

## Chapter Eight: The AirLand Battle

Like many aspects of Desert Storm, it is difficult to generalize about the lessons of the AirLand battle. As has been discussed in Chapters Two and Three, the Coalition land offensive was shaped by US military doctrine that had evolved strikingly since the Vietnam War. This doctrine placed a new emphasis on maneuver, deception, striking at the enemy's strategic center, remaining within the enemy's decision cycle, multiple simultaneous thrusts, decisive use of force through flanking movements, night and power weather warfare, sustained high tempos of continuous operation, and integrating the application of firepower into the concept of maneuver.

Many aspects of the new US AirLand battle doctrine were put into practice during the land war. The Coalition battle plans called for "initiative," "agility," "depth," and "synchronization," and all four were achieved. The key tactics in the AirLand battle were to avoid battles of attrition, attack the enemy's vulnerabilities, keep the battlefield fluid, force the enemy to move in the desired direction, maintain continuous operations, optimize all capabilities, and maximize night/limited visibility operations: All these tactics were actually employed in combat, and all were effective. The key sustainment goals were anticipation, integration, responsiveness, and improvisation: These goals too were met.

Yet, this success in maneuver and in maintaining high tempos of operation was only achieved after a massive air war of attrition. The UN Coalition was also able to exploit advances in tactics, training, and technology that the US and its allies had developed for fighting in Europe in a AirLand battle against an Iraqi enemy that was tied to static defense concepts. Where US plans for Europe called for NATO to "fight outnumbered and win" against a Warsaw Pact threat with superior numbers and many advanced military capabilities, the Coalition had a decisive advantage of Iraq in virtually every area of military capability. Further, the Coalition had many advantages in human factors. This is sometimes forgotten in the emphasis on new tactics and technology, but the leading land forces -- British, French, and US -- were exceptional professional forces which had had the time to achieve high readiness levels. They fought Iraqi forces which were largely conscript forces with poor training and leadership.

If the air war represented a major step forward in achieving air supremacy, and the use of offensive air power, the AirLand battle was a demonstration of the value of many changes in the art of operations. It is one of the ironies of war, however, that it is easier to learn specific lessons from a long slow process of failure than from a quick and decisive success. The land portion of the Gulf War was so quick and decisive that

analysts often have to settle for victory as a substitute for data, and the cumulative level of Coalition superiority was so high that it is often difficult to determine the relative contribution that any given advantage made.

## Comparative Land Strength And Capabilities.

The details of the individual land forces on each side have already been discussed in Chapter Three. At the same time, it is important to understand several aspects of these forces that have special importance to an analysis of lessons from the AirLand battle. These factors include Coalition strength and order of battle at the time the land war began, the size and state of Iraqi land forces, and the resulting force ratios.

### **The Coalition Ground Forces**

The force ratios between the Coalition and Iraq changed fundamentally during November, December, and January, as a result of the decision to send a second US corps to the Gulf discussed in Chapter Two. The US VII Corps began to deploy from Germany immediately after President Bush announced by decision to reinforce on November 8, 1990.<sup>1</sup> The US Army's 1st Division was deployed from the US, along with the 2nd Marine Division, 3rd Marine Air Wing, and support forces. Much of this build-up took place between December 5, 1990 and January, 1991. The US Army increased its heavy brigades by approximately 145% during this period, from 7 to 17. The VII Corps had 1,200 tanks and 1,046 M-2/M-3s (including 54 M-1s and 42 M-2/M-3s operationally ready afloat (ORF). The XVIII Corps had only 738 tanks and 647 M-2/M-3s (including 26 M-1s and 36 M-2/M-3s in ORF).<sup>2</sup> The 1st Marine Expeditionary Force (I MEF) increased by 75% from 4 regiments to 7, and the number of amphibious brigades afloat doubled from 1 to 2. British, French, and Egyptian land forces also made major increases in force strength during this period.<sup>3</sup>

As has been discussed in Chapters Two and Three, the missions of various national contingents also changed. The French 6th Light Armored Division was placed under the tactical control of the US XVIII Corps, and was used to secure the Coalition's left flank. At least one source indicates that this move occurred at French request to avoid continued French subordination to the Saudis.<sup>4</sup> The equipment of the 6th Light Armored Division did, however, suit the operations of XVIII Corps better than those of JFC-N or JFC-E.

The rest of the British 1st Armored Division arrived from Germany, and Sir Peter de la Billiere, the British Commander successfully sought the reassignment of the 7th Armored Brigade and British forces from the US Marine Command to the US VII Corps. In order to give the Marine land force more heavy weapons, and compensate for the reassignment of British forces to the VII Corps, two battalions of the 2nd Marine Regiment

were detached from the incoming 2nd Marine Division, and assigned to the 4th Marine Expeditionary Brigade, and one battalion was assigned to the 6th Marine Regiment. Most importantly, the US Army Tiger Brigade (1st Brigade, 2nd Armored Division) -- with 118 M-1A1 tanks and 78 M-2/3 Bradley armored fighting vehicles -- was detached from the US Army 2nd Armored Division and placed under the tactical control of the US 2nd Marine Division of the 1st Marine Expeditionary Force (I MEF).<sup>5</sup>

By the time the land offensive began, the US had built-up its forces to a total of 527,000 men and women in all four military services. Its major land forces now included two US Army Corps with seven Army divisions, two armored cavalry regiments, and three combat aviation brigades directly under their command. The US Army now had 1,878 Abrams tanks in maneuver units, of which 116 with M-1s and the rest were M-1A1s or M-1A1 Heavy Armors. It had an additional 80 in division-level ORFs, 429 in theater war reserves, 609 M-1 and IPM-1 models counted as excess. Counting M-1s on loan to the Marines, this totaled 3,082 M-1 tanks. The Army had 1,616 Bradley M-2/M-3 armored fighting vehicles in maneuver units, not counting 78 in division-level ORFs, 346 in theater war reserve, and 161 counted as excess.<sup>6</sup>

US land forces also included one Marine Corps expeditionary force (consisting of two US Marine Corps Divisions, their associated air wings, and combat and service support.). The Marine Corps force had 16 M-16 organic M-1A1 tanks, 60 M-1A1 tanks on loan from the Army, M-60A1 tanks, more than 350 Light Armored Vehicles (LAVs), 532 Assault Amphibian Vehicles, and 56 M-551A1 Sheridan armored reconnaissance vehicles on loan from the Army. US land forces had a total of over 2,000 tanks, 2,200 armored fighting vehicles and armored personnel carriers, and 1,700 helicopters. Allied forces deployed more than 200,000 troops, and 1,200 tanks.<sup>7</sup>

Britain had contributed 43,500 British troops with 180 tanks, and an armored division, and France had contributed 16,000 troops, attack helicopters, and a light armored division, and combat aircraft. US, British, and French land forces totaled 258,710 soldiers, 11,277 tracked vehicles, 47,449 wheeled vehicles, and 1,619 aircraft.<sup>8</sup> Saudi Arabia deployed 118,000 troops, 550 tanks, 179 aircraft, and over 400 artillery weapons. Egypt contributed 40,000 troops, two armored divisions and 250 tanks. Syria contributed 20,000 Syrian troops and two divisions.

The Coalition land order of battle at the start of the ground offensive is shown in Table 8.1. It is clear from this table that the Coalition had formed one of the largest and most complex multi-national orders of battle in military history. As has been explained earlier, the main attack forces were concentrated in VII Corps, supported by XVIII Corps to the West. The forces for the main supporting attack were concentrated in the I MEF, with

support from Joint Forces Command (North) and Joint Forces Command (East). As a result, the main weight of attack was carried out by Western forces and predominantly by the US Army, US Marine Corps, and British 1st Armored Division.

The joint force organization of the Coalition order of battle supported this concentration of force, and allowed the US Army Central Command (ARCENT) to set clear missions, boundaries between units, phase lines for the advance, fire support coordination lines, and restricted fire lines. It greatly simplified the problem of command and control with a multi-national force, and reduced the risk of fratricide. These advantages were strengthened by the fact that the Saudi Army took responsibility for coordination of all Arab forces, and all the smaller multinational land forces, easing the problems presented by the different languages, organization and training, equipment, and logistic systems of various Coalition armies.

At the same time, the US provided liaison teams from ARCENT, its special forces, USAF Forward Air Controllers (FACs), Air Liaison Officers (ALOs), and Air Naval Gunfire Liaison Company. US Marines were also provided as liaison officers. These teams provided common communications to ARCENT, and ARCENT had 35 man liaison teams with the Saudi JFC-North and JFC-East which acted as battle staff members, and provided satellite communications. These communications were critical to the land offensive because line of sight communications would have been uncertain or inefficient. The US teams provided 115 super high frequency satellite ground terminal relocations during the land offensive, with a total of 33 multichannel satellite terminals. Even then, it did not deploy enough terminals to prevent serious communications problems within critical formations like VII Corps.<sup>9</sup>

While many aspects of the Coalition's organization for land warfare look simple on paper, they represent a remarkable achievement in international cooperation compared to most past alliance commands. They were also supported and underpinned by the cooperation of senior British, French, Saudi, and US officers. For all the friction that sometimes occurred, this functional approach to coalition warfare and to providing central command -- without direct subordination of many national forces -- permitted an exceptional degree of coordination and synchronization. It is an important lesson of the war.

Table 8.1The Coalition Ground Force Order of Battle in Desert Storm -- Part One

- o XVIII Corps: (Coalition positions west of Saudi-Iraqi neutral zone)
  - 24th US Army Infantry (Mechanized) Division
    - 197th Infantry (Mechanized) Brigade subordinated
  - 82nd US Army Airborne Division
  - 101st US Army Airborne (Air Assault) Division
  - 6th French Light Armored Division
    - 2nd Brigade, 82nd US Army Airborne Division subordinated
  - 3rd US Army Armored Cavalry Regiment
  - XVIII Corps Artillery
    - 18th Field Artillery Brigade
    - 212th Field Artillery Brigade
    - 196th Field Artillery Brigade
  - 12th US Army Aviation Brigade (helicopter)
  - 18th US Army Aviation Brigade (helicopter)
- o VII Corps (Coalition positions along Saudi Iraqi border in old Saudi Iraq Neutral Zone to the beginning of the Saudi-Kuwait border at the Wadi Al-Batin)
  - 1st US Army Armored Division
    - 3rd Brigade, 3rd Infantry Division
  - 3rd US Army Armored Division
  - 1st UK Army Division
    - 7th Armored Brigade Group
    - 4th Armored Brigade
  - 1st US Army Infantry Division (Mechanized)
    - 2nd Armored Division (FWD)
  - 1st US Army Cavalry Division
  - 2nd US Army Armored Cavalry Regiment
  - VII Corps Artillery
    - 210th Field Artillery Brigade
    - 42nd Field Artillery Brigade
    - 75th Field Artillery Brigade
    - 142nd Field Artillery Brigade
  - 11th US Army Aviation Brigade (helicopter)
- o Joint Forces Command (North) (Coalition positions along the Saudi Kuwait border to the east of the Wadi Al-Batin)
  - Egyptian Corps
    - 3rd Egyptian Mechanized Division
    - 4th Egyptian Armored Division
    - Egyptian Ranger Regiment
  - Syrian Division
    - 9th Syrian Division
    - Syrian Special Forces Regiment
  - Force Muthannah
    - Saudi Army 20th Mechanized Brigade
    - Saudi Army 4th Armored Brigade
  - Force SAAD
    - Kuwaiti Ash-Shahid Brigade
    - Kuwaiti Al-Tahrir Brigade
  - JFC-North Troops
    - Niger Infantry Battalion
    - 1st Aviation Battalion (RSLF)

--15th Field Artillery Battalion (RSLF)

Table 8.1The Coalition Ground Force Order of Battle in Desert Storm -- Part Two

o 1 Marine Expeditionary Force (Coalition positions along Saudi-Kuwaiti border to the right of Joint Forces Command (North) and to the left of Joint Forces Command East)

- I MEF Command Element
  - 1st Surveillance, Reconnaissance, and Intelligence Group
  - 3rd Civil Affairs Group
  - 3rd US Navy Naval Construction Group
- 2nd Marine Division (MARDIV) \*\*
  - US Army 1st (Tiger) Brigade, 2nd Armored Division
- 1st Marine Division (MARDIV) \*\*\*
- 24th Marines (Rear Area Security)
- 3rd Marine Air Wing
- 1st Force Service Support Group
- 5th Marine Expeditionary Brigade
- 4th Marine Expeditionary Brigade (on ships in Gulf)

o Joint Forces Command (East) (Coalition positions along the Saudi-Kuwaiti border to the Gulf.

- Task Force Omar
  - Saudi Army 10th Infantry Brigade
  - UAE Motorized Infantry Battalion
- Task Force Othman
  - Saudi Army 8th Mechanized Brigade
  - Omani Motorized Infantry Battalion
  - Bahrain Infantry Company
  - Kuwaiti Al-Fatah Brigade
- Task Force Abu Bakr
  - Saudi National Guard 2nd Motorized Infantry Brigade
- Task Force Tariq
  - Saudi Marine Battalion Task Force
  - Senegal Infantry Battalion
  - Moroccan 6th Infantry Regiment
- JFC-East Troops
  - Qatari Mechanized Infantry Battalion
  - 1st East Bengal Infantry Battalion
  - Kuwait/UAE Combat Aviation Battalion
  - 14th Field Artillery Battalion (RSLF) (Towed 155mm)
  - 18th Field Artillery Battalion (RSLF) (MLRS)
  - 5th Sail Allah Engineer Force (RSLF)

o SOCCENT Control

- 5th Special Forces Group
- 3rd Special Forces Group

\* The French force was composed of a number of smaller formations including the 1st Foreign Legion Cavalry Regiment, 1st Helicopter Regiment, 1st Spahih Regiment, 2nd Foreign Legion Infantry Regiment, 3rd Helicopter Regiment (Reinforced), 3rd Marine Commando Regiment, and 4th Dragoon Regiment.

\*\* 1st, 3rd, 4th, 7th, and 11th Marines, 1st Light Armored Infantry battalion, 1st Battalion, 25th Marines, Task Force Troy (Deception), 1st and 3rd Tank Battalions, 1 Combat Engineer Battalion, 1st Reconnaissance Battalion.

\*\*\*6th Marines, 8th Marines, 10th Marines, 2nd Light Armored Infantry Battalion, 2nd Tank Battalion (M-1A1), 8th Tank Battalion, (USMCR) (M-60A1), 2nd Reconnaissance Battalion.

Source: Adapted by the author from Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 323-327 and Annex I, pp. 357-358, 365-366, 370.

## **Coalition Movements to Prepare for the Land Attack and the Lesson of Logistics and Lessons Regarding Requirements and Lift**

During the air campaign, the Coalition successfully completed a massive move to the west. General Schwarzkopf's deception plan required the two main corps, that were to strike deep into Iraq, to wait to move into their final attack positions in the areas west of Hafr al-Batin until air power succeeded in winning air superiority. This delay was designed to deprive Iraq of the ability to understand and characterize the nature of the movements taking place.<sup>10</sup>

This plan, however gave the VII and XVIII corps commanders only about two weeks to carry out one of the most complicated force deployments in history, and one that rivaled the actual AirLand battle as an accomplishment. US, British, and French forces had to shift 255,000 soldiers -- and 64,000 tracked and wheeled vehicles -- distances up to 300 miles. To put these distances in perspective, it is about 280 miles from Dhahran and 250 miles from the port of Al Jubail to King Khalid Military City, which is about 50 miles south of Hafr al-Batin. It is 300 miles from Riyadh to King Khalid Military City and another 120 miles from King Khalid Military City to Rafha in the western area. The approximate location of the Coalition forces after these movements is shown in Figure 8.1

The movement of the VII and XVIII Corps and other Coalition forces took place from January 17 to February 24, during the midst of the air campaign. The XVIII Airborne Corps moved about 260 miles to the West, and VII Corps moved about 150 miles. The VII Corps moved without using heavy equipment transporters so its movement could serve as a rehearsal for its long thrust to the west. The overall movement of Coalition forces continued 24 hours a day for more than three weeks. This required some of the most careful movement planning in military history.<sup>11</sup>

Vehicles often moved at 15 second intervals. C-130s provided extensive theater airlift to its new positions near Rafha. These C-130 flights took places at low altitudes to reduce the risk of Iraqi detection and deconflict them from the ongoing air campaign. C-130s averaged a take off and landing every seven minutes, 24 hours a day, for the first 13 days of the move. Engineers created a new airstrip out of the Tapline Road in an area about nine miles from the Iraqi border, and aircraft brought in fuel in 5,000 gallon bladders.

These movements, and sustaining the Coalition forces in battle, required a major effort in terms of road building and logistics in the inland areas where the VII and XVIII Corps had to operate. A massive new road system had to be created to supplement the

excellent coastal and east-west roads in Saudi Arabia. At the same time, the US Army 22nd Support Command had to shift supplies from Saudi ports on the Gulf coast to bases near King Khalid Military City, and create a separate logistic center for each Corps with up to 60 days of supplies. This involved moving 29.6 million meals, 36 million gallons of fuel, and 114.9 thousand tons of ammunition from Saudi ports to positions west of Al-Batin and creating the necessary distribution system.

The British 1st Armored Division faced a particular challenge since its force structure had been changed radically from an armored brigade to a full division, and it now was to move 350 kilometers inland to support the VII Corps, rather than the I MEF. Further, it had to improvise enough logistic and support capability to handle a campaign of up to two weeks length, and do so using force elements that had never before supported a formation with this particular structure or fought in desert warfare. The fact that it not only carried out its movement west, but some of the most complex movements after G-Day of any of the Coalition forces is a considerable tribute to British arms.<sup>12</sup>

New Corps and division support commands had to be created, and equipped so that they could rapidly deploy forward to support the VII and XVIII Corps advances. Six major logistics sites had to be created for the VII and XVIII Corps, and four more for the I MEF area near the Kuwait border. All were stocked with large amounts of potable water, equipment, ammunition, food, petroleum, construction materials, and spare parts.

Just moving the heavy equipment of the US 24th Infantry Division (Mechanized) forward required 3,223 heavy equipment transporters, 445 low boys, and 509 flatbed trucks.<sup>13</sup> The US Army had to borrow trucks from Saudi Arabia and other countries, and still had problems. As is discussed in Chapter Nine, it found that some of its trucks and vehicles lacked sufficient off-road capability and that only a few of its vehicles could move through desert areas where rains created severe trafficability problems.

Similarly, US Marine Corps forces had to move the equivalent of two divisional-air wing task forces. The 2nd Marine Division leapfrogged west around the 1st Marine Division during this movement, and 60,000 Marines moved using a single dirt road through the desert. The US Marine Corps faced a major challenge in creating logistics and support capabilities in its area of operations. It was organized to operate from positions near the shore. Under the Coalition war plan, however, its assault was to thrust due north through the Iraqi defenses covering the Ahmad al-Jabir Airfield in Kuwait from positions about 70 miles inland, and about 100 miles from its main supply base at Al Jubail. It was forced to move its supply points from Al Mishab and on the coast to newly constructed bases at Al-Kibirt and "Al-Khanjar."<sup>14</sup>

Two light airfields and a helicopter complex were built at Al-Khanjar, and the dirt airstrip at Al-Kibirt was improved to allow C-130s to provide air lift. To provide sustained logistic support, the Marine Corps was forced to borrow extensive amounts of logistic equipment from the US Army, create a motor pool of several hundred trucks driven by Marine reservist drivers using trucks provided by Saudi Arabia, and use its assault helicopters as theater airlift. Unlike the US Army, it organized separate small logistics detachments for each combat unit to simplify the logistic effort and minimize the need for central control.

Saudi Arabia built up logistic and supply capabilities for its own forces, plus many other Coalition forces. While Egypt and Syria provided combat equipment, munitions, and military supplies, Saudi Arabia provided fuel, food, and extensive support from civilian transport and engineering equipment.

There has been a tendency since the war to translate this experience into requirements for major improvements in air and sealift, for additional prepositioning and rapidly deployable supplies, and for more related support equipment. These lessons are all important and valid, but one should not lose sight of the fact that it is cheaper to properly assess the enemy, and only deploy what is required, than to conduct a massive build-up half way around the world. Similarly, it is important to note that the scale of the Coalition build-up and movements was based on assumptions about Iraq's war fighting capability that later proved highly pessimistic. USCENTCOM assumed that the ground offensive would take two weeks, followed by another four weeks of consolidation.<sup>15</sup> This over-estimation of the enemy was extremely costly in terms of logistics and material, and again illustrates the vital importance of improving intelligence on the quality and war fighting capability of threat forces.

A detailed review of the logistics and movement effort of both US and British forces also indicates serious problems in setting reasonable goals for stock levels and requirements, and the efficient organization of movement packages.<sup>16</sup> None of the forces in the Coalition had planned or prepared for the kind or scale of war it had to fight in the Gulf. This meant that virtually every aspect of supply, logistics, support, and movement had to be improvised.

The natural tendency in carrying out such improvisation was to err on the side of safety, but this often more than doubled the resulting requirement sealift and airlift effort. This, in turn, meant that lift was not available, or was delayed, for more important shipments and movements. Further, at the tactical level, both the US and British Army found from the field exercises and detailed planning activities that they had not prepared properly to support long-range tactical movements in the desert, and each increase in

logistics and sustainment requirements created an additional burden in intra-theater movement planning and equipment.<sup>17</sup> Since it is far cheaper to improve requirements planning and movement planning than to increase airlift and sealift, or move unneeded goods, the efficiency of strategic and tactical movement needs to be given as much attention as increasing lift.

It is not always clear that the US, at least, has learned this lesson of war. Planners in each of the US military services have certainly given the issue attention, and proposed significant improvements in the way the US would carry out future moves. However, the military politics of providing advanced tactical systems such as new mine clearing systems and heavy equipment transports, and procuring additional sealift, the V-22, amphibious ships, maritime prepositioning ships, and the C-17 at a time of defense cuts seemed to have severely limited the real world effort to improve the efficiency of strategic and theater lift, and make reductions in requirements based on the experience of the Gulf War.

Figure 8.1

The Location of Coalition Ground Forces on February 23, 1991 (G-1)

Source: Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 358

## **Iraqi Army Strength at the Time of the Ground Campaign: Perceived and Real**

The uncertainties affecting the impact of the air campaign on Iraqi ground forces before and during the AirLand battle have been discussed in the previous chapter and Chapter Five. They make it difficult to assess many aspects of Iraqi strength at the moment when Desert Storm began, and precisely how the AirLand and land campaigns affected the Iraqi Army. In addition, the maps and data the US has declassified since the war sometimes show slightly different Iraqi army force strengths, and unit identifications and locations.<sup>18</sup>

Interviews with commanders in the field immediately after the war, and during the years that have followed, indicate that many felt that intelligence failed to properly identify or characterize the Iraqi units they faced and attacked. National and theater intelligence experts respond by talking about the excessive and unrealistic demands of field and combat commanders for detail. The fact remains, however, that any assessment of the lessons of the ground campaign must begin with the recognition that major uncertainties exist regarding the original strength and effectiveness of Iraqi ground forces and as to how severely Iraqi ground forces had suffered from the air offensive.<sup>19</sup>

There are only relatively minor differences over the number of total major combat units in Iraqi forces. As has been discussed earlier, the Department of Defense estimated shortly after the war that Iraq's forces in the Kuwaiti Theater of Operations at the time the air campaign began included 5 corps with 35-36 divisions. Eleven of these divisions were armored and mechanized divisions, 25-26 were infantry divisions, and one was a special forces division. Eight more division equivalents were nearby or in the KTO as independent elements, bringing the total forces in the KTO to 43 divisions with 142 brigades.<sup>20</sup>

The key debate that has emerged over Iraqi force strength at the time of the ground war, and the quality of related intelligence, is over the strength of the manpower and equipment within these combat units. If all of these Iraqi units had ever been fully manned and equipped, Iraq would have had a total of 545,000 troops in the Kuwaiti theater at the time the air campaign began -- with about 50% of this manpower in Kuwait and 140,000 in the Republican Guards. Iraqi would have had 4,200-4,500 tanks, 2,880 armored personnel carriers, 3,100 artillery pieces, SA-2 and SA-3 launchers, and a large number of shorter range missiles and anti-aircraft weapons.

This is the force estimate that USCENTCOM used for planning during much of the war, although some estimates in USCENTCOM were even higher.<sup>21</sup> Further, there seems to have been no agreement at the top command level within USCENTCOM as to

the damage that the air campaign had done to Iraqi ground forces. According to one source, General Yeosock and ARCENT issued an estimate as late as January 31, 1991, indicating that the Iraqi forces in the KTO were still at 93% of their full strength, and the Republican Guards were still at 99% of their full strength.<sup>22</sup>

As has been discussed in Chapters Five and Seven, a systematic review of all-source intelligence after the war revealed that such estimates were too high. The revised intelligence estimates presented in various parts of the Gulf War Air Power Survey (GWAPS) indicate there were only 336,000 Iraqis in the theater when the air campaign began with 3,475 tanks, 3,080 APCs, and 2,475 artillery pieces. This estimate is lower in every category than the USCENTCOM estimate, except for the APCs. The reason that APCs are the exception is because US intelligence initially undercounted and misdefined the number of APCs in Iraqi units for reasons that are still not clear, and never corrected its original estimate of the other armored vehicle strength of Iraqi forces.

USCENTCOM intelligence still felt there was a total of nearly 450,000 Iraqi troops in the KTO at the time the ground campaign began.<sup>23</sup> The corrected intelligence estimates released in the Gulf War Air Power Survey indicate, however, that desertions, withdrawal, and combat damage had reduced these forces to 200,000-220,000 Iraqis in the theater when the ground offensive began on February 24, and that the remaining force was left with 2,090 functioning tanks, 2,150 APCs, and 1,320 artillery pieces.<sup>24</sup>

These broad figures disguise other differences. There was no consensus within the Coalition forces as to the impact of the air campaign on given Iraqi Army units. The I MEF, for example, used slightly different estimates of the impact of the air war on the forces in front of it than were held by ARCENT and USCENTCOM.<sup>25</sup>

In general, Coalition forces acted on the estimates provided by ARCENT. These estimates are shown in map form in Figure 8.2, which provides a summary of USCENTCOM's estimate of the damage that the air campaign had done to the effectiveness of individual Iraqi units at the time the land offensive began.

ARCENT estimated that Iraqi 4th Corps was about 58% effective, and the low grade forward deployed infantry units in Iraq's 7th Corps were 42% effective.<sup>26</sup> At the same time, effectiveness was estimated to vary by unit within a given corps. The Iraqi 52nd Armored Division was estimated at 50% effectiveness, while ARCENT estimated that the 1st Mechanized and the 6th Armored Division could retain up to 90% effectiveness. Other key divisions like the 10th and 12th Armored divisions were estimated to retain an effectiveness of 58% -- although ARCENT recognized that such judgments were often tenuous at best. The Republican Guard was assessed to retain 66% percent effectiveness, and even the Tawakalna Division -- which had been hit most

heavily by air was assessed at 57%. The Madinah Division was assessed at 65% and the Hammurabi Division at 72%. The Republican Guard infantry divisions were also assessed at above 60% combat effectiveness, although it was judged that they would remain in the rear in the defense of Basra.<sup>27</sup>

As Chapter Five has discussed, there also were differences over such estimates between ARCENT and DIA and CIA. At the time of the ground campaign began, DIA and ARCENT had reconciled many of their differences and DIA estimated that the combat effectiveness of all of Iraq's front line divisions had been reduced by more than 50%. The 45th Mechanized Division, south of As Salman, was estimated to be at 50-75% of strength, as were the 12th, 52nd, 17th, and 10th armored divisions. The Republican Guard Tawakalna Mechanized Divisions and the Al Madinah Armored Divisions were estimated to be at 50-75% effectiveness. While CIA's estimates of these individual units has not been fully declassified, it is clear from interviews and the sources discussed in Chapter Five that the CIA gave such Iraqi units a much higher level of surviving strength.<sup>28</sup>

There were also some differences over the role that specific Iraqi land forces in the theater were supposed to play in combat. At the time the land war began, Iraq deployed its land forces in a number of different echelons which were and are difficult to categorize. One possible method is shown in Table 8.2, which is based on US Iraqi unit location maps and a review of Iraqi maps photographed in the Iraqi headquarters near the Kuwait Airport shortly after the war. Other sources describe other ways to assign roles or missions to given Iraqi units.

The Department of Defense's report to Congress on the conduct of the war does not describe Iraqi forces consistently; instead it indicates that 25 of Iraq's divisions were estimated to be committed to the KTO, that 10 were estimated to be in the operational reserve, eight in the strategic reserve, in addition to independent brigades.<sup>29</sup> It also indicates that,

- o Iraq's forward forces consisted of the front line infantry divisions to the east of Wadi al-Batin, which were organized into the IV Corps, with the 6th Armored and 1st Mechanized Divisions in reserve.
- o Iraq's forces also consisted of the front line infantry divisions along the main defense line west from the coast on the Kuwaiti-Saudi border, which were organized into the VII Corps, with the 52nd Armored Division in reserve. Iraq had four infantry divisions and one mechanized division deployed along Kuwait's coast.

- o The Iraqi operational reserve in the eastern part of the KTO was called the II Armored Corps, which had the 51st Mechanized Division and the 17th armored division. It was both a counter-attack and blocking force, with the additional mission of countering any air or amphibious landings.
- o A theater reserve of at least six Republican Guards divisions was positioned along the Iraqi-Kuwait border. The key elements of this Republican Guards force included the Tawakalna Mechanized Division, the Madinah Armored Division, and the Hammurabi Armored Division. The Adnan (Al Faw) and Nebuchadnezzar infantry divisions were kept back to defend the approaches to Basra.<sup>30</sup>

These differences over Iraqi force strength at the beginning of the land campaign sometimes appeared to be little more than statistical quibbles, but they had an impact on operational planning and attitudes before the conflict. Both the US Army commander, General Yeosock, and the US Marine Corps Commander, General Boomer, were faced with exaggerated estimates of Iraqi capability. While General Yeosock, General Boomer, and many subordinate commanders had already learned to discount much of the reporting on Iraqi effectiveness before the land war began, some subordinate commanders seem to have showed caution in maneuvering where more accurate intelligence would have made them more aggressive. This may have been a particularly important factor in the case of the VII Corps, which deployed later than other US forces and attacked elite Iraqi forces in the rear. The qualitative problems in these forces were much less apparent than in Iraq's forward infantry divisions, and data were not available on the basis of patrols, defectors, or tactical reconnaissance.<sup>31</sup>

Such differences in estimates of force strength also have an impact on the way given battles and encounters are now assessed, and on the lessons that can be drawn from the use of given types of forces. It is one thing, for example, to talk about destroying a division which has 90% of its strength, and quite another to talk about destroying a division with 25% of its strength. It is one thing to talk about pushing the VII Corps quickly through a Republican Guards Forces Command that has already been largely destroyed from the air, and quite another to talk about attacking a force which is largely intact.

When one examines battles, "destroying" a unit is not the same as "defeating" it, or severely weakening it. Further, the tendency in many reports to confuse fighting a whole division, with fighting brigade-sized or smaller elements of that unit, not only leads to a substantial exaggeration of the size of many battles but acceptance of damage claims to Iraqi forces that often exceed the size of the total Iraqi force engaged.<sup>32</sup>

An accurate description of the role and mission of Iraqi forces is also important. Since the war, there has been a tendency to focus on the Republican Guards as the major force the Coalition had to fight; however, the VII Corps fought major engagements with regular Iraqi army heavy divisions, and the I MEF and British 1st Armored Division also fought such battles. This mirrored the history of combat during the Iran-Iraq War, where regular army heavy divisions tended to win battles, and the Republican Guards tended to exploit them. There are questions which cannot be answered from the data currently available as to exactly what Iraqi units should have reinforced given sectors of Iraq's forward defenses, an issue which makes it difficult to analyze exactly how the Coalition disrupted Iraq's defensive plan.

It is far easier to talk about the desired impact of the Coalition's deception plans than it is to verify exactly how much deception was really achieved. Two key questions emerge which cannot be answered without more data on Iraqi capabilities and perceptions: Just how effective was the deception surrounding the movement of VII and XVIII Corps, and how well could Iraqi forces have redeployed in any case? Similarly, to what extent did the amphibious operation actually pin down Iraqi forces on the coast, and to what extent were they pinned down by the air campaign and the inability to deploy and support them elsewhere?

The victor generally gets to dictate the initial terms of military history, just as the victor gets to dictate the terms of peace. Ultimately, however, some judgments about military history and the lessons of war will have to be delayed until that can be based on a better understanding of the view from the other side of the hill.

Table 8.2Iraqi Army Deployments in the Kuwaiti Theater of Operations (KTO)

<u>Function of Force</u>	<u>Division Strength</u>			
	<u>Armored</u>	<u>Mechanized</u>	<u>Infantry</u>	<u>Total</u>
<u>Forward Barrier Defense:</u> Infantry divisions acting as first echelon of defense to defend border area. Moderate to low quality forces designed to absorb shock of offensive:				
In Kuwait: 16, 36, 7, 14, 28, 42, 8 Infantry Divisions	0	0	7	7
In Neutral Zone: 48, 25, 28, 27, 20 Infantry Divisions	0	0	4	4
<u>Forward Reserve:</u> Second echelon forces deployed behind forward echelon to halt Coalition advance or reinforce before the Coalition could penetrate the forward defenses.				
26, 31, 27, 21, 15 infantry divisions; 30, 1, 5 mechanized divisions; 12 armored division	1	3	4	8
<u>Coastal Defense Force:</u> Infantry forces hold against the initial phase of an amphibious assault or heliborne assault, and secure Kuwait City.				
18, 19, 11, U/I, 2, U/I infantry divisions. 51 mechanized division	0	1	6	7
<u>Regular army heavy reserve:</u> Critical force in trying to contain major breakthroughs, or in launching counter attacks.				
52, 17, 10, 6, 3 armored divisions; 45 mechanized division	5	1	0	6
<u>Republican Guards reserve:</u> Ultimate mobile heavy reserve and elite infantry defending the approaches to Basra and Umm Qasr				
Medina and Hammurabi armored, Tawakalna mechanized division, Al Faw and Nebuchadnezzar Infantry Divisions	2	1	2	5
<u>Army infantry reserve:</u> Regular army infantry division defending the northwestern approach to Basra and Shaibah				
49, U/I, and special forces divisions	0	0	3	3
<u>Total</u>	8	6	26	40

Source: Adapted from briefing aids provided by the US Department of Defense in April, 1991, and Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 355. Note that US maps for Iraqi forces do not agree from source to source.

### **Qualitative and Leadership Problems in Iraqi Land Forces**

The issue of relative quality is as important as the issue of relative quantity. As has been discussed in Chapter Three, the Iraqi Army had some good combat-proven units.

Some were well-equipped with T-72 tanks and BMPs and self-propelled artillery. At the same time, much of the Iraqi Army was still basically an infantry force in terms of its training and tactics, and most of its forward deployed units were composed of poorly trained conscripts. Iraqi commanders in the less capable units rarely showed initiative, and the Iraqi services had a rigid "top-down" command and control system. Most Iraqi infantry units were trained largely for static defense along a continuous line, and were manned with low grade conscripts and officers, having limited skill in maneuver. Except for selected Republican Guard and regular army units, Iraqi commanders were briefed to place their emphasis on holding a continuous front, rather than on planning and training to withdraw, cross-reinforce, and re-concentrate.

As has been discussed in Chapter Seven, the impact of weeks of concentrated air attacks before the Coalition land offensives interacted with this uncertain Iraqi leadership and command discipline. Maintenance during the air campaign was poor, and completion and repair of defense lines were erratic. Many forces were exposed by the open desert terrain, and the sand blew off many minefields. Little effort was made to keep positions, alternative positions, and ditches from filling with sand. While there was a total of 30 days of ammunition in theater, and three days with each combat unit, food deliveries were poor. The impact of desertions was also erratic. These problems hurt some units and elements of Iraqi combat power more than others. As a result, Iraq lost force coherence, and saw desertions bring total manning levels to about 40% of the authorized strength, and less than 60% of the strength that Iraq deployed when the war began.<sup>33</sup>

It also seems likely that at the point the land campaign began, the Iraqi high command failed to appraise the growing weaknesses in its land forces correctly, and failed to understand the meaning of the land warfare technologies and capabilities possessed by the Coalition forces -- just as it had been incapable of anticipating the strategic and tactical impact of Coalition air power. Some interviews with Iraqis at least suggest that the high command still saw war in terms of their conflicts with Iran, force ratios and equipment numbers, and a vision of US land warfare capabilities based on Vietnam and Lebanon.

