Close Air Support Since 9/11: Implications for Urban Operations

A Monograph

by

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Abstract

Close Air Support Since 9/11: Implications for Urban Operations, by Lt Col John D. Rabun, 40 pages.

The current emphasis from the National Security Strategy on Great Power Conflict has led to a focus on supporting Large Scale Combat Operations. However, doctrine does not reflect the rapid urbanization of populations throughout the world. Close Air Support during Large Scale Combat Operations is further complicated in the urban environment in terms of risks of fratricide and collateral damage. This monograph explores two case studies of Close Air Support to ground operations since 9/11. The conclusions from each case study are applied to combat in an urban environment and the doctrine which supports urban operations.

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Acronyms

AAA	Anti-Aircraft Artillery
AQ	al-Qaeda
ASOC	Air Support Operations Center
BCD	Battlefield Coordination Detachment
C2	Command and Control
CAS	Close Air Support
CAOC	Combined Air Operations Center
CENTCOM	Central Command
CFACC	Combined Force Air Component Commander
CFLCC	Combined Force Land Component Commander
CJTF	Combined Joint Task Force
FAC	Forward Air Controller
FAC(A)	Forward Air Controller (Airborne)
GFAC	Ground Forward Air Controller
GRG	Gridded Reference Graphic
GTAC	Ground Terminal Air Controller
HUMINT	Human Intelligence
IED	Improvised Explosive Device
IPB	Intelligence Preparation of the Battlefield
JDAM	Joint Direct Attack Munition
JFC	Joint Force Commander
JSOA	Joint Special Operations Area
JTAC	Joint Terminal Air Controller
MANPAD	Man-Portable Air Defense
OPORD	Operations Order
QRF	Quick Reaction Force

RCT	Regimental Combat Team
ROE	Rules of Engagement
RPG	Rocket Propelled Grenade
SEAD	Suppression of Enemy Air Defense
SOF	Special Operation Force
TF	Task Force
UAV	Unmanned Aerial Vehicle

Figures

Introduction

CPT Nate Self surveyed the battlefield within his limited view. He was crouched down to present as small of a target as possible to the oncoming enemy fire consisting of medium and heavy machine guns, small arms, rocket-propelled grenades (RPGs), and mortars. CPT Self and his team's situation was dire. His quick reaction force (QRF) had just crash-landed on top of Takur Ghar, a mountain in Afghanistan. His team suffered multiple friendly forces killed and wounded in the first minute of the engagement. The QRF's mission of finding and recovering a lost Navy SEAL on Takur Ghar had become significantly more complicated than expected. The QRF consisted of nine Rangers, only six of the Rangers able to fight after the rest were wounded or killed in the crash and subsequent firefight.[1] The amount of fire impacting his perimeter was increasing by the minute. Enemy fighters occupied earthen bunkers and trench lines only seventy-five meters away, making any call for fire a dangerous proposition.[2]

Twister 51/52, a two-ship formation of F-15Es was flying in the area while prosecuting targets for another Ground Forward Air Controller (GFAC). CPT Self's attached GFAC established radio contact with Twister 51/52 and requested the flight to conduct a strafe pass using their 20mm gun on the enemy positions pinning down his team. Twister flight employed their guns in eight passes over the next thirty minutes to kill and suppress enemy forces on the top of Takur Ghar.[3] Over the next two hours, F-15E's and F-16s conducted multiple strafe passes and dropped several bombs in support of the embattled QRF. Additionally, a newly fielded Predator unmanned aerial vehicle (UAV), employed a Hellfire missile against an earthen bunker generating most of the enemy fire. Destruction of the bunker allowed the remaining Rangers and

[1] Lester W. Grau and Dodge Billingsley, *Operation Anaconda: America's First Major Battle in Afghanistan* (Lawrence: University Press of Kansas, 2011), 248.

[2] Ibid., 252.

[3] US Department of the Air Force, *Operation Anaconda: An Airpower Perspective* (Washington, DC: US Department of the Air Force, 2005), 75.

their reinforcing comrades to assault the trench and bunker complex, killing the occupying enemy troops. Destruction of the fortification allowed the Americans on the mountain top much-needed breathing room. Joint fires, combined with maneuver, prevailed over the enemy forces on "Roberts Ridge."[4] The fluid nature of the fighting and the close proximity of friendly and enemy forces is indicative of the urban fighting in Iraq during Operation Iraqi Freedom.

Since the terror attacks on 11 September 2001, the United States waged war across the globe to counter terrorism. The US military engaged in joint campaigns, leveraging the strengths of each service branch and components to reduce individual weaknesses. One of the asymmetric advantages that American forces leveraged over the past eighteen years is its unrivaled airpower. The US Air Force provides an asymmetric advantage to allied ground forces by delivering responsive precision targeting of enemy formations and positions in close proximity to friendly forces. This advantage often allowed ground forces to prevail in combat. The joint force faces a distinct possibility of fighting in an urban environment in the future, as they have in the past during the clearance of Fallujah and fighting in Nasiriyah during Operation Iraqi Freedom.

Air support demonstrated its advantages during Operation Iraqi Freedom when Close Air Support (CAS) was vital in the rapid advance to Baghdad. Airpower defeated or degraded Iraqi forces before they closed with American ground forces, and when Iraqi forces crossed into the close fight, airpower was able to decimate them in detail. Much of the CAS utilized occurred in the urban environment. The utilization of CAS in past conflicts has been an integral part of how the US military fought and won battles. Technological improvements have allowed for the execution of CAS for US forces in every major conflict since the Korean War. Joint operations stress the utilization of CAS to enable friendly movement and maneuver as a critical enabler. The US military has cautiously built upon the relationship inherent to joint fires since 9/11, allowing for tactical success on the battlefield surpassing all expectations. CAS will be essential for joint

[4] The ridgeline was named after one of the deceased Navy SEALs.

forces to prevail in future conflicts and urban areas as they more and more become the location of future battles. In order to leverage CAS in the future, the US military will need to embrace all of the joint services and enhance the linkages between air and ground units. The flexibility of employment and precision effects from the ultimate high ground enables American maneuver units to close with and defeat their numerically degraded adversaries.

The population of the world is rapidly increasing, and much of the population is relocating to urban areas. In 2018, 55 percent of the world's population lived in urban areas.[5] Given the trend in urbanization and extensive use of CAS by US troops, this study will also shed light on the conduct of joint fire support, not necessarily just in urban operations. US forces have fought multiple battles in urban areas, but a look at how the US military integrates joint firepower in all types of battles will allow for an analysis of lessons learned. Utilizing research of two case studies through the lens of history and doctrine, while using the following questions to illuminate the effectiveness of each operation: What joint planning was accomplished, and what was the effectiveness? Was there sufficient coordination among services before the operation commenced? Lastly, did the execution of the operation unfold as planned, or were there underlying execution issues that needed to be resolved? If these questions are answered negatively, did this have an impact on that operation? If there was a negative effect, how could it impact joint operations in urban environments? Two case studies will be used in this monograph to illuminate lessons learned during joint operations, specifically focusing on the planning for employment of weapons during a CAS mission. Research from Operation Anaconda in Afghanistan and Operation Phantom Fury in Iraq will be included in the study. Even though Operation Anaconda was not fought in an urban environment, it is included due to the many lessons learned that can be drawn for future joint operations based on the fluid nature of the fighting.

[5] Mark York, “Dense Urban Environments: What Does the Operational Environment Look Like?” (Master's Thesis, US Army Command and General Staff College, 2019), 2.

If tasked to fight a war overseas, the US military will need to effectively use all parts of the joint force to compel the adversary to submit to US objectives. The world is rapidly urbanizing, therefore fighting in populated areas is more likely than in the past. The use of America's technological overmatch to prevail when fighting is necessary while operating far from home. Identifying lessons learned is a requirement in order to change doctrine. To see through the fog and friction that occurred in past operations will allow joint forces to continue to plan, execute and achieve their assigned goals; particularly if conducting operations in demanding urban environments.

Operation Anaconda

In the skies over the Shahi-Kot valley, two USAF A-10s hunted targets in support of the pitched fight below. On 5 March 2020, the fighting in Shahi-Kot had been ongoing for three days. The Taliban and al-Qaeda (AQ) fighters had not given up and were continuing to mass and counter-attack exposed American positions in the ridgelines. The lack of organic firepower possessed by the infantry below made interdicting reinforcements a top Air Force priority.

While A-10s were on scene and looking for targets, a nearby MQ-1 Predator located multiple vehicles and a large number of enemy soldiers massing in a neighboring valley.[6] The Predator operator contacted a nearby Ground Terminal Air Controller (GTAC) to call in the orbiting A-10s. The Predator operator relayed the location of the four trucks and up to 200 personnel hidden deep in the shadows of the valley. Dusk was approaching and the two GTACs that could see the valley were not able to discern the massing forces in the shadows. The A-10s found the valley and fired several marking rockets to designate the area for the GTACs. After receiving clearance to employ their weapons, the A-10s made several passes while releasing all their ordinance, seeing multiple secondary explosions. The A-10s then contacted a Navy two-ship

[6] Grau and Billingsley, *Operation Anaconda*, 288.

formation of F-18s and had them release all of their weapons into the valley. The next morning a SOF (Special Operations Force) team and a Predator looked into the valley to assess the battle damage. The Predator and SOF team reported over 200 bodies and four destroyed vehicles.[7] The enemy that massed for a decisive counter-attack against the spread-out American forces had been utterly destroyed.

