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NINTH AIR FORCE

IN THE

WESTERN DESERT CAMPAIGN

TO 23 JANUARY 1943

SCANNED BY ISA

PREPARED BY
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NINTH AIR FORCE PARTICIPATION IN THE DESERT CAMPAIGN

TO 23 JANUARY 1943

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It is the desire of the President, the Secretary of War, and the Commanding General, AAF that a solid record of the experiences of the Army Air Forces be compiled. This is one of a series of studies prepared as "first narratives" in the projected over-all history of the AAF.

The decision to make the information contained herein available for staff and operational use without delay has prevented recourse to some primary sources. Readers familiar with this subject matter are invited to contribute additional facts, interpretations, and constructive suggestions. To this end perforated sheets, properly addressed, may be found at the back of the study.

This study will be handled in strict compliance with AR 380-5.
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Ninth Air Force Participation in the Desert Campaign
to 23 January 1943
Chapter I

AMERICAN ENTRY INTO THE MIDDLE EAST

Active participation of the United States Army Air Forces in the Middle East began at what was probably the lowest ebb of British fortunes in that theater. There had been two years of fighting back and forth across the Western Desert and correspondents began to refer to the periodic marches and counter marches of the rival armies as the "accordion war." In their first offensive the British inflicted an ignominious defeat upon the numerically superior Italians and by February 1941 succeeded in advancing as far as Benghazi. But no sooner had the British taken Benghazi than Greece appealed for help against her Axis invaders. Confronted with the prospect of a two-pronged drive against the Middle East, the British divided their meagre forces only to meet defeat first in Greece and again in Crete. These disasters were paralleled by a retreat in the Western Desert. Under the aggressive leadership of Gen. Erwin Rommel the reinforced Axis troops had seized the initiative and during the latter part of March 1941 launched an offensive. They struck the British south of Benghazi and inflicted heavy losses. Deprived of their armor the British troops had no alternative but to withdraw along the coast. Rommel pressed the pursuit, by-passed Tobruk, and on 12 April seized Bardia which is practically on the Egyptian border.
The German invasion of U.S.S.R. on 22 June 1941 relieved the pressure in the Western Desert and gave the British a breathing spell which was utilized to effect a reorganization and to undertake a program of training and preparations. By the fall of 1941 the British had built up numerical superiority in men, guns, and planes and on 18 November launched an offensive to drive the Axis out of Libya. They succeeded in driving Rommel back as far as Aghaila and in trapping substantial numbers of Axis prisoners. They failed, however, to destroy the main striking force—the Axis armored and motorized divisions—and Rommel came back on 23 January 1942 to destroy all but 50 of the 160 British tanks.

Again the British were forced to withdraw from Bengasi and to take up defensive positions running south of Gazala to Bir Hachim.

Both sides were now immobilized for a period of approximately four months in building up supplies necessary for a decisive campaign. Again the British succeeded in achieving numerical superiority but this time the wily Rommel struck first. In a wide enveloping movement he swept around the British defenses on 27 May 1942. For two weeks an indecisive battle raged but on 12-13 June Rommel succeeded in luring the British tanks onto 88-mm. and 50-mm. antitank guns concealed among derelict vehicles and in shallow wadis in the Knightsbridge area. As a result, 230 of the 300 British tanks were destroyed without any corresponding loss having been inflicted upon the enemy. The destruction
of the British armor at Knightsbridge on "Black Saturday,"
13 June, was the turning point of the campaign and from that
point until they reached El Alamein the British were in retreat.

Twice, then, the British with numerically stronger forces
had failed to defeat the Axis. British prestige in the Middle
East sank to a new depth when it began to look as if, despite
American lend-lease equipment which was being sent in an ever-increasing stream, the Suez Canal would be lost to the Allied
cause. It was on the day before "Black Saturday" that an American
squadron of heavy bombardment planes undertook a hazardous raid
on the Romanian oil refineries at Floesti. The first strategic
bombing mission directed against the Axis from the Middle East
was carried out 12 June 1943 by 13 B-26's under the command of
Col. Harry A. Halverson. The actual damage inflicted was not
considerable but the American flyers made a flight of some 2,600
miles and pressed home the attack with determination. Although
falling short of the expectations of its planners this first raid
on the Floesti oil refineries illustrated the fact that even
though Hitler's Panzer divisions were advancing victoriously in
the desert the war could still be taken to the heart of Axis
territory by means of the long-range bomber. This fact could not
have been other than an encouraging development at a time when
British prestige was at its lowest in the Middle East.

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A day or two after the raid on the Floesti oil fields it was learned that Italian warships were steaming down from Taranto to intercept a convoy of British supply ships headed for Malta. Malta had become increasingly important as an air and naval base and increasingly difficult to supply. If Malta was to survive, however, the convoys had to get through and the crews of the B-24's were accordingly briefed to attack the Italian vessels. Seven airplanes of the Halverson Detachment took off at dawn on 15 June and intercepted the Italian fleet 220 miles east of Malta. Several hits and near misses on the superstructure of the battleships Littorio and Cavour were reported but the damage inflicted does not seem to have been crippling. Had the bombers been equipped to carry 2,000-pound instead of 500-pound bombs, it is probable that severe losses would have resulted. In reporting this action Colonel Halverson stated: "I consider that the primary mission of our cooperation which was to prevent attack of a large and vital British convoy by the main body of the Italian fleet has been accomplished." The Halverson detachment had not been destined originally for assignment in the Middle East but was organized and equipped to carry out a secret bombing mission in the Far Eastern theater. Because of the prospective loss of Burma the detachment had been temporarily deflected at Khartoum and acting on orders from the War Department had carried out the raid on the Floesti oil refineries and the attack against the Italian fleet. Colonel
Halverson then asked to be allowed to proceed on his original mission. He stated that it was his "considered opinion" that one more cooperative mission would deplete his force to a point where his primary mission could not be accomplished. Because, however, of the unfavorable situation in the Far East and the critical need for heavy-bombardment aircraft in the Middle East, Colonel Halverson was directed to assemble his command in the vicinity of Cairo and to report to the RAF Commander in the Middle East in order to arrange necessary details for the employment of his force in cooperation with the British. The efforts of the Halverson detachment in cooperation with the British were henceforth directed against the enemy's supply ports. On the night of 21-22 June nine bombers cooperating with three Wellingtons, which lighted up the targets with flares and incendiaries, attacked the wharves and shipping at Benghazi causing large fires. On 25 June, 10 Halpro airplanes reached the target at Benghazi and bombed docks and warehouses with "fair results." On 20 June Tobruk fell—by the 26th the harbor was being attacked by American B-24D's. Tobruk was henceforth subjected to an ever-increasing bombardment. From the time of its fall into Axis hands until it was reoccupied by the Eighth Army in November American heavy bombers carried out nearly 200 effective sorties against this target.
As this record suggests, the combat history of the Ninth Air Force in its initial stages was largely a heavy bomber show. No other theater at that time provided opportunities for so thorough a test of the effectiveness of long-range heavy bombardment. During the summer of 1942 both armies along the Alamein line were preparing for an offensive which would open as soon as one side or the other had the requisite amount of supplies and reinforcements. There was relatively little ground action, and air action in direct support of the land battle temporarily took a back seat. The real battle was the battle of supply and here, naturally, long-range strategic bombing assumed a major role.

In the Western Desert there were what may be called, for convenience, primary and secondary lines of supply. The primary lines of supply were the water routes running from the sources of supply to African ports. The secondary supply lines were those extending from the ports of entry to the front. In the primary lines the Axis had the advantage—they had a short haul across the Mediterranean from Italy, Sicily, Greece, and Crete while the British and Americans had to ship the bulk of their supplies over the length of the Atlantic and Indian oceans through waters infested with submarines and surface raiders. One exception to this, however, was the short haul by which fuel oil could be shipped from the refineries in the Persian Gulf area to the Egyptian front. In general, too, the British had the advantage
in the matter of secondary supply lines. From Alexandria to the
front at El Alamein it was only 70 miles whereas the distance
from Tobruk, the most advanced port of any size available to the
Germans, to El Alamein was approximately 350 miles. Bengasi,
which is about 250 miles west of Tobruk, was of course used as
well as the small port of Matruh which is over 200 miles east
of Tobruk. But in order to avoid hauling supplies overland by
motor transport from Bengasi the Germans concentrated their
shipping more and more at Tobruk and utilized coastal vessels
called "F" boats on an increasing scale to reship supplies from
Tobruk to Matruh. 11 Obviously it was the capacity of the ports
of Matruh, Tobruk, and Bengasi which constituted the bottleneck
in the German supply problem and it was against this bottleneck
that American heavy bombardment was required.

Col. Bonner Fellers, U. S. military observer in the Middle
East, had followed British fortunes in the Western Desert for
over a year and had kept the War Department informed of develop-
ments. Often his dispatches took a highly critical tone toward
British leadership but Colonel Fellers' observations were always
incisive and candid. He never lost sight of the importance of
the Middle East in the over-all strategic picture. With the
retreat of the British after the loss of their armor on 13 June
1942, Colonel Fellers emphasized again and again the importance
of holding the Middle East and the necessity for long-range
bombers. On 17 June he cabled the War Department warning that the Middle East was less secure than at any time since Germany attacked the U.S.S.R. Even though accepted strategies allocated defense of the Middle East to the British, he urgently recommended that the WD weigh carefully the extreme importance and total insecurity of this theater, taking necessary steps to hold a theater the loss of which would be a major blow to our cause. He added that the heavy bomber offered the only means of providing effective and immediate assistance.

With the fall of Tobruk, Colonel Fellers was quick to size up the situation and cabled his impressions and recommendations to the War Department. His lucid diagnosis of the situation is worthy of quotation:

With numerically superior forces, tanks, aircraft, artillery, and transports, reserves of all classes the British Army has twice failed to defeat the Axis in Libya. Under their present leadership and with their present tactical measures British cannot be given enough lease-lend equipment to win a victory. The VIIIth Army failed to maintain the morale of its troops. Its tactical conceptions were consistently faulty; it neglected completely the use of combined arms; its reaction to lightning battlefield changes was sluggish; it was without foresight in planning evacuation of supplies. The only remaining certain and effective method of destroying Rommel is to unify Air and Army commands, to reorganize the VIIIth Army under new leadership and new methods, to delay and to contain the Axis forces, at the same time interrupt shipping so as to deny vital supplies to the Axis.

Colonel Fellers went on to point out that it was of primary importance to sink cargoes coming into Benghazi and Tobruk. He called
attention to the recent attack by American aircraft on the Italian fleet as proof that heavy bombers could effectively interrupt shipping in the eastern Mediterranean. The losses of the British fleet in the Battle of Kythera Straits, 23 May 1941, showed that a fleet without ample air coverage could not operate within range of a land-based enemy air force. Based on events which had already taken place, it was clear that the eastern Mediterranean was pre-eminently an air theater and its shipping could be controlled by bombers based in the Middle East.  

There were, in addition, more than military advantages to be derived as a result of the use of heavy bombers. In the Middle East and the Balkans there were already favorable psychological reactions resulting from the presence of American bombers and the single raid on the heart of Axis oil supply at Ploesti. Only the presence of American heavy bombers in greater number could absorb the shock resulting from the recent reverses of the Eighth Army.  

British strategy conceived of the Middle East and India as interdependent theaters and held to the notion that, if India fell, the Middle East would fall also. Colonel Fellows regarded the latter as erroneous but maintained that its converse was true: if the Middle East fell, India would be lost also. Loss of the Middle East would sandwich India between two powerful, hostile forces and the maintenance of Allied air forces in that theater
would be next to impossible. Colonel Fellers therefore recommended that American air forces in India be transferred immediately to the Middle East and that an air support command consisting largely of B-24 type aircraft be sent to the Middle East without delay.\textsuperscript{17}

It is evident that Colonel Fellers' recommendations did not fall on deaf ears for on 23 June 1942 a message was sent to Maj. Gen. Lewis Hyde Brereton, Commanding General of the Tenth Air Force in India, to proceed immediately to the Middle East with the mission of assisting General Sir Claude Auchinleck. General Brereton was to take such heavy bombers as were available to him and was to make use of the headquarters of General Maxwell, Commanding General, U.S. Army Forces in the Middle East, for liaison and coordination with the British. The transfer of personnel and equipment from India to the Middle East was, however, to be regarded as a temporary expedient only, and General Stilwell, Commanding General of the U.S. Army Forces in the China-Burma-India theater, was assured that, as soon as the mission had been accomplished, Brereton's force would be returned to his command. General Brereton was chosen for this "temporary detail" in Egypt because of his "wide combat experience."\textsuperscript{18} General Brereton had served in combat theaters from the very outbreak of the war in the Pacific. At the time of the Japanese attack on Pearl Harbor he was Commander of the Far East Air Force in the Philippines, and served thereafter in Java. In February 1942 he had flown to India to assume command of the Tenth Air Force.\textsuperscript{19}
According to one account General Brereton interrupted a staff meeting at New Delhi to read the cable ordering him to Cairo. 20 Certainly he lost no time, for two days later he cabled the War Department that he was about to depart. The initial maximum force would be 10 heavy bombers of the 9th Bombardment Squadron, 7 to depart immediately, and 3 others when they came into commission. 21 Brig. Gen. Miler E. Adler described the force that was flown to Egypt as "near cripples" which were perhaps the least decrepit of "that mess of airplanes we had over in India." 22 Approximately 60 officers and 165 enlisted men constituted the initial Brereton detachment. General Stimson, General Adler, and Col. G. V. Whitney accompanied General Brereton as his staff. 23 This detachment arrived in Cairo on 23 June and the United States Army Middle East Air Force was officially organized on that date. 24 By absorbing the air section of the North African Mission into the new organization, the Brereton detachment was able to profit by the experience of people who knew the area and many of its problems. 25 Since the bomber base at Fayid, Egypt was considered dangerously close to the range of German bombers, the American heavies were moved to Lydda in Palestine on 30 June 1942. 26

Soon after arriving in the Middle East, General Brereton organized his air forces into two major groups consisting of combat units and an Air Service Command. 27 On 20 July 1942 the Halverson
detachment and the 9th Bombardment Squadron were consolidated to form the First Provisional Group. Colonel Halverson was appointed commanding officer and thus the Ninth Air Force began its career with one group of heavy bombers.

Immediately upon its arrival in the Middle East the 9th Bombardment Squadron had joined the Halverson detachment in its raids against the Nazi supply ports of Benghazi and Tobruk. On 19 July 1942 General Brereton reported that these two units had carried out 21 missions averaging seven airplanes per mission. Losses resulting from 36 days of operations had included 3 airplanes by enemy action, 3 interned in Turkey, and 1 aircraft force-landed and not recoverable. One major overhaul was necessary as a result of enemy aircraft gunfire. The strength of the two units as of 19 July was 19 B-24D's and 9 B-17's of which 7 and 3 respectively were in commission and operationally fit. This force was augmented on 25 July by the arrival of the air echelon of the 344th Bombardment Squadron of the 98th Group at Ramat David, Palestine. On the night of 30-31 July, seven B-24D's of this group carried out their first combat mission by attacking harbor facilities and a motor repair depot at Marsa Matruh. The raid was carried out in cooperation with Wellingtons of the RAF and Albacores which preceded the bombers in order to illuminate the target with flares and incendiaries.
British reconnaissance based in Malta and Egypt sent out Spitfires to photograph harbors and convoys en route. Information concerning new arrivals, departures, loading, dispositions, changes of course, and expected destination was gathered and sent out to the combat units concerned. The American bombers attacked Axis convoys as they assembled in Greece and Crete, as they made their crossing, and as they entered the harbors of Tobruk and Benghazi. For example, on 22 July 1942 American heavy bombers attacked the dock installations at Suda Bay in Crete and obtained, according to the operations report, direct hits on two medium merchant vessels, setting them on fire. On 20 July B-24D aircraft of the First Provisional Group attacked a convoy in Navarino Bay in southern Greece and scored one hit. On the same date B-17's made an attack on Tobruk, illustrating the flexibility of airpower and showing how even a small force may strike at widely dispersed points simultaneously. The First Provisional Group struck at the Axis next in the middle of the Mediterranean. On 1 August a 10,000-ton transport was sunk and its destruction confirmed by RAF reconnaissance. Such raids on enemy shipping were continued and from 29 July to 30 August more than 115 effective sorties were carried out by American heavy bombers.

