Historical Research Agency (AFHRA) File: NA-286 (hereafter cited as "Captured Iraqi Officers"), and (S) "The Gulf War: An Iraqi General Officer's Perspective," 75, 332, 346, in AFHRA File: TF6-26-370, Part 6 (hereafter cited as "Iraqi General Officer's Perspective"). See also Williamson Murray et al., *Operations*, vol. II, part 1 of *GWAPS*, 7 (hereafter cited as *GWAPS*, II, Part 1); Williamson Murray, *Air War in the Persian Gulf* (Baltimore: Nautical and Aviation Publishing Company, 1995), 58; and Norman Friedman, *Desert Victory: The War for Kuwait* (Annapolis: Naval Institute Press, 1991), 252. Saddam's claim that the United States could not withstand 10,000 casualties in one battle implied that Iraq could accept such losses and continue fighting. Captured Iraqi officers later observed that Saddam's highly publicized assertion on that score did nothing to promote morale among Iraqi soldiers who would have to do the fighting and dying. On the latter point see (S) "Iraqi General Officer's Perspective," and Murray, *Air War in the Persian Gulf*, 74, n. 64. For a penetrating analysis of the Saddam Hussein regime, see Samir al-Khahl, *The Republic of Fear: The Politics of Modern Iraq* (Berkeley: University of California Press, 1989). Information extracted from classified sources is not itself classified.

⁴ *GWAPS*, II, Part 1, 271.

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⁵ (S) IIR 6 072 0045 91 in “Captured Iraqi Officers;” (S) “The Gulf War: An Iraqi General Officer’s Perspective,” 75, 281, 332, 346 ; *GWAPS*, II, Part 1, 272; Khaled bin Sultan with Patrick Seale, *Desert Warrior: A Personal View of the Gulf War by the Joint Forces Commander* (New York: HarperCollins, 1995), 363-64; Gordon and Trainor, 267-71. Information extracted from classified sources is not itself classified.

⁶ Gordon and Trainor, *Generals’ War*, 271-72; Khaled, 362-64.

⁷ Interview, Gen (Ret) Charles A. Horner with Maj Daniel R. Clevenger, 26 Feb 96. See also Gordon and Trainor, 269. Although enemy prisoner of war (EPW) reports should always be used with caution, perhaps the best “Iraqi” source available at this point concerning Saddam’s motivations is the aforementioned compilation of captured senior officer interrogation reports known as the “Iraqi General Officer’s Perspective.”

⁸ Gordon and Trainor, 268; Khaled, 363. ARCENT’s VII Corps had no combat divisions available until 28 January, a situation that underscores ARCENT’s relative vulnerability during the first two weeks of the war. On that point, see Robert C. Owen, et al., *Chronology of the Gulf War*, vol. 5, part 2 of *GWAPS*, 183 (hereafter cited as *GWAPS*, V, Part 2). Prior to the beginning of the air campaign, Gen H. Norman Scharwzkopf, commander-in-chief of US Central Command (CINCCENT), had personally voiced concern about a possible Iraqi preemptive attack down the Wadi al-Batin. See Peter de la Billiere, *Storm Command* (London: Harper, 1992), 252. Much like their ARCENT counterparts, once the air campaign was underway, senior officers in US Marine Corps, Central Command (MARCENT) also had come to discount the possibility of an Iraqi attack. Confidence on that score was reflected in the decision of the MARCENT commander, Lt Gen Walter E. Boomer, to entrust to a single platoon the security of his large logistics base at Kibrit, a location well forward of his main forces. See Gordon and Trainor, 276. MARCENT perceptions of a relatively low ground threat were further pointed up by the decision to move the MARCENT fire support coordination line (FSCL) some five miles north of the Kuwaiti border. Intended to help ensure against accidental attacks by friendly air, this step also meant that all air attacks directed against targets along the Kuwaiti-Saudi frontier would have to be under the control of a forward air controller (FAC). See *GWAPS*, V, Part 2, 190. The Saudis also seem to have disregarded the possibility of an Iraqi incursion once the air war had begun. See Gordon and Trainor, 279-80.