Planning

The military objective of Operation Anaconda was to clear the Shahi-Kot valley from the remnants of Al-Qaeda and Taliban forces that retreated after operations at Tora-Bora. Conceived in early February 2002, Operation Anaconda was born into a command structure that was geographically stretched and reduced in manning from normal operations during this juncture of Operation Enduring Freedom.[8] Central Command (CENTCOM) was headquartered in Tampa, FL while Combined Forces Land Component Command (CFLCC) was at Camp Doha, Kuwait. Lastly, the 10th Mountain Division's tactical headquarters element was moving from Uzbekistan to Bagram Airfield, Afghanistan.[9] SOF and conventional force planners began to move to Bagram in the first week of February 2002 for proximity to the area of operations. The initial planning efforts conducted by SOF and conventional forces from the 101st Air Assault Division morphed into a more extensive operation than earlier planned. 3rd Brigade, 101st Air Assault Division (Task Force Rakkasan) had a complete brigade staff located at Bagram, and they took over the lead role in the conventional force plan.[10]

More significant numbers of conventional forces became available in Afghanistan in conjunction with Afghan partner forces. The additional forces expanded the options available for

[7] Grau and Billingsley, *Operation Anaconda*, 289.

[8] US Air Force, *Operation Anaconda: An Airpower Perspective,* 22.

[9] Richard Kugler, Michael Baranick, and Hans Binnendijk, "Operation Anaconda: Lessons for Joint Operations" (National Defense University, 2009), 8.

[10] Grau and Billingsley, *Operation Anaconda,* 126.

planning. Based on the size and complexity of the growing operation, conventional forces headquarters were designated to lead the operation. Headquarters elements of the 10th Mountain Division, moving into Bagram, picked up planning with what had already been accomplished.[11] Thus, the newly designated Combined Joint Task Force (CJTF) Mountain was given the lead of the operation during their movement into Afghanistan. During this transition of planning and control, CJTF Mountain did not have crucial joint and SOF enablers required to integrate the operation from all components.

Once CJTF Mountain assumed command of the operation, the planners had a truncated timeline in which to complete the skeletal plan they inherited. The biggest intelligence question the planners encountered during the Intelligence Preparation of the Battlefield (IPB) phase was the amount of enemy inhabiting the operating area. Intelligence reports and analysis estimated that there were 200 to 1000 enemy fighters, mostly based on human intelligence (HUMINT).[12] In previous operations in Afghanistan, HUMINT had been less than accurate. Previously, sources passed information that enemy forces were more numerous than were encountered by US and partner forces.[13] Planners requested additional assets and intel collection to firm up their analysis, but they received no additional data during their shortened planning timeline.

Two key assumptions were made during IPB. One was that enemy fighters would flee Afghan and US forces during their movement into the valley. After the previous two operations in Afghanistan, enemy fighters fled US and Afghan forces, including the assault on Tora-Bora. During the Tora-Bora operation, al-Qaeda and Taliban fighters used a fighting rearguard to cover their main force and senior leaders in an attempt to retrograde. These fighting retreats became the norm to US and Afghan forces. Intelligence planners deemed it likely that the enemy would continue their retrograde to allow senior leaders to escape the Shahi-Kot valley. The second

[11] US Air Force, *Operation Anaconda: An Airpower Perspective,* 22.

[12] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 14.

[13] US Air Force, *Operation Anaconda: An Airpower Perspective,* 23.

assumption was that enemy forces were located in the valley, not in the ridges and mountains. Fighting positions and infrastructure in the heights above the valley were not observed or reported. The most dangerous enemy course of action of standing their ground and fighting in the mountains was deemed unlikely based on previous operations.[14]

Based on intelligence estimates and assumptions, planning coalesced around a hammer and anvil type operation, depicted in Figure 1. SOF teams planned to infiltrate the valley perimeter days in advance to conduct reconnaissance and act as the outer cordon of forces.[15] Two Afghan forces, each supported by SOF teams, were the hammer of the operation. They would block the south end of the valley with a small force and then push from the north with a more significant force, clearing three main villages of fighters.[16] US Army conventional forces would be inserted by helicopter onto the high ground on the eastern edge of the valley as the anvil in blocking positions, interdicting enemy forces attempting to flee to the east in the mountain passes.[17] Preparatory air bombardment of known enemy positions was to occur shortly before the air assault, and then on-call CAS was to be used for defensive fires.[18] The forces allocated for the operation were deemed sufficient based on the expected number of enemy present and the assumption that they would retreat.

[14] Grau and Billingsley, *Operation Anaconda,* 127.

[15] Ibid., 130.

[16] Ibid., 128.

[17] Ibid., 127.

[18] US Air Force, *Operation Anaconda: An Airpower Perspective,* 35.

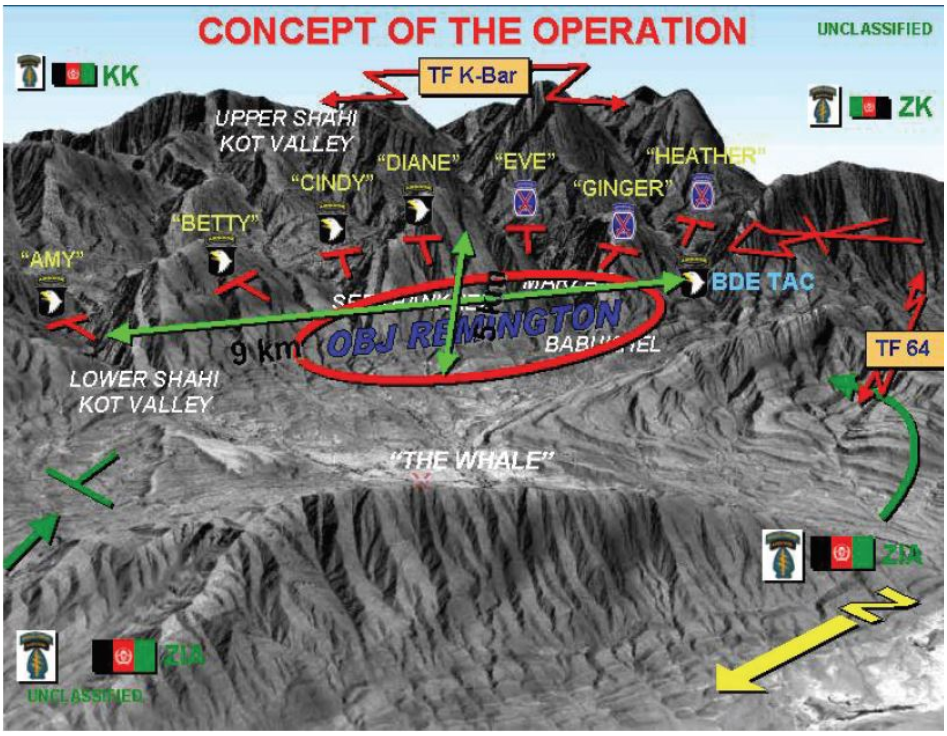

Figure 1. Concept of Operation Anaconda. Richard L. Kugler, Hans Binnendijk, and Michael Baranick, *Operation Anaconda: Lessons Learned for Joint Operations* (Washington, DC: National Defense University, 2009), 56.

The first of many briefings took place with Army leadership as the operation began to gather momentum. On February 17th, LTG Paul Mikolashek, CFLCC, and MG Franklin Hagenbeck, Commander of the 10th Mountain Division, received the concept brief at Bagram.[19] LTG Mikolashek approved the plan in principle on February 17th for execution on February 28th. MG Hagenbeck and CJTF Mountain assumed command and control of the operation on February 22nd. His staff now took responsibility for planning final details and execution.[20] On February 20th, the operations order (OPORD) was forwarded to the Combined Air Operations Center (CAOC) and briefed by the Battlefield Coordination Detachment (BCD) on February 21st. Working-level planning immediately began among the CAOC staff, the BCD, and CJTF Mountain; however, senior leadership inside the CAOC was still unaware of the magnitude of the

[19] Grau and Billingsley, *Operation Anaconda*, 135.

[20] Ibid.

operation. Lt Gen Michael Moseley, the Combined Forces Air Component Commander (CFACC), was not briefed on the plan until the 25th due to his previous travel arrangements.

Planners at the CAOC were hard at work, allocating aircraft to ensure the rapidly expanding requests for airpower were sourced. The CAOC changed the average amount of airpower allocations to make sure sufficient fighters and bombers were able to support the growing operation. The relatively small size of the battlefield and effective command and control (C2) of airplanes stacked up to support the operation was a pressing issue. The Shahi-Kot valley and surrounding environs measured only five by nine kilometers. Not only was the operating area quite small, but the ridges were also impediments in themselves. Figures 2 and 3 depict the restricted battlespace and airspace challenges from planning and executing CAS in the Shahi-Kot valley. The original OPORD requested "on-call" CAS only, but requirements for more air power increased as planning continued. However, time became a limiting factor. Planners would have to focus on ensuring that a robust communications network was in place to succeed in delivering airborne ordinance from the scattered CAS aircraft.

Additionally, the size of the physical terrain and the ridgelines in the operating area precluded more than one CAS formation employing ordinance at the same time, lengthening the kill chain against fleeting targets.[21] The significant changes in elevation from the valley to the craggy ridges and mountains made delivering ordinance very challenging. Constricted attack headings were applied not to overfly the large numbers of friendly positions on the ground, which complicated the employment of aerial attacks. The US Air Force allocated the Army significant numbers of GFACs, however, communication with aircraft was a challenge due to the limited number of frequencies allocated to controllers.[22] An additional factor complicating the CAS planning involved frequency allocation and spectrum management. US Army tactical radios

[21] Grau and Billingsley, *Operation Anaconda*, 137.

[22] Ibid., 144.

operate on the Frequency Modulation band while most USAF aircraft operate on Very/Ultra High-Frequency bands. In most cases, this issue made communication with overhead aircraft only possible with the GFAC radios.