This unrelenting attack had its effect in preventing the Axis from building up much-needed supplies. As early as 10 August General Brereton reported that Benghazi, Tobruk, and Matruh were
operating at 60 per cent of their potential capacity, that the
daily intake at these ports was 2,500 tons against 4,400 poten-
tial.37 The Axis, however, had been able to replace lighters and
harbor craft on a par with the rate of destruction and the daily
intake at Tobruk was sufficient to maintain operationally all land
and air forces east of Tobruk. The Germans were reported, also,
to have sufficient motor transport to deliver required land and
air operational supplies to forward areas provided they could
continue to rely on Tobruk. The enemy was using 60 to 70 self-
propelled landing barges, "F" boats, from Benghazi eastward.38
Designed as tank-landing craft, these boats were also capable of
carrying general cargo, motor vehicles, or troops.39 Indications
were that further substantial destruction of enemy supply facili-
ties was possible only if additional heavy bombers were made
available.

General Brereton had been ordered to the Middle East in a
time of extreme emergency and was told merely to assist Auchinleck
with whatever forces he could assemble from his command in India.
He had no time to formulate plans or policies but was forced to
begin in the midst of things. It was not long, however, before
he was able to size up the air situation and inform the War Depart-
ment of his plans for the employment of the U. S. Army Middle East
Air Force. His strategic estimate indicated that there were three
major objectives: (1) to assist Auchinleck in his mission to
destroy Rommel's forces with direct and indirect air support; (2) to secure the sea and air communications on and over the Mediterranean Sea; (3) to maintain an air offensive against the Axis by direct action against Italy and other vital strategic objectives such as Romanian oil production and if necessary oil production in the Caucasus area.\textsuperscript{40}

In connection with his plan for assisting the Eighth Army, General Brereton cited some interesting statistics with regard to direct and indirect support accorded the Eighth Army from 28 June to 22 July. It will be recalled that, after the disastrous tankbattle at the 'Cauldron' and the loss of Tobruk on 21 June, the RAF made a supreme effort to protect the retreating ground forces. The badly disorganized and poorly dispersed British columns would have presented excellent targets and yet the Luftwaffe seems scarcely to have appeared. The RAF, on the other hand, pounded Rommel's pursuit units and, according to one source, all serviceable aircraft averaged seven missions per day.\textsuperscript{41} It seems to be the general opinion among military observers that it was the action of RAF alone that prevented the destruction of the Eighth Army. When General Brereton arrived in the Middle East the retreating British units were taking up their positions along the Alamein line but Rommel was allowing them no rest.

During the period 28 June to 22 July the RAF heavy bomber effort outside the battle area consisted of 187 individual
sorties in which 920,000 pounds of bombs were dropped. The effort contributed by the U.S. air forces in the Middle East consisted of 297 individual sorties with 862,000 pounds of bombs dropped for the most part on targets out of range of the RAF. During this same period RAF medium and light bombardment made 869 sorties and dropped 2,800,000 pounds of bombs against such targets as motor transport, airdromes, ports, and shipping. Sorties flown by medium and light bombers in direct support of the Eighth Army during this period numbered 1,949; the bomb total was 3,800,000 pounds. Fighter-bombers dropped 1,160,000 pounds of bombs in 1,413 sorties. Fighters carried out 6,180 sorties consisting of machine-gun attacks against ground installations, motor transport, tanks, and troop concentrations, and escort to light and medium bombers. 42

The number of sorties flown and the total of bombs dropped, however, have little significance aside from the results achieved. General Brereton felt that the following estimate of results achieved was conservative. From 800 to 1,000 vehicles per week were believed to have been destroyed or seriously damaged. One hundred and fifty-six enemy aircraft were destroyed and 57 probably destroyed, with an additional 185 damaged to the extent of requiring major overhaul. Extensive damage had been inflicted upon the harbor facilities of the three major Axis ports in North Africa, Bengasi, Tobruk, and Matruh and to ports in Crete, southern Greece, and Italy. 43

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If the Eighth Army was to achieve its mission of destroying Rommel, General Brereton maintained it was essential that additional light, medium, and heavy bombardment and fighter units be sent to the Middle East immediately. Air units could be committed to action almost immediately after arrival and the time element was of vital importance. RAF personnel could support the initial combat elements until the ground echelons arrived. In order to achieve the three strategic objectives which he outlined, General Brereton recommended that the U.S. air forces in the Middle East be increased to include 8 heavy bombardment groups, 4 light (dive) bombardment groups, 2 medium bombardment groups, 6 fighter groups, and 2 photo squadrons. Such a force, assisted by the RAF, he believed to be the "approach to the eventual defeat of Germany." Furthermore, "the strategic location in this area of a strong air force gives strong support to air and sea communications to India and China and Allied operations in those theaters."  

General Brereton's air force never reached the size of his recommendations but it was being gradually strengthened. On the night of 16 August 1943 the 12th Medium Bombardment Group carried out its first mission against harbor installations at Marsa Matruh. 45 Elements of this group had departed the United States in July and by the middle of August the entire group had assembled in the Middle East. The 81st and 82d Squadrons were based at Deversoir along the Suez Canal and the 82d and 434th Squadrons at Ismailia, about 10 miles northward. The first month after
arrival in the theater was given over to training. Each crew flew at least five training missions in order to get acquainted with various aids to navigation available in the Middle East. The first missions were flown at night against enemy airfields at El Daba, Fuka, and harbor installations at Marsa Matruh. It was soon discovered, however, that because of the lack of flame dampeners the B-25's were unsuited for night missions. The bright spurt from the exhaust pipes caused the RAF to dub the Mitchells the 'Fireflies.' In the beginning one of the most difficult jobs for the combat crews of the medium bombers to learn was the location of the target. The first 15 missions were carried out with the assistance of observers from the South African Air Force which had been in the desert over a year and a half. The South Africans acquainted the Americans with flying conditions in the desert and assisted the navigators and bombardiers in mastering the technique of finding the target in the desert.

The air echelon of the 57th Fighter Group, travelling by air transport, began to arrive at Nuseibiba, Palestine, on 12 July 1942. In order to get American fighters into the Middle East as quickly as possible a new method of transporting planes and pilots was resorted to. The P-40's and pilots of the 57th Fighter Group were taken aboard the aircraft carrier Ranger and transported across the Atlantic. When the carrier was about 100 miles off the coast of Africa in the vicinity of Lagos the airplanes took off
and followed a newly established air route across Africa, landing at Nuqebila, Palestine, on 31 July 1942.\textsuperscript{53} The ground echelon of the 57th Fighter Group, as well as the ground echelons of the 99th Heavy and the 12th Medium Bombardment Groups, departed Manhattan on 16 July aboard the British-operated troop carrier Pasteur.\textsuperscript{54} The ground echelons of the 64th and 65th Squadrons joined the air echelons at Nuqebila on 19 August while the ground echelon of the 66th joined its air echelon at Beit Deras the same day.\textsuperscript{55}

As soon as they began to arrive in the Middle East, American fighter pilots were integrated with existing British units for a period of training and operational instruction in tactics peculiar to the theater in which they were to operate.\textsuperscript{56} This enabled the Americans to profit by the experience of the British and South African air forces without delaying combat action. Like the bomber crews the fighter pilots were at first dependent on the British for intelligence, briefing, airfield facilities, and servicing. The difference was that they did not act as independent units but were infiltrated into experienced British units.\textsuperscript{57} Brig. Gen. Auby C. Strickland, Commanding General of the IX Fighter Command, later said that he considered the success enjoyed by the American fighter units in the Middle East to be largely to the excellent training and experience received through the assistance of the British fighter command.\textsuperscript{58} The first combat mission on
which pilots of the group participated was flown on 9 August.
The pilots of the 57th Fighter Group and the 12th Bombardment
Group were among the first Americans to come to blows with the
Luftwaffe and were the first Americans to engage in action in
cooperation with ground troops fighting the Germans. 59
Chapter II
AIR-GROUND COOPERATION IN THE WESTERN DESERT

When the first American air forces arrived in the Middle East they were integrated with British units familiar with desert conditions and experienced in desert warfare. Two years of fighting back and forth across the desert had by no means been in vain for, although suffering repeated setbacks, the British had learned by their mistakes and were building an army-air organization which was to administer the first major defeat to the German army. The Western Desert provided a proving ground for both tactical and organizational developments of far-reaching influence on the growth of Allied doctrines of air-ground cooperation.

The Egyptian-Libyan desert, extending from Cairo for 1,200 miles westward to the hills of Tunisia and southward for a thousand miles to the Sudan, is a vast triangle, roughly the size and shape of India. In a sense it is a huge military reservation where war can be carried on with relatively little damage to civilian life and property. There are no barriers such as mountains, rivers, lakes; there are few landmarks and little cover. Men travel in the desert by compass; armies can maneuver at will such as battleships steam into position for action. The principal limitations

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on movement are those imposed by vast distances, and supply forms
the basic consideration of all military movements. The desert
has been aptly described as the "tactician's paradise and the
quartormaster's hell."

Military considerations have governed the development of
communications. At the beginning of the war Matruh was the terminus
of a single line of broad-gauge railroad running west from Alexandria.
From Matruh to Sidi Barrani there was a tarmac road. From there to
the Libyan frontier there was, until the Italian advance in late
1940, nothing but a rough track. In Libya the Italians constructed
an excellent tarmac road along the coast as far as the Libyan
frontier and subsidiary roads between Benghazi and Derna. After
the Italians advanced into Egypt they began the construction of
the "Via Della Vittoria" from the Libyan frontier to Sidi Barrani.
Inland communications consisted merely of tracks worn by long usage.

The desert climate is characterized by hot days, cool nights,
and erratic changes of temperature. Violent winds which hurl up
huge clouds of dust and sand are commented upon with particular
asperity by most observers. Dust is a serious menace to aircraft
engines but in general the desert offers ideal flying weather
practically the year round. Although air operations in the Middle
East are dependent upon sea-borne supplies, fuel is obtainable
locally and airfields can be constructed with relative ease.
General Brereton was quick to perceive the importance of drawing upon British experience in desert warfare. As he informed the War Department on 7 July 1942, there existed "a wonderful opportunity for training and observation of operational methods of fighters and light bombardment in direct support of ground army operating against highly trained tank and motorized units." He urged the dispatch of qualified observers and of group and squadron commanders from light bombardment and fighter units for 30 days of observation and active participation with parallel British organizations. Air Marshal Tedder and his Air Officer Commanding, Sir Arthur Cunningham, were pioneering in the field of air-ground cooperation and were forging an organization designed to bring about the maximum utilization of air power in support of the land battle. This organization had seen its highest development in the Libyan campaign beginning on 27 May 1942. So impressed was General Brereton with the degree of coordination that had been worked out between the RAF and the British Army that he submitted on 22 August 1942 a report to the War Department entitled, "Direct Air Support in the Libyan Desert." In order to understand how the American airmen fitted into the British organization and also to appreciate their role in the fighting that was to come, it is well to point out some of the more important developments in the doctrine of air-ground cooperation as it had been worked out in the Western Desert.
To obtain the fullest coordination between the RAF and the British Army, Cunningham had moved the air operations staff in beside the army operations staff. There was thus achieved a joint air-ground headquarters embodying the idea of co-equal striking forces, neither superior to the other and both working toward a common goal. The two staffs were divided into advance and rear echelons. This arrangement placed the rear echelon out of range of fighter aircraft and enabled it to work undisturbed except for night bombings. The rear echelon maintained communication with Middle East headquarters in Cairo and acted as a center link in the chain between Cairo and advance headquarters. The location of the advance army-air headquarters was generally a compromise between the requirements of the two commanders. In order to exercise proper control of fighter and bomber groups, it was desirable that the air headquarters should be within 5 to 10 miles of forward operating airfields and adjacent to a landing ground for its own use. A position some 40 to 60 miles behind the front lines was generally acceptable to the army commander.

For purposes of the present discussion, air force action in conjunction with ground forces may be divided into two types: direct air support and indirect air support. Indirect air support may be defined as any air action against the approaches to a theater of war such as land and sea communications, ports, shipping, base installations, etc. It is, in fact, strategic
air action against any target which has an effect, though not immediate, on the battle between land forces. Direct air support, on the other hand, implies action which has an immediate effect on the land battle. The spring and summer campaign of 1942 had witnessed a trend toward heavier emphasis on direct air support. Col. Bonner Fellers, military attaché in Cairo, summarized the development thus:

We made an analysis of the RAF missions. About 70 per cent was behind the line—enemy airdromes, communications, fighter sweeps and things like that. German Air Force operation is the opposite. About 65 per cent of the missions flown are over their troops in direct support to further advance units or for their protection. . . . Now, the RAF philosophy is swinging toward that of the GAF but they may change when the emergency is over. As I came back from the front on the 19 July, the function of the RAF was to give direct support to the 8th Army. 'We had to come to it,' I was told.

The key agency through which direct air support was accorded the Eighth Army was a combined army and RAF unit known as the Air Support Control. Located at advance headquarters, this Air Support Control received information on both the ground and the air situation from all sources. A separate air force tactical radio net with tentacles to forward ground units was maintained. Requests for air support could be initiated by units no lower than a brigade. A request form was furnished the originating tentacle in order to save time and to avoid errors and omissions. The information required included: (1) number of aircraft desired;
Each army corps has its own separate radio net. The tentacles indicated to the battle outposts are monitored by the division, corps, and army, in that order.

Air Support Control in Western Desert
(2) description of the target; (3) bomb line (expected line of forward troops in the next two hours); (4) location of any local landmarks or special devices used to help the pilot locate the target such as colored smoke, "7" ground-stripes, Aldis lamp, etc.; (5) time of the origin of target request. The request was examined in the light of the army and air commanders' policies and the current air situation and, if granted, the proper orders were issued to the RAF formations to execute the mission. The originating unit was informed of the estimated time of arrival of the aircraft over the target. It has been estimated that the average interval from the origination of the request to the time of arrival over the target was generally 1-1/4 to 1-1/2 hours. There were a few cases of 20 to 30 minutes but these were exceptional and attributable to the fact that air operations had already initiated action as the result of air information.

One of the most important functions of the tentacles located with forward troops was the transmission of information concerning the bomb line. This line was defined as "the predicted line of forward troops during the next two hours, back of which no bombing or any form of air attack should be carried out." In the early stages of the campaign there was a tendency to place the bomb line too far forward in order to insure against any risk of casualties to friendly troops. This resulted on more than one occasion in the Germans taking refuge between the bomb line and
forward British troops. During static periods the accurate plotting of the bomb line presented no particular difficulties but during an active period it was subject to continual change and hourly reports were scheduled as to the movement of ground troops. The information was then transmitted immediately to the air units.  