⁹ (S) JSTARS End-of-Mission Report for 28 Jan 91, “JOINT STARS Liaison Log Books,” in AFHRA File: K215.19-15 (hereafter cited as “JSTARS End-of-Mission Reports”); Horner interview; Interview, Maj Gen (Ret) Thomas R. Olsen with Maj Daniel R. Clevenger, 13 May 96; and Gordon and Trainor, 267-71, 276. See also (S) CENTAF Tactical Air Control Center Current Operations Log (hereafter referred to as TACC Log), entries for 29/30 Jan 1991, in AFHRA File: NA-215, vol. 1; and Gordon and Trainor, 278. Information extracted from classified sources is not itself classified.

¹⁰ Given the size of the theater, perhaps as many as three continuous JSTARS orbits would have been required for the kind of comprehensive and consistent surveillance that could have resulted in a clearer understanding of Iraqi prebattle movements in the southern Kuwaiti theater of operations (KTO). On this point see Price T. Bingham, “The

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Battle of Al Khafji and the Future of Precision Surveillance Strike” (unpublished paper available in the Airpower Research Institute of the College of Aerospace Doctrine, Research, and Education [CADRE/AR]).

¹¹ Gordon and Trainor, 233-35, 268. The quote is from Olsen interview.

¹² (S) “Iraqi General Officer’s Perspective,” 346; *GWAPS*, II, Part 1, 271-73; Gordon and Trainor, 278-271. Information extracted from classified sources is not itself classified.

¹³ Friedman, 197-98; 160; Gordon and Trainor, 268-69.

¹⁴ Gordon and Trainor, 272-75.

¹⁵ *GWAPS*, II, Part 1, 275; Gordon and Trainor, 268-71, 279; Perry D. Jamieson, unpublished manuscript, forthcoming from the Air Force History Support Office as “Lucrative Targets: The Air Force and the Kuwaiti Theater of Operations,” 113.

¹⁶ Most sources agree the actual Iraqi attack on OP-4 began around 2000 hours local time. Gordon and Trainor (272-73) state the first Iraqi vehicles, sighted at a distance of some three miles, came into view at 1926 hours local time. See also Charles H. Cureton, *U.S. Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm* (Washington: HQ USMC, 1993), 33.

¹⁷ LANTIRN is an abbreviation for the low-altitude navigation and targeting infrared for night system that depicts the area in front of the aircraft in a manner similar to the view normally seen during the daytime.

¹⁸ (S) TACC Log, entries for 29/30 Jan 91. General Horner had already retired for the night when the Iraqis initiated their attacks on the Marine OPs. Shortly after midnight Brig Gen Buster Glosson, director of Horner’s special planning group (otherwise known as the “Black Hole”), visited the TACC for an update on current operations. Upon learning of the Iraqis’ cross-border attacks, Glosson promptly alerted Horner, who immediately returned to the TACC and took personal charge. The reference to a “business as usual” mentality and the description of the general sequence of events within the TACC is taken from Gordon and Trainor, p. 278. The authors of *GWAPS* agree the TACC “did not react to the first warning signs the Iraqis were moving” and that a decisive response to the Iraqi incursion had to await the arrival of General Horner. See *GWAPS*, II, Part 1, 273. According to the official Marine Corps history, it took about 90 minutes from the time the shooting started for the first strike aircraft to arrive on station in the vicinity of OP-4. The first aircraft to reach OP-4, a Marine F/A-18, checked in at 2130 and was followed by “successive sections” [flights] of Air Force A-10s. One of the latter was involved in the first fratricide incident of the war when an A-10-launched Maverick malfunctioned and destroyed a Marine LAV at approximately 2230 local time. See Cureton, 36-37. Iraqi jamming of American radio frequencies may have contributed to the delayed initial response of Marine and Air Force CAS. See Gordon and Trainor, 273, and (S) ABCCC Documents, 7ACCS in AFHRA File: NA-287, vol. 1. See also (S) TACC Log, entry for 2024Z 29 Jan 91; Capt Roger L. Pollard, “The Battle for OP-4: Start of the Ground War,” *Marine Corps Gazette*, Mar 92, 48; and two letters to the editor of the *Marine Corps Gazette*: Capt William H. Weber, IV, “More on OP-4,” *Marine Corps Gazette*, Jun 92, 64; and Capt Steven A. Ross and SSgt G.L. Gillispie,