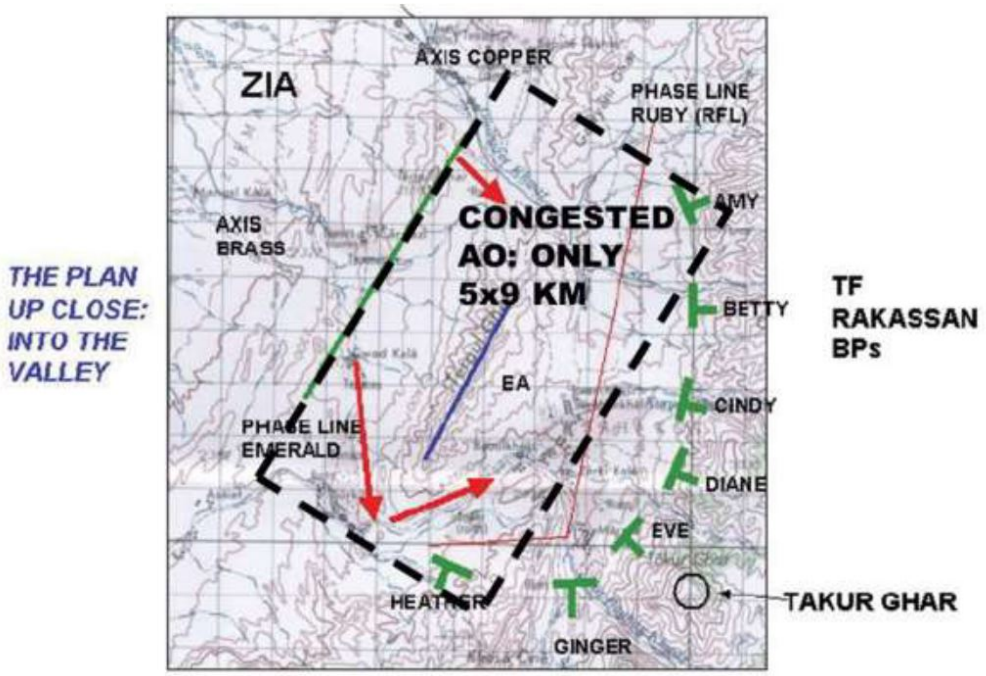

Figure 2. Concept of Operation Anaconda with Area Dimensions. Richard L. Kugler, Hans Binnendijk, and Michael Baranick, *Operation Anaconda: Lessons Learned for Joint Operations* (Washington, DC: National Defense University, 2009), 56.

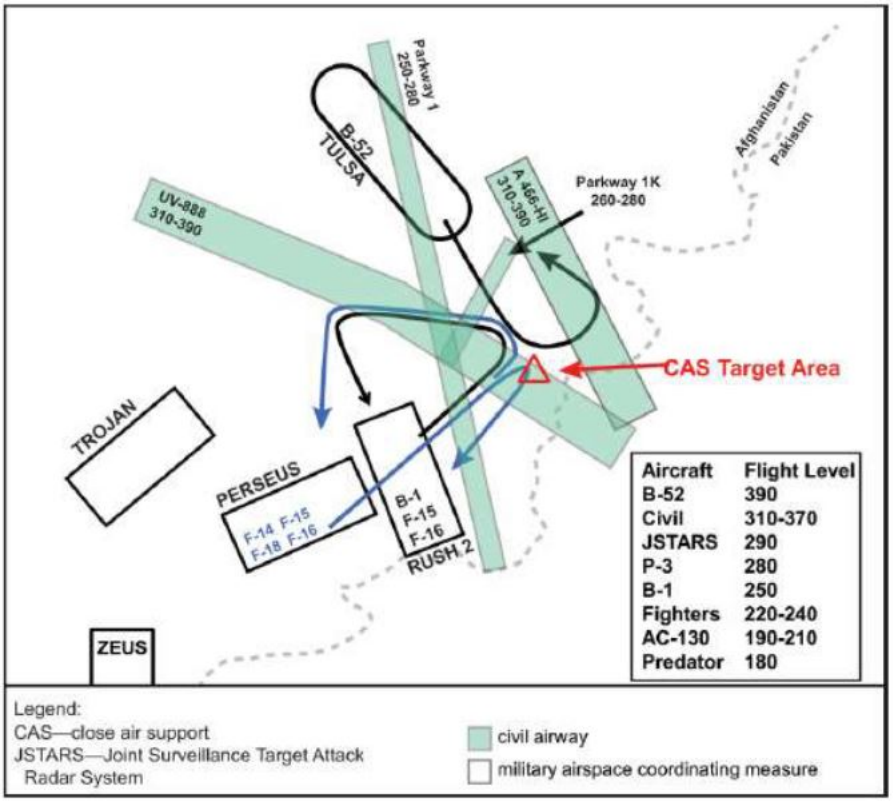

Figure 3. Operation Anaconda CAS Stack. ALSA Center, Airspace Control (Joint Base Langley-Eustis, VA: ALSA Center, February 2019), 22.

Deconfliction of weapons employed by CAS in support of the GFACs and friendly battle-tracking was another challenge not identified in planning. The constricted battlespace made employing weapons for one GFAC a risk to other nearby forces. Battle tracking all friendly units would be required to keep forces safe. Not only were conventional forces within the blast radius of CAS weapons, but so were SOF teams in elevated overwatch positions and the other SOF personnel moving with Afghan forces in the valley. The location of SOF teams and their Joint Special Operating Areas (JSOAs) was another issue not addressed due to compartmentalized planning. JSOAs were put in place as control measures to restrict fires once SOF teams were inserted into the operating area. Only Joint Forces Special Operations Component Command (JFSOCC) could authorize fires in these areas.[23] The planned JSOAs overlapped with

[23] US Department of Defense, Joint Staff, Joint Publication (JP) 3-09, *Joint Fire Support* (Washington, DC: Government Printing Office, 2014), 2-2.

conventional friendly force positions, slowing clearance for joint fires delivered in support of the conventional forces.

The rules of engagement (ROE) for the operation were an issue identified late in the planning process due to the shortened planning timeline and joint coordination. There was no Fire Support Coordination Line in place, which limited the types of strikes that the ground force commander could request under the CENTCOM ROE.[24] This ROE had been in place since the start of Operation Enduring Freedom in order to reduce civilian casualties.[25] CAS could only be used defensively outside of a JSOA or engagement zone under the ROE at the time of the operation. Furthermore, the ROE stipulated that offensive strikes against targets that had not yet shown hostile intent or were deemed time-sensitive would have to be approved by CENTCOM.[26] The lack of an engagement zone set by CJTF Mountain within the valley and ridges turned all requests for airpower other than defensive CAS into requests that would have to be approved by CENTCOM.[27]

Typically, most targets were visible in the valley and hostile intent could be recognized, and thus, engageable under defensive CAS ROE.[28] Strikes on the upper ridges and outside the valley were classified as interdiction, falling under a different set of ROE requiring CENTCOM approval.[29] The majority of targets prosecuted were small point targets, such as camouflaged earthen bunkers, mortar pits, and trenchworks that were very hard to spot from CAS aircraft. CAS aircraft typically needed precise coordinates to get "tally target" with their targeting pods or with

[24] The Fires Support Coordination Line is a coordination measure to restrict fires into a specific area. Short of the coordination measure, the CFLCC can shoot into the area without consulting other commands. Long of the coordination measure the CFACC can drop ordinance without coordination. See US Joint Staff, JP 3-09, *Joint Fire Support*, for more details.

[25] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 23.

[26] Ibid., 10.

[27] US Air Force, *Operation Anaconda: An Airpower Perspective,* 40.

[28] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 23.

[29] Ibid.

the pilot's eyes to prosecute the target.[30] Unfortunately, not all GFACs had the appropriate gear to facilitate an accurate target handoff to the CAS aircraft. Some GFACs possessed outdated Soviet-era maps and there were very few GPS-coupled laser rangefinders with the ability to provide precise coordinates. Thus, many GFACs had to "walk" their bombs onto the target by dropping one at a time and then correcting the distance and direction from each observed impact. This process increased the time required to kill targets.[31]

A final impediment to the effective integration of joint fires in support of the operation, the Air Support Operations Center (ASOC) that would typically handle a large and complex operation, had not yet stood up in the theater. The ASOC is the primary control agency for the execution of air operations that directly support the land component within division assigned airspace.[32] The ASOC had not moved into Afghanistan due to airlift limitations and the lack of a requirement due to the small amount CAS used by SOF teams in previous operations. Deployment of substantial American and allied conventional forces had yet to occur in Afghanistan.[33] Doctrine in 2001 specified that the ASOC was supposed to be collocated with the Army corps headquarters it supported. However, in Afghanistan in 2001, there was no corps headquarters present.[34] One of the contributing factors to not establishing the ASOC in Bagram earlier was that the OPORD only required minimal on-call CAS. Planners believed that the CAOC, with its better connectivity in conjunction with airborne command and control assets, could readily handle the small volume of requests for CAS outlined in the original plan.[35]

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[30] "Tally Target" is the doctrinal term when an aircrew is contact with intended target, using sensors or with their eyes. See US Department of Defense, Joint Staff, Joint Publication (JP) 3-09.3, *Close Air Support* (Washington, DC: Government Printing Office, 2014) for more information.

[31] Ibid., 25.

[32] US Joint Staff, JP 3-09, 2-18.

[33] US Air Force, *Operation Anaconda: An Airpower Perspective,* 40.

[34] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 9.

[35] Ibid.

With the start of the operation on 28 February, 2002, was rapidly approaching. The staff and units put final touches on the parts of their plan. The weather would have its say on the start of the operation. Poor weather, including valley fog and low clouds, were forecasted for the operating area. MG Hagenbeck gave the order to delay the operation for two days to allow conditions to improve. Additional C2 fixes were developed for the growing operation during the two-day extension. Extra staff rehearsals ironed out some existing issues. More men and material were placed at Bagram as well, increasing the small stockpile of fuel and munitions that existed.