Requests from lower echelons were monitored by corps and army headquarters and if either disapproved, the Air Support Control was notified over corps communication line or directly by the army operations staff. Air Support Control in turn notified the ground unit making the request over the Air Support Control net. If no objections were interposed by higher echelons, Air Support Control transmitted the request to air force operations. Although the army could not order the air force to perform a mission, its "requests" were generally complied with. Reasons for not complying included a prior commitment of all available forces, the necessity for reservicing, inability to provide fighter escort at the time desired, and unfavorable weather conditions.  

As a matter of fact, in the majority of cases, targets for direct support of ground troops were discovered by air reconnaissance from advance airfields rather than by the ground troops themselves. 

Direct air support was accorded the Eighth Army in the May 1942 campaign by fighters, fighter-bombers, and light bombers.
The light-bomber squadrons were equipped with Bostons (A-20's) and Baltimores (A-30's). Unescorted missions at 20,000 feet or above were flown but the most frequent type of mission by the light bombers was flown at altitudes of from 9,000 to 10,000 feet with an escort of fighters, usually on the basis of one fighter for each bomber. If the enemy air force was strong an additional high altitude cover was provided. This type of mission was very successful and losses due to enemy air action were reduced to a minimum.

Targets attacked by light bombers included: (1) dispersed motor transport and armored units; (2) landing grounds and dispersed aircraft; (3) motor transport on the move along roads and over the desert; (4) camps and antiaircraft positions. Targets were assigned the wing by advance air headquarters. Alternate targets were generally given so that in case the primary target was not found the mission would not be a total loss. The light bombers generally carried four 250-pound bombs, although the loads were sometimes varied to include two 500-pound bombs and two 250-pound bombs. Box formations of six planes were generally flown. Upon approaching their targets the formations spread out so as to be approximately 100 yards apart in order to get the maximum results from their 350-pound bombs.

Fighter aircraft used during the Libyan campaign included Hurricanes, Tomahawks, Kittyhawks, and Spitfires. Of these, the
Spitfire was considered the best answer to the ME-109 which at that time was regarded superior to any allied fighter. The Kittyhawk (P-40E) was held in high esteem and could compete on favorable terms with the ME-109 at altitudes below 12,000 feet, but outclassed at higher altitudes.\(\text{17}\)

Fighters were employed in offensive sweeps and defensive patrols, in support for bombing attacks and fighter-bomber missions. Probably the most effective fighter employment during the battle was the protection of direct support missions.\(\text{18}\) The May 1942 campaign brought out the fact that the fighters should be able to carry out the dual role of either fighter or bomber.\(\text{19}\) In Greece and Crete the Germans had experimented with attaching bombs to their ME-109. No extensive use, however, was made of fighter-bombers until the May 1942 campaign. The fighter-bomber was employed particularly against targets which were not ordinarily considered remunerative. Detached motor transport, isolated tank units, or other objectives not adequately covered by antiaircraft defenses were suitable targets. The main advantage of the fighter-bomber was, of course, its versatility. After dropping its bomb load it could resume its fighter role and either strafe ground troops or intercept any enemy aircraft that might be about.\(\text{20}\)

One of the most difficult problems in the direct air support of ground troops is that of recognition. There were instances during the campaign of the RAF bombing British troops and of
British troops firing on their own aircraft. There was no radio communication between the aircraft and the ground troops concerned, and the absence of recognizable landmarks in the desert made it extremely difficult for the aircrew to pinpoint positions.

Various methods of indicating targets were experimented with but one of the most common methods was the use of panels in the shape of the letter "V" with the vertex pointing toward the target. At the open end of the "V" horizontal panels were placed, each line representing 1,000 yards to the target. At night petrol tins filled with sand and saturated with oil or gasoline were used. A large "V" some 100 yards in length was used at night while in the day 30 to 40 yards was considered the minimum length necessary for successful identification. Colored smoke signals were also used to assist airmen in locating enemy positions.

Tanks and other targets within the range of artillery were sometimes indicated by means of smoke shells. Targets within range of artillery were, however, bombed from the air only when by the nature of the target it was considered that the 250-pound bomb would be more effective than shell fire.

War in the desert is essentially a war of movement and the air forces supporting ground troops were required to shift their bases of operation with the utmost facility. In order to acquire a high degree of mobility the ground echelon of each squadron was
divided into "A" and "B" parties which duplicated each other with respect to equipment and personnel. Either party was capable of maintaining the full squadron from a separate landing field for a period of three days. This arrangement made possible the development of the leapfrogging technique whereby the squadron was able to move from one airfield to another without interruption of operations. 26

As the newly arriving American units took their place alongside the British in August there were many indications that the battle for the Western Desert would soon be resumed in full scale. Allied heavy bombardment continued its attacks on enemy ports and sea communications; medium bombers struck repeatedly at Matruh and Tobruk, and at rail and road traffic; while both bombers and fighters took their toll in attacks against enemy airdromes. It was estimated that Axis losses in southbound shipping to North African ports had risen to approximately 50 per cent by the end of August. Concentration of air attacks on tankers had the effect of creating a shortage of fuel and lubricating oil. 27 The enemy's air power had been increasingly forced onto the defensive by persistent raids on his airdromes. Night bombing of airfields including the dropping of delayed action bombs and spikes followed by early morning attacks proved an effective method of reducing enemy air power. 28 In one attack, during August, 437 bombs of
250 pounds each were dropped on the Daba landing grounds by 23 Wellingtons, 11 Bostons, 6 Albacores and 9 USAAF Mitchells. The immediate effect of this raid was the retreat of the Stukas 60 miles to the rear. In another raid Wellingtons and AAF Liberators dropped on various landing grounds, in addition to the usual load of 250- and 500-pound bombs, two 4,000-pound bombs and over 20,000 spikes.

Rommel must have sensed that he was losing the battle of supply and that each day promised to tip the scales slightly more in favor of the Allies. Moreover, he was a believer in the tactical offensive and Alexandria, the coveted prize, was so near. On the evening of 30 August tactical reconnaissance aircraft reported three fresh concentrations of enemy vehicles on the southern sector. By midnight it was apparent from ground and air reports that Rommel had undertaken a full-scale offensive. The main attack was delivered by the 15th Armored Division employing 140 tanks and the 21st Armored Division with approximately 70 tanks. These divisions were supported by the 90th Light. Twenty Wellingtons and 11 Albacores of the RAF bombed these enemy concentrations during the night of 30-31 August. Several direct hits and near misses were scored among transport vehicles, destroying several and damaging others.

The Panzer divisions continued eastward the next morning until noon, when the northern column halted a few miles southwest.
of Deir El Bagil and the southern stopped a short distance southwest of Deir El Rihov, apparently waiting for the 90th Light to join them. At this point a heavy dust storm arose which prevented Allied aircraft from taking off, and for over four hours the two Panzer divisions could not be touched from the air. Later in the afternoon, however, the two British armored columns began to move in a northeasterly direction. The enemy moved into a position where they had been expected and the British antitank guns, 25-pounders, and hull-down tanks poured such a withering barrage into the enemy armor that they were forced to withdraw farther south for the night. During the night Wellingtons and Albacores of the RAF continued to bomb Axis concentrations of tanks and vehicles.

On the second day of the battle (1 September) Axis armor resumed its attacks in the apparent hope of enticing the British armor into the open. The British declined the honor, however, and resisted so stoutly that the enemy was again forced to withdraw. Light-bomber attacks in the enemy's rear supplemented the good work of the artillery. American heavy, medium, and fighter aircraft were all active in the support of the Eighth Army on 1 September. Heavy bombers intercepted an enemy convoy in the Mediterranean and scored a direct hit on a merchantman; medium bombers, flying with RAF squadrons, attacked and destroyed several motor transports; while American fighters engaged in
fighter sweeps and escorts over the battle area. From this activity one medium bomber and one fighter were missing. 39

Apparently disconcerted at their failure to lure the British armor into traps prepared for it, the Axis forces seemed reluctant to resume the offensive on 2 September. The British therefore seized the initiative and began to put into effect plans which had been formulated to close mine-field gaps which the Germans had opened. 39 The whole area south of the British forces was a mass of tanks and vehicles and this concentration was kept under constant attack from artillery fire and fighter-bombers. Allied bombers made in all some 176 effective sorties as follows: 110 by Bostons, 57 by Baltimores, and 9 by Mitchells of USAAF. These attacks were escorted by Kittyhawks, Tomahawks, and P-40's. 40 U. S. heavy bombers, meanwhile, continued their pounding of Tobruk. 41

The peak of the air effort was reached on 3 September. Early in the day air reconnaissance disclosed that the enemy had broken off contact and was moving back through gaps in the mine fields. The ground troops intensified their effort against the retreating Axis columns while the air effort was stepped up to 200 sorties on the southern sector alone: 92 by Baltimores, 90 by Bostons, and 18 by Mitchells. These attacks were carried out against retreating Axis columns wherever suitable concentrations were found. British land forces attested to the accuracy of the bombing by
reporting that every approach of Allied bombers was accompanied by an attempt at rapid dispersal of the enemy's vehicles. The bombers were escorted by Kittyhawks, Tomahawks, and P-40's which made 156, 21, and 60 sorties respectively.42

The efforts of the American airmen on this day brought forth notes of appreciation from Air Vice Marshal Coningham. To the 13th Medium Bombardment Group, flying B-25 Mitchells, he said:

"Many thanks for your great assistance in the current day's bombing. We are full of admiration for the grand work of your crew and I know our squadrons are delighted. Well done and good luck."43

To the 57th Fighter Group he radioed: "We are most grateful and full of admiration for the grand effort your pilots are making in this period of hard work and hard fighting. Well done."44 The day bombing by the American medium and British light bombers was taken up at night by British Wellingtons and Albacores which carried out 61 sorties against enemy tanks and vehicles on the night of 3-4 September.45 During the night the enemy air forces were also active and bombers, probably JU-88's for the most part, carried out approximately 60 sorties against British forward positions.46 Searchlights and Veroy lights were employed but the enemy's night bombings were probably hampered by the absence of a suitable flare-dropping aircraft such as the Albacore.46

On the 4th of September the Germans made a last and determined effort to break through the British defenses. Counterattacks in
the morning and again in the afternoon were, however, beaten off by artillery fire and bombing. British tactics were to withhold their main armor and use light tanks, artillery and air against enemy concentrations which presented excellent targets. Air operations on the 4th, however, were more restricted than on the previous two days because of dust storms. Two air attacks were made to repel the enemy's counterattacks and, in all, 42 Boston, 18 Baltimore, and 12 Mitchell sorties were carried out. Enemy landing grounds were attacked by four B-35's and many hits in the target area were reported. Heavy bombers of the AAF were also active and attacked a convoy in the Mediterranean in cooperation with the RAF and Royal Navy. Two merchantmen were reported sunk and a third left blazing. So successful were the attacks against enemy shipping that on 5 September it was reported for the first time in several weeks that no cargo vessels were known to be moving south from Italy or Greece. The enemy was now sending out only heavily escorted convoys probably because the sending of a single vessel with escorts had not paid. Malta by this time had resumed an offensive role and Malta-based planes were daily making fighter sweeps over Sicily and torpedo planes were making attacks on shipping along the Greek coast.

By morning of 5 September it was apparent that the Axis offensive had spent itself. The enemy was gradually forced back during
the 5th and 6th behind a strong screen of antitank guns. The enemy's withdrawal was molested by ground troops on the east and north and, although restricted by adverse weather conditions, the Allied air forces made a number of bombing attacks on retreating motor transport. During the entire Axis offensive, 30 August to 5 September, the Allied air forces, with the exception of the heavy bombers, were employed in direct support of the Eighth Army. One of the outstanding features of this support was the efficient "shuttle service" maintained by Bostons and Baltimores. During the period of the offensive a total of 652 light-bomber sorties were carried out, including 43 sorties by Mitchells of USAAF. Our fighters were employed principally on bomber escort duty and carried out 150 sorties during the last four days of the battle. The effort of the USAAF was not inconsiderable but it was only a token of what was to follow.

Another feature of the air activity was the demise of the Stuka dive-bomber bogey. During this short period of Axis offensive action the Stukas almost invariably jettisoned their bombs upon sighting Spitfires, Hurricanes, or P-40's and they practically abandoned dive bombing and disposed of their bombs on the level instead. It was clearly shown that the Stuka was a sitting target for a determined fighter and the JU-87 proved to be, as one writer has said, "a crow masquerading in an eagle's feathers."
The significance of the September battle lies in the fact that British strength had been tested by what Rommel intended as a full-scale offensive and had been found capable of repulsing the Axis. Gen. Sir Bernard Law Montgomery, who had assumed command of the Eighth Army in August, was no longer on the defensive and could now choose his time to strike. It is interesting to note, too, that Rommel repeated the tactics which had been so successful in the campaign of the previous spring, namely, an attempt at a wide enveloping movement in which the British armor was to be destroyed by antitank gunfire and then the British infantry was to be destroyed by armor. This time, however, the British made a clear analysis of enemy intentions and met him accordingly. The Axis attack was invited on ground which was chosen by the British and they did not accommodate the Germans by entering the 88-mm. traps or attacking precipitously with their armor. The effect of Allied bombing was now being felt too for it was apparent that during the campaign the Axis forces were short of supplies, especially fuel and lubricating oil.

After the conclusion of the September battle the British gave no indication of an immediate counteroffensive. Time was favoring Montgomery and he intended taking no chances—his preparations must be complete. The RAF took advantage of the breathing space to make much-needed organizational changes and to train and re-equip for the coming decisive struggle. During the period of active
ground operations the B-25's of the 12th Group had operated from L.G. 99, an advance landing ground, but by 9 September 1942 they had returned to Deversoir and Ismailia. Here they underwent a period of intensive training in formation flying, medium altitude bombing, and low target firing. In the rearrangement of the Middle East air forces preceding the October offensive, a new wing (No. 232) was formed to control two RAF Baltimore and the three USAAF Mitchell squadrons. In early September the squadrons of the 57th Fighter Group had been scattered but after the Axis offensive all units of the group were brought together on 16 September at L.G. 174, which was located about 23 miles south of Alexandria. The operational control of the fighter group was vested in the Air Officer Commanding, Western Desert, and in order to gain experience in the control of air forces in the field as well as to guard American interests an American headquarters was attached to Advance Air Headquarters. The 57th Group was placed under the tactical control of the RAF 211 Group (equivalent to the American wing). On 6 October 1942 the 66th Squadron of the 57th Group was transferred to the operational control of the RAF 239 Wing where it remained until 19 November 1942.

During the lull between the September campaign and the October offensive British ground troops continued training and offensive patrol activity, retaining continuous local initiative. The Long Range Desert Group, an organization equipped to carry out...
commando-type operations, made several cleverly planned and
daring raids in the enemy's rear. This group participated in
a combined operation against Tobruk and Bengasi on the night of
13-14 September, the object of which raid was to effect a complete
block of the two harbors. The effort achieved only limited
success at considerable cost in men, motor transport, and ships.
The air phase, however, was carried out according to plan. On
the night of the combined assault selected areas of Tobruk and
Bengasi were heavily bombed by RAF and USAAF aircraft. Against
Tobruk 35 RAF and USAAF heavy and 66 medium sorties were carried
out, and 20 effective sorties were made against Bengasi.