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“OP-4 Once More,” *Marine Corps Gazette*, Jul 92, 11-12. Information extracted from classified sources is not itself classified.

¹⁹ As noted above, the Iraqi offensive actually seems to have been aimed at the Saudis’ Eastern Area Command. (S) TACC Log, entries for 29/30 Jan 91; Horner interview; *GWAPS*, II, Part 1, 273; Gordon and Trainor, 278.

²⁰ Gordon and Trainor, 273-74; Cureton, 36-37.

²¹ (S) TACC Log, entry for 1940Z, 29 Jan 91; Jamieson, 115. See also Dennis P. Mroczkowski, *U.S. Marines in the Persian Gulf, 1990-1991: With the 2D Marine Division in Desert Shield and Desert Storm* (Washington: HQ USMC, 1993), 20-23; and Gordon and Trainor, 274-75. Information extracted from classified sources is not itself classified.

²² Gordon and Trainor, 275.

²³ Cureton, 40-41; Gordon and Trainor, 274.

²⁴ Gordon and Trainor, 279-86; Khaled, 381-87; Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), 208-213.

²⁵ (S) ABCCC Documents, 7 ACCS in AFHRA File No: NA 287, vol 1; (S) TACC Liaison Officer Log, entries for 29 Jan through 2 Feb in AFHRA File: TF4-12-227, Parts I and II. Information extracted from classified sources is not itself classified.

²⁶ Horner interview; (S) TACC Log, entries for 29/30 Jan 91; (S) TACC NCO Log, entries for 29 Jan through 2 Feb 9, in AFHRA File TF 6-46-482; *GWAPS*, II, Part 2, 238-39. Additional appraisals of JSTARS contributions in the Gulf War are available in Charles D. Lloyd, “A Technological Success Story: Joint STARS and Operation Desert Storm,” *Air Power History* 38 (Fall 1991), 27-35; Grant M. Hales, “The Tactical Air Command and Operation Desert Storm: A Case Study of Tactical Aircraft Employment,” *Air Power History* 38 (Winter 1991), 43-47 (see especially pp. 46-47); “Eyes of the Storm,” *Jane’s Defence Weekly* 15 (4 May 1991), 735-37; and George K. Muellner and George J. Cusimano, “Developmental Flight Test in Combat (Joint Stars at War),” *1991 Report to the Aerospace Profession: Society of Experimental Test Pilots (SETP) Symposium Proceedings* (Lancaster, Calif: Society of Experimental Test Pilots, 1991), 60-82. Information extracted from classified sources is not itself classified.

²⁷ *GWAPS*, II, Part 2, 237; Gordon and Trainor, 273-74; and Cureton, 36-37. As noted above, communications problems also appear to have impeded the initial CAS effort. See Gordon and Trainor, 273.

²⁸ Gordon and Trainor, 283.

²⁹ Horner interview; Gordon and Trainor, 284.

³⁰ According to Prince Khaled, the Marines claimed that close proximity of JFC-East screening forces to the enemy made it inadvisable to honor repeated Saudi requests for air strikes against Iraqi troops advancing on Khafji on the night of 29 January. For his part, Khaled suspected the Marines were more interested in supporting their own embattled ground troops at the OPs, especially since those forces constituted the first line of defense for the Marines vast logistics complex at Kibrit. See Khaled, 367-7, and a November 1995 draft briefing prepared by Price T. Bingham and Richard Gunkel, “Khafji and Its

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Meaning for Air Power” (copy available in CADRE/AR). For more on the state of USMC-Saudi relations see Gordon and Trainor, 170-71.