On 2 March, the initial interdiction airstrikes that had been approved by CENTCOM were underway. However, SOF teams were unaware of the time and location of the interdiction strikes. The first fissure in the plan rapidly developed. The teams that had inserted into their overwatch positions were uncomfortable with the proximity of the impacts and called off the remaining strikes.[36] Additionally, the destruction of the previously identified targets and chokepoints did not occur due to the SOF teams in the vicinity. The lack of preparatory bombardment would have severe implications for the upcoming Afghan ground movement and American air assault.

Start of Operations

During the pre-assault fires, the first Afghan forces moved towards the Shai-Kot. The southern Afghan unit was to block the southern exit of the valley while the main Afghan force in the northern end was the clearing force for the operation. SOF teams working with Afghan forces promised pre-assault fires to soften up any enemy positions as they had done in the past engagements. Afghan forces saw pre-assault fires as their decisive weapon against Taliban and AQ forces. The Americans saw it as a significant motivator to get Afghan irregulars to fight.

However, as the northern Afghan force advanced towards the northern pass, they were unaware of the ROE issues that resulted in the cancellation of the pre-assault bombardment and

[36] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 60.

the lack of strikes made them wary. The halt of the strikes could not be explained by the SOF team embedded with the Afghans, primarily due to the existing C2 structure. Shortly before the belated assault commenced, the Afghan convoy came under attack from what they thought was a complex ambush of heavy machine guns and mortars. In fact, it was an instance of fratricide. A USAF AC-130 gunship had been approved to strike the convoy because of a malfunctioning navigation system and an incorrect location for the convoy.[37] During the AC-130 strike, multiple Afghans were wounded and one American was killed. The Afghan advance was stalled with the Afghan commander deciding that his men needed to reset and regroup. The Afghan clearing force would not move any further this day.

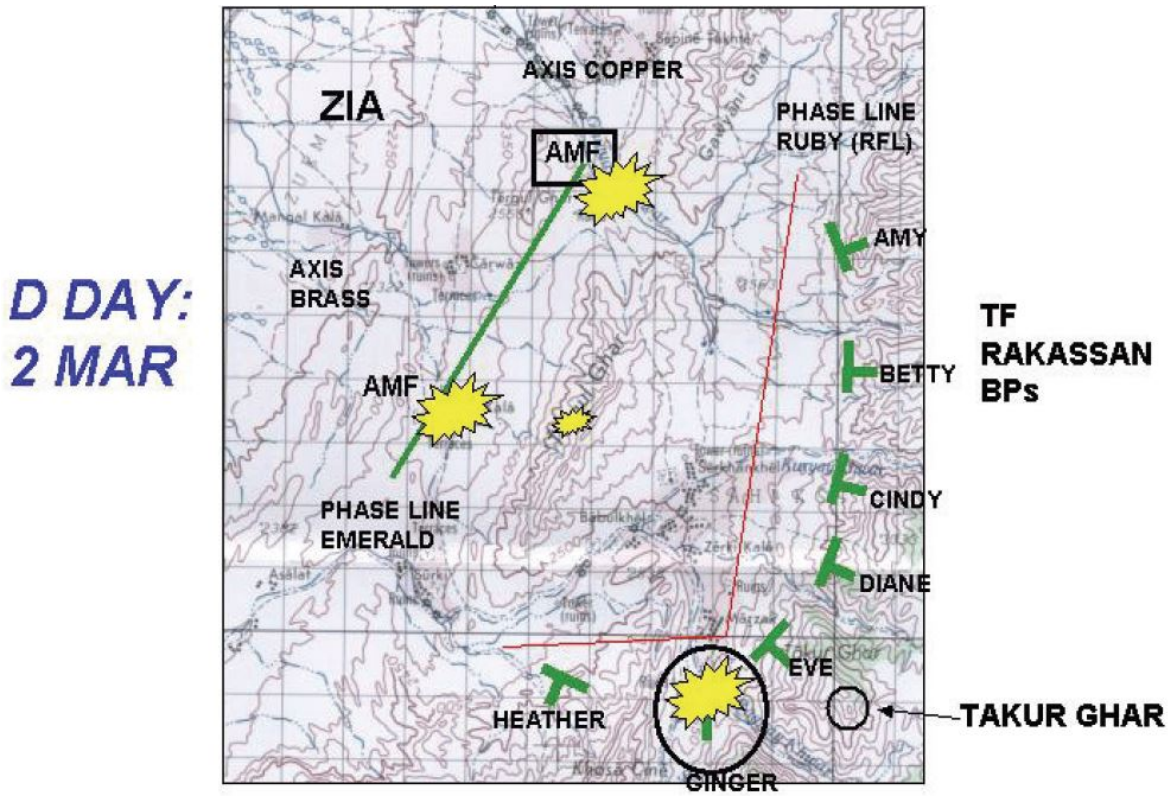

Figure 4. Operations on D-Day. Richard L. Kugler, Hans Binnendijk, and Michael Baranick, *Operation Anaconda: Lessons Learned for Joint Operations* (Washington, DC: National Defense University, 2009), 57.

[37] US Air Force, *Operation Anaconda: An Airpower Perspective,* 61.

While reinforcing elements of the Afghan force were taking care of wounded from the friendly fire incident, the first wave of the US air assault was about to land forces on the eastern ridge of the valley. These blocking positions were to provide the anvil of the operation and were designed to prevent enemy forces from exfiltrating from the valley floor to the eastern mountain passes. Intelligence, surveillance, and reconnaissance had not definitively detected enemy positions or forces on the eastern ridge that American forces were about to occupy. Shortly after being inserted, American forces all along the ridge came under sustained machine gun, RPG, and mortar fire from positions above them on the eastern ridge, in the valley, and across the valley. Conventional troops did not expect a significant enemy presence or a sustained fight, especially from positions above them based on the intel assessments in planning. As a result, the first air assault wave had minimal mortar ammunition and one 120mm tube.[38] Enemy forces surrounded them on the high ground. American forces were now outnumbered and outgunned.

As the fight unfolded on the ridge lines below, American forces had the ultimate high ground in the form of on-station CAS aircraft. Enemy machine gun and mortar positions were pinning down troops on the ground were prime candidates for CAS strikes. GFACs began to work CAS requests for strikes on the positions. However, the C2 system began to collapse due to the volume of requests that began to flood into the poorly planned CAS C2 structure. There were over thirty GFACs on the ground in the valley and the surrounding area in conventional and SOF teams.[39] An Airborne Warning and Control System aircraft on station to forward the CAS requests for the ASOC and the CAOC to prioritize and control.[40] This communication relay began to buckle under the large numbers of requests once the enemy forces in the valley stood and fought. The withdrawal of the main Afghan force now left American units in a position for

[38] Grau and Billingsley, *Operation Anaconda,* 177.

[39] David Lyle, "Operation Anaconda: Lessons Learned or Lessons Observed" (Master's thesis, US Army Command and Staff College, 2009), 12.

[40] US Air Force, *Operation Anaconda: An Airpower Perspective,* 64.

which they had not planned. There was no branch or sequel prepared for the contingency that American ground troops now faced. Commanders had to improvise a new plan as best they could with the system that was in place.

The opening day and subsequent hard fighting that the American forces experienced in the first few days in the Shahi-Kot valley was unplanned. The accompanying AH-64s that escorted the air assault were all heavily damaged, requiring reinforcement and replacement. The massive increase in CAS requests and weapons employed was much higher than envisioned. Through perseverance, ad hoc fixes to the broken plan, and tenacious fighting and responsive airpower, US forces were able to control the portions of the valley and ridges. Once the ridges and parts of the valley were in American hands, the Afghan forces could then begin to clear the rest of their objectives. As Operation Anaconda came to a close, many people began to wonder what went wrong with the plan.

Aftermath

US and allied forces were lifted out of the Shahi-Kot valley after almost two weeks of fighting. The initial operation plan called for three days of operation.[41] After the first shocks to the C2 system and the limitations that were inherent due to limited planning, American ground troops cleared the enemy from the valley with more responsive airpower. On the third day of fighting, the C2 structure was altered in order to fix deficiencies within the enlarged CAS operation. The enhanced C2 structure allowed the CFACC to bring more firepower into the fight quicker than before. ROE issues were ironed out with CENTCOM, allowing for more responsive airstrikes for ground forces. The ultimate high ground was now able to unleash its full force on the enemy and help conclude the operation. Friendly ground forces were able to destroy enemy forces quicker, and the interdiction of fighters fleeing the valley continued unabated. Airpower enabled the achievement of the commander’s objectives with minimal loss of friendly lives.

[41] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," vi.

Operation Anaconda did not unfold in the manner in which it was conceived, both from the ground and air perspective. Ultimately it was a successful joint operation although proper coordination between all services and components during the planning phase would have facilitated a smoother operation from the start. LTG Mikolashek did not designate MG Hagenbeck as the Joint Force Commander (JFC). This limited MG Hagenbeck's ability to integrate the different service and support components into the operation. This critical oversight of command relationships perpetuated the dysfunctional and separate planning processes that were already well advanced. Elevating the position of CJTF Mountain to a JFC would have put MG Hagenbeck on equal footing with the rest of the senior commanders in CENTCOM. Being designated as the JFC would allow better access to resources and planning capabilities. Such a designation would have brought the 10th Mountain Division's assigned ASOC into theater much earlier, bringing professional air planners into the planner process. Supplemental joint manning of the JFC's staff would have also increased since there was a lack of officers that had conducted a joint operation before.[42]

The JFC and supporting staff bear the responsibility for all aspects of joint fire support planning, prioritization, coordination, execution, and assessment.[43] The duties of planning for joint fire support are also inherent in formulating the scheme of fires. It is an integral part of how the commander visualizes the operation and allocates resources to enable his goals.[44] After the JFC visualized and explained his operational intent to the staff, the next step required for effective joint fires planning and employment is battle tracking and coordinating airspace.[45] Part of the duties required of an ASOC is battle tracking and coordination of airspace inside JFC owned

[42] Kugler, Baranick, and Binnendijk, "Operation Anaconda: Lessons for Joint Operations," 12.