The heavy bombers kept up their relentless pounding of Axis
supply ports and convoys. A greater part of their effort con-
tinued to be directed against Tobruk. It has been estimated that,
from the time this port fell into Axis hands until it was reoccu-
pied, approximately 4,000 tons of bombs were dropped on it by the
RAF and USAAF. There is no evidence to show that the port was ever
actually closed but it is certain that the enemy's reinforcement
effort was seriously hampered. During the first half of September
it has been estimated that some 18,000 tons of Axis shipping was
sunk and 6,000 tons damaged. Of this amount, 45 per cent was sunk
by air action.

Aerial reconnaissance revealed that during October the per-
petual mauling of Tobruk had had the effect of causing Axis
shipping to be diverted to a considerable extent to Benghazi, 250 miles west of Tobruk. Attention was then shifted primarily to
Bengasi where an especially noteworthy raid was carried out on
23 September. Reconnaissance photographs revealed that a merchant
ship, 8,000-ton capacity, and apparently loaded with ammunition
and fuel, was blown up. It was estimated that damage inflicted
on the part would seriously impair its unloading capacity for a
considerable time. 69 Other enemy ports which were bombed included
Suda Bay, Navarino Bay, Candia, and Bizerta. 70

In October 1942 there were two groups of heavy bombers in the
Middle East. The First Provisional Group was well under strength
for while there were four squadrons, one of these, the 512th,
 existed on paper only, and the 514th and 515th, composed of
elements of the original Halverson detachment, were considerably
below operational strength. The 513th Squadron was composed of
the B-17's which had accompanied General Brereton from India.
The 98th Group, on the other hand, had arrived in the Middle East
well equipped and well manned. It was based in Palestine, with
the 343d and 344th Squadrons established at St. Jean near the
Syrian border and the 345th and 415th Squadrons camped at Ramat
David. 71

In order to facilitate heavy-bombardment operations in the
Middle East it was considered expedient to bring all heavy bombers
under American operational control. Negotiations to this effect
were carried on as early as September and on 12 October 1942 orders were issued assigning nine officers to the IX Bomber Command.\textsuperscript{72} This command eventually included two U.S. bomber groups and the 160° RAF Squadron equipped with 13 Liberators.\textsuperscript{73} In its early operations the heavy-bomber groups worked in closest collaboration with the RAF which furnished information concerning the enemy. Col. Patrick W. Timberlake, A-3 of the Ninth Air Force, was in constant contact with RAF Headquarters in Cairo and daily dispatched operational orders to the bomber groups in Palestine.\textsuperscript{74}

After the September offensive in which the medium bombers of the 12th Group were employed in direct support of the Eighth Army the medium-bomber effort was directed mainly against enemy landing grounds, particularly those at Daba, Fuka, and Sidi Haneish. In the period between 6 September and 22 October the combined efforts of the RAF and USAAF comprised 14 heavy, 219 medium, 595 light, and 333 fighter-bomber sorties against airfields. Of these, USAAF Mitchells carried out over 80 effective sorties.\textsuperscript{75} These operations were not undertaken without losses. On the night of 13-14 September, for example, four Mitchells failed to return from a mission against the airfield at Sidi Haneish.\textsuperscript{76}

The RAF and AAF displayed considerable ingenuity in their campaign to gain a high degree of air superiority in the Western Desert. For example, air reconnaissance photographs taken on
6-8 October revealed that the enemy's forward landing grounds at
the Daba and Qotalifya areas were waterlogged as a result of recent
rains which, fortunately, had not seriously hampered Allied air
operations. The decision was made to interrupt training and
take advantage of this unusual opportunity to deal the Luftwaffe
in the Western Desert a crippling blow. Accordingly, on 9 October
Bostons and Baltimores made 144, Mitchells 16, and fighter-bombers
32 effective sorties against the landing grounds at Daba and Sidi
Haneish.77 These attacks were made with escort provided by P-40's
and Spitfires. As a result of this combined offensive the enemy
was reported to have suffered 8 aircraft destroyed and 18 damaged
on the ground.78 These daylight operations were supplemented by a
night raid of Wellingtons and Albacores against the enemy landing
ground at Fuka.

Beginning on 14 October part of the ground echelon of the 12th
Bombardment Group (H) began moving to E.G. 36, which was located
about 50 miles from the front lines. By 18 October, 34 Mitchells
carrying the flying personnel landed at the forward base. In their
operations in the Western Desert pilots of the medium bombers
developed a high degree of competence in the maintenance of "air
discipline." The fighter escort insisted upon a tight formation
because such a formation was easier to protect than a long-drawn-
out one. Experience taught also that in a loose formation the
tail-end airplanes used more gasoline and once they fell behind it

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was hard for them to catch up. The medium-bomber formation, therefore, normally consisted of 18 airplanes, 3 flights of 6, each flight 2 vees in javelin down. It was found that this formation was easy to handle and enabled the formation commander to wheel around in taking evasive action. So smooth and unbroken were the 12th's formations that the men of the Eighth Army began to refer to them as the "18 Imperturbables" or the "18 Red Devils."\textsuperscript{79}

Over the target the normal technique was to come in with a diving turn, up to 90 degrees, losing from 1,000 to 2,000 feet in altitude. Bombing was done between 6,500 and 8,500 feet. After the bombing approach was made either a diving or a climbing turn off the target was used. The B-25's generally made a diving turn because if they tried to climb off the target too much speed was lost. In bombing airfields, pattern bombing was employed exclusively. The bombardiers were instructed not to bomb until the lead bombardiers' doors were open. The D-8 sight was used instead of the Norden bombsight and later on the Mark-E and -10 were used. Over the target the Mitchells would spread out to 100 yards between airplanes since the Americans had been told that the radius of deflection of the English 250-pound bomb was approximately 50 yards. The effectiveness of the 12th's activities was attested to by a captured German colonel who is reported to have said: "Those Mitchells—never when they lay a pattern on a field do we get away without a hell of a bombing."\textsuperscript{80}
The ground crews also developed a very high degree of proficiency. Men in each squadron were selected to specialize on certain jobs. In one instance, it is reported that six airplanes were completely re-serviced and re-bombed in twenty-two minutes.  

There is another instance reported of a plane's making a bally landing in the middle of the runway, and, with aircraft landing to right and to the left of him, the driver of the gas bowser rushing out to the middle of the field to fill the tanks before the operations officer could stop him.  

The British offensive at El Alamein which began on 23 October was preceded by a decisive victory in the air. In fact, General Montgomery refused to mount his offensive until he had definite assurances from the airmen that they had achieved superiority over the enemy air force. As early as 21 September 1942 Air Vice Marshal Coningham had called a conference of all group captains and wing commanders, along with his staff, and had outlined to them in a general way the plans for the preliminary air offensive which was to precede the ground action. The conference was informed that a stepped-up air action would begin around 20 October and that the interval from 21 September to 20 October would be utilized in intensive training, in getting all aircraft into combat condition, in bringing personnel up to strength and in checking transportation to insure mobility of all units. Similar conferences were held each following Monday and on Monday, 19 October, the AOC announced that the ground attack would begin on the night
of 23 October and that there would be an all-out air offensive beginning the night of the 19th with three major objectives: (1) to knock out the enemy's air opposition and deny him air reconnaissance; (2) to destroy supply and communication facilities in the Tobruk-Sollum area; (3) to break the morale of enemy troops by keeping them awake for three successive days. 86

On the first day of the preliminary air offensive, 19/20 October, the Allied air forces flew 387 sorties. Of this number, 54 were made in patrolling the Fuka-Daba area, 168 against enemy landing grounds and shipping at Tobruk, and 165 in direct support of the Eighth Army in bombing motor vehicles and gun emplacements. On the following day the same degree of effort was maintained but the emphasis was shifted more to counter air force action, 241 sorties being flown against enemy landing grounds and only 63 in direct support of ground troops. Included in the latter were two tactical reconnaissance missions, each composed of one reconnaissance plane (Hurricane) with 11 fighter escorts. 87

On the 22d the Army made no requests for direct support other than two tactical reconnaissance missions which, as on the previous day, were furnished. 88 Bombing activity consisted entirely of raids against enemy landing grounds. Fighter sweep patrols accounted for 129 of the total of 350 sorties for the day. An interesting feature of the day's activity was an attack by U. S. and British bombers against the Maleme airdrome, the airdrome which had figured
so prominently in the German conquest of Crete. It was well known that German bombers were flying much-needed aviation fuel from Crete and that aircraft based in Crete could be quickly shifted to North African airdromes to reinforce the battered Luftwaffe. It was of primary importance, therefore, to strike at this more remote base of German operations. The damage inflicted by the raid carried out on the 22d does not seem to have been extensive but return visits were soon to be made by the heavy bombers. On the 23d direct support again consisted only of reconnaissance missions. Indirect support consisted of 212 sorties carried out in bombing enemy landing grounds and 126 sorties made on fighter sweep patrols.

A review of American bomber operations in the Middle East prior to 25 October 1942 shows the following totals:

<table>
<thead>
<tr>
<th>Sorties</th>
<th>Bombs Dropped (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1st Provisional Group</td>
<td></td>
</tr>
<tr>
<td>B-24's</td>
<td>357</td>
</tr>
<tr>
<td>B-17's</td>
<td>67</td>
</tr>
<tr>
<td>2. 98th Group</td>
<td></td>
</tr>
<tr>
<td>B-24's</td>
<td>319</td>
</tr>
<tr>
<td>3. 12th Bombardment Group</td>
<td></td>
</tr>
<tr>
<td>B-25's</td>
<td>259</td>
</tr>
</tbody>
</table>

The principal targets, according to the number of pounds of bombs dropped, were:
<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>Description</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobruk</td>
<td>1,028,000</td>
<td>Landing grounds</td>
<td>205,000</td>
</tr>
<tr>
<td>Bengasi</td>
<td>680,000</td>
<td>El Daba</td>
<td>108,000</td>
</tr>
<tr>
<td>Convoys</td>
<td>425,000</td>
<td>Candia</td>
<td>95,000</td>
</tr>
<tr>
<td>Suda Bay</td>
<td>244,000</td>
<td>Mersa Matruh</td>
<td>66,000</td>
</tr>
<tr>
<td>Navarino Bay</td>
<td>235,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

During the same period P-40's of the 57th Fighter Group carried out 550 sorties which included bomber escorts, offensive sweeps, and fighter-bomber missions.
Chapter III

THE BATTLE OF EL ALAMEIN, 23 OCTOBER-6 NOVEMBER 1942

The battle of El Alamein differed from its predecessor desert campaigns in several important respects. In the first place, although desert warfare is generally thought of as being highly mobile, the positions occupied by the opposing armies presented a very restricted zone of movement. The Alamein line was unique in that it had both a top and a bottom. Every other position, British or Axis, had generally been based at one end on the sea and at the other in the limitless desert. This invited flanking movements on the south and both sides had made extensive use of such tactics. At Alamein, however, the British position, about 40 miles in length, was anchored at the north on salt lakes by the sea and on the south on the Qattara quicksands. The Qattara Depression is a geological freak which along the northern portion lies about 200 feet below sea level. The salt waste lands which form the bed of the depression have been described as "impassable by cars and unsafe for loaded camels." Either one side or the other, therefore, had to break through heavily defended lines before the battle could assume the mobility characteristic of desert fighting.

This famous battle was unique also in that the British directed their main effort at the strongest and deepest point in
the Axis line and used a form of attack that had been discredited as long ago as World War I because of the heavy casualties involved. The enemy had disposed his troops so that the strongest German force, the 15th Panzer and 16th Light, were concentrated in the north while the other German armored division, the 21st Panzer, and the better Italian units were holding the southern sector. The center, held principally by Italians, was the weakest point and it was here that the Germans were inviting attack. Both sides had been preparing their defenses for a period of three months and the lines took the form of discontinuous belts of mine fields several miles in depth. Gen. Sir Harold Alexander is reported to have said concerning the German position: "To break down a wall, one inserts a crowbar beneath it and pries a hole." General Alexander chose to insert his crowbar at the strongest point in the wall, the northern sector. An Australian salient on the coast afforded him a secure right flank and the attack would be delivered where the enemy least expected it. The British commanders realized that the nauling, crowbar form of attack could succeed only if the attacker had superior fire power and high quality of infantry. Accordingly they determined to lay down a heavy barrage in World War I fashion and then to send in infantry to clear the way for tanks, instead of vice versa.2

The battle of El Alamein was preceded by elaborate deceptive measures designed to lead the Germans to a false appreciation of
British intentions. Many old trucks were sent to the southern area and moved about constantly to create the impression of large-scale movements and preparations. Dummy soldiers and wooden antiaircraft guns were used to simulate a heavily reinforced line. Since water supply is a basic consideration in all tactical operations in the desert, the British actually went through the motions of laying a pipe line to the south. Dummy corps were formed and spurious messages were sent back and forth. The success of these elaborate measures was made evident by the question which the captured Gen. Ritter von Thoma later asked in exasperation: "What the hell became of those two armored divisions down in the South?"

Other extensive preparations were made prior to the opening of the offensive. The British Counter Battery organization had as its goal complete information concerning the position and caliber of each enemy gun, the formation to which it belonged, and its arc of fire. This goal was not wholly achieved but by the opening of the battle the location of batteries was nearly complete. Seven days' supplies plus three days' reserves had to be arranged for in preparation for the attack. Hundreds of thousands of shells were placed in widely dispersed ammunition dumps which were well camouflaged. The Western Desert railway worked day and night delivering much needed supplies to forward areas, 60,000 tons being delivered during the first 20 days of
October. Between 1 September and 22 October the Royal Army Ordnance Corps issued to the Eighth Army 35,000 pairs of socks, 19,000 pairs of boots, 45,000 blankets, 125,000 water containers and 610,000 portable cookers, to mention only a few items.

