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GERMAN BATTLE STYLE
IN ULTRA MOBILE, HIGH INTENSITY WAR:
NORTH AFRICAN DESERT 1941-42

BY

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PREFACE

The German Army fought battles in World Wars I and II more effectively than any other armed force. Other great Armies - - British, French, American, and Russian - - fought against the Germans with estimable battle fighting skill among commanders and combat soldiers. Those Armies also fought with weapons similar in technological performance characteristics to those of the Germans. The German Army, however, linked tactics and operations with ~~weapons~~^{weapons} in combinations that gave it more impressive victories on the strategic offensive and dangerous vigor on the strategic defensive than its respected opponents. The German Army possessed an edge in war fighting that remains to this day difficult to qualify but nevertheless a tangible, superiority over the other great Armies of the world. This brief study searches for insights into what made the German Army tick: the style of the commanders and the spirit that drove the combat soldiers. The purpose of the study is to present the insights and make recommendations on how the associated German style of fighting might be applied to improve U. S. Marine Corps operations today.

The thesis that the German Army fought armed battles more effectively than any of its opponents demands at least brief elaboration. In the years of sweeping social and economic change preceding World War I, the German Army developed the most impressive plan of military operations for possible war between the two opposing alliance systems that had developed between 1890-1914. The plans for military operations of the four other Great Powers

that entered the war in 1914, do not remotely approach Count Alfred von Schlieffen's conceptualization in terms of boldness, decisiveness, initiative, concentration, and surprise - - factors that read like a litany of the possible principles of war. In the words of probably the most distinguished living historical authority on Germany, the Germans intended to put the armed strength of a great power (France), as it were, like a cat in a bag.¹ Just as impressive, the Germans intended then to transfer the victorious armies to the denuded eastern front and put an even bigger Russian cat in a (presumably) bigger bag. The German operations at the beginning of World War I associated with the ideas of Schlieffen reflect, in turn, the tangible German superiority in operations and tactics for the rest of the war.

The operations conducted by Helmut von Moltke (the Younger) in August-September 1914 and associated with the earlier Schlieffen "Plan" would fail to conquer France or take Paris. This failure is well known. The opening German offensive gained so much ground, however, that the Germans fought for the next four years exclusively on French and Belgium^a soil. This astounding general framework for the entire war in the west is rarely connected with the Schlieffen "Plan" and seldom claimed as a factor in support of German operational prowess in World War I. On the eastern front, the Germans conducted the most effective set of military operations in the entire war in the Battle of Tannenberg (August 1914) and its sequel. The Germans went on

1. Gordon A. Craig, Stanford University, in various conversations with the author between 1965 and the present.

with the help of a faltering but casualty-absorbing Austro-Hungarian Empire to defeat Russia by December 1917. German expeditionary armies with deceptive ease would knock Serbia (1915) and Rumania (1916) out of the Great War. Modest German forces assisting the Austrians in the south would inflict in late 1917 the most serious defeat of the Italians in the war. The Germans would excel in gas warfare notably artillery projectile tactics and technology and the employment of mustard gas, the employment of machine guns, the construction of fortifications, and the development of "shock troop tactics."²

Struck by the picture above, historical authorities have quantified the relative effectiveness of the armies in World War I. Authorities have used casualties inflicted and received by each side in a battle as the most important unit of exchange in the business of war. Casualty data have been available since the modern more systematic approach to war that emerged in the nineteenth century. Authorities have been able to extract these data from medical and adjutant general (personnel administration) records of the larger European armies. These data correlated with the personnel strengths of the opposing forces in a battle and numerical factors to account for inherent advantages associated with the side on the defensive, have been used to score the effectiveness of the opposing sides in battle. Using the data as sketched out above and assigning scores, authorities note that

2. Bruce I. Gudmundsson, Stormtroop Tactics: Innovation in the German Army 1914-1918 (New York, 1989), is a [REDACTED] recent account of the tactics that were the forerunner of the blitz style of advance in World War II.

two German soldiers in World War I were equivalent in "combat effectiveness" to three western allied soldiers, for example, French or British. On the eastern front, the combat effectiveness equations indicate that two German soldiers were the equivalent of approximately 14 Russians.³ The effectiveness scores are tied in closely with casualties and these numbers can be generalized roughly as telling the reader that when the Germans received two casualties on the western front they inflicted three and when they received two casualties in the east they inflicted 14. These numbers suggest the importance of attempting to discover what made the Germans tick in war fighting.

In World War II, the German Army conducted operations from 1939-1941 that gave it the immediate possibility of winning the war in Europe through continuation of the drive on Moscow in August 1941. The Army fought under difficult operational circumstances in Norway and the Balkans, was significantly outnumbered in men and tanks in the French Campaign, and faced the challenge of a two-front war in the Polish Campaign that demanded an immediate victory on the "eastern front." The German Army conducted the fighting in those campaigns with a style of operational moves so bold that it achieved victories in the immediate opening stages of the campaigns. In effect, during the period, the Germans won the opening stages of "campaigns" rather than campaigns as conventionally understood in the sense of the later ponderous North African, Italian, and Northwestern European

W 3. Colonel Trevor N. Dupuy, USA (Ret.), Numbers, ^Predictions and war (London, 1979), pp. 99-103.

campaigns of the western allies. The style of command and the methods of combat required to win so quickly and decisively characterized German war fighting on the strategic offensive.

On the strategic defensive from late 1942-1945, the German Army put on impressive performances in the three major theaters of the war in Europe. In the Mediterranean, the German Army won a defensive "victory" in Sicily, avoiding destruction, inflicting heavy casualties and escaping across water with personnel and equipment. In Italy, the Germans similarly won a great defensive victory punishing stronger allied forces in costly battles around Salerno, Ortona, Cassino, and Anzio and preventing the seizure of Northern Italy until the last days of the war. In Northwestern Europe, the Germans would put up strong resistance at Normandy, defeat the allies in Operation Market Garden, and surprise them in the Ardennes offensive with damaging consequences. On the eastern front, the Germans would recover from the Stalingrad debacle so effectively as to launch a strategic offensive at Kursk in July 1943 and prevent the Soviets from reaching the fringes of the core German area until early 1945. The German Army would fight with vigor on the defensive in a style characterized by self confidence and flexibility in command and tactical coherence and counterattack esprit on the part of the combat troops.

The Battle of Kursk illustrates the tactical dominance of the German Army on the battlefield in World War II. The Soviets have continued to view the battle as the centerpiece of the Great Fatherland War and the best example of their war fighting skill. The battle can scarcely be criticized from the viewpoint of

favoring the Germans as a selection for illustrating German war fighting skill. The Germans would fight the battle under circumstances so adverse that only superior tactical performance on the part of the combat troops and commanders would save the Germans from a military collapse in the east in 1943.

The Germans conceptualized the attack in early 1943 at the correct time to inflict a strategic setback to the Soviets by the destruction of the Soviet forces around Kursk in the strategically predominate southern front of that year in the war. Through the epic procrastination of Adolf Hitler in delaying the attack from April to July 1943, the German Army gave the Soviets three months to regain their composure from their substantial defeat at Kharkov in March that had resulted from disastrous overextension at the end of the Stalingrad and Middle Don operations. The Soviets would know where the attack was coming for three months, construct fortifications to a depth of 35 km, and lay half a million mines in belts among them. The Soviets would mass men, tanks, artillery, and aircraft in numbers greater than those of the attacking Germans. Thanks to Hitler's procrastination, British warnings through breaking of the German Enigma codes, and Soviet intelligence, the Soviets would even eventually know the day of the attack. The Germans would finally launch their attack into a summer thunderstorm system that would drench the ground and independently of Soviet resistance halt German movement for about eight hours early in the offensive. Under such conditions, the German Army should have taken disastrous casualties and tank losses, gained no ground, and experienced encirclement by the

vast Soviet strategic reserve massed for the battle and facing immobilized German attackers.

Authorities have examined this battle and using both Soviet and German data have been calculated factors of effectiveness for the two sides. The famed Obyon sector was the area where the crucial engagement was played out. In that sector, the German 48th Panzer Corps engaged numerically superior Soviet forces organized into the Sixth Guards Army and First Tank Army and set in 35-kilometer deep prepared defenses. The Germans achieved a score effectiveness in the resultant combat that translates into one German combat soldier having the effectiveness of approximately three Soviet. The 48th Panzer Corps attacked outnumbered in tanks and assault guns, artillery pieces, and air support sorties by factors in each case of approximately 2:1. The German force advanced 35 km into the Soviet positions inflicting approximately 23,400 casualties and knocking out 450 tanks while suffering the loss of 4,400 men and 141 tanks.⁴ How is it possible that the 48th Panzer Corps could have accomplished these tactical results under the burden of the conditions noted? This study is part of a continuing search for the style, spirit, and weapons that gave the German Army the tactical and operational edge it held in World War II, even, for example, when engaged in what the Soviets consider their master operation of the War. The search now takes us to Rommel and the North African desert.

4. See these data in Dupuy, Numbers, Predictions and War (1979), pp. 108, 109.

INTRODUCTION

In North Africa in January 1941, the Italian Army stood on the brink of defeat and the loss of the last Italian territory in Africa to a motorized, well equipped and growing British field army. British forces stood near El Agheila on the Sirte Gulf half the distance from the Egyptian border to Tripoli, the capital of Libya lying a moderate distance from the Tunisian border. Faced with impending Italian collapse, the German High Command (OKW)⁵ sent a minuscule motorized force to stiffen Italian defenses around El Agheila and prevent, or at least slow, a British advance to Tripoli. The OKW designated the force, German Africa Corps (DAK),⁶ formed it on 9 February 1941, and saw to the arrival of its new commander, Generalleutnant Erwin Rommel⁷ on 12 February. The OKW initially allotted to the Corps one panzer and one light division in process of being formed from parts of other German divisions in Europe. During the period of this study 1941 - June 1942, the DAK would comprise two panzer divisions and one roughly pieced together light Africa division.⁸

5. Oberkommando der Wehrmacht or OKW.

6. Deutsches Afrika Korps or DAK.

7. Rank equivalent to U.S. major general.

8. 15th Panzer Division in process of formation February 1941 largely from 33rd Infantry Division. 21st Panzer Division formed on basis of 5th Light Division and transformed into the panzer division on 1 August 1941 in Africa. A motorized division in process of formation early in 1941 out of a melange of German units in Europe and Africa. In November 1941, the Germans designated the "Africa Division" as 90th Light Africa Division.

SINGLE
SPACE

Between February - June 1941, Rommel and the still assembling DAK would dominate the fighting in North Africa. In March 1941, in a bold counterstroke, disregarding his instructions to defend and consolidate around El Agheila, Rommel would advance with a handful of German units a distance of 500 miles (along the sea) to Sollum on the Egyptian frontier. In June 1941, in conjunction with numerically strong Italian forces, Rommel and the DAK would repulse the British offensive designated Operation Battleaxe. The British High Command in the Middle East, pressed by the home government, launched the offensive with the optimistic intention of destroying the axis forces now concentrated between Tobruk and Sollum in Northeastern Libya. On 15 August 1941, OKW established Panzergruppe Afrika (Panzer Group Africa) and German success and prestige forced a reluctant Italian High Command to place virtually all of its field forces in Libya under the operational command of recently promoted General der Panzertruppen Rommel.⁹ Between August - November 1941, Rommel received enough reinforcements from Europe to put together the 21st Panzer Division and the 90th Light Africa Division. With these forces in place, the stage is set to examine the performance of a talented German commander and several German mobile divisions in action against a powerful, well equipped British field army.

The researcher of this piece chose the German forces in North Africa not only for the skill of their operations but also for the fact of the desert terrain. For the past approximately 20 years, the U. S. Armed Forces have been increasingly

9. German rank equivalent to U.S. lieutenant general.

preoccupied with the necessity to provide advice and weapons to countries faced with realistic prospects of high intensity conventional war in the desert. These countries include an unlikely assortment of very different states having, however, the common striking characteristic of desert climate and terrain. The countries comprise Israel, Egypt, Saudi Arabia, and Pakistan. During the same time, the U. S. Armed Forces have faced realistic possibilities of intervention against hostile states in the same band of climate and terrain to include Libya and Iraq. The desert places a premium on mobility in terms of weapons, organization, and the style of command. With its historical experience almost exclusively of set piece heavy infantry assault against fortified areas and light infantry combat in jungle covered mountain and rice paddy, the Marine Corps cannot be said to have the weapons, organization, and command style that suggest an easy transition to mobile war in ~~terrain~~ ^{favoring} ~~terrain~~ a motorized enemy. The Marine Corps is aware of the stronger possibilities of having to move over long distances against mobile, armored opponent^s and has exercised forces in the California desert in order to make adjustments possible within the constraints of effective strategic mobility. Rommel and the DAK conducted military operations in similar terrain with a style that the Marine Corps should know because the Germans operated with superior technique, parts of which can be applied to Marine Corps operations today.

Since 1945, British historical opinion has gone through several phases on the subject of Rommel and the DAK in North Africa. A small German force that by most accounts should have

been pushed aside and destroyed along with the Italian army in Libya by the summer of 1941, in fact, survived the year and came close to defeating the British in the summer of 1942. Roughly handled psychologically by the German superiority in ground warfare, the British have had a natural tendency to seek arguments that protect ~~the~~^{an} image of British excellence in arms. Instead of acknowledging that the British field army had been outfought by a German commander of genius with a small but qualitatively superior corps, British commentators developed arguments that tended to protect the image of the British army in North Africa as being at least as good as the Germans. Three protective arguments predominate: first, Rommel was a military genius, and a German corps no more able than the opposing British army gained more prestige than it deserved in the fighting in 1941-1942; then, Rommel was, to the contrary, not a genius but the product of historical misrepresentation, and German success was based on implied "unfair" technological superiority against which a British army qualitatively equal in all other ways to the Germans struggled manfully and triumphed; and most recently, Rommel again became accepted as a leader of military genius, but German technological superiority carried the palm as the predominate reason for the German success of 1941-42.

For purposes of this study, the above situation can be dispensed with as follows. Rommel can be accurately interpreted as a commander of genius. The DAK can be considered to be tangibly superior to the British field army opposing it in command and combat soldier style. The DAK cannot be considered to have had a significant technological superiority over the British-Imperial

forces. The British argument of technological superiority is also a non sequitur, i.e., a reasoning from false or irrelevant premises, when used as it has been to protect the image of the British fighting man by claiming a non-human deficiency in the performance characteristics of the British 2-pounder (40mm) tank and antitank guns¹⁰ and associated Crusader main battle tank. The argument fails because even if British technology was inferior, the human leadership element in the body of British fighting men stands indicted as less effective than the German because the British leaders developed and accepted into the army inferior weapons.

The British field army, nevertheless, stands as superbly tenacious, well equipped by any standards, numerically superior to the Italo-German forces in virtually every category of weapon and equipment, and numerically superior in the air. At sea, the British were overwhelming, seriously inhibited only by the inconsistent intervention of modest German Stuka (dive bomber) forces. Against this first class opponent, Rommel and the DAK, with the support of numerically strong but badly equipped Italian divisions, successfully defended eastern Libya in the extended period from February 1941-July 1942. In the latter month, Rommel and the DAK actually forced the British back to El Alamein, a scant 55 miles from Alexandria and now over 2,000 miles along the sea from Tripoli. The period is filled with examples of gunfire and maneuver in the desert. Many of the examples contain lessons

10. The projectile fired by these guns weighed approximately two pounds.

that can be applied to Marine Corps tactics, organization, and weapons today especially under conditions of mobile war in the desert.

The author was limited to three months for the research, writing, and presentation and discussion of results. Faced with these constraints, he determined to concentrate on the period from 18 November 1941 - 21 June 1942 and the three major engagements within it:

North Africa, Major Actions, Nov 41 - Jun 42


1. British Crusader Offensive from the Egyptian Frontier, 18 November 41.
2. German Counterstroke from El Agheila, 21 January 42.
3. German Venezia Offensive Around Gazala, 26 May 42.