³¹ DOD Dictionary of Military and Associated Terms (Joint Pub 1-02), 24 Mar 1994, quoted in Doctrine for Joint Operations (Joint Pub 3-0), 1 Feb 1995, GL-2.

³² (S) TACC Log, entry for 1900Z, 31 Jan 91; (S) TACC NCO Log, (Hosterman Notes), entry for 2010L/1710Z 30 Jan 91, cited in Jamieson, 118. Mention is made of the Iraqis’ presumptive target in Horner interview. Information extracted from classified sources is not itself classified.

³³ (S) TACC Log, entries for 29 Jan through 2 Feb; (S) *Desert Storm: Fixed Wing BAI/CAS Operations and Lessons Learned*, Institute for Defense Analysis Document D-1080, Jan 92, in AFHRA File: TF 6-23-350, Vol. 3, 48-49. Information extracted from classified sources is not itself classified.

³⁴ *Spirit 03* was most likely shot down by an SA-14 or SA-16. Of the loss of *Spirit 03*, a senior CENTAF officer later observed, “Because they were doing so well they stayed on their targets into the daylight, and they became a target themselves.” Olsen interview, 13 May 1996; see also Gordon and Trainor, 284. The most detailed secondary account of the shoot down is in Atkinson, 210.

³⁵ Marine attack helicopter sorties are included in the total of 1,000 attack sorties flown during the period 29-31 Jan 91. See *GWAPS*, II, Part 2, 237-38.

³⁶ General Mahmoud’s comments and the references to Iraqi radio communications are taken from Gordon and Trainor, 283, 285-87; the “cockroach” analogy appears in H. Norman Schwarzkopf, *It Doesn’t Take a Hero* (New York: Linda Grey, Bantam, 1992), 429.

³⁷ Schwarzkopf later claimed the Iraqi 5th Mechanized Division had been “almost totally destroyed,” noting that intercepted enemy communications indicated only 20 percent of the division had made it back to Kuwait. Schwarzkopf, 426; *GWAPS*, II, Part 1, 273-74, see especially n. 68.

³⁸ *GWAPS*, II, Part 2, 240.

³⁹ Quoted in *ibid.*, 239-40. See also (S) IIR 6 072 0073 91 in “Captured Iraqi Officers.” Information extracted from classified sources is not itself classified.

⁴⁰ Weber, “More on OP-4,” *Marine Corps Gazette*, Jun 92, 64; I MEF Command Briefings (U), 30 Jan 91, A.M.; 31 Jan 91, A.M., quoted in Jamieson, 120.

⁴¹ Literally “God from a machine,” in classical Greek and Roman drama the *deus ex machina* was a deity cranked in by stage machinery for the purpose of resolving particularly difficult situations of one kind or another.

⁴² Horner interview.

⁴³ Fred Frostic, *Air Campaign Against the Iraqi Army in the Kuwaiti Theater of Operations* (Santa Monica, Calif: RAND, 1994), 17, 36, 59; Eliot Cohen, “A Bad Rap on High Tech: The GAO’s Misguided Missile Against Gulf War Weaponry,” *Washington Post*, 16 July 96, 15.

⁴⁴ (S) Master Attack Plans, D+12, D+13, D+14, D+15 in AFHRA File K239.0472-23 and K239.0472-24. See also (S) JSTARS End-of-Mission Reports, 30 Jan through 2 Feb 91 in AFHRA File K215.19-16 through K215.19-20. The reference to JSTARS as a “toy”

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occurred in a conversation between a Marine general and an Air Force general in which both men agreed they had significantly underestimated the value of the new system. See *GWAPS*, II, Part 2, 239. Information extracted from classified sources is not itself classified.