In the race for supplies and reinforcements which was carried on during the summer of 1942 the Allies outstripped the Axis in every department—men, guns, and tanks. The American heavy and medium bombers played no small part in this battle of supply and the work accomplished during July, August, and September had an important effect on the outcome when the attack was inaugurated. The relative strength of the two sides is shown in tabular form below:

Estimated Strength of Ground Forces on the Eve of the El Alamein Offensive, 23 October 1942

<table>
<thead>
<tr>
<th></th>
<th>British</th>
<th>Italian</th>
<th>German</th>
<th>Total Axis</th>
<th>Relative Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>165,000</td>
<td>46,000</td>
<td>47,500</td>
<td>232,500</td>
<td>1.76</td>
</tr>
<tr>
<td>Guns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antitank</td>
<td>1,450</td>
<td>450</td>
<td>550</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>775</td>
<td>250</td>
<td>60</td>
<td>340</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,275</td>
<td>750</td>
<td>700</td>
<td>1,450</td>
<td>1.57</td>
</tr>
<tr>
<td>Tanks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>450</td>
<td>15</td>
<td>50</td>
<td>50</td>
<td>2.05</td>
</tr>
<tr>
<td>Medium</td>
<td>150</td>
<td>210</td>
<td>470</td>
<td>730</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,050</td>
<td>275</td>
<td>235</td>
<td>510</td>
<td></td>
</tr>
</tbody>
</table>
Estimated "Serviceable Aircraft" Strengths, North African Theater

|                | Allied | Axis | Relative Strength
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fighters</td>
<td>605</td>
<td>347</td>
<td>1.75</td>
</tr>
<tr>
<td>B. Bombers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Dive bombers</td>
<td>-</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>2. Recon.</td>
<td>-</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>3. Light</td>
<td>108)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium)</td>
<td>146</td>
<td>315</td>
<td>171</td>
</tr>
<tr>
<td>Heavy)</td>
<td>61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torpedo</td>
<td>25</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>340</td>
<td>277</td>
<td>1.23</td>
</tr>
<tr>
<td>C. Special: Recon. and Army Coop.</td>
<td>55</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>D. Seaplanes</td>
<td>-</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

Estimated Total
All Serviceable A/C
1,000
713
1.40

The timing of the battle of El Alamein was based upon two factors: the moon phase and the success of the preliminary air offensive. Moonlight during the early morning hours had become an almost indispensable prerequisite for successful operations of infantry and armored attacks. The object of the night attacks was to allow the infantry three or four hours on captured ground before daylight in order that they might dig themselves in and form their tank defenses. Because of the lack of landmarks the infantry did not want to attack in pitch dark. The moonlight attack, however, partially compensated for the lack of cover in
the desert and yet afforded enough light to allow the troops to see what they were doing. General Montgomery did not wish to begin his offensive until he received assurances from the RAF that they had achieved air superiority and could guarantee it. Such assurance was given just a few days before the opening of the battle.\textsuperscript{10}

At 2140 hours, 23 October 1942, 20 minutes before the advance of the infantry, one of the most intense artillery barrages in history opened up along the Alamein line. Eight hundred guns of all calibers fired four hundred rounds each. In the northern part of the line where the main effort was being made ammunition was limited only by the amount that could be hauled to the guns.\textsuperscript{11} The effect of this sudden rain of hell is vividly described by a correspondent who had witnessed many an artillery display in the desert: "The desert air throbbed and pulsed intolerably with wave and counterwave of deafening clamour. The flashes rippled from end to end of the horizon as though some giant were playing crazy scales on a piano which produced flame instead of music. There had been nothing like this concentration in the desert before."\textsuperscript{12}

Immediately after, the artillery barrage sappers moved forward to clear a path for the infantry. The mine detectors, like large vacuum cleaners, were swung back and forth until the buzz gave notice of the deadly traps. The sapper deftly removed
the mines and moved cautiously forward, followed by men with miles of white tape which marked a path that was safe at least from the danger of exploding mines.

The main thrust was delivered in the north. The 2d New Zealand Division was 100 per cent successful in reaching its objectives on the first day but the Australians and particularly the South Africans were held up by strong points and bitter hand-to-hand combat. An advance of approximately six miles, at its greatest depth, was made along an eight-mile front. Attacks in the central and southern sectors were made as diversions to prevent the 21st Panzer and Ariete Armored divisions from joining the Axis armor in the north. The 4th Indian Division, in the central sector, advanced through the first enemy mine field while in the southern sector the Seventh Armored Division met strong resistance from an enemy protected by mine fields and antitank positions and were forced to withdraw after an initial success. 13

In order to support the advancing infantry all along the line and to supplement the effects of the artillery barrage, 65 Wellingtons and 24 Albacores from the RAF carried out continuous bombing during the first night of the offensive. Gun emplacements received a high priority of attention as well as concentrations of armor and encampments. Night-flying Hurricanes joined in this activity and strafed field guns, ammunition dumps, vehicles, and transport repair shops in the enemy's rear. The attacks carried
out by the RAF were planned ahead and no requests for direct support were initiated by the ground forces during the first night.\textsuperscript{14}

During the next day, 24 October, the British forces were occupied in the north in consolidating their positions. The British armor stood ready to pass through the mine fields but was prevented from doing so by the fact that the gaps were still commanded by enemy antitank guns. In the south the Seventh Armored Division continued clearing operations in the enemy mine fields.\textsuperscript{15}

On the two days preceding the land battle, the 22d and 23d, the Army made no request for direct support missions other than reconnaissance and the energies of the RAF and USAAF were devoted to counter-air activities. After the battle was joined, however, during the day of 24 October, the Allied air force activities were devoted very largely to direct support of ground operations. A total of 588 direct support sorties were flown and of this number 496 were in response to calls from the Army. The remainder of the air force activity was distributed as follows: 62 sorties in raids on enemy landing grounds, 262 indirect support sorties, 254 fighter sweeps, and 3 reconnaissance missions.\textsuperscript{16}

The American air forces in the Middle East participated prominently in these operations. Medium bombers of the 13th Group carried out around 50 effective sorties against enemy vehicles.\textsuperscript{17} Fighter aircraft of the 57th Group were engaged in bomber escort
duty and carried out approximately 100 sorties on the day follow-
ing the initial attack of the land forces. When on bomber
escort duty the fighter pilots followed the rule that their
primary duty was the safety of the bombers. Proof that they
were highly successful in the bomber escort type of mission is
afforded by the fact that during the whole period from Alamein to
Tripoli not a single bomber escorted by fighters was brought down
by enemy air action. Because of unfavorable weather conditions
over Benghazi, Tobruk, and Crete, heavy bomber activity was
restricted during the week of the opening of the offensive.

On the 25th there was no important change in positions.
British armor made some advance through the mine fields in the
northern sector during the night of 24-25 and there were brief
armored attacks by the enemy to test strength but these efforts
were not on a major scale. In the southern sector, the 131st
Infantry Brigade advanced across the second mine field between
Hunassib and Himeimat but they encountered small arms and
artillery fire and were forced to retire. The diversionary
attacks in the south had made little headway against determined
resistance and after the 25th they were discontinued. They had
accomplished their purpose, however, in keeping the Axis armor
separated for the German commanders seemed still to be in doubt
as to where the main point of attack was being directed.
Allied bomber effort on the 25th was directed principally against concentrations of enemy transport vehicles in the northern sector with the object of thwarting attempts at counterattacks. Mitchells of the 12th Group in cooperation with Bostons and Baltimores of the RAF carried out 30 sorties and dropped 60,000 pounds of GP bombs. Excellent bomb patterns were laid down on motor vehicle dispersal areas and Allied bombers succeeded in their mission so well that by afternoon no suitable targets presented themselves because of the dispersal of the enemy's forces.\textsuperscript{23} Fighters of the 57th Group made 72 sorties on fighter-bomber and bomber escort missions. The enemy air force was more active on the 25th than on any of the previous days of the battle and the American P-40's brought down three ME-109's and damaged others without themselves sustaining any losses.\textsuperscript{24} It is worthy of note, at this point, that all Allied fighter and bomber aircraft operating over the battlefield of El Alamein, with the exception of the Spitfires and Hurricanes, were of American construction.\textsuperscript{25}

On the morning of the 26th the British made further advances in the northern sector. The Australians moved forward about two miles while farther south the 2d New Zealand and 1st South African divisions advanced slightly. In the south the 50th Division moved in the direction of Junassib while units of the 44th Division continued their efforts to clear the enemy mine fields north of Himeimat.\textsuperscript{26}
Meanwhile the enemy was preparing for a formidable counterattack from the west and southwest of the British salient. The weight of the Allied air forces was marshalled in direct support of the ground forces and 223 sorties were dispatched with the mission of breaking up the enemy's concentrations. The land forces testified to the accuracy of the bombing, and its efficacy is indicated by the fact that no enemy counterattacks materialized. The American participation in the day's activity over the battlefield consisted of 18 sorties made by B-25's of the 12th Group and 72 sorties by fighters of the 57th Group on fighter-bomber, fighter patrol, and bomber escort duties. The enemy made a determined attempt on 26 October to challenge Allied air superiority and suffered heavy casualties. Six ME-109's, 8 NC-202's, and 3 JU-87's were destroyed; 5 ME-109's, 2 NC-202's, and 5 JU-87's were probably destroyed; and 5 ME-109's, 2 NC-202's, 5 JU-87's, and 1 JU-88 were damaged. Of this bag, pilots of the 57th Group were credited with bringing down 4 NC-202's. Allied losses amounted to four fighters destroyed.\(^{27}\)

After approximately a week of limited operations on account of unfavorable weather conditions heavy bombers of the 98th and First Provisional Groups made three separate attacks on 28 October on convoys in the vicinity of Tobruk. Two direct hits and four near misses on a 5,000-ton tanker and one direct hit on a barge were claimed. The bomber formations were attacked by
enemy fighters, one of which was probably destroyed by gunners of the heavy bombers. All aircraft returned safely from the day's operations. 28

On 27 October the British widened their salient in the north by the capture of a vital point called Kidney Ridge. Strong counterattacks against the 26th Australian Brigade and the 1st Armored Division were repulsed with heavy tank casualties on both sides. 29 Again the Allied air forces were directed against the enemy forces in an attempt to break up his concentrations and a total of 375 sorties were flown in direct support missions. In addition, 117 sorties were flown on indirect support, 68 on landing grounds, and 243 on fighter sweep patrols. 30

American pilots of the 57th Group displayed their ingenuity by introducing a new type of fighter mission. Taking off in the light of truck headlights, a group of fighter-bombers arrived over enemy L.G. 18, near Fuka, at dawn on 27 October. Not expecting these early morning callers, the enemy was caught unawares and a number of his aircraft were destroyed on the ground while trucks and tents were damaged and destroyed by strafing. This new type of raid was repeated with outstanding success on 28 October and 2 November and these "pre-dawn" missions played a prominent part in relegating the enemy air force to a minor role in the battle of El Alamein. 31
In their encounters with the much-vaunted Luftwaffe, American pilots invariably showed up to good advantage. On 27 October, for example, 9 P-40's of the 65th Squadron equipped with bombs and 8 P-40's of the 64th Squadron acting as top cover had completed their bomb run when they sighted 20-plus CR-42's. Approaching from another direction were a comparable number of Stukas escorted by 20-odd 109's. Despite odds of about 50 to 16, our pilots turned into this contingent of the Luftwaffe and destroyed 7 enemy aircraft, probably destroyed 3, and damaged 3 others. They accomplished this without loss.\(^\text{32}\)

There was a lull in ground activity on the 28th which concluded that has been described as the "break-in" phase of the battle. This first phase was characterized by the establishment of the British salient in the northern sector, the gradual extension of the bulge, heavy but ineffective counterattacks, and constant, close air support. During this time the Axis had shown great hesitancy in accepting the fact that the main attack was in the north, and kept their armor divided. This sluggishness of reaction on the part of the Axis can be attributed to two factors which are easier to enumerate than to evaluate: (1) the success of British deceptive measures which led to a false appreciation of the situation; (2) the fact that Rommel was absent from the battlefield and the German troops were under a less able commander.
When the battle opened on the night of 23 October Rommel was in Berlin and his troops were under the command of Gen. Georg von Stumme, who had commanded on the U.S.S.R. front and who, according to one account, "was committed to the disposition of defensive forces in depth, in separate groups." Whether he was committed to such a preconceived tactical doctrine or simply baffled by the situation would seem, however, to be open to question. At any rate he failed to appreciate British intentions and failed to unite his armor against the British advance in the north. He was killed on 26 October and Gen. Ritter von Thoma took command briefly. Rommel is believed to have returned to North Africa on the 27th or 28th of October.

The second phase of the battle was inaugurated on the night of 28-29 by the 20th Australian Brigade which attacked and extended the British salient northwards to the extent of two miles. A simultaneous attack by the 26th Australian Brigade was launched westward and parallel to the coast but it failed to achieve its objectives. The result of this action was that Thompson's Post, an enemy pocket to the east of the 20th Brigade's narrow salient, was partially isolated and the enemy found it necessary to make counterattacks immediately. Seven counterattacks were repulsed by Allied ground and air forces on 29 October. While the enemy was thus engaged in the coastal sector, the British were regrouping major units in preparation for further decisive action.
On 30 October the Australian salient was pushed an additional two miles northward. The railroad was cut but the advance did not reach the coast. The next day there was a lull in ground activity while British units consolidated their positions. The enemy forces holding Thompson's Post were reinforced by a group of 18 tanks from the 90th Light which ran around the northern tip of the Australian salient. Further efforts were made to relieve the partially trapped forces and on 1 November numerous counterattacks were made both from within the pocket and by elements of the 90th Light and 21st Armored divisions from the west. 25 The results of this action were not clear at the time but later it appeared that a substantial portion of the enemy pocket was able to withdraw along the coast.

The period 29 October to 1 November was characterized by the establishment of a narrow salient in the enemy's flank. The establishment of the salient had the effect of diverting the enemy's attention and allowing the regrouping of the British forces to proceed undisturbed. What is more important, it apparently convinced the German high command that the main British thrust would follow along the coastal road in a northwesterly direction toward Sidi el Rahman. 25 During the period up to 1 November the British tank losses were estimated at 100, mostly of light types which had been used to clear a way for the mediums. British heavy armor, however, had not yet been committed and was
being held in reserve for the decisive tank battle. 37

The Allied air forces continued their offensive unabated. Because, however, of the dispersal of the enemy's vehicles the second phase of the battle was characterized by comparatively few light-bomber missions. During the four days in question only about 200 light and medium sorties were carried out as compared with over 400 fighter-bomber sorties on vehicles, gun emplacements and suspected enemy headquarters. The American pilots of the 57th Group, although relatively new to desert combat, proved to their colleagues in the RAF that they were not only good flyers but good fighters as well. On 23 October, for example, Allied fighters shot down nine enemy fighters, four of which were brought down by pilots of the 57th Group although they constituted only 23 per cent of the Allied fighters on patrol that day. 38

One of the finest examples of direct air support of the entire campaign is furnished by the action on 30 October. The Australians had as their objective the extension of the salient to the coast that day and their action would be subject to a flank attack by the enemy forces inside the pocket at Thompson's Post. The air forces had as their mission the prevention of the formation of a counterattack within this pocket. Although the area was small—approximately 9 miles square—and the bomb line was constantly changing, the Allied air forces carried out over 500 sorties and succeeded in preventing a counterattack from developing. In view
of the small area bombed and the fluctuating bomb line it is worthy of note that no bombs fell on Allied troops. On the following two days direct support was concentrated on the front of the salient.