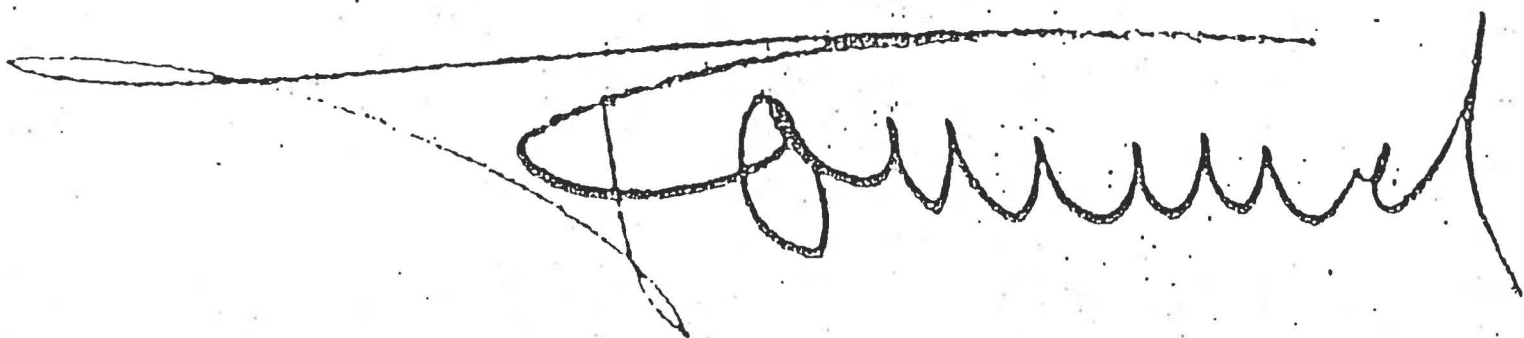
In extracting actions and making observations, the author determined to use original sources as exemplified by the records of the German Army for the period. In a lengthy process begun before the actual research, he ordered the most pertinent, operationally oriented records of the High Command, Panzer Army Africa (Armee Oberkommando, Panzerarmee Afrika) and the three German divisions in it during the period of study: 15th Panzer Division, 21st Panzer Division and 90th Light Africa Division. The author selected 22 reels of the most relevant records for purposes of observing German combat operations. In completing the research, the author scanned approximately 14,000 pages of German language material. Out of those pages, he reproduced approximately 1,200 pages that he examined in detail. The study is based, therefore, almost exclusively on German records of the


African based divisions and Rommel's headquarters. The records are supplemented as appropriate by the author's knowledge of the published material on the subject based on intermittent but considerable attention to the war in Africa since his graduate school years at Stanford University in the mid-1960s.

besonderen Vorkommnisse.

Gesehen: H. Qu., den 4.9.41.

Der Befehlshaber: 



General der Panzertruppen. 

CHAPTER 1

ROMMEL

"You'll find there are always two possible decisions open to you. Take the bolder one - - it's always best." Generalleutnant Rudolf Schmidt to Rommel in February 1940, on the occasion of Rommel taking command of his first Panzer division.¹¹

Karl Maria von Clausewitz (1780-1831), erudite Prussian philosopher of war, stated, as a result of his search for the regulating ideas in war that the best of all possible principles in the conduct of war is to do as the genius does. Although he seems to be making an obscure witticism, he is probably correct in noting that war cannot be conducted by recipe. Military leaders, for example, Marine Corps officers cannot conduct war by recipes of principles, but neither are many going to be recognized as military geniuses. One way out of this cruel dilemma is to encourage the study of war and, as appropriate, the actions of geniuses in the realm of armed violence. Rommel was a war fighting genius whose instinctive touch and unexcelled will to exploit fleeting opportunity cannot be taught on the one hand or accomplished by recipe on the other. The aspiring military leader can observe the genius at work by historical study of his actions and thoughtful ~~study~~ ^{consideration} of his style. Armed with such knowledge, he and his armed service should be able to gauge the usefulness of the specific techniques of the genius and the possibilities of ~~study~~ ^{emulation}.

11. As quoted in David Irving, The Trail of the Fox (London, 1978), p. 51.

Rommel had experienced a uniquely varied and successful military career by the time of his entrance into North Africa. Born in November 1891 near Ulm in the German Kingdom of Wuerttemberg, he grew up in an area of forest and mountain in a state where the people are noted for hard headed practicality and frugality. Rommel had little natural predilection as an adolescent for the profession of arms. His father ^{nevertheless,} placed him in an army cadet school in the Prussian port of Danzig on the Baltic Sea in July 1910. He was commissioned in 1912 as a lieutenant in the Army of Wuerttemberg, one of four German armies that fought in World War I.¹² Between 1914-1918, he fought with exceptional distinction as a lieutenant in the Wuerttemberg Mountain Battalion, earning the German Empire's highest military decoration (Pour le Mérite) and finding his métier as an officer unexcelled in exploiting chance situations. According to the evaluation of a senior instructor in 1931, Rommel basically ^{remained} ~~that~~ lieutenant, making instant decisions and acting on the spur of his battlefield impressions. War is the province of danger, uncertainty, and chance, and Rommel would exceed every division commander and ^{higher} ~~in~~ in World War II in his capability to move within the framework of danger and to exploit the combat opportunities associated with chance. It is this mastery of the fundamental atmosphere of war that qualifies Rommel as a military genius.

12. The German Empire of the day comprised 25 states and one Imperial Land. The four most important based on tradition and the strength of regional particularism, maintained their own armies - - those of Prussia, Bavaria, Saxony, and Wuerttemberg. The Armies of the latter states, of course, were synchronized in command style and technology with the Prussian.

At war's end, 1918, the Army promoted Rommel to captain, and after many turbulent months during the German revolution, the Army chose him as one of an elite body of officers to remain in the drastically reduced army of the Treaty Reichswehr. Rommel served from 1920-1929 as seemingly permanent company commander in an infantry regiment at Stuttgart near his birthplace at Ulm in southern Germany. Rommel then served as junior instructor at the Dresden infantry school from 1930-1933 and finally as commander of an infantry battalion beginning in the latter year. In 1935, the Army assigned him as senior instructor at the new infantry school at Postdam, a suburb of Berlin. The Army recognized in him a special flair for tactics and an ebullient professionalism almost perfect for teaching., In 1937, he published a sparkling book but unlikely best seller entitled, The Infantry Attacks, an ^{achievement} ~~work~~ which brought him to the attention of Hitler and resulted in his assignment as special advisor to the Hitler Youth organization in 1937-1938. In November 1938, the Army posted Rommel as commandant of the officer cadet school at Wiener-Neustadt in newly annexed Austria. Hitler continued to be impressed by Rommel, however, and gave him command of his mobile headquarters for the occupation of Czecho-Slovakia in March 1939 and other escort duties culminating in command of the Fuehrer's War Headquarters for the Polish Campaign.

Promoted to the rank of Generalmajor (Brigadier General U.S. equivalent) in 1939, Rommel was ready for command of a division after his special assignment during the war in Poland. Rommel somewhat presumptuously requested one of the new panzer divisions but was offered a mountain division based on a service record

that was dominated by infantry assignments and war in the mountains. Hitler seems to have intervened in the assignment process and the Army ultimately ordered Rommel to command of the 7th Panzer Division on 6 February 1940. Under Rommel's leadership, the division would achieve the most substantial results of any German division engaged in the French Campaign. Rommel would lead the division literally from the front and maneuver according to his personally conceptualized Stosslinie (thrust line). Under Rommel, the division would be first to cross the Meuse River, move consistently faster and deeper than any other German division for the remainder of the campaign, successfully repel a strong Anglo-French counterattack in its exposed right flank near Cambrai, and take masses of prisoners from respectable opponents prior to the final collapse on 22 June 1940.

- - Rommel's Location In Battle - -

Throughout World War I and while in command of 7th Panzer Division in France in May-June 1941, Rommel led his formations from the front. He achieved extraordinary success during both periods of war almost entirely through means of this style of command. In North Africa, as corps, and later army commander, Rommel continued to lead from the front. He achieved the great success of his life in the attack of 26 May 1942, which resulted in the defeat of the British field army in Libya and the seizure of the Tobruk fortress by 21 June. He won this victory at the army level of command as Generaloberst (Colonel General or U.S. four-star general) while continuing to accompany the advanced

elements of the combat forces he sensed were at the crucial point in the battle.

In a surrounding climate of danger, uncertainty, and chance, Rommel reduced uncertainty and took advantage of chance by his personal, physical presence with the advanced elements of attacking forces. Just how far forward was Rommel during the German offensive against the British Gazala¹³ positions in May and June of 1942? On 31 May 1942, Headquarters, German Africa Corps (DAK) formed Battle Group (Kampfgruppe) Major von Block from the 15th Panzer Division and ordered it to take the British fortified "box" at Got el Ualeb. This British box blocked the supply lines of the mobile forces of Panzer Army Africa entangled at that stage of the battle in an untenable position in the middle of strong, intact British forces. Built around IIIrd Battalion, 104th Motorized Rifle Regiment, Kampfgruppe Block and its modest but critically poised forces, began the attack at 0715 on 1 June 1942 carrying on its slender back much of the hope for German success in the entire battle. DAK¹⁴ supported the attack with Stuka (Junker 87D dive bomber) sorties but the Germans made no gains until the artillery commander of the Kampfgruppe moved into the front line to experience personally the resistance that held up the assault force. He picked out the apparent Schwerpunkt of the British defenses and ordered a change of position and "new insertion" of the artillery. The Kampfgruppe began to bring in

13. Gazala is a small town located close to the Mediterranean Sea, 65 km west of Tobruk. See Maps 1 and 2 for all such place names.

14. German Africa Corps or Deutsches Afrika Korps or DAK.

more effective artillery fire and coordinated another Stuka strike by 0830. At this juncture the fighting seemed to be stabilizing to the advantage of the British in spite of the German exertions. If the box held another day, the German mobile force, five divisions organized into the DAK and the Italian XXth ^{Motorized} ~~Corps~~ ^{Corps}, would likely be forced to withdraw to the area west of the ~~British~~ ^{vast} British minefields between Gazala and Bir Hacheim.

Mid-morning at approximately 0900, the engagement report of Kampfgruppe Block almost casually but with evident total surprise at the turn of events, painted the following picture: "At this moment, the Oberbefehlshaber [commander in chief], Colonel General Rommel appeared in the right platoon [!] of the 11th Infantry Company and accompanied the entire further attack of the battalion in the farthest forward line."¹⁵ Attacking southward, Kampfgruppe Block and Rommel began to gain ground. By noon, as tank elements of 15th Panzer Division moved alongside from the east to support the attack, the British 150th Brigade collapsed in the box. Rommel had secured the communications of his five mobile divisions east of the British mine fields. The destruction of 150th Infantry Brigade was a turning point in the battle. Rommel had effected that turning point by his physical presence in the middle of an advance skillfully coordinated by a lean staff and executed by a Kampfgruppe assembled late afternoon of the day before the attack. A commander at the end of a communications device miles away from the battle surrounded by a large over-

15. 21.Pz.D., Ia, Anlage zum KTB Nr. 5, Gefechtsbericht III./Schuetz. Rgt. 104 (mot), 2.6.42, U.S., Archives, German Records, Divisions, T-313, Roll 768, Fr. 000866.

ranked staff can be imagined only with difficulty to have achieved the same result.

Rommel's "lieutenant style" proved ideal for maintaining a high tempo of advance in mobile war and exploitation of opportunity in complex, swirling mobile battle. Rommel often accompanied the leading elements of advancing forces and, on the spot, ordered tactical formations into new moves based on his immediate impressions. As commander in chief, notwithstanding his front line penchant, he acted at the operational level of war by ordering tactical moves that contributed directly to the successes of the battles being linked together by him to form the operation. In a word, when Rommel ordered a tactical move, it more or less automatically became an operational maneuver based on his position and outlook on the campaign in progress.

The following incident during the 450-mile advance of late January 1942 from El Agheila to Gazala illustrates the style. On 22 January, 5th Machine Gun Battalion, 15th Panzer Division, formed another of the omnipresent German Kampfgruppen (battle groups) of the desert war to include a 105mm howitzer detachment, 100mm gun battery, and one company of 50mm Pak (antitank guns). The DAK (German African Corps) ordered the machine gun battalion Kampfgruppe to be the advanced attachment of yet a larger Kampfgruppe Warrelmann and move east through the great road junction at Agedabia and the smaller but even more important road junction at Antelet farther east. German seizure of Antelet would put the Panzer Gruppe in position to outflank the strong British forces to the north around the port of Benghazi or to advance across the

open desert inland to Gazala lying far away to the northeast. The Germans recognized Antelet as crucial operational terrain and an area through which they would have to move quickly in order to continue to keep the British off balance.

As the machine gun battalion Kampfgruppe advanced toward Agedabia, it believed itself to be the advanced element of the Panzer Group in the offensive. At 1130, 22 January 1942 as it reached the minefields in front of Agedabia, it discovered that fields had already been breached by a neighboring Kampfgruppe of 21st Panzer Division personally led by Rommel who was first through the minefield and now advancing on Agedabia in the lead of the Panzer Army. The machine gun battalion Kampfgruppe received new orders to continue the advance through Agedabia to Antelet now following the commander in chief. The Kampfgruppe moved through Agedabia as darkness fell and continued into the night toward Antelet. Then, six kilometers before Antelet "in the darkness along the road, the commander in chief appeared in front of the leader of the Kampfgruppe and ordered: 'defend Antelet and hold at whatever cost.'¹⁶ Rommel had already personally pressed 21st Panzer Division on to the north and now personally in an oral order set the machine gun battalion on its way to secure the communications of the advancing spearhead of the Panzer Army - - in the middle of the night alongside a desert road.

16. 15.P2.D., Ia, Anlage zum KTB Nr. 2, Gefechtsberichte des Maschinengewehrbataillons vom 22.1. bis 26.1.42, U.S., Archives, German Records, Divisions, T-313, Roll 666, Fr. 000593.

- - Rommel's Headquarters Kampfstaffel - -

^B
(attle ^Echelon)

In the active stages of all the mobile battles in the time period of this study, Rommel operated out of a relatively small and mobile battle headquarters. The Germans used the terms Panzer Army High Command Operations Staff (Panzerarmeeoberkommando Fuehrungsstab), or similarly, Army Combat Command Post (Armeegefechtsstand) to describe this operationally-oriented headquarters. In the German Army, compared for example, with the Marine Corps today, such a headquarters was relatively small, and normally had a modest security element for the immediate protection of the commander and staff. With his penchant for intervening directly in the battle, Rommel personally developed the security element of the Operations Staff into a unique combat force described as the Panzer Army High Command Kampfstaffel or Combat Echelon of the Operations Staff.

After the successful counterstroke of 21 January 1942 that moved the Germans 400 miles east along the Mediterranean from El Agheila to Gazala, Rommel ordered DAK to form a Beuteabteilung (Captured Materiel Detachment, approximately battalion strength) out of captured British and American Tanks. DAK assigned Oberstleutnant (Lieutenant Colonel) Ramsauer of 15th Panzer Division on 12 February 1942, the task of putting together the first company of such a larger detachment.¹⁷ Simultaneously, Rommel began to

17. Pz.AOK Afrika, Ia, Anlage 14 zum KTB Nr. 3, DAK, Aufstellung einer Beute-Panzer-Abteilung, 12.2.42, U.S. Archives, German Records, Panzer Armies, T-313, Roll 426, Fr. 8719207.

put together a strong Kampfstaffel for the Panzer Army Operational Headquarters ¹⁸ and took most of the British tanks and set up a Beutepanzerkompanie (Captured Materiel Tank Company) in the army Kampfstaffel. Rommel operated in this situation with a style that illustrates the ingenuity, imagination, and practicality of the man. He saw two things: first, the special possibilities of a small masse de manoeuvre available to him personally at the Panzer Army Operational Headquarters, and second, the necessity for a strong combat element to protect a headquarters that he characteristically projected in and among the opposing British forces along with him in the fluid combat of the desert. He knew such an element would need tanks; with his practicality and frugality, he could not justify taking German tanks from the two relatively thin panzer divisions. The answer was a Kampfstaffel with a British tank company. Similarly, but with a somewhat different general purpose, the Israeli Army organized an entire captured tank brigade of approximately 139 tanks after the June 1967 War, and, in soldier's vernacular, referred to it as the Russian Brigade.