[43] US Joint Staff, JP 3-09, 1-3.

[44] Ibid., 1-1.

[45] Ibid., xi.

airspace.[46] The airmen that made up the planning section of the ASOC were well versed in planning for C2 and battlespace deconfliction in small operating areas. However, many of the issues encountered on the battlefield could have been mitigated in planning if there had been a fully staffed ASOC.

When examining Operation Anaconda within the context of doctrine, planning, coordination, and execution, it is clear that there was a lack of a thoroughly thought out and coordinated plan. MG Hagenbeck remarked that his staff "weren't asking the questions they needed to."[47] Detailed and integrated planning was not effectively accomplished because of the lack of a complete headquarters staff and enablers. The multiple moves of the division headquarters also hampered continuity during the planning process. Effective coordination with external agencies and commands, such as with SOF and the CAOC, was problematic. The SOF tactical operations center was located next to the operations center on Bagram where the plan was developed. However, SOF teams did not know when shaping fires were planned and their subsequent impact areas on a constricted battlefield. The stove-piped nature of the planning and lack of unity of command and effort of the different parts of the operation are also a concern. Execution errors in battlespace management, deconfliction, and frequency management were errors encountered that could have been mitigated through detailed planning. These issues could have been fixed during the planning cycle if they had been systematically thought through and addressed by all parties.

Even though there were issues, the operation did eventually achieve the overall goals. The biggest takeaway from the operation is that joint planning and operations had not been tested in such an environment in that capacity since Operation Desert Storm. The joint force made errors, but the vast amount of the errors were rectified for the invasion of Iraq one year later. In

[46] US Joint Staff, JP 3-09, 2-18.

[47] Lyle, "Operation Anaconda: Lessons Learned or Lessons Observed," 1.

the case of Operation Iraqi Freedom, joint forces displayed a fantastic effort against the Iraqi forces they faced. Without the lessons learned from Operation Anaconda, the joint effort would still learn the same lessons, arguably in a more dangerous environment.

Operation Phantom Fury

The morning of 31 March 2004, began like most others in Iraq. Four Blackwater contractors were conducting an early morning supply run from Camp Fallujah. The routine supply mission was almost an after-thought to the contractors. They did the same thing many times before. The contractors were in two SUVs, escorting three local trucks and drivers. However, the events on that day were about to change the character of the war in Iraq in many ways in which they could not have imagined.

The small convoy approached the edge of Fallujah and took a direct route through the town instead of bypassing the city on the outskirts of the town. Traffic increased as the convoy proceeded through the city, local vehicles interspersed with the convoy, breaking up the space between the SUVs and trucks. The convoy wound through the center of town, passing the main municipal complex when tragedy struck.[48] Two Iraqi vehicles rolled in front of the convoy, forcing it to stop.[49] While the contractors in the lead vehicle talked to the Iraqi's at the impromptu roadblock, several armed men ran out of a close-by building and fired at the convoy. The contractors in the lead vehicle were killed immediately. The trail vehicle attempted to flee but the vehicle was disabled and the occupants were killed.[50] As soon as the gunfire ended, the jihadists fled the scene and a large mob descended on the area. Arab news crews were shortly on the scene, recording the actions of the mob as they desecrated the American bodies. The bodies were dragged through the streets of Fallujah and eventually were hung from the northern bridge in

[48] Richard D. Camp, *Operation Phantom Fury: The Assault and Capture of Fallujah, Iraq* (Minneapolis, MN: Zenith Press, 2009), 1-2.

[49] Ibid., 2.

[50] Ibid.

town.[51] The deaths of the contractors would serve as the catalyst for a monumental clash in Fallujah. The upcoming battle would be "no holds barred" fight by both sides in an urban environment.

Planning

The White House demanded action in the wake of the murders. The result was Operation Valiant Resolve, beginning on 5 April 2004. US Marines were ordered to clear Fallujah of insurgents. Marines were at a disadvantage from the start of the operation. Two Marine infantry battalions were ordered to clear a city of an estimated population of 300,000, including approximately 2,000 insurgents.[52] The Marines had sufficient forces to isolate the city from outside support and to prevent insurgents from fleeing while assaulting the city itself. However, once the Marines began their assault into Fallujah, they found there was not enough infantry to effectively clear and hold secured sections. Due to the ROE, they were also unable to utilize the large amount of firepower at their call to offset their numerical disadvantage and kill insurgents. Preventing civilian casualties was paramount. The ROE pertaining to the use of CAS and indirect fires in urban environments prevented their use. Not only were there ROE and troop strength issues, but the operation was rushed as well.

The Marines did not have sufficient time to plan a coordinated offensive with combined arms and joint fires due to the reactive nature of the operation. Intelligence on the locations of insurgent weapons' caches, hideouts, and C2 nodes did not exist in enough detail to facilitate planned targeting. A lack of preemptive targeting of the insurgents and their caches hampered Marine freedom of movement throughout the city. Furthermore, the Marine infantry battalions ordered to attack did not possess armor support. Only sixteen Marine tanks were deployed to Iraq

[51] Richard D. Camp, *Operation Phantom Fury*, 3.

[52] Matt Matthews, *Operation Al-Fajr: A Study in Army and Marine Corps Joint Operations* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 9.

by this point in the conflict, and none of them were used in the assault.[53] The White House called off the operation at the beginning of May after Marine losses mounted, generating negative press. Nevertheless, the Marine's attention in the coming months would not waver from the insurgents that still plagued Fallujah.

Months later, in August of 2004, the situation in Iraq was at a boiling point. Marines were called into Najaf to suppress an open uprising. The Marines required US Army reinforcements equipped with armored vehicles to subdue Najaf based on the large size of the city. Both services worked well together as a combined arms team, leading Marine planners to take note of the operation when looking at options for taking back Fallujah. The uprising in Najaf was crushed relatively easy, with minimal US casualties.[54] Marine planner still kept a watchful eye on Fallujah during the operation in Najaf and began planning a new operation in September 2004. Marine staff officers identified the need for additional support to isolate and clear the city. 1st Marine Division was planning the upcoming US operation, and they requested additional forces in the form of heavy armor units based on the success of the combined Najaf operation. The deployed Marine force still lacked armor at the time of the second operation. The Marine led operation was reinforced by two US Army combined arms battalions and an additional armored brigade. The mechanized battalions would participate in the seizure of the city while the armored brigade would isolate the city. The seizure and clearance of Fallujah was the only task that Marine infantry units would have to execute.[55]

With the additional forces allocated to the Marines, the planning team made most of the time they had in order to avoid the rushed mistakes of Operation Valiant Resolve. Combining the two different services' ground schemes of operation proved more straightforward than initially thought. The initial Marine plan was overly infantry-centric and did not capitalize on the

[53] Matthews, *Operation Al-Farj,* 9-10.

[54] Ibid., 9.

[55] Ibid., 13-14.

strengths of the Army's combined arms battalions and joint fires. Once the tasked Army battalions were introduced to the plan, they suggested changes to better utilize the increased fires and maneuver provided by their assets. Marine leadership received the recommendations warmly and implemented many of the proposed changes. Another commonality that helped break down barriers was that many of the Marine leaders were graduates of the US Army's School of Advanced Military Studies. The leadership of the participating Army battalions had also graduated from the same school.[56] Their shared framework and problem-solving techniques were crucial to overcoming obstacles and instituting the best plan for the operational variables that they encountered.

The overall ground scheme of maneuver for the upcoming operation was a north-to-south clearance of the city, supported by joint fires. The city was divided in half from east to west. Each half had a Marine Regimental Combat Team (RCT) and an Army mechanized battalion. RCT-7 was the supporting effort for the Division in the eastern half of the city. RCT-1, in the western half, was designated as the main effort. A common ROE was set and shared among all of the tasked units in order to better integrate the operation as a combined force.[57] The exchange of liaison officers early in the planning phase helped smooth over any issues that occasionally arose.

Not only did planners work extremely hard toward integrating Army units with Marine formations, but they also worked very closely with USAF planners. The planning teams worked to make an easily executable CAS plan that avoided the mistakes of the Operation Valiant Resolve. Previous issues such as airspace deconfliction and air tasking authority were given full attention to maximize CAS utilization. Planners broke down the small airspace, only six by six kilometers, into multiple sections and altitudes. This breakdown facilitated CAS aircraft employing weapons in different sectors at the same time that artillery and mortars were engaging

[56] Matthews, *Operation Al-Fajr*, 19.

[57] Ibid., 16.

targets. The effective use of airspace was written into joint CAS doctrine after the operation, eventually dubbed "keyhole" CAS.[58]

While the risk of fratricide was extremely high between the ground services in the operating area, planners also attempted to lessen the risks of collateral damage and civilian casualties. Fallujah was a vast urban area composed of 50,000 buildings in over 2,000 city blocks. The development of grid reference graphics (GRGs) mitigated the fratricide and collateral damage risk in the city. The GRGs broke each section of the city down into numbered sections that could be read quickly in-flight by an aircrew, allowing for rapid target identification by FACs (Forward Air Controller), Joint Terminal Air Controllers (JTACs), and CAS aircraft. GRGs encompassed the entire city of Fallujah. For quick orientation by the CAS team, every house in the city was numbered. The introduction of GRGs was a critical piece of air planning that made CAS operations in urban and complex terrain much more straightforward. The large urban area posed a significant problem for ground troops composed of two services who were operating with CAS from all services.[59] Supporting the ground operation were over twenty Marine FACs and Air Force JTACs. The FACs and JTACs were tasked to accompany Marine and Army units. The concept of air operations included two formations of CAS fixed-wing aircraft on station at all times during daylight operations.[60] At night, each RCT in the city had an AC-130 gunship allocated.[61]

Joint planners were hard at work in the IPB process and planning air support for the upcoming operation, as well as conducting kinetic and non-kinetic shaping operations. After the first ground operation was called off in May 2004, the US Army III Corps joint fires section

[58] Richard Camp, "Threading the Needle: Air Support for Operation Phantom Fury," *Yellow Sheet* (Winter 2018): 46.