Although the main emphasis was still on direct support of ground forces, counter-air activities continued and the bombing of enemy landing grounds and offensive patrols was kept up without abatement. Enemy communications lines were bombed as far back as Matruh. Heavy bomber activity shifted briefly from North African ports to the Maleme airrome in Crete. The purpose behind these attacks was, however, the same—to deny Rommel supplies and reinforcements. British intelligence had disclosed that Rommel, short on aviation gasoline, was flying in supplies from Crete in JU-52’s and other aircraft. On the night of 29 October the First Provisional Group attacked the airrome at Maleme in order not merely to destroy the aircraft on that airrome but to deny gasoline to the contingent of the Luftwaffe in North Africa. From this mission one plane failed to return, the first operational loss of the IX Bomber Command. On the 30th, the 160 Squadron, RAF, under the operational control of the IX Bomber Command, attacked Maleme. On the 31st the 98th Group took a crack at the same target and the First Provisional Group, which by now had become the 376th Group, paid a return visit.
During the month of October all units of the United States Army Air Forces in the Middle East dropped a total of 1,300,000 pounds of bombs on tanks, motor transport, troops, and harbor facilities in North Africa, Southern Greece, and Crete. Although unfavorable weather hampered operations and results were not always observed, 6 tankers and 1 freighter were reported sunk or burned out by direct hits and 10 other vessels were probably damaged or sunk by American heavy bombers. During the month the 13th Medium Bombardment Group and the 57th Fighter Group made repeated attacks in support of the Eighth Army destroying and damaging many vehicles and causing serious interruption of enemy rail and road communications. During the intensive period between 19 and 31 October, 300 bomber and 743 fighter sorties were carried out in support of the advance of the Eighth Army. In aerial combat with the German Air Force the Americans proved to be more than a match. Bombardment units destroyed 7 enemy aircraft and probably destroyed 4 others. Pilots of the 57th Group claimed to have destroyed 27 enemy aircraft, probably destroyed 6, and damaged 15. In operations in the Middle East theater through 31 October, American losses due to enemy action were 2 fighter, 3 medium, and 1 heavy-bombardment airplanes.\(^48\)

The third and decisive phase of the battle of El Alamein was the break-through by the British armor, 2 to 4 November. In the first phases of the battle the infantry had prepared the way
for the tanks. Minor tank engagements had been fought but the bulk of British armor had not yet seen battle. The Axis armor, on the other hand, had suffered considerably in abortive counter-attacks during the preceding nine days and the balance of tank strength was definitely in favor of the British. The Seventh Armored Division had been withdrawn from the south and was moving up to join the Tenth Corps in the region of Tel el Bisa where the final attempt at a break-through was made.

On the night 1–2 November the New Zealand infantry struck hard toward the west in the vicinity of Tel el Aggaqir and cleared lanes through the mine fields. The infantry advance was covered by artillery and by attacks on the enemy's forces by 100 Wellingtons aided by 13 flare-dropping Albacores. At dawn the next day the British armor moved forward and made a deep penetration between Rommel's divided tank forces. To the north of the bulge made by the British were the 21st Panzer and the remaining units of the 90th Light and 164th divisions while on the south were the 15th Panzer and remnants of two Italian armored divisions, the Littorio and Ariete. Rommel reacted vigorously to the British penetration and brought up his justly famous 88-mm. guns which inflicted heavy losses on British tanks at short range. Losses, however, had been anticipated and Montgomery was prepared to risk the loss of a whole armored brigade in order to get one armored division into the open. The tank battle of Tel el Aggaqir was
fought furiously throughout the daylight hours of 2 November with British armor being attacked from the north and southwest. Losses were heavy on both sides but by the end of the day it was clear that the British had gained the upper hand and the Axis armor had been shattered.47

The action of Tel el Aquair presents another outstanding example of direct air support of ground operations, approximately 600 sorties being flown in direct support missions.48 The bomber shuttle service went back into operation and 171 effective sorties were made by Bostons and Baltimores and 40 by Mitchells of the USAAF.49 The effectiveness of these raids is attested to by an entry in the captured diary of a German artillery officer: "Where are our fighters, our Stukas and AA? Can't see a thing of them. Tommy comes every quarter of an hour with 18 heavy bombers."50 The fact that the German officer mistook Baltimores, Bostons, and Mitchells for heavy bombers pays tribute to the intensity of their bombing. According to one account, a group of 200 enemy troops, hands upraised, walked over to the British lines as a "direct result" of one of our light-bomber raids.51

During the intense tank battle of 2 November Allied fighters carried out a record number of 274 sorties. On one ground-strafing mission pilots of the 57th Group are reported to have destroyed 7 enemy aircraft on the ground and destroyed and damaged an undetermined number of motor transport. American pilots dropped a
total of 6,000 pounds of bombs on fighter-bomber missions and on bomber escort duty fought off at least 10 ME-109's. In all these various operations—strafing, fighter-bomber, and bomber escort—pilots of the 57th Group carried out a total of 70 sorties.  

Although the enemy continued strong opposition to British movements there was evidence on 3 November of his thinning out in the forward area and withdrawing. The British Tenth Corps, which had been so severely engaged the previous day, paused briefly for necessary reorganization while armored car patrols began to fan out in all directions to carry out raids in the enemy's rear. In the southern sector patrols were moving out to maintain contact with the enemy and numerous Axis demolition explosions were heard.  

During the morning Allied air forces were employed against the weakening enemy troops in the north. The light-bomber effort was concentrated against the poorly dispersed enemy traffic moving along the coastal road from Daba to Fuka. As a result of incessant bombing by Allied bombers and fighter-bombers death and destruction were strewn along the Axis highway. Over 300 vehicles were immobilized and left burning, antiaircraft guns were silenced, and the withdrawing enemy troops were mercilessly mown down by strafing aircraft. The American participation in the day's activity consisted of 45 sorties by Mitchells of the 15th Group and 88 sorties by F-40's of the 57th Group on all types of missions.
The Axis air force made a feeble effort to come to the rescue of their retreating ground forces. Two escorted attacks by JU-87's were intercepted and the Stukas forced to jettison their bombs. During the day Allied aircraft shot down 8 JU-87's and 6 ME-109's, probably destroyed 10 JU-88's and 1 ME-109, and damaged 10 other aircraft. Of this bag, American pilots were responsible for 2 ME-109's destroyed and 1 probable.\textsuperscript{55} Their only casualty was one pilot who crash-landed unhurt.\textsuperscript{56} During the night of 3-4 November Wellingtons and Albacores took up where the Baltimores, Bostons, and Mitchells left off and bombed Axis columns withdrawing along the coastal road. The small pocket of enemy troops at Thompson's Post was cleared out and the pursuit of the retreating enemy was thereby accelerated considerably.\textsuperscript{57}

Heavy-bomber activity during the period 1-4 November was directed mainly against the Axis-held port of Tobruk. On 2 November five B-17's of the 376th Group, which had bombed Tobruk countless times during the last six months, scored an unusual success. Direct hits were obtained on two medium-sized merchant vessels and fires started in harbor installations which were seen burning two days later. Air Chief Marshal Sir Arthur W. Tedder radioed General Bradley: "Glad if you would convey my hearty congratulations to the First Provisional Group on the good bag at Tobruk yesterday which is especially valuable at present critical stage of operation."\textsuperscript{58} As a result of the rapid advance of the
Eighth Army attention was shifted on 4 November from Tobruk to Bengasi, the last Axis port of any size east of Tripoli.  

By the morning of 4 November it was apparent that the enemy had begun a full-scale retreat and the British tanks and armored cars began large movements into the enemy's rear. Armored cars now became a crucial factor in the chase and in this regard the British outnumbered the Germans 6 to 1.  

All day long Allied light bombers and fighter-bombers attacked the enemy columns moving westward along the main coastal road. Bostons and Baltimores of the RAF carried out 141 effective sorties while Mitchells of the 12th Group carried out 42 effective sorties.  

On the 5th the British armored units continued their efforts to cut off the Axis retreat. They met little serious opposition until they reached an enemy mine field at the Fuka escarpment where the pursuing troops came under heavy fire from 105-mm. and 88-mm. guns of the rearguard covering the mine field. By late afternoon, however, this obstruction was cleared and the pursuit resumed.  

In the southern sector a few enemy pockets continued resistance but the formidable task of gathering in Axis prisoners had begun. The Allied air forces assumed a new role—that of prisoner rescue—by dropping food and water to isolated groups of prisoners which the British Army had not had time to round up.  

The B-25's of the 12th Group carried out 42 sorties and dropped 325 bombs weighing 250 pounds each on motor transport in the enemy rear area.
Fighters of the 57th Group on this same day flew 28 bomber escort sorties and 40 sorties as fighter-bombers dropping 20,000 pounds of bombs with excellent results. While these operations were being carried out "A" party of the 57th Group, which had been at L.G. 174 since 16 September, was ordered forward to L.G. 172 in the Daba area.

On 6 November the 2d New Zealand Division had reached the mine fields south of Matruh when a heavy rain set in which hindered Allied operations and favored the Axis retreat for the next few days. Tanks were capable of movement in wet weather but their gasoline supplies were being held up miles behind. Air activity was hampered by the weather and there was no report of medium-bombardment activity. Fighters of the 57th Group, however, carried out 24 sorties and destroyed a number of transport vehicles in the vicinity of Weresa Matruh. On 6 November the Army headquarters moved from its battle site westward to Daba—convincing sign, if any were needed, that the battle of El Alamein was won.
Chapter IV

ADVANCE TO TRIFOLI, 7 NOVEMBER 1942–23 JANUARY 1943

The bad weather encountered on 6 November had the effect of retarding the progress of the British armored forces and frustrated their attempt to cut off and encircle Rommel. On 8 November enemy resistance at Matruh station was overcome and a break in the weather made it possible for the Tenth Corps to proceed westward from a position generally south of Matruh. Further rear-guard action was encountered but no serious resistance was met until Halfaya Pass was reached.\(^1\) The pass was captured on the night of 10–11 November, and shortly after dawn on the 11th the 4th Light Armored Brigade advanced westward clearing the landing grounds at Sidi Azeiz, Gambut, and Sidi Rezegh. The 2d New Zealand Division occupied Sollum and then Bardia the same day.\(^2\) The main retreating Axis columns by-passed Tobruk which was occupied by the British on 13 November.

By the time the British entered Tobruk the German motor transport was as far west as Toqra. The gap between the two forces was steadily widening and contact was limited to spasmodic rear-guard action. The advance in the desert began to assume less the nature of a pursuit and more the character of a drive against an enemy withdrawing in good order.\(^3\) The Germans were salting and/or oiling wells, dynamiting bridges and culverts, ploughing airfields, and
laying down a carpet of mines faster than the British sappers could roll it up. Rommel had suffered heavily—an estimated 50,000 casualties and most of his armor with the exception of approximately 50 tanks—but he was bent on salvaging what he could. This involved impeding the British pursuit to the maximum but not committing his depleted forces to battle. On 20 November British forces entered Bengasi while the German divisions were racing toward El Agheila which offered their next defendable position.

Although Rommel maintained a retreat in good order, he was not able to offer any effective resistance to the persistent harassment which his Panzer divisions received from the skies. From the moment the Axis retreat began the Allied air effort was directed toward causing the enemy as much havoc, confusion, and delay as possible. After the break-through of the British armored forces (3-6 November), light and medium bombers did not play a conspicuous role in the battle until about the middle of December. This was due to the fact that the swiftly moving Axis forces were not considered ideal targets for medium bombers and especially to the fact that fighter aircraft could be moved more expeditiously to newly occupied landing grounds and could be more easily maintained. Once the retreat got in full swing, then, most of the day attacks against enemy forces were carried out by fighter aircraft which were equipped with extra gas tanks that enabled them to attack the enemy at long range. Pilots of the 57th Group carried out 477 sorties in fighter-bomber missions and offensive patrols.
between 6 November and the end of the month.  

An outstanding feature of Allied air activity during the 
pursuit was the rapidity with which fighter squadrons moved forward 
with the advancing army and occupied landing grounds formerly held 
by the enemy. The following time table illustrates how the 57th 
Group kept upon the heels of Rommel's retreating columns: 

<table>
<thead>
<tr>
<th>Eighth Army's Advance</th>
<th>Occupation of Landing Grounds by the 57th Fighter Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 Nov.</td>
<td>Fuka Escarpment</td>
</tr>
<tr>
<td>8</td>
<td>Matruh</td>
</tr>
<tr>
<td>9</td>
<td>Sidi Barrani</td>
</tr>
<tr>
<td>11</td>
<td>Halfaya</td>
</tr>
<tr>
<td>13</td>
<td>Tobruk</td>
</tr>
<tr>
<td>19</td>
<td>Bengasi</td>
</tr>
</tbody>
</table>

This mobility was achieved by following the "leap-frogging" 
practice developed by the British. The ground staffs of each squadron 
having been divided into two equal parties, "A" and "B", the "A" 
party would move out in advance to make preparations at the cap-
tured landing fields for the reception of the planes. As soon as 
the new sites were made ready the planes would come forward to 
the new bases. "B" party would then advance either to join "A" 
party, or to leapfrog over it to a still more advanced landing 
ground. It was not uncommon for moves to be made on an hour's 
otice and each move entailed the striking of tents, packing up 
of equipment, and formation of a convoy consisting of about 25
vehicles per squadron carrying men and equipment, and including gas and water bowers, fire truck and ambulance. By these rapid moves the pursuit was maintained and the planes kept in continuous operation. 9

The close coordination between air and ground movements was made possible not only by the flexible organization of the air forces but also by the terrain on which the battle was taking place. A landing field could be put in shape by levelling a strip of desert with bulldozers and scrapers, removing as many rocks as possible and marking the boundaries with 50-gallon gasoline drums. The location of landing grounds was well known to the British and despite ploughing, mining, and spikes planted by the enemy they could generally be put in operating order within a relatively short time. After the landing field was cleared off the operations tent was set up close to the runway behind which were the cook's tent and the officers' mess. The rest of the camp was then set up with careful attention to proper dispersal. When telephone wires had been run in from wing headquarters, gasoline brought forward, and bombs and ammunition stored away, the squadron was ready for the
time in action as a tactical unit. Experience in the desert had shown that fighter squadrons performed better in pairs, for one squadron could carry out its bombing or strafing mission while the other acted as top cover. In order, therefore, to achieve the maximum efficiency the 112th RAF, or "Shark" squadron, was attached to the 57th Group for operational duty. The "Shark" squadron stayed with the group for about three months flying sixes with the 66th while the 64th and 65th were paired flying fours.11

On 12 November 1942 the United States Army Middle East Air Force was officially redesignated the Ninth Air Force. Shortly after, the 79th Fighter Group arrived in Egypt and began training for combat. During the period preceding the fall of Tripoli, exchanges of pilots between the 57th and 79th Groups were made in order that the neophytes might more readily learn desert tactics and gain experience in actual combat.12

With the retreat of the Axis armies from Egypt, the 376th and 98th Bombardment Groups (H) moved from their bases in Palestine to the Delta area. The 376th Group arrived at its new base at Abu Sueir, Egypt, on 9 November, and the 98th moved to bases at Fayid and Kabrit on 13 November 1942. With the fall of Tobruk on 13 November the Allied heavy-bomber activity was shifted to Benghazi which was bombed until the day before British troops entered the city. With the fall of Benghazi on 19 November Tripoli inevitably achieved the unenviable distinction of becoming the principal target of the U. S. heavy bombers. From their bases in Egypt the 98th
and 376th Groups carried out missions from Crete to Tripoli.

American airmen learned much in the Middle East from the RAF, especially with regard to fighter and light-bomber operations in support of ground troops, but the Middle East was also a proving ground for heavy-bomber tactics. Much was learned, for example, concerning pattern bombing of maneuvering targets. The Holverson detachment was untrained in this type of operation because its original mission did not call for such training. The 96th Group, as a whole, was trained only in individual airplane bombing but upon arrival in the Middle East began to use three-plane formations with the two wing men dropping on the leader in deflection and sighting individually for range. The development of pattern bombing was at first hindered by bomb rack failures. If the bomb racks of the lead plane did not function properly the wing planes would not drop their bombs and the run was a failure. It was found that bomb-rack failures on B-24's were on some high altitude missions, as high as 50 per cent. This mechanical difficulty was, however, overcome and pattern bombing thereby improved. Between 15 October and 15 November, 32 missions of 2-, 6-, and 9-plane formations were used against maneuvering targets and 6 hits were claimed. In some cases as many as 27 aircraft were dispatched against targets on the open sea because of the importance of preventing certain supply ships from reaching North African ports. Generally, the attack was made in 3-plane elements. Within the
period 15 October to 15 November the effectiveness of pattern bombing against maneuvering doubled as compared with the period 4 June to 14 October. 15

By 23 November Rommel had succeeded in reaching a strong position at El Aghela and advance British elements had pushed on as far as Agedabia. The critical point in the pursuit had now been reached. Twice before the British had advanced this far and had been thrown back. Wavell had failed largely for political reasons; Auchinleck had to retreat before an Axis counterattack largely because of his inability to solve the supply problem. This time, however, there was a difference: the battle in the Western Desert had the highest priority and there would be no diversion of troops until the Axis was driven from North Africa; Montgomery and his subordinates had foreseen the supply problem and had laid plans for its solution in advance.