In March and April 1942, Rommel and his staff pieced together a Kampfstaffel to meet the demands of extremely mobile operations against a first class motorized enemy in permissive terrain for movement and little cover or concealment from air attack. To the Beutepanzerkompanie of 12 British Mark III (16 tons, max 65mm armor, 40mm guns) and two Mark VI (20 tons, max 40mm armor, 40mm

18. Pz. AOK Afrika, O.Ou., Umgliederungen und Neuaufstellungen, Aufstellung der Kampfstaffel des O.B., 12.2.42, U.S., Archives, German Records, Panzer Armies, T-313, Roll 437, Fr. 8730292.

guns) tanks, Rommel added a special 1st Company consisting of a wild but effective melange of weapons for protecting the Army Operational Headquarters. Shortly before the Gazala offensive of 26 May 1942, Rommel approved of a regular company of motorized infantry called Company von Koenen and designated 2nd Company of the Kampfstaffel. Rommel also approved a strong antiaircraft (Flak) battery, 3rd Battery, 43rd Antiaircraft Regiment, that held light and heavy weapons capable of engaging both armored ground targets and aircraft. These units comprised the Rommel Kampfstaffel - - Rommel's combined personal defense and assault element. They held the following men and weapons:

Rommel Kampfstoffel (May - June 1942)

<u>Element</u>	<u>Personnel</u> ^{19*}	<u>Heavy Weapons</u>
1. <u>Kasta</u> HQ and 1st Company ⁺	9/37/179	8 20mm <u>Flak</u> ; 4 40mm <u>Pak</u> (e) ^{**} 3 50mm <u>Pak</u> ; 1 57mm <u>Pak</u> (e) ^{**} 1 75mm <u>Pak</u> ; 1 86mm Arty (e) ^{**}
2. 2nd Company	4/18/106	3 80mm mortars
3. 3./143	<u>4/17/156</u>	2 20mm <u>Flak</u> ; 8 88mm <u>Flak</u>
<u>Kasta Totals</u>	17/72/441	See above. Mostly <u>Flak</u> , <u>Pak</u> .

- * Officers/NCOs/Men.
- ** e or English.
- + Kasta or Kampfstaffel.

19. For these personnel figures, see Pz.AOK Afrika, Kampfstaffel, OB, Kasta Tagesmeldung, 13.6.42, U.S., Archives, German Records, Panzer Armies, T-313, Roll 666, Fn. 8776055.

Ironically, Rommel ordered the company of captured British tanks away on a special mission two days before the attack. He held the strong force noted above as his personnel combat echelon on the day of Operation Venezia. In typical German Army style, Rommel placed Hauptmann (Captain) Kiehl in charge of a mixed 500-man force that would probably demand a lieutenant colonel on the part of the Marine Corps today.

In the confused combat of powerful armored forces among the fortified British "boxes," the Kampfstaffel provided necessary defense and launched attacks of its own. By 27 May 1942, Rommel's sweep with his five mobile divisions around Bir Hacheim at the southern end of the British defenses had miscarried. The Panzer Army found itself being forced back through the British mine seas and fortified boxes by an enemy field army whose tank forces outnumbered ^{its own.} In a situation filled with uncertainty and dominated by chance encounter, Rommel moved with his Battle Headquarters and strong Kampfstaffel as a four-star general directing the maneuver of four axis army corps with approximately ten divisions. The following combat illustrates the fluid conditions of desert war, the command style of a successful mobile commander, and the indispensable value of a strong headquarters battle echelon.

Moving northeast since 0600 through desert terrain criss-crossed by friendly and enemy marching forces and supply columns, the Battle Headquarters and Kampfstaffel ran into a deployed British artillery battery and antitank guns. Rommel ordered the handful of German tanks he had within the Battle Headquarters as a small Panzerstaffel (tank echelon) to attack the enemy force.

Rommel did not call for assistance from some nearby German combat force but rather immediately attacked the enemy with his own personal resource. With this attack, the tanks of Battle Headquarters successfully forced the British to withdraw but suffered heavy losses: The detachment of five German tanks lost one Panzer III H (21 tons, max 50mm armor, 50mm gun) through direct hit by Pak, one Panzer IV F1 (23 tons, max 50mm armor, short 75mm gun) through direct hit by artillery, and two Panzer IIIs to engine breakdown during the maneuvering. The Battle Headquarters and Kampfstaffel held the ground at the end of the fight and a German Panzerwerkstattkompanie (tank repair company) aggressively operating in the same area retrieved the four tanks and successfully repaired them.²⁰

Shortly after this encounter, Rommel with his personal Begleitstaffel (Escort Echelon) of the Kampfstaffel continued farther to the front to find 33rd Reconnaissance Battalion, 21st Panzer Division. At 1245, "it bumped into" three British cruiser tanks (15 tons, max 30mm armor, 40mm guns) which "shot up" the captured British radio vehicle accompanying Rommel. The main protection for Rommel in the escort echelon was a platoon of four captured British 40mm truck-mounted Pak which fought off the British tanks forcing their retirement. Fifteen minutes later, the Kampfstaffel closing up behind Rommel ran into a British artillery battery on the march similarly to the Germans. The Kampfstaffel attacked scattering the more surprised British unit

20. Pz, AOK Afrika, OB, Anlage zum KTB, Kampfstaffel, OB, Kasta Gefechtsbericht, 27.5.42, U.S., Archives, German Records, Panzer Armies, T-313, Roll 477, Fr. 8775919.

capturing one gun and its towing tractor while destroying another gun and three trucks and taking 29 prisoners including two officers. This level of combat action around the Battle Headquarters of an army commander in a mobile desert engagement suggests a special dimension in desert warfare different from beach assault and insurgency warfare.

Combat around the Kampfstaffel intensified later in the day. At 1430, British aircraft made low level attacks on the column with machine guns and bombs and hit one 8-wheeled armored radio vehicle with a light bomb. Only two hours later, as the Battle Headquarters column halted to set up the Army Command Post, a strong British force attacked out of the north and northeast. The scene again represents elements of cultural shock for military forces inexperienced in mobile war in the desert. The battle Headquarters of the four-star commander of a German field army was in the middle of a British attack aimed quite by chance at it - - the British, of course, did not know that they were attacking the Headquarters of Panzer Army Africa. In the battle that followed, the Kampfstaffel using its Flak battery and 1st Company assets of 88mm Flak, towed 50mm Pak, and one 75mm self propelled Pak, knocked out nine British cruiser tanks, two armored reconnaissance vehicles and two trucks. The British attack forced the Battle Headquarters to change position a short distance to the west where it remained fixed for the next several days 3km south of Bir el Harmat and 12 km to the north northeast of Bir Hacheim, the southern fortress of the British defenses.

The next day, 28 May 1942, illustrates the Kampfstaffel in

defense of the temporarily static Battle Headquarters of the Panzer Army. The 3rd Battery, 43rd Fak Regiment, set up a "linear" front of its weapons defending to the northeast. After intermittently firing at British armored reconnaissance vehicles, the Flak battery experienced a "sudden" tank attack from about 15-20 British cruiser tanks which had moved around the battery positions from the southeast and immediately attacked the surprised Germans. In an intense gunfire engagement that lasted 20 minutes, the Flak battery destroyed 13 British cruiser tanks including three that had advanced to approximately 50m of the German 88mm and 20mm Flak firing positions protecting Rommel's Battle Headquarters. The fight was brutal for the British. The Flak battery combat report noted laconically that the British "commander, another officer, and six other crew personnel were taken prisoners. The rest of the crews died in the tanks."²¹ The Kampfstaffel lost one man badly wounded and expended 132 rounds of 88mm antitank and 60 rounds of 20mm antitank ammunition in repulsing this British surprise attack and achieving an annihilating tactical result. The Flak battery held the battlefield at the end of the fight and its brief note on British losses can be taken as accurate.

In the days following 28 June 1942, Rommel used the Kampfstaffel in two additional thought provoking ways. Located in the middle of strong British mobile units, he several times used Kampfstaffel units to support neighboring German mobile forma-

21. Pz. AOK Africa, OB, Anlage zum KTB, Kampfstaffel, Gefechtsbericht, 3./Flak 43, 28.5.42, U.S., Archives, German Records, Panzer Armies, T-313, Roll 477, Fr. 8775296.

tions against anticipated British attacks. The Free-French and British fortified box at Bir Hacheim held out tenaciously until 11 June 1942, and Rommel used 2nd Company of the Kampfstaffel with additional Flak and Pak actually to launch an attack against the fortress alongside of other strong German forces. Later on 19 and 20 June 1942, Rommel again inserted the Kampfstaffel into an attack this time against Tobruk. Rommel seems to have envisioned the formation not only as a strong security element for his exposed Battle Headquarters against both air and ground attack, but also as a unique maneuver element immediately available to him as a forward-oriented commander to take advantage of chance in battle.

- - Rommel's Thrust Line - -

Technique in Mobile War

Rommel introduced the Stosslinie (thrust line) into use in the German 7th Panzer Division after he assumed command in February 1940 and used it during the French Campaign. The technique proved to be superior to the use of map coordinates or geographical features as means of designating locations on tactical and operational maps. After Rommel left 7th Panzer division, its next commander Generalmajor Hans Freiherr von Funck, used the thrust line throughout 1941 in the Russian Campaign. In North Africa, Rommel enforced the technique in Panzer Army Africa and the records give almost innumerable examples of its use.

Just what advantages did Rommel sense in placing a line - -

generally a single straight line but sometimes one with a single turning point in it - - on a map, around which he would direct movement and demand the location of subordinate units? During the French Campaign (May-June 1940), he stated that the thrust line had the special advantage of security over designation by map coordinates or geographical features. An alert enemy with captured maps can detect map coordinates even when encoded and, of course, easily through radio listening in the event of uncoded coordinates sent over the air. The Germans sometimes encoded numbers used with thrust lines, but generally they simply gave the numbers calculated for the designated locations. With thrust lines changed often, there was virtually no way that an enemy could reproduce it. Halfway through the Gazala battles, Rommel's Battle Headquarters ordered the 33rd Armored Reconnaissance Battalion to move to new positions west of Bir Hacheim to block any escape of the Free French Brigade in that surprise direction. The Panzer Army order reads simply "To block Bir Hacheim to the west, 33rd Armored Reconnaissance Battalion is attached [to Panzer Army] and ordered to set itself in at 175.5 right 31.5" No enemy seizing that document or hearing the order transmitted in the clear could locate that point.

Although the thrust line was uniquely secure, it cannot be claimed that security was the main reason for its creation by Rommel. He undoubtedly saw the Stosslinie as an ultra quick way of moving and locating forces and giving his own location in the clear without even the necessity to encode a single number. Associated with Rommel, the thrust line gave him and the Germans

one of many edges that they displayed over their opponents in the desert. Map 3 illustrates the thrust line for the German offensive planned against Tobruk for late November 1941. The German sketch on the map shows one elegantly simple line heading into the British position around which all commanders and combat soldiers could orient their efforts.

Map 3. Planned German
Attack on Tobruk (Tobruk)
(Nov 41). Note Thrust Line.

CHAPTER 2

THE GERMAN STYLE IN MOBILE WAR

In preparing themselves for the next move in mobile combat, German military units of appropriate size, for example, divisions, instinctively organized themselves into Marschgruppen and Kampfgruppen (march groups and battle groups). In mobile campaigns like France (1940), Russia (1941), and North Africa (1941-42), German divisions rarely fought as divisions but rather maneuvered into contact with the enemy and fought as a tactical conglomerate of several self contained Kampfgruppen (battle groups). In the active stages of ongoing battle, the German divisions reorganized and reconcentrated daily for the next day's combat. This process of reorganization and reconcentration was ubiquitous in mobile warfare. The German Army in World War II organized different Kampfgruppen and concentrated them nightly for the following day's battle more effectively than any other Army in the mobile stages of the various European campaigns.

The German Army commanders, staffs, and combat soldiers seemed to possess some special instinct in reforming Kampfgruppen and fighting in them. In analysis of European combat in World War II, British commentators have noted the superiority of the Germans fighting in what the British often characterized as "ad hoc" units (i.e., "for the sake of this case alone"). The British based their estimate on studies later in the war with the Germans on the defensive. They stated essentially that in disastrous defensive situations, the German Army threw together forces

to overcome individual, unique one-time crises with special success. The British recognized this skill but associated it with some provident expertise in improvisation that served the Germans well in the defensive stages of the war.

In the grand German offensives of the first part of World War II, however, and the mobile battles in North Africa in 1941-42, the Germans just as characteristically, and with the same technical and tactical skill, put together Kampfgruppen. On the defensive, the German Army put together Kampfgruppen largely to survive immediate, overwhelming pressures from a numerically and materially superior enemy. On the offensive, one observes a totally different rationale. The Germans formed them when attacking in mobile warfare to seize crucial ground but more generally to defeat strong groupments of enemy forces. German commanders and staffs showed a flexibility in putting together the innumerable Kampfgruppen that characterized the German style in mobile war. German combat soldiers showed special qualities of "teamwork" in constantly shifting in and out of different Kampfgruppen. They also showed some difficult to define but nevertheless tangible will to succeed in the attack.

- - The German Kampfgruppe (Battle Group) - -
in North Africa

The German 15th Panzer Division reacted to the far-reaching British Crusader Offensive in a way that illustrates the Kampfgruppe-style of combat in war in the desert. The British began the Crusader operations on 18 November 1941 with the surprise

move of the mass of the armor of the field army around the southern end of the German fortifications anchored near Sidi Omar 45 km from Sollum in Egypt on the Mediterranean Sea. The massive British force moved during the night and projected itself far behind Panzer Army Africa. Rommel and his headquarters did not realize the full magnitude of the danger and on 19 November 1941 sent 21st Panzer Division piecemeal (i.e., without its running mate, 15th Panzer Division, DAK) to engage British forces that if seriously engaged together would probably have destroyed it. Fortunately for the active Germans, both sides groped in the dark for each other until the first big engagements of 22, 23 November 1941 in which the Germans fought concentrated.

The 15th Panzer Division did not begin to make serious contact with the British mobile force that had driven close to the Tobruk fortress to link up with its British garrison until 21 November 1942. With a successful linkup, the British envisioned destroying the surrounded DAK now lying to the east. Panzer Army Africa envisioned simultaneously hunting down and destroying the British masse de manoeuvre while maintaining the siege lines around Tobruk. Such intentions represent the mutually opposed wills of opponents in war that breed uncertainty and friction in battle and lead to the quick obsolescence of long written orders. At 2015 on 21 November, DAK ordered 15th Panzer Division to concentrate south of Gambut for a coordinated blow with 21st Panzer Division against the British mobile force lying to the south. In characteristic German style, DAK ordered the concentration and necessary regrouping at a time that required 15th

Panzer Division to reorganize and move during the middle of the night.

The DAK order not only necessitated a night movement of the entire division but also required disengagement from British forces up against parts of the organization. The division set up a rear guard to hold its early evening position of 21 November until 0300 the next morning. The rear guard consisted of a strong detachment of 1st Battalion, 115th Motorized Infantry, artillery, and Pak (antitank guns). The division commander did not march the 15th Panzer Division to its new concentration area as a single force. He ordered the setting up of three Marschgruppen (march groups) which under the conditions of impending heavy combat were in fact three large Kampfgruppen. Generalmajor (Brigadier General) Neumann-Silkow was able to move the division along two axes in three self standing maneuver elements. Between 2100-2400, 21 November 1941, at night and in contact with enemy forces, 21st Panzer Division reorganized itself into the following groups:²²

Kampfgruppe Lt Col Cramer
(Marschgruppe A)

Panzer Rgt. 8
3rd Battery, Flak Rgt 33
1st Bn, Arty Regt 33
Staff, Arty Regt 33
3rd Bn, Arty Regt 33
Div Staff
78th Armored Comm Bn

Kampfgruppe Col Menny
(Marschgruppe B)

Staff, 15th Moto Rifle Bde
115th Moto Rifle Rgt
33rd Pak Bn
33rd Armored Engr Bn
2nd Bn, Arty Regt 33

Kampfgruppe Lt Col Geissler
(Marschgruppe C)

Staff, 200th Moto Rifle Rgt
15th Motorcycle Bn
2nd Machine Gun Bn

22. 15.Pz.D., Ia, KTB Nr.2, Seite 10, noch 21.11.41, U.S., Archives, German Records, Divisions, T-313, Roll 664, Fr. 000411.

In spite of the fatigue of the combat and movement of 21 November, difficult road conditions, night movement, and British control of the air, Groups A and B moved out promptly at 2400 and Group C at 0100 22 November 1941. The rear guard followed at 0300. The 15th Panzer Division was not a small unit. March Group A, for example, moved out with 144 battle and command tanks. The movement proceeded with little internal friction, and Neumann-Silkow radioed DAK at 0730 that the division had reached its concentration area.