While the data are uncertain, Iraqi prisoner of war (POW) reports and interviews indicate that Iraqi commanders neither understood the implication of their lack of beyond visual range targeting capabilities, nor how weak their combined arms capabilities really were, and that their artillery lacked mobility and the ability to rapidly adjust fires. They did not fully understand the consequences of their dependence on land lines, radio systems and centralized nodes that the coalition could jam, decrypt, or destroy. They did not understand the implications of their lack of sophisticated night vision devices, fire control computers, and the thermal sights that allowed Coalition forces to engage at very long ranges, and often

target Iraqi forces at beyond visual range. They did not fully appreciate the inherent problems of a logistics system that was over-extended, slow reacting, and complex, even before the air campaign. They did not foresee what it would take to sustain their heavy divisions in a war of maneuver, and they placed only limited emphasis on battlefield recovery and repair. These pre-war limitations in Iraq's understanding of its enemy almost certainly had a serious impact on the outcome of the AirLand battle.

Many of these weaknesses were known to Coalition forces in the theater before the land campaign began. The "battle of Khafji" and the fighting during January 29 to February 1 had revealed many of the shortcomings in the Iraqi Army. Not only had Coalition forces exposed these weaknesses in clearing the city, but two companies of the 1st Marine Division with LAVs had succeeded in halting an Iraqi armored attack, and the Iraqis had proved timid in attacking, made poor use of combined arms, and showed limited skill in using their weapons. These encounters raised the hope that most Iraqi forces might be equally ineffective throughout the land campaign, but they were not a basis for commanders to take risks until large-scale combat demonstrated their relative importance and scale. A US Marine Corps historian provides the following perspective,<sup>34</sup>

"Commanders did know from intelligence reports that Iraqi units suffered from low morale, poor training, desertion, and bad living conditions. We suspected in mid-January that the willingness of the front line troops to fight was questionable...within two weeks of the start of the air war were had a very encouraging picture about the enemy our ground forces were about to go up against. Iraqi Army shortcomings were graphically illustrated in the fighting that took place along the border during the period 29 January to 1 February and referred to as the 'battle of Khafji'."

Some field commanders briefed their subordinate commanders in depth on the weaknesses discovered in Iraqi forces before the land campaign began -- for example, Brigadier General James M. Myatt, commander of the USMC 1st Division, gave such a briefing on February 20.<sup>35</sup> General Yeosock also seems to have been well satisfied with General Stewart, his G-2. However, US national intelligence agencies and USCENTCOM did an erratic job of analyzing and communicating many of these Iraqi weaknesses to the commanders of the XVIII and VII Corps, I MEF, JFC-N, and JFC-E, as well as to their subordinate commanders.

Other field commanders -- particularly in the VII Corps, JFC-N and JFC-E -- prepared for the land attack with a picture of Iraqi capabilities based on intelligence that erred in the direction of exaggerating Iraqi capabilities. Lower level commanders praised the intelligence briefings that they were given on topics like Iraqi artillery deployments and

tactics, but several indicated that they felt they were not given an adequate picture of the uncertainties in that intelligence they received, or a comprehensive and balanced picture of Iraqi weaknesses they might exploit. These commanders felt that the intelligence they had available made it necessary to prepare for a worst case threat.<sup>36</sup>

At one level, the way in which intelligence was presented increased Coalition training, preparation, and effectiveness, and no prudent intelligence analyst or field commander could ignore worst case risks. At another level, exaggerating the threat helped create a set of attitudes that did not fully prepare commanders to exploit the Iraqi weaknesses that were confirmed during the first day of combat. Lt. General William M. Keys, the commander of the 2nd Marine Division, is typical of a number of Coalition major combat unit commanders in pointing out that,<sup>37</sup> "...our biggest overall intelligence shortcoming was in building Saddam Hussein and his forces into a monster that just wasn't there. Going into battle, this made us more gun-shy than we should have been." The lesson that an accurate perception of the enemy is vital to success is scarcely a new one, but it remains a lesson of modern war.

Figure 8.2

The Location and Condition of Iraqi Ground Forces on February 23, 1991 (G-1)

Source: Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 355 (or 354)

## **Iraqi Forward Barrier Defenses: Perceived and Real**

The nature and impact of Iraq's forward defenses is also of considerable importance. At the time the ground war began, Coalition land commanders were briefed that Iraq's forward deployed forces were positioned in two major defensive belts along the Saudi-Kuwaiti-Iraqi border. The first defensive belt paralleled the border roughly five to 15 kilometers inside Kuwait, and was composed of minefields -- with mixes of anti-tank and anti-personnel mines varying in width from 100-200 meters -- as well as lines of barbed wire, anti-tank ditches, berms, and oil-filled fire trenches designed to cover the key avenues of approach. This first defensive belt was covered by platoon and company sized strong points that acted as early warning forces and which could fire on troops attempting to cut through. The second defensive belt, up to 20 kilometers behind the first began north of Al-Khafji, proceeded northwest of the Al-Wafrah oil fields until it joined with the first near Al-Manaqish. It had obstacles and minefields similar to the first.

Intelligence indicates that these defensive belts were supported by long lines of mutually supporting brigade-sized positions composed of trench lines and strong points which could be covered with interlocking fields of fire from armor, artillery, and automatic weapons. Battalion-sized triangular strong points of roughly 2,000 meters a side were set up with an anti-tank ditch, a three to four meter high berm, company-sized positions at the angles, and armor and artillery inside.

US intelligence estimated that Iraq planned to slow Coalition forces at the first belt, trap Coalition forces between the two defensive belts, decimate most of the Coalition forces before they could penetrate both belts, and immediately counterattack if any Coalition forces did get through the second belt. The Republican Guards and regular army mechanized and tank forces were to provide mobile reserves, and counterattack capabilities. Other Iraqi defenses existed along the seacoast, with naval and land mines, and fortified high rise apartment buildings. Iraq constructed a major new road network, with buried command posts, communications lines, and command posts. Individual weapons were revetted, and there were anti-tank ditches and berms.<sup>38</sup>

There were, however, problems with many of these estimates that grew out of the problems discussed in Chapter Five and which exaggerated Iraqi capabilities. A US Army history of the war notes,

"After Desert Storm, General Schwarzkopf and some of his officers criticized the quality of the intelligence they had received. The Coalition, they believed, had greatly overestimated enemy strength and capabilities. In retrospect, the intelligence effort reflected strengths and weaknesses that had long characterized Western information gathering and analysis. Eavesdropping devices,

satellite photography, and reconnaissance aircraft, frequently using new technology, produced high-quality raw data and Iraqi movements and positions. On the other hand, the number of agencies involved resulted in duplication of effort, and security compartmentation prevented timely dissemination of information to the field. Commanders complained that they received reconnaissance photographs that were at least one day old and that estimates were often too vague to be meaningful. For all the aerial reconnaissance, Army Central Command apparently was never able to piece together an accurate picture of the defenses west of the triborder area, perhaps because the secrecy surrounding the flanking move had left responsible agencies unaware of the need. Finally, as in past crises, the lack of agents on the ground left American leaders in the dark regarding Iraqi intentions."<sup>39</sup>

These estimates led Coalition forces to carry out massive preparations for the breaching operation. Although US forces had never trained for such attacks as part of the AirLand battle doctrine before the Gulf War, its emphasis on realistic training led US forces to carry out a very aggressive preparation and training program in November and December of 1990.<sup>40</sup> For example, the US Army rushed in thirteen battalion countermine sets of equipment (CMEs) during December 28, 1990 and February 16, 1991, plus 118 mine plows and 75 M-9 Armored Combat Earthmovers (ACEs).<sup>41</sup> It conducted extensive training exercises, and the 1st US Division was given extra breaching equipment so it could lead the advance of VII Corps.<sup>42</sup>

The I MEF was given one CME battalion set by the US Army and 24 ACES, plus the support of the equipment held by the Tiger Brigade and additional engineering equipment that they obtained from the Army, the Saudis, and from other sources, and then exercised with earth movers and mine-clearing plows. Once the I MEF completed its movements in preparation for the land offensive, it began to conduct extensive training exercises. The I MEF created full scale mock-ups of what it believed to be the Iraqi defenses in the breach areas.<sup>43</sup> The British Army, USCENTCOM and ARCENT carried out similar exercises tailored to their own attack plan, and advisors worked with the commanders of JFC-N and JFC-E to plan and execute barrier crossing training.

As is the case with other exaggerations of Iraqi capabilities, the briefings on Iraqi's forward defenses helped contribute to the Coalition victory by increasing preparation and undermined it by encouraging caution. They also complicated the planning of the breaching operation, both in terms of war planning and tactical operations.<sup>44</sup> Intelligence often provided detailed maps and estimates of the forward defenses which incorrect in detail, and sometimes reflected the result of the imagery dissemination problems and lack of standardized coordinates discussed in Chapter Five. There were gaps and errors in the

material provided to such key commands as those of the US Marine Corps 6th Regiment and the British 1st Armored Division.<sup>45</sup> The I MEF had to bypass the entire theater and national intelligence system, and send officers to Washington to get accurate imagery of the Iraqi minefields in the forward area.<sup>46</sup>

A US Marine Corps historian notes that,<sup>47</sup>

"It was the lack of real-time imagery that caused concern. Not until the last moment did field commanders see photo-images of the defenses to their front. Those defenses appeared to be uneven in strength, but the images did not show enough that wasn't already known or assumed to cause a redrafting of offensive plans. It was the enemy's potential that we would have been unwise to ignore. The Iraqi Army's defensive capabilities and tactics were well understood. Many of its commanders, officers, and soldiers were combat veterans from the Iran-Iraq War..."

Combat commanders countered some of these intelligence problems by using their limited tactical assets and reconnaissance patrols. The I MEF, for example, was able to correct some of the errors in the intelligence it received by scouting out gaps and problems in the Iraqi defenses, and redirected its attack shortly before the beginning of the land attack to exploit a gap in front of the I MEF line of advance.<sup>48</sup> However, interviews with British and US officers -- and an extensive series of walkthroughs on the battlefield immediately after the war -- indicate that Iraqi forward defenses were almost always significantly less formidable than US national and Coalition theater-level intelligence had estimated before the war.

At the same time, the weaknesses in Iraqi defensive concepts and in the way in which they were implemented, seriously weakened Iraq's ability to conduct land warfare, and reflected serious problems in the quality of Iraqi military leadership. It is still unclear how Iraq's senior commanders believed they could implement such a defensive concept effectively in the face of Coalition air power. Iraq's defensive concepts positioned Iraq's forces in ways that contributed to their vulnerability during the air campaign, and their rapid defeat when the ground phase of Desert Storm began. Static forward defenses, and deployment of regular armored and mechanized forces nearby, dispersed Iraq's forces over an extremely wide front, and helped deprive Iraq of any chance of providing such defenses with effective air defenses.

It seems that the Iraqi high command simply had no idea from its past wars of what air power could do, or how much more quickly Coalition armor could move than the infantry-dominated Iraqi forces. The cost of such misperceptions were clear even before the land offensive began. The "battle of Khafji" showed that Iraqi forces could not move in the

open without being decimated by Coalition air forces. Long before that, the air campaign had cost Iraq its ability to support its forces with effective intelligence and reconnaissance capability -- which deprived Iraq's ground forces of any hope of effective battle management in reinforcing its forward defenses or in creating large formations that could coordinate effectively in defense or counterattacks.

The way in which Iraqi defenses were laid out and constructed created many tactical problems for Iraqi forces. Some defenses were well constructed. Many were badly laid out and only partially completed. Some areas had well laid out minefields and barriers, and others did not. Some fire trenches were filled with oil, some were damaged by air attacks and artillery, and others had simply never been fully completed. Some barriers were wide or high enough to be serious and others were not. In some areas, partial gaps existed in the defenses. In other areas, the supporting battalion-sized and brigade defenses in the rear were not complete, were poorly laid out, or were situated in ways that implied little effort to properly survey the terrain. It was obvious that Iraqi defensive capabilities were erratic and had some severe weaknesses before the Coalition air and ground attacks.<sup>49</sup>

Iraqi defenses often seemed to be defenses against infantry assault that were ineffectively adapted to dealing with armor, and with an enemy equipped with major combat engineering resources.<sup>50</sup> The weaknesses of these defenses again indicate that Iraq drew on its experience in fighting with Iran without asking whether this experience was relevant against a very different enemy, that Iraq was unable to take account of either standard Soviet defensive doctrine or the experience of the Arab-Israeli Wars, and that Iraq did not understand the problems such defenses could pose in terms of concentration of force once they were penetrated.

In comparison with Egyptian and Israeli fortifications in 1973, Iraqi defenses seemed to reflect a limited understanding of armor and anti-armored warfare, and of the speed and force with which mechanized forces could break through against such defenses.<sup>51</sup> In many areas, they lacked the depth to deal with armor and a war of maneuver. Interviews indicate that the Iraqi infantry forces manning these defenses also were badly under-equipped with night vision devices and with anti-armor weapons that could kill at long ranges. It is difficult to appraise the skill with which such positions could have been given artillery support because Iraq had lost so much artillery during the air campaign. Many of the defensive positions behind the defensive belts indicate that Iraq's pre-air campaign artillery assets were spread over too wide a front to achieve effective concentration of fire against advancing infantry -- much less heavily armored forces against which artillery has only limited lethality.

Further, Iraq's defenses had serious operational weaknesses. Dispersing so many forces into forward defenses made it critical for Iraqi forces to reinforce them before the Coalition could achieve a major breach and thrust large armored forces into rear areas where they could freely maneuver. Any major mechanized penetration of the defenses confronted the Iraqi armored and mechanized forces with the fact that they had no way to determine the level of Coalition forces penetrating a given area, and suddenly confronted them with fluid mechanized maneuver warfare for which many Iraqi armored and mechanized units had limited real capability -- rather than with the mission of reinforcing static defenses. Iraq's method of defense almost certainly helps explain why its forces were defeated so quickly and why so many either became prisoners of war or retreated in a rout.

There are two lessons to be drawn from Iraq's forward defenses:

- o One is the need to develop better intelligence means to accurately characterize and survey forward area barrier defenses. US Army, Saudi Army, and Marine Corps officers who had crossed the Iraqi defensive lines repeatedly indicated that they had been poorly briefed on what they faced, and had been given generalized pictures of Iraqi defenses that were not actually the defenses they encountered. These problems were made more serious by the exaggeration of Iraqi strength and ability to man and equip such belts. Although the Coalition did prove to need more breaching and mine clearing equipment in some areas, its speed of advance might have been higher and more decisive if JFC-N, I MEF, and JFC-E forces had had an accurate picture of the threat.
- o The second is the need to consider what kind of defensive barriers might actually help in the future. The Iraqi model is almost certainly not the way to achieve significant defensive capability against an armored force, and was wasteful in effort, men, and resources. It effectively created a prison camp for much of the Iraqi Army once it was penetrated because the Iraqi infantry in any one unit area were dispersed over such a wide area that they had no way to conduct a fighting withdrawal from penetrated positions.

### **Force Ratios and The Art Of Operations**

There is no consensus in Western sources as to what Coalition and Iraqi force strength data to count in a force ratio comparison, or as to the force ratios involved. USCENTCOM planners estimate, however, that the force strengths in the theater of operations before the air campaign favored the Coalition by 1.8:1 in personnel, 1.2:1 in tanks, 1.3:1 in other armored vehicles, and 3.6:1 in aircraft. When these ratios were broken down by sectors or major line of attack, USCENTCOM planners estimated that the Coalition forces had a superiority of 1.4:1 along the main line of attack from the West and

1.3:1 along the line of the supporting attack through Kuwait. The Egyptian/Syrian force had a superiority of 1.4:1. The I MEF had a strength of only 0.75:1, but was linked to the advance of the two groups of Arab forces. It was estimated that the US Corps closing in on the RGFC from the West would have a superiority of 2.7:1 at the final objective, and that the US-British Corps would have a superiority of 2.2:1.<sup>52</sup>

Such force ratios, however, are at best crude measures of weapons strength and capability based on manpower and equipment numbers. They say nothing about force quality. While military experts normally estimate that it takes at least a 2:1 superiority in land force strength -- and generally 3:1 -- to conduct a successful offensive, the UN Coalition also had massive qualitative advantage.

These advantages were reinforced by another aspect of force capability that must be considered in any net assessment of Coalition and Iraqi land capabilities. The history of the land offensive shows that a superior war fighting doctrine and operational art helped the Coalition win so quickly and decisively. Because the Coalition had American planners and de facto American command, it was able to put many of the AirLand battle concepts discussed in Chapter Three into practice. Table 8.3 attempts to summarize these concepts, and the advantages that they gave the Coalition by using many of the phrases included in briefing aids used by the US before and during the Gulf War. Many of the phrases listed in this table may at first seem to be little more than usual list of staff college clichés and "buzz words," but their value is reflected throughout the history of the land offensive that follows. They are each significant lessons of war.

In fact, the cumulative importance of the differences in Coalition and Iraqi conceptual thinking and execution of the operational art is perhaps the greatest single lesson of the AirLand battle. So is the importance of the Coalition's advances in synchronization, combined arms, and jointness. This becomes progressively clearer from a review of the final preparations for the land attack, and from a description of the key details of actual land combat. If the lessons of the air campaign are often technical, and focus on specific issues in executing the campaign, the key lessons of the AirLand battle are different. They lie in how the interaction between the different elements of the Coalitions forces produced synergistic effects. The Coalition's military performance was scarcely perfect, but its combination of the AirLand battle, high manpower quality and readiness, and superior tactics and technology proved remarkably decisive. In fact, some of the Coalition's problems were created by an exaggerated picture of Iraqi capabilities, and a battle plan that partially depended on Iraqi willingness to stand and fight.<sup>53</sup>

Table 8.3Coalition Advantages in the Conceptual Approach to AirLand WarfareAdvantages in Doctrinal Emphasis

- o Initiative - to set or change the terms of the battle by offensive action.
- o Agility - the ability of friendly forces to act mentally and physically faster than the enemy.
- o Depth - the extension of operations in space, time, and resources.
- o Synchronization - the arrangement of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point.

Advantages in Tactical Emphasis

- o Exploit combined arms and combined operations, fully integrating the capabilities of all land, sea, and air combat systems.
- o Rapidly shift and concentrate decisive combat power, both fire and maneuver, at the proper time and place on the battlefield..
- o Maintain high rates of maneuver
- o Continuously exploit deception
- o Strike at the enemy's strategic center,
- o Remain within the enemy's decision cycle: Maintain a superior observation-orientation-decision-action loop.
- o Multiple simultaneous thrusts
- o Decisive use of force through flanking movements
- o Integrate the application of firepower into the concept of maneuver.
- o Integrate tactical fixed and rotary wing airpower into the tactical operations of land forces.
- o Sustained high tempos of continuous operations
- o Avoid battles of attrition, attack the enemy's vulnerabilities
- o Keep the battlefield operation fluid
- o Force the enemy to move in the desired direction
- o Maintain continuous operations
- o Optimize all capabilities
- o Maximize night/limited visibility operations

Advantages in Goals for Sustainment

- o Anticipation,
- o Integration,
- o Responsiveness
- o Improvisation

Advantages in Training Goals and Methods

- o Train to realistically implement doctrine and training.
- o Coherent teams of trained professional forces.
- o Realistic battle training at all echelons and levels of maneuver.
- o Realistic night, and limited visibility training.
- o Exploit high levels of readiness.
- o Train to sustain through maintenance, repair, and logistics.
- o Use training to test adaptation.

## The Final Coalition Battle Plan<sup>54</sup>

By the time the Coalition was ready to begin the land offensive, the Coalition battle plan was still basically the plan discussed in Chapter Two. Schwarzkopf and his Corps commanders had discussed different ways of employing a two Corps force. One included having the XVIII Corps conduct a breaching operation, with the VII Corps exploiting the breach from its rear. Another option was placing VII Corps to the West with XVIII Corps to its east. The final plan, however, called for XVIII Corps to be placed in the West, with VII Corps conducting its own breaching operations and launch a massive left hook from a more central position.<sup>55</sup>

This plan is shown in Figure 8.3. The XVIII Corps was to attack to the West and deep into Iraq to control the main line of communication from east-to west along Iraq's Highway 8 and cut off Iraqi forces in the Kuwaiti Theater of Operations. The VII Corps was to conduct the main thrust of the Coalition attack to attack the Republican Guard Forces Command and envelope the Iraqi forces remaining in Kuwait. It was to attack to the east of the XVIII Corps, and west of the Wadi Al-Batin, and thrust northeast to decisively defeat the Republican Guards Forces and ensure that heavy Iraqi regular army forces could not regroup and counterattack. The VII Corps was able to take advantage of a gap that the Coalition discovered in Iraqi forces and move two armored divisions and an armored cavalry regiment to the west. The assignment of the 1st Cavalry Division was to act as the theater reserve, guard against an Iraqi attack on Hafr al-Batin, and fix Iraqi forces in place.

The 24th Infantry Division (Mechanized) and 3rd Armored Cavalry Regiment, and the US forces in the VII Corps, were to conduct the critical advance towards Basra. They were to avoid most of Iraq's forward and fixed defenses in the KTO during the first phase of their advance, envelop Iraq's forces in the KTO from the West, and destroy the three heavy Republican Guard divisions and the additional regular army heavy divisions that made up the Iraqi strategic reserve. This main thrust, which was sometimes called the "left hook" or "Hail Mary" plan, was intended to implement the AirLand battle doctrine, and exploit the impact of the air campaign while using air support operations, continuous 24 hour-a-day high tempo operations, and technologies like thermal sight, passive night vision systems and sights, and GPS to "own the night" and "own the desert."

To the west, the JFC-N, I MEF, and JFC-E were given the assignment of attacking north across the Iraqi forward defenses, encircling Iraqi forces in Kuwait, and

liberating Kuwait City. The JFC-N was to seal off the Iraqi line of communication north from Kuwait City. The I MEF was to attack the Iraqi forces in its forward area and seize the Iraqi positions southeast of the city of Al-Jahara. The JFC-E was to attack the Iraqi forces on the Kuwaiti border near the coast and secure the key objectives along the coast south of Kuwait City. The Marine amphibious task force and British and US navies were to tie down the Iraqi forces near the coast with the threat of an amphibious landing. It was uncertain as to whether Iraq would attempt to hold Kuwait City, but the combined mix of JFC-N, I MEF, and JFC-E forces were to then encircle Kuwait City and the Arab forces in JFC-N and JFC-E were then to liberate the city.

The ground attacks were to be carefully sequenced to try to confuse the Iraqis. The 6th French Light Armored Division, US 82nd Airborne Division, and the 101st Airborne Division in the XVIII Corps were to attack in the direction of the lower Euphrates and Baghdad at 0400 on G-Day (the first day of the ground attack) to secure the Coalition's left flank. The Marines were to attack at the same time, followed by the forces in JFC-E near the coast. The I MEF was to secure Kuwait west of Al-Wafrah, and to pin down and decisively defeat the Iraqi forces along its front, pin down Iraq's tactical and operational reserve in southern Kuwait, prevent any reinforcement of the Iraqi land forces in the west, and then block the retreat of Iraqi forces out of Kuwait and Kuwait City and help the forces of JFC-N and JFC-E in liberating Kuwait City.

Several aspects of this plan are of particular importance:

- o First, the timing of and success of the attack on the Republican Guards and ability to cut off the Iraqi forces fleeing north out of Kuwait determined important aspects of its success, which meant that the success of the XVIII and VII Corps determined the extent to which the Coalition could or could not definitively defeat the Iraqi forces in the KTO.
- o Second, the timing of the battle plan depended heavily on the assessment that most Iraqi forces would stand and fight, and that their retreat would be comparatively slow and enforced in battle. No other plan would have been prudent -- given the intelligence estimates of the time -- but the moment that more of the Iraqi forces in Kuwait fled north in a virtual rout, the success of the VII Corps in reaching its objective became more and more uncertain.
- o Third, the destruction of the Republican Guard forces depended on the assumption that they would engage and would not retreat northeast before the XVIII Corps and VII Corps could reach them. This too, however, was somewhat dependent on Iraqi forces in the south holding long enough so that the Republican Guards would fully commit to the land battle.

- o Finally, assumptions seem to have been made that air power could help seal off the northern escape routes from the battlefield. These assumptions, however, depended in part on pinning down much of the Iraqi force in the KTO, on good weather and visibility over enough time for air power to be effective, and on analyses showing that Iraqi lines of retreat were fragile enough so that air power could play a major role in blocking them.

Collapse and a rout are rarely the most successful strategies in war, but they may have been the best strategy for Iraqi land forces in the KTO. As will be described shortly, the speed of the Iraqi collapse and retreat forced a number of important adjustments in the Coalition battle plan during the war. The Coalition's initial successes and the resulting rout led USCINCENT to accelerate the time table for the VII Corps attack by 15 hours, and the Coalition still became involved in a race to seal off the KTO south of Basra that it had only a limited prospect of winning. Iraqi forces in the KTO could run directly north to Basra up improved highways or through trafficable desert, and Iraqi forces in the north and northeast above Kuwait City had no reason to commit themselves to all out battle.

As has been discussed in Chapter Seven, weather intervened to limit the effectiveness of Coalition air power, and Iraq's lines of retreat proved to be more successful than US air planners had estimated. On the morning the ground war began, rain, blowing sand, and smoke from burning oil wells made visibility poor. These conditions had a mixed impact on the battle. They helped enhance the advantages of the Coalition's land forces in night warfare capabilities, and in using infrared and thermal sensors. They did not affect some key intelligence platforms like the JSTARS. They did, however, restricted Coalition air interdiction and close support capabilities, and the movement of wheeled logistic vehicles. Coalition air power was often highly effective in spite of these problems, but it could not be exploited consistently with full effectiveness during much of the land offensive.

The detailed discussion of the land offensive that follows is filled with "might have beens" that reflect different interpretations of how the Coalition should have dealt with the Iraqi rout. Much of this attention focuses on the movements of VII Corps. Iraq might have been less successful in retreating if the VII Corps had been able to exploit the fact that Iraqi forces were weaker than intelligence anticipated by accelerating its "left hook" early in its attack as it did on the last day.

USCINCENT attempted to compensate for the early collapse of Iraqi forces by wheeling VII Corps to the east much sooner than planned, issuing a series of orders to VII Corps to step up its advance, assigning the US 1st Infantry (Mechanized) Division to

support the VII Corps advance, releasing the US 1st Cavalry Division from a reserve function to that of an attack force to Tuesday morning, February 26. Preparation were also made at the Corps level, and possibly within USCINCENT, to prepare the 101st Airborne Division of the XVIII Corps for an air assault to block the exits north of Basra on February 27. However, the combined forces of VII Corps and XVIII Corps did not block the escape routes to Basra out of the KTO in time to win total victory, and the decision was taken to end the war without conducting an air assault to block the exits north of Basra.<sup>56</sup>

At the same time, the records currently available on the detailed movements during the land offensive indicate that it is much easier to demand higher rates of movement once a war is over than it was achieve them during the battle. The distances were long, and the XVIII and VII Corps succeeded in executing the longest and fastest sustained armored advance in history. The Republican Guard and Iraqi regular army forces in the area were stronger than US intelligence had estimated when the land campaign began. The timing was critical, and the number of additional Iraqi forces that could have been trapped is uncertain, and any envelopment that left a de facto sanctuary in Basra ensured that a significant number of Iraqi forces would escape.

Some analysts have also argued that the Coalition might also have been more successful if JFC-N had carried out its mission aggressively or on schedule. As has been discussed in Chapter Three, Egyptian forces faltered and Syrian forces did not commit. At the same time, it is unclear how many more Iraqi forces really would have been trapped if JFC-N had advanced more aggressively. The advance by I MEF and JFC-E probably drove so many Iraqi forces north that JFC-N would have had to advance more quickly than planned to achieve a decisive impact.

These issues are discussed in more detail in the day-by-day analysis of the battle that follows. At the same time, there are certain elements of the theater of the absurd in trying to blame the war plan, given commanders, or given groups of Coalition forces for the fact that the Iraqis were not fully enveloped. The land campaign was one of the great successes of military history, and the limits to its success were largely a function of political decisions as to how to end the war and the fact that the enemy in central Kuwait and the northern KTO could often flee the battlefield more rapidly than the Coalition could advance.

Iraqi forces faced a much easier task in fleeing north than the Coalition did in sealing off Iraqi forces. The choice of timing in ending the war was political, not military. If the Coalition had wanted to use air power to kill far more Iraqi troops it could easily have done so by changing the way in which it attacked the Iraqi forces in the KTO and by

bombing Iraqi forces around Basra. Many of the Republican Guards would have escaped unless the Coalition chose to advance deep into Iraq, but the Coalition could have destroyed all of the elements of the Hammurabi Division that remained in the theater, 101st Airborne Division could almost certainly have forced many more Iraqi units to surrender by blocking the exits out of Basra on February 28. Grand strategy -- or lack of it -- was made in Washington.

More broadly, would Hannibal have failed at Cannae if most of the Romans had run away after the first clash, and would the Romans have been deemed the victors? Would Lee really have won if he had suddenly fled to North Carolina and would Grant then have failed? Blaming the victor for failing to anticipate the enemy's sudden collapse, and defining routs as a form of successful battle, is probably not going to emerge as a lesson of war.

Figure 8.3

The Final Coalition Attack Plan

Source: Adapted from Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 339.

## Preparing the Battlefield<sup>57</sup>

As Chapter Seven has described, the Coalition flew more than 35,000 sorties against Iraqi forces in the KTO, and more than 5,600 against the Republican Guards Forces Command in preparation for the land offensive.<sup>58</sup> It carried out a wide range of special purpose missions. Many aircraft struck at the Iraq's artillery and positions in the forward area. B-52s dropped bombs on UIraq's forward defenses. F-117A strikes were made against the pumping stations (Iraq intended to use to fill its trenches with oil to create "fire trenches" once the Coalition attacked), fuel-air explosives to try to detonate mines, and napalm to burn trenches already filled with oil. The US Navy moved three carriers forward into the Gulf, and many Coalition air units devoted most of their resources to preparing for the land attack in the forward area. For example, the 3rd Marine Air Wing (3rd MAW) used its AV-8Bs, F/A-18s, and UAVs to target and attack Iraqi artillery, armor, and forces in central and southern Kuwait, and by February 3, 1991, it was concentrating almost exclusively on preparing the battlefield.

### **Focusing on Iraqi Artillery**

This preparation scarcely stopped with airpower. Coalition artillery, the MLRS, and attack helicopters were used to attack Iraqi artillery concentrations, and US Army and Marine Corps forces conducted counter-artillery raids. These attacks were given priority by ARCENT because Iraq's artillery was seen as its best developed combat arm, as its only surviving method of bringing firepower to bear on the Coalition forces breaching and penetrating Iraq's defensive belts, and as the one arm that might slow the Coalition advance.

The main target of this counter artillery effort was the "third belt" of towed artillery fire points about 14 to 20 kilometers north of the main Iraqi forward berm, which were supported by Iraqi forward observers and by a series of 40 foot observation towers. While this was scarcely a sophisticated reconnaissance system, it gave Iraqi observers about 15-26 miles of coverage in some areas, and the small thin towers made difficult targets for artillery and aircraft.

The US attacked these towers with laser-guided Copperhead artillery shells on February 7, and followed the attack with cluster bombs. Seven key towers were quickly destroyed, and the Iraqis lost their "long range targeting system."<sup>59</sup> In addition, the Coalition used aircraft, attack helicopters, tube artillery, and the Multiple Launch Rocket System (MLRS) to attack Iraqi artillery. For example, on February 13, three MLRS batteries moved forward to the berm at dusk and fired 216 rockets and two batteries fired 140,000 bomblets on Iraqi artillery positions. The third battery, directly linked to a Q-37 counterbattery radar stood by in support, ready to fire another 70,000 bomblets in

counterbattery fire. The Iraqis did not, however, engage at this time, during massive US attacks on Iraqi artillery on February 16-17, or later. As the US Army history of the war noted,<sup>60</sup>

"In this engagement and in all subsequent artillery ambushes executed before G-Day, the Iraqis never took the bait. Relief among VII Corps artillery men was mixed with curiosity. What had happened to Saddam's most fearsome arm?...In a word, Saddam's artillery men had simply failed to make technological improvements in their over-the-hill gunnery that had been available for 20 years."

The only major problem that Coalition artillery encountered during this period was targeting. Wide area satellite coverage could only locate targets within 400 meters, and artillery needed a precision of 100 meters. This meant that every target found on imagery had to be confirmed and located by a second and more accurate source. The US attempted to use UAVs to provide this information, but then lacked the assets for battle damage assessment. JSTARS also presented problems because the data it provided on moving targets required an immediate response to attack the target before it moved out of the area. As one US Army history of the war noted,<sup>61</sup>

"The many layers of bureaucracy charged with integrating the indirect fire support function frustrated early attempts to establish a responsive indirect fire support program. Too often, important targets such as FROG rocket battalions moved before they could be targeted. Once struck, BDA was still a problem and the VII Corps was never able to determine accurately how many tanks and artillery pieces remained in its path... (senior commanders) empowered junior officers to order indirect fire strikes themselves."

### **Psychological Warfare and Deception**

The Coalition stepped up its psychological warfare efforts, and deception efforts during the 30 days before G-Day. It is unclear how much effect these psychological warfare efforts really had in motivating Iraqi forces. The data based on prisoner of war interviews that describe the effectiveness of the psychological warfare effort are somewhat similar to the interview data used in assessing the impact of B-52 raids -- they do more to indicate that the questioner was looking for a given answer than indicate that they really measure Iraqi attitudes. Efforts like helicopters flying loudspeaker patrols seemed to have had particularly uncertain effects, while dropping large numbers of safe conduct and surrender leaflets do, however, seemed to have helped prepare Iraqi forces to desert or surrender once the air campaign or land offensive motivated them to do so.

In addition to the amphibious raids and feints discussed in Chapter Nine, the 1st Cavalry Division conducted a series of feints, artillery raids, and movements in the direction of the Iraqi forces near the Wadi Al-Batin. Communications, air movements, and covert activities were used to try to convince Iraq that US Army forces remained in place, and that a false military headquarters was created with simulated message traffic and "convoys" creating large trails of dust.<sup>62</sup>

At the same time, VII Corps and I MEF forces conducted combined arms raids, and deception efforts. The British 1st Armored Division conducted a deception plan to make the Iraqis believe it was still on the coast of the Gulf when it actually had moved 350 miles to the west to join the VII Corps. The I MEF also created a "Task Force Troy" that spent 10 days before G-Day conducting false communications, building dummy positions, and raiding Iraqi forces in the Al-Wafrah area, and also used a small force of armor, infantry, reconnaissance units, engineers, US Navy Seabees, and Army psychological warfare experts to create the illusion of a much larger force.<sup>63</sup>

Ironically, the "battle of Khafji" on January 29, seems to have reinforced the effect of the Coalition deception effort, as did some Coalition maneuvers designed to stop any Iraqi raids across the border. Some prisoner of war interviews indicate that the success of the Coalition counterblow -- and small clashes between the advancing Iraqi forces and US Marine units near Al Kirbit, and the movement of the 6th Marine Regiment into the border area south of Al-Wafrah on January 30 -- led Iraq to believe it had encountered much larger Coalition forces than were ever in the area.

According to some US estimates, these deception activities helped to keep up to five Iraqi infantry divisions and an armored division in place and away from the VII Corps area of attack, although it is not clear that Iraq had the capability to move or could have removed so many forces from its defenses in Kuwait without fatally weakening them.<sup>64</sup>

### **Probing and Blinding Iraqi Forces**

Iraq's failures to aggressively conduct forward patrols and reconnaissance activity, to secure important observation posts, to develop an effective method of screening its forward defenses, and to train, organize, and equip its forward elements with sensors and night vision devices had been a major weakness in Iraqi military capabilities during the Iran-Iraq War. Iraq did only slightly better during the Gulf War. It set up command and observation posts during Desert Shield and the air campaign, and conducted patrols, although these activities were often badly structured and equipped, and some infantry units in the forward area had evidently learned little since the Iran-Iraq War. Given the fact that these activities were Iraq's only way of compensating for its lack of more sophisticated

intelligence and reconnaissance, Iraq failed to carry out the level of effort needed, and failed to do what it did do effectively.