The British, however, had been in continuous pursuit for two weeks and a delay of three weeks at Benghazi was necessary for rest and consolidation of positions. Montgomery refused to commit his forces to what might be a major assault until he was satisfied that the supply problem had been solved. This involved bringing the necessary supplies overland and transforming Benghazi into an effective base. All motor transport in the Middle East was requisitioned and maximum use was made of the railroad up to Tobruk. During the period 10 November to 17 December the railroad
transported the major amount of war material, 102,131 tons. No small quantity, however, came by sea. By 1 December Bengasi was handling nearly 1,000 tons daily and this amount was steadily increased until by 15 December the port was reported to be handling 2,000 tons of the estimated daily requirement of 2,555 tons for all classes of supplies.

By the middle of December, then, the British had carried out a necessary reorganization and their supply position had improved to the point where Montgomery was willing to continue the advance. The story of El Agheila resembles that of El Alamein in many respects. The positions occupied by the opposing forces resembled each other in that the Axis flank was based at one end on the sea and at the other on salt marshes and soft sands which made an outflanking movement difficult. At Agheila, as at Alamein, therefore, the British were committed to a frontal assault. Again there was a heavy bombardment to soften up enemy defenses and a preliminary air blitz against the enemy's airfields, supply centers, and troop concentrations. The enemy landing grounds in the vicinity of Marble Arch were singled out for attention and attacked repeatedly by P-40's of the 57th Group and light bombers of the RAF during the first week in December. According to one account the Allied air force succeeded in driving the enemy air force 90 miles beyond the front line of ground troops. Immediately preceding the attack on the Agheila positions the weight of air attack was shifted to forward enemy installations.
On 12 December under cover of intense artillery and air bombardment the British began their offensive against the Agheila position. Rommel, however, had no idea of staging a repetition of the Alamein show by risking his depleted forces against a full-scale assault. It was estimated that by this time Rommel had 60 German and 45 Italian tanks with approximately 40 armored cars. With no prospect for substantial reinforcements Rommel began on the night of the 12th to withdraw his forces from Mersa Brega and resume his retreat westward.

The fighter pilots of the 57th Group reached the peak of their activity during the battle of El Agheila. On the 13th a record number of 17 individual missions were flown and 76,000 pounds of bombs dropped. In one engagement with the enemy two ME-109's were destroyed and others damaged at the expense of the loss of one pilot. The same type of bombing and strafing missions were flown on the 14th, 15th, and 16th.

This time, however, the Axis was more successful in disengaging its forces and dispersing the retreating columns so as to avoid offering a concentrated target. Only once or twice were there sufficiently large concentrations of enemy transport to justify the use of light and medium bombers. On 13 December 35 Bostons and Baltimores and 18 Mitchells of the USAAF escorted by Kittyhawks and P-40's attacked a concentration of motor vehicles on the coastal road west of Marble Arch and inflicted considerable damage. Continuing the attack the next day the "Imperturbables" dropped 80 bombs, 250 pounds each, on motor transport and antisaircraft batteries in the
Nofilia area. After these two attacks, however, there were no suitable targets for light bombers during the rest of the month. In fact, the retreat assumed such momentum and landing grounds were so scarce that for the next three weeks targets were not available even to fighters.

While Rommel was moving the remnants of his Panzer divisions across the lone and level sands of Libya, the IX Bomber Command was tightening the noose in an attempt to cut him off from supplies and reinforcements. Rommel was racing for Tripoli, his next defensible position and the last Italian port in North Africa. The object of the IX Bomber Command was to neutralize Tripoli as a port and render it a worthless haven for the wily Rommel. Not only Tripoli but ports of embarkation in Sicily, southern Italy, and Crete and convoys on the high seas as well were attacked unremittingly.

One of the chief handicaps to this program of strategic bombing in the Middle East was, however, distance. The flight from the Canal area to Tripoli and back was over 2,000 miles and to Sicily or southern Italy it was even farther. In order, therefore, to shorten this distance somewhat it was decided to establish an advance base at Gambut which is approximately 30 miles east of Tobruk. By the time the Eighth Army entered Bengasi the preparation of this forward base at Gambut had begun. The principle of haste and mobility was perhaps taken a step too far when on 21 November a fighter plane of the 57th Group, evacuating L.C. 139 at Gambut, collided with a 3-25 of the 13th Group which was shuttling 1,000
pound bombs from the Delta to Gambut for the use of the heavies of
the IX Bomber Command. The Gambut landing ground provided a base
at which the heavy bombers could refuel before and after missions
and added perhaps a 500-mile radius to their arc of potential
bombing operations.

It was from the Gambut springboard that the first mission
against Tripoli was carried out on 21 November. Fifteen B-24D's
of the 98th Group were dispatched; 9 turned back because of weather
and mechanical failures but 6 planes bombed the target using 20
American bombs, 1,000 pounds each. Approximately 5 hours later
8 B-24D's of the 376th Group dropped 40 bombs, 1,000 pounds each,
on the same target. A direct hit on a warehouse and other hits on
the principal mole were claimed and large fires were reported
resulting from the raid. On the following day 8 Liberators of
the 160 Squadron, under operational control of the IX Bomber
Command, carried out a further attack with the usual fires and
explosions resulting. Other attacks were carried out on 26 and
29 November and thereafter regular visits were made to Tripoli
until the port fell into Allied hands.

The B-17's which had been brought to the Middle East from India
by General Brereton were described at the time as "near cripples."
Further wear and tear in the Middle East, aggravated by the omnipresent
dust which plagued engines continually and their limited range and
different performance characteristics made them unsuitable for
combined operations with the B-24's. On 27 November six B-17's
carried out an attack on shipping and a floating drydock in Portolago Bay, on Leros Island in the Dodecanese. Explosions and fires resulted and two merchant ships were believed hit. This was the last mission of the B-17's in the Middle Eastern theater and in December the planes, together with some of their crews, were transferred to the Twelfth Air Force.

On 4 December the American heavy bombers struck hard at Naples for the first time. Twenty aircraft from the 98th and 375th Groups attacked the shipping moles and the Italian fleet in the harbor. The returning crews reported a number of hits on dock installations and one direct hit and several near misses on a battleship, a cruiser, and two additional ships. Preliminary reconnaissance showed a cruiser lying on its side in the harbor and extensive damage to harbor facilities. Tripoli was attacked next and then a return visit was made to Naples. Hits were observed on the moles, in the dock area behind the moles, and on one merchant vessel. This time, however, one American bomber was brought down by the heavy anti-aircraft fire at the harbor. The Italians, and doubtless the Germans, realized that Naples, as the chief over-loading Axis port in the Mediterranean, would be a high priority target for Allied bombers. Anti-aircraft defenses were therefore strengthened and were, according to the crews of the 150 Squadron RAF, of a fierceness comparable only to the defenses of the Ruhr. "See Naples and die," became a grim jest in the messes at the Delta bases of the IX Bomber Command.
One of the most remarkable features of air power is its versatility. It can be shifted from one target to another and can be assigned whatever tasks the situation demands or opportunity offers. Information had reached Allied headquarters in the Middle East that supplies and men were being moved by the Axis on railroads along the Tunisian coast from northern ports toward Tripoli. On 15 December nine B-24D’s of the 376th Group were dispatched to bomb the round house and repair shop at Sfax which serviced locomotives that maintained the crucial railroad transportation. Seventy-two American bombs, 500 pounds each, obliterated the target.

The attack on Sfax was merely the opening gun in an aerial barrage that was directed against Tunisian ports with increasing intensity until the Axis was driven from North Africa. About the middle of December, 18 heavy bombers of the 93d Group, on loan from the Eighth Air Force, arrived at Gambut with the mission of bombing targets in Tunisia affecting the North African campaign. No sooner, however, had they arrived than the bad weather became worse and plagued their operations until after Christmas. The lull in operations, however, was utilized to make necessary shifts in landing grounds. It was decided to assign L.G. 153 at Gambut to the 93d Group during its stay in the Middle East and to shift the advance post of the Delta-based groups to L.G. 159, five miles west. The forward echelon of the 12th Bombardment Group, however, had been stationed there and the intrusion of the heavy
bombers necessitated removal of the mediums to L.G. 142 which was
approximately five miles east of Gambut. Between Christmas and
New Year's the weather cleared sufficiently to permit attacks
against Tunis, Sousse, and Sfax by bombers of the 93d and 376th
Groups and the 150 Squadron. New Year's was celebrated by an
attack on Tunis by the 98th Group in which hits were scored on the
turning basin and railroad junction. In the Middle East raids
were generally scheduled to be carried out at last light in order
that the bombers might return from the target area under cover of
darkness. When they approached their bases the landing field
was illuminated by flares and/or the headlights of trucks. The
planes were generally brought down by means of signals from an
Aldis lamp.

While the Tunisian ports were being pounded a diversionary
attack of considerable proportion was being planned. Ever since it
had fallen into the hands of the Axis, Crete had been a thorn in
the side of the British in the eastern Mediterranean, for on its
airfields were based the bombers which were attacking convoys in
the eastern and central Mediterranean and the harbors of Tobruk
and Benghazi which were now in British hands. In addition, reconnais-
sance planes based on Crete ranged over the area and kept an eye on
British movements of supplies and men. In order to eradicate this
menace, and also to divert fighters from Tunisia and Sicily, a
combined attack on the airfields and landing fields in Crete was
planned. B-24's of the IX Bomber Command, B-25's of the 12th

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Medium Bombardment Group and Baltimores of the 305 Group, RAF, based at Derna, were to combine their striking power to hit Axis planes on the ground and render unusable the landing fields. Thirty-six Mitchells were scheduled to take off and 12 succeeded in getting into the air when an untimely dust storm of terrific intensity reduced visibility to nil and grounded the other planes. Eleven planes actually dropped bombs on the landing grounds at Bereklion. The 36 Baltimores of the RAF which were cooperating in this mission succeeded in taking off and attacked port installations at Suda Bay and the Tymbelic airbase dispersal area.

The landing field at Derna was clear so that 12 B-24's took off and each plane succeeded in dropping twelve 500-pound bombs each, on the Kasteilli Pedeia airbase.

In spite of bad weather planes of the IX Bomber Command continued their attacks against Tunisian ports and on 7 January 20 B-24's from the 33d, 98th, and 378th Groups took off to bomb Palermo. Before reaching the target 15 of the planes turned back because of weather or mechanical failures. Nevertheless the 10 planes reaching the target caught its defenders unawares and met only light, inaccurate, and late antiaircraft fire. Clouds prevented any observation of the results achieved. The next day planes of the IX Bomber Command reached out for another new target, Bizerte, but because it was blanketed with 10/10 clouds they attacked their alternate target which was Tunis.

In the early part of January 1943 intelligence was received
by air headquarters which indicated that Rommel was withdrawing his reserves to Tripoli and beyond. On the night of 8–9 January five RAF Liberators of the 160 Squadron began a series of attacks against road junctions in the vicinity of Tripoli. The work of the Liberators in spreading confusion on the enemy’s supply route and hindering his troop movements was supplemented by Wellingtons and night-flying Hurricanes. By the middle of January the maximum strength which the 160 Squadron could muster was six aged and asthmatic Liberators, some of which had more than 500 operational hours to their credit. These near-cripples were kept aloft only, as the historian of the IX Bomber Command says, “by maintenance miracles and the indomitable character of their crews. There is a report of an occasion on which one of these aircraft was taken up by its crew with a full load of bombs and only three engines functioning. “We hoped the fourth would catch once we were in the air, and it did,” said the pilot. By the 16th the 160 Squadron had only two serviceable planes and was finally forced to retire to the Delta area for major repairs and overhauls.

The IX Bomber Command carried on a war not only against Axis supply but enemy morale as well. Again they hit in the most vulnerable spots. Propaganda leaflets entitled "A Thousand Weary Miles" depicted the haughty Germans riding at top speed across the desert sands from Alamein to Tripoli while the Italians, poor suckers, had to walk the weary way. The leaflets promised honorable surrender to the bearer and not a few were later redeemed.
Beginning on 15 January the bombing of the harbor of Tripoli took a slightly peculiar turn. The Allied bombers had inflicted severe damage on the harbor installations and of the 28 merchant vessels in the port between 21 November and the time of its evacuation by the Axis, six, and possibly more, were damaged by bombing attacks. By the middle of January it had become apparent to the Germans that they would have to abandon Tripoli but they were determined to deny its use to the Allies. Photo reconnaissance disclosed that as early as 8 January preparations for the demolition of the harbor were being made. Frets for demolition charges were noticed along the mole and quays. It was apparent also that the Axis was floating the wrecked ships and placing them in position to block the entrance to the harbor. With the object of preventing obstruction of the harbor 20 B-24's of the 93rd and 48 98th Groups were dispatched to bomb the wrecks. To the crews who had been over Tripoli so many times this action seemed somewhat like sending coals to Newcastle. "Have'n't we sunk 'em already?" was likely to be their attitude, expressed or unexpressed. The attacks on the derelicts were continued for the next six days and during a week's time Allied Liberators carried out 73 effective sorties and dropped 364 bombs of 1,000 pounds each. Although some of the wrecks were immobilized the B-24's had done their work too well in the first place and out of the mass of wrecks in the harbor the Germans managed to get four into place and to block completely the entrance to the harbor by 21 January.
Meanwhile the Allied bombers had kept up their attacks against other Tunisian ports which by this time were being pounded also by Allied bombers of the Twelfth Air Force in Algeria, the RAF in Malta, and the Royal Navy. The Allied anaconda strategy was beginning to work and gradually all life would be squeezed from the Axis in North Africa. The following table shows the estimated effect of these combined operations against the ports of Tunisia:

<table>
<thead>
<tr>
<th>Normal Daily Discharge</th>
<th>Average Daily Discharge, Jan. 1943</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunis</td>
<td>2,400 tons</td>
</tr>
<tr>
<td>Bizerte</td>
<td>1,800 tons</td>
</tr>
<tr>
<td>Sousse</td>
<td>1,500 tons</td>
</tr>
<tr>
<td>Sfax</td>
<td>1,500 tons</td>
</tr>
<tr>
<td>Gabes</td>
<td>300 tons</td>
</tr>
</tbody>
</table>

By the first of January 1943 Rommel’s Panzer divisions had retreated approximately 250 miles beyond El Agheila to the vicinity of Buerat. The pause at El Agheila had given the Germans the opportunity to sow the whole route with mines and booby traps which hindered the British pursuit. Montgomery had sent a flying column around the mine fields which on 15 December succeeded in intercepting a portion of Rommel’s rearguard at a place called Wadi Matratin, 65 miles west of Agheila. This advance force was, however, too small to close the trap and the main body of Montgomery’s forces continued to be hindered in its progress by the mines. Buerat, like Agheila, offered natural advantages as a defensive position; it was protected on one flank by the Wadi...
Zemzem, a rock-strewn gully, and on the other by the coastal marshes. A line of tank traps and fortified strong points made the position formidable enough for the Germans to be able to put up a delaying action.