During this same period of time, 21st Panzer Division, the other division of DAK, fought largely in self standing Kampfgruppen that were constantly reorganized. At 1210 on 19 November 1942, the division commander ordered the formation of Kampfgruppe Stephan in the face of the somewhat premature DAK order to seek out and destroy the British mobile force between Tobruk and the Egyptian border and now lying south and west of DAK. The Kampfgruppe was typical of the stronger German battle groups and consisted of the following:²³

Kampfgruppe Stephan (After 1210 19 Nov 41)

8th Panzer Rgt (that moment w/124 operational tanks)
2nd Bn, Arty Rgt 33 (approx 12 105mm howitzers)
3rd Battery, Flak Rgt 18 (mixed, 2 20mm and 4 88mm guns)

Generalmajor Johannes von Ravenstein, the division commander, directed the Kampfgruppe to isolate and destroy a British motorized force located by 3rd Panzer Reconnaissance Battalion and

23. 21.P2.D., Ia, Anlage zum KTB Nr. 2, Gefechtsbericht, Pz.R.5, 17.11.-31.12.42, U.S., Archives, German Records, Divisions, T-313, Roll 767, Fr 000213.

estimated initially to hold approximately 200 tanks and numerous other vehicles and guns. Oberst (Colonel) Stephan moved south with his Kampfgruppe at 1420 and soon located the British force now estimated at 130 tanks and numerous other armored vehicles, guns, and trucks. In a fight lasting about two hours until the approach of darkness, Oberst Stephan engaged the powerful British force and threw it back to the southeast toward the Egyptian border. The Kampfgruppe claimed 21 British-held American tanks as destroyed and remaining on the battlefield mostly by the guns of the attached 3rd Flak Battery. German records show the following friendly losses:²⁴

Kampfgruppe Stephan Engagement (Afternoon 19 Nov 41)

- a. Tanks: Catastrophic Kill by Gunfire - 2 Panzer III.
- b. Tank: Damaged, Repairable but lying in enemy country - 1 Panzer II.
- c. Tanks: Damaged, Repairable, Retrieved by Panzer Maintenance Company off battlefield but lost to 15th Panzer Division by evacuation rearward - 4 Panzer III
- d. Tanks: Mechanical Breakdown - 1 Panzer III

The Germans put together Kampfgruppe Stephan in the brief period from 1210-1430 with movement to combat beginning at the latter time. In spite of this short notice, the group fought a coordinated action with the Flak maneuvering effectively enough with the German tanks to get credit for knocking out most of the British tanks. The Germans also achieved a favorable exchange ratio - - 8 tanks damaged in various degrees compared with 21 permanently lost by the British - - a circumstance supporting a

24. Ibid., Fr. 000214.

view of some special tactical efficiency of the Germans in the battle.

The Germans put together these battle groups in innumerable shapes and forms. Later in the campaign, in March 1942, DAK ordered 21st Panzer Division to conduct a reconnaissance in force designed to clear ground in front of it in order to move the DAK and Italian XXth Motorized Corps into more favorable positions for the eventual offensive at Gazala. The new division commander at that time, Generalmajor George von Bismarck, decided to set up Kampfgruppe Bismarck under his personal leadership to conduct the foray.²⁵ Bismarck received the order on 13 March 1942 with the requirement to move on the morning of 16 March. To accomplish the mission he put together a medium-sized Kampfgruppe that concentrated in its positions for the advance by 2000 15 March. He built the force for an advance across open desert against an enemy with strong armored reconnaissance forces and the danger of air attack. The Kampfgruppe looked suspiciously like a Panzer division in microcosm. Figure 2 ²⁶ shows a force with just about anything necessary for combat but with special emphasis in the open desert on weapons rather than men, e.g., the force held only one platoon of motorized infantry. The Figure also shows a somewhat awkward organization with Bismarck as a senior commander with only one modest-sized maneuver force. Bismarck probably

25. Generalmajor Johannes von Ravenstein had been captured by the British on 29 Nov 41 in the fluid, mobile combat of the Crusader battles.

26. 21.Pz.D., Ia, Anlage zum KTB Nr. 3, Abt. Ia Nr. 98/42 Geh., Unternehmen Bismarck, 13.3.42, U.S., Archives, German Records, Divisions, T-313, Roll 768, Fr. 000234.

Kampfgruppe Leadership Element

Cmdr, 21st Panzer Div (Generalmajor G. von Bismarck)
Part of Div Command
Part of 2d Co, 200th Panzer Comm Bn
Three Recon Troops, 33d Panzer Recon Bn
Div Recon Platoon

Kampfgruppe Troop Element

Cmdr, IId Bn, 104th Motorized Inf Rgt and Staff
One Panzer Co (Reinf), 5th Panzer Rgt
One Battery, 155th Arty Regt (105mm Howitzers)
One Pak Co (minus one plt), 39th Panzer AT Bn*
One Motorized Inf Plt, 104th Motorized Inf Rgt
One Pioneer Plt. 200th Panzer Pioneer Bn
One Fla Plt, 617th Fla Bn**
Part of Supply Troops, 21st Panzer Div

*Pak or PanzerabwehrKanone or antitank gun.
**Fla or "Army antiaircraft cannon" in contradistinction to Flak
or "Air Force antiaircraft cannon."

Figure 2.
Kampfgruppe Bismarck (15, 16 Mar 42)

envisioned the relatively strong reconnaissance assets in the leadership element as another maneuver element.

It is difficult to overemphasize the German use of night time to regroup into new Kampfgruppen for the next day's mission and to be on the move into combat by Morgengrauen (break of day) - - a term used by the Germans in their orders over and over again to indicate the time at which the next offensive maneuver would begin. After a day of considerable movement and moderate combat on 26 November 1942 in the area behind the Sollum front, 15th Panzer Division went through the following evolution that illustrates German style in the middle of a major operation. In night rest positions finally by midnight on 26 November, the division received the order from Rommel himself at Panzer Group to attack the British behind the Sollum front from the rear. Shortly after the midnight hour, in an example of the flexibility demanded in mobile war, the division received a new order to move in the opposite direction directly toward Tobruk to retrieve the situation, a move which demanded the reorganization of the division during darkness and advance toward the enemy before daybreak. In full darkness, the division reorganized itself into four Kampfgruppen with missions to move as follows to the desert road leading west to Sidi Azeiz and Tobruk and then along it toward the enemy:²⁷

Kampfgruppe 1 - 33rd Armored Engineer Bn with one company 33rd Antitank Bn, and followed by IIIrd Bn, 33rd Artillery Regt.
Task: Reach the road and proceed east at 0430.

27. 15.Pz.D., Ia, KTB Nr. 2, 27.11.41, U.S., Archives, German Records, Divisions, T-313, Roll 664, Fr. 000445.

Kampfgruppe 2 - 2nd Machine Gun Bn with one platoon 33rd Antitank Bn. Task: Reach the road and proceed east at 0440.

Kampfgruppe 3 - 8th Panzer Regt with 1st Battery, 33rd Flak Regiment, one company, 33rd Antitank Bn, with staff 33rd Antitank Bn, and Div staff. Task: Reach the road and proceed east at 0445.

Kampfgruppe 4 - 115th Motorized Infantry Regt, with one platoon, 33rd Antitank Bn, and IId Bn, 33rd Artillery Regt organized in ^{among} ~~the~~ the infantry battalions. Task: Reach the road and proceed east at 0500.

In spite of heavy interference from march columns of 21st Panzer Division also moving at night in the same area, the division reached the road on schedule. Once the division was on the road, the division commander moved the 8th Panzer Regiment to the front to lead the march east. By shortly after the break of day, the first element of tanks lay on the road just east of Sidi Azeiz and heading into it. At that moment, approximately 0600 27 November 1941, it received artillery fire from the area around the village.

The Germans reorganized and moved at night with a style and tempo of action that led to shattering tactical victories during the war. On the move, alert, and advancing with an urgent, distant mission, the panzer regiment immediately deployed and attacked supported by a battery of four 105mm howitzers that had been moving in column with it. The division commander recognized the British force as a "strong enemy" and ordered all of the division's artillery forward and into action in support of the panzers. The heavy artillery battalion (150mm howitzers and

100mm field guns) was farthest forward and added its fire to that of the ^{medium} light battery at short range of about 3,000-4,000m. The British force was immediately smothered by German artillery fire which continued to be reinforced. Supported by this fire and the advance of the division pioneer battalion, the tanks in a brief 15-minute fire fight broke into the village area and forced the surrender of the headquarters of 5th New Zealand Brigade and other units encamped around it taking 800 prisoners. The German artillery regiment commander remarked that the battle ended before he could get the artillery into action out of the rear Kampfgruppe in the division column. The Germans excelled in surprise encounters like this one in World War II.

As the circumstances above show, the Germans excelled because of the sense of urgency and tempo in their operations. As the British slept in their laager around Sidi Azeiz, the Germans reorganized and moved through the desert in the night. As the Germans advanced out of the edge of darkness onto Sidi Azeiz they moved to the urgent drum beat of yet another offensive thrust that they had worked through the hours of darkness to generate. The special energy reflected in continuous operation through night and into day maintained the initiative for the Germans and gave them the edge in surprise encounters characteristic of mobile war.

- - Location of the German - -

Commander in Combat

In Command of 7th Panzer Division in France (1940), Rommel led the division from the front often placing himself physically

in the
^

leading column in a division advance. In command of Panzer Army Africa in 1941-42²⁸ Rommel led with the same style during similar periods of high intensity mobile war. During the considerable periods of quiet in the ground campaign, he visited subordinate commanders or frontal positions of the combat troops on almost a daily basis.²⁹ Other German mobile force commanders similarly led from the front during the French Campaign and most of Rommel's subordinate commanders in Libya affected the same style. The German Army in the development of its mobile forces encouraged the commanders to lead from as far forward as possible. It is difficult to estimate the balance between the influence of the ^{German} Army ^{in general} and Rommel ^{in particular} on the minds of the German commanders in North Africa. Suffice it to say, that ~~the~~ German commander led from the front in a style encouraged by the Army and with the powerful additional stimulus of the example set by the commander in chief in North Africa, himself_x

Leading from the front, the German commander was able to cut through uncertainty and master chance in their exaggerated forms in mobile battle. Positioned forward in the battle itself, the commander of an attacking force has the best opportunity through his direct impressions of the fighting to clear up uncertainty. Located in the same position, he has similar opportunity to master chance surprise encounter and other unexpected violence

28. Actually German Africa Corps (1941), Panzer Group Africa (August 1941-January 1942), then Panzer Army Africa for the remainder of the period of this study.

29. Note, for example, ^{ka} Pz. AOK Africk, KTB, 15.8/-18.11.41, U.S., Archives, German Records, Panzer Armies, T-313, Roll 423, Fr. 8715788-89.

and maneuver on the part of the enemy. With the stress on continuous regrouping and movement at night, the German commander also tended to keep the initiative on the battlefield. ^{In possession of} ~~the~~ ^{in a battle,} ~~the~~ ^{led} initiative, he established the offensive Schwerpunkt in the ~~the~~ ^{fight} and ~~the~~ ^{led} Schwerpunkt formation. Placed forward in the battle, the commander would have impressions necessarily limited to the area around him, but those impressions would be from the center of the battle and in touch with reality.

Earlier in the Crusader battles, for example, 8th Panzer Regiment had greater success in a meeting engagement than that related above at Sidi Azeiz. Success was based on the same factors plus the ^{German} commander being located ^{literally} at the front of the unit. On 22 November 1941, in full darkness at 1900,³⁰ the panzer regiment received the mission to move out immediately to the northwest to seize ground lying 14km from Sidi Rezegh. After moving 4km through the night, the 1st Battalion, 8th Panzer Regiment ran into a tightly bunched concentration of vehicles. At 10m distance, the panzer battalion commander moving in the ^{vehicle} lead of his unit recognized the ^{equipment} ~~the~~ as British. He continued to drive straight through the British laager and while doing so ordered his following 1st Company to move to the left and the 2d Company to the right ^{in and among} ~~the~~ the British vehicles. The battalion commander then ordered the headlights on the German tanks to be turned on and the tank commanders to use the table of organization machine pistols of the vehicles on foot to force the

30. ^{led} Sunset that day was at approximately 1715.

surrender of the surprised British tank crews in the laager. Not a single shot was fired until one British tank moved to get away and was shot up in flames by the German tank crews remaining in their tanks. A British officer managed to set one more tank on fire furnishing additional light for the Germans to take more prisoners. The panzer battalion had captured the commander of the British 4th Tank Brigade, 17 officers, 150 men, 36 tanks and numerous other weapons and pieces of equipment.³¹

The German tank column moved through the darkness with an urgency and tempo superior to that of the British force recovering in laager from the day's fighting. The German battalion commander led from the leading vehicle of the column and immediately glimpsed the reality and grasped the opportunity of the encounter. From his advanced location he cut through the uncertainty and mastered the element of chance in the surprise encounter battle.

In a directive circulated to his subordinate commanders during the deployment to Libya early in 1941, the division command of 15th Panzer Division pointed out the following about the

31. 15.Pz.D., Ia, KTB Nr. 2, Seite 4, 22.11.41, U.S., Archives, German Records, Divisions, T-313, Roll 664, Fr. 000417.

"location of the leader:"³²

"All leaders must

- (a) see for themselves,
- (b) have a lead so far to the front of their troops that they are in a position to provide them with orders without them having to stop (a command friendly orders style). The location of the leader as far forward as possible (the leader of the point company behind the point, the leader of the rear guard behind the most advanced company, etc.). Special protection most necessary for the leader!"

In Panzer Army Africa, German commanders operated largely in accordance with the spirit expressed in these words. Rommel personally exemplified the style and his headquarters Kampfstaffel (battle echelon) the practical necessity to protect him and give him a small additional maneuver element. German division commanders accompanied their advanced units in maneuver and attack. Typically, for example, in his order for the movement of the 21st Panzer Division closer to Bir Hacheim for impending Operation Venezia, Generalmajor von Bismarck noted specifically in the last paragraph of the movement order: "I ride alongside of the commander of the 5th Panzer Regiment [the lead element]. My Operations Echelon and Quartermaster behind the panzer regiment."³³

In combat, the division commander stood in the same advanced position. At 1620 23 November 1942, the commander, 15th Panzer Division, stood physically in the middle of the combat of the 8th

32. 15.Pz.D., Ia, Anlage zum Taetigkeitsbericht, Kommando, 15.Pz.D., Anhaeltspunkte fuer die Motorisierte Gefechtsausbildung, U.S., Archives, German Records, Divisions, T-313, Roll 664, Fr. 000250.

33. 21.Pz.D., Ia, Anlage zum KTB Nr. 5, Division Befehl fuer den Vormarsch am 1./2.5.41 nach Bir Hacheim. U.S., Archives, German Records, Divisions, T-313, Roll 768, Fr. 000813.

Panzer Regiment near Sidi Rezegh on the verge of the substantial German victory that day. The war diary of the division noted that "the division commander standing in the most advanced line where it is always necessary to be, recognized an enemy attack coming in on the left flank of the division. Enemy tanks including heavily armored Mark II tanks began an attack. The division commander personally snatched up an 88mm Flak and a heavy field howitzer [150mm] and directed the location of the firing position. Under the fire direction of Captain Fromm, commander, 1st Battery, 18th Flak Regiment, the attack was repulsed."³⁴ This account is a little classic. The division commander in the middle of the combat with his panzer regiment, personally detected a strong enemy attack with tanks impervious to German tank and Pak fire. Cutting through any uncertainty about what was happening by his presence in the path of the enemy attack, the division commander also mastered chance disaster in the presence of the Mark II tanks by personally finding and siting two weapons heavy enough to break up the attack. This same division commander, Generalmajor Neumann-Silkow, would be wounded by shell fragments in an advanced position next to his armored command vehicle on 7 December 1941 and die of his wounds two days later.

34. 15.Pz.D., Ia, KTB Nr. 2, Seite 10, 23.11.41, U.S., Archives, German Records, T-313, Roll 664, Fr. 000428.