In contrast, the Coalition carried out aggressive reconnaissance activity during the period before G-Day. Coalition ground forces extensively probed Iraq's forward defenses during the air campaign. They were able to supplement national and theater intelligence with more accurate pictures of the specific Iraqi barriers in given areas of attack, and were able to conduct long-range reconnaissance, probes, and patrols. At the same time, Coalition forces carried out aggressive counter-patrol activity to deprive Iraq of similar intelligence. The 1st Infantry Division, for example, engaged 20 Iraqi tanks and infantry in the forward area of the VII Corps. Such attacks made Iraq's weak structure of forward observation posts in the area even weaker.<sup>65</sup>

US Army and US Marine Corps scout, aviation, and special operations helicopters and aircraft carried out a series of armed reconnaissance missions in the forward area. US Army and Marine Corps helicopters carried out extensive missions -- many at night -- against Iraqi observation posts, command posts, and light air defense positions. For example, AH-64s in the 101st Airborne Division began a cross-border reconnaissance mission on February 15, supported by EH-60 Quickfix and EF-111 electronic warfare aircraft. These helicopter attacks used guided weapons like Hellfire and the laser-designated Copperhead artillery round to attack Iraqi positions and bunkers -- and Iraqi troops surrendered to attack helicopters on several occasions.<sup>66</sup>

British Special Air Service (SAS), Saudi rangers and paratroopers, and US Special Force Groups succeeded in manning forward observation posts, and patrolled the border to provide early warning of an Iraqi attack. As G-Day neared, special forces began to operate deep inside Iraqi territory, and special task groups like the US 3rd Special Forces Group began to carry out long range patrols with low-light cameras and probing equipment to map armored trafficability and specific lines of advance. SAS units watched for Iraqi reinforcement and movement activities. US Navy SEAL units carried out reconnaissance operations and mine-clearing operations near the coast in Kuwait.

Efforts to use special forces to probe even deeper into the Iraqi rear were not as successful. For example, eight special forces teams flew into Iraq on February 23, but they were unable to find sites to hide in, in the open barren terrain, and teams that attempted to dig and hide in cultivated areas were discovered by inquisitive farmers. This experience is a lesson in what HUMINT can and cannot do in countries and terrain where it is impossible to use natives or act as natives.<sup>67</sup>

At the same time, the value of these reconnaissance activities is also a lesson of the war. They were able to partially compensate for the failure of US national and theater level

intelligence documented in Chapter Five, and they helped pin down Iraqi forces and suppress similar Iraqi reconnaissance activity. Interviews indicated that they could provide good coverage in selected parts of the forward area, although such data had inevitable limitations, and could not be effectively integrated into a broader picture of the battlefield.

### **Probing Into Iraq**

The XVIII Corps carried out several aerial and vehicle raids into Iraq to strike observation posts, and command bunkers, artillery, and armor before G-Day. On February 20, for example, the 101st Airborne Division's aviation brigade destroyed 15 Iraqi bunkers with air and TOW missile fire. By February 22, the helicopters of the 82nd Airborne Division were also penetrating deep into Iraqi territory.<sup>68</sup> The VII Corps sent the 2nd Armored Cavalry Regiment nearly 15 kilometers forward into Iraq to protect engineers that cut holes into Iraq's defensive belts and forward berm.

The VII Corps used the 1st Cavalry Division and Corps Artillery to attack Iraqi artillery units near Wadi al-Batin. This kind of raid protected the movement of the VII Corps and reinforced the deception operation by giving the Iraqis the impression that the US was preparing for a main attack in the area. It also, however, involved substantial risk. The last of these raids occurred on February 20, and elements of the 1st Cavalry Division ran into an ambush by carefully positioned Iraqi AT-12 100mm anti-tank guns -- losing three men and nine wounded in the raid.<sup>69</sup>

Probes into Iraq were particularly important in the I MEF area because the force would have to advance directly through the Iraqi barriers. From mid-January on, the I MEF maintained observations and signals intelligence positions in the forward area, and deployed reconnaissance teams and light armored vehicles to observe the border and screen the movement of the 1st and 2nd Marine Divisions. Beginning on January 17, these probes led to a series of clashes with Iraqi forces in the forward area. During January 20-31, the I MEF carried out a series of combined area raids in the border area. These raids were designed both to support the deception operation and test Iraqi capabilities. At the same time, Marines in forward observation posts called in AV-8Bs to attack Iraqi artillery and Marine Corps UAVs were used to locate other targets. In the middle of the air campaign, the Marine Corps was already engaged in a low level battle on the ground.

Reconnaissance teams from both Marine divisions moved into Kuwait a week before the ground battle began. On the night of February 21st, two regimental-sized task forces of the 1st Marine Division infiltrated into Kuwait and remained there until G-Day. These forces concealed themselves during the day, cleared mines and obstacles, and killed Iraqi forward observers during the night. It is not clear whether they were largely

undetected, or whether Iraqi infantry forces failed to respond, but they were able to position themselves to support the mechanized attack that began on G-Day (February 24).

The 2nd Marine Division had relocated to an attack position only a few kilometers from the Iraqi defenses. The two Iraqi defensive belts in this area were also only 2-3 kilometers apart, and were in Kuwait's Umm Qudari oil field. These defenses had reasonably good mine fields, trench lines, fire trenches, berms and forward outposts; however, the 2nd Light Armored Infantry Battalion of the division was still able to cross into Kuwait and carry out a mission to eliminate Iraqi forward observers and the defenses in front of the first belt.

## G-Day: February 24, 1991<sup>70</sup>

The land phase of the war began in rain and darkness at 0400 local time on February 24, 1991 -- after days of debate over its precise timing and the probable weather it would encounter, and after a last minute Soviet-Iraqi peace initiative.<sup>71</sup> The weather debate, which centered around the availability of air support, was resolved when clearer weather appeared. The peace initiative debate came from a Soviet sponsored effort that led Iraq to propose withdrawal from Kuwait over a six week period -- which would have given Iraq time in which to attempt political maneuvers, confront the Coalition with a vast effort in maintaining ground force capabilities, and then end in a deadline during a worse part of the year for a land battle -- and a demand that all sanctions end when two-thirds of the Iraqi force had withdrawn.

The US countered with a demand for Iraqi withdrawal in four days (which Iraq's retreat in the face of the Coalition land offensive later proved was fully feasible), immediate withdrawal from the defensive belts in the forward area, return of all prisoners of war, and withdrawal from Kuwait City in two days, and disclosure of all mine fields and booby traps. This US demand caused some divisions within the Coalition. The deadline for Iraqi withdrawal was extended to a week at British and French urging, and France pressed to extend the deadline for an Iraqi response.

At this point, however, Iraq set Kuwait's oil fields on fire -- doing billions of dollars worth of further damage to Kuwait. Close to 150 oil wells were set on fire, while others were allowed to spill oil into the desert. Iraq also destroyed equipment at Kuwait's major processing centers at Ash Shuaybah and Mina al Ahmadi. These Iraqi actions led President Bush to reject any further extension of the deadline and delay of the land battle. The oil fires also changed the character of the fighting, making it more difficult to conduct air operations, but altering visibility on the battlefield in ways which enhanced the Coalition's advantage in using thermal sights and night vision devices.

Like the battle of Khafji, Iraq's adventure into large scale environmental warfare ultimately did far more harm to Iraq than good. It deprived it of outside political support, it ended efforts to negotiate a peace without a devastating land battle, and it gave the tactical advantage to the enemy.

The Coalition began this land battle by attacking along a broad front ranging from Khafji on the Persian Gulf to positions north of Rafha on the Iraqi-Saudi border.<sup>72</sup> As Figure 8.4 shows, US, British, and French armored forces thrust north in an arc north and east of the Iraqi positions in Kuwait and along the Iraqi-Saudi border, and advanced towards the Iraqi city of Salman, west of Kuwait, and towards Nasiriyah on the Euphrates river. Other forces, largely consisting of the Saudi Army, Egyptian units, and the US Marine Corps moved north up the coast towards Kuwait City, Wafrah, and Al-Jahrah.

Figure 8.4

The Initial Coalition Attack on G-Day (February 24, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. I-39

### **The Thrust by the XVIII Corps**

By G-Day, the XVIII Corps totaled about 115,000 soldiers, 4,300 tracked armored vehicles, and 21,000 wheeled vehicles. The core of its strength was the US force component, which had built-up to 107,300 men, 18 infantry battalions, 718 tanks, 444 howitzers, 63 MLRS launchers, 18 ATACMS, 1,494 armored fighting vehicles (including 56 M-551A1 Sheridans and 567 M-2/M-3s), 368 TOW vehicles, 227 attack helicopters, 741 support helicopters, 24 Patriot launchers, 24 IHawk launchers, 117 Vulcan AA guns, and 320 Stinger teams.<sup>73</sup>

The XVIII Corps had the most complex mix of missions and tasks of all of the Coalition forces. As is shown in Figure 8.5, these missions called for the Corps to penetrate 260 kilometers into Iraq to the Euphrates River, prevent Iraqi reinforcement into the KTO via key Euphrates River crossings at Samawah and Nasiriyah, cut the key Iraqi line of communication along Highway 8 to Baghdad, help seal off the Iraqi forces in the KTO, and help VII Corps defeat the Republican Guards.

The 6th French Light Armored Division led the attack -- advancing in two groups called Group West and Group East, and supported by the 2nd Brigade of the 82nd US Airborne Division and the 27th US Engineer Battalion. By this time, the 6th French Light Armored Division had about 9,860 men out of the 16,500 French military personnel in the region (including those in Djibouti and at sea), with another 180 in support in Riyadh. It was far smaller than most US Army units, and had about 160 armored fighting vehicles, including 40 AMX-30 tanks and 18 155mm howitzers. It did, however, have 120 helicopters, of which 60 were equipped with anti-tank missiles.<sup>74</sup>

The remaining two brigades of the 82nd Airborne Division attacked by land along the western boundary of the Corps, and the 101st Airborne Division launched an air assault to the east of the French force that was designed to penetrate quickly to the Euphrates, defeat or destroy any Iraqi forces in its way, and turn east to create a blocking position north of Al Basra. The 24th Infantry Division (Mechanized) was to attack through the Iraqi forces to reach the Euphrates and turn east to attack the Republican Guards. The 3rd Armored Cavalry Regiment, on the eastern boundary of the XVIII Corps zone, was to secure the Corps' flank and maintain contact with the VII Corps.<sup>75</sup>

Advance elements of the French 6th Light Armored Division had already pushed forward to a sand escarpment in Iraq on February 23. Scouts from the division crossed that border at 0400. The division's main combat elements began to move at 0530, and crossed the border at 0730. They advanced north in two lines, and their objective was the small Iraqi airfield at As-Salman, about 90 miles away. The French crossing was

unopposed, but proceeded slowly. There were sandstorms and rain, and the French experienced problems with their wheeled vehicles whose tires often could not survive the hard desert terrain.<sup>76</sup>

Some observers felt that the advancing French forces slowed down too much when they came under artillery fire from encountered elements of the Iraqi 45th Mechanized Division, although such Iraqi fire was comparatively light and was directed against preplanned targets in ways that made it ineffective. It is unclear this was the case. They only seem to have delayed long enough for the French and US Army forces to provide artillery support and counter-battery fire using counterbattery radars. The 6th French Light Armored Division then used Gazelle attack helicopters and AMX-30 tanks to attack the Iraqi tanks and bunkers in the forward area and captured 2,500 prisoners. The division moved to the southern part of its first objective (Rochambeau) during the afternoon, and took its first objective within seven hours.

What is more controversial is that the division paused to camp for the night before it moved on towards As Salman. The French commander felt that the 6th French Light Armored Division could not continue its advance because an Iraqi company-sized unit with artillery was still in Rochambeau, there was a risk of mines, and the division was burdened with 2,000 prisoners of war. The French force was also not as well equipped with night vision equipment as the US and British forces. Nightfall came at 1800, and a sand storm began shortly afterwards -- sometimes reducing visibility to 20 meters. This presented serious problems for French forces. It is not clear that the US command in the XVIII Corps fully understood this situation, but it is clear that it urged the French commander to continue advancing.<sup>77</sup>

The 101st Airborne Division had built-up to more than 6,000 soldiers, 200 helicopters, and 1,000 vehicles by G-Day. Its advance was delayed by fog over its initial objective from 0500 to 0727, but corps artillery and multiple rocket launchers began to fire on Iraqi forces in its path, and the 101st then attacked with a massive helicopter force of AH-64 and AH-1 attack helicopters, 60 UH-60s, and 40 CH-47 transport helicopters. These forces were supplemented by the 18th Aviation Brigade of the XVIII Corps.<sup>78</sup>

This air assault flew 93 miles into Iraq -- about half-way to the Euphrates -- and seized objective Cobra by 10:39. This movement involved some 300 helicopter sorties. The 3rd Brigade of the 101st Airborne Division then refueled and flew forward and attacked a position on Highway 8 at 1508.<sup>79</sup> While there were occasional fire fights, the Iraqis in the operating area of the XVIII Corps put up little sustained resistance, were poorly organized, and soon began to surrender in large numbers. As a result, the 101st

Division took 500 prisoners and was able to quickly turn Cobra into a major forward operating base and refueling point for the XVIII Corps.<sup>80</sup>

At the point the air assault began, the combat and service support forces of the 101st Airborne Division began to move a 700 vehicle convoy north along a road carved out by the division's engineers, to link up with the heliborne force at the new forward base at Cobra. These movements began a process of supply that moved some 380,000 gallons of fuel to the base by the end of G+2. It turned Cobra into the forward base the XVIII Corps needed to move attack helicopters and infantry to Highway 8, and to eventually launch a total of eight attack helicopter battalions and cavalry squadrons 200 kilometers east to attack the Iraqi forces that fled across the Al Hammar causeway on G+3.

By the evening of the 24th, the 101st Airborne Division had moved 170 miles and had succeeded in cutting Highway 8.<sup>81</sup> In addition, the artillery preparation for the attack and the probes into Iraqi forces produced little Iraqi response, and confirmed the fact that the air campaign and preparation of the battlefield had been highly effective in weakening Iraq's forward defenses, that the deception plan had worked, and that the Coalition had achieved tactical and operational surprise. Further, near midday, USCENTCOM learned from the Kuwaiti resistance that the Iraqis had blown up the desalinization plant in Kuwait City -- a strong indication that they intended to retreat since this was their main source of water.

These events led Schwarzkopf to exploit the accelerating tempo of the Coalition attack. He requested the advice of subordinate commanders as to whether the attack in other sectors could be advanced in time. With the exception of the Egyptian commander in JFC-North, they agreed that the attack could be advanced -- provided that they had time to attack the Iraqi forward defenses in daylight.<sup>82</sup> As a result, USCINCENT ordered the 24th Infantry Division (Mechanized) and the 3rd Armored Cavalry Regiment of the XVIII Airborne Corps to attack at least five hours ahead of schedule, and the VII Corps to attack 15 hours ahead of schedule -- at 1500 hours on G-Day versus planned times as late as 0400 hours on G+1. The race against the rout had begun.<sup>83</sup>

The 24th Infantry Division (Mechanized) had similar success. It was one of the heaviest combat formations employed during Desert Storm, and illustrates just how many elements of combined arms were integrated into major US combat formations. The 24th Infantry Division (Mechanized) had been reinforced to create a combat team with 25,000 men in 34 battalions, with a total of 1,793 tracked vehicles and 6,566 wheeled vehicles. Its equipment included 249 M-1 tanks, 218 M-2/M-3 Bradleys, 843 M-1113 APCs, 91 LTV TOW vehicles, 24 8" self-propelled howitzers, 90 155mm self-

propelled howitzers, 60 4.2" self-propelled mortar carriers, 36 MLRS, and 182 special purpose track vehicles. Its helicopter strength included 19 AH-64s, eight AH-1s, seven OH-58Ds, 24 OH-58Cs, 18 UH-60s, three EH-60s, and 11 UH-1s.<sup>84</sup>

The 24th Infantry Division (Mechanized), along with the 3rd Armored Cavalry Regiment of the XVIII Airborne Corps, moved across some of the most rugged terrain in Iraq to seize key objective areas West of the VII Corps zone.<sup>85</sup> The three brigades of the 24th Infantry Division (Mechanized) moved forward with three brigades abreast while its armored cavalry squadron screened its front. It attacked using a "battle box" formation where armored cavalry provided a screen about 5-10 miles in front, and four companies or mixes of platoons dispersed into "corner" positions with tank and Bradley units in the forward corners, and company or smaller units securing the flanks. The commander, and support and supply elements remained inside the box. These "boxes" could move forward in "jumps" of about 40 miles, and were 4-5 miles wide, and about 15-20 miles from front to rear.<sup>86</sup>

The division, however, met almost no initial opposition. It was able to advance for about 50 miles at speeds of 25-30 miles per hour. In the process, it rapidly demonstrated the value of its night vision systems, thermal imaging systems, GPS receivers, and other electronic navigation aids. By the end of the day, the 24th Infantry Division and 3rd Armored Cavalry Regiment had seized objectives 75 miles into Iraq, and had captured nearly two hundred prisoners.

Figure 8.5

The XVIII Corps Attack on G-Day (February 24, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 362

## **The Thrust by the VII Corps**

By G-Day, VII Corps had a total of approximately 146,000 soldiers, 1,220 M-1 tanks, 6,600 tracked vehicles (including 1,046 M-2/M-3s), and 32,000 wheeled vehicles. While each of its divisions had a different total manning and equipment strength, its heavy armored divisions were the heaviest formations employed during Desert Storm. Each such division had approximately 22,500 men, 350 tanks, 285 Bradleys, 115 howitzers, 36 MLRS fire units, 36 AH-64s, and 44 other helicopters.<sup>87</sup>

The US 1st Armored Division, for example, had 17,428 personnel assigned, and 4,806 attached for a total of 22,234. Its equipment holdings included 353 M-1A1s, 286 M2/3 Bradley, 90 M-109 self-propelled howitzers, 24 M-110 8" howitzers, 29 MLRS fire units, 9 ATACMS, 36 AH-64 attack helicopters, 8 AH-1 attack helicopters, 6 OH-58 and 6 UH-60 helicopters, 24 Chaparral AA weapons, 24 Vulcan AA weapons, 84 Stinger manportable surface-to-air missiles, 25 ACE and 8 engineering vehicles, 16 AVLMs, and 6 Fox chemical detection vehicles. This gave it a total of 129 aircraft and 9,175 vehicles: 1,941 tracked and 7,234 wheeled.<sup>88</sup>

To put these US heavy divisions in perspective, the Tawakalna Division of the Republican Guards had an authorized strength of two armored and one mechanized brigades and an artillery unit.<sup>89</sup> At the time the war began, US intelligence estimated that the Tawakalna had a total authorized strength of 9,439 men, 312 T-72 tanks, 177 BMP armored fighting vehicles, 54 GCT 155mm guns, 36 M-46 130mm gun howitzers, and 18 D-30 122mm howitzers.

These totals indicate that the Iraqi divisions were far inferior to the US divisions in everything but tank strength. In most actual battles, the US was also able to fight most Iraqi forces one brigade at a time. This created force ratios which were even more favorable to the US. The most powerful Iraqi brigades were the Republican Guard armored and mechanized brigades. The armored brigades of the Tawakalna Division had an authorized strength of about 2,205 men, 134 T-72M1s, and 35 BMP-1(2)s. The mechanized brigades of the Tawakalna Division had an authorized strength of about 2,259 men, 44 T-72M1s, and 107s BMP-1(2)s. The actual holdings of such forces after the air campaign varied by unit and their strength is unknown.

The VII Corps had two major missions: To destroy or defeat the three heavy Republican Guards Divisions in the Republican Guards Forces Command, (RGFC) and advance to the east in parallel with the movement of the XVIII Corps, and complete a double envelopment of Iraqi forces in the KTO. The outline of the VII Corps attack plan is shown in Figure 8.6, and called for a feint and development.

The 1st Cavalry Division, which was still acting as a Corps reserve, was to make an attack along the Wadi Al-Batin, dividing Iraq from Kuwait, to focus the attention of Iraqi commanders on a false line of main attack and pin down the concentration of Iraqi infantry divisions in the area. The 1st US Infantry (Mechanized) Division, or "Big Red One" was to move across the Iraqi defensive belts and berm in lightly defended center of the VII Corps zone, while the 2nd Armored Cavalry Regiment and the 1st and 3rd Armored Divisions were to move around the western side of the Corps zone where there was little Iraqi presence. The British 1st Cavalry Division was to pass through the breach created by the US 1st Infantry (Mechanized) Division and attack the Iraqi armored division in the Corps zone to prevent it from attacking the flank of the Corps' advancing forces.

These were complex battle plans, and advancing the attack time of the VII Corps by 15 hours was not easy. The VII Corps had contingency plans to attack earlier than originally planned, but virtually all of its detailed planning had assumed that the attack time would be at 0600 on G+1. The timing was predicated on the assumption that the delay would convince Iraqi commanders and Saddam Hussein that the main line of advance was the I MEF, and ensure that Iraq would not shift its heavy forces towards the "left hook" of the VII Corps. They now were being asked to attack as early as 1200 on G-Day -- although the actual assault began several hours later.

In addition, advancing the time of its attack meant that the VII Corps faced problems in ensuring that there would be sufficient daylight to complete its initial breaching operation. As a result, it had to reduce a planned three hour artillery fire support program to 30 minutes of actual fire. This artillery fire began at 1430, and involved something approaching a Soviet-style fire plan. Three field artillery brigades, two divisional artillery groups, 13 tube artillery battalions, and 10 MLRS batteries fired 11,000 rounds and 414 rockets (with a total of 600,000 bomblets) into a 20 by 40 kilometer section of the Iraqi front. A total of 350 howitzers covered the attack, with 22 howitzers per kilometer of front.

This US artillery fire was concentrated on Iraqi forward positions and the C<sup>2</sup> facilities facing the 1st Infantry (Mechanized) Division, and the reserve positions behind the Iraqi defense belts came under sustained air attack. The effectiveness of the fire is indicated by the fact that UAV coverage that morning had found that the Iraqi 48th Division still had 87 guns out of 100 after the air campaign, but none were operable after the artillery attack.<sup>90</sup>

The 2nd Armored Cavalry Regiment -- followed by the 1st and 3rd Armored Divisions -- moved forward with a protecting screen of A-10s.<sup>91</sup> It achieved enough

tactical surprise to advance before the Iraqi armor could reinforce their forward positions, and met little resistance. One soldier in the leading elements of the 2nd Armored Cavalry Regiment described his fear of the initial breaching operation as "the fear of nothing," and the 2nd Armored Cavalry Regiment succeeded in making made a deep penetration around the western flank of the Iraqi Seventh Corps.<sup>92</sup>

The advancing US forces quickly overran the Iraqi defenses and advanced northeast along the "bowling alley" toward the Republican Guard Forces Command. They ran into supply problems because fifteen of the regiment's ammunition tractors could not move ammunition forward through the sand in the berm. However, VII Corps provided ammunition supply via CH-47, in spite of an ongoing sandstorm. As a result, the 2nd Armored Cavalry Regiment advanced 30 kilometers into Iraq by the time the 1st Infantry (Mechanized) Division left its line of departure.

The 2nd Armored Cavalry Regiment and the 1st Armored Division advanced so quickly that their advanced elements came within 10 kilometers of Al Busayyah, and their movement had to be halted that night so the US advance could secure their flank, and the British 1st Armored Division had time to pass through the breach and to attack and pin down the Iraqi tactical reserve to the southwest of the main VII Corps advance and to prevent it from counterattacking.<sup>93</sup>

The 1st Infantry (Mechanized) Division -- under the command of Major General Thomas G. Rhame -- conducted its part of its breaching operation in a way which illustrates how the Coalition produced decisive force and shock during its initial attack.<sup>94</sup> Early on the morning of G-Day, the division "blinded" Iraqi forces by seizing the security zone of the Iraqi 26th and 48th Infantry Divisions. At 0530, scouts led battalions through 20 holes in the Coalition's berm near the border with two battalion-sized task forces of tanks and mechanized infantry advancing on six kilometer wide fronts. By 0915, these battalions had defeated the Iraqi forces in the security zone.

Once the artillery barrage ended at about 1500, the 1st Infantry (Mechanized) Division attacked through what satellite imagery had indicated was another fault in the Iraqi defenses -- a gap between the positions of the Iraqi 48th Division and 26th Division. The defenses of the two divisions also differed sharply in quality. The 48th Division laid out its trenches in irregular zigzags that provided reinforcing fire and positioned its artillery properly. The 26th Division laid out its defenses in straight lines and did not properly position its artillery or armor. The division commander had also been told that he was facing Iraqi forces with about 60% of their authorized strength and around 10-15% of their pre-air campaign artillery.<sup>95</sup>

The 1st Infantry (Mechanized) Division initially attempted to move up its assault on the Iraqi main defensive belts to 1300. In practice, the attack could not be started until 1500. At this point the advancing troops still had no idea of what to expect. They had been told that they might expect massive chemical weapons assaults, and take up to 40% casualties. The reality was very different. The division's assault battalions moved forward, led by M-1A1 tanks with mine plows, drag rakes, and steel roller, and by M-9 armored combat earthmovers. Unlike the Marines, the VII Corps had found line charges to be unreliable, and advanced using tanks and engineering equipment supported by mechanized infantry in the Bradley.

The division massed 241 M-1A1s and more than 100 Bradleys on a six kilometer front, and advanced with artillery support. The machine guns and 25mm chain guns from the Bradleys suppressed Iraqi infantry while the mine plow tanks and armored combat earthmovers cut lanes through the Iraqi minefields and defensive barriers, and used mine plows to collapse the Iraqi trenches. As was common during the breaching operations, US infantry did not dismount from its vehicles, but instead pushed through quickly to minimize the risk of small fire fights and take maximum advantage of the shock value of armor.

Some Iraqi infantry surrendered during this part of the breaching operation, but in other cases, the division's Bradley armored fighting vehicles used their machine guns to keep the Iraqi infantry in their trenches while tanks and armored bulldozers rolled forward. The Iraqis -- drawing on their experience in the Iran-Iraq War, often piled the earth from their trenches on the forward side to provide more protection against infantry assault, but this allowed the US forces to use the earth to bury the trenches with sand. This buried some Iraqi forces alive, and led most of the remaining Iraqi forces to surrender. Once eight lanes of advance were cleared, armored forces moved through the lanes, and fanned out at 30 miles per hour, attacking bunkers, artillery weapons trucks, and machine guns nests. The 1st Infantry (Mechanized) Division moved through the entire Iraqi defense line in about 40 minutes with two casualties. It took 500 prisoners, although one estimate indicated that 150 Iraqis had been killed in the trenches.<sup>96</sup>

Instead of taking a planned 18 hours to break through the Iraqi defenses, as it once had planned, the 1st Infantry (Mechanized) Division had breached them in two hours and decisively defeated two Iraqi infantry divisions in the process. Most of the time required to exploit the breaching operation had consisted of the engineering effort necessary to clear minefields and barriers. The 1st Infantry (Mechanized) Division was only able to create advance lines through about 50% of the forward defenses by nightfall. Even so, it had already taken several hundred prisoners of war.

The 1st Infantry (Mechanized) Division continued its effort during the night, repositioned its artillery, and breached minefields and wire obstacles forward of the Iraqi 48th Infantry Division. Two brigades of the 1st Infantry (Mechanized) Division penetrated through the Iraqi defenses in the dark, and prepared to pass the reserve brigade. Elsewhere, the 1st Armored Division and 3rd Armored Divisions followed the axis cleared by the 2nd Armored Cavalry Regiment, and the British 1st Armored Division prepared to pass through the US 1st Infantry (Mechanized) Division to attack Iraq's tactical reserves. By the close of G-Day, the forces of the VII Corps had decisively defeated two brigades of the 26th Division, had defeated elements of the 48th Division, and had taken nearly 1,500 prisoners.<sup>97</sup>

This success helped lead to further orders to accelerate the Coalition's attack, but such orders presented problems for the VII Corps that were different from those of the other advancing Coalition forces. At this point for example, VII Corps still had not moved most of the 1st Infantry (Mechanized) Division's armor through the breach, and its two armored divisions and the 2nd Armored Cavalry had advanced deep into Iraq. Much of the VII Corps' artillery and logistic vehicles were still waiting at the breach, there was still a serious risk from uncleared mines, and the British 1st Armored Division was still waiting to pass through the breach that the 1st Infantry (Mechanized) Division had begun.

As a result, VII Corps decided at about 2200 to regroup and refuel many of its forces during the night, and pursue the attack at first light.<sup>98</sup> In contrast, General Schwarzkopf and others at USCENTCOM felt VII Corps should have pressed on with its attack. As has been reported in many books and memoirs, this experience helped lead USCINCENT to see the VII Corps as lacking in speed and aggressiveness, although the forces in the VII Corps faced the physical problem of trying to rapidly change Corps-sized movements and battle plans in the face of considerable uncertainty about the reaction and actions of Iraqi forces.<sup>99</sup>

The British 1st Armored Division did move through the 1st Infantry (Mechanized) Division's positions to the breaching area during the night, and began passing through the breach at 1200 on the morning of G+2. The British 1st Armored Division was now a considerable force. It had built up to two brigades and a substantial divisional support force. Its combined arms mix was different from that of any US division in that it was limited in tank strength, but very well equipped with artillery. It also was the only other Coalition force with the full modern combined arms capability needed to implement the AirLand battle in high intensity combat, and modern integrated C<sup>4</sup> capabilities. The

British Ptarmigan system provided secure voice and fax capability, and the Wavell data-link system provided real-time computer communications.<sup>100</sup>

Estimates of British combat unit strength, like those of American units, differ in detail because some sources report authorized strength, or on-hand strength, and so many formations acquired additional elements and equipment during their build-up. The heaviest British brigade was the 7th Armored Brigade, which seems to have had an authorized strength of about 3,940 men in combat elements plus additional men in support elements. It had two armored regiments with a total of 100 Challenger tanks, an armored infantry battalion with 45 Warriors, a reconnaissance squadron with 16 Scimitar, 4 Striker, and 4 Spartan armored fighting vehicles, a field artillery regiment with 24 M-109 155mm self-propelled howitzers, an air defense battery with 36 Javelins, an aviation squadron with 9 Lynx with TOW and 4 Gazelles, an engineer regiment with Challenger AVRE armored recovery vehicles and armored vehicle launched bridges (AVLBs), and combat engineering tractors (CETs).<sup>101</sup>

The 4th Armored Brigade had an authorized strength of 4,190 men plus additional men in support elements. It had one armored regiment with a total of 43-57 Challenger tanks, two armored infantry battalions with 90 Warriors, a field artillery regiment with 24 M-109 155mm self-propelled howitzers, an air defense battery with 36 Javelins, an aviation squadron with 9 Lynx with TOW and 4 Gazelles, and an engineer regiment with AVRE armored recovery vehicles, AVLBs and CETs.

The British 1st Armored Division had a wide range of independent elements, including the only major artillery force in the Coalition that was capable of rapid maneuver and advanced combined arms operations aside from the artillery supporting US forces. Divisional artillery included four artillery regiments: a 420 man regiment with 12 M-109s, a 780 man regiment with 16 M-109s (and 12 M-110 self-propelled 203mm howitzers, a 650 man regiment with 650 men and 12 MLRS fire units, and an air defense regiment with 600 men and six tracked and six two Rapier surface-to-air missile launchers.

The division-level forces also included 16 Challenger tanks, an armored regiment with 680 men, and 40 Scimitar, 24 Scorpion, and 18 Striker armored fighting vehicles. They included an aviation regiment with 460 men, 13 Lynx equipped with TOW and 18 Gazelle helicopters; and a support helicopter force with 12 CH-47s, 15 Pumas, and 12 Sea Kings. They also included an armored engineer regiment with 1,050 men, and with AVREs, AVLBs, CETs, and Giant Viper shaped charge rocket systems. The divisional engineers seem to have had AVREs with 165mm demolition guns; most AVREs have 105mm demolition guns.

The advance of the British 1st Armored Division was led by the British 7th Armored Brigade. The fact that British forces were ready to move through the breach was a considerable accomplishment because British armor had originally been scheduled to use heavy equipment transporters (HETs) to move to the jump off point during the initial phase of the attack. Advancing the time of its advance forced the British 1st Armored Division to move directly to the breach site without uploading and downloading its armor from HETs. This not only increased the fatigue of personnel and equipment wear, it forced the tankers positioned to supply British forces -- which previously had only planned to top off the full tanks in British armor -- to race back to a logistics base and rush enough fuel forward to fully refuel.<sup>102</sup>

Like US forces, the British 1st Armored Division quickly learned the value of GPS and thermal vision devices. The British were able to advance at far higher rates and with far better navigation than have ever previously been possible in desert warfare.<sup>103</sup> The two brigades of the British force effectively leapfrogged each other -- taking the lead in turns. British engineers and sappers provided constant support in improving the line of advance, and the US provided air support as well as additional artillery support.

The US 1st Cavalry Division carried out its feints into the area where the Iraqi-Kuwaiti-Saudi borders join, and provided a reserve for the JFC-N forces east of Al-Batin. It was already clear, however, that the 1st Cavalry Division was not needed as a theater reserve, and Iraqi forces simply were not capable of reacting to this kind of deception operation.

Figure 8.6The VII Corps Attack on G-Day (February 24, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 365

**Joint Forces Command - North**

The Egyptian 3rd Mechanized Division, Task Force Khalid, and Task Force Muthannah started their attack on Iraqi positions at 1500 in the afternoon. The Egyptians advanced first, followed by Saudi and Kuwaiti forces. The Egyptian preparatory attack had led the Iraqis to light their fire trenches, give away their artillery positions, and allow the advancing JFC-N forces to suppress Iraqi artillery and advance with a clearer picture of the Iraqi forward positions.<sup>104</sup> The JFC-N forces only encountered light harassing fire as they moved into the Iraqi trenches, barriers, and mine fields, but -- as has been discussed in Chapter Three -- the Egyptians became concerned with burning oil trenches in front of their attack and reports of Iraqi preparations for an armored counterattack, and halted before they reached their initial objectives. They partially dug into blocking positions.<sup>105</sup>

In fact, the Iraqi forces facing both the JFC-N and I MEF had already been badly hit by air attacks and the preparation of the battlefield. The 20th and 30th Iraqi infantry divisions proved ineffective, and the 21st and 16th Iraqi infantry divisions fell back towards Ali As-Salim Airfield. The 6th Armored Division, which was west of Ali As-Salim Airfield, also had sharply reduced strength and could not have counterattacked.<sup>106</sup>

The Egyptian 3rd Mechanized Division, Task Force Khalid, and Task Force Muthannah resumed their advance at day break on G+1. Meanwhile, the Egyptian 4th Armored Division prepared to follow the Egyptian 3rd Mechanized Division, and the Syrian 9th Armored Division slowly followed, acting as the JFC-N reserve, and sending out one reconnaissance battalion to tie in with the operations of the I MEF.

The delay of JFC-N was important because the battle plan called for it to protect the right flank of the VII Corps, advance to objectives inside Kuwait that were northeast of Al-Jahrah, and move east to positions north of Kuwait Bay. The aggressive execution of this plan would have supported the envelopment of Iraqi forces, helping to cut-off Iraqi forces in southeastern and central Kuwait. However, JFC-N seemed to have suffered from the exaggerated intelligence on the Iraqi threat, and did not adapt to the changing structure of the land offensive. As a result, Iraqi forces in its area were able to successfully retreat.

### **The 1st Marine Expeditionary Force**

In some ways, the I MEF faced the most serious challenge of any of the Coalition forces attacking on the first day. One Marine Corps historian describes this role, and the attitudes of Marine Corps officers at the time of the attack, as follows,<sup>107</sup>

"The role envisioned for MARCENT ground forces was to fix the Iraqis in place. Whether we advanced to Kuwait City or a few kilometers was insignificant to our keeping the enemy's attention to the south. For us, that meant fighting the Iraqi Army on the ground of its own choosing. The threat of high casualties and sustained combat necessitated the creation of a large casualty replacement pool and huge stocks of ordnance and equipment. Commanders were well-versed in history, and understood that the allied failure in World War I offensives and the Iranian offensives happened because of the inability of the attacking force to maintain the momentum of the attack. If commanders felt anxious about the enemy, there was every indication from his preparations, known tactical arrangements, and past history to warrant prudent planning....Many officers believed the first day's fighting would tell us how the battle would go. The war would either end quickly or take weeks of bitter fighting."