⁴⁵ *GWAPS*, II, Part 1, 274; Horner interview; Bingham and Gunkel. Interestingly, based on considerable indications that the Iraqis fully intended to follow up their surprise attacks with a much larger follow-on push, it has been proposed that there was an additional “fourth battle,” a potential battle that never materialized because of the destructiveness of coalition air strikes. See David A. Deptula, “Lessons Learned: The Desert Storm Air Campaign,” 49 (unclassified briefing presented to the Center for Strategic and International Studies, April 1991). A copy of the briefing is in AFHRA File TF 4-8-147, “Interview with Lt Col David A. Deptula.”

⁴⁶ *GWAPS*, II, Part 1, 277-80, and Frostic, 5.

⁴⁷ Schwarzkopf, 424; and Horner interview. See also *GWAPS*, II, Part 2, 241. In contrast to General Schwarzkopf’s view, the Battle of Khafji made a significant impression on Maj Gen William Keys, commander of the 2nd Marine Division. Keys soon convinced the MARCENT commander, Lt Gen Boomer, that the Iraqis’ lackluster performance argued for a more aggressive plan of attack on the part of Marine ground forces. In the event, when coalition ground operations began on 24 February, the subsequent and unexpectedly rapid Marine advance to Kuwait City had profound implications for the overall timing and tempo of planned ARCENT operations. On this point see Gordon and Trainor, 290-99.

⁴⁸ *GWAPS*, II, Part 2, 241-42.

⁴⁹ Gordon and Trainor, 268.

⁵⁰ For a comment on the reduced value of non-night-capable systems and other key implications of the Gulf War for airmen, see retired RAF Air Vice Marshal R.A. “Tony” Mason’s important article, “The Air War in the Gulf,” *Survival* 33 (May/June 1991), 211-229.

⁵¹ Horner interview.

⁵² Framed thus, these questions are raised in correspondence from Barry Watts of Northrup-Grumman Corporation to Lt Col David Deptula, August 1994 (copy in CADRE/AR).

⁵³ The importance of unity of command of airpower, originating in the final campaigns of World War I, was forcefully demonstrated in virtually every combat theater during World War II. The North African campaign is particularly noteworthy because it was there that modern American tactical air doctrine was first set down. Allied airpower in North Africa initially was parceled out among ground force commanders. The results were discouraging: Allied airmen could neither gain air superiority nor provide effective close air support. Subsequent centralization of control of air assets resolved both problems and dramatically underscored the lesson that airpower is employed most effectively when entrusted to a single air commander. This and other key airpower concepts derived from combat experience in North Africa found official expression in *War Department Field Manual 100-20, Command and Employment of Air Power*, 21

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July 1943, sometimes referred to in Air Force circles as the “emancipation proclamation of tactical airpower.” Later military experience in Korea, Vietnam, and the Persian Gulf served to reaffirm the value of unity of command of airpower. For more on the evolution of command and control of airpower in the North African theater, see Wesley F. Craven and James Lea Cate, *Europe: Torch to Pointblank, August 1942 to December 1943*, vol. II of *The Army Air Forces in World War II* 7 vols. (Chicago: University of Chicago Press, 1948-58), 27-29, 136-45, 153-206. A copy of FM 100-20 and an excellent discussion of the North African air campaign may be found in Richard H. Kohn and Joseph Harahan, eds., *Air Superiority in World War II and Korea* (Washington: Office of Air Force History, 1983), 29-36 and appendix.

⁵⁴ This early evaluation of the potential of military aviation was offered in 1913 by Assistant Secretary of War Henry C. Breckenridge. Quoted in Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917-1941* (Washington: Office of Air Force History, 1985), 1.

⁵⁵ The importance of doctrine and a systematic approach to its development are addressed with clarity and force in I.B. Holley, Jr., “The Doctrinal Process: Some Suggested Steps,” *Military Review* 59 (April 1979), 2-13.

⁵⁶ Charles R. Schrader, “Friendly Fire: The Inevitable Price,” *Parameters* 22 (Autumn 1992), 29-44.