CHAPTER 3

OPERATIONAL AND TACTICAL OBSERVATIONS ON THE GERMAN CONDUCT OF WAR IN THE DESERT

Commentators often break down the conduct of war by military leaders into strategy, operations, and tactics. From such a view, strategy stands as a high level, cerebral art that defines the higher level goals of war in theaters of military operations and is susceptible to analysis in terms of principle or rule. In a war, the goals of strategy can be gained only by the armed violence associated with the military operation and the battles comprising it. Military operations and the inclusive battles are less susceptible to control in terms of principle and rule. Lying in the realm of armed violence, operations and the battles comprising them tend to march to the drumbeat of the climate of the armed violence of war - - danger, exertion, uncertainty, and chance. In such a scheme, the military operation comprises the battles strung together in given space and time to achieve a set of strategic goals. Operational art becomes the art of stringing those battles together to achieve prescribed strategic goals. Battles - - armed encounters, engagements, maneuvers, and strikes - - are the realm of tactics. In the conventional arrangement of strategy, operations, and tactics, the latter stands out as the art of fighting battles.

In North Africa in 1941-42, Rommel and the staff of Panzer Army Africa practiced operational art with a style that can be characterized by the words quick tempo, decisive objective, and continuous movement. In contrast with Soviet operational art

today in which the Soviets tout a systematic approach and various recipes involving correlation of force for success, the Germans recognized the uniqueness and danger in every operation and a resulting style characterized by the observation of one German general³⁵ that in danger there is always opportunity. If the Soviets attempt today to take uncertainty and chance out of the conduct of the military operation by systematic, quantifiable, rule-book addressal to every contingency, the Germans overcame the same factors by making quicker decisions from more advanced positions seeking opportunity in the province of chance and taking advantage of it. The Germans were painstaking and thorough in the putting together of their operations when in possession of the initiative on the offensive. The Germans systematically (i.e., always) employed Planspielen or command conferences in which they calculated the difficulties of an anticipated operation but never confused the game with the reality of the violence and uncertainty of war.

During the time covered by this study, Rommel and his staff orchestrated their first operation in the period 18 November - 7 December 1941 as a reaction to the British Crusader Offensive. This German "operation" was not planned by Rommel and his staff, but rather it was forced on Panzer Army Africa by the British. Under surprise attack by an enemy numerically superior on the ground and in the air, Rommel had the clear strategic goal to -----

35. An observation of then Generalmajor Fritz Erich von Manstein during the Polish Campaign (!). Manstein seems to be saying that lesser minds and characters see only danger in danger, react accordingly and attempt to remove danger in advance by adherence to rule or principle.

avoid the destruction of his own army and thereby prevent the seizure of Libya and the ending of the war in North Africa. Rommel and his staff faced the sudden prospects of linking together several battles - - one around Tobruk, another farther east on the frontier defenses, and the largest of all among the opposing mobile forces in the area between the siege lines of Tobruk and the defenses on the frontier between Sollum and Sidi Omar. Just what style of operations did the Germans reveal in coordinating these battles in the desert against a superior enemy?

First of all, for two days, 18, 19 November 1941, Rommel and his staff mistook the purpose of the strong British reconnaissance forces that had driven close to the Tobruk siege lines by the evening of the latter day. Rommel optimistically dismissed the activity as a reconnaissance to clarify German intentions relative to the impending German attack on Tobruk. The Panzer Army staff estimated the situation as late as the evening of 19 November as one in which the British were attempting to disrupt the German preparations. Rommel and his staff did not accurately gauge the situation until the afternoon of 20 November when it became "apparent that the enemy had not only set out on a relief thrust to Tobruk but on a great general offensive."³⁶ In effect, the German command did not react to the actual great offensive of the enemy until the evening of the third day. Rommel showed

36. Pz. AOK Africa, Ia, Schlachtbericht der Panzerarmee Afrika, den 20.11.41, U.S., Archives, German Records, Panzer Armies, T-313, Roll 430, Fr. 8723063.

considerable energy during this period, however, approving the DAK order to commit the 21st Panzer Division alone on 19 November against the vastly underestimated British mobile force. Fortunately for the Germans, 21st Panzer Division did not contact the main strength of the British tank forces. The next day, 20 November, the DAK finally concentrated 15th and 21st Panzer Divisions. The same day, Rommel realized the presence of a grand British offense and began the operation from the German side.

During the first several days, 18-20 November 1941, of the British advance, the Germans groped for a British mobile force of uncertain dimensions. The Germans groped in open, level desert for the British moving with a mobile force that had a pool of approximately 500 cruiser-type tanks and 250 armed reconnaissance vehicles available for the advance. It is a notable point that the British motorized forces in desert terrain rather than being vulnerable to detection were extremely difficult for the Germans to find. Panzer Army command had three Panzer reconnaissance battalions under its direct operational control, elements of two panzer divisions, and other forces including aerial reconnaissance assets airborne in spite of substantial British air control and skilled radio intercept units all dedicated to finding the British but none having decisive success.

Rommel and his staff began to practice operational art on 21 November 1941 by stringing together three battles forced on them by the British attack. Panzer Army Command sent out orders daily from this point on to the two static battles developing around Tobruk and Sollum. The orders came out in a consistent, firm, succinct pattern, for example, on the evening of 21 November:

"XXth Army Corps hold Tobruk front," just as simple as that. Rommel knew that a collapse of his predominately Italian forces either at Tobruk or around Sollum would jeopardize full success in the unsolicited operation developing around him. Well aware of the danger surrounding him by 21 November, Rommel, as his actions show over the course of the operation, sensed that the opportunity offered itself to defeat the British field army. In effect, Rommel began by 21 November to link together the battles into a German operation that had the strategic goal to defeat the British mobile force (i.e., the tank formations) and drive into Egypt with the correlated possibility of the collapse of the British in North Africa.

After directing hard fighting on the morning of 22 November 1941 in the Tobruk battle that kept the British contained in the fortress, Rommel made the bold decision to drive the DAK concentrically into the main concentration of British armor in North Africa now lying southeast of Tobruk. In the resulting fighting that took place around Sidi Rezegh, the DAK and the Italian XXth Motorized Corps blocking from the southwest inflicted heavy losses on the British mobile force. On the evening of 22 November 1942, pacing his whole operation to the battle with the British mobile force, Rommel ordered the DAK to continue the attack around Sidi Rezegh with the specific intention to encircle the armored forces and destroy them. On 23 November, the two German panzer divisions continued to show tactical superiority over the opposing British, and won another great victory inflicting heavy losses on the British armor and forcing the intact

elements to the southeast away from Tobruk. At the same moment the Italo-German force outside of Tobruk had successfully fought its battle to contain the British, and the Italo-German force between Sollum and Sidi Omar was hard pressed in its battle but still successfully blocking any British advance along the sea westward to Tobruk. Rommel believed in the evening of 23 November 1942 that he had won the operation. He believed he had done so through his active success in the battle against the British armor and stabilization of the fronts in the two defensive battles.

- - German Tactics in the Desert: - -

Preoccupation with Tanks

Studies on German battle fighting on the offensive in World War II tend to emphasize maneuver as the key element in German success in mobile wars. Studies on a bold, successful commander such as Rommel in North Africa tend to describe his genius also in terms of maneuver particularly in open, level desert. This study, which included the perusal of approximately 14,000 pages of records of Panzer Army Africa and the 15th and 21st Panzer Divisions, detected a special German skill in tactical maneuver in agreement with the established conventional wisdom on the subject. As the researcher continued to examine the large volume of material, he also came across an unmistakable, perhaps unique, German preoccupation with weapons in North Africa. The researcher had observed in an earlier study of the offensive battles of a panzer division in France (1940) and Russia (1941) a similar special emphasis on weapons. In North Africa in 1941 and 1942,

the German forces showed a sensitivity to the numbers and qualities of their own weapons that was exaggerated beyond that shown on the European continent. The reason for this is probably that in the open desert, the Germans witnessed that the gun tended to dominate the man and to give special protection against even the tank. In a return to observations once made but now largely disappeared from the literature, the research could not help but notice the similarity between war at sea where gun and machine dominate over man, and war in the desert in similar open, trafficable "terrain" and the supremacy of the motorized force and associated guns over the rifleman.

The Germans identified the tank as the key weapon and the panzer division as the key war fighting organization in North Africa. In its engagement report on the Crusader battles from 18 November-7 December 1941, 5th Panzer Regiment, 21st Panzer Division, gave daily accounts of each tank lost and the strength in tanks for insertion in battle (Einstzbereit). On 17 November, for example, 5th Panzer Regiment had ready for action the following tanks representing the entire strength of 21st Panzer Division:³⁷

5th Panzer Rgt, 21st Panzer Div (17 Nov 41)

a.	Panzer II - - - - -	35	
b.	Panzer III - - - - -	68	A total of 124
c.	Panzer IV - - - - -	17	recon, battle, and
d.	Panzer III (Bef.)* - - - -	4	command tanks

*Bef. or Befehlswagen (Command Vehicle).

On 17 November 1941, the German Command - - the commanders

37. 21.Pz.D., Ia, Anlage zum KTB Nr. 2, Gefechtsbericht, Pz.R.5, 17.11-31.12.41, Seite 1. U.S. Archives, German Records, Divisions, T-313, Roll 767, Fr. 000213.

and staff of the Panzer Army, DAK, and the 21st Panzer Division - based its estimate of the "striking power" of 21st Panzer Division almost exclusively on the 124 tanks held by 5th Panzer Regiment. The same division could defend itself effectively without a single tank through use of its complement of artillery, Pak and Flak and while fighting from field fortifications. To be a factor of significance in maneuver and attack, however, 21st Panzer Division required tanks. The Germans had invented the first modern combined arms team in their panzer divisions of 1935 and were dedicated to the concept notably in terms of the ad hoc Kampfgruppen that they put together so often in World War II. Tanks, in fact, even in the open desert, could not be expected to advance effectively against opposing forces with strong artillery, Pak, and pioneer assets without combined arms tactics. Knowing all of this, the Germans also knew that the Panzer Army could not conduct mobile warfare without the tank and that the capability of the army to maneuver and advance in North Africa could be measured both tactically and technically in terms of the number of tanks Einsatzbereit (ready for insertion in battle).

Rommel, for example, conducted the great multi-battle operation of 18 November - 7 December 1941, based largely on the tactical capabilities of DAK and its two panzer divisions. The two panzer divisions functioned, in turn, according to the number of tanks available for maneuver by skilled commanders and combat by skilled crews in combination with other arms. The acute German sensitivity to the importance of the tank shows in the daily accounting of the standing in tanks. The Germans recorded

three bits of information about their tanks that allowed Rommel and Panzer Group Staff to gauge both the tactical and operational possibilities of the Crusader situation. In 21st Panzer Division the Germans painstakingly identified the numbers of tanks totally lost, the numbers of tanks not ready for action but under repair and in process of being returned to service, and the number of tanks at any point in time ready for action (Einstzbereit).

The German situation in tanks was the most decisive measure of German exertion in the Crusader fighting. The situation allows the reader as well as it allowed Rommel and his commanders and staff in 1941 to gauge the course of the fighting and to relate the tactical situation with the remaining operational possibilities at any point in time. Beginning with 124 tanks on 17 November 1941, 21st Panzer Division lost tanks in the following pattern in the period 18-23 November 1941, the period in which the German mobile force groped for the British and at the end of which it fought a great tank battle which Rommel sensed gave him victory in his operation:

21st Panzer Division

<u>Tanks Totally Lost</u> (accumulated 18-23 Nov 41) (catastrophically destroyed or immobilized and lying in enemy territory) - - - - -	42
<u>Tanks in Repair</u> (situation 2200 23 Nov 41) (complex picture with approx half due for return from 1-48 hours later) - - - - -	50
<u>Tanks Combat Ready</u> (situation 2200 23 Nov 41) - - - - -	32
<u>Tanks Total</u> - - - - -	124

As a result of the tank battles of 22, 23 November 1941, 21st Panzer Division stood on the evening of the latter day with only 32 tanks ready for combat on 24 November. The German situa-

tion was even more disastrous than it appears. Of the 32 remaining tanks, 5th Panzer Regiment could use only 18 in tank versus tank combat because 11 of the operating vehicles were lightly armored, 10-ton Panzer II tanks armed with a 20mm cannon and three additional vehicles were sophisticated command tanks with dummy wooden gun barrels and armed only with two machine guns. Early on the morning of 24 November 1942, Rommel nevertheless became convinced that he had defeated the British mobile force. As a result he faced the grand operational problem of how to transform the victory in the great mobile battle into victory in the operation forced on him by the British offensive. In a move unequaled in boldness by any army-level commander in World War II, Rommel determined to thrust to the Egyptian border with the two German panzer divisions under his personal command. With only 32 tanks in 21st Panzer Division and 65 tanks in 15th Panzer Division and prospects of rapidly dwindling numbers as he outstripped his overburdened repair companies, Rommel had little possibility of finishing off the British mobile force and destroying the British field army in Libya.

On 26 November 1941, after a fruitless three days of march, countermarch, and moderate combat south of Sollum along the Egyptian frontier, Rommel under the prompting of the Panzer Group staff directed the two panzer divisions back to Sidi Rezegh. The staff made it clear to Rommel that the Tobruk battle had turned critically to the disadvantage of the Germans and the nearly beaten British mobile force had begun to recover southeast of Tobruk in the open desert. On the morning of 27 November 1941, back in the area of the earlier great mobile battle, Rommel found

himself in possession of an army whose striking power lay in 30 combat ready tanks of the returning 21st Panzer Division and 54 tanks of 15th Panzer Divisions. From 27 November - 7 December 1941, Rommel directed numerous engagements and encounters in the closely linked battle southeast of Tobruk and the great battle with the recovered British mobile force in the desert. As the tank numbers indicate, Rommel did not have the strength in tanks to bring the German operation to a successful conclusion by a second more decisive defeat of the British armor. When Rommel began to withdraw on 7 December 1941 toward El Agheila 500 miles away, the 21st Panzer Division reported 20 tanks ready for combat and the 15th Panzer Division 30 tanks. Panzer Army Africa specifically held the following tanks on that day ready for combat:³⁸

Panzer Group Africa (7 Dec 41) Combat Ready Tanks*

a.	<u>Panzer II</u>	- - - - -	10	(Recon Tanks)
b.	<u>Panzer III</u>	- - - - -	28	
c.	<u>Panzer IV</u>	- - - - -	8	
d.	<u>Panzer III (Bef.)</u>	- - - - -	4	(Command Tanks)
	Total		<u>50</u>	tanks

*A total of only 36 battle tanks.

With only 36 German battle tanks remaining, Rommel and Panzer Group Africa had no realistic chance of operational victory in Eastern Libya. Rommel now sought the operational goal of successful withdrawal of his shattered Italo-German force

38. 15.Pz.D., Ia, KTB Nr. 2, 7.12.41, U.S., Archives, German Records, Divisions, T-313, Roll 664, Fr. 000505, and 21.Pz.D, Ia, Anlagen zum KTB Nr. 2, Gefechtsbericht, Pz.R.5, 6.12.41, U.S., Archives, German Records, Divisions, T-313, Roll 767, Fr. 000229.

based on rear guard battles strung along from Tobruk all the way to El Agheila. Rommel would employ rear guard Kampfgruppen built around small tank detachments combined with strong Flak and Pak elements to prevent the British from breaking directly through his forces or outflanking them to the south out of the open desert. He had enough tanks remaining after 7 December 1941 to conduct this operation but little more.

- - German Tactics in the Desert: - -

Preoccupation With Flak (Antiaircraft Guns)

Rommel and Panzer Army Africa faced heavy odds in open desert terrain in 1941-42. The British field army, the famed 8th Army, drastically outnumbered the German forces in the Italo-German Panzer Army in almost every weapon. British numerical superiority included greater numbers of tanks, antitank guns, field artillery pieces, antiaircraft guns, and combat aircraft including fighters, low-level attack aircraft, and medium bombers. The British field army significantly outnumbered the combined Italo-German forces in the same categories of weapons. As concerns the question of technology and specifically weapons performance characteristics, the British field army held weapons that were similar in performance to those of the Germans and superior to those of the Italians. Argument continues to rage on the question of technology, but the generalization above holds even in the face of the complex technological picture. The British complain that their 40mm tank cannon was smaller than the German 50mm and 75mm tank cannon with implied technical superiority for the Germans. The British had designed, however, a small-

er cannon that was so good technologically that it matched the armor penetration capabilities of the larger German tank cannons.³⁹ Most of the technological analyses end similarly in closely balanced characteristics such as those between the British and German tank cannons.