The I MEF attack plan is shown in Figure 8.7, and it is clear from the MEF's position that it lacked the ability to achieve more than limited tactical surprise. Its mission was to thrust forward directly through the Iraqi defensive belts, and advance through Iraq's forces in the KTO towards the Mutla Pass. The main thrust of this attack had to be directed in the direction that Iraq expected, and it had to advance without strong forces on its flanks. At the same time, the weight of the I MEF attack was supposed to convince Iraqi commanders that it was the main attack, rather than the VII Corps in the West, and it was also faced with the de facto task of aiding JFC-E and possibly part of JFC-N, if anything should go wrong with their advance or if Iraq should counter attack.

The size of the I MEF forces committed to the land attack are shown in Table 8.4. As has been discussed earlier, Marine Corps forces are not designed for sustained combat against heavy forces, and had to be reinforced by a US Army brigade plus substantial amounts of engineering and support forces from Marine units all over the world. The I MEF also included some US Army support elements: In an unusual example of jointness, US Army psychological warfare teams in USMC helicopters played the Marine Corps hymn over their loudspeakers when Marine Corps forces advanced into the breach.

Table 8.4I MEF Battle StatisticsStrength of I MEF at G-Day

Personnel	80,000
Tanks	
M-1A1	76
M-60A1	353
US Army Tiger Brigade (additional)	118
APC/AFVs	
APCs	676
LAVs	350+
AAVs	532
US Army Tiger Brigade APCs (additional)	160
Artillery	215
Towed	175
Self-propelled	40
MLRS (US Army)	10
TOWs	525
Armored Combat Earth Mover (ACE)	24
Counter Mine Equipment Set (Battalion)	1
Tactical Air	
AH-1 attack helicopters	220
Other aircraft	40
Total	260
3rd MAW	
Personnel	16,000+
Aircraft	467

Marine Losses

Personnel	
Killed in Action	22
Wounded in Action	88
Equipment	
Tanks	6
Mine plows	(5)
AAVs	3
LAVs	2
Aircraft	9

Source: Adapted from Lt. General Walter E. Boomer, MARCENT Operations in the Campaign to Liberate Kuwait, Washington, US Marine Corps Headquarters, August 13, 1991; Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 736 and 747, and comments by

Lt. Colonel Steve Dietrich, Military Studies Branch, US Army and his article, "In-Theater Armored Force Modernization," Military Review, October, 1993, pp. 35-45. The numbers shown are reported differently in a variety of sources. The Tiger Brigade figures are incremental, and the numbers for Marine forces include equipment loaned by the US Army.

The US Marines had a total of 94,000 personnel in theater at the peak of the Gulf War, 8,000 more than at the peak of Vietnam. About 64,000 personnel were on the ground in the I MEF area in Saudi Arabia, and the I MEF had a total of 23 deployed active battalions. Each Marine Division had about 16,000 men and the Tiger Brigade had about 4,700. These major combat units had many combat support forces. At the same time, Table 8.4 shows that the I MEF was a relatively lightly equipped Corps-sized force for the enemy it attacked. The entire I MEF's tank strength was only a little larger than some US Army armored divisions.<sup>108</sup> It had four USMC tank battalions, two with M-1 tanks (only some of which had the heavy guns or thermal sights of the M-1A1), and two equipped with M-60A1 tanks that had reactive armor. It also had the two tank battalions of the Tiger Brigade, equipped with M-1A1s.<sup>109</sup>

The I MEF had a substantial number of additional armored fighting vehicles, many of which were equipped with TOW anti-tank guided missile launchers, but most of their vehicles were not as heavily armored as the US Army's Bradleys. Two light armored infantry battalions had LAVs (light armored vehicles), which were 8 X 8 wheeled vehicles that carried a six man scout team and a 25mm gun.

Two amphibious assault vehicle battalions had light armored AAVP-7A1 amphibious assault vehicles that could carry up to 25 troops, and also had a heavy machine gun or 40mm grenade launcher, designed to be used in amphibious landings. The AAVs were used as APCs and CE vehicles. The I MEF had 11 artillery battalions, with a comparatively large number of artillery weapons, but nothing that approached the artillery strength that the Iraqi forces had originally deployed in the area that the I MEF attacked.

The I MEF also had an integrated air wing in direct support. Total Marine air strength in the Gulf had reached 40 squadrons, with 19 fixed wing squadrons, and 21 helicopter squadrons. There were 390 aircraft in the 3rd Marine Air Wing, which was part of the I MEF, and there were 160 additional aircraft in the 4th and 5th Marine Expeditionary Brigades and the 13th Marine Expeditionary Unit in the Gulf. This was a larger single concentration of Marine aviation than the Marine Corps had ever deployed in World War II, Korea, or Vietnam. The 3rd Marine Air Wing was also better organized to provide close support to advancing land forces than any other element of the Coalition -- except for the US Army's attack helicopter units. As Chapter Seven has described, the I MEF also had its own air control zone to improve the quality of air support, and it showed great independence in interpreting the ATO.<sup>110</sup>

The Marines had the advantage of attacking Iraqi defenses which had been severely hurt by the regular air campaign and by the battlefield preparation activities that had taken place just before the attack. This is illustrated by the data shown in Table 8.5. It should be

stressed that these data are Marine Corps estimates, not estimates coordinated fully with USCENTCOM or DIA. They almost certainly err in two respects.<sup>111</sup> First, they exaggerate the strength of Iraqi forces at the beginning of the air campaign and second, they exaggerate the damage done by the time the ground attack began.

These two errors tend to cancel each other out, however, and Table 8.5 probably reflects a reasonably accurate picture of just how badly many Iraqi units had been hurt by air power before the ground war started.<sup>112</sup> Two aspects of these figures are also of more general importance in assessing the lessons of the ground battle: First, they help explain why the Coalition won so quickly and why it is so difficult to learn lessons about the specific contribution of tactics and technologies during the AirLand battle. Second, they show that the forces that Iraq had built-up before the air campaign were still a significant threat, in spite of their many defects.

Figure 8.7

The I MEF Attack on G-Day (February 24, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 371.

Table 8.5Impact of Air Power on Iraqi Forces on G-Day in the Line of Advance of I MEF

Unit	Armor		APCs		Artillery		Percent of
	D-Day	G-Day	D-Day	G-Day	D-Day	G-Day	Strength
	<u>Destroyed</u>						
<u>Forces in the Breach Area</u>							
Southern "heel" of Kuwait							
7th Infantry Division	107	83	35	24	144	121	30
8th Infantry Division	142	30	35	24	144	64	70
14th Infantry Division	142	16	35	35	72	61	40
9th Infantry Division	142	15	35	35	144	59	75
36th Infantry Division	35	35	35	17	72	42	30
5th Mechanized Division	<u>177</u>	<u>32</u>	<u>249</u>	<u>145</u>	<u>72</u>	<u>42</u>	<u>60</u>
Subtotal	745	211	424	254	648	339	50
<u>Enemy in the Exploitation</u>							
Coast, near Kuwait City, and West							
11th Infantry Division	35	0	107	0	72	0	100
1st Mechanized Division	177	13	249	1	72	25	90
3rd Armored Division	356	36	212	23	72	6	95
19th Infantry Division	142	1	35	0	72	8	95
42nd Infantry Division	35	0	35	3	72	8	95
6th Armored Division	<u>249</u>	<u>115</u>	<u>177</u>	<u>85</u>	<u>72</u>	<u>50</u>	<u>50</u>
Subtotal	994	155	815	112	432	96	88
<u>Enemy Forces at the Consolidation</u>							
Above retreating forces and new reserves							
1st Mechanized Division	117	13	249	1	72	25	90
3rd Armored Division	356	36	212	23	72	6	95
11th Infantry Division	70	0	107	0	72	0	100
19th Infantry Division	142	1	35	0	72	8	95
51st Mechanized Division	177	5	249	17	72	12	95
6th Armored Division	249	115	177	85	72	50	50
10th Armored Division	<u>249</u>	<u>63</u>	<u>177</u>	<u>58</u>	<u>72</u>	<u>53</u>	<u>60</u>
Subtotal	1,420	223	1,206	184	504	154	84

Note: Total Iraqis in Southeast KTO estimated at 170,000 personnel, 2,272 tanks,. 1,665 APCs, 1,96 artillery weapons, and 432 aircraft. Also, see the different estimates provided at the end of Chapter Seven.

Source: Adapted from Lt. General Walter E. Boomer, MARCENT Operations in the Campaign to Liberate Kuwait, Washington, US Marine Corps Headquarters, August 13, 1991. pp. 9, 45, 46, 47

The I MEF attack began at 0530.<sup>113</sup> The 6,000 men of the 6th Regiment of the 2nd Marine Division attacked from a position near the "elbow" in the Kuwaiti border, where it suddenly turns north. The 1st Marine division was led by Task Force Ripper and was covered by the two Marine Task Forces that have infiltrated earlier. Task Force Ripper penetrated the two Iraqi defensive belts. The Marines sometimes met effective resistance from small elements of Iraqi forces, and there were clashes between Marine M-60A1 and TOW-equipped high mobility multi-wheeled vehicles (HMMWVs or "Humvees") and Iraqi armor and infantry. Iraqi forces often fought well when they were attacked directly from the front, but collapsed when Marine forces attacked them from the flanks and the rear. Similarly, Iraqi artillery began to engage from the start, but it took the form of preplanned fire which rarely targeted accurately on Marine forces. The engineering part of the breaching operation, however, was anything but smooth. The Iraqi minefields were wider and more dense than the I MEF had expected. Three mine clearing tanks were disabled and line charges malfunctioned.<sup>114</sup>

This engagement with Iraqi forces did, however, reveal important limits in US and Coalition C<sup>4</sup>I/BM capabilities that were to have a major impact on the land campaign. During the morning, Task Force Ripper engaged an Iraqi force that quickly retreated to the northeast, past another advancing USMC formation called Task Force Grizzly, which was moving to a blocking position on Task Force Ripper's left flank. Because Task Force Ripper believed that Task Force Grizzly was the Iraqi force, they hit the other Marine unit with tank and artillery fire that killed one Marine and wounded three others.

This was the first major incident of fratricide in the land campaign and like so many of the incidents that followed, it led to further restrictions on Coalition maneuvers and operations. Marine Corps units generally did not maneuver at night after this incident, and movement of any kind generally ceased after sunset, once units arrived at their assigned night positions.<sup>115</sup>

These limitations reflected a fundamental limitation in C<sup>4</sup>I/BM capabilities that affected even the best equipped US and British forces that has important implications for future warfare. Quite aside from the problem of fratricide, which is discussed in the next chapter, Coalition forces faced major control problems in coordinating the movement of subordinate units because commanders often experienced communications problems in precisely locating their forces, and lacked an automated real-time C<sup>4</sup>I/BM system to precisely locate all of their combat elements, and ensure that they could be flexibly maneuvered without fratricide. This meant that they had to place strict limits on military operations to avoid fratricide that slowed down the tempo of operations over the entire battlefield, limited night warfare capabilities and maneuver capability, and slowed down

any operation involving the crossing of lines, rapid shifts in artillery fire, and the sudden armored and attack helicopter thrusts. Advanced as the I MEF, XVIII Corps, and VII Corps operations were, the state of the art in C<sup>4</sup>I/BM still placed serious limits on the operational art.

The Marines had already advanced 12 miles into Kuwait. By 0600, they had reached their first phase line at the forward edge of the Iraqi minefields along the defensive belts. Marine engineers began cutting six tank-wide lanes through the minefields using tank plows and Mark 154 line charge launchers -- which could use a rocket to carry a line of shaped charge explosives 35 meters across a minefield which was then exploded to detonate mines. In spite of a false alarm that made the advancing troops don chemical protection gear, the first lane through the mine field was cleared by 0655.<sup>116</sup>

The 1st Marine Division completed its breaching operation on schedule, and moved north past Ahmad Al-Jabir airfield -- which had been the headquarters of the Iraqi IV Corps.<sup>117</sup> Light armored infantry protected the division's right flank while the 1st Marine Division continued to advance, and Marine infantry fully cleared the buildings and bunkers in the Ahmad Al-Jabir airfield on February 25. The 1st Marine Division had taken up a position near the Burqan oil field by the end of G-Day.

The 2nd Marine Division attacked to the west about 90 minutes later than the 1st Marine Division. The attack was led by the reinforced 6th Marine Regiment. It attacked across the Kuwaiti border at the point between the "angle" where it turns south and the "elbow" where it turns west. The division moved through the Iraqi defensive belts in three battalion columns. It came under moderate mortar and artillery fire from Iraqi forces that were dug in behind the mine fields, but used M-154 line charges and M-60A1 tanks with forked mine plows and rakes to clear the mines. The 2nd Marine Division cleared the first barrier relatively quickly, but then came up against more heavily defended barriers to the west.

The 6th Marine Regiment was held up briefly on its right, but pushed its battalions through breach lanes in the Iraqi defenses in the center and on the left, and then turned to clear the resistance on the right. It finished its breaching operation by noon, and moved forward quickly. The US Army Tiger Brigade" in the 2nd Marine Division then moved through the Iraqi forward defenses that afternoon, and the US 8th Marine Regiment moved forward the next morning. The US forces then consolidated their position to deal with an Iraqi counterattack, and then overran elements of the Iraqi 7th and 14th Infantry divisions, which had been badly hit by air attacks before the land offensive began.

The 6th Marine Regiment went on to reach its initial objectives in Kuwait by 1400, and captured some 4,000 Iraqi prisoners of war, including most of the Iraqi 9th tank

battalion and 35 operational Iraqi tanks. The 6th Marine Regiment then secured its position while the rest of the 2nd Marine Division and Tiger Brigade moved forward. The bulk of the force had moved through the Iraqi forward defensive line by evening of G-Day.

The special air control zone and "demand pull" system described in Chapter Seven worked well. The 1st Marine and 2nd Marine Divisions and JFC-E received continuing close air support and battlefield air interdiction support from the 3rd Marine Air Wing (3rd MAW) -- which flew 671 sorties in support of G-Day. This support not only included fixed wing F/A-18s and AV-8Bs, but AH-1 attack helicopters. The AH-1s proved to be particularly useful in popping up from positions just behind the advancing Marine forces to provide immediate support to take out tanks, bunkers, and strong points in the path of the ground troops. Marine ground spotters with laser illuminators often targeted Iraqi tanks for the Hellfire missiles fired by AH-1Ws.

By the end of G-Day, the I MEF had established breach lanes in the east, and six breach lanes in the West. It had advanced 20 of 35-50 miles necessary to reach its objective, had eliminated most of three Iraqi infantry divisions in its forward path, and had taken 8,000 Iraqi prisoners of war.<sup>118</sup> The Marines had also established helicopter landing zones in their new forward positions and were receiving supplies and ammunition from CH-46 and CH-53 helicopters.

### **Joint Forces Command - East**

Unlike JFC-N, the Saudi-led Arab forces in JFC-E moved forward on schedule. They began moving at 0800, and the 8th Saudi Mechanized Brigade and the 10th Saudi Mechanized Brigade cut six lanes through the first obstacle belt and secured their initial positions. Their advance was aided by the surprisingly poor construction and siting of some of the Iraqi forward defenses in their line of advance, and by naval gunfire from US battleships. It was also aided by support and liaison teams of 45 US Marines and US Army Special Forces, and by a feint by helicopters of the 4th Marine Expeditionary Brigade (MEB) on the morning of the 25th, which conducted an amphibious feint off Ash Shuaybah to keep the Iraqi forces along the coast from deploying south. US Navy Seals conducted beach reconnaissance and detonated charges, while other US Navy special forces units infiltrated Kuwait City to link up with the Kuwaiti resistance.<sup>119</sup>

Iraqi forces put up resistance near Mina As-Saud, but Coalition air power had reduced the Iraqi 18th Infantry Division and the 8th Infantry Division to the point where they had lost most of their effectiveness, and the 29th Infantry Division, which had also been hit hard by air power, retreated to the east. JFC-E overran the Iraqi forces. It achieved all of its objectives by the end of G Day, advanced a little over one-third of the way to Kuwait City, and captured large numbers of Iraqis. The Saudi 2nd National Guard Brigade

was also able to send out a reconnaissance force towards Jabbar along the coastal highway, and it became clear that JFC-E might also be able to advance more quickly than the original war plan had called for.

Figure 8.8

The JFC-E Attack on G-Day (February 24, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 374.

## G-Day + 1: February 25, 1991

The Coalition established tactical and technical dominance over the Iraqi forces in southern and central Kuwait at some point between the morning and early evening of G-Day. By the time it resumed its attacks on the morning of G+1, it had already decisively exploited the four key elements of the AirLand battle: Initiative, agility, depth, and synchronization. It had demonstrated a superior ability to exploit combined arms and combined operations, and maintain high rates of maneuver, and a superior observation-orientation-decision-action loop. It not only had shown a technical superiority in land warfare fire power, maneuver, and night warfare capability to match its technical superiority in the air, it had deprived Iraq of its one technical advantage -- its forward defensive barriers.

The broad pattern of action by Coalition forces during G+1 is shown in Figure 8.9. It is difficult to know how well the Iraqi high command understood the developing situation on the morning of G+1. It must have realized that many of the divisions in its III Corps in Eastern Kuwait had already ceased to be combat effective: These divisions included the 7th, 8th, 14th, 18th, and the 29th Divisions, as well as some elements of the 3rd Armored and 5th Mechanized Divisions. It must have known that its defenses in front of the I MEF had collapsed rapidly. As has been mentioned earlier, one critical indicator is the fact that it blew up the desalinization plant in Kuwait -- the major source of water for many of its forces -- before VII Corps even began its attack.<sup>120</sup>

Iraq, however, had no major reconnaissance assets and no way to analyze the overall nature of the battlefield. As a result, it is uncertain whether even the Iraqi commanders in the KTO as yet realized that their reserve divisions in the rear no longer had any chance of reinforcing the forward defenses near the Saudi border as early as the morning of G+1, and that they had little hope of establishing a coherent defensive anywhere south of Kuwait City. It is also doubtful that the high Iraqi command could as yet fully characterize the threat posed by the French 6th Light Armored Division and the 101st Airborne Division, and it is still more doubtful that the Iraqi commanders in the KTO or in Baghdad understood the full threat posed by the XVIII and the VII Corps.

The Iraqi high command committed some forces in the KTO to counterattacks and defensive action, which led to some stiff fighting in a number of areas during the course of the day. However, these Iraqi forces fought in small unit actions without any clear effort at attempting a cohesive defense. Iraq was never able to attempt a full division-sized counterattacks, or make an effective effort to reinforce its forward defenses.

In contrast, the Coalition's successes had already led USCINCENT to try to find new ways to accelerate the offensive, although it still had to act with caution. At the beginning of G+1, the Coalition was not yet in a position to risk full exploitation of its advantages without regard to the Republican Guards or regular army heavy division in the northern part of the KTO. It had no way to be certain that Iraq would not consolidate around Kuwait City, or that it would not attempt some major counter-attack within Kuwait. This knowledge was to come during the course of the day.

Figure 8.9

Coalition Advances on G+1 (February 25, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. I-40.

## **The Advance By XVIII Corps**

The XVIII Corps continued to advance in the west. The remaining two brigades of the 82nd Airborne followed the French advance towards As Salman -- although at the cost of initially creating a small traffic jam along the one road north -- and cleared and secured a two lane highway into Iraq that was to act as a main supply route for moving the Corps' supplies and forces north.

The French 6th Light Armored Division resumed its advance at 0600 on G+1, having reorganized its force at night using GPS receivers. It reached the area of the airstrip at As Salman at 1100, and redeployed, while Coalition air support prepared the battlefield for the French attack. Weather sometimes presented significant visibility problems, as did the comparatively rough terrain in the area, but French land forces moved to within 2,500 meters of the forward fence at 1600. They then advanced -- following a rolling barrage. They quickly seized the airfield while other French forces captured the small town and crossroads into Iraq nearby.<sup>121</sup>

A combination of French and American airborne forces seized the rest of the rugged escarpment fortress area inside Iraq, and defeated the bulk of the Iraqi 45th Infantry Division. By mid-afternoon, two thousand prisoners, and nearly three battalions of artillery were captured by the 6th French and 82nd Airborne Divisions. Twenty-six hours after crossing the line of departure, the French and American forces had advanced one hundred kilometers, and seized the southern edge of As Salman and its key airfield (Objective White). During this time, the 82nd Airborne had entered the forward operating base at Cobra, and the 1st and 2nd Brigades of the 101st Airborne Division completed their deployment into Cobra.

Weather initially delayed the 101st Airborne Division's next major operation, which was an air assault to take up blocking positions in the north. At 1400, however, the 3rd Brigade of the 101st Airborne Division carried out the longest air assault movement in history, flying 175 miles along the Saudi-Iraqi border to occupy a blocking position on Highway 8. The assault involved 60 CH-47s, carrying "Humvees" with TOW anti-tank guided missile launchers, and 66 Blackhawk UH-60s carrying infantry. The 3rd Brigade took a position along the south bank of the Euphrates, southeast of Al Kinder, and a few miles north of Iraq's air base at Tallil, to the west of An Nasiriyah. In spite of mud and weather that created major operational problems, the task force then conducted armed reconnaissance, and attacked Iraqi forces to cut off Iraqi movement near An Nasiriyah and Tallil, 150 miles behind Iraqi forces in Kuwait City.<sup>122</sup>

The 24th Infantry Division (Mechanized) attacked towards its first major objectives in an advance north towards An-Nasiriyah. Its 197th Infantry Brigade attacked

at 0300 in the western part of the division sector, after heavy artillery preparation, and seized it after limited Iraqi resistance. Its 2nd Brigade attacked its objective, took 300 Iraqi prisoners without resistance, and established blocking positions to the east. Its Brigade thrust northwest and took its objective. Meanwhile, it used its AH-64s to patrol its area of operations, attack scattered elements of Iraqi forces, and support armored operations.<sup>123</sup>

The 24th Division effectively shattered the Iraqi 26th and 35th Infantry Divisions, after "weak resistance," and the 24th Infantry Division and the 3rd Armored Cavalry Regiment continued their attack in zone, penetrating 135 kilometers into Iraq, and seizing key objectives prior to turning east toward their final objective of decisively defeating or destroying the Republican Guard Forces Command.<sup>124</sup> To the east, the 3rd Armored Cavalry Division advanced on the left of the VII Corps, and moved towards Jalibah and the Euphrates.<sup>125</sup>

By the end of G+1, the XVIII Corps had taken all of its objectives, taken thousands of Iraqi prisoners of war, and established brigade sized blocking positions on the Euphrates. Its further advance now became limited by the need to coordinate its swing to the east with the movements of the VII Corps, also because it was meeting progressively more serious Iraqi resistance.<sup>126</sup>

### **The Advance By VII Corps<sup>127</sup>**

The advance of the VII Corps involved a series of complex movements which are summarized in Figure 8.10. Early in the morning of G+1, VII Corps resumed its advance on Al Busayyah and the Republican Guards. Heavy rain prevented air strikes, but US forces prepared for a dawn attack on Al Busayyah -- an Iraqi Corps logistic center and base, and a major crossroads for theater movements. US artillery fired a barrage of 346 MLRS rockets and 1,440 155mm rounds at Iraqi positions between 2040 on G-Day and 0600 on G+1. At 0615, the US 1st Armored Division began to directly attack the Iraqi positions. It quickly overran a brigade-sized command post, captured five hundred prisoners, and then engaged elements of the Iraqi 26th Infantry Division.

Supported by close air support and attack helicopters, the US 1st Armored Division closed in on the Iraqi main position, and used artillery and the MLRS to prepare for an assault.<sup>128</sup> The Iraqi forces refusal to surrender led to a brief armored fire fight that became typical of many such armored engagements in the war. The 1st Armored Division engaged Iraqi armor with M-1A1 tanks at ranges of 2,000-2,800 meters. Within 10 minutes, it had destroyed 40-50 Iraqi armored vehicles. The guns from the M-1A1s sometimes blew the turrets off the Iraqi tanks, and Iraqi POWs later

reported that they often could not see or target the advancing Coalition armor before the Iraqi armor began to be destroyed.

After this clash, the 1st Armored Division continued its advance towards Al Busayyah early in the afternoon, attacking Iraqi elements as it moved with artillery, aircraft, and helicopters. Many Iraqi forces began to surrender immediately -- or after brief engagements -- but the 1st Armored Division could not take all of the Iraqi positions around Al Busayyah before nightfall. The division commander decided not to advance into an area with many small wadis in the dark, halted armored operations for the evening, and used artillery to prepare for an attack at dawn.

At 0600, the 2nd Armored Cavalry Regiment began screening in zone, with the 3rd Armored Division following. These units continued their attacks north, and reached the point that night at which they were to turn east towards the Republican Guards. In spite of rain and high winds, the 2nd Armored Cavalry Regiment and 3rd armored Division continued their advance, and later that night, the 2nd Armored Cavalry Regiment encountered elements of the Tawakalna Division and the 50th Brigade of the Iraqi 12th Armored Division. It attacked and decisively defeated elements of the 12th Armored Division, and the US forces took up blocking positions, preparing to attack the Tawakalna Division on the morning of G+2.<sup>129</sup>

The US 1st Infantry (Mechanized) Division continued its attack at 0400 hours, and fully secured a breach-head passage for the 1st British Armored Division. A rapid British advance was critical to securing the flank of the Coalition VII Corps, defeating the Iraqi 52nd division and 37th Armored Brigade of the Iraqi 12th Armored Division, and securing the flank of the Egyptian forces in JFC-N.

Completing this movement through the breach, however, was anything but easy. The 1st British Armored Division had to complete a major movement through narrow passages in friendly lines, in the middle of wind and rain, and hampered by dealing with large numbers of Iraqi prisoners of war. By noon, however, the 1st British Division began passage through the breach. The 7th Armored Brigade successfully completed its passage through the breach, and moved northeast to strike at the Iraqi 52nd Armored Division through the now crumbling defenses of the Iraqi VII Corps.<sup>130</sup>

By 1515, the 7th Brigade (Desert Rats) was already leading the northern part of the British advance. While the 7th Brigade did not initially encounter Iraqi opposition, it reached a major Iraqi communications facility at Copper North, and seized the position after a clash with Iraqi T-55s. It then advanced to capture Objective Zinc, where it defeated elements of an Iraqi armored brigade, destroying 46 armored vehicles and taking 1,500 Iraqi prisoners. The attack of the 4th Brigade was delayed by traffic

problems, but reached its first major objective, Objective Bronze, at 2230. It launched a night attack with Challengers, Warriors, and Scimitars, pushed through pockets of Iraqi armor and infantry, and overran several major Iraqi logistics dumps.<sup>131</sup>

Night movement presented a problem for the British forces because the image intensifier systems on their Warrior fighting vehicles proved to be nearly useless on truly dark nights. As a result, the Warrior drivers had to lock onto the red lights used by the Challenger tanks, and follow them blindly, although their drivers had thermal vision devices. This again demonstrates the critical importance of thermal vision systems in night combat.<sup>132</sup>

The 1st British Division paused to regroup at 2300, and resumed its attack at 0530 on G+2, advancing to strike at the Iraqi 52nd Armored Division. This began a process of almost continuous combat as the 1st UK Armored Division which attacked the Iraqi 52nd Division, advanced through Iraqi resistance towards Objective WATERLOO, and was defended by elements of the Iraqi 12th Armored Division and 25th Infantry Division.<sup>133</sup>

While the VII Corps made substantial progress during the G+1, USCINCENT felt that the movements of VII Corps were too slow and too deliberate.<sup>134</sup> It is clear from memoirs and interviews that USCENTCOM and the VII Corps had different views of the battlefield. USCENTCOM headquarters saw a theater in which the Iraqi forces in the western, central, and northern KTO now faced a battlefield where (a) they had lost communications and situational awareness (since they had no effective reconnaissance capability, and air attacks deprived them of effective radio communication) (b) they could not characterize the major or tactical thrusts of Coalition (c) they had no artillery targeting capability against Coalition forces beyond line of sight, and they were often unwilling to use their surviving counter-battery radars (d) their bunkers offered no protection (e) they no longer had cohesive mine or barrier defenses (e) they could suddenly be attacked by aircraft and helicopters without warning, and (f) they were being engaged by superior armor and anti-armor weapons, operated by crews trained to engage in real-world fire fights, at ranges well in excess of 1,000 meters, while most Iraqis only had firing range training -- if that -- at ranges beyond 1,000 meters.

The VII Corps saw a battlefield which involved massive problems in coordination and physical movement, where it would have to engage the main body of the Republican Guards and Iraq's best regular heavy divisions. It also continued to see a battlefield where they faced the risk of a counterattack on their southwestern flank because of gaps between units and the slow movement of JFC-N. Schwarzkopf thought at the time that this view of the battlefield even led the VII Corps commander to consider an attack

southwards -- although this may have been the result of poor communications, and the VII Corps commander discussing a proposal to send small elements of the Corps south to mop up Iraqi forces and secure its flanks.<sup>135</sup>

If USCINCENT called for daring, the VII Corps sought to conduct a decisive set of coordinated blows by several divisions. While USCINCENT appeared to have been more correct given the final outcome of the war, this appearance may be deceiving. The detailed descriptions of the movements of the units in VII Corps and XVIII Corps that have so far been published scarcely indicate the US forces that were resting or that could have rapidly advanced without sacrificing much of their ability to conduct and sustain combined arms operations. The VII Corps and XVIII Corps forces would almost certainly still have won if they had conducted such an advance, but casualties might well have been higher, and added speed in closing with the enemy might have led to equal delays in winning the series of battles that followed.

It is possible that some of these questions about the VII Corps capability may eventually be resolved by a detailed simulation of different courses of action by VII Corps and XVIII Corps, based on detailed analysis of the condition of given force elements, terrain, and weather. However, given the evidence available, one must be cautious in making sweeping judgments about sweeping movements.

Figure 8.10

The VII Corps Attack on G-+1 (February 25, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 382.

## **Joint Forces Command - North**

Coalition forces were less successful in the positions occupied by JFC-N. The Egyptian Corps resumed their breaching operation at 0400, and created a 16 kilometer bridgehead through the Iraqi positions, but advanced slowly and sometimes paused to take up blocking positions when no significant enemy activity was taking place. They did not aggressively maintain pressure on the retreating enemy, and increasingly left the VII Corps unsupported on its right. They were still well short of their objective on the morning of February 26. (G+3).

In contrast, the Saudi-led Task Force Khalid continued its breaching operation, moved through the breach early in the morning, and advanced towards its objective. The Saudis and Kuwaitis reached their objective slightly ahead of schedule that evening, and consolidated their position. The Syrian 9th Armored Division followed the Saudi-Kuwaiti task force, while its reconnaissance battalion continued to screen the border between JFC-N and the I MEF.

### **The Advance by I MEF<sup>136</sup>**

The I MEF advanced into the main Iraqi reserve forces in the KTO in the midst of fog and smoke from burning oil wells, and encountered some of the most serious Iraqi resistance during the war. The 2nd Marine Division and the Tiger Brigade began their attack from a position south of Al Abdallya. The 1st Battalion of the 8th Marine Regiment, then under the operational control of the 6th Marine Regiment of the 2nd Marine Division, used tanks, artillery, TOWs and aircraft to repulse one of Iraq's few armored counter-attacks.<sup>137</sup> In a demonstration of AirLand capability, the advancing Iraqi forces were attacked by aircraft in much the same way that exposed Iraqi forces had been attacked at Khafji, and were reduced to brigade-sized strength by the time they closed on the 6th Marine Regiment. The 2nd Marine Division --with the Tiger Brigade on the left, the 6th Marines in the center, and the 8th Marines on the right -- continued to advance, and then engaged the Iraqi 3rd Armored Division and 1st Mechanized Divisions.<sup>138</sup>

Elements of these two Iraqi divisions had taken up defensive positions on high ground to the northwest of the 2nd Marine Division advance, in an area with scattered buildings and fences, and Marine forces became engaged in close combat -- sometimes using manportable Dragon anti-tank guided weapons against Iraqi armor -- demonstrating that technology had scarcely eliminated the need for infantry forces that could fight dismounted or in buildings and trenches.

This combat demonstrated that the attacking Iraqi forces had poor training in using their weapons in mobile engagements -- particularly their Soviet anti-tank guided

missiles -- and that Iraqi commanders did not realize the cost of committing forces piecemeal. The Iraqi counterattacks could often be defeated at relatively low cost because battalion or smaller-sized elements were committed piecemeal. This made it difficult to evaluate how successful weapons systems like the Marine Corps LAV really were, particularly because they were often supported by tanks, artillery, and/or Cobra attack helicopters.

Elsewhere, the battle became a battle between Iraqi tanks and Marine Corps M-1A1s, Cobras, and AV-8Bs. Poor weather and the smoke from burning oil wells sometimes reduced visibility to a "few yards" -- and led to fighting between intermingled Iraqi and Marine forces -- but the M-1A1s of units like B Company of the 1st Tank Battalion of the 8th Marines were able to use thermal sights to engage the Iraqi forces at long ranges under conditions where the Iraqi forces could not reply with effective fire. Marine M-60A1s closed to shorter ranges, but their superior crew training quickly proved decisive in medium and short range engagements.<sup>139</sup>

Many of these armored and infantry clashes took place in the equivalent of night warfare. While this mix of weather, oil smoke, and night, limited some aspects of Coalition air power, it gave the Marines the ability to exploit their superior training and thermal vision capabilities. The 2nd Marine Division secured the area at 2200. It had taken more than 4,500 prisoners, including several Iraqi brigade commanders, and estimated that it had destroyed 248 Iraqi tanks during the days fighting.<sup>140</sup>

To the east, the 1st Marine Division encountered an Iraqi counter-attack and close combat near the Al Burqan oil field. Once again, the 1 MEF made effective use of both air and land forces. AH-1Ws and AV-8Bs maneuvered jointly with Tanks and LAVs. Forward air controllers were able to use extensive air support even at very close ranges, while the 1st Marine Division was able to locate its positions and enemy positions very accurately for air support, and artillery fire, using GPS receivers, which again indicates that superior training and thermal sights gave Marine armor a decisive range and rate of engagement advantage in armored clashes. The 1st Marine Division estimated that it destroyed more than 100 Iraqi armored vehicles, and it took more than 1,500 Iraqi prisoners of war.

The Iraqi counterattack succeeded in delaying the I MEF advance, but the I MEF still consolidated its hold on the Al-Jabir airfield by the close of G+1, while elements of the I MEF had advanced to within 10 miles of Kuwait City. The 3rd Marine Air Wing flew over 460 sorties in support.

### **The Advance by Joint Forces Command - East**

Joint Forces Command - East continued to advance up the coastal area to the east of the I MEF. Unlike the I MEF, it encountered light resistance, and its main problem was dealing with a flood of Iraqis who surrendered and had to be moved to the rear as prisoners of war. Task Force Omar and Task Force Othman continued to advance, while the 2nd Saudi National Guard Brigade advanced along the coast. The Qatari units followed as the JFC-E reserve and the two US battleships continued to provide naval gunfire support.

### **The Situation at the End of G+1**

By the end of February 25, the Coalition had hastened its tempo of attack and had seized all of its key objectives in the western portion of the Kuwaiti Theater of Operations. Additionally, the Coalition had created a large breach area, and its forces advanced through this breach towards the positions of the Republican Guards. The fighting during the course of the day had also led Iraqi forces to begin a massive retreat out of the southern part of the KTO. The I MEF and the JFC-E advance had forced the Iraqi III Corps to retreat towards Kuwait City in growing disarray, and the forces of the Iraqi III Corps increasingly became intermingled with Iraqi troops retreating out of positions near Kuwait City, Al Jahrah, and along the coast moving north towards Basra.<sup>141</sup>

In spite of the scheduling and weather problems described in Chapter Seven, the Coalition's mix of fixed wing and rotary wing aircraft had also succeeded in conducting large scale battlefield interdiction missions. Coalition aircraft flew a record of 3,159 sorties, and 1,997 were direct combat missions in support of the AirLand battle. These air strikes not only played a major role in reducing the casualties of the VII Corps, I MEF, and JFC-E forces, they again demonstrated that Iraqi armor could not move during the day or night in the face of Coalition air power. Part of the Iraqi 3rd Armored Division was caught massing in the open west of Kuwait City Airport, and air strikes inflicted enough losses to deprive them of their ability to counter-attack or maintain a strong defense.

While Coalition amphibious forces continued feints near Faylaka and Bubiyan, it is unclear that Iraq was now capable of responding to the Coalition's deception efforts. The 7,500 men in the 5th Marine Expeditionary Brigade were disembarked at Al Mishab, and rushed forward to act as the reserve for the I MEF.