[59] Camp, *Operation Phantom Fury*, 13.

[60] Ibid., 134.

[61] Ibid.

continued to plan for the eventual operation to retake Fallujah. The first shaping operations were conducted in June 2004.[62] Kinetic shaping operations, specifically air attacks, were launched almost every night during the ramp-up of operations as intelligence developed. Limited kinetic targeting allowed the information operations section to desensitize the insurgents to strikes within the city and the media to the upcoming full-scale attack. The maintenance of a low-level threshold of violence kept negative press coverage of the ongoing shaping operation to a minimum. Once the ground offensive began, the kinetic action would not be significantly more violent than the past months of shaping operations.[63] The maintenance of an allowable level of violence was a crucial part of shaping the reporting from unfriendly news networks.

A crucial part of the shaping operations used to develop the battlefield was the ruse that the Marines and Army would attack from the south of the city. Loudspeaker units deployed to broadcast vehicle noise mimicking the movement of armored formations. Limited kinetic probes and raids were launched on the southern edge of town to disrupt enemy forces and gather intel.[64] Not only did the insurgents lose sleep as they continuously reacted to the noise and raids, but they also lost men when US forces used UAVs and snipers to target and kill the reacting insurgents. Additional intelligence gathered from the raids was instrumental in applying pressure to the insurgent network before ground combat started. Information operation teams also broadcasted messages into the city to influence the civilian population to leave the city, reducing the amount of potential civilian casualties.[65] Other messages broadcasted to the civilian population encouraged them to remove their cars from the streets of Fallujah. American planners wanted to reduce the exposure that US forces would have from hidden Improvised Explosive Devices

[62] Kendall D. Gott, John McCool, and Combat Studies Institute, eds., *Eyewitness to War: The US Army in Operation AL FAJR: An Oral History* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 237.

[63] Ibid.

[64] Ibid., 241.

[65] Ibid., 240.

(IEDs). Cars left on the roads in Fallujah were destroyed. Thereafter, all cars on the streets were systematically bombed by US airpower, reducing the risk to Marines and soldiers. These shaping operations and their subsequent effects enabled airpower to be more freely used within the city as civilians evacuated and enemy networks were exposed for targeting by airpower.

The ROE was another planning consideration the joint force had to work through. Senior American leaders restricted the ROE significantly due to the negative press coverage during the previous operations in Fallujah. The ROE stated that US forces could respond in the event of an observed hostile act or demonstrated hostile intent. The intent was to minimize damage to civilian infrastructure and lives. The ROE also limited preemptive strikes outside the normal targeting cycle during the shaping phase. Targeting weapons caches and insurgent meeting places were missed due to ROE constraints. With a more relaxed ROE, these targets were typically struck in the shaping phase.[66] The cumbersome targeting cycle required a large amount of intelligence to offset collateral damage and would remain in place until the Marines and Soldiers crossed into Fallujah. While the ROE limited air planners during the shaping phase, the planning team worked to mitigate some of the effects. By prescribing the carriage of precision weapons for CAS missions, planners set up the JTACs on the ground with weapons that would cause the least amount of potential collateral damage.[67]

Start of Operations

On D-Day, 7 November 2004, Marines and Soldiers moved towards prepared assault positions on the outskirts of Fallujah. Insurgents had six months to prepare the city for the assault. Densely scattered minefields, IEDs, and prepared fighting positions were located throughout the city.[68] Intelligence estimated that there were upwards of 2,000 insurgents within the city, which

[66] Camp, *Operation Phantom Fury*, 149.

[67] Ibid.

[68] Matthews, *Operation Al-Fajr*, 37.

included contingents of foreign fighters.[69] Leaflets were dropped as a last-minute plea for civilians to leave the city and proceed to government-run housing areas. These leaflets also outlined the rules for civilians to abide by when staying in the city.[70] During the period of darkness on 7 November, American and Iraqi forces assaulted the isthmus on the west edge of the city containing the city hospital and two key bridges.[71] Iraqi forces quickly secured the hospital and the nearby bridges.[72] A US Army Civil Affairs team, paired with a US Navy doctor, delivered medical supplies shortly after securing the hospital to ensure positive media coverage of the seizure of the hospital.[73] US Navy riverine craft patrolled the waterways that surround Fallujah, interdicting anything attempting to enter the city.[74] Fallujah was now completely isolated and cut off from the rest of Iraq.

With the city completely cut off from outsiders, the leading Army and Marine units moved into their forward assault positions on the town's northern edge, for an overview of the assault, see Figure 5.[75] While the US forces were moving into position, CAS, artillery, and sniper teams continued to keep pressure on insurgents. UAVs circled overhead, designating targets for CAS aircraft and artillery, which would quickly and efficiently destroy insurgent teams or fighting positions.[76] Before the main ground assault could commence, Marine engineers breached the railroad berm on the northern edge of town. By mid-morning on 8 November, Marine units launched an attack on an eight-story apartment building on the edge of town designated as key

[69] Camp, *Operation Phantom Fury*, 262.

[70] John R. Ballard, *Fighting for Fallujah: A New Dawn for Iraq* (Westport, CT: Praeger Security International, 2006), 55.

[71] Ibid., 57-58.

[72] Camp, *Operation Phantom Fury*, 159.

[73] Ibid., 161.

[74] Ibid.

[75] Ibid., 169.

[76] Matthews, *Operation Al-Fajr*, 39.

terrain.[77] The apartment building overlooked the north edge of the city and would operate as a C2 node, observation platform, and aid station for friendly forces after its capture.

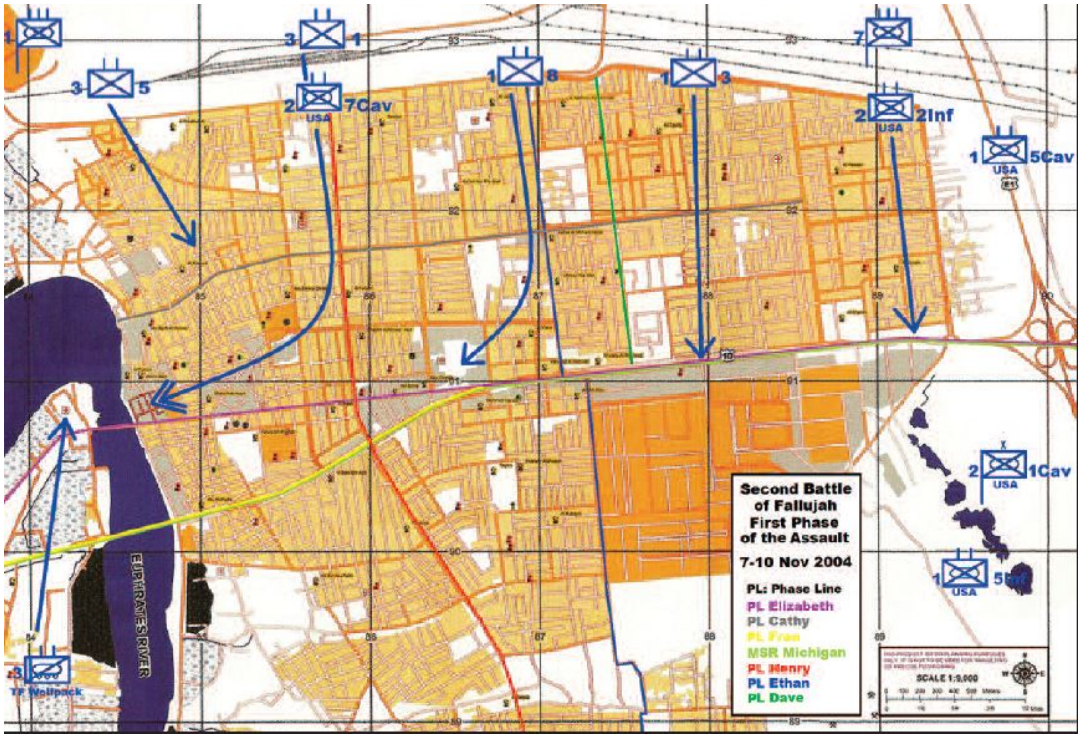

Figure 5. Concept of Operation Phantom Fury. Timothy McWilliams and Nicholas Schlosser, *US Marines in Battle: Fallujah, November-December 2004* (Quantico, VA: History Division-US Marine Corps, 2014), 15.

Fallujah was bounded on the northern edge of town by a thirty-foot raised railroad berm.[78] To help facilitate breaching the berm, four Marine Corps F-18 Hornets dropped eight 2000-pound Joint Direct Attack Munitions (JDAMs) onto the berm. Next in the breaching sequence were the bulldozers that would smooth over the railroad tracks and craters made by the JDAMs. Subsequently, the bulldozers cleared any IEDs or minefields between the railroad tracks and the buildings on the outskirts of town. While the bulldozer and engineer units were hard at work with breaching operations, Marine and Iraqi forces assaulted the train and power station, cutting electricity to the city. These assaults set the conditions for the follow-on operations within

[77] Camp, *Operation Phantom Fury*, 169.

[78] Ibid., 171.

the city and gave a morale boost to the engaged Iraqi forces.[79] With breaching operations underway, Marine FACs utilized CAS on the forward edge of the city, neutralizing threats emanating from buildings within the first few blocks of the city.[80] Joint fires softened up the forward defenses and allowed for a foothold in the northern urban area once the Army's mechanized battalions moved into the city.[81]

Once the breach was complete, US Army mechanized battalions roared into action in both the east and west sectors of Fallujah, supported by joint fires. The mailed fist of tanks and Bradleys quickly penetrated the insurgent defenses while Marine infantry followed and began to clear buildings and neighborhoods behind the armored spearheads. The combat power of the Army units lay in their armor. The Marine units possessed more infantry than their Army counterparts; therefore, the Marines were primarily tasked for house clearance.[82] Army mechanized battalions planned to race halfway into the city until they hit their phase line within 48-72 hours. The armored thrust pushed insurgent forces from the north into the less densely populated southern half of the city.[83] The back-clearing of the northern half of Fallujah was followed by clearing the southern half in the same manner as the northern half of the city.