Rommel and the German elements in Panzer Army Africa faced an uncomfortable situation in which they were drastically outnumbered and held no counterbalancing advantage in technology. The Italian elements in the Panzer Army reduced the numerical inferiority but added an element of technological inferiority that reduced the effect. In the fighting during the period covered by this study, the two German divisions of the DAK would do the bulk of the fighting in both the great defensive battles of Crusader (November-December 1941) and the offensive operation of Venezia (May-June 42) because of their superior mobility. The following listing illustrates the adverse balance for the Panzer Army and the heavier responsibilities of the DAK in the mobile battles:

Adverse Balance for Germans 18 Nov 41, Crusader Battles)

	<u>Weapon</u>	<u>German</u>	<u>Italian</u>	<u>British</u>
a.	Tanks	260	154	648
b.	Pz Recon*	33	24	646
c.	<u>Pak</u>	94	195	312
d.	<u>Flak</u>	128	112	300

*Armored Reconnaissance Vehicles.

 39. British 40mm L/52 Tank: 56mm at 500m; German 50mm L/42 Tank: 63mm at 500m; German 75mm L/24 tank: 54mm at 500m. See in F.M. von Senger und Etterlin, Die Kampfpanzer von 1916-1066 (Muenchen, 1971), pp. 515, 516.

The listing shows that the Italians, who had approximately three times as many men as the Germans in North Africa, would not be able to do an equivalent share of the armored warfare that would so completely dominate the theater. The Germans would conduct the mobile war significantly to the exclusion of the Italians based on the relatively small numbers and weak performance characteristics of the Italian armor and other weapons of the Italian XXth Motorized Corps that was only put together a week before the British Crusader Offensive. Accepting this analysis, the researcher suggests an operational picture in North Africa in which a German armored force with 299 tanks and armored reconnaissance vehicles assisted by a much smaller, tactically and technically deficient coalition force, faced a British armored force of approximately 1,112 technically similar vehicles. Rommel and the German forces of the Italo-German field army faced the adverse numerical situation illustrated above from the beginning of their deployment to North Africa. The adverse situation was compounded by British air superiority in open, level desert terrain. The Germans became preoccupied with Flak from the beginning of the campaign in North Africa to redress the adverse situation described above.

As early as April 1941, Rommel sited a handful of the 88mm Flak in the German Africa Corps⁴⁰ in static strong points between Sollum and Sidi Omar on the Egyptian frontier. With his front

40. Official name for German forces in North Africa from 9 February-15 August 1941. On 15 August 1941, the force was designated Panzer Group Africa and then on 30 January 1942 it became Panzer Army Africa.

line instincts and imagination, Rommel sensed the value of the cannon as a heavy antitank weapon (Pak). The British at this time also had an infantry support tank, the "Matilda" Mark II, a relatively heavy tank at 26 tons with 80mm of armor liberally distributed over the fronts and sides of the hull and turret. The Germans had no Pak in the middle of 1941 that could penetrate the 80mm armor on this tank. By the beginning of the Crusader Offensive, the Germans had placed 23 of the total of 35 88mm Flak in North Africa with the Italo-German forces on the Sollum front. By the same time, the Germans realized that the gun system with its three-quarter tracked towing vehicle and four-wheel gun carrier and trailer from which it could be fired, was mobile enough to accompany the tank formations in battle. During the Crusader battles, the Germans would employ the 88mm Flak in support of numerous Kampfgruppen in what the Germans called the Panzerbegleit, or tank escort, role.

In the Flak regiments of the day, the Germans had both 88mm and 20mm guns organized into batteries. In combat in the desert, the Germans used the 88m Flak batteries predominately in the antitank role. The 20mm Flak batteries in contrast provided most of the Flak air defense for the German mobile divisions - - specifically 15th Panzer, 21st Panzer, and 90th Light Africa Division during the period of this study. The Germans also had mixed batteries of 88 and 20mm Flak which they used predominately as antitank units. The Germans found quickly by experience that the 20mm guns were nimble weapons systems with high rates of fire that proved to be effective against the low level air attacks that were most dangerous to the mobile formations. The Germans

also found that the 20mm Flak firing the armor piercing round was capable of knocking out any of the British armored reconnaissance vehicles and other similar light armored vehicles. The 20mm Flak firing the high explosive round also proved to be extremely effective against trucks and similar unarmored vehicles and also effective against infantry. The Germans, as a result, commonly employed the 20mm Flak batteries ^{and} ~~the~~ detached platoons to screen and fight off British reconnaissance units and similar light forces.

Beginning in 1930, the Germans developed the 88mm Flak used by the Germans in World War II and thoughtfully put together a family of ammunition and fuzes that permitted the Flak to fire effectively against air, ground, and heavy ground armored targets. As a result, the German Flak batteries in North Africa could fire two types of projectiles and fuzes against tanks, and several additional type of high explosive projectiles and fuzes against ground and air targets. The Germans used high explosive projectiles with instantaneous and delay nose fuzes and clockwork nose fuzes for various effects against ground targets. They used exclusively clockwork fuzes with 88mm high explosive projectiles against aircraft. The Germans could shift direct fire among different targets immediately simply by loading the appropriate ammunition and using the appropriate sights. The gun could also be fired from its four-wheel trailer-carrier. Towed by an 8-ton, three-quarter tracked towing vehicle, the 88mm Flak organized generally into 4-gun batteries, had the off-road mobility in

desert terrain to move forward with the German tank regiments and support them by direct fire.

By 1942, the Germans had a succinct set of guiding principles for the insertion in battle of the heavy 88mm Flak batteries. Headquarters, DAK, advised on 22 May 1942 that German forces should consider inserting the heavy batteries as antiaircraft units, tank escort units, or ground firing units, the latter especially for shooting at ranges between 8-14km. The German directive noted the flexibility of the batteries in shifting targets and mission, commenting specifically that an 88mm Flak battery set up to fire at air targets could shift "immediately" to firing against armored and ground targets.⁴¹ HQ, DAK continued in characteristic German style to state that the heavy Flak batteries should be inserted in combat together notwithstanding the target - - air, armored, or ground. The directive warned that the temptation must especially be resisted to provide single 88mm Flak for the hard fighting and hard begging motorized infantry units because the guns would end up as targets too far forward and too big to escape losses from enemy infantry. The directive continued that the heavy Flak batteries did not have the mobility necessary to keep up with the reconnaissance battalions and should be used only sparingly with them. The directive ends on the tantalizing generality that "the insertion of the

41. 15.Pz.D., Ia, KTB Nr.3, Anlagen C, Deutsches Afrika Korps, Ia/Flak, Richtlinien fuer den Einsatz von Flak - Batterien, 22.5.1942, U.S., Archives, German Records, Divisions, T-313, Roll 666, Fr. 001446,47.

88mm tank escort battery succeeds as a rule on a wing of the tank force by achieving flanking fire against the enemy."⁴²

With their mobile divisions, the Germans had considerable success with the self-propelled 20mm Fla (Army designation for Flak) companies of the army. Army columns ^{were difficult to} ~~protect~~ ^{with} truck-towed 20mm Flak against low level air attack because the guns ~~took~~ ^{took} time to get into a firing mode. In defensive positions, either towed or self propelled 20mm Flak ~~could fire immediately~~ ^{could fire immediately} against air attack. The Germans found that the light Flak batteries (and army companies) were effective against the British armored reconnaissance vehicles at ranges below 800m. The Germans as a doctrinal procedure in North Africa had the ^{towed} 20mm Flak go into firing positions during the halt of mobile columns. With forces on the move in combat, the Germans placed the guns of the light Flak battery on the outside of the combat formations whenever possible.

Fighting against a numerically superior enemy with strong air forces, Panzer Army Africa was forced to use Flak to protect its mobile force from excessive damage and casualties and to maintain its capability to maneuver in the face of low level air attack. The Germans had strong air forces in North Africa but not enough to provide full cover over their marching columns or engaged forces. Between 19 November-15 December 1941, the Commanding General, 15th Panzer Division, used his attached 5th Battery, Flak Regiment 33, to support several organic battalions of the division in combat against the British during the Crusader

42. Ibid., Fr. 001447.

battles. The battery was a light one armed with 20mm Flak and would support, for example, the division machine gun and motorcycle battalions and some of the artillery battalions. The battery fought numerous actions during this time period that illustrate the necessity for light automatic cannon with mobile forces operating in the desert today against strong opposition.

On 19 November ¹⁹⁴¹ ~~1940~~, 15th Panzer Division began to move into its "alarm areas" (Alarmraeume) and the Flak battery moved in support of a marching column. At 1630, six British Bristol-Blenheim light bombers began attacks on the column. Two platoons of the battery went into firing positions to fight off the bombers and fired 370 rounds of high explosive, nose-fuzed instantaneous projectiles against them. Faced with this moderate Flak fire from the ground, the British did not press home their attacks effectively and caused little damage or delay to the Germans.⁴³ This pedestrian action, which is similar to numerous other fights in the German records, suggests that moderate Flak defenses based on light automatic cannon with their spectacular tracer effects as well as real damage capabilities can generally provide adequate defense against serious air attack.

The 5th Battery, Flak Regiment 35 had its hands full during the Crusader battles and its actions also illustrate the extent to which an opposing air force can intervene on the ground even when friendly air assets remain intact and fairly strong. On 20

43. Bristol-Blenheim: Three-seat, two-engine, ground attack style aircraft with 1,000-pound internal bomb load and three machine guns able to be directed in strafing.

November 1942, two platoons of 20mm Flak in support of the marching columns of the division motorcycle and machine gun battalions went into firing positions twice in the morning and once in the afternoon firing off 445 rounds of high explosive ammunition against British fighters armed for ground attack. The next day, 21 November, the 2d Platoon of the Flak battery and the machine gun battalion it was supporting came under attack by 16 British armored reconnaissance vehicles. The Germans drove the British off in a late afternoon action but the Flak platoon lost one 20mm gun and its towing truck. Other columns supported by the battery came under low level air attack three times during the day. In a substantial success, the battery shot down one British Hurricane fighter armed for ground attack. The battery fired 716 high explosive and 56 armor piercing rounds in support of the division moves.⁴⁴ The action on 21 November was less pedestrian and shows a 20mm Flak battery flexibility engaging light armored targets on the ground and successfully engaging more determined enemy fighter bombers.

The 5th Battery, Flak Regiment 33, fought actions in a similar pattern during the rest of the period of the Crusader battles. The Flak battery met its biggest challenge on 23 November 1941 in a day of violent fighting and chance encounter involving combat against British infantry, tanks, and attacking aircraft. At 0930, 4th Platoon, in a sudden chance encounter with British infantry in trucks destroyed one armored machine gun carrier, several trucks, and took 20 prisoners. Later in the -----

44. Ibid., Fr. 000321,22.

day, the 20mm Flak of two of the platoons supported attacks of the machine gun and motorcycle battalions against British infantry and machine gun and antitank gun positions. At 1745 in the afternoon, in a wild melee among the mobile forces engaged in the desert, the 20mm Flak faced British cruiser tanks at close range. The battery commander himself pulled the 4th platoon around to one flank of the local British tank attack and immobilized one Mark IV cruiser tank with 20mm armor piercing rounds fired through the sides and rear. Fifteen minutes later, the platoon engaged two Mark IV cruiser tanks which suddenly appeared from another direction and catastrophically destroyed one with 20mm armor piercing projectiles that caused a fire and explosions on the inside of the tank. The battery also engaged infantry in trucks, and deployed on the ground in and among the British tanks, and had taken by around 1900, 250 prisoners. In one of the last engagements of the day the battery commander with the 12th gun of the battery engaged a British armored reconnaissance vehicle and another Mark IV cruiser tank at short range, immobilized both with gunfire, and took the crews prisoner. During this same busy day, the battery defended against air attack three times during the late afternoon by a total of about 17 British Bristol-Blenheim light bombers. The intensity of the fighting and the flexibility of the battery is exemplified by the expenditure of 2,240 rounds of 20mm HE and 570 rounds of AP ammunition, and the expenditure of 150 rounds of machine gun ammunition and 60 rounds of machine pistol ammunition by the Flak crews.

During the same period of time, 3rd Battery, Flak Regiment 33, a heavy battery with 4 88mm and 4 20mm Flak, supported the 1st Battalion, Panzer Regiment 8, of the division. Attached to the tank regiment, the battery was employed in the tank escort role rather than air defense. The battery commander would employ his guns with great flexibility often firing at ground targets of opportunity. On 23 November 1941, the battery commander deployed two 88mm Flak on the left and two additional on the right flank of the panzer regiment in support of a morning attack against concentrations of British tanks, truck columns, and infantry. The battery fired both impact-fuzed and time-fuzed air burst rounds against British truck and infantry targets and armor piercing rounds against tanks, immobilizing four Mark IV cruiser tanks and destroying approximately 20 trucks.⁴⁵ Later, in the afternoon, the battery advanced on the left flank of the tank regiment but so close to the British that it could not set up to fire because of British rifle and machine gun fire. Toward the end of the day, the panzer regiment disengaged the battery and inserted it into a gap that had developed on the left between it and the neighboring Italian Ariete tank division. In the blocking role, the Flak battery destroyed 5 British Mark IV cruiser tanks with the firing of 66 rounds of AP ammunition as the enemy tried to exploit the gap. The battery lost two men killed and eight wounded as well as a tracked towing machine and a carriage for one of the 88mm guns totally destroyed.

45. 15.Pz.D., Ia, KTB Nr. 2, Gefechtsbericht der 3./Flak 33, 19.11.15.12.41, U.S., Archives, German Records, Divisions, T-313, Roll 666, Fr. 000341, 42.

In the fighting on 21 November 1941, the heavy Flak battery effected an interesting tactic that is worth noting. The battery was in positions in and among the tanks of Panzer Regiment 8 that were engaged with strong British tank units. After about one hour of combat, the German tanks found themselves short of ammunition and forced to break off the battle. The British sensed the German disadvantage and pressed their attack as the German tanks began to withdraw. The Flak battery commander recognized the situation also and on his own initiative kept his four 88mm guns in firing position and brought to bear enough fire to halt the British tanks. The battery commander had established spontaneously a "Flak screen" behind which the friendly tanks could disengage and take on ammunition.

- - German Tactics in the Desert: - -
Preoccupation With Pak (Antitank Guns)

Faced with British numerical superiority in tanks from the day of their arrival in Africa early in February 1941, the Germans needed every antitank gun they could lay their hands on. During the first several months, the German Forces in Libya would have a relatively small number of Pak weapons and more than half would be the modern looking and exceptionally agile 37mm Pak. By 1941, however, based on their experience in the brief but tough French Campaign in which they had suffered 156,000 casualties, the Germans knew that the gun was outmoded. In France, the German 37mm Pak crews had not be able to knock out virtually any of the French light, medium, or heavy tanks, all of which had

large surface areas protected by 40mm or somewhat greater thicknesses of armor. The Germans met in France near Cambrai for the first time on 21 May 1940, the British Mark II (Matilda) ^{infantry} support tanks whose 80mm armor was completely impervious to the 37mm AP projectiles. In Africa, the Pak battalions of the panzer divisions would again meet the Mark II (Matilda) and Mark III (Valentine) heavily armored infantry support tanks with little or no prospects of damaging these vehicles. Against the more numerous British cruiser tanks in the British tank divisions, the 37mm Pak would be more effective in getting through the 30mm to 40mm frontal armor of the vehicles at short range but would still be a marginal weapon. German Pak crews during the French Campaign had already begun to refer to the 37mm Pak as "the Army's doorknocker" -- most of the doors would be more solid in 1941 against the British in the desert.