Much of the battle to liberate Kuwait was already won: The overall situation in the theater already made it impossible for Iraq to organize any cohesive defense south of Kuwait City or even north of the Mutla ridge -- where it had prepared fixed defenses. Key command elements of the Iraqi forces had begun to retreat by 1200 on G+1, and this

triggered a growing domino effect in those Iraqi forces associated with the III Corps and IV Corps headquarters, along the coast, and in or near Kuwait City. This Iraqi retreat grew steadily worse after about 1500, and forces from the coast and southern Iraq began to cluster around the vicinity of Kuwait City by 1900.

The JSTARS detected that this Iraqi retreat had become a rout early on the morning of February 26, 1991. This rout was triggered in part by the announcement by Baghdad radio at 0100 that all Iraqi forces would withdraw from Kuwait in compliance with UN Resolution 660 -- although Saddam Hussein declared that Iraq was withdrawing in the face of "aggression" from 30 countries. It also created a massive cluster of targets on the road north through the Mutla pass. It was this target cluster that led CENTAF to use F-15Es to strike the head and rear of the column before dawn on February 26, triggering the repeated air attacks by the US Air Force, US Navy, and USMC that created the so-called "highway of death".

## G+2: February 26, 1991

By the early morning of February 26, most of the Iraqi forces in southern Kuwait and around Kuwait City were running north. The road to Basra was already jammed with civilian vehicles, vehicles carrying loot, military vehicles, and vehicles carrying military equipment without any noticeable unit discipline, and many Iraqi officers fled with little regard for their troops. Coalition forces had already deep into Iraq and taken over 30,000 prisoners of war.

Roughly 26 of Iraq's 43 combat divisions were ineffective, and Iraq no longer had cohesive command, control, and communications at any level of operations outside the Republican Guards Forces Command. Although the Iraqi IV Corps had never been massively attacked, it was only capable of scattered resistance at the individual unit level. The Iraqi III Corps was thrust back on Kuwait City and its airport, and only scattered elements attempted to defend themselves. At the same time, continuing air attacks on retreating Iraqi forces made it impossible for Iraq to organize more cohesive defenses. Even then, Iraqis were lucky. Coalition air power would have done significantly more to destroy retreating Iraqi forces, if it had not faced weather problems and restrictions on the damage that it was ordered to inflict.

The military situation on G+2 is shown in Figure 8.11, and it is clear that the main battle had now become the battle against the Republican Guards. The XVIII Corps and the VII Corps were moving to the east. In contrast, Iraq was deploying elements of the brigades of the Adnan Infantry Division to the northeast, in positions to the rear of the US advance along the new boundary between the XVIII and VII Corps. The three

brigades of the Tawakalna Division were positioned in a 60 kilometer arc directly in front of the VII Corps, with the 46th Armored Brigade of the Iraqi 12th Armored Division in the rear. The 37th Armored Brigade of the Iraqi 12th Armored Division completed the southern part of this arc between the positions of the Tawakalna Division and the Wadi al-Batin. Two brigades of the Madinah Division were about 60 kilometers to the rear of these forces, between the boundary between XVIII/VII Corps boundary and the northern border of Kuwait. Another brigade was across the border in northern Kuwait. The Iraqi 10th Armored Division was in the area to the east of the Wadi al-Batin, and the Hammurabi Division was to the southeast of the Madinah division along the Kuwait Border, defending Basra.

In spite of the air campaign, these Iraqi forces still had an impressive total strength of manpower and weapons. Major elements of these Iraqi forces were still maneuvering to defend themselves-- rather than retreat. Each major encounter meant a potential battle with an Iraqi force of hundreds of tanks, artillery weapons, and armored vehicles that was turning towards the west to shield the approaches to Basra before fighting. The VII Corps and XVIII Corps were advancing into armored battles that were often intense, and where they could not always exploit decisive force or maneuver, count on timely massive air support, or prepare for battle with indirect fire support.

In many cases, engagements became classic combined arms engagements between battalion to brigade-sized combat units, where a combination of superior training, tactics, and technology became critical. Once again, the US forces were able to exploit a decisive advantage in terms of precise navigation and location of targets, thermal vision devices and guns that outranged Iraqi tanks, attack helicopters and air support, and superior artillery targeting and lethality. They also exploited advantages in virtually every aspect of the operational art involving combined arms, and the superior capabilities of US mechanized forces, scouts, support forces, and the other elements of the combined arms team. The Iraqi major combat units were not able to operate cohesively, and Iraq could not employ them as corps level forces with any effectiveness. They also were deployed where they could usually be engaged in sequence.

Even so, the resulting battles were not easy. Exploiting their edge in tactics, technology, and training forced US troops to fight at the limits of their performance capabilities. Much of the fighting involved relatively close combat that deprived Coalition forces of some of their advantages. The detailed battle accounts of the 24th Mechanized Infantry Division, VII Corps, 1st British Armored Division, and I MEF are filled with examples of close range combat and examples of personal leadership and courage.

More importantly, the VII Corps and XVIII Corps were beginning to encounter forces capable of putting up a major resistance to the Coalition advance. At the same time, the slow advance by the Egyptian Corps gave some Iraqi forces time to retreat towards Basra. As a result, the rapid collapse of the Iraqi defenses in southern Kuwait had already reduced the prospect that the Coalition's double envelopment could win the race against the rout and seal off Iraqi forces from a successful retreat to Basra and the Euphrates.

Figure 8.11

Coalition Advances on G+2 (February 26, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. I-41

## **The Advance By XVIII Corps**

The situation in the northwestern part of the battlefield began to stabilize. The 3rd Brigade of the 101st Airborne Division continued to interdict enemy forces along Highway 8, and its 2nd Brigade moved to the east to attack the north Basra road, destroying fifteen vehicles, and capturing thirty-seven Iraqi prisoner of war. The 82nd Airborne Division moved east, providing security for Coalition lines of communication.

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The French 6th Light Armored Division resumed its advance from Rochambeau at 0600, having reorganized its force at night using GPS receivers. It reached the area of the airstrip at As Salman at 1100, and redeployed while air support prepared for the attack. The weather presented significant visibility problems, particularly in comparatively rough terrain, but French land forces were within 2,500 meters of the forward fence at 1600, and advanced, following a rolling barrage. It quickly seized the airfield, while other French forces captured the small town and crossroads into Iraq nearby. For the rest of the war, the French 6th Light Armored Division stayed in the northwest, protecting the XVIII Corps and ARCENT's Western flank.<sup>143</sup>

The main thrust of the XVIII Corps, however, shifted towards the northeast, and involved a dash to the Euphrates by the 24th Infantry Division (Mechanized) and 3rd Armored Cavalry Regiment to cut off Iraq's ability to retreat out of the KTO. This dash required the movement of more than 26,000 men and 8,600 vehicles, and created a massive logistic burden. The 24th Infantry Division (Mechanized) alone required 2,400 short tons of ammunition, 400,000 gallons of fuel, and 213,000 gallons of water a day.

The attack began at 1400 through a true "desert storm" of dust and wind. Its three brigades moved towards the Iraqi airfields at Jalibah and Tallil, with the 3rd Armored Cavalry screening the division's southern and eastern flanks. The division advanced steadily at 25 kilometers per hour and initially met little resistance. It was already three-quarters of the way to the Euphrates by 2130 on February 25.

At this point, however, the 24th Infantry Division (Mechanized) and 3rd Armored Cavalry Regiment began to encounter rougher terrain and flood areas that turned the desert into bogs called "sabkhas." Division engineers had to scout paths through the sabkhas, and the division could not resume its final attacks to seal off the Euphrates until around 1200 on February 26.

The 24th Infantry Division (Mechanized) and 3rd Armored Cavalry Regiment also began to encounter a different kind of combat. While the I MEF had already met occasional stiff resistance from individual Iraqi formations, the 24th Infantry and the 3rd Armored Cavalry Regiment now faced a relatively determined defense by the Iraqi 26th

Commando regiment, and the Iraqi 47th and 49th Infantry divisions. The US forces were also moving into the path of elements of the Hammurabi Division of the Republican Guards, which were retreating up Highway 8 towards Baghdad, and attempting to escape the theater.

While these Iraqi formations were as "blind" as other Iraqi forces in terms of effective reconnaissance and intelligence, they were relatively well-positioned in a rocky escarpment, and had enough height to have some view of the overall battlefield. The 1st Brigade of the 24th Infantry Division (Mechanized) was among the first formations to deal with this reality. It became involved in a four-hour artillery duel with Iraqi forces in which close fighting took place with Iraqi forces willing to fight with small arms and anti-tank guns.

The Iraqi 47th and 49th Infantry divisions did not stop their artillery fire after a few short exchanges, and they provided little more than pre-planned fire at range makers that consisted of oil barrels they had already positioned in the desert. The Iraqi force also lacked the armor to resist the US advance, and proved to be highly vulnerable to US artillery using Q-36 Firefinder counter-battery fire radars and improved conventional munitions (DPICM). US artillery had a decisive advantage, and maintained a rate of fire about 3-6 times higher than that of numerically superior Iraqi forces. In the process, it destroyed four Iraqi artillery battalions.

The 24th Infantry Division (Mechanized)'s 1st Brigade secured its position along Highway 8, just to the east of the main lakes south of the Euphrates by 0110. One unintended benefit of this advance was that the brigade of the Hammurabi Division that was moving towards Baghdad turned back. The 24th Infantry Division (Mechanized)'s 197th Brigade fought its way out of the bogs and an attempted ambush by the 3rd Commando Regiment of the Republican Guards, and reached its objective south of Tallil Airfield at 0430. During the advance of the 24th Infantry Division (Mechanized)'s 1st and 197th brigades, US armor and mechanized infantry became involved in an intensive series of small fire fights.<sup>144</sup>

In spite of a dust storm and then darkness, US forces fought duels against Iraqi armor with combined forces of M-1A1s, AH-64s, and Bradleys that could begin to target and engage Iraqi armor at ranges as great as 3,500 meters -- sometimes spotting and destroying Iraqi armor before it could return fire. The 24th Infantry Division destroyed fifty-four Iraqi tanks upon its initial contact with enemy forces. The division and 3rd Armored Cavalry Regiment also used infantry, artillery, the MLRS, and M-19 grenade launchers to attack Iraqi forces in bunkers and defended positions.

The 2nd Brigade advanced with little resistance and reached its objective on the southeastern edge of Jalibah Airfield early in the evening. With this advance, the 24th Infantry Division (Mechanized) reached its objectives just south of the two airfields.

### **The Advance by the VII Corps**<sup>145</sup>

The VII Corps was also advancing against Iraqi forces which had never suffered as much in terms of supplies, losses, or morale as the Iraqi forces in the southern and central KTO. Further, these were also Iraqi forces where USCENTCOM still overestimated the damage done by air power, although USCENTCOM's damage estimates had otherwise been notably more correct than those done in Washington. This is a factor to be considered in any assessment of the VII Corps rate of advance -- and the 24th Infantry Division (Mechanized) and 3rd Armored Cavalry Regiment --from G+2 onwards..

USCINCENT and VII Corps still had different views of the battlefield. USCENTCOM was acting on the basis of both a perception of the battlefield where an Iraqi rout was taking place elsewhere in the KTO, and an estimate that exaggerated the weakness of the Republican Guards and the forces associated with them. In contrast, VII Corps not only faced the prospect of a direct battle with the one element of Iraqi forces that intelligence regarded as highly combat effective, but having to improvise a major wheeling motion while it had elements in contact with the enemy.<sup>146</sup>

Deciding on when to make this wheeling movement required as precise an estimate as possible of whether the Iraqi heavy forces would actively counterattack, or simply establish blocking positions. On the morning of February 25, ARCENT intelligence estimated that the Iraqi force would only advance to blocking positions. JSTARS played a major role in this intelligence estimate, helping to characterize the movements of the Iraqi Tawakalna Division, the 52nd Armored Division, and the 12th Armored Divisions.<sup>147</sup> This again demonstrates the importance of theater and tactical intelligence assets.

As a result, the VII Corps commander decided on the afternoon of February 25, to wheel the 1st and 3rd Armored divisions to the east and attack the Republican Guards. The VII Corps commander drew on a contingency plan, formed before the start of the ground war, which calculated that such an attack would take three divisions to ensure success.

Because the 1st Cavalry Division was still held as the theater reserve, the 1st Infantry (Mechanized) Division was shifted to provide the additional strength needed for the main attack. It had completed its breaching operation for the British 1st Armored Division and began to move north. In the interim, the VII Corps advanced with the 1st

Armored Division on its left wing, the 3rd Armored Division in the center, and the 2nd Armored Cavalry Regiment in the south between the division and the British division.<sup>148</sup>

The resulting wheeling maneuver was anything but easy. It involved a total of 145,000 men, three full US heavy divisions, an armored cavalry regiment, four US heavy artillery brigades, and a corps aviation brigade, plus the British 1st Armored Division, which was securing the Corps' right flank to the east. It meant driving the VII Corps directly towards the positions of the Republican Guards and some of Iraq's best elite regular heavy divisions. It also meant engaging in the main battle as early as the evening of February 26, and no later than February 27 -- far ahead of the original battle plan.

Weather conditions further complicated the situation. Temperatures were near zero, fog had turned into intermittent and then steady rain. High winds blew powered sand through to rain to cover vehicles in mud, and low clouds and high winds often grounded fixed wing air support and helicopters. Visibility was poor, and navigation relied heavily on the GPS and compasses. These were scarcely ideal conditions for shifting and accelerating a massive armored advance by 145,000 men.

At the same time, the maneuver was eased by the fact that the 1st Armored Division secured Al Bussayah. The division began the day with a major artillery attack on the remaining Iraqi forces near Al Bussayah - firing over 1,400 shells and 300 MLRS rockets. At 0900, it overran the defenses on the outside of the town. While scattered fighting continued through the morning, the 1st Armored Division was able to bypass Al Bussayah and move forward.<sup>149</sup>

Although it encountered some difficulties in restructuring its logistic support, this success allowed the VII Corps to advance on an 80 kilometer front -- with seven armored and mechanized brigades, an armored cavalry regiment advancing north to south, a mechanized division, heavy artillery brigades, and the corps aviation brigade in support. Further, General Schwarzkopf released the 1st Cavalry Division from its position in reserve, and began a 250 kilometer race to join the VII Corps attack -- reaching its objective within 24 hours.

The need to accelerate the VII Corps attack on the Republican Guards Forces Command became more urgent by the hour. During the previous day, the USAF and US Army had conducted air and artillery attacks on many of the communications nodes used by the Iraq, while leaving Republican Guards communications intact. This had the desired effect when the Tawakalna Division of the Republican Guards broke communications security, early on February 26, after weeks of silence to give orders that described his defensive positions.<sup>150</sup>

About six hours later, USCENTCOM received similar radio intercepts indicating that the Iraqi III Corps retreat had "turned into a rout", and that tank transporters and artillery tractors were being sent to the Hammurabi Division -- which might indicate that it was being sent out of the KTO.<sup>151</sup> While the same intercepts indicated that the Madinah division was being sent to blocking positions to the southwest, these intercepts provided further indications that the overall battle was becoming a pursuit, rather than a battle of contact and envelopment. As a result, General Schwarzkopf again urged the VII Corps to accelerate its advance to destroy the Republican Guards.<sup>152</sup>

These orders led the VII Corps commander to commit the 1st and 3rd Armored Divisions before the 1st Infantry (Mechanized) Division and some other attacking elements were fully in place, and suitable orders were issued at 1045. This potentially meant attacking a concentrated force of all three Republican Guards heavy divisions (Tawakalna, Madinah, and Hammurabi) and the regular army 10th and 12th Armored divisions. While it later became clear that these forces could not operate cohesively -- and that Iraq may have already begun to move elements of the Republican Guards divisions out of the theater at some point during February 26 -- neither the VII Corps, nor USCINCENT had any way to be certain of this at the time.<sup>153</sup>

Miserable weather continued throughout the day -- with visibilities as low as 300 meters -- and the VII Corps encountered serious communications problems. The SINCGARS lacked the range and reliability to provide the long range communication that the Corps needed. VII Corps had only a few TACSAT satellite communications receivers and these could not be used in moving vehicles. As a result, VII Corps lacked the communications capabilities of the XVIII Corps, and VII Corps communications required command visits and considerable independence of action.<sup>154</sup>

Iraqi forces shifted position slightly during G+2, but two brigades of the US 1st Armored Division advanced towards the position of the motorized elements of the Adnan division to the east of the Ar Rumaylah oil field, and towards the 2nd and 14th armored Brigades of the Madinah Division. The 3rd Brigade of the 1st Armored Division advanced towards the 29th Brigade of the Tawakalna Division. The 3rd US Armored Division advanced towards the southern part of the Ar Rumaylah oil field towards the boundary between the 29th Brigade of the Tawakalna Division and its 9th Brigade. The 2nd Armored Cavalry Brigade advanced directly towards the Tawakalna Division, and the 1st Infantry (Mechanized) Division advanced rapidly to the northeast from the rear towards the 18th Brigade of the Tawakalna Division, and the Iraqi 37th Armored Brigade of the 12th Armored Division.<sup>155</sup>

These advances threatened to create a gap between the XVIII Corps and the VII Corps. The XVIII Corps was consolidating its position on Highway 8, and beginning to wheel the 24th Mechanized Division and the 3rd Armored Cavalry east to support the VII Corps. At this point, however, the gap between the two corps was still growing.

This risk led the XVIII Corps commander to accelerate the movement of the 24th Mechanized Division to the east, and advance the 3rd Armored Cavalry Regiment to establish a new continuous boundary between the XVIII and VII Corps. The 1st and 3rd Brigades of the 82nd Airborne Division were shifted to clear the areas near Tallil or Jabril. A brigade of the 101st Airborne Division was given the missions of establishing a new forward operating base for air elements of the 2nd Brigade of the 101st Airborne division, and deploying four attack helicopter battalions, with a total of 72 AH-64 attack helicopters, to the east where they could screen the Corps' northern flank

Earlier in the day, the 1st US Armored Division -- with a strength of about 22,500 men, 350 tanks, 285 Bradleys, 115 howitzers, 36 MLRS, 36 AH-63s, and 44 other helicopters had completed the destruction of the northern brigade of the Iraqi 26th Infantry Division and an Iraqi Seventh Corps logistics base near Al-Busayyah.<sup>156</sup> Although this fighting was not intense, clearing the town delayed the advance of the 1st Armored Division, which was typical of the "friction" that kept the VII Corps from advancing as USCINCENT had hoped.

The 1st US Armored Division then advanced to the north, on the Western flank of the VII Corps. It moved in a wedge about 25-45 kilometers wide and 80-150 kilometers long, with armored cavalry, chemical defense and engineer units in the lead, a following brigade, and then artillery with the division's two other brigades on each side. It continued its advance to the north and east, and closing by 1300 with forward elements of the Republican Guard's Tawakalna Division. It then attacked with M-1A1s and Bradleys -- which engaged the enemy at ranges in excess of 2,000 meters -- while supporting attacks were carried out by A-10s, AH-1 attack helicopters, and the MLRS.

Weather and dusk turned the battle into night warfare after 1900 in which the US again exploited its decisive advantage, while Iraqi forces were reduced to main gun tracers. This advantage became even more important as the force advanced into more vegetated areas where bushes often had the same size as armor. The thermal sights of the M-1A1 saw through the low vegetation, and M-1A1s were able to attack and kill several dozen T-72s and BMPs in an engagement with initial ranges of 3,000 meters.

The 3rd US Armored Division pushed through a screen of Iraqi armored reconnaissance forces, and also attacked the Tawakalna Division. By about 1600, the 1st and 2nd Brigades of the 3rd Armored Division closed on the 29th and 9th Brigades of

the Tawakalna Division in the midst of dense fog and rain. Unlike most Iraqi forces, these units were well-positioned in defensive emplacements, and had alternative emplacements where they could retreat to provide in-depth defense.

The initial artillery attack by the VII Corps had little effect on the Tawakalna Division forces in these positions, and the weather deteriorated to the point where visibility dropped to as low as 100 meters -- while rain and blowing sand were driven by winds gusting up to 24-42 miles per hour. This weather was so bad that M-1A1 guns often had to manually set range because laser range finders could not sense a return, which initially made it impossible to provide air or helicopter support.

Nevertheless, the 3rd Armored Division advanced using its heavy cavalry squadron, a tank force, five battalions of artillery, and 27 MLRS launchers while the 1st Armored Division continued to engage.<sup>157</sup> Ranges closed to as little as 400 meters. Tank fire mixed with Bradleys firing TOWs, and artillery fire support that used improved conventional munitions. The resulting fire fight lasted until 0300 on February 27, and effectively destroyed key elements of the Tawakalna division. Once again, the US decisively exploited superior artillery and armored warfare capabilities. The fighting did not, however, always favor the Americans. Some Iraqi armor was positioned hull down in well-sheltered positions and was able to fire in what was becoming an illuminated battlefield at ranges of 1,000 meters. Superior training and rates of engagement won such exchanges, but also caused casualties in which technology scarcely eliminated the risks of war.

The weather also improved and allowed AH-64s -- targeted by the JSTARS -- to advance ahead of the 3rd Armored Division's 2nd Brigade and catch an Iraqi mechanized unit attempting to reinforce the elements of the Tawakalna Division that were under attack. In spite of the weather, 24 AH-64s struck the advancing Iraqi formation at 2300. The AH-64 pilots used night vision goggles and FLIR systems to destroy as many as eight to nine T-72 tanks, 19 BMPs, and other armored vehicles, and halted the move of the force. This again demonstrated the ability of JSTARS and attack helicopters to add a new dimension of "deep strike" capability to the battlefield.

The continuing night attack of the 1st Armored Division on the Tawakalna Division demonstrated the advantages of land "IFF" systems. Throughout its advance, the division made extensive use of its thermal sights and night vision devices both to attack Iraqi units and to preserve their own formations. They also used special infrared identification lights. Scouts had lights to mark the flanks of formations, and indicate the lead vehicles, which had special infrared strobe lights that pointed upwards so they could only be seen from the air, and identify the forces as friendly.

Further to the south, the 2nd Armored Cavalry Regiment was screening the 1st Infantry (Mechanized) Division -- which had completed its breaching operation and was now moving north in strength. The 2nd Armored Cavalry Regiment advanced to the northeast and encountered elements of both the Tawakalna Division and the Iraqi 12th Armored Division. In the process, it became one of the few Coalition forces that had to fight an armored battle against larger Iraqi forces. It began to encounter fire when it advanced to a position called "69 Easting" and engaged Iraqi forces for the next two hours until it encountered a major Iraqi armored force with modern T-72 tanks at "73 Easting".<sup>158</sup>

The resulting battle lasted from about 1618 to 2000, and became a classic tank encounter in which well-trained and led US combined forces destroyed the Iraqi opposition. US M-1A1s again exploited their thermal sights and long range fire. The US forces could use their sights to "see" through mist and blowing sand that had reduced their visibility to 1,000 meters. US tank commanders used low power to survey the enemy, and high power to pick out Iraqi tanks whose turrets were moving in their direction. Gunners opened fire at ranges of 2,400 meters against Iraqi tanks that could not see clearly, and that had zeroed their guns on a range of 1,800 meters.

The Iraqis not only could not fire accurately, they assumed that the US tanks were firing from a static position although the US tanks were actually moving and firing using stabilized guns. The M-829A1 depleted uranium rounds, or "silver bullets" -- fired by the US M-1A1s and easily penetrated the frontal armor of the Iraqi T-72s, often set them on fire and blew off their turrets. The Iraqis, however, targeted positions that the US tanks had already left. The result was that the M-1A1s in US forces were extremely lethal while the Iraqi tanks were largely ineffective: One Iraqi T-72M1 tank unit that had only lost two tanks during the air campaign lost the rest of its 37 T-72M1s in less than six minutes.

US mechanized forces were equally effective. The Bradleys that followed the M-1A1s used their TOWs to attack enemy armor -- sometimes even trying to use TOW beyond its maximum range of 3,700 meters. They also used their 25mm guns to suppress the remaining Iraqi infantry forces.

As a burning line of T-72s began to outline the size of the full Iraqi force, the advancing US forces called in air and fire support. The US used F-16s and A-10s, AH-64s, the MLRS (12 rockets and 130,000 bomblets), and howitzer fire (2,000 rounds) to suppress the Iraqi forces ahead of the tank advance, attack new elements of the Iraqi force as they were discovered, and strike at any Iraqi unit that attempted to counter-attack. "73 Easting" became a combined arms killing ground.

The 2nd Armored Cavalry Regiment then found a gap between the Tawakalna Division, and the Iraqi 12th Armored Division and the advancing US armored units began a four-hour fight that continued through the early evening of the 26th, using thermal imagery to cut through the dust and shatter superior Iraqi tank and armored forces. At the same time, attack helicopters attacked the Iraqi artillery batteries. These night attacks by 2nd Armored Cavalry Regiment and the 1st and 3rd Armored Divisions destroyed a significant amount of the Tawakalna Division's armor, and again demonstrated the advantage of superior night/poor weather warfare capability and training. The 2nd Armored Cavalry Regiment alone took 1,300 prisoners.

Once this battle was won, the 2nd Armored Cavalry Regiment went into reserve and the 1st US Infantry (Mechanized) Division passed through its position and continued the attack to the east. The 1st Infantry (Mechanized) Division had completed a 16-hour advance from the breach area, but was still able to complete a rapid passage of lines through the 2nd Armored Cavalry Regiment, and join the battle at around 2100. It began to engage the 18th Mechanized Brigade of the Tawakalna Division and the 37th Brigade of the 12th Armored Division. In spite of fatigue, the 1st Infantry (Mechanized) Division launched a night attack that became a series of brigade-sized engagements, fought through well-prepared defensive positions.

M-1A1s and Bradleys came under attack by Iraqi armor and anti-tank teams, and responded by using their thermal sights to target and destroy Iraqi armor and infantry. During these engagements, it was clear that Iraqi infantry often had no indication that the US armor could use thermal sights to target them through cover that normally would have protected them. The resulting close mixed fighting led to new fratricide incidents, when some US armored weapons crossed sectors; however, US forces again showed that they "owned the night."

The VII Corps also used 18 AH-64s in its 11th Aviation Brigade to strike at Iraqi armor deep inside Iraqi territory.<sup>159</sup> It became clear by the afternoon of February 26 that it was not necessary to reserve the 11th Aviation Brigade to strike deep at an Iraqi counterattack. Further, night offered the AH-64s an ideal opportunity to execute a massed precision attack against Iraqi armor. This was a complex operation because the AH-64s had to pass over a fluid armored battle. The first attack was scheduled to begin at 2100, but was delayed until 2115 to work out the final details of IFF in the forward area. The Apaches then passed over the area of the "73 Easting Battle" and attacked in three areas in the main line of Iraqi retreat about 50 to 80 kilometers beyond the land battle. They found and engaged Iraqi armor, using FLIR to locate and fire at Iraqi forces that attempted to attack them.

It became clear in the process that there were larger concentrations of Iraqi armor to the east of their attack zones, and this was confirmed by the JSTARS. As a result, the AH-64s refueled and rearmed, and the VII Corps commander requested authorization to attack to the east. At this point, however, VII Corps efforts to launch a new AH-64 attack came into conflict with the ATO, which reserved the attack area for single F-111 attacks using loads of laser-guided bombs. The AH-64 force would almost certainly have been far more lethal than a single F-111, but it proved impossible to alter the ATO system -- which is an important lesson for the future. The AH-64s were forced to resume their attacks in areas where Iraqi forces did not have as much massed fleeing armor. Nevertheless, the second attack struck a multi-vehicle convoy and key elements of the Iraqi 10th Armored Division near Objective Minden at around 0300. The AH-64s continued killing attacks, using Hellfires to knock out the lead and rear vehicles. They then switched over to using rockets and guns to kill softer vehicles.

The 11th Aviation Brigade did not carry out a third attack since this too would have required it to go further east than the ATO plan permitted. Even so, the two earlier 30- minute attacks killed an estimated 33 tanks, 22 APCs, 37 other vehicles, a bunker, and an unknown number of Iraqi soldiers. They effectively destroyed the combat effectiveness of elements of the Iraqi 10th Armored Division, which did not recover from the shock of a night attack by a total of 18 attack helicopters. Other AH-64s found and killed Iraqi armor in the Madinah Division, and targeted it for follow-on strikes. The AH-64s had effectively extended the depth of the VII Corps operations to over 100 kilometers.<sup>160</sup>

Still further to the south, the British 1st Armored Division continued to advance to the northeast of the Egyptian Corps in the direction of the Wadi al-Batin, and closed on a force of one or two brigades of the Iraqi 52nd Division.<sup>161</sup> Until the morning of February 26, the British 1st Armored Division had advanced through only moderate Iraqi resistance. This situation now changed.<sup>162</sup>

The British division closed on the Iraqi 52nd Armored Division early in the morning, at around 0530, and continued to attack through about 0920.<sup>163</sup> The Iraqis put up only limited initial resistance, but British forces were forced to attack in the middle of a sandstorm, using GPS to maintain proper position. As the battle progressed, the visibility remained erratic, but training and technology gave the British forces a decisive advantage in combined armed cohesion, rate of engagement, and accuracy of fire advantage in using their Challengers and the Milan anti-tank missiles on their armored vehicles. This fighting continued until the Iraqi position was finally cleared.<sup>164</sup>

British forces then moved forward in brigade-sized punches through a series of objectives along their path to the Wadi al-Batin, as the division commander shifted division artillery from the support of one brigade to the other. The 7th Brigade advanced through objectives Platinum and Lead, and moved near the Wadi Al-Batin and the Kuwaiti border between 1430 and 1740. The 4th Brigade encountered heavy Iraqi resistance at Objective Brass at 1330, defeated the Iraqi forces by 1500, and went on to defeat the Iraqi forces in Objective Steel by about 1700. It then moved towards its final objective near the border, Objective Tungsten. Taking this objective again involved heavy night combat, but the 4th Brigade fully secured their objective by 0430 on February 27.<sup>165</sup>

The British 1st Armored Division secured the south-eastern flank of the VII Corps during this fighting, and did so in two days -- although British commanders had initially estimated that this would take four to ten days.<sup>166</sup> Tragically, some of its Warriors also came under fratricide from both British tanks and US A-10s. Britain lost nine soldiers and 11 wounded because of attacks by the A-10s.<sup>167</sup> In spite of this incident, the British 1st Armored Division was ready to commit major elements to a new attack as early as 2130, but the Coalition had not yet reached a decision as to where the British forces should advance. As a result, British forces regrouped for the night, resupplied and refueled.<sup>168</sup>

### **The Advance by Joint Task Force - North**

By the beginning of February 26, it was clear that the Egyptian III Corps no longer faced any risk of an Iraqi counter-attack. As a result, it stepped up its pace and advanced rapidly with little Iraqi opposition. It reached its original objective near Al Braaq, and turned east before rapidly thrusting 60 kilometers towards its next objective at Ali As Salim Airfield. At this point, the original battle plan called for the Egyptian Corps to move through the I MEF position and liberate Kuwait City.

Task Force Khalid also achieved its objectives and turned east towards Kuwait City. The Syrian 9th Armored Division followed in support. While Syrian forces performed the function of screening Task Force Khalid to the east, and securing the supply lines of JFC-N, none of these tasks actually served any military purpose. As was the case throughout the Gulf War, the Syrian 9th Armored Division effectively opted out of the fight -- which weakened the JFC-N, and contributed to its slow advanced and failure to help seal off the Iraqi forces in the southern KTO.

### **The Advance by I MEF**

The I MEF refueled and replenished on the night of February 25, and resumed its attack on the morning of the 26th. Its objectives were now Kuwait City and the Mutla

Pass. The 2nd Marine Division turned on the road north to the Mutla Pass, and towards Al Jahrah at the eastern end of the Bay of Kuwait, while the Tiger Brigade headed towards the Mutla Ridge, the one major defensive position north of the Bay of Kuwait. The Mutla Ridge was the key to cutting off the roads leading north to Basra from southern and central Kuwait, and Kuwait City.<sup>169</sup>

In spite of the fact that many Iraqi forces had already fled north, the Iraqi command had not organized a systematic retreat by all of its remaining forces in Kuwait. It had left some forces in place, and others to retreat as best they could. This allowed the 2nd Marine Division and the Tiger Brigade to complete at least part of the double envelopment in which the resulting advance was one of the most successful tests of the AirLand battle doctrine during the Gulf War. Air support was rushed in from the 3rd Marine Air Wing and from AV-8Bs on shipboard, and airborne FACs proved able to target key Iraqi forces in the Tiger Brigade's line of advance. Seizing the Mutla Ridge would unquestionably have taken significantly longer if air and land power had not worked in concert.

The 2nd Marine Division reached a position where it could attack the Iraqi forces in the lower Mutla area at 1200. At the same time, the Tiger Brigade, supported by attack aircraft and helicopters, plowed, and fought its way through an Iraqi minefield and then through dug-in Iraqi armor and bunkers, before taking the high ground west of Al Jahrah. It systematically destroyed the Iraqi anti-aircraft defenses in the area, consolidated its position, and cut off the Iraqi forces in Kuwait. This left hundreds of Iraqi tanks and armored vehicles vulnerable to Coalition airpower, with no line of retreat. In many cases, Iraqi forces abandoned their vehicles and fled north on foot; other Iraqi forces surrendered.

The 2nd Marine Division took the outskirts of Al Jahrah, and destroyed elements of the Iraqi 3rd Armored and 5th Mechanized Divisions. This involved several stiff clashes with Iraqi T-72s and infantry from some of Iraq's best regular forces. These forces chose to fight, rather than surrender. However, the 2nd Marine Division and the Tiger Brigade secured Al Jahrah at around 1600, and continued on to secure positions on the high ground of the Mutla Ridge. They estimated that they took 4,200 Iraqi prisoners, and destroyed 166 Iraqi tanks in the day's fighting.<sup>170</sup>

The 1st Marine Division had already turned towards Kuwait International Airport, and forward elements had reached the edge of the airport by 2300 on February 25. Although Marine commanders knew that the Iraqis were now in retreat, the area around the airport was still defended while fighting occurred across the division's front. The commander of the 1st Marine Division called in his maneuver commanders, at about

1300, to finalize plans for an attack on the airport. The Commanders dispersed at about 1400 to hold their own briefings, which took about an hour.

Meanwhile, the 2nd Marine Division came alongside of the 1st Marine Division, and both divisions were now in a position to attack. This link-up between the 1st and 2nd Marine Division provided another example of the impact of the limitations that C<sup>4</sup>I/BM capabilities placed on operations. Although the link-up between the two divisions was given careful attention, the right flank of the 2nd Marine Division still identified the left flank of the 1st Division as hostile, and engaged it with machine gun fire. As a result, it was not until 1530 that both divisions were in final position and ready for the final drive -- three and one-half hours after the 1st Marine Division had first stopped.

The need for this planning and coordination was demonstrated by the fact that the 1st Marine Division was now able to advance through a driving sand storm, periods of darkness, and smoke from burning oil wells, and through pipelines, and the worst terrain it had yet encountered, without a single loss to fratricide. The 1st Marine Division was also able to defeat a major Iraqi armored force that was holding Kuwait International Airport and could no longer retreat. This led to a low-level battle that lasted into the night, and until 0330 on February 26.

During this battle, the 1st Marine Division was forced to fight at night, and through the dense oil smoke from burning oil wells, which sometimes limited visibility to a few meters. Once again, superior training, technology, and combined arms proved critical. So did the assistance of close air support and naval fire support from US battleships. By about 0600 on February 26, the 1st Marine Division advanced into what was now an empty airport and secured it and its positions. In the course of the days fighting, it had destroyed an estimated 250 Iraqi T-54/T-55 and 70 T-72 tanks, and 70 other armored vehicles.<sup>171</sup>

### **The Advance by Joint Forces Command East**

JFC-E continued its successful advance up the coast. Task Force Omar achieved its objective on the west on the outskirts of Kuwait City. Task Force Othman and the Qatari Battalion reached their objectives on the southern edge of Kuwait City with a UAE motorized infantry battalion to screen the left flank of the Saudi 10th Mechanized Brigade. The Arab forces were so successful in this sector that the JFC-E operating objective was moved west twice during the day, and JFC-E was given four additional objectives.<sup>172</sup>

One senior US commander of the forces in the area commented several days after the end of the war,<sup>173</sup>

"We were surprised by both the Egyptians and the Saudis. The Egyptians surprised us because they had high morale and our experience with their training made us expect to see them advance more quickly. I am not sure what happened. They certainly got no support from Syria, but they also worried about counterattacks for which we had no intelligence. It may have been that they lacked enough breaching equipment, and their own long range intelligence assets....But it took them a long time to move, and the Saudis in JFC-N seemed to always move faster than the Egyptians.