The clearance of Fallujah was a multi-week process. The initial penetration of the city occurred much more rapidly than anticipated. However, insurgent forces were able to move in the urban terrain around the armored spearheads and reoccupy buildings behind the armored forces. Marine and Army infantry cleared each house which was a tedious and deadly process. At the beginning of the operation, Marine forces utilized organic firepower, mostly consisting of machine guns and rocket launchers. After taking heavy casualties in the first days, the infantry

[79] Camp, *Operation Phantom Fury,* 171, 174.

[80] Ibid., 197.

[81] Ibid., 182.

[82] Ballard, *Fighting for Fallujah,* 56.

[83] Ibid., 57.

utilized armor and joint fires to reduce the enemy defenses of a fortified house before the infantry assault.[84] Heavily defended houses were destroyed by joint fires to preclude taking excessive friendly casualties.[85] GRG's were instrumental for quickly and effectively employing CAS platforms against designated targets, reducing the time required and increasing the situational awareness of the CAS team. Avoidance of fratricide and collateral damage was due to the match of precision weapons to the high level of situational awareness provided by the GRGs inside the densely packed city. The 500-pound JDAM was instrumental in ensuring weapons effects were delivered to the target, avoiding any harmful effects to nearby homes or friendly troops. The aerial campaign utilized 100 percent precision-guided bombs, a first for a US air campaign.[86]

House clearance operations took place during daylight hours. Much as in Operation Anaconda, US forces did not execute large scale night operations to reduce friendly casualties. Instead, USAF AC-130s and UAVs roamed the skies, searching for any movement within the city. Battle tracking of the static friendly positions was excellent, allowing the AC-130s to shoot anything that moved outside well-known US perimeters at night.[87] The application of joint fires in this manner disrupted enemy preparations to attack friendly positions at night or set up ambushes for the following morning. While US infantry were able to rest at night, the harried enemy forces were under constant attack if they moved within the city, further reducing their ability and will to resist American armor and infantry.

Lessons Learned

Marine and Army units would have a hard task ahead of them as they continued to clear the city. US forces declared Fallujah secure on 8 December 2004, twenty-four days after the beginning of the operation. While in contact, US forces developed counters to insurgent tactics.

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[84] Camp, *Operation Phantom Fury*, 226.

[85] Ibid., 261.

[86] Camp, "Threading the Needle: Air Support for Operation Phantom Fury," 49.

[87] Camp, *Operation Phantom Fury*, 200-202.

They used their CAS and artillery advantage to their benefit. US tactics changed after gaining an understanding that insurgents wanted US infantry to enter houses to lessen the US advantage in CAS, indirect fires, and armor. The United States' ability to shift tactics and use precision firepower to their advantage helped the American forces on the ground. Air to ground coordination became much more efficient, allowing for rapid prosecution of targets from the air to support ground objectives. The increased situational awareness of CAS assets provided by the use of accurate GRGs reduced the probability of fratricide as well.

When examining the detailed and integrated planning conducted before the operation, all seemed well. Sixty percent of aviation assets came from the First Marine Expeditionary Force in Operation Phantom Fury while the remainder of air support came from joint forces.[88] Marine planners solicited suggestions and experience from the Air Force and other joint fires officers within the theater to build a robust, joint plan that was easily executed by all types of air assets. The design of the aviation plan utilizing the GRGs for aviation and JTAC usage was brilliantly conceived and executed. The use of keyhole CAS kept multiple CAS formations on station at any given time, maximizing the amount of simultaneous joint fires if required. Even though Marine aircraft were more likely to be supporting a CAS request, the other three services assimilated quickly into the joint construct the Marines created. In addition, the futures planning cell had six months to plan Operation Phantom Fury. The large amount of time led to a well thought out plan that could absorb several changes, which was a marked contrast to the rushed nature of Operation Valiant Resolve. There was plenty of time to include additional units as they were added to the scheme of maneuver.

An examination of the coordination and execution of the air plan reveals that airpower was well integrated and executed with deadly precision. 386 CAS strikes were delivered with an

[88] Camp, *Operation Phantom Fury,* 161.

additional 14,000 rounds of indirect fire delivered.[89] AC-130s were routinely used at night in danger-close situations, delivering accurate and lethal firepower when in close proximity to friendly forces.[90] UAVs were able to pinpoint insurgent positions to allow joint fires to neutralize the enemy before friendly forces were within the range of the insurgent weapons.[91] The holdover of Marine Harrier squadrons during their replacement phase meant that additional CAS assets were available for Operation Phantom Fury. All Marine fixed-wing CAS aircraft were equipped with the newest advanced targeting pod, the Litening, to help with precision targeting of their weapons.[92] Marine rotary-wing assets also planned to be on-station throughout the day and to partially overlap with AC-130s at night, keeping direct fire CAS on station for the entirety of the day.[93] The amount of CAS on station was always sufficient for operations. The only delays experienced were due to limited airspace when multiple flights were dropping ordinance.

Operation Valiant Resolve demonstrated that a well thought out plan for airspace and CAS deconfliction was required for operations to be successful. Planners spent many hours thinking through the plan in the six months leading up to Operation Phantom Fury, incorporating lessons learned and best practices from previous operations. The additional planning time was well spent based on the results and after-action comments. CAS was a responsive weapon that ground force commanders used to protect the lives of infantry on the ground. Precision weapon delivery and battle tracking of friendly positions were a requirement for successful CAS operations in an urban environment. The joint fires team executed a well-developed plan and professionally delivered joint fires to decimate the enemy. With enough time and planners

[89] Gott and McCool, *Eyewitness to War,* 239.

[90] A.R. Milburn, *Lessons Learned; Operation Phantom Fury* (Quantico, VA: Marine Corps Center for Lessons Learned, 2005), 8.

[91] Ibid.

[92] Kenneth Estes, "U.S. Marine Corps Operations in Iraq, 2003-2006" (Quantico, VA: History Division, USMC, 2009), 58.

[93] Ibid.

receptive to outside ideas, the difficulty of integrating joint services within the operation was worked through to achieve positive results.

Urban Operations

Urban areas have increased rapidly in the second half of the twentieth century and indicators point to this trend continuing into the twenty-first century. The US Census Bureau defines an area as urban if it contains more than 50,000 residents with a concentration of greater than 1,000 people per square mile.[94] In 1950, only 30 percent of the world's population lived in a city. In 2018, that figure rose to 55 percent of urban denizens. North America and Europe have the largest populations living in urban areas; over 75 percent of the population lives in a city.[95] In contrast, the population of Northern Africa approaches 55 percent urban dwellers. Of the urban residents, approximately half of the population resides in cities with a population of less than 500,000, while one in eight are residents of megacities that have a population of greater than ten million people.[96] The accumulation of wealth, power, and prestige that a city possesses makes them just as likely areas for battle in the future as they were in the past. US forces will be immersed in a conflict in urban areas as demographic shifts continue and will be exacerbated by economic inequity in the developing world.

Doctrine

With the levels of urbanization increasing, joint planners need to be cognizant of planning for conflict in urban areas. Joint Publication 3-06, *Joint Urban Operations,* identifies

[94] Dawn A. Morrison and Colin Wood, "Megacities and Dense Urban Environments: Obstacle or Opportunity?" *Small Wars Journal* (February 23, 2016), accessed 27 February 2020, https://smallwarsjournal.com/jrnl/art/megacities-and-dense-urban-environments-obstacle-or-opportunity.

[95] United Nations, Department of Economic and Social Affairs and Population Division, "Population Facts" (New York: United Nations, 2018), 1, accessed 27 February 2020, https://population.un.org/wup/Publications/Files/WUP2018-PopFacts_2018-1.pdf.

[96] United Nations, Department of Economic and Social Affairs and Population Division, "World Urbanization Prospects: The 2018 Revision" (New York: United Nations, 2018), 1, accessed February 27 2020, https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf.

three critical areas to consider when attempting to understand an urban area. The three critical areas are dubbed the "Urban Triad." They consist of complex man-made physical terrain, population size and density, and the urban infrastructure.[97] Understanding the specifics of each category in IPB is critical to getting a better understanding of the operational environment and, ultimately, the success of the operation. While understanding the urban triad is required to enable the commander's vision for the operation, planning for CAS within an urban area also focuses on certain specifics within the urban triad. Successful urban operations will require a much higher degree of planning, coordination, and cooperation than non-urban operations.

The application of a systems approach to CAS planning during urban operations is critical for success. All of the elements of the urban triad are interlinked, and any changes to one element will have a ripple effect on the other elements. Understanding how the operation will affect the system when employing CAS is necessary to achieve the objectives set by the commander. Some factors to consider when undertaking urban operations in large cities is that the operations are resource and time-intensive and can create large numbers of friendly and civilian casualties alongside rapid media coverage of events.[98] Based on the effects that an urban system can impose on forces that are fighting within that area, a complete understanding of the urban environment is required to bring success during operations. Air support in urban areas requires a more nuanced view of several environmental factors in order to be successful, especially when kinetically targeting manmade physical terrain.

Planning for CAS in an urban area is not entirely different from CAS in a rural area, although urban environments require additional emphasis in some specific areas. One area that requires additional consideration are threats to CAS aircraft. Threats to aircraft can increase within the city due to the ability to hide threat systems. Anti-aircraft artillery (AAA) is

[97] US Department of Defense, Joint Staff, Joint Publication (JP) 3-06, *Joint Urban Operations* (Washington, DC: Government Printing Office, 2013), 1-2.