Earlier, in 1938, the Germans had already begun to develop a replacement for the light Pak designated ultimately the 5cm Pak 38 and considered by the Germans in 1941 to be a "heavy" Pak weapon. The 50mm Pak was a vast improvement but still only a partial answer to the British armor. With an armor perforation capability at 1,000m range of 61mm at a 30-degree angle of obliquity, the 50mm Pak dominated all of the British cruiser tanks at 1,000m, the Mark III (Valentine) to approximately 800m, but continued to have little effect against the Mark II (Matilda) at any range. Rommel and his staff worked feverishly to get the heavier gun into Africa. They pressed the Army High Command (OKH) for additional imaginative stop gaps and successfully supplemented the gradually arriving new 50mm Pak with the innova-

tive 47mm Pak built in Czechoslovakia in small numbers and mounted on a German Panzer I light tank chassis. ^{For use as antitank guns,} Rommel and his staff also managed to extract from OKH large numbers of Soviet 76.2mm field guns that had been captured along with huge stocks of ammunition in the summer of 1941. ~~When the purpose to use the~~

~~antitank guns~~ The Germans even converted significant numbers of ^{the} famed but ancient French model 1897 75mm field guns into antitank guns by cleverly placing them on various available 50mm Pak carriages and using French ammunition. Working in this manner, Rommel and his staff had managed to scrape together the following array of Pak on the eve of the great test of the Crusader battles:

Panzer Group German Pak (16 Nov 41)⁴⁶

	<u>Weapon</u>	<u>Number</u>
a.	37mm <u>Pak</u> 35/36 - - - - -	36
b.	47mm <u>Pak</u> (Czech) Self Propelled) - -	27
c.	50mm <u>Pak</u> 38- - - - -	94
d.	75mm Model 97 (French) - - - - -	0
e.	76.2mm 36/39 (Russian) - - - - -	0
f.	88mm <u>Flak</u> 36 - - - - -	35
	Total	<u>192</u>

Soon to be attacked on 18 November 1941 by approximately 750 British tanks (including 100 out of the Tobruk fortress), the Germans faced hard questions of survival from the viewpoint of

46. Pz. AOK Afrika, Ia, Anlage zum KTB, Panzergruppe Panzerabwehrwaffen, 16.11.41, U.S., Archives, German Records, Panzer Armies, T-313, Roll 423, Fr. 8716049, 50.

antitank defense. How would the Germans avoid decisive defeat in November and indeed come close to winning the operation?

The answer comes from several directions. The Italians contributed a large number of Pak weapons although the bulk was located around Tobruk and Sollum and never able to be used against the tanks of the British mobile force. The Italian XXth Motorized Corps contributed substantially to the mobile battle and held around 120 Italian 47mm Pak with moderate armor perforation capabilities. The German 88mm Flak proved to be outrageously effective based on some combination of technical excellence and bold, uninhibited tactical handling. Although the DAK fought with only 12 of these guns, the 88mm Flak goes a significant way toward explaining the survival of the Panzer Group. The Germans handled their own Pak, finally, in ways that help to explain their successes in the battle.

Similarly to the thoroughness and tactical awareness in the design of the 88mm Flak 36, the Germans developed a high explosive round for the 50mm Pak. They also developed a sophisticated antitank round with a delay fuze that set off a small ^{charge} ~~charge~~ in a heavy-walled penetrator that exploded behind the armor, i.e., often inside the enemy vehicle. Armed with high explosive ammunition, German 50mm Pak units could engage British infantry in the open, in field fortifications, and manning machine gun and mortar positions. Armed with such ammunition, 50mm Pak units could more effectively destroy British trucks and also knock out British armored reconnaissance vehicles. The Pak units even forced the shifting of British artillery positions in some engagements through use of high explosive rounds. The Germans also

had large quantities of high explosive projectiles for the large number of 106 Russian 76.2mm Pak that had been converted from the Russian field gun and inserted in North Africa by May 1942.⁴⁷

Early in 1942, the Germans continued to press for antitank guns and Rommel requested the outfitting of each of the six motorized rifle companies of the motorized infantry regiments of the panzer division with six 50mm Pak 38. The statistic is impressive. Rommel and his staff saw the war in the desert dominated to such a degree by the tank and armored reconnaissance vehicle that they decided to place six 50mm ^Pak in ^{each} ~~company~~ German infantry company. The OKH approved the new outfitting of the companies on 12 May 1942. Two months later in July 1942, as the Germans began to put together a fourth division for employment in Africa - - the 164th Infantry Division - - OKH and Panzer Army Africa agreed on an outfitting level of 196 50mm Pak 38 for the new organization.⁴⁸ These are heady numbers of antitank guns. The Germans seem to be telling the historical observer something about the necessities of mobile warfare in the desert.

The Germans inserted their Pak units in combat with a style illustrated by the following combat action. In full withdrawal by mid-December 1941 after the Crusader battles, Rommel and his staff organized Kampfgruppe ^{Colonel} ~~_____~~ Menny as a strong rear guard

47. Pz. AOK Africa, O.Qu., Versorgungssachgebiet, Bestand um Pak, 25.5.42, U.S., Archives, German Record, Panzere Armies, T-313, Roll 439, Fr. 873031.

48. Pz. AOK Africa, O.Qu., Versorgungssachgebiet, Funkspruch vom 21.5.42, 13.20 Uhr, OKH/Gen St d H, Org. Abt. (III) an Pz AOK, U.S., Archives, German Records, Panzer Armies, T-313, Roll 439, fr. 8732968.

to prevent the encirclement and destruction of the remaining forces of the Panzer Army. The Germans combined the panzer regiments of 15th and 21st Panzer Divisions to form a ^{single} tank force of 34 combat ready tanks - - the entire number of combat ready German tanks in North Africa - - and built the Kampfgruppe around them. Other elements included one battalion of 33rd Artillery Regiment, 2nd Machine Gun Battalion, part of 1st Battalion, 33rd (Army) Flak Regiment, and 3rd Company, 33rd Antitank Battalion. At this moment, 15 December 1942, a British force had moved around the south flank of the Panzer Army into positions between the Italian XXIst and XXth Army Corps threatening to break up the Panzer Army and block the retreat of Italo-German forces positioned to the east. Kampfgruppe Menny had the mission to destroy this British force ensconced around height 181 which lay 15km west of Gazala. The 12 50mm Pak of 3rd Company, 33rd Antitank Battalion fought in this action.

Oberleutnant (First Lieutenant) Tocue, the Pak commander, placed himself and one platoon of four 50mm Pak with the leading elements of the machine gun battalion, deployed one additional platoon on the flank of the battalion, and set the remaining platoon on the right flank of the panzer force. Rather amazingly for an antitank gun commander, Tocue described his mission to include destruction of enemy ground targets "as well as especially to suppress enemy Pak, machine gun positions, etc., with high explosive shells and to furnish fire support for the attacking

infantry."⁴⁹ Given the dangerous operational situation for the Panzer Group, Kampfgruppe Menny attacked with determination and in a short, intense battle essentially annihilated the dangerously positioned British force. Oberleutnant Tocue noted in detail the eclectic success achieved by the tactically flexible German Pak force. The 50mm Pak knocked out one heavy armored reconnaissance vehicle, two Mark IV cruiser tanks, one artillery tractor "shot up in flames," four 40mm self-propelled antitank guns, nine trucks shot up also in flames and 12 additional damaged trucks set on fire by the Pak crews. Tocue noted specifically that his guns destroyed (or captured after the action) 30-40 British machine guns in the "very numerous machine gun nests" though use of high explosive shells.⁵⁰ In additional convincing detail, he noted that one of the British Mark IV cruiser tanks that he claimed for his company had in fact been immobilized by some other German weapon but was still firing and was finished off by a direct hit by a 50mm Pak AT round low on the hull. The anti-tank gun crews also brought in 234 prisoners including seven officers out of the British positions which had been physically overrun by the Germans. From the viewpoint of weapons effects, he noted finally that the two British 87.6mm field guns claimed by him had been knocked out by direct hits with AT rounds and resultant wounding (but not killing) of the crews.

49. 15.Pz.D., Ia, KTB Nr. 2, Gefechtsbericht, 3./Pz.J. 33, 15.12.42, U.S., Archives, German Records, Divisions, T-313, Roll 666, Fr. 000521.

50. Ibid., Fr. 000522.

One more combat action should suffice to illustrate the flexible handling of German antitank gun units in the desert and the potential application to desert war today. Early in the Crusader battles on 21 November 1941, 15th Panzer Division continued to search in a southwest direction from Sidi Azeiz for strong British tank forces operating deep in the rear of Panzer Group Africa and heading for Tobruk. The division commander deployed two companies of 33rd Pak Battalion, the organic Pak battalion of the division, on the flanks of the 115th Motorized Infantry Regiment in tactical march column behind the leading 8th Panzer Regiment. The division commander assigned the remaining 1st Company, 33rd Pak Battalion, to a separate Kampfgruppe Major Oberent formed for another mission. War is filled with friction, however, and 1st Company lost Kampfgruppe Oberent in the darkness of the evening of 20-21 November and at break of day was assigned to secure the right flank of 115th Motorized Infantry Regiment behind 2d Company already deployed there. The motorized infantry regiment advanced westward seeking contact with the British.

As the march continued, strong British armored reconnaissance forces began to move in from the south, and the commander, 115th Motorized Infantry Regiment shifted the 2nd and 3rd Companies, 33rd Pak Battalion, to screen the regiment's south flank. In an instructive lesson in the fluid nature of desert war, the Pak battalion commander took over the two Pak companies and moved them 3km farther south into what he described as the best firing positions according to the lie of the land. As the two Pak companies moved into the firing positions, they found themselves engaged by large numbers of British armored reconnaissance vehi-

cles which they checked momentarily by "shooting up in flames" two accompanying trucks. The two Pak companies continued to engage the British while the motorized rifle regiment already 3km distant continued to march west. The Pak battalion commander decided to break contact with the British but continue to screen the regiment's south flank by "leap frogging" his two companies from firing position to firing position parallel with the advance of the regiment. Acting according to this plan, 3rd Pak Company "limbered up" and moved west into new positions. As 2nd Pak Company attempted to break contact with the British and leap frog forward it found itself strafed and bombed by part of a force of 20 British Hurricane fighter-bombers attacking the south flank of the motorized infantry regiment.⁵¹

Approximately an hour later, at 1100 22 November 1941, the motorized rifle regiment slowed and halted in the face of strong British tank forces and a major battle began to take shape. The 1st Pak company had continued to move on the north flank of 115th Motorized Rifle and as strong contact developed with the enemy, the Pak commander, Lieutenant Walters, on his own initiative advanced to the point of the regiment and went into the best firing positions he could find. The tactical situation seems unreal; a Pak company in position alone as the most advanced front of a motorized rifle regiment. The company observed British tank forces massing for an attack about 1,200m away and

51. 15.Pz.D, Ia, Anlage zum KTB Nr. 2, Pz Jg. 33, Gefechtsbericht ueber die Abwehr feindlicher Panzerangriffe gegen die Suedflanke der 15.Pz. - Div. am 22.11.1941, U.S., Archives, German Records, Divisions, T-313, Roll 666, Fr. 000378.79.

knocked out one of several tanks which had moved closer to the front of the motorized rifle regiment. At this juncture, midafternoon, strong German tank forces moved out from the front of the *motorized rifle* regiment through the 12 50mm Pak cannons of the company and engaged the British tank force. After tank-versus-tank combat, the German tanks short of fuel and ammunition broke contact with the British and rolled back toward the front of the motorized rifle regiment and through the Pak of the company. Sensing an advantage, the British tanks pressed forward and ran up against the advanced Pak screen. The Pak guns had lain largely undetected by the British for what they were - - part of a full-strength company well deployed in good firing positions. The company commander opened "surprise fire" with all 12 guns simultaneously when a large number of the advancing British tanks were at 800m range. The company commander observed that one tank immediately burst into flames and others stopped with smoke pouring from them.⁵² The British halted their advance and engaged the Pak cannons with tank cannon and machine gun fire. When darkness fell, the Pak company still lay in its firing positions.

This historical incident can be used to make some important generalizations about war in the desert and the German style of fighting it. There is a frontless quality about war in the desert between two motorized opponents. The motorized rifle regiment moved long distances through open desert hunting for an equally mobile opponent but unable to locate him. There is a

52. Ibid., Fr. 000379.

long range quality about desert war. Endangered by an enemy lying somewhere to the south, the motorized infantry regimental commander did not secure his flank with a motorized infantry company but rather with two antitank gun companies. The infantry company did not have enough weapons with long enough range to keep a strong motorized opponent from closing with and destroying it. In desert war, the tactical realities are far different from those in hilly country with vegetation and built up areas. The antitank gun battalion commander set up his screen of guns 3km off the flank of the motorized infantry regiment whose commander continued to advance away from the guns. What about the security of the flanks of the antitank gun line? What about the expanding several-kilometers-wide gap between the motorized rifle regiment and the Pak companies?

The following factors seem to explain apparently ill considered and dangerous tactical moves. In open, level desert, motorized forces in movement cannot be concealed in daylight. The relatively large (compared with men) vehicles can be seen when moving and often raise clouds of dust that can be seen even farther. The regimental commander in the incident above could see from the flank of the regiment that the gap between the Pak and the infantry was empty and knew that the Pak companies had long range weapons that could dominate large areas of the gap in the event a maneuvering enemy force appeared in it. In contrast, in open, "level" desert, a motorized force like the 1st Pak Company that had moved to the front of the motorized infantry regiment and apparently exposed itself to destruction, once

deployed stationary in its firing positions virtually disappeared in the desert.

German Tactics in the Desert:

Tank Retrieval and Repair in Combat

The strength of the DAK on a particular day of the war in Africa lay in the number of tanks ready for combat. The number of combat ready tanks depended, in turn on the original number available for action and attrition through (1) tanks totally lost, and (2) tanks temporarily lost and in process of retrieval, evacuation, repair, and return to action. The DAK had no tank reserves and in the relatively brief Crusader battles received no replacement tanks through the supply line to Africa. The DAK began the Crusader battles with 260 battle, reconnaissance, and command tanks and with that number comprised a mobile force capable with skill and reasonable luck of defeating the much larger British tank forces. Separately from tactical skill, however, the DAK would win, survive, or be annihilated as a combat force based on how many of that original number of tanks it would continue to have available for battle.

The Germans lost tanks in combat in the desert from causes that included combat (gunfire, mines, etc.), terrain hazards, and mechanical breakdown. The balances among these causes could be surprising and it is worthwhile to understand the realities of this situation in order to come to grips with an important part of mobile war. In Korea, for example, from 1950-53, the United Nations forces lost more tanks to "terrain hazards" than they did

to enemy action. The difficult terrain for tanks and the lack of mobile warfare largely explain the observed result. In the desert in 1941-42, the Germans lost tanks mainly to gunfire from British tanks and antitank guns, but they also suffered significant losses from mechanical breakdown. The following distinctions help in the understanding of the tank strength of mobile forces at any point in time:

Tank "Losses" During Combat*

<u>Tanks Lost</u> (Combat)(Gunfire, Mines, etc.)	<u>Tanks Lost</u> (Non-Combat)
1. Catastrophic Kill - Perm. Loss	1. Terrain Hazard - Perm. Loss
2. Immobilization - Perm. Loss	2. Terrain Hazard - Temp. Loss
3. Immobilization - Temp. Loss	3. Mech. Breakdown - Perm. Loss
4. Firepower Damage - Temp. Loss	4. Mech. Breakdown - Temp. Loss

*Perm. or permanent. Temp. or temporary. Mech. or mechanical.

The listing shows that mobile forces in combat can expect daily to suffer "losses" that can be characterized as either permanent or temporary. The listing suggests thereby that the permanent losses cannot be retrieved during critical, brief periods of high intensity combat by resupply and are particularly devastating. The listing also suggests that losses can be returned to combat by a process of retrieval and repair that is a uniquely important factor in mobile operations.

In the period 18 November-7 December 1941, the DAK faced a situation in which it would attempt to conduct a great German mobile operation with its original striking power as intact as possible but would be ground down in battle by tank losses characterized as permanent or temporary. The DAK would begin to suffer numbers of tanks totally lost and have to take steps to keep those numbers as low as possible. The Germans could not do

much about the catastrophic destruction of their tanks by gunfire, mines, etc.. They were constrained by the existing designs of the vehicles and the realities of the armed violence of combat. In the category of total loss, however, the Germans lost most of their vehicles to retrieval problems on the battlefield. Typically, panzer forces would observe immobilized German tanks at the end of engagements lying irretrievable on British ground. On their own ground, unless the tanks were burning, the Germans would tow immobilized vehicles immediately with the tractors of the tank repair company (Panzerwerkstatt^o_Akompanie) organic to each panzer regiment. Repairable tanks would then be evacuated to the workshops of the organic repair company. In some cases, the Germans would move the repair companies to concentrations of tanks in process of evacuation. The Germans suffered many tanks as total losses because they were unable to retrieve them off the battlefield as soon as they were immobilized in German-held territory. The retrieval "battle" fought above was one of the most important in the mobile engagements of 1941-42.