"The Saudis in JFC-E were a different story. We had helped them train for a completely new kind of combined arms warfare, and we had no doubt about their commitment, courage and initial willingness to fight. We did not really know what would happen when the fighting began, however, or how well they would sustain the fight. The answer came very quickly. They did what they were supposed to do, they did it well, and they did it almost exactly on schedule

....Understand, they were not a heavy force. JFC-E was much smaller than the other forces in terms of firepower and armor. However, the only problem they had was that they could not suddenly absorb all the changes in their orders on the 26th. But, we were having problems too. The orders could have been a little better organized and more coherent...

"One thing we did learn, is how critical our relationship before the war was, and how important our liaison effort was during Desert Shield and Desert Storm. I know you will hear a lot about how aggressive special forces were. I think the liaison teams with Arab forces were far more important. They really helped win the war."

### **The Situation at the End of G+2**

By the end of G+2, the VII and XVIII Corps had captured a total of over 13,000 enemy prisoners of war. JFC-N, the I MEF, and JFC-E had reached positions on the edge of Kuwait City, the Marines had won control of the international airport, and Arab forces were preparing to liberate Kuwait. These Coalition advances took place, despite record rainfalls, which created substantial amounts of mud, and severely limited the Coalition's ability to provide air support.

In spite of the operational problems discussed in the previous chapter, Coalition air forces had also flown a record 3,159 sorties. The attack component of these sorties was heavily targeted against the retreating Iraqi forces, but the resulting briefings on the successes of these sorties later backfired on the Coalition. After the war, the strikes on

the Al Jahrah and Basra road (Highway 6) led to reports of the "road of death," and these reports and later TV coverage of the abandon Iraqi vehicles on the road gave the impression of a massive slaughter of Iraqi troops that never took place.

It was now clear that the Coalition faced hard choices regarding conflict termination. Iraq was defeated. It had effectively lost 33 of its 43 divisions in the KTO, although some 70,000-80,000 Iraqi troops had succeeded in fleeing north to Basra. Aside from the Republican Guards, the regular forces near them, and a few pockets of regular Army forces, the Iraqi forces in Kuwait had surrendered or had been destroyed as effective fighting forces. The Tawakalna Division was largely destroyed, which left elements of the Iraqi regular Army 10th Armored Division and the surviving elements of the Republican Guards' Al Madinah Division to try to organize the defense of Basra in positions north of Kuwait. Other Iraqi forces, now isolated to the west of Basra, were forced to flee north across the causeways through the Al Hammar Lake.

The Coalition could still achieve significant strategic results in terms of weakening any future threat from Iraq by destroying the remaining Iraqi Republican Guards, and heavy forces to the south of the Euphrates and Basra, but it could not destroy or entrap the entire Iraqi Army in the KTO without expanding the scope of the war and risking extensive air and land combat in a built-up area. USCENTCOM also faced the problem that it did not have the time and weather conditions to make a comprehensive all-source assessment of the damage it had already done to the Republican Guards and many of the heavy regular army units in the north. It knew that Coalition air and land forces had done severe damage to these Iraqi forces, but no reliable damage assessment was available from G-Day through the end of the war.

In short, the key issue was no longer one of how long or how well the war was fought, but one of why it was fought. If the point was to change the goal for ending the war, the war now needed to be fought accordingly. This meant giving the ground campaign a dramatic new direction, by shifting the Coalition battle plan to advance into the populated areas around Basra, and/or carrying out a plan for an air assault deep in the direction of the Iranian border, and sealing off the escape routes north of Basra. It also meant using Coalition air power to destroy every retreating Iraqi unit, and bombing the Iraqi forces intermingled with built-up areas in Basra.

Any such escalation was clearly a policy-level grand strategic decision. Killing so many more Iraqi soldiers, taking 30,000 to 60,000 more prisoners of war, and advancing into an Iraqi city and/or to positions near the Iranian border was not a decision to be taken by Schwarzkopf or Powell. It was a decision that could only be justified in terms of a concerted effort to make fundamental changes in the postwar political and

military situation in Iraq, and it either had to be taken by President Bush and the other leaders of the Coalition or should not have been taken at all.

## G-Day + 3: February 27, 1991

No such decision was taken. By the beginning of G+3, the Coalition's military objectives had not changed. They were still to complete the liberation of Kuwait without involvement in the populated areas of Iraq, although they did not preclude a new and much larger envelopment of Iraqi forces. The XVIII Corps was developing the option of an air assault on the Iraqi lines of communication north out of Basra. The main thrust of Coalition forces, however, was to attack the remaining elements of the Republican Guards forces, consolidate victory within Kuwait, and maintain pressure on the Iraqi forces fleeing north. These Coalition objectives are illustrated in the force movements shown in Figure 8.12.

Real world logistic, support, and fatigue problems had also become steadily more serious. The XVIII and VII Corps faced growing problems in refueling and replenishing many of their forces, and their lead combat elements had now been advancing for three days. The strain of combat, combined with unanticipated rates of movement and sustainment efforts, coupled with the continuing exploitation of night and limited visibility warfare, put exceptional strain on the men in many of the elements of Coalition forces.

Regardless of any wartime or post-war debates over rates of advance, the fact that the XVIII and VII Corps forces could continue their attacks at all during G+3 is a lesson in the importance of human factors, training, and readiness. It is easy to talk about the advantages provided by superior mobility, sustainability, and high technology systems like thermal vision devices. However, all of these elements of the AirLand battle placed new demands on training, morale, readiness, and every aspect of human factors. If the war seemed Nintendo and Teflon-like from the media, it scarcely did so from the ground and the air.

Figure 8.12

Coalition Advances on G+3 (February 27, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 400.

## **The Advance by XVIII Corps**

The key to the success of the XVIII Corps now became the advance of the 24th Infantry Division (Mechanized) and the 3rd Armored Cavalry Regiment. They were moving east towards Basra in the direction of the Al Hammar lake and towards the positions occupied by the Madinah Armored Division and Nebuchadnezzar and Al Adnan Infantry Divisions of the Republican Guards. In order to carry out this advance, however, the 24th Infantry Division (Mechanized) had to secure its position along the Euphrates River Valley and seize all of the positions around the Tallil Airfield, about 20 miles south of An Nasiriyah, and the Jalibah airfield to the east, near the Hawr Al-Milh lake. As a result, the 1st and 2nd Brigade of the 24th Infantry Division (Mechanized) were tasked with attacking Jalibah, and the 197th Brigade was tasked with attacking Tallil.<sup>174</sup>

Preparing this attack required combat and logistics officers to improvise a major refueling operation on the night of the 26th. The original plan had never called for refueling and forward support to move as quickly, and lead M-1A1 tanks that were now down to 100 gallons in their 500 gallon fuel tanks. This refueling was accomplished at about 2400, on February 26. This type of refueling effort later had led to commentary that the M-1A1 and other heavy tanks placed an impractical fuel burden on logistic support. It would certainly be desirable to have more fuel efficient tanks (and as well as more fuel efficient versions of other weapons), but it is far from clear that this incident demonstrates anything other than the fact that rapid exploitations require added logistic effort and a great deal of improvisation. It is scarcely clear, for example, that the advancing forces would have been better off with the more fuel efficient, but less capable, M-60A3.

The 1st Brigade began the artillery preparation for the next phase of its attack at 0500, resumed its advance in the face of limited Iraqi opposition, and took the Al Jalibah airfield at 1000 -- destroying 14 MiGs left on the airfield. This advance to the east led USCINCENT to adjust the phase lines between the 24th Infantry Division (Mechanized) and the VII Corps to place them between the Tallil airfield and the Ar Rumalia oil fields west of Basra.<sup>175</sup>

At 0100, the 24th Infantry Division (Mechanized) attacked east with two brigades, and the 3rd Armored Cavalry Regiment, leaving the 197th Brigade to clear the Tallil Airfield to the north. In an unusual move, General Luck -- the XVIII Corps Commander -- had placed the 3rd Armored Cavalry Regiment under the operational control of the 24th Infantry Division (Mechanized) at around 2000 the previous night.<sup>176</sup> This helped create a total force of some 800 combat vehicles which was moving almost directly east towards Basra -- along Highway 8 -- on a 50 kilometer long north-south front. This force encountered scattered elements of the al-Faw, Nebuchadnezzar, and Hammurabi

Republican Guard Divisions, defeated or bypassed them, and went on to seize massive Iraqi supply dumps just east of Jalibah. It achieved a sustained advanced rate of nearly 40 miles per hour, and ignored or suppressed Iraqi artillery fire that could not target and shift rapidly enough to keep up with the advancing column. It overran and bypassed some 5,000 Iraqi soldiers and 1,300 ammunition bunkers.

The 24th Infantry Division (Mechanized) then advanced east along Highway 8 to join up with the VII Corps. Throughout the rest of the afternoon and evening of February 27, armor, artillery, and attack helicopters continued to advance, destroying hundreds of Iraqi vehicles trying to redeploy to check the advance, or escape north across the Euphrates.<sup>177</sup>

This advance was extremely successful, but it again revealed problems in the range and reliability of the SINCGARS system when it was not supported by extensive satellite communications. It also presented additional problems in terms of fuel and ammunition because these could not arrive forward until the evening of February 27. Some US supply vehicles were not advanced enough to keep up with the advancing armor, and could only move at a rate of 10-15 miles per hour. As a result, many US forces became involved in a continuing logistics race in those sectors where armor made a rapid advance.<sup>178</sup>

Regardless of these problems, the 24th Infantry Division (Mechanized) and the 3rd Armored Cavalry Regiment continued their preparations for their final advance towards Basra, and the 197th Brigade moved forward from Tallil. Their attack was planned for 0500 on February 28. Their advance was also to be supported by the redeployment of the attack helicopter battalions of the 101st Airborne Division which seized a new forward operating base (Viper) about 200 kilometers east of Cobra.

This assault was another lesson in the ability of air assault forces to extend the depth of the battlefield. Viper was seized by an air assault of the 101st Airborne Division's 2nd Brigade. This assault used 55 CH-47 sorties and 120 UH-60 sorties. After a 45-minute flight from Cobra, it landed a force of more than 500 troops, 60 HMMWVs with TOW, and 18 105 mm howitzers, in the area which was to become Viper. The landing occurred around 0900, and Viper was given sufficient security, fuel, and ammunition to be operational by about 1300. This was anything but easy. In order to supply sustained operations out of Viper, a force of 30 CH-47s was forced to fly five-hour round trips of more than 800 kilometers to bases in Saudi Arabia -- carrying either 2,000 gallons of fuel, or eight tons of munitions -- until land supply began on the night of the 27th.<sup>179</sup>

One key reason for the attack on Viper, and redeployment of the 2nd Brigade, was to prepare for an air assault to the north of Basra in order to seize the bridges to the north along Highway 6, which paralleled the Tigris. Capturing Viper, however, immediately

allowed the XVIII Corps to attack other targets. At 1430, two aviation brigades with 64 AH-64s based in Viper began attacks on a kill box about 145 kilometers to the northeast, directly above Basra. The AH-64s conducted four hours worth of sustained attacks with Hellfires, rockets, and guns. Although burning oil smoke sometimes reduced visibility to less than 1,000 meters, and sometimes to near night warfare conditions -- which would have prevented the attack in an earlier war -- the two AH-64 battalions were able to use thermal sights to attack the Iraqi vehicles fleeing north across the Al Basra causeway. In a few minutes, they destroyed the vehicles on the causeway, and temporarily blocked further movement.<sup>180</sup>

Two other attack helicopter battalions flew further north across the Al Hammar lake, and attacked Iraqi forces that had already crossed the causeway. These attacks destroyed an estimated 14 APCs, eight multiple rocket launchers, 4 helicopters, 56 trucks, and two SA-6 radars. The attack did not encounter any Iraqi tanks, and this raised the issue of whether the tanks had already moved north, or were remaining near Basra. U-2 and Satellite imagery later showed that large numbers of Iraqi armored vehicles were still in Basra on March 2.<sup>181</sup>

These attack helicopter assaults significantly reduced the ability of Iraqi forces to use the northern escape route to the west of Basra, and trapped advancing Iraqi forces between the 24th Infantry Division (Mechanized), the VII Corps, and the Euphrates. By flying low over an area that no longer had cohesive air defense, the AH-64s were now able to patrol an area of 160 by 380 kilometers.

That evening, the 101st Airborne Division prepared its 1st Brigade for an air assault into the area north of Basra that had been attacked by the AH-64s operating out of Viper. This assault was planned to establish a blocking position on the last exit out of the KTO and complete the double development. It was planned to begin at 0500 on February 28, but was delayed and then canceled when the XVIII Corps received the first indications of a ceasefire at 0145, on the morning of February 28.<sup>182</sup>

### **The VII Corps Advance<sup>183</sup>**

At dawn on G+3, the VII Corps continued to thrust east through heavy morning fog and begin a massive coordinated Corps-sized AirLand attack on the remainder of the Tawakalna Division, the Al Madinah Division, and the Hammurabi Division. The position of the key Iraqi forces in the path of the XVIII Corps and the VII Corps advance is shown in Figure 8.13.

The fog lifted as the morning continued, but heavy cloud cover continued. This restricted close air support, although missions continued to be flown under a ceiling of 3,000 feet. The 1st Cavalry Division, which had arrived in the forward area, attacked to the

north where it could help prevent Iraqi forces from escaping, and the 1st and 3rd Armored Divisions attacked eastward from the northern part of the Corps sector. The 1st Infantry (Mechanized) Division completed a night passage through the 2nd Armored Cavalry Regiment's position and immediately attacked the Iraqi forces.

These armored attacks were coordinated so that artillery and AH-64s hit the Iraqi positions the armored forces were closing on, while close air support aircraft attacked the next set of Iraqi positions behind them. To the south, the 2nd Armored Cavalry Regiment and the British 1st Armored Division advanced along the southern part of the corps sector.

The 1st Armored Division was moving into an area where it was to engage a mixed group of Iraqis from the Madinah Division's 14th Mechanized Brigade, the 12 Armored Division's 46th Armored Brigade, and remnants of the 10th Armored Divisions, plus elements of the Iraqi 52nd, 17th, 12th, and 10th Divisions which had been fleeing north and which were used to reinforce the Madinah Division.

The 1st Armored Division conducted a massive armored attack on the Republican Guards forces at first light. It pulled back its Bradley scouts and advanced in a three brigade front with all of its 350 M-1A1s deployed forward. Progress was moderate. The division fought its way through part of a brigade of the Adnan Division, through moderately defended Iraqi training and logistics facilities, and came up against a major Iraqi T-72 tank force from the 2nd Brigade of the Madinah Division.

This Iraqi force was in a good defensive position on a high ground to the east -- that came to be called "Madinah Ridge." The Iraqi T-72s were deployed hull down, and camouflaged on a reverse slope. The Iraqi forces were deployed in two parallel lines of T-72s and BMPs, spaced about 100 to 150 meters apart, and running northeast to southeast. They were well camouflaged, and had extensive anti-aircraft guns.<sup>184</sup>

The Iraqis planned to surprise advancing US armor, and then turn the Wadi below the ridge into a killing zone using tanks and artillery. This ambush might have worked in previous wars, but the M-1A1s detected the Iraqi T-72s at ranges in excess of 3,000 meters with their thermal sights. The US tank forces, which had never previously trained at ranges beyond 2,400 meters, engaged the Iraqi tanks at 2,800 to 3,000 meters -- well beyond the effective range of the T-72s. For nearly 15 minutes, four battalions of the US M-1A1s of the US 1st Armored Division -- stretched out of a front of nearly 10 kilometers -- fired nearly as quickly as their guns permitted, while Bradley's used their TOWs and 25mm guns. The 6-6 Infantry and three tank battalions of the 1st Armored Division's second Brigade, and the 4-6 Armor of its 1st Brigade on their right, played a critical in a battle that became the largest armored killing ground of the Gulf War.<sup>185</sup>

AH-64s with Hellfires and artillery were called in to provide support. Elsewhere on the battlefield, elements of the 1st Armored Division closed to within 800 meters of the Iraqi force -- relying on superior training and fire control systems to out-engage Iraqi armor. This fight expanded to include elements of the Iraqi 10th Armored Division by 1100, and infantry battles between the Bradleys with 25mm guns and TOWs, and Iraqi BMPs and infantry in trenches.

Once again, superior US training and fire control systems provided a decisive advantage in rates of engagement, while the superior armor on US tanks was able to defeat Iraqi anti-armored weapons. At least one Iraqi T-72 was destroyed in close fighting with a Bradley, and one M-1A1 killed four successive T-72s in an engagement at less than 400 meters.<sup>186</sup> A-10s provided air support as well as the AH-64s. One A-10 was lost to ZSU-23-4 anti-aircraft guns, but tanks could locate these weapons by their distinctive firing pattern, and then suppress them.

The US forces were aided by the fact that Iraqi artillery was either too slow to engage US forces or simply fired repeatedly at predetermined positions. This gave the 1st Armored Division time to reposition its counterbattery radars and prepare its MLRS fire units to suppress the Iraqi 122mm guns. However, the 1st Armored Division's artillery still took nearly 40 minutes to reply to the Iraqi fire because of communications and coordination problems in firing at a position that was in the XVIII Corps zone. The US Army was far from the "electronic battlefield," but when it did reply, it rapidly suppressed one battery and then continued firing. By 1400, the MLRS fire units had destroyed or suppressed four Iraqi artillery battalions and during that day the 1st Armored Division's counterbattery fire destroyed at least 72 Iraqi guns.<sup>187</sup>

A combination of AH-64s, A-10s, F-16s, and artillery continued to fire at the Madinah Division for two hours. This air support continued despite burning oil clouds and uncertain visibility. By 1500, the Iraqi forward defenses were suppressed, and US armor rolled over the remaining forward elements of the Madinah Division. The attack was largely over by 1630. The 1st Armored Division had destroyed over 300 Iraqi armored vehicles and had lost only one American killed in combat and one due to fratricide. At 1700, it received orders to resume its advance.<sup>188</sup>

The battle did, however, delay a complex set of VII Corps maneuvers. The 1st Cavalry Division had been scheduled pass around the 1st Armored Division and to link up with the 24th Mechanized Infantry Division during the morning, but this move was delayed until 2100, when the VII Corps became able to deploy the 2nd Armored Cavalry Regiment and the five full divisions against the Republican Guards. It also left the 1st Armored

Division short of fuel. Two logistic convoys had to be improvised to rush in fuel from the 3rd Armored Division reserve and from VII Corps depots in Saudi Arabia.<sup>189</sup>

When the battle of Madinah Ridge was going on, the 1st Infantry (Mechanized) Division defeated the Iraqi 37th Armored Brigade and advanced to the east in an effort to cut the Kuwait City Basra Highway. One of the division's armored cavalry units succeeded in crossing the highway at 1630, completing part of the "double envelopment." However, by this time it was nearly 25 kilometers in advance of the main force, and night had fallen. To avoid any risk of fratricide, the 1st Infantry (Mechanized) Division halted its movement, and the armored cavalry unit took up a blocking position on the highway. In spite of its isolation from the main body of the division, it took more than 1,000 prisoners during the night.<sup>190</sup>

The 3rd Armored Division, which had broken through the Tawakalna Division, overran the division's artillery positions, and the remaining elements of the Iraqi 10th and 12th Armored divisions, and drove towards the east. Its advance was led by two battalions of AH-64s. It began to take more prisoners, and found an entire battalion of equipment abandoned in its path, with engines and radios running.<sup>191</sup>

During this advance, the 3rd Brigade of the 3rd Armored Division moved through the position of the 2nd Brigade, "conducting a passage of lines while in contact with the enemy," to successfully attack the Iraqi 12th Armored Division. It drove through its defenses, and broke into Kuwait. The kind of realistic maneuver training the US Army had stressed at Fort Irwin -- and the use of GPS receivers -- greatly helped in coordinating such movements and in reducing fratricide.<sup>192</sup>

The 3rd Armored Division reached its forward advance line for the day at 2030. This did not, however, halt its activities. Late on the evening of the 27th, the 3rd Armored Division used AH-64 helicopters to successfully attack the rear of the Iraqi 10th Armored Division, in spite of poor visibility and weather. These attacks behind the Iraqi forward lines broke up the Iraqi defense and forced units under attack to abandon much of their equipment. At the same time, the 1st and 3rd Brigades of the 3rd Armored Division -- supported by artillery and the MLRS -- forced the Iraqi defending forces to retreat into what now were disorganized rear elements, and completed the rout of the 10th Armored Division. This again demonstrated the value of the AirLand battle and the value of attack helicopters under conditions where few fixed wing aircraft could operate.<sup>193</sup>

The Coalition command had problems in deciding on the line of advance that British forces should take once they reached the edge of the Wadi al-Batin. By the evening of February 26, the British 1st Armored Division was in position to drive up the Wadi al-Batin against the Republican Guards in parallel with the 1st US Infantry (Mechanized

Division. It could also drive east to the coast and establish another blocking position across the roads to Basra, and create a supply line from the south along the Wadi al-Batin.

The VII Corps originally wanted the British 1st Armored Division to move north along the Wadi al-Batin towards the Republican Guards, but it was increasingly unclear whether the British forces could commit to such a battle in time to be effective. The British commander, General Sir Peter de la Billiere also stated that a major incident with fratricide from A-10s the previous day -- and fratricide problems between the armored vehicles in the British and US forces -- convinced the British and US commanders that an advance against the Republican Guards was too risky to improvise in a battle that was already won. As a result, the orders to the British commander were changed several times during the night -- delaying the British advance -- and uncertainties over the timing of the coming ceasefire then interfered further with British operations.<sup>194</sup>

British forces were finally ordered to advance into Kuwait at about 0800, reached the Wadi al-Batin at 0930, and moved towards a position about 30 kilometers inside the country.<sup>195</sup> The 7th Armored Brigade of the British 1st Armored Division attacked due east across the Wadi Al-Batin, and the IPSA pipeline into Kuwait, and overran elements of three Iraqi infantry divisions. Soldiers in the British forces described resistance as slight, with few Iraqi defensive positions, and with scattered combat equipment that had already been destroyed from the air.

British forces reached their main objective in Kuwait, Objective Varsity, during the course of the day. British forces had reached a point in two days that British commanders had originally estimated would take four to 10 days. They had advanced continuously for three days and nights, and as their commander said, "the main difficulty was now exhaustion. Men were gray faced after three days and nights with almost no sleep, and...their facilities were much reduced." <sup>196</sup> The British 1st Armored Division then waited for a new decision as to where it should advance.

By the evening of G+3 (February 27), the British force was in position to advance in three possible directions: To drive north towards the Republican Guards, advance to the coast, or clear the Wadi al-Batin to the south to link up to the Tapline road and create a new main logistic supply line. Uncertainties over the timing of the coming cease-fire were making a decision more and more time sensitive, but Iraqi forces were now collapsing so quickly that it was difficult to decide on the proper line of British advance. British forces were given orders to clear the Wadi al-Batin at 1930, which was countermanded at 2030 because it became clear that a new logistic route could not function before the war over. As a result, the British forces were ordered to drive to the east, and the British commander gave the order to prepare for this attack at 2230.<sup>197</sup>

The VII Corps achieved a great deal during G+3.<sup>198</sup> The VII Corps had defeated major elements of five Iraqi divisions: The Madinah, Tawakalna, the 10th Armored, the 12th Armored, and the 52nd Armored, the only heavy Republican Guards Division that retained most of its effective fighting strength was the Hammurabi Division. The surviving elements of the infantry divisions that had been located along the Saudi border on the southern flank of VII Corps had largely been taken prisoner.<sup>199</sup>

Figure 8.13

Key Iraqi Positions on G+3 (February 27, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 401.

## **The Advance of Joint Forces Command - North**

The Egyptian Corps closed on Ali As-Salim Airfield, and the Saudi 4th Armored Brigade and Kuwaiti Ash-Shahid Brigade secured their objective. After some delays caused by the sudden and unilateral decision of Kuwait's Emir that Kuwait forces should liberate Kuwait City, a brigade sized force entered the city and began to secure its western area. The Syrian Division remained in support, "securing" JFC-N's lines of communication.

After some negotiation, and clearance of the Egyptian advance by President Mubarak, Kuwaiti forces led the advance into a formally liberated Kuwait at 0900. They were followed by Egyptian forces, and the various Arab forces were then given separate roles in securing the city. They entered a stripped city with limited water and power. Everything from the ports to museums and stores to the zoo had been looted. Up to 1,000 Kuwaitis were missing, and the sky was filled with the smoke from burning oil wells. The 200,000 Kuwaitis who had remained in the country began a liberation celebration that was to last for days.

This Kuwaiti decision to have only Kuwait forces lead the liberation of Kuwait City, which was taken from far to the rear, did more to alienate other Arab states than convince the world and Kuwaiti public opinion that Kuwaiti forces had accomplished the liberation. The Kuwaiti decision irritated Egypt, Saudi Arabia, Qatar, the UAE, and other Arab states because the Kuwaiti description described other Arab forces as "friendly", rather than as "brothers"<sup>200</sup>

It also ignored the fact that the Kuwaitis in Kuwait City were not waiting for a formal liberation. Twelve US Marines from the 2nd Force Reconnaissance Company had already infiltrated into Kuwait City, and had somewhat inadvertently triggered a liberation celebration that lasted for days. A Marine Corps officer working with the Kuwait resistance had the same experience in Al Jahrah, and found himself the guest of honor at a Liberation dinner. US special forces also conducted a early liberation by entering the US Embassy and working with Kuwaiti liberation forces to clear key buildings. while US Navy Special Warfare units seized the Iraqi headquarters in the former Kuwaiti Police Headquarters.<sup>201</sup>

## **The Advance of the I MEF**

The 2nd Marine Division and Tiger Brigade consolidated their position in Al Jahrah and on the Mutla Ridge and maintained liaison with JFC-North. At 0500, the Tiger Brigade established contact with the advancing Egyptian forces, and 0900, the Arab forces in JFC-N passed through the 2nd Marine Division's position and advanced towards Kuwait City. The 2nd Marine Division remained on the Mutla Ridge until the offensive halted at 0800 the next day.<sup>202</sup> The 1st Marine Division cleaned up the last pockets of resistance at Kuwait

Airport consolidated its position, and linked up with the JFC-E forces advancing along the coast. It coordinated JFC-East's passage of lines through its position into Kuwait City.<sup>203</sup>

The 3rd Marine Air Wing shifted its AH-1W attack helicopters and attack aircraft north, along the main highway from Kuwait City to Basra. It flew over 200 sorties, but had to reduce its activity in the afternoon because more of the Iraqi forces moving north along the highway north were now waving white flags. In addition, AV-8Bs, flying from the USS Nassau, conducted attack missions, and CH-46Es flew supplies to the I MEF from the amphibious task force, while transporting Iraqi POWs back to the fleet.

### **The Advance of Joint Forces Command - East**

The JFC-E secured its final objectives south of Kuwait City, and forward elements moved into the city and linked up with JFC-N. The JFC-E forces began to occupy the eastern part of the city and helped complete the liberation of Kuwait.

### **The Situation at the End of G+3**

General Schwarzkopf and General Powell had begun to discuss ending the war during the early afternoon (Gulf time) of G+3. According to the descriptions of this discussion that have so far been made public, it seems that the ARCENT commander, General Yeosock, advocated continuing the land battle until it produced a more decisive result, while Powell advocated recommending that the war be ended because it had effectively achieved the UN's original objectives and additional killing might produce a negative political backlash.<sup>204</sup>

Schwarzkopf says in his memoirs that Powell called at 2230 local Gulf time from the White House, and stated that President Bush's advisors and the British and French political leaders were increasingly concerned with the level of destruction in Iraqi forces, and asked if Schwarzkopf objected to the ending of the war. Schwarzkopf stated that he agreed to recommending that President Bush announce a cessation of hostilities at 0500 on G+4, although this only gave 6 1/2 hours of warning, and that he immediately called his major commanders. He also stated that Powell called a few hours later to indicate that the war would end at 0800 local time to create a "100 hour" land offensive.<sup>205</sup>

It is clear that Schwarzkopf and USCENTCOM fully understood at this point in time that the Coalition could not seal off the theater or enforce terms that required Iraqi troops to leave their equipment in the KTO. At the same time, the USCENTCOM daily intelligence summary for February 27 had stated that, "the Republican Guards are encircled...have few options other than surrender or destruction."<sup>206</sup>

USCENTCOM intelligence seems to have confused defeating elements of various Republican Guards divisions and brigades with destroying or surrounding the entire formation. As Chapters Five and Seven have discussed, it also sharply overestimated the

damage it had done to Iraq's first line equipment -- particularly to the holdings of the Republican Guards.<sup>207</sup> It is not clear how much these over-estimates of damage influenced USCENTCOM or Washington, however, Schwarzkopf stated that he informed General Powell of the Coalition's inability to keep Iraq's forces from retreating with some of their equipment, and the White House accepted this as a reality in deciding to cease hostilities.<sup>208</sup>

As a result of these discussions, President Bush decided to end offensive operations at 0800 on G+4. Kuwait City was liberated. Iraq no longer had any combat effective forces in Kuwait, and its Republican Guard Forces Command and the key heavy regular divisions in Iraq seemed to be shattered.

## G+4: February 28, 1991

President Bush's decision to end the offensive at 0800 put heavy pressure on USCENTCOM to achieve as much as possible before the cease-fire, and Coalition forces continued their attack to destroy the Republican Guards throughout the early morning of February 28. The final positions of Coalition forces are shown in Figure 8.14.

Figure 8.14

Coalition Advances on G+4 (February 28, 1991)

Source: Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 408.

### **Final Advances by the XVIII Corps**

By 0800, the XVIII Corps had completed its advance, cut off key lines of Iraqi retreat, and had played a major role in breaking up the Republican Guards Forces Command. The 24th Mechanized Infantry Division and the 3rd Armored Cavalry Regiment continued to advance and attack the retreating Iraqi forces west of Basra until 0800.<sup>209</sup> The 82nd Airborne Division cleared the objectives in its area, and the 101st Airborne Division continued operations along Highway 8, interdicted the north road to Basra, and secured its forward operating bases at Cobra and Viper. When operations ended, the 24th Mechanized Infantry Division was 30 miles from Basra and no longer faced any effective opposition. It then took up defensive positions and halted operations.

### **Final Advances by the VII Corps<sup>210</sup>**

On the night of February 27, the VII Corps commander was initially told that the cease-fire would occur as of 0500. As a result, he planned to complete the double envelopment of the Iraqi forces in his area at 0500, with the 1st Cavalry Division advancing to the north and the 1st Infantry (Mechanized) Division advancing to the south. The 1st and 3rd Armored Division were to press forward in their zones, as was the British

1st Armored Division. These plans were never completed because new orders came at 0200 that the cease-fire would now take place at 0800.<sup>211</sup> As a result, the VII Corps was suddenly given the order to resume the attack with full intensity and continue until 0800.

These shifting orders disrupted a planned attack by the AH-64s of the 11th Aviation Brigade, which were supposed to attack Safwan, and the attack was held back while the new ground force attack plan was implemented. The VII Corps also experienced communications problems with the commander of the 1st Infantry (Mechanized) Division, who was in a tank, which delayed the beginning of what was supposed to be a combined attack by the 1st Infantry (Mechanized) Division and the 11th Aviation Brigade on Safwan. While the VII Corps issued a new attack order at 0400, the order to attack Safwan did not reach the 1st Infantry (Mechanized) Division, which later led to a situation where General Schwarzkopf believed that the VII Corps had taken Safwan, when actually it had not.

The full VII Corps attack began at 0600, with a 45 minute artillery, MLRS, and attack helicopter attack in preparation for the new advance. All units were advancing by 0615, but reports of a unit receiving fratricide then halted movement between 0645 and 0705. This order ensured that the 1st Infantry (Mechanized) Division would have had no chance of reaching Safwan even if the order to take the town had been properly

communicated. AH-64s flew over the area, but found few Iraqi vehicles and soldiers to attack.

The 1st Armored Division encountered Iraqi forces during its attack, and killed 100 more Iraqi armored vehicles. The 3rd Armored Division deployed to the east, and the British 1st Armored Division reached the coast. At this point, a temporary cease-fire was declared at 0723, and further action halted.<sup>212</sup> The VII Corps had moved 330 kilometers deep into the heart of Iraq, and that succeeded in cutting off the Iraqi route of withdrawal along the Euphrates River Valley.<sup>213</sup>

The VII Corps also continued to attack Iraqi forces until 0800. The 1st Armored Division attacked forward and secured Objective Bonn south of the position of the 24th Mechanized Infantry Division. The 3rd Armored Division continued its attack and destroyed 250 more Iraqi vehicles in the fighting, and continued pursuing the enemy along its line of advance until 0800.<sup>214</sup>

The British 1st Armored Division, which had only been cleared by the VII Corps to cross the Wadi al-Batin at 1930 on February 27, began to attack to the east at 0600 on the morning of February 28, encountering only limited Iraqi resistance. Led by the 7th Armored Brigade, it became involved in a race to the east at 40 kilometers per hour -- with some Warriors driving forward at 70 kilometers per hour -- trying to best the 0800 deadline. It attacked through rough country, and Iraqi berms and minefields, and managed to cut the Basra road (Highway 6) before 0800. By now it had moved 290 kilometers and attacked for 97 hours, 54 of which were in contact with the enemy. It had destroyed an estimated 60 Iraqi tanks, 90 armored fighting vehicles, and 37 artillery weapons, and had taken 5,000 prisoners of war. Its only killed in combat were the nine men that it had lost to US A-10s.<sup>215</sup>

At 0800, the VII Corps began to establish blocking positions to ensure that no remaining remnants of Iraqi forces could escape the area. The 1st Armored Division, the 1st Infantry (Mechanized) Division, 1st Cavalry Division, 3rd Armored Division, and 2nd Armored Cavalry Regiment established an East-West line between Al Jahrah and Basra. While later analysis produced lower figures, the VII Corps estimated that it had captured nearly 22,000 Iraqi prisoners of war, and decisively defeated a total of more than 12 Iraqi divisions, and reported destroying 1,300 tanks, 1,200 other armored fighting vehicles, 285 artillery pieces, and 100 air defense systems.<sup>216</sup> It accomplished this with remarkably small casualties and losses of equipment. The US 1st Armored Division, for example, had lost only 4 killed in action and 53 wounded in action. It had lost a total of 4 M-1A1s, 2 M-3A2s, 1 M-113A2, 2 AH-64s, 1 HEMMT fueler, 4 HUMMWVs, and 1 CUCV.<sup>217</sup>

The VII Corps then shifted to humanitarian missions. It provided over 1 million meals, treated some 30,000 Iraqi civilians in military health facilities, and reopened the school and clinic in Safwan. It also protected some 12,000 Iraqi refugees, set up a camp for 30,000 refugees north of Rafah, and provided transportation for Iraqis who wished to leave Iraq.<sup>218</sup>

### **Final Advances by Joint Forces Command - North**

JFC-N ceased offensive operations. Egyptian Rangers secured the Egyptian Embassy in Kuwait City, the 3rd Egyptian Mechanized Division screened the north from its position at Al-Abraq, and elements of the Egyptian 4th Armored Division began to clear the western part of Kuwait City.

### **Final Advances by the I MEF**

The I MEF remained in position outside Kuwait City. While the 6th and 8th Marines of the 2nd Marine Division had worked with the Kuwaiti resistance to attack into Al Jahrah, seize the key bases in the area, and secure the northern road, this attack did not prove necessary. The 1st Marine Division secured its position.<sup>219</sup>

The I MEF assisted the passage of JFC-N and JFC-E forces into Kuwait City, having lost 14 killed plus 48 wounded. It had lost six fixed wing aircraft and three helicopters. It had taken more than 20,000 Iraqi prisoners, and estimated that it had destroyed 1,040 Iraqi tanks, 432 artillery weapons, and 608 armored personnel carriers. While these estimates later proved to be somewhat exaggerated, it was clear that the I MEF had been extremely effective.<sup>220</sup>

The 3rd Marine Air Wing was ordered to stand down from combat operations. It now began to provide supplies and logistics to forward units while maintaining defensive combat air patrols over the I MEF sector. By the time it stood down, it had flown 9,659 sorties in support of the I MEF and Coalition forces. Some 8,910 of these sorties were in support of the ground force offensive.

### **Final Advances by Joint Forces Command - East**

JFC-E also ceased offensive operations. It consolidated its position south of the Seventh Ring Road in Kuwait City, and Saudi special forces secured the Saudi Embassy. A battalion sized task force entered Kuwait City, and remained near the 6th Ring Road. Royal Saudi Marines occupied Mina As Saud. Other JFC-E cleared the area of Iraqi stragglers.