[98] Ibid., 1-5 - 1-9.

particularly effective due to its ability to be hidden or placed on rooftops for more effective use against lower flying aircraft. Rotary winged aircraft are especially susceptible to well-concealed AAA and may have to hold outside the city until an area or district is swept for AAA threats.[99] During Operation Phantom Fury, Marines instituted a one-kilometer standoff distance from the edge of the city for attack helicopters to mitigate the threat of AAA and Man-Portable Air Defenses (MANPADs) and prevent battle damage.[100] Even though the fighting during Operation Anaconda was in a rural area, the dense AAA coverage from the high ridgelines damaged most of the committed AH-64s in the first day that operated in the valley.[101] Reinforcement by Marine AH-1s within the theater bolstered the dwindling numbers of attack helicopters available for flight operations. Additional AH-64s were airlifted from the US to backfill the damaged AH-64s.[102] MANPADs also present a lethal threat to fixed and rotary wing CAS assets because of the large number of systems that can be employed and the short time of flight the missile. The emplacement of radar-guided surface to air missile systems near or within the city will require extended periods of suppression of enemy air defenses (SEAD) to have CAS assets be able to operate without undue influence.[103] Enemy commanders will likely site surface to air assets near protected structures where collateral damage will likely be problematic. ROE concerns for SEAD in an urban environment must be addressed appropriately in planning and execution.

Communication between CAS assets and JTACs or FAC(A)s (Forward Air Controller Airborne) can be more difficult in urban areas. Urban canyons, the space in between tall buildings, can mask or limit line of sight communication links used by JTACs and CAS aircraft.

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[99] See the Battle for Najaf, 24 Mar 2003. The 11st Aviation Regiment was ambushed by concentrated AAA fires outside Najaf. All of the Apaches (32 total) committed to the battle were damaged.

[100] Camp, “Threading the Needle: Air Support for Operation Phantom Fury,” 47.

[101] Grau and Billingsley, *Operation Anaconda*, 198-199.

[102] Ibid., 246, 200.

[103] US Department of Defense, Joint Staff, Joint Publication (JP) 3-09.3, *Close Air Support* (Washington, DC: Government Printing Office, 2014), 3-20.

Thus, a redundant communications plan is required within the joint force for different wavelengths and frequencies to operate effectively. Operation Anaconda suffered from a lack of frequencies allocated to JTACs and the assigned frequencies were in a wavelength that was not able to be monitored by Army radios.[104] While in an urban operation, the placement of radios or antennas is crucial for comms with CAS aircraft due to masking from tall buildings or the scattering of transmissions.[105]

If communications are degraded by the physical terrain or by enemy communication jamming, the incorporation of airborne radio relays can mitigate some of the issues and restore communication links from the JTAC to the CAS asset. Having FAC(A) aircraft on station can mitigate the jamming by removing radio receivers from the jamming pattern.[106] After the wholesale failure of ground to air communications during the first day of Operation Anaconda, the USAF prioritized sending FAC(A) aircraft to support ground units, reducing some of the issues encountered with communications.[107]

Command and control of aircraft orbiting overhead is another critical part of planning. The ASOC, working command and control of CAS assets, in conjunction with an airspace control party to work aerial deconfliction of operating airspace, is vital to the success of air operations. Operation Phantom Fury had a fully staffed air operations section to ensure detailed air planning was done beforehand. Operation Anaconda suffered from not having an ASOC during planning, which had disastrous results.

The proficiency of JTACs and CAS assets is an additional critical component for urban operations. Historically, 90 percent of engagements in urban environments occur within fifty

[104] Grau and Billingsley, *Operation Anaconda,* 185.

[105] US Joint Staff, JP 3-09.3, 3-20.

[106] Ibid., 3-21.

[107] Grau and Billingsley, *Operation Anaconda,* 227.

meters of friendly and enemy forces.[108] Engagements against enemy forces or positions using supporting arms can occur within 250 meters of friendly forces.[109] CAS weapon loadouts should be carefully matched within the joint force to maximize precision munitions that can be paired to a large variety of targets yet limited blast effects. Coordination for Operation Phantom Fury specified that CAS platforms be equipped with precision weapons, the 500-pound JDAM was in high demand. Unfortunately, the best precision weapons for limiting collateral damage will also be in high demand across the entire area of operations. Early coordination and planning to ensure that these critical weapons are allocated smartly by JFACC assets are essential. The evolution of precision weapons and the technology to effectively engage targets in an obscured battlefield has lifted some constraints that weather imposes on CAS. Low cloud decks in the target area cannot keep enemy forces from being targeted as long as a JTAC can observe the forces and communicate to CAS assets.

Friendly force situational awareness is paramount in urban operations in order to bring accurate and timely effects to bear. Engagements with enemy forces will occur at reduced ranges due to limited lines of sight between forces resulting from urban and complex terrain. Situational awareness of friendly and enemy forces is critical to prevent fratricide. The fratricide of the combined Afghan and SOF team on the opening day of Operation Anaconda is an example of a loss of situational awareness and the dire consequences that result from it. One method to increase situational awareness is the production and dissemination of GRGs. GRGs, when appropriately developed and disseminated widely, can immensely increase battle tracking of the enemy and friendly forces and reduce the risk of fratricide. The ability to communicate via a standard product increases awareness of friendly positions and allows for rapid targeting of

[108] US Joint Staff, JP 3-09.3, 3-21.

[109] Ibid.

potential enemy forces in buildings, the advantage inherent in GRGs cannot be overstated.[110] The use of GRGs in Operation Phantom Fury was an unqualified success, quickly allowing aircrew to engage targets without a single instance of fratricide.

The challenge of operating and fighting in an urban environment should not be underappreciated. Friendly forces will likely have a bloody and drawn-out battle against a knowledgeable and determined foe within an urban area. The time required to properly plan an assault into an urban area is lengthy and ad hoc assaults into an urban environment can invite disaster such as the first assault on Fallujah. The operational and tactical link between the ground scheme of maneuver with air support is imperative. Exploiting the ultimate high ground with CAS will enable the infantry to clear and hold positions and successfully reach objectives, reduce friendly casualties, and limit collateral damage. Close air support will never occupy a house but will better enable the Soldier or the Marine that has to do so.

Conclusion

Joint operations in the modern era require a high degree of coordination and cooperation in order to be successful. If joint operations are to take place in urban environments, the planning, coordination, and cooperation between services must be seamless to attain the JFC's objectives. This study utilized the lens of history and doctrine to examine two case studies. The two case studies looked if planning, coordination, and cooperation were undertaken and exercised during the resulting combat engagements? If there was a lack of planning or coordination in any of the above categories, did it have an impact on that operation? If so, how would it impact joint operations in urban environments in the future?

The research questions above, when applied to Operation Anaconda, show failures in the planning, coordination, and execution of air support. The operational failure is based on the

[110] Matt Kralovec, "Capturing the Role of Gridded Reference Graphic Systems" (Academic paper, Quantico, VA: Expeditionary Warfare School, 2012), 2.

criteria of detailed joint planning and coordination among the services. The basic oversight of planning doomed the air support from the start. The planning and coordination issues affected the execution of CAS to aid the ground scheme of maneuver thus impacting operational objectives. Even though many issues were identified after the start of the operation, the US and allied forces were able to overcome stiff resistance and achieve the overall objective of clearing the valley, albeit on an extended timeline. The failure to adequately incorporate joint inputs into the initial planning hampered the operation, allowing some enemy fighters to escape the valley. Sub-optimal air support was provided because of late coordination during the final planning with joint forces, affecting the friendly ground scheme of maneuver during the operation. The doctrine was not at fault in this case study. The application of the existing doctrine during the planning process for Operation Anaconda was at fault, albeit for a multitude of reasons. The lack of coordination by an appropriately manned staff within the joint force made the execution of the operation far more complicated than it needed to be. When applying the lessons learned from Operation Anaconda to an urban operation, the planning shortfalls and subsequent operational effects would have been magnified by the increased tempo and lethality inherent in an urban environment due to the chaotic and obscure nature of the battlefield.

Operation Phantom Fury was a case study in which many things went right for the joint force. Not only had the lessons learned from Afghanistan been internalized, but the previous year of fighting together as a joint force in Iraq allowed best practices to be identified and utilized. Appropriate manning of staff and planning teams, as well as the enabling assets such as the ASOC, were already in Iraq and fully functional. The planning and coordination of the joint force, especially with CAS, allowed operations to support either Army or Marine units without missing a beat. The application of doctrine as a guideline for planning was done correctly across all the research questions. Airpower enabled the resulting success of the combined arms team clearance of Fallujah. The only cautionary note is in regards to ROE. Could have the ROE been relaxed earlier in the operation, allowing more air support against hardened buildings inhabited

by enemy fighters? If the ROE were loosened, weighing the subsequent increased destruction of buildings across the urban triad and the follow-on reconstruction efforts would be necessary.

In summary, urban operations in the future are likely to stress the joint force due to the increased challenges while conducting combat operations in a compressed, obscured, and confusing environment. The further urbanization of conflict areas and the movement of populations to cities is only going to make conflict more deadly to friendly and civilian lives. The current joint doctrine for CAS in an urban environment is sufficient in order to apply military power within a city. The application of doctrine across the joint force is sufficient to be able to prevail in urban operations against a determined enemy. Ensuring that the joint force utilizes doctrine appropriately during planning and execution is paramount in order to be able to prevail. America can use the history of urban fighting and the practical doctrine it possesses to limit damage to infrastructure and lives. Success in future urban operations requires that joint planners ensure that planning, coordination, and cooperation are incorporated into the operational plan from the beginning. Doing so will ensure maximum lethality will be brought to bear on the battlefield to minimize friendly casualties while still restraining the effects from unduly affecting the civilian populace and infrastructure.

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