The DAK would also begin to suffer numbers of tanks immobilized through combat damage, terrain hazard, and mechanical breakdown during combat and remaining on ground under German control. In these incidents of tanks immobilized but capable of repair, the Germans had to evacuate the vehicles on tank transport vehicles as quickly as possible to the repair companies for work and return to combat. If the tanks could be repaired in two days shop time, the Germans did the work in the maintenance companies and returned the tank to the panzer regiments as dictated by the tactical situation. Tanks requiring more than two-

days work were evacuated to Army-level workshops farther to the rear. Once in that cycle of evacuation, the German tanks had little chance of return to combat in a fight of the duration of the Crusader battles.

During Crusader, the Germans fought the following "battle" of retrieval and repair. With 124 tanks on 17 November 1941, 5th Panzer Regiment, 21st Panzer Division, suffered its first losses on 19 November. On that day the panzer regiment lost two tanks catastrophically killed by British gunfire and six others lost permanently through other damage or loss mechanisms. By the end of the day, 22 November 1941, the panzer regiment had suffered permanent losses of 24 tanks including five catastrophically killed by gunfire and 19 permanently lost mostly as damaged vehicles unable to be moved during forced shifts of the panzer regiment's repair workshops, or left behind at damaged-tank concentration areas in the cut and thrust of the mobile battle. On 23 November, 5th Panzer Regiment fought its biggest battle of the operation with a substantial number of tanks - - approximately 80 ready for combat. The 5th Panzer Regiment scored along with the tank regiment of the other panzer division, the biggest German victory in the Crusader battles and one that brought them close to victory in the whole operation. The panzer regiment suffered heavy losses that day though that ran^{as} follows: 17 tanks catastrophically killed by gunfire or permanently lost through other means, 51 tanks temporarily damaged and under repair (including a substantial number from previous days' actions), and 32 tanks ready for insertion in combat. The remaining striking

power of Panzer Group Africa can be equated with those 32 tanks and a somewhat larger number in the other German panzer regiment in North Africa. Rommel would practice operational art on the morning of 24 November 1941 constrained by the offensive capabilities of that small remaining number of German tanks in North Africa.

German tactics for tank retrieval included the aggressive towing of vehicles under fire. The Germans developed these tactics in order to prevent the capture or destruction of friendly tanks occasioned by the sudden and significant shifts in location by opposing forces in the desert. The Germans pushed their regimental tank repair company as far forward as possible to reduce evacuation and return times. It is difficult to exaggerate the importance of these tactics because of the direct correlation between the number of tanks in Panzer Group Africa and the operational possibilities open to its commander. The Germans did these things well, for example, note the total of 51 tanks having been successfully retrieved off the battlefield and evacuated to the regimental tank workshops by the evening of 23 November by a single regiment. In contrast, the Germans had permanently lost 41 additional tanks including 23 tanks left behind due to chance shifts in the mobile battle and resultant overrunning by the British.

After the Crusader battles, 5th Panzer Regiment, 21st Panzer Division, put together a report of its battles in the period 17 November-31 December 1941. In the report, the regimental commander painstakingly pieced together the picture in tank losses suffered during the high intensity mobile battles. The

Germans provide a valuable picture of the distribution of losses by various causes and the importance of the tank retrieval and repair company in armored combat. The picture was the following:⁵³

Mobile Desert War: Distribution of Tank Losses

<u>No. Tanks</u>	<u>Description of Loss</u>
29	Gunfire: Burned or Completely Destroyed.
28	Gunfire or Mech Breakdown: Some Permanently Lost Others Successfully Retrieved.
5	Immobilized. No Tow Available. Blown Up in Place.
2	Unknown Fate.
12	Immobilized. Towed to Repair Companies Both Panzer Regts. Then Abandoned During Tactical Displacements.
16	Immobilized. Towed to First Assembly Area. Then Abandoned During Tactical Withdrawal.
<u>92</u>	Tanks Damaged Out of Original 124 in Tank Regt.

For the Marine Corps today, the listing gives a rough idea of the distribution of losses that could be expected in a high intensity armored engagement in the desert. Even more usefully, the listing shows the importance of battlefield retrieval in maintaining numbers of tanks and armored reconnaissance vehicles and similar armored combat vehicles in the category of "ready for insertion in battle." The Germans also suffered painful losses due to displacements of the tank repair companies and the abandonment of the initial assembly area for retrieved tanks. The 5th Panzer Regiment permanently lost the staggering total of 28 tanks through its displacements compared for example with the -----

53. 15.Pz.D., Ia, Anlage zum KTB Nr. 2, Gefechtsbericht ... des Panzer-Regiments 5 vom 17.11.bis 31.12.41, U.S., Archives, German Records, Divisions, T-313, Roll 767, Fr. 000234.

permanent loss of only 17 tanks in the biggest engagement of the Crusader operation on 23 November 1941 around Sidi Rezegh. Tank retrieval has always been known to be a serious business. The German experience indicates that it is so important that special tactics and techniques are necessary to be developed to secure the position of groupments of tanks lying in retrieval assembly areas and in the tank workshops themselves.

The Commander, 5th Panzer Regiment came to the conclusion that the Retrieval Platoon of the Repair and Retrieval Company needed radios and security combat vehicles to reduce the losses to salvageable vehicles. This experienced commander pointed out also that higher headquarters must assure a secure basis for the retrieval of damaged armored vehicles, for example a secure area for the assembly of the vehicles away from the immediate battlefield. He noted also that the motorized rifle regiment must be tasked to provide a reserve combat force to protect the damaged but repairable tanks of the panzer regiment and to secure the retrieval platoon during towing off the battlefield.

CHAPTER 4

GERMAN LOGISTICS IN THE DESERT

Rommel and the Germans in North Africa conducted military operations that had one striking similarity to the great allied amphibious campaigns of World War II in both the European and Pacific theaters. Panzer Army Africa depended almost entirely on sea lanes of communication between Italy and North Africa. The German ^{ff}~~Luftwaffe~~ supplemented those lines by flying all of its aircraft and most of its personnel to Africa and carried eventually most of the German Army personnel that moved between Italy and Africa as replacements and evacuated wounded. Rommel and his staff practiced extensive coordination with the large Italian and small German naval forces responsible for seaborne logistics. Rommel faced operational disaster in the Crusader battles because of the breakdown of the sea lines of communication in the months prior to the British offensive.

With the importance of seaborne logistics demonstrated by November 1941, Rommel and his staff, and the High Commands of Italy and Germany took steps when they were strong in the Mediterranean in the first half of 1942, to secure the logistics of the Panzer Army. German supplies flowed freely during that period. Rommel was able to supply his forces by sea more effectively than the British. As a result, he was able to put together forces strong enough to conduct offensive operations around Gazala in eastern Libya in May-June 1942 with the strategic goal to defeat the British field army. With its defeat, the Italo-German forces planned to continue the axis strategic offensive by

conquest
the knowledge of Malta and resultant securing of the sea lines of communication to Libya. Based on the extent of the defeat of the British field army, the Germans also had the alternate option to continue the attack into Egypt with the remote but tempting possibility of driving the British out of North Africa immediately. In the actual event, Rommel demanded the continuation of the drive into Egypt. In spite of his unique brilliance in seizing chance opportunity and maintaining a fierce tempo of operations, he was unable to advance beyond Alamein. Two factors largely explain his failure - - the continued general weakness of his sea lines of communication which limited the strength of the Panzer Army just below that necessary to push on to Alexandria and the chance British seizure of a German enigma coding machine in 1934 and the eventual capability to read high level German message traffic during WW II.

Ashore, in Libya, within the Panzer Army, the Germans organized effective logistics operations. Under the German Army system, the Panzer Army held the Service Troops and delivered supplies into dumps at corps level in support of the divisions.⁵⁴ Each German division had an organic Service Echelon that paralleled the Panzer Army Service Troops. The 21st Panzer Division, for example, had one division-level panzer workshop company while

54. The German term, supply, included all the supporting services associated today with the more fashionable term, logistics. The researcher will use the term, service, for the rest of the chapter to include the provision of rations, fuel, ammunition, the maintenance and repair of weapons and equipment, the preparation of food, the providing of medical treatment, etc..

the Panzer Army had a similar company with capabilities to accomplish higher levels of repair. The division would also have two ambulance companies, two medical companies, and a division hospital. The Panzer Army in turn had several higher level hospitals - - two army, one field, and one war hospitals - - - to which the division evacuated casualties as appropriate to the wound, road conditions, and distances. For the Germans fighting a mobile war, however, the service challenge in supplying a battle was provision of fuel, ammunition, and water and rations. In the 21st Panzer Division, the commander had at his disposal the division Nachschubdienst (Supply Service), a battalion level organization also often referred to as the division Trosse (trains) for resupply. In the German division of World War II, the division Ib, or quartermaster, normally a general staff officer, directed the resupply in the name of the division commander. The Ib accomplished this resupply largely through the columns and companies of the division trains and orders issued to the commander of the trains.

In 15th Panzer Division, the division commander provided service support for the division through means of his Ib and the trains organized as sketched out in Figure 3. The Figure, which has been extracted directly from a division order on organization, shows the Ib with a Quartermaster Echelon co-located with the commander and "staff" of the division trains. The Ib resupplied the division largely through 13 numbered columns each with a 30-ton capacity in appropriate supplies. Columns 8-10, for example, carried fuel, one numbered column carried water (Wasser); and another unnumbered column (Ers. or Ersatz) carried

replacement tanks. The division trains also included three automotive repair companies with capabilities to handle both wheeled and tracked vehicles. The number of trucks in a 30-ton column varied according to the capacities of the trucks used.⁵⁵ Most commonly, the Germans put together the columns with ten vehicles. With the columns, the Germans had a resupply system that was redundant and flexible with what can be likened to interchangeable transportation building blocks.

In a panzer division, the Ib co-located the Quartermaster Echelon with the commander and "staff" of the division trains in order to be in touch with the actual situation in fuel and ammunition, and intervene as necessary to maintain resupply. As such, he often found himself with lightly armed service troops, e.g., drivers and assistant drivers of the numerous trucks in the division trains and personnel of the workshop companies. With a significant concentration of vehicles in a theater where the enemy had a strong air force, the Ib in 15th Panzer Division had a little Kampfstaffel with 8 20mm Flak for defense against low level air attack for both the quartermaster staff personnel and the parts of the division trains often around the headquarters. The Ib faced another even more dangerous characteristic of warfare in the desert in the ultra-mobility of the opposing forces. The British in the Crusader battles advanced with several hundred armored reconnaissance vehicles, truck-borne infantry, and large

55. Capacities of different columns varied from division to division; for example, 21st Panzer Division at approximately the same time (6 Feb 42), had only one fuel column but with a capacity of about 150 tons.

numbers of tanks. Formed into numerous battle detachments large and small that often freely roamed the open desert in a frontless mobile war, they constituted potentially mortal danger in sudden, chance encounter with the Ib, the commander of the trains, or individual columns.

For its own protection and for the defense of the commander of the trains and the trains themselves, the Quartermaster Echelon had six truck-towed 37mm Pak in addition to the 8.20mm Flak weapons. The Ib personally deployed a force that could fight off fairly strong British units on the move in chance encounters. The 37mm Pak was a marginal weapon against the British cruiser tanks at ranges over 500m, but, at shorter ranges, its projectiles would perforate the armor of the numerous older cruisers with their frontal protection of ^{approximately 40mm} and lighter armor elsewhere. With its armor piercing shells, the 37mm Pak could easily knock out the British armored reconnaissance vehicles at longer ranges, and, with its high explosive shells, it was effective against trucks, infantry, various infantry weapons, and antitank guns. The Ib could use the 20mm Flak in a ground firing role against the British armored reconnaissance vehicles and knock them out with the two types of antitank ammunition developed for the weapon - - the conventional AT round and the tungsten-cored AT round. German test firings showed that the antitank rounds had similar performance at 500m range⁵⁶ with armor perforation of about 17.5mm at 30 degrees angle of obliquity. These figures

56. Pz. AOK Africa, O.Ou., Versorgungssachgebiet, OKH, Gen St d H, Nr.: I1984/41 g. Kdos., 28.2.41, U.S. Archives, German Records, Panzer Armies, T-313, Roll 439, Fr. 8732892.

translate into knocking out armored reconnaissance vehicles at ranges somewhat over 500m. At shorter ranges of approximately 100-200m, the 20mm Flak could perforate the frontal armor of the early British cruiser tanks with low obliquity impacts over wide areas of the sides. The 20mm Flak also had high explosive projectiles that were particularly effective against trucks.

The Germans recognized the detached and exposed situation of the division quartermaster and the trains and provided him with a Kampfstaffel (battle echelon) to defend the quartermaster echelon and the trains near it. For the fluid combat situations of mobile war in the desert the Germans were on the right track. The quartermaster Kampfstaffel should probably have been even larger so that the Ib could send out escort forces with columns when required and defend the division workshop companies from disastrous displacements and the abandonment of crucial weapons forced sometimes by relatively small British forces. The Germans should probably have increased the Kampfstaffel to include an infantry platoon reinforced by medium mortars and machine guns and as many captured weapons as could be put together conveniently. The 15th Panzer Division had begun to ^{develop} ~~develop~~ a division trains organization with an integral combat force strong enough to fight off enemy mobile forces, escort its more important columns, and form strong points for self defense.

By February 1942, Panzer Army Headquarters, concerned by the harassment of supply columns by light British forces and by a relatively small numbers of British-recruited Arab franc tireurs (guerrillas), put out orders that required a driver and assistant

driver in every supply truck on the move individually or in columns. The Panzer Army required that the two men in every truck each have a firearm specifically loaded and accessible for action. For each column of the supply trains on the move, Panzer Army orders required a security troop armed specifically with automatic weapons and had ⁿgrenades in addition to the rifles or pistols of the drivers and assistant drivers. Sensitive to air attack, the Germans specifically designated members of the security troops as Spaehers (or, ~~look~~ outs) for British low level aircraft and mobile ground forces.⁵⁷

In May-June 1942, Rommel conducted the Venezia operation, orchestrating three separate battles toward the strategic goal of the destruction of the British field army lying between Gazala and Tobruk. With the German plan revealed to the British in advance through the Ultra situation, Rommel faced a difficult operation that lasted longer than expected and was characterized by an extremely complex crisscrossing of opposing combat formations. He also experienced a disastrously dangerous situation for the almost unarmed German supply columns terribly exposed in the middle of the deep enemy defense system and harassed by British light troops operating out of the desert from the south. With the service support situation near collapse, he issued the

57. For these developments see Pz.AOK Africa, Ia, Anlage zum KTB Nr. 3, Pz-AOK Abt. Ia/Ic Nr. 1210/42 g., Ueberfaelle, 28.2.42., U.S., Archives, German Records, Panzer Armies, T-313, Roll 426, Fr. 8719301, 02.

following order on 31 May 1942, in the middle of the great operation:

"All service support columns and supply convoys are to attach the fundamentally necessary antitank weapons for self defense. Further, all supply convoys are to be outfitted with radio communications by which means they can be escorted by radio and be in a position to request prompt support."⁵⁸

Rommel issued this order in the early stages of the Venezia operation while deeply embedded in the British Gazala defenses. At that moment, he and his mobile force depended for their survival on supplies moved by truck columns. The truck columns of the German divisions, for example, had to move from the combat areas of their divisions back to DAK dumps to pick up supplies and deliver them forward to the combat units and division dumps. Panzer Army truck columns simultaneously delivered supplies to the DAK dumps and constituted additional logistics traffic in the rear area. In the first two days of the offensive, Rommel hoped to have roads opened through the British minefields and past the fortified British boxes directly into the mobile force. Unable initially to get through the British minefields or reduce the static defense positions, the Panzer Army depended on extended roads for their truck columns south of the British defenses around Bir Hachein which held out until 11 June 1942. The situation was chaotic with the German divisional truck columns and even Panzer Army truck columns farther to the rear under attack by British armored reconnaissance forces and various other raiding detachments. The German truck columns once among their own

58. Pz. AOK Afrika, Ia, Anlage zum KTB, Panzerarmee Afrika Ia, Gef. St., den 31.5.42. Takt.Zeit. 2235, U.S., Archives, German Records, Panzer Armies, T-313, Roll 469, Fr. 8766866.