### **The Situation at the End of G+4**

During the brief period between the President's announcement and the cease-fire, the XVIII corps had moved close to Basra. The US VII Corps had attacked all but one of the heavy Republican Guard divisions still in the theater. British and US Army forces

had completed the liberation of northern Kuwait. Saudi and other Arab forces had liberated Kuwait City, and US Marine forces had secured the southern and western outskirts of Kuwait city. At 0800 hours, just one hundred hours after the start of the ground campaign, a cease fire was ordered. The war ended with the total defeat of Iraq's forces in the south. The Coalition had secured the entire Western theater of operations south of the Euphrates River and an area of Iraq West and north of Kuwait larger than the state of New Jersey.

As was the case at the end of G+2 and G+3, the situation at G+4 raised interesting "might have beens." Much of the escaping Iraqi armor might have been attacked the day before if the XVIII and VII Corps had been able to maintain a continuous front, or if the AH-64s had been allowed to range freely over the battlefield - - rather than be restricted to given areas by the ATO. Even by February 27, the AH-64s were having trouble finding targets south of the Basra area and the zones restricted to fixed-wing aircraft. The decision not to extend the war and allow the 101st to carry out an air assault and seize a blocking position north of Basra on the 28th also helped some Iraqi forces to escape. So did the decisions to not pursue Iraqi forces into the Basra area and to not use air power to attack the Iraqi forces in the area.

Again, however, one must be cautious about just how much any of these measures would really have accomplished by G+4, or even thereafter. Air power did not prove capable of sealing off the 20 odd bridges and causeways out of the KTO. As has been discussed in Chapter Seven, the US model for analyzing Iraqi LOCs was oversimplified, and underestimated the options open to Iraqi forces, and the weather did not always permit timely and effective attack. A few days of additional air attacks would probably not have produced massive amounts of additional Iraqi losses.

Although it was not known to Coalition commanders at the time, some elements of the Republican Guards Forces Command had begun to move north out of the KTO as early as February 26, and certainly during February 27. The Republican Guards Forces Command had fully admitted defeat by midnight on February 27, 1991, and had ordered the rest of the Republican Guards to retreat north to take up positions to defend Iraq. Many of the forces that were not directly in the path of the XVIII and VII Corps escaped, with the exception of the Hammurabi Division which was trapped by the 24th Infantry Division (Mechanized) and then engaged on March 2. The fight on the causeway had cost the Hammurabi Division the equivalent of about one full brigade, the Tawakalna Division was hurt so badly that it later had to be disbanded, and the 5th Mechanized Division later surrendered en masse to the Kurds in northern Iraq.<sup>221</sup> In spite of these

defeats, however, about one-third of the tanks and heavy armor of the RGFC and regular forces command escaped into the area around Basra and into the north.

Simply extending the land battle by a day or two might also have had a limited strategic impact. Satellite imagery found that large armored and mechanized elements of the Republican Guards were 100 kilometers north of Basra as early as March 1, 1991. These Iraqi forces had retreated in order, and had halted in dispersed positions where many were in revetments. While it is easy to talk about closing the trap on February 28, many of these elements of the Republican Guards had to have begun moving through Basra early on February 27, if not as early as February 26. Any further bombing or blocking efforts that did not go far north of Basra might well have failed to achieve additional strategic or grand strategic result. While an air assault by the 101st could have taken up a key blocking position on the roads north of Basra, many of the Guards would have escaped.

Discussions about sealing off the area also tend to focus on the bridges and routes that existed in peace time, and ignore the fact that the Iraqi forces in the theater had massive engineering resources to bypass or patch bridges and causeways, and use earthmovers to create temporary causeways across shallow rivers and lakes. Further, the Iraqis were have found to have prepositioned large numbers of barges, pontoons, and extension bridges in the area, and were used to help major elements of the Republican Guards move as far north as Amara, some 200 kilometers away from their original positions in the KTO.<sup>222</sup>

## G-Day +5 and Beyond

There were two incidents which broke the cease-fire after 0800 on February 28. One was minor. At 20:00 on February 28, 1991, Iraqi soldiers riding in a school bus fired on US soldiers manning a checkpoint. The US guards returned fire, killing six enemy soldiers and wounding six. There were no US casualties. The other fight was far more serious.

### **The Battle With the Hammurabi Division**

At the time the fighting ceased, the 24th Mechanized Infantry Division had halted only about two kilometers from the positions of the Hammurabi Division, which was still largely intact. The reconnaissance elements of the 24th Mechanized Infantry Division also covered the main road north that the Hammurabi Division had to move north into Iraq. During the next two days, these US forces came under scattered fire from the Hammurabi Division, but these incidents were viewed as minor incidents until

March 2, when US scouts came under fire from Iraqi RPGs and anti-tank fire. A brief clash followed and the scouts captured an Iraqi infantry squad.<sup>223</sup>

At 0420 on the morning of March 2, the Hammurabi Division began a full scale movement towards the north. More than 200 Iraqi T-72s and BMPs attacked towards the 1st Brigade of the US 24th Mechanized Infantry Division, striking towards a repaired section of the causeway across the Hawr al Hammer that the Iraqis had quietly bulldozed the day before. This advance seemed to have been triggered by the uprisings in southern Iraq and an order to advance to support Saddam Hussein and the Ba'ath government against Shi'ite rebels.

The Iraqi action created a nearly perfect killing ground. The Iraqi column was fleeing north towards a narrow 2.5 kilometer long causeway that could be interdicted with mines by the MLRS and then attacked by AH-64s. The 24th Mechanized Infantry Division used three M-109A1 155mm artillery battalions and an MLRS battery to fire scatterable mines and improved conventional munitions in the path of the advancing Hammurabi Division and over the causeway.

The Hammurabi Division then split into different elements. Some fled west on Highway 8, where they were attacked and destroyed by the 1st Brigade of the 24th Mechanized Infantry Division.<sup>224</sup> Others fled south and were destroyed by artillery. This left about 200 armored vehicles which had not been engaged, plus another 200 armored vehicles north of the causeway which were already safely across the Euphrates. At 0900, the 18 AH-64s in the 24th Mechanized Infantry Division engaged the Iraqi armor, which had stalled along a 15 kilometer stretch of road, and attacked them with 107 Hellfires. At the same time, the M-1A1s of the 1st Brigade attacked up the road from the south and drove north along the Iraqi column.<sup>225</sup>

By the end of these engagements, the Hammurabi Division had lost over 185 armored vehicles, 400 trucks, and 34 artillery pieces -- many abandoned, rather than hit while their crews were in them -- and hundreds of Iraqis had been taken prisoner. The US then broke off the action and allowed roughly 40 Iraqi armored vehicles and 200 wheeled vehicles to move towards Basra.<sup>226</sup>

This battle effectively ended the war, although one more incident arose because Schwarzkopf still believed that the 1st Infantry (Mechanized) Division had fully occupied the area around Safwan, while it had only sent helicopter patrols into the area.<sup>227</sup> This led Schwarzkopf to order the seizure of the Safwan air strip and Safwan mountain on G+4. At this point, the main road junction near Safwan was still occupied by elements of the Republican Guards, and the Iraqi commander refused to withdraw. After consulting with Powell, Schwarzkopf gave the Iraqis an ultimatum, and the 1st

Infantry (Mechanized) Division sent forward a force of 50 tanks and Bradleys, and began to circle the area with AH-64s. The Iraqis then withdrew without a fight.<sup>228</sup>

### **The Incident at Safwan and Uncertain Terms For Ending the Conflict**

At 1100 on March 3, the USCENTCOM Commander arrived at Safwan, without any senior civilian, and met with the Iraqi military leadership to discuss proposed terms of reference for the military aspects of the cease-fire between Coalition and Iraqi forces. Washington had failed to draft cohesive or detailed terms to use in the preliminary negotiations -- which Russia was conducting with Iraq -- until March 1, 1991. As a result, the terms were never fully reviewed with either USCENTCOM or the other national commands before they were negotiated in Safwan -- another lesson in the need to make conflict termination a basic aim of war, before a war is won.<sup>229</sup>

When the discussions were held at Safwan, no effort was made to consider the developing political upheavals in Iraq. The talks focused on arrangements for the immediate release of all prisoners of war, the exchange of information on personnel carried as missing-in-action, the location of remains of Iraqi military personnel, minefields, and NBC storage sites. The land offensive and the war had come to an end. Throughout the cease-fire period, Coalition forces continued defensive and security operations with an emphasis on force protection, clearing enemy personnel, and destroying or evacuating captured enemy equipment. The orders beginning the withdrawal of the Coalition force had, however, begun to be issued on March 2.<sup>230</sup>

The ARCENT alone withdrew 541,429 soldiers from March 2, 1991 to January 2, 1992. Up to 5,000 soldiers per day left Saudi Arabia, and a total of 2,500 aircraft and 420 ships moved 1,928,000 tons of equipment back to Europe and Saudi Arabia. Meanwhile, the Coalition forces in the theater shifted their mission to the relief and protection of Kurdish refugees in the north of Iraq and peace enforcement. The USAF began to airlift supplies on March 5, and a Coalition ground force was deployed as part of Operation Provide Comfort on April 18. A Kurdish security zone was set up to protect the Kurds on April 19.

## **The Impact of the Gulf War on the Iraqi Army**

All victory is relative, and it would have taken a much longer and bloodier war to totally defeat or destroy Iraq's land forces. The Iraqi Army suffered massive losses during the Gulf War, although the previous chapters have already shown that experts differ sharply about how many Iraqis died during the Gulf War, how much equipment and munitions were destroyed or lost during the air and ground offensive phases of the

war, and how many Iraqi combat units lost cohesion or combat effectiveness at any given time.

Just after the war, USCENTCOM estimated that Coalition forces had virtually shattered more than fifteen Iraqi divisions, and only 5-7 of 43 Iraqi divisions were still capable of offensive operations. It estimated that the Coalition had captured 86,000 Iraqi prisoners, 64,000 of which were taken by US forces.<sup>231</sup>

The Department of Defense estimated after the war that 10 Iraqi infantry divisions, one armored division, and one mechanized division had been reduced from zero to 25% of their combat strength. Six more infantry, two mechanized, and four armored divisions had been reduced to 25-50% of their combat strength. Six infantry, two mechanized, and one armored division had been reduced to 50-75% of their combat strength, and five infantry divisions, one special forces division, one mechanized, and two armored divisions retained 75-100% of their combat strength.<sup>232</sup>

These broad estimates of the impact of the war on Iraqi forces in the KTO are probably correct. As has been discussed in Chapter Seven, the key differences exist in US Government estimates based on ongoing after-action analysis of intelligence and damage assessment data, and are reflected in Table 8.6 The estimates based on imagery are probably the most correct, and they indicated that the Iraqi forces in the KTO lost 76% of their tanks, 54% of their APCs, and 90% of their artillery. At the same time, the Gulf War Air Power Survey indicates that US intelligence concluded that the Republican Guards units only lost 50% of their weapons in these categories in spite of both the air campaign and AirLand battle.<sup>233</sup> According to one report, sharp differences existed between USCENTCOM's original estimate of the Republican Guard's losses as of February 23 and those based on imagery which CIA began to issue on February 24. This source indicates that USCENTCOM estimated the Guard lost 388 tanks and the CIA estimated 166, that USCENTCOM estimated 142 APCs were lost and CIA estimated 203.<sup>234</sup>

Table 8.6

The Impact of Coalition Air and Land Forces on Iraqi Equipment Strength  
At the Time of the Cease-Fire

	<u>Tanks</u>	<u>APCs</u>	<u>Artillery</u>
Total in KTO on January 16, 1991, at start of Air Campaign (Imagery)	3,475	3,080	2,474
Total left at beginning of the land campaign	2,087	2,151	1,322
Total destroyed or abandoned during the during land campaign (USCENTCOM estimate)	2,159	521	1,465
Destroyed by air	(451)	(224)	(353)
Destroyed by land or abandoned	(1,708)	(297)	(1,112)
Total destroyed or abandoned during the during land campaign (Imagery Based)	1,245	739	1,044
Total destroyed during air campaign and land offensive (Imagery Based)	2,633	1,668	2,196
Still in Iraqi Control on March 1, 1991 (Imagery)	842	1,412	279

Source: Adapted by the author from Eliot Cohen, ed., Gulf War Air Power Survey, Volume II, Section II, pp. 259-261.

It is important to understand that these estimates only include the Iraqi forces in the KTO, and not the entire Iraqi Army -- much of which had never entered the KTO. Even so, such estimates indicate that Iraq's total national army emerged from the Gulf War with as little as 25% to 33% of its prewar total national division strength fully operational, with only about 20% of its heavy armored and mechanized brigade strength combat effective, and with only 20% to 25% of its total manpower under full government control. In terms of equipment losses, some experts feel that Iraq lost about 50% of its total national operational tank strength, 40% of its other armored vehicles, and 50% of its artillery -- although such losses see to count some recoverable equipment. The Iraqi Army outside the KTO had also lost much of its stocks and infrastructure. Coalition air attacks had struck hard at facilities and area targets.

Immediately after the war, part of the Iraqi Army was also in a state of disruption and political upheaval. Many Iraqi troops had become disaffected. Unrest in the Army triggered the first revolts in the south, and some elements of the armed forces then joined Shi'ite and Kurdish rebels that attempted to seize power. Other commanders and units either wavered in their loyalty or hesitated in obeying Saddam Hussein's orders.<sup>235</sup>

However, this disruption of Iraq's forces was relatively short-lived. None of the forces that challenged Saddam were strong enough to confront the Republican Guards, and the regular military units that remained loyal. It is also clear in retrospect that Saddam Hussein took the decision no later than February 27, to rush Republican Guards forces out of the theater to use them to ensure that he could suppress uprisings in southern Iraq, and it is likely that the Iraqi commanders negotiating the cease-fire at Safwan manipulated his request to Schwarzkopf to ensure that Iraq's helicopters could be used to attack both the uprising in the south and the Kurdish uprising in the north.<sup>236</sup>

In any case, the Iraqi Army, and Iraq's vast paramilitary security apparatus soon regained control of key urban areas, and Saddam proceeded to purge the army of any elements that he felt were inefficient, uncertain or disloyal. He removed the head of the security service and inefficient security personnel, and reorganized his government and military forces. During the course of 1991 and early 1992, forces loyal to the government suppressed all serious Shi'ite resistance in the south, and drove the remaining Shi'ite forces into the marshes near the Iranian border. The army defeated a Kurdish uprising that threatened to seize control of the north and Mosul during the first weeks after the cease-fire, and left the Kurds isolated in a UN-secured enclave.

Iraq restructured its army command structure. It purged as many as 1,500 senior officers, and shot others.<sup>237</sup> The Iraqi Army also recovered some of the equipment that it initially abandoned, or which had fallen into hostile use in Iraq, and conducted a massive

scavenging hunt in the Iraqi territory that the Coalition had occupied the moment that Coalition forces left. Iraq sent infiltrators into Kuwait in an effort to regain equipment, spare parts, and munitions. In many cases it was able to repair equipment that had been counted as "killed" during the war because the damage was not sufficient to prevent repair or combing parts from several damaged systems.<sup>238</sup>

By September, 1992 -- after only a little over a year of recovery -- Iraq's military forces were able to deploy 500,000 to 650,000 men -- including a substantial number of reserves. The Iraqi Army had 300,000-400,000 actives, or about 40% its prewar strength. Many of the regular army forces were manned by poorly trained and motivated conscripts, which had been drafted after the Gulf War or who had been defeated in that conflict. These lower quality forces were stiffened, however, by reorganized and relatively effective Republican Guards forces, a number of moderate to high quality regular army units, and reorganized internal security forces.

The Iraqi Army was reported to be organized into five main corps, with a 4th Border Guard force along the Syrian border, a 5th Border Guard force along the border with Saudi Arabia, and a third screening force along the Western border of Kuwait. The Iraqi Army had a total of 24 to 30 divisions. These included an uncertain mix of armored, mechanized, and infantry divisions. According to British and Israeli sources, there were three regular armored divisions, three regular mechanized divisions, and 15-17 regular infantry divisions. The Republican Guards had three armored divisions, one mechanized division, three-four infantry divisions, and a special forces unit.

Various estimates of total major combat unit strength gave the Iraqi Army a numerical strength of some 25-28 division equivalents, versus a strength of 60-70 division equivalents before the Gulf War. However, such direct numerical comparisons ignore the fact that Iraqi divisions had far less manpower, equipment strength, and combat capability than Iraqi divisions before the war. Iraq had also been forced to demobilize some reserve units, and to disband or consolidate some of 15-20 special forces and commando units that existed before the war.

The strength of the Iraqi Army had risen again by 1995. Iraq now had a total of 350,000-400,000 men (including 100,000 recalled reserves), five-six corps, with a total of 28-30 divisions with 10 armored and mechanized divisions (four in the Republican Guards and six in the regular army), and 18-20 infantry and mountain division equivalents (three in the Republican Guards and 15-17 in the regular army), plus a division-sized special Republican Guards formation.<sup>239</sup>

The Iraqi Army was concentrated around the Kurdish security zone in the north, with as many as 15-16 divisions and 150,000 men. Infantry divisions secured the border

of the security zone, and armored, mechanized, and Republican guard divisions provided heavy offensive forces. The army's key formations were a corps headquartered in Mosul and another corps headquartered in Kirkuk. Another Iraqi corps or large-scale formation was concentrated in the Baghdad area with many of the Republican Guards heavy divisions and the special Republican Guards (or "Presidential guards") formations.<sup>240</sup> Two more corps were deployed in the south, with at least 50,000-75,000 men. These forces seemed to have included 5-10 divisions, with a mix of infantry and heavy divisions, and at least some Republican guard formations in reserve.

In addition, Iraq had 20,000 frontier guards. These frontier guards were deployed along every border -- except the "border" along the Kurdish security zone, which was covered by regular Iraqi forces. The frontier guards are little more than a light infantry and surveillance force armored with light weapons and AA guns. Training has generally been poor, but the force does free the army to perform combat missions.

It is not clear how well such estimates of the Iraqi Army's major holdings in 1992 track with the estimates of wartime losses in 1991. The figures available on estimate Iraqi strength in 1991 and 1992 differ too much in definition and source to make direct comparisons. Iraq does, however, seem to have had more equipment than even the revised estimates of damage during the Gulf War would fully explain.

Iraq's holdings seemed to include about 3,000 tanks, or less than half of the 6,700 tanks that it had before the war. About half of these tanks were T-54s, T-55s, T-59s and T-69s. Iraq also had about 600-700 M-48s, M-60s, AMX-30s, Centurions, and Chieftains captured from Iran or obtained in small numbers from other countries. Iraq had lost much of its pre-war T-72 strength and only had about 500-600 T-72s left, plus about 200-300 T-62s. This compares with nearly 1,500 T-72s and T-62s before the war. According to some estimates, only about 2,000-2,300 of Iraq's tanks were operational, but Iraq retained over 1,500 tank transporters and heavy vehicle trailers out of the several thousand that it had bought during the Iran-Iraq War.<sup>241</sup>

Iraq's surviving strength of other armored vehicles seemed to include some 4,000-4,500 other armored vehicles. This total included 1,250-1,500 armored reconnaissance and command vehicles (BDRM-2, EE-3, EE-9, AML-60, AML-90, MTLB) versus 2,500 before the war. It included 800-900 armored infantry fighting vehicles (BMP-1, BMP-2, and AMX-10P) versus 2,000 before the war; and included 2000-2250 APCs (BTR-50, BTR-60, BTR-152, OT-62, OT-64, MTLB, YW-531, M-113, M-3, EE-11) versus up to 7,100 before the war. Other estimates indicate that Iraq may have had only about 2,800-3,100 other armored vehicles, versus 5,100 before the war. Regardless of the exact number, many of these vehicles only had limited

operational capability in 1994. Iraq did, however, retain large numbers of special purpose armored vehicles like armored command centers that it had bought during the Iran-Iraq War.<sup>242</sup>

Iraq's surviving artillery included about 1,500-1,750 towed artillery weapons (105mm, 122mm, 130 mm, and 155mm). It also included around 250-300 self-propelled artillery weapons (2S1 122mm, 2S3 152mm, M-109A1/A2 and GCT AUFF-1 155mm); and 4,000-5,000 (60mm, 81mm, 120mm, 160mm) mortars. This compares with 3,000-5,000 towed weapons, and 500 self-propelled tube weapons before the war. The data on multiple rocket launchers are contradictory. Although many such weapons were destroyed or abandoned in the KTO, Iraq still retained 150-200 such weapons (240mm, 140mm, Astros I, ASTRO II, BM-21, 122mm). Iraq probably retained many of its pre-war holdings of the Frog surface-to-surface rocket, and at least several hundred rockets.<sup>243</sup> Iraq had over 350 self-propelled mortars mounted on armored vehicles before the Gulf War and probably at least one hundred after the conflict. Iraq retained large numbers of towed 81mm and 120mm Soviet mortars.

The Iraqi Army lost large numbers of its anti-tank weapons during the fighting, but retained substantial anti-tank warfare capability. Its guided weapons included an unknown number of HOT, AS-11, and AS-12s mounted on PAH-1 and SA-342 helicopters, and AT-2s mounted on MI-8 and MI-24 helicopters. It had Milan and HOT launchers mounted on VC-TH armored vehicles; Soviet AT-1, AT-3, AT-4 crew-portable anti-tank guided missiles, and Milan manportable anti-tank guided missiles. It retained several thousand 85mm and 100mm anti-tank guns and heavy recoilless rifles.

Iraq had about 7,000 anti-aircraft guns, including machine guns, before the war. Iraq lost substantial numbers of anti-aircraft guns, but seemed to retain 300-500 self-propelled weapons, including some AMX-30 SAs, Egyptian made gun/light missile launchers, and 150-200 radar-guided ZSU-23-4s. Iraq retained about 4,000-5,000 other AA guns, although many were not operational or may have been deployed as anti-infantry weapons. Post-war estimates do not provide many details of Iraqi Army surface-to-air holdings, but they clearly included hundred of light and medium surface-to-air missile launchers such as the SA-7, SA-8, SA-9, SA-13, SA-14, and SA-16, and 50-100 surviving Roland fire units. Iraq seemed to retain 50% to 66% of its pre-war anti-aircraft weapons strength.

Army aviation seemed to retain about 120 of the 159 armed helicopters that Iraq possessed before the war. These included 20 PAH-1 (BO-105) attack helicopters with AS-11, AS-12 and HOT missiles, 30 MI-24s and MI-25s with AT-2 missiles, 40 SA-342s with AS-12s and HOTs, Allouettes with AS-11s and AS-12s, and 5 AS-321s with

Exocet. Iraq retained about 200-300 heavy, medium, and light transport and utility helicopters.<sup>244</sup>

This total inventory of surviving army equipment is more impressive, however, than Iraq's surviving military capabilities. Although Iraq built up significant war fighting capabilities during the Iran-Iraq War, its forces had many defects even before they suffered major losses during Gulf War. Like many other Middle Eastern armies, Iraq armed with little regard to standardization, ease of supply, training, and maintenance. It's army was dependent on continuing imports of a wide mix of equipment supplied by the former Soviet bloc, France and Italy, other European states, and Third World countries. Iraq relied on resupply as a substitute for maintenance, overhauls, and effective logistics. As a result, much of its equipment was constantly deadlined -- or had limited operational effectiveness.

The Gulf War made this reliance on resupply unworkable. Iraq has been cut off from major arms imports and foreign technical support since August, 1990, yet its army needed at least \$1 billion a year worth of arms imports even before it suffered the losses of the Gulf War. Iraq's army was also organized to deal with combat attrition through resupply of new equipment, rather than by repairing damaged or worn equipment. As a result, Iraq not only has suffered from wartime losses, but from a steady decline in operational equipment strength and equipment sustainability, and from the inability to fully repair much of the combat damaged equipment it salvaged from the war.

Iraq's military industry has offset some of these problems. It assembled some T-72 kits from shipments that it received before the war, and manufactured some tank parts. It is able to manufacture limited numbers of artillery and multiple rocket launcher systems, and produce large numbers of small arms and artillery ammunition. It is heavily dependent on imported subassemblies and machines, however, and has probably lost a significant amount of capability because it no longer has access to imports of these items.<sup>245</sup>

A steadily larger portion of the Iraqi Army's equipment is becoming deadlined, or is losing part of its operational capability over time. While Iraq can improve its ability to manufacture some spare parts, its inability to produce or obtain some critical major parts and complex assemblies will force it to cannibalize its equipment, and reduce its sustainability, unless the embargo ends. These problems will be compounded by (a) the weakness of the Iraqi Army logistic and supply system, (b) mass losses of stocks and supplies during the Gulf War that cannot be replaced, (c) the maldeployment of a great deal of equipment and stocks, (d) the inability of the Iraqi Army to properly man and organize its post war support and logistic system , and (e) a general lack of

interoperability in Iraq's equipment mix. Iraqi ability to conduct sustained intense combat, maneuver, or to support a major redeployment with logistics and supply is greatly reduced.

All of these readiness and sustainability problems will degrade Iraq's limited ability to conduct effective combined arms and mobile warfare. So will the human element. The quality of Iraq's manpower has been degraded by the fact that many of Iraq's best armored and mechanized units were shattered in the fighting, including its heavy Republican Guards units. Many officers and technicians were lost in the fighting, and the Iraqi forces have been subject to recurrent purges and upheavals ever since the end of the conflict. There has been little large scale training since early 1990, and many units are filled in with a mix of inexperienced troops and low grade conscripts and reservists. There are continuing problems with conscript call-ups and desertions in the regular forces. At least one-third to one-half of the Iraqi order of battle consists of hollow forces that will take years to rebuild to the level of capability that they had before the fighting.

The Iraqi Army, however, remains a large force, and does not face formidable opponents in the region. It is still likely to remain qualitatively superior to Iranian and southern Gulf armies for at least the next few years, and is far superior to the surviving forces of Iraqi Kurdish and Shi'ite rebels. Even the most serious defeat does not destroy a large national army unless the winner chooses to occupy the losing nation. The Coalition did not make that choice.

## The Strategic Outcome of the Land Battle

It is much easier to assert that some clear lesson should be drawn from the strategic outcome of the land offensive than it is to support such a lesson with the required weight of evidence. To some extent, deriving such a lesson is also an exercise in trying to judge whether a glass is two-thirds full or one-third empty. The Coalition achieved all of its initial major objectives in half the time originally planned. It drove Iraqi forces out of Kuwait, it secured Kuwait City and Kuwait City Airport, inflicted major damage on the Iraqi Republican Guard Forces Command, and controlled all critical lines of communication in the KTO. It did so with few Coalition casualties, limited Iraqi losses, and limited collateral damage. The US, British, and French ground troops which led the advance proved the validity of many aspects of the new "AirLand battle" strategy. Coalition land forces succeeded in each of their main lines of attack.

The Coalition did not fully complete the envelopment or destruction of Iraqi forces, and prevent many Iraqi forces from escaping north. It is not clear that it ever

really had this option in the sense of be able to achieve "perfect victory," but it clearly chose to reject it when it halted the movement of the XVIII and VII Corps on February 28, and decided not to execute an air assault by 101st Airborne Division to seize positions blocking the brigades north of Basra across the Tigris.

The land offensive did not achieve a broader strategic outcome that many wanted after the war, but which the Coalition had not pursued in shaping the war or in providing policy guidance for the land offensive. The war triggered major political unrest and rebellions in Iraq, but it did not change the character of the Iraqi regime. Some have argued that the regime might have fallen after a few more days of fighting or if the Coalition had fought on until it forced the total surrender of all Iraqi forces trapped in the area around Basra. This was possible, but the successful escape of the major elements of the Republican Guards out of the Basra pocket by February 27 makes it neither certain nor probable. Saddam Hussein and the Ba'ath elite retained massive paramilitary internal security forces, and large numbers of functional Republican Guard and regular Army forces in Iraq that were never committed to the KTO. Changing the Iraqi regime probably meant a full scale invasion of Iraq, and forcing a new regime on the country -- a much larger military option and one far beyond the UN mandate.

It is difficult to draw strategic lessons from this situation beyond the reality that limited war produces limited results. Speculation about what could have been done during the land offensive, and the fact that the Coalition did not complete all of its envelopments and attacks on schedule, seems to offer few lessons for the future. It may be argued, for example, that the Coalition could have planned from the start to carry out the double envelopment more quickly if it had had a clearer idea of how weak Iraq's defense would be. The battle plans for the XVIII and VII Corps might have achieved more rapid advances if less concern had been paid to the risk of counter-attacks to either Corps flank, and if units had not been held in reserve.<sup>246</sup>

Many things *might* have been done, but the more one reviews the detailed chronologies of the individual events during the battle, the more impressive the advances of the XVIII and VII Corps becomes. It would be interesting to put some of the more severe critics of the movements of these Corps into a simulator that confronted them with the same complexities, increasing fatigue, weather and visibility problems, communications, logistic and supply, and combat tasks faced by the XVIII and VII Corps commanders. Its is remarkably easy to advance if all that one has to command is a word processor.

It does not seem valid to criticize General Schwarzkopf or others in the theater for the emphasis they placed on attacking the Republican Guards, and to try to draw

lessons about the value of an emphasis on maneuver versus attrition. The Republican Guards and heavy regular divisions were the main instruments of the regime's power, and most of the other Iraqi forces escaping north had little strategic importance, unless the Coalition expanded its objectives to seizing a substantial part of Iraq. Taking more prisoners, as distinguished from winning a direct fight, might or might not have had political benefits after the war, but it is difficult to see exactly how the Coalition would have exploited more prisoners to change the regime in Iraq.

In summary, the wisdom of hindsight must not ignore three central facts about the land offensive. First, no one could truly predict the effectiveness of Coalition forces relative to Iraqi forces until the war began, and commanders in the field ultimately cannot be held responsible for the failure to create a battle plan based on the actual weaknesses of Iraqi forces. Third, all the discussion of double envelopments and advances on the final day tends to ignore what was accomplished, along with the fact that key elements of the Republican Guards had already moved north of Basra, and the uncertain grand strategic value of further military action.

Most importantly, neither General Schwarzkopf nor any commander in the field can be held responsible for the grand strategic direction of the war. If the land offensive was to have had a broader grand strategic purpose, this should have been decided in Washington long before February 28. It should also have been obvious in Washington that if any last minute changes were to be made in the ultimate purpose of the land offensive, these orders should have been given the moment the Iraqi retreat turned into a rout.

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<sup>1</sup> For an excellent history of the efforts of VII Corps to prepare for Desert Storm, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm," Military Review, January, 1992, pp. 2-16.

<sup>2</sup> Based on comments and research by Lt. Colonel Steve E. Dietrich. See his "In-Theater Armored force Modernization," Military Review, October, 1993, pp. 34-45.

<sup>3</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 231-235, 316, 321.

<sup>4</sup> Rick Atkinson, Crusade, p. 382; Number taken from comments and research by Lt. Colonel Steve E. Dietrich. See his "In-Theater Armored force Modernization," Military Review, October, 1993, pp. 34-45..

<sup>5</sup> The correct title of the detached Marine unit is "2nd Marines." The title "2nd Marine Regiment" is used to clarify the difference between this unit and the division. The Tiger Brigade had previously been attached to the 1st Cavalry Division during Desert Shield. On

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January 10, 1991, the XVIII Corps issued an order to the 1st Cavalry Division to begin planning for the on-order, self detachment of the brigade to Abu Hadriyah under the tactical control of USMACENT. This order indicated that USARCENT would provide administrative and logistical support. The count of tanks in the Tiger Brigade is taken from work by Lt. Colonel Steve E. Dietrich, and illustrates the difficulty of providing any precision in counting tanks. A total of 120 tanks were assigned to the Brigade, but each of its two tank battalions had crews in 58 tanks (116 total). Two more crewed tanks may have been in the brigade headquarters for use by the commander and executive officer. It is not clear, however, where they were physically located. Various sources report 116-120 tanks. The decisions relating to the detachment of the Tiger Brigade are discussed in Chapters Two and Three. Also see Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 165-169.

<sup>6</sup> These totals for the M-1 and M-2/M-3 are based on comments and research by Lt. Colonel Steve E. Dietrich. See his "In-Theater Armored force Modernization," Military Review, October, 1993, pp. 34-45. Much of his detailed work will be published in a forthcoming monograph, Heavy Metal: The Tank Modernization Program of the Persian Gulf War.

<sup>7</sup> These figures are inventory data. For US totals actually committed to battle, see Chapter Nine. Some of the Marine Corps equipment counts and the estimates of the total US force come from Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 333, 736, 747..

<sup>8</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 23, 114.

<sup>9</sup> For a detailed description, see Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 31-329, and Annexes K and M.

<sup>10</sup> Unless otherwise stated, the statistics and mileage figures used are taken from the relevant sections in Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, and the Department of Defense, The Conduct of the Persian Gulf War: Final Report.

<sup>11</sup> See Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm," Military Review, January, 1992, pp. 2-16.

<sup>12</sup> See the description in Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 74, 79-80, 82,

<sup>13</sup> A detailed description of the preparation, deployment, and movements of the 24th Mechanized Division is found in three volume series by Major Jason K. Kamiya, A History

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of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992. See Volume One, pp. 2-18.

<sup>14</sup> For a good summary description of the US Marine movement and logistic effort during Desert Storm, see Brigadier General Charles C. Krulak, "CSS in the Desert," Marine Corps Gazette, October, 1991, p.. 22-25.

<sup>15</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 145, 215; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 317-318.

<sup>16</sup> These issues are discussed further in Chapter Nine.

<sup>17</sup> Some of the problems involved are discussed in Chapters Seven and Ten. Some detailed descriptions of problems in the sea and air lift effort can be found in the chronology in Volume V of the Gulf War Air Power Survey.

<sup>18</sup> For example the two maps facing each other on pages 354 and 355 of Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, do not agree in detail. Also, some the specific unit identify problems during the fighting as discussed in Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 236-237.

<sup>19</sup> See Schwarzkopf's assessment of these issues in General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 430-432.

<sup>20</sup> See Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 111, 351-356.

<sup>21</sup> It should be noted that there are sharp internal contradictions in the document from which this estimate is drawn. See Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 93-95, 104-113. Page 353 shows 4,280 tanks, 3,100 artillery weapons, and 2,800 APCs.

<sup>22</sup> See Colonel Richard B. Lewis, "JFACC: Problems Associated with Battlefield Preparation in Desert Storm," Airpower, Spring, 1994, pp. 4-15.

<sup>23</sup> Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 353-354.

<sup>24</sup> Dr. Eliot A. Cohen, "A GWAPS Primer," US Air Force, Washington, 19 April 1993, p. 2.

<sup>25</sup> Based on interviews which included review of tables comparing the strength estimates of individual Iraqi divisions used by the Marine Corps and USCENTCOM planners.

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<sup>26</sup> See the discussion at the end of Chapter Five and Chapter Seven for additional details. Note that a number of sources provide very different estimates of the level of Iraqi effectiveness at the time the land campaign began.

<sup>27</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 206-209.

<sup>28</sup> Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 353-354. Interviews indicate that the description of the debates over these issues in Rick Atkinson, Crusade ( pp. 340-342, 345-347 ), are substantially correct.

<sup>29</sup> See Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 111, 351-356.

<sup>30</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 93-95, 104-113, 355, 401. Note that this report is often self contradictory.

<sup>31</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 433-436, 443-445.

<sup>32</sup> Such claims are particularly common in the briefings provided by VII Corps and its component divisions immediately after the war, and in those of the 24th Mechanized Infantry Division.

<sup>33</sup> See Chapters Three, Five, and Seven and Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 104-113, 353; Dr. Eliot A. Cohen, "A GWAPS Primer," US Air Force, Washington, 19 April 1993, p. 2.

<sup>34</sup> Comments by Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.

<sup>35</sup> Commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.

<sup>36</sup> Based on interviews.

<sup>37</sup> Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79.

<sup>38</sup> This description is based upon US Army briefing materials and diagrams circulated at the time of the war, and Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 349-350.

<sup>39</sup> Draft text of Frank N. Schubert and Theresa L. Kraus, The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm, Washington, US Army Center of Military History, 1994. Also see New York Times, June 13, 1991 and William

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Matthews, "US Intelligence Not Geared to Read an Enemy's Motive," Army Times, May 27, 1991.

<sup>40</sup> Commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.

<sup>41</sup> Data provided by Lt. Colonel Steve Dietrich, Chief Military Studies Branch, US Army Center of Military History.

<sup>42</sup> See the description of VII Corps training activities in Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm," Military Review, January, 1992, pp. 2-16; "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>43</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 340.

<sup>44</sup> See the descriptions of the problems created for General Boomer in Molly Moore, A Woman at War, New York, Scribners, 1993, p. 120-122.

<sup>45</sup> As has been noted earlier, the proper name for the USMC unit is the "6th Marines". The term regiment is used to indicate the approximate size of the force. USMC units different from the other land units deployed in that they are integrated AirLand expeditionary forces, rather than land major combat units.

<sup>46</sup> There is some difference over the timing involved in this case. USMC historians indicate that the 2d Marine Division sent its division engineer officer, Lt. Colonel Mark Swanstrom, to Washington. DC, to get imagery of minefields and barriers, and that he left on February 5, and returned on February 15. This imagery was used to make a series of 1:12,500 maps which were distributed to company level prior to D-Day. (Commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.) Other sources talk about getting the data few days before the beginning of the offensive. See Lt. General Royal N. Moore, Jr., "Marine Air: There When Needed," Proceedings, November, 1991, pp. 63-66; Murray Hammick, "Iraqi Obstacles and Defensive Positions," International Defense Review, 9/1991, pp. 989-991.

<sup>47</sup> Comments by Lt. Colonel Charles H. Cureton, USMC, July 16, 1994

<sup>48</sup> Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 436; Rick Atkinson, Crusade, p. 334.

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<sup>49</sup> The author spent five days in the area moving both by road and helicopter in areas from the coast to position near Rafah. Also see Murray Hammick, "Iraqi Obstacles and Defensive Positions," International Defense Review, 9/1991, pp. 989-991.

<sup>50</sup> US Marine officers were particularly surprised by the difference between pre-war briefings and reality, and by the emphasis on defense against infantry, rather than armored assault. Also see Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 91-92, 98.

<sup>51</sup> The author directed the project that wrote the Secretary of Defense's report to Congress on the lessons of the October, 1973 war.

<sup>52</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 113.

<sup>53</sup> The US Army view of the lessons of the AirLand battle is described in detail in Brigadier General Robert H. Scales, ed. , Certain Victory: The US Army in the Gulf War. Two interesting commentaries by US Marine officers include Lt. Colonel G. I. Wilson, "The Gulf War, Maneuver Warfare, and the Operational Art," Marine Corps Gazette, June, 1991, pp. 23-24, and Colonel J. J. Edson, "A Perspective on Desert Storm," Marine Corps Gazette, June, 1991, pp. 24-25.

<sup>54</sup> A number slightly different descriptions of the Coalition battle plan appear in various histories and memoirs. This description draws on the summary in the Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 336-343.

<sup>55</sup> Brigadier General Robert H. Scales, ed. , Certain Victory: The US Army in the Gulf War, p. 215. There is considerable controversy regarding the extent to which the US army planners, or "Jedi" under General Schwarzkopf did or did not originate the idea of a sweeping armored maneuver and the "left hook." One source -- Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 143-152, argues that the original idea came from work led by Henry S. Rowen and Paul Wolfowitz and that civilians bypassed General Powell in advancing the idea to Secretary Cheney. Others sharply disagree.

<sup>56</sup> Some sources argue that the option of an air assault without supporting armor was never considered seriously by Schwarzkopf. Such an operation would have posed considerable risk since the ground component would have had to consist largely of infantry. If the war had continued, however, it might have been possible to combine such an assault with a massive new series of air attacks and thrusts by XVIII and VII Corps. The infantry in the force could also have been supported by AH-64 strike forces. See Michael R. Gordon and

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General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 406-407.

<sup>57</sup> There are a number of somewhat contradictory descriptions of activities during this period. The primary reference used in this section is the Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 343-349.

<sup>58</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 345; Army Times, March 2, 1992, pp. 8-18.

<sup>59</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 202.

<sup>60</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 203-204.

<sup>61</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 206.

<sup>62</sup> Rick Atkinson, Crusade, pp. 330-332.

<sup>63</sup> For additional discussion, see Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 346-352.

<sup>64</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 344.

<sup>65</sup> For further details of some of these VII Corps operations, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm," Military Review, January, 1992, pp. 2-16 and "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>66</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 200, 206.

<sup>67</sup> General Sir Peter de la Billiere, Storm Command, pp. 156, 191-192, 221-227, 235-249; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 198; Rick Atkinson, Crusade, pp. 370-372, 387-390.

<sup>68</sup> For a good summary of these helicopter operations, and of the preparation of US Army helicopters for operations in Desert Storm, see James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 173-196.

<sup>69</sup> Rick Atkinson, Crusade, pp. 332-333; Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm," Military Review, January, 1992, pp. 2-16; "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

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<sup>70</sup> A myriad of minor conflicts exist over the details of the land battle and land advance. Unless otherwise footnote, all of the following details describing the land battle are taken from Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 358-411, supplemented by details taken from Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War.

<sup>71</sup> See General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 442-445; Rick Atkinson, Crusade, pp. 347-353.

<sup>72</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 216.

<sup>73</sup> These figures are based on the chart in Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 97, 146. Note, however, that this table shows strength as of November 5, 1990. As a result, the tank, Sheridan, and Bradley data have been adjust to take account of work by Lt. Colonel Steve E. Dietrich in "In-Theater Armored Force Modernization," Military Review, October, 1993, pp. 35-45. The original data count 763 tanks, but this is before the detachment of the Tiger Brigade.

<sup>74</sup> Briefing paper provided by the French Embassy.

<sup>75</sup> For further details, see Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 216-222, and Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, Volume One, pp. 6-15.

<sup>76</sup> The discussion of French forces is based primarily on the summary transcript of the French briefing on operations in Riyadh by Brigadier General Daniel Gazeau and a following interview on March 1, 1991 (JIB); a chronology provided by the French Embassy, Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War; Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992; Interview with General Rocquejeoffre, Military Technology, 8/91, p. 23; Interview with General Janvier, Military Technology, 8/91, pp. 24-25; Interview with General Forray, Military Technology, 8/91, pp. 26-27; Oliver Latremoliere, "Objective White: The Battle for As Salman," Military Technology, 8/91, pp. 28-31; "Army Light Aviation," Military Technology, 8/91, p. 32; Interview with General Carbonneaux, Military Technology, 8/91, pp. 33-35.

<sup>77</sup> Rick Atkinson, Crusade, pp. 384-385.

<sup>78</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 452. Some reports show 66 UH-60s and 33 CH-47s. See the description of this operation in James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 197-203.

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<sup>79</sup> Thomas Taylor, Lightning in the Storm, New York, Hippocrene, 1994, pp. 265-268, 292-294, 301-320; Rick Atkinson, Crusade, pp. 384-385.

<sup>80</sup> James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, p. 203.

<sup>81</sup> Thomas Taylor, Lightning in the Storm, New York, Hippocrene, 1994, pp. 265-268, 292-294, 301-320; Rick Atkinson, Crusade, pp. 384-385.

<sup>82</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 453-456; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 222; Army Times, March 2, 1992, pp. 8-18. There is considerable debate over how much consultation actually took place, as distinguished from direct orders. See Rick Atkinson, Crusade, and Michael R. Gordon and Bernard Trainor, The General's War, for different attempts at "insider" histories of these debates.

<sup>83</sup> As was the case with most Coalition units, this involved major changes to the original timing of the division's attack plan. See Lt. Colonel Bantz J. Craddock, 24th Mechanized Infantry Division Combat Team: Attack Plan, Fort Stewart Georgia, US Army, February, 1992, and Lt. Colonel Bantz J. Craddock, 24th Mechanized Infantry Division Combat Team: Historical Reference Book, Fort Stewart, Georgia, US Army, April 1991. Also see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>84</sup> As always, counts of such numbers differ. These figures are taken from Lt. Colonel Bantz J. Craddock, 24th Mechanized Infantry Division Combat Team: Historical Reference Book, Fort Stewart Georgia, US Army, April 1991, Section 35 and 76. The 24th Mechanized Infantry Division had been reinforced from 18,000 men, 1,574 track vehicles, 3,500 wheeled vehicles, and 90 helicopters at the time of Desert Shield.

<sup>85</sup> For operational details, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 19-23.

<sup>86</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 364.

<sup>87</sup> For an excellent overview of VII Corps operations, used as background in much of the following discussion of VII Corps operations, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37. These numbers are taken from Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 146, 239; comments provided by Lt. Colonel Steve E. Dietrich. see Lt. Colonel Dietrich's "In-Theater Armored Force Modernization," Military Review, October, 1993, pp. 35-45.

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<sup>88</sup> Based on 1st US Armored Division briefing materials provided to the author. For additional details on the preparation and operations of this division with many interviews and descriptions of life at the unit level, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 34-176.

<sup>89</sup> Based on 1st US Armored Division briefing materials provided to the author.

<sup>90</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 225-229.; Rick Atkinson, Crusade, pp. 394-395; Army Times, March 2, 1992, pp. 8-18.

<sup>91</sup> For a detailed description of preparations for the attack and initial operations at the level of the 1st Armored Division, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 176-205.

<sup>92</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 366.

<sup>93</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 367; Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 205-206.

<sup>94</sup> See Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 225-229.

<sup>95</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 224-232; Department of Defense, Conduct of the Persian Gulf War: Final Report, pp. 366-367; Rick Atkinson, Crusade, pp. 395-396

<sup>96</sup> Rick Atkinson, Crusade, p. 397; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 224-232; Department of Defense, Conduct of the Persian Gulf War: Final Report, pp. 366-367.

<sup>97</sup> Note that the Department of Defense, Conduct of the Persian Gulf War: Final Report, shows very different Iraqi formations on p. 365. These data are taken from Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 224-232 and comments by Lt. Colonel Steve Dietrich.

<sup>98</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 366-367.

<sup>99</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 455-456, 460; Army Times, March 2, 1992, pp. 8-18; Michael R. Gordon, Michael R., and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994; Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

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<sup>100</sup> In addition to descriptions of British operations in Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992 and Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, the analysis of British operations is based on interviews in Saudi Arabia in March, 1991, interviews in Britain, and transcripts of British press conferences provided by the JIB, including the summary briefing on British operations during the Gulf War by Colonel Barry Stevenson on March 1, 1991.

<sup>101</sup> This composite estimate has a number of uncertainties. It is adapted from interviews, Tim Ripley, Land Power: The Coalition and Iraqi Armies, London, Desert Storm Special, Osprey, 1991, pp. 51-55; David Miller, "UK Forces in the Gulf War," Military Technology, 7/91, pp. 39-50; Ian Bustin, "Desert Sabre," Military Technology, 7/91, pp. 51-52; Ian Bustin, "Desert Warrior," Military Technology, 7/91, pp. 51-52; Charles Delmain, "Desert Challenger," Military Technology, 7/91, pp. 55-58.

<sup>102</sup> General Sir Peter de la Billiere, Storm Command, pp. 285-288; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 223; Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 91-101.

<sup>103</sup> General Sir Peter de la Billiere, Storm Command, pp. 286-287; Lt. Colonel A. G. Denaro, "A battle group commander's view," International Defense Review, 9/1991, pp. 983-985; General Sir Peter de la Billiere, "The Gulf Conflict: Planning and Execution," RUSI Journal, Winter, 1991, pp. 7-13; Major General Rupert Smith, "The Gulf War, The Land Battle," RUSI Journal, Winter, 1991, pp. 1-4; Brigadier General P. A. J. Cordingly, "The Gulf War: Operating With Allies," RUSI Journal, April, 1992, pp. 17-21.

<sup>104</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. I-38.

<sup>105</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 457; Rick Atkinson, Crusade, pp. 391-392, 405.

<sup>106</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, p. 375.

<sup>107</sup> Comments on drafts of this chapter by Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.

<sup>108</sup> Some of the armored strength Marine forces did have was also rushed into the field. The Marines had only 76 M-1 tanks: 60 M-1A1 Heavy Armor tanks on loan from the US Army to the 2nd Marine Tank Battalion, which included B Company, 4th Tank Battalion, USMC reserve and C Company, USMC Reserve. C Company received the US Marines first 14 M-

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1A1 Common tanks (the USMC version of the M-1A1 Heavy Armor). They arrived in Saudi Arabia on February 21, and actually got to C Company on February 23, all of six hours before it moved out for the attack.

<sup>109</sup> This discussion of Marine Corps strength is based upon interviews; materials provided by the US Marine Corps; Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992; commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994; Lt. Colonel Charles H. Cureton, US Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Colonel J. Quilter II, US Marines in the Persian Gulf, 1990-1991: With the 1 Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Lt. Colonel Dennis P. Mroczkowski, US Marines in the Persian Gulf, 1990-1991: With the 2D Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Lt. General Royal N. Moore, Jr., "Marine Air: There When Needed," Proceedings, November, 1991, pp. 63-66; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50; and Lois G. Caporale, "Marine Corps Historical Notes from the Gulf War," Marine Corps Gazette, December, 1991, pp. 44-46.

<sup>110</sup> Lt. General Royal N. Moore, Jr., "Marine Air: There When Needed," Proceedings, November, 1991, pp. 63-66; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50.

<sup>111</sup> This judgment was concurred in by some of the Marine officers assessing the lessons of the war.

<sup>112</sup> For alternative data and background, see Chapter Seven and Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. pp. 334-338.

<sup>113</sup> Some sources show 0400. The USMC History and Museums Division indicates 0530.

<sup>114</sup> Rick Atkinson, Crusade, pp. 377-379; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M.

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Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50.

<sup>115</sup> Comments on drafts of this chapter by Lt. Colonel Charles H. Cureton, USMC, July 16, 1994.

<sup>116</sup> Rick Atkinson, Crusade, pp. 377-379; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50.

<sup>117</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 454-455.

<sup>118</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 368-373.

<sup>119</sup> Based on a tour of this part of the battlefield with Saudi officers shortly after the end of the war. Also see Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 372-375, and I-38 to I-40.

<sup>120</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 452-453.

<sup>121</sup> French briefing on operations in Riyadh by Brigadier General Daniel Gazeau and a following interview on March 1, 1991 (JIB); "Interview with General Rocquejeoffre," Military Technology, 8/91, p. 23; "Interview with General Janvier," Military Technology, 8/91, pp. 24-25; "Interview with General Forray," Military Technology, 8/91, pp. 26-27; Oliver Latremoliere, "Objective White: The Battle for As Salman," Military Technology, 8/91, pp. 28-31; "Army Light Aviation," Military Technology, 8/91, p. 32; Interview with General Carbonneaux, Military Technology, 8/91, pp. 33-35.

<sup>122</sup> Eliot Cohen, Gulf War Air Power Survey, Volume V, Part II, p. 236; for a detailed description of the fighting, see Thomas Taylor, Lightning in the Storm, New York, Hippocrene, 1994, pp. 320-340, and James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 204-205. Also see Rick Atkinson, Crusade, pp. 408-411.

<sup>123</sup> See James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 219-220.

<sup>124</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 378.

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<sup>125</sup> For operational details, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 24-25.

<sup>126</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 461.

<sup>127</sup> In addition to the sources listed in the following footnotes, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>128</sup> For a more detailed description of the operations of the 1st Armored Division on this day, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 205-212.

<sup>129</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 237-238.

<sup>130</sup> Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 245-247, and David Miller, "UK Forces in the Gulf War," Military Technology, 7/91, pp. 39-50; Ian Bustin, "Desert Sabre," Military Technology, 7/91, pp. 51-52.

<sup>131</sup> General Sir Peter de la Billiere, Storm Command, pp. 290-291; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 239, 245-247; David Miller, "UK Forces in the Gulf War," Military Technology, 7/91, pp. 39-50; Ian Bustin, "Desert Sabre," Military Technology, 7/91, pp. 51-52; .

<sup>132</sup> Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, p. 102.

<sup>133</sup> See the description in Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 101-108. Also Ian Bustin, "Desert Sabre," Military Technology, 7/91, pp. 51-52; Lt. Colonel A. G. Denaro, "A battle group commander's view," International Defense Review, 9/1991, pp. 983-985; General Sir Peter de la Billiere, "The Gulf Conflict: Planning and Execution," RUSI Journal, Winter, 1991, pp. 7-13; Major General Rupert Smith, "The Gulf War, The Land Battle," RUSI Journal, Winter, 1991, pp. 1-4; Brigadier General P. A. J. Cordingley, "The Gulf War: Operating With Allies," RUSI Journal, April, 1992, pp. 17-21.

<sup>134</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 460-464; Rick Atkinson, Crusade, pp. 404-407, 421-422, 424-427; ; Army Times, March 2, 1992, pp. 8-18; Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 299-307.

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<sup>135</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 463; Rick Atkinson, Crusade, pp. 440-441.

<sup>136</sup> Major sources for this summary of USMC operations include commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994; Lt. Colonel Charles H. Cureton, US Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Colonel J. Quilter II, US Marines in the Persian Gulf, 1990-1991: With the 1 Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Lt. Colonel Dennis P. Mroczkowski, US Marines in the Persian Gulf, 1990-1991: With the 2D Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Department of Defense, Conduct of the Persian Gulf War: Final Report, Department of Defense, April, 1992, pp. 384-386; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>137</sup> The rest of the 8th Marines did not move forward until later.

<sup>138</sup> Some differences exist as to the identity of these Iraqi forces, and some sources reference the Iraqi 5th Mechanized Division.

<sup>139</sup> While all such data are controversial and uncertain, B Company was credited with destroying 30 T-72s, 29 T-54s/T-55s, 28 BMPs, and 7 BTR-60s during the war.

<sup>140</sup> Some reports indicate an Iraqi general was captured, but these reports were incorrect. Commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994;

<sup>141</sup> Rick Atkinson, Crusade, p. 428.

<sup>142</sup> James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 205-206; Rick Atkinson, Crusade, pp. 433-434.

<sup>143</sup> French briefing on operations in Riyadh by Brigadier General Daniel Gazeau and a following interview on March 1, 1991 (JIB), "Interview with General Rocquejeoffre," Military Technology, 8/91, p. 23; Interview with General Janvier, Military Technology,

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8/91, pp. 24-25; "Interview with General Forray," Military Technology, 8/91, pp. 26-27; Oliver Latremoliere, "Objective White: The Battle for As Salman," Military Technology, 8/91, pp. 28-31; "Army Light Aviation," Military Technology, 8/91, p. 32; Interview with General Carbonneaux, Military Technology, 8/91, pp. 33-35.

<sup>144</sup> For details of the division's operations on this day, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 26-27.

<sup>145</sup> In addition to the sources listed in the following footnotes, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>146</sup> Army Times, March 2, 1992, pp. 8-18; Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37..

<sup>147</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 237.

<sup>148</sup> A number of conflicting descriptions exist of these events. This description relies on Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 246-250.

<sup>149</sup> For further details, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 213-234.

<sup>150</sup> Rick Atkinson, Crusade, pp. 438-439.

<sup>151</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 251.

<sup>152</sup> For an "insider" history of the resulting tensions between Schwarzkopf and Franks, see Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 395-396. Additional discussion can be found in Rick Atkinson, Crusade, pp. 438-439.

<sup>153</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 315-316.

<sup>154</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 253.

<sup>155</sup> See the detailed map in Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 266.

<sup>156</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 239; Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 231-240.

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<sup>157</sup> For details of this aspect of the fighting by the 1st and 3rd Armored Divisions, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 1-33, 241-66.

<sup>158</sup> Rick Atkinson, Crusade, pp. 441-448; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 5, 261-263, 283; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 390-392.

<sup>159</sup> The 11th Aviation Brigade had two battalion-sized units, 2nd Squadron, 6 Cavalry and 4th Battalion, 229th Advanced Attack Helicopter Regiment. Both units were organized and equipped the same. Each had 18 Apaches (AH-64s). This attack was made by the AH-64s of the 229th.

<sup>160</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 288-291.

<sup>161</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 239; David Miller, "UK Forces in the Gulf War," Military Technology, 7/91, pp. 39-50; Ian Bustin, "Desert Sabre," Military Technology, 7/91, pp. 51-52..

<sup>162</sup> General Sir Peter de la Billiere, Storm Command, pp. 291-292.

<sup>163</sup> Some differences emerge as to these times between British and US reports.

<sup>164</sup> General Sir Peter de la Billiere, Storm Command, pp. 292-297; Lt. Colonel A. G. Denaro, "A battle group commander's view," International Defense Review, 9/1991, pp. 983-985; General Sir Peter de la Billiere, "The Gulf Conflict: Planning and Execution," RUSI Journal, Winter, 1991, pp. 7-13; Major General Rupert Smith, "The Gulf War, The Land Battle," RUSI Journal, Winter, 1991, pp. 1-4; Brigadier General P. A. J. Cordingley, "The Gulf War: Operating With Allies," RUSI Journal, April, 1992, pp. 17-21; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 285-287.

<sup>165</sup> General Sir Peter de la Billiere, Storm Command, pp. 292-293; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 285-287.

<sup>166</sup> General Sir Peter de la Billiere, Storm Command, p. 297.

<sup>167</sup> See the description in General Sir Peter de la Billiere, Storm Command, pp. 291-297.

<sup>168</sup> General Sir Peter de la Billiere, Storm Command, pp. 292-297; Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 113-214. British sources differ somewhat as to the exact time given objectives were secured. Also see Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 247-293.

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<sup>169</sup> Major sources for this summary of USMC operations include commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994; Lt. Colonel Charles H. Cureton, US Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Colonel J. Quilter II, US Marines in the Persian Gulf, 1990-1991: With the 1 Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Lt. Colonel Dennis P. Mroczkowski, US Marines in the Persian Gulf, 1990-1991: With the 2D Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 396-398; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>170</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 396-398; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>171</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 396-398.

<sup>172</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. I-40.

<sup>173</sup> Interview in Saudi Arabia, early March, 1991.

<sup>174</sup> For details of the division's operations on this day, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm,

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Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 29-32.

<sup>175</sup> Rick Atkinson, Crusade, pp. 454-456; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 305-308.

<sup>176</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 260, 302.

<sup>177</sup> For a description of the helicopter operations, see James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 225-226.

<sup>178</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 305.

<sup>179</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 303-305.

<sup>180</sup> For an excellent description of the combat during this attack and the causeway attack that followed, see Thomas Taylor, Lightning in the Storm, New York, Hippocrene, 1994, pp. 364-394, and James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 206-213. Also see Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 303-305.

<sup>181</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 401; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 303-304.

<sup>182</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 308.

<sup>183</sup> In addition to the sources listed in the following footnotes, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>184</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 298; Michael R. Gordon, and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 407-408.

<sup>185</sup> For operational details of this engagement, see Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 279-302, and Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 297-300.

<sup>186</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 295-296; Rick Atkinson, Crusade, pp. 465-467.

<sup>187</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 299.

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<sup>188</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 299.

<sup>189</sup> Rick Atkinson, Crusade, p. 467.

<sup>190</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 301.

<sup>191</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 301-302.

<sup>192</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 404.

<sup>193</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 404.

<sup>194</sup> General Sir Peter de la Billiere, Storm Command, pp. 298-299; Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 124-127, 129.

<sup>195</sup> General Sir Peter de la Billiere, Storm Command, pp. 297-298.

<sup>196</sup> General Sir Peter de la Billiere, Storm Command, pp. 297-298; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 301-302; Rick Atkinson, Crusade, pp. 464-465.

<sup>197</sup> General Sir Peter de la Billiere, Storm Command, pp. 298-299; Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 127-130; Lt. Colonel A. G. Denaro, "A battle group commander's view," International Defense Review, 9/1991, pp. 983-985; General Sir Peter de la Billiere, "The Gulf Conflict: Planning and Execution," RUSI Journal, Winter, 1991, pp. 7-13; Major General Rupert Smith, "The Gulf War, The Land Battle," RUSI Journal, Winter, 1991, pp. 1-4; Brigadier General P. A. J. Cordingley, "The Gulf War: Operating With Allies," RUSI Journal, April, 1992, pp. 17-21.

<sup>198</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 404.

<sup>199</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 301-302.

<sup>200</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 464-466; Rick Atkinson, Crusade, pp. 458-460; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. I-42 to I-43.

<sup>201</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 406-407.

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<sup>202</sup> USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore, Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>203</sup> This summary is based upon commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994; Lt. Colonel Charles H. Cureton, US Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Colonel J. Quilter II, US Marines in the Persian Gulf, 1990-1991: With the 1 Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Lt. Colonel Dennis P. Mroczkowski, US Marines in the Persian Gulf, 1990-1991: With the 2D Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 396-398; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore, Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>204</sup> For an "insider" history that feels Powell exaggerated Iraqi losses and the risks continuing the war posed in terms of world opinion, see Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 413-427.

<sup>205</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 461, 470-472.

<sup>206</sup> Rick Atkinson, Crusade, p. 470.

<sup>207</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 315-316

<sup>208</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 470-472. Also see Rick Atkinson, Crusade, pp. 469-472, 476-477.

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<sup>209</sup> For additional details, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 32-35, and Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 302-303 and 305-308.

<sup>210</sup> In addition to the sources listed in the following footnotes, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," Military Review, February, 1992, pp. 17-37.

<sup>211</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 308-309; Rick Atkinson, Crusade, pp. 478-480.

<sup>212</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 309-310.

<sup>213</sup> See Tom Carhart, Iron Soldiers, New York, Pocket Books, 1994, pp. 303-321.

<sup>214</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 308-310.

<sup>215</sup> General Sir Peter de la Billiere, Storm Command, pp. 299-301; Nicholas Benson, Rat's Tales: The Staffordshire Regiment at War in the Gulf, Brassey's, London, 1993, pp. 130-132, 137-140; Lt. Colonel A. G. Denaro, "A battle group commander's view," International Defense Review, 9/1991, pp. 983-985; General Sir Peter de la Billiere, "The Gulf Conflict: Planning and Execution," RUSI Journal, Winter, 1991, pp. 7-13; Major General Rupert Smith, "The Gulf War, The Land Battle," RUSI Journal, Winter, 1991, pp. 1-4; Brigadier General P. A. J. Cordingley, "The Gulf War: Operating With Allies," RUSI Journal, April, 1992, pp. 17-21.

<sup>216</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 408-409.

<sup>217</sup> Briefing materials provided by the 1st Armored Division.

<sup>218</sup> See Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Post Cease-Fire Operations," Military Review, June, 1992, pp. 3-19.

<sup>219</sup> This summary is based upon commentary on draft manuscript by Colonel William J. Davis, Deputy Director, History and Museums, USMC, July 19, 1994, and comments by Colonel Dennis P. Mroczkowski and Lt. Colonel Charles H. Cureton, USMC, July 16, 1994; Lt. Colonel Charles H. Cureton, US Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Colonel J. Quilter II, US Marines in the Persian Gulf, 1990-1991: With the 1 Marine Expeditionary Force in Desert Shield and Desert

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Storm, Washington, History and Museums Division, Headquarters, USMC; Lt. Colonel Dennis P. Mroczkowski, US Marines in the Persian Gulf, 1990-1991: With the 2D Marine Expeditionary Force in Desert Shield and Desert Storm, Washington, History and Museums Division, Headquarters, USMC; Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, pp. 396-398; USMC Headquarters briefing book, "US Marines in Desert Storm," May, 1991; Rottman, Armies of the Gulf War, p. 19; Major General J. M. Myatt, "The 1st Marine Division in the Attack," Proceedings, November, 1991, pp. 71-77; Lt. General William M. Keys, "Rolling With the 2d Marine Division," Proceedings, November, 1991, pp. 77-79; Colonel Norman G. Ewers, "A Conversation with Lt. General Royal N. Moore," Marine Corps Gazette, October, 1991, pp. 44-50; Rick Atkinson, Crusade, pp. 412-415.

<sup>220</sup> Louis G. Caporale, "Marine Corps Historical Notes from the Gulf War," Marine Corps Gazette, December, 1991, pp. 44-43.

<sup>221</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 315-316

<sup>222</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 309-310.

<sup>223</sup> For more details, see Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 310-314; Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 429-430, 437-439.

<sup>224</sup> For additional details, see Major Jason K. Kamiya, A History of the 24th Mechanized Division Combat Team During Operation Desert Storm, Fort Stewart, Headquarters 24th Mechanized Division, 1992, and the summary in Volume One, pp. 36-37.

<sup>225</sup> For a good description of the AH-64 portion of this attack, see James W. Bradin, From Hot Air to Hellfire, Novato, Presidio, 1994, pp. 226-231.

<sup>226</sup> Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 311-314; General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 478-479; Rick Atkinson, Crusade, pp. 481-484.

<sup>227</sup> The debate over this point of confusion in mapping the precise advance of Coalition forces, particularly those of VII Corps and XVIII Corps, often ignores the fact that maps and displays used at a wide range of different echelons of command involved similar confusion and imprecision. Even with today's technology, commanders cannot command from bunkers hundreds of miles to the rear of the front lines and expect to know what is really happening at the front. The author photographed many of the command maps at

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different echelons shortly after the war, and they reveal an almost inevitable set of differences over the nature of Coalition and Iraqi movements, and the forces in the area. This same confusion is revealed even in histories of the war when, for example, the maps in Certain Victory: The US Army in the Gulf War, The Conduct of the Persian Gulf War: Final Report, and the Historical Reference Book of the 24th Mechanized Infantry Division Combat Team are compared in detail. (Fort Stewart, Georgia, April 1991). Schwarzkopf points out in his book that he was unfair to VII Corps in dealing with this incident. General H. Norman Schwarzkopf, It Doesn't Take a Hero, p. 482. For a good detailed description of the military actions taking place around Safwan, and the later post-cease-fire activities of the VII Corps, see Lt. Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Post Cease-Fire Operations," Military Review, June, 1992, pp. 3-19.

<sup>228</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 475-478; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, pp. 322-324.

<sup>229</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 479-480.

<sup>230</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 470-472, 483; Brigadier General Robert H. Scales, ed., Certain Victory: The US Army in the Gulf War, p. 333-338. A critical analysis of the lack of political direction of the talks at Safwan is found in Michael R. Gordon, and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 440-448.

<sup>231</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 411.

<sup>232</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 355.

<sup>233</sup> Department of Defense, The Conduct of the Persian Gulf War: Final Report, Washington, Department of Defense, April, 1992, p. 355; Dr. Eliot A. Cohen, draft text of executive summary of Gulf War Air Power Study dated April 28, 1993, p. 43. Losses include withdrawals and some systems temporarily inoperable. Total losses actually killed or captured are estimates to be 76% of tanks, 55% of APCs, and 90% of artillery. Republican Guards units, however, only lost 50% in these categories.

<sup>234</sup> Michael R. Gordon and General Bernard E. Trainor, The General's War: The Inside Story of the Conflict in the Gulf, Boston, Little Brown, 1994, pp. 429-439.

<sup>235</sup> Washington Post, November 7, 1991, p. A-46, November 14, 1991, p. A-47; Wall Street Journal, November 11, 1991, p. A-10; Jane's Defense Weekly, November 16, 1991, p. 926, July 13, 1991, p. 61; The Estimate, November 22-December 5, 1991, p. 1; New York

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Times, November 7, 1991, p. 3; Los Angeles Times, November 14, 1991, p. 4; Michael Eisenstadt, "Recent Changes in Saddam's Inner Circle: Cracks in the Wall?" Policywatch, Number 22, November 22, 1991, pp. 1-2; Baltimore Sun, June 21, 1991, p. 7.

<sup>236</sup> General H. Norman Schwarzkopf, It Doesn't Take a Hero, pp. 488-489;

<sup>237</sup> Washington Post, July 16, 1991, p. 14, November 7, 1991, p. A-46, November 14, 1991, p. A-47; Wall Street Journal, November 11, 1991, p. A-10; Jane's Defense Weekly, November 16, 1991, p. 926, July 13, 1991, p. 61; The Estimate, November 22-December 5, 1991, p. 1; New York Times, November 7, 1991, p. 3; Los Angeles Times, November 14, 1991, p. 4; Michael Eisenstadt, "Recent Changes in Saddam's Inner Circle: Cracks in the Wall?" Policywatch, Number 22, November 22, 1991, pp. 1-2; Baltimore Sun, June 21, 1991, p. 7; Daily Telegraph, July 11, 1991, p. 9; London Times, October 4, 1991, p. 12; Washington Times, September 4, 1991, p. A7.

<sup>238</sup> New York Times, August 8, 1991, p. A-12.

<sup>239</sup> In addition to the sources listed at the start of the Iraq section, the author has drawn on interviews with various US and foreign experts in March, April, October, and November, 1993, and IISS, The Military Balance, 1993-1994, IISS, London, 1993, pp. 115-117; USNI Data Base. Military Technology, World Defense Almanac: The Balance of Military Power, Vol. XVII, Issue 1-1993, ISSN 0722-3226, pp. 139-142; Kenneth Katzman, Iraq: Future Policy Options," Congressional Research Service, CRS 91-596F, December 12, 1991, pp. 23-30; FBIS, October 13, 1991; Michael Eisenstadt, "The Iraqi Armed Forces Two Years On," Jane's Intelligence Review, pp. 121-127. March, 1993, and RUSI Working Notes, August, 1992-September, 1993.

<sup>240</sup> Most estimates now indicate a strength of one Special Republican Guards division. Some experts feel that there are two division equivalents.

<sup>241</sup> These estimates are based primarily on interviews with various experts. The 1993 IISS data show only 2,200 tanks, but this count does not track with the intelligence data the US has declassified in its studies of the Gulf War or the estimates of other experts. It may represent an attempt to count fully operational tanks, but this is unclear.

<sup>242</sup> The IISS estimates 4,200 OAFVs, including 1,500 BTR-50, BTR-60, AML-60, AML-90, EE-9, and EE-3 reconnaissance vehicles; 700 BMP-1 and BMP-2 armored fighting vehicles; and 2,000 BTR-50, BTR-60, BTR-152, OT-62, OT-64, MTLB, YW-531, M-113A1/A2, Panhard M-3, and EE-11 armored personnel carriers. A few experts estimates Iraq only had about 2,000-2,300 operational other armored vehicles. Additional sources include interviews in London, December, 1991 and April 1993, in Switzerland and Israel, January, 1992, in Switzerland, January, 1993, IISS data, and the views of various experts as

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of May and June, October, and November, 1993 ; Jane's Defense Weekly, February 22, 1992, p. 284; Jerusalem Post, January 25, 1992, p. 9; Washington Times, January 20, 1992, p. 10, January 17, 1992, p. A-1; Wall Street Journal, November 11, 1991, p. A-10; Jane's Defense Weekly, November 16, 1991, p. 926, February 22, 1992, pp. 284; The Estimate, November 22-December 5, 1991, p. 1; Michael Eisenstadt, "Recent Changes in Saddam's Inner Circle: Cracks in the Wall?" Policywatch, Number 22, November 22, 1991, pp. 1-2; Defense News, February 24, 1992, p. 1; Washington Post, November 7, 1991, p. A-46, March 13, 1992, p. A-19, August 6, 1992, p. A-39; Jane's Defense Weekly, August 8, 1992, p. 8., and

<sup>243</sup> Sources in addition to those cited at the start of this section include interviews in London, December, 1991 and April 1993, in Switzerland and Israel, January, 1992, in Switzerland, January, 1993, IISS data, and the views other experts as of May, June, October, and November, 1993; The IISS estimate is similar to the author's. ; Jane's Defense Weekly, February 22, 1992, p. 284; Jerusalem Post, January 25, 1992, p. 9; New York Times, March 12, 1992, p. A-10; Washington Times, January 20, 1992, p. 10; Washington Post, November 7, 1991, p. A-46, November 14, 1991, p. A-47, March 13, 1992, p. A-19; Wall Street Journal, November 11, 1991, p. A-10; Jane's Defense Weekly, November 16, 1991, p. 926, February 22, 1992, pp. 284; The Estimate, November 22-December 5, 1991, p. 1; Michael Eisenstadt, "Recent Changes in Saddam's Inner Circle: Cracks in the Wall?" Policywatch, Number 22, November 22, 1991, pp. 1-2; Defense News, February 24, 1992, p. 1.

<sup>244</sup> The IISS estimates 500. It is doubtful that this many are operational.

<sup>245</sup> Yezid Sayigh, Arab Military Industry: Capability, Performance, and Impact, London, Brassey's, 1992, pp. 103-130.

<sup>246</sup> A number of books have debated this issue, but the best series of commentaries is contained in Proceedings between June, 1993 and October, 1993. The series starts with an article by Col. James G. Burton, "Pushing Them Out the Back Door" and concludes with an article by Lt. General John H. Cushman, "Desert Storm's End Game." There are commentaries on each article. One important caution should, however, be applied to the debate in Proceedings. The writers often assume that Iraqi forces are properly identified and characterized as to location, movement, and size in reported of the battle. This simply is not the case. Nominal unit locations do not measure force strengths, actual locations, and willingness to fight.