Again, however, Rommel had no intention of committing his forces to a major engagement. A few probing thrusts by the British were the signal for resumption of the Axis retreat. Dividing his forces, Montgomery struck with one force along the road and with the other several miles inland. By nightfall on the 16th the whole Buerat position had been cleared and the pursuit was again in full swing.

During the first week in January air activity over the forward area was limited by bad weather and by unavoidable delay in moving Allied fighters to forward landing grounds. "A" party of the 57th Group moved out of Belandalah the last day of December and arrived at Hamraiet 51, or Hamraiet North, on 5 January. During this period of limited allied activity the German Air Force displayed an unusually aggressive spirit. No sooner had the convoy of "A" party moved into its camp area than it was bombed by 24 enemy fighter-bombers. These raids were repeated three or four times daily for the next three days and resulted in casualties among infantry working on the airstrip and among the antiaircraft crews.

The planes of the 57th Group arrived at their new landing grounds on 9 January and almost immediately were dispatched on "scramble" missions as well as escort missions for reconnaissance...
planes. The result was that the Axis air force became much less hold in its activities against forward bases of the Allies. On 15 January the Eighth Army resumed its advance and although some resistance was offered during the first day the enemy evacuated the Buerat position during the night of 15-16. Proof that Rommel intended the fighting at Buerat to represent a delaying action only is offered by the fact that the 21st Armored Division was withdrawn from the Buerat position two days before the British resumed the offensive. On the first day of the battle there were still no suitable targets in the forward battle area for the B-25's but P-40's of the 57th Group carried out bombing and strafing missions against groups of vehicles north of Gheddadia. These activities were continued for the next three days (16, 17, 18 January) when an order was received for the 57th Group to move to a new landing ground, Baggag West. The planes arrived at their new landing ground on 18 January and continued their fighter-bomber attacks against the enemy's retreating columns.

The rapid advance of the Eighth Army had forced the enemy to withdraw his aircraft from advanced landing grounds and on 17 January air reconnaissance reported nearly 200 enemy aircraft concentrated on the Castel Benito airfield, 20 miles south of Tripoli. This meant that there was a suitable target for light bombers, and on the night of 18-19 January 9 B-25 aircraft of the 12th Bombardment Group in cooperation with Bostons and Baltimores of the RAF bombed the airstrip and inflicted widespread damage.
The attacks on the Castel Benito airdrome were continued through the 21st when several aircraft were destroyed or damaged and the ploughing of the airfield was interrupted. Withdrawing from Castel Benito the Axis air force moved to Tunisian bases and on 23 January began a series of fighter-bomber and bomber attacks on the Ben Gardane and Medenine landing grounds.

By 20 January the Eighth Army had captured Tarhuna and the port of Homs. These actions were supported by fighter-bomber attacks on gun positions and enemy rearguards. During the next three days both fighters and medium bombers of the USAAF in cooperation with the RAF maintained constant pressure against the enemy columns retreating west of Tripoli. Rommel made no real effort to defend Tripoli. His object was now to reach the Mareth Line which offered one of the strongest defensive positions in North Africa. When he was in the vicinity of Buerat, Montgomery had again divided his army into two forces, one of which was to advance toward Tripoli, along the coast, while the other was to drive around the southern end of Rommel's line and advance from the south. The two jaws of the pincers gradually and surely closed. On 23 January 1943 Tripoli fell and the Italian Empire in Africa passed into history.

The Ninth Air Force in the Western Desert campaign contributed one of the outstanding achievements of the Army Air Forces in the early stages of World War II. Heavy bombers entered the Middle East at a time of extreme emergency in the spring of 1942 and made
an immediate and effective contribution in saving the canal area for the Allied cause. The B-24's attacked strategic targets in southern Europe, ports of entry, ports of embarkation, and Axis convoys on the high seas. These missions played an important role in denying Rommel the necessary reinforcements and supplies and contributed immeasurably to his ultimate defeat.

The air support given to the Eighth Army by our medium and fighter groups which followed the heavy bombers to the Middle East was a significant contribution to the Allied offensive which has not been sufficiently emphasized. With the sources available it is not possible to state with mathematical precision what proportion of the total air effort was performed by pilots of the Ninth Air Force. Available sources seem, however, to point to the conclusion that before and during the battle of El Alamein fighters of the Ninth Air Force flew from one-sixth to one-tenth of the total sorties flown and scored approximately 40 per cent of the total victories over enemy aircraft. On the advance across Cyrenaica, U. S. fighters were carrying out approximately one-fourth of the missions and by the time they reached El Agheila they were flying one-third and occasionally one-half of the total fighter sorties. When the Eighth Army reached El Agheila the 12th Medium Bombardment Group moved to forward landing grounds and assumed an estimated one-third of the medium- and light- bomber task which they maintained until the fall of Tripoli. By 23 January 1943 U.S. fighters had destroyed upward of 60 enemy aircraft
against the loss of less than half that many themselves.

Throughout the entire period covered by this study the Ninth Air Force acted in cooperation with the RAF and carried out operations in support of the British Eighth Army. The British had been fighting in the Western Desert for two years and had built up a body of experience from which the Americans were able to profit greatly. Literally, the Allied air forces went to school in North Africa, for the Western Desert was a proving ground for both tactics and organization which were later used with telling effect against the Axis in Europe. In summarizing the contribution made and the experience gained it would be difficult to improve upon the words of Maj. Gen. Lewis H. Brereton, who commanded the first American air force to participate in large-scale operations against the German Army:

I feel that we have carried a logical share of the load and that we have struck a telling blow against the enemy. Without the complete cooperation of the Royal Air Force and without our complete cooperation with them, air power could not have played the vital role it has in this battle. Tripoli would not now be in Allied hands. I am proud to command the Ninth Air Force, and extremely proud of our association with the Royal Air Force. Together we shall move forward to even greater success.
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1. The Flower Mission, 1 August 1943, AAF Historical Studies: No. 6, 15-18.


3. GT-III-5593, Col. Halverson (Cairo) to CGAAF, no \textit{\textbf{;}} 15 June 42.


5. GT-III-5593, Col. Halverson (Cairo) to CGAAF, no \textit{\textbf{;}} 15 June 42.

6. GT-III-5576, Col. Halverson (Cairo) to CGAAF, A1461 AISAE, 17 June 42.

7. GT-OUT-3939, 1150 to AISAD (Cairo), JD 1054, 17 June 42.

8. GT-III-7451, Halverson (Cairo) to CGAAF, no \textit{\textbf{;}} 23 June 42.

9. GT-III-7418, Halverson (Cairo) to CGAAF, no \textit{\textbf{;}} 23 June 42.


11. The German \textit{\textbf{\textquotedblleft F\textquotedblright}} boats were primarily tank-landing craft although they could also be used for carrying motor vehicles, general cargo, or even troops. It is thought that a considerable number of these vessels were constructed in Greece shortly after the Axis occupation. "Attacks on Coastal Traffic," RAE Middle East Review, No. 1 (May-Dec. 1943), 52-53.

12. GT-III-6008, Cairo to ASHAD, 1154, 17 June 42.

13. Ibid.

14. GT-III-7205, Cairo to HILID, 1160, 21 June 42.

15. GT-III-6491, Cairo to HILID, 1149, 19 June 42.

16. Ibid.
17. CI-III-6491, Cairo to MILIT, 1149, 19 June 42; CI-III-7236, Cairo to MILIT, 1135, 21 June 42.

18. CI-092-5700, AGWAR to Aquila, New Delhi, 318, 23 June 42.


20. Recent Operations, 1.

21. CI-III-8183, New Delhi to AGWAR, Aquila 2319, 25 June 42.


23. Ibid.; CI-III-8183, New Delhi to AGWAR, Aquila 2319, 25 June 42.


27. Cairo to AGWAR, cablegram ALISIL 62, 3 July 42.

28. CI-III-10806, Cairo to AGWAR, ALISIL 442, 29 July 42; Administrative History of the Ninth U.S. Air Force.

29. CI-III-0206, Cairo to AGWAR, ALISIL 325, 19 July 42.

30. Ibid.

31. Highlights of 33rd Bombardment Group; Administrative History of the U.S. Ninth Air Force.

32. CI-III-0032, Cairo to AGWAR, ALISIL 498, 1 Aug. 42.

33. CI-III-7945, Cairo to AGWAR, ALISIL 467, 23 July 42.

34. CI-III-0258, Cairo to AGWAR, ALISIL 493, 31 July 42.

35. CI-III-2014, Cairo to AGWAR, ALISIL 561, 5 Aug. 42.


37. CI-III-0391, Cairo to AGWAR, ALISIL 645, 10 Aug. 42.

38. Ibid.

40. CH-III-1622, 1635, 1636, Cairo to AGMAR, "AGMAR 528-530,
4 Aug. 42.

41. Notes on Lessons on Operations in the Middle East, HISS Campaign
Study No. 5, 14.

42. Ibid.

43. Ibid.

44. Ibid.

45. History of the 13th Bombardment Group.

46. Interview with Col. Curtis R. Low, 28 July 1943 [Low interview].

47. Ibid.

48. CH-III-6302, Cairo to AGMAR, "AGMAR 1385, 17 Sep. 42.

49. History of the 13th Bombardment Group.

50. Low interview.

51. Ibid.

52. Administrative History of the U. S. Ninth Air Force.

53. Ibid.; Record of Combat Activities, prepared by Col. Arthur C.
Salisbury.

54. Maj. Porter R. Chandler, The 68th Fighter Squadron from Alamein
to Tunis. This unit history was compiled by Major Chandler, intelligence
officer of the 68th Fighter Squadron, from original sources and is in his possession. It is by far the most complete
record of any single unit operating in the Middle East which has
come to the attention of the writer.


56. Comments Obtained from Brig. Gen. Auby C. Strickland, CG, IX
Fighter Command, 23 Jan. 1943, in AGM 312, 1b, Operations Ltr,
Col. Frank Hearn stated that the squadron commanders and all
flight leaders were sent out to the desert to operate under
the 333d Wing, RAF. Interview with Col. Frank Hearn, 10 Aug.
1943.
57. Outline History of the 57th Fighter Group, prepared by Robert L. Allensworth, asst. group intelligence officer.


59. Record of Combat Activities, 57th Fighter Group.
Chapter II

1. CI-IL-2555, Cairo to AGWAR, MID3 135, 7 July 42.

2. Ibid.


4. The terms here used are defined in Middle East Training Pamphlet No. 56, entitled "Direct Air Support," issued by GHQ, MEAF & HQ, RF, H2. They do not necessarily represent official usage or tacit doctrine of the USAF.


8. ME Training Pamphlet No. 56; Brereton Report.


10. Ibid.


12. Barratt Report; Maj. Gen. C. L. Scott stated: "Ground troops in division and smaller units are not air minded, don't know what the air can do for them, don't know the help they could give air units, and are indifferent to and afraid of close air support." "Observations and Activities in the Middle East," 23 July 1943, in A-2 Library.


14. "Operational Notes for Light Bombers in the Western Desert."


16. Ibid.

18. Ibid.


21. "Operational Notes for Light Bombers in the Western Desert." Major Lodge knew of at least three instances of the RAF bombing British troops while he was in the Western Desert. "Interview with Maj. Henry Cabot Lodge III, 7 July 1942."


24. "Operational notes for Light Bombers in the Western Desert."

25. Ibid.

26. Ibid.


28. "Air Attacks of Airfields: A review of Methods Adopted and Devices Used from the Commencement of the War to the Summer of 1943," issued by the Air Ministry, September 1943, British Empire 9870 (1943), in A-2 Library. According to this report, during the summer of 1942, "the enemy commenced to drop crosscut spikes on airfields. These spikes were constructed of sheet metal about 1/16 inch thick, welded into the shape of a sharp-edged four-pointed pyramid, with a base of about 3 inches and camouflaged to blend with the terrain. They were dropped in large numbers from containers with the intention of puncturing aircraft tires. These spikes were capable of doing serious damage to tires, particularly on hard ground which was covered by a few inches of pulverized soil. Once their presence was known, however, most of them could be cleared up, but a few inevitably were undiscovered, and potentially dangerous. Their use has not been continued to any extent, although at one period they were dropped in large numbers in conjunction with bombs in night attacks."

29. Ibid.

30. Ibid.

32. Ibid.

33. Ibid.

34. Ibid.

35. Notes from Theatro of War, No. 14: Western Desert and Cyrenaica, August-December 1943 [Notes, No. 14].

36. Ibid.


38. CI-II-0350, Cairo to AGWAR, A7311, 3 Sep. 42.


40. CI-II-1572, Cairo to AGWAR, A3510 1039, 3 Sep. 42; “The Battle of Egypt,” 34.

41. Ibid.

42. Ibid.

43. CI-II-1513, Cairo to AGWAR, A3511 1096, 3 Sep. 42.

44. Ibid.


46. Ibid.

47. CI-II-1566, Cairo to AGWAR, A3511 1116, 4 Sep. 42.


49. CI-II-1500, Cairo to AGWAR, A3510 1107, 4 Sep. 42.

50. Ibid.

51. CI-II-1970, Cairo to AGWAR, A3510 1127, 5 Sep. 43.

52. Ibid.


55. Ibid., 35.
56. Ibid., 28.
57. CI-IN-1136, Cairo to AGWAR, \text{ANNEX} 1060, 3 Sep. 42.
58. CI-IN-3295, Cairo to AGWAR, \text{ANNEX} 1132, 5 Sep. 42.
59. History of the 12th Bombardment Group.
60. Lev interview.
62. Record of Combat Activities, 57th Fighter Group.
63. Ibid.
65. Ibid.
66. CI-IN-1918, Cairo to AGWAR, \text{ANNEX} 1539, 28 Sep. 42.
67. CI-IN-6377, Cairo to AGWAR, \text{ANNEX} 1239, 14 Sep. 43.
68. CI-IN-12031, Cairo to AGWAR, \text{ANNEX} 1607, 29 Sep. 42. Figures for the latter half of September are not available. "The Battle of Egypt," 37.
69. Ibid.; CI-IN-11466, Cairo to AGWAR, \text{ANNEX} 1539, 25 Sep. 42.
70. Ibid.
72. Ibid.
73. CI-IN-2757, Cairo to AGWAR, \text{ANNEX} 2369, 6 Nov. 42.
74. Morgan, History of the Ninth Bomber Command.
76. History of the 12th Bombardment Group; CI-IN-6377, Cairo to AGWAR, \text{ANNEX} 1239, 14 Sep. 42.
77. Ibid.
78. C:111-06563, Cairo to AGWAR, DAUSHE 1211, 10 Oct. 42.

79. Low interview; A Short History of the 15th Bombardment Group, delivered 27 May 1944 by Maj. H. B. Thompson before the Intelligence Officers' Conference, in TIFFI files.

80. Ibid.

81. Low interview.

82. Thompson, Short History of the 15th Bombardment Group.

83. "Narrative of the Battle of El Alamein."

84. Eyreton Report.

85. Ibid.

86. "Narrative of the Battle of El Alamein."


88. Ibid.

89. C:111-10345, Cairo to AGWAR, DAUSHE 2030, 24 Oct. 42.

90. Eyreton Report.

91. USAAF in "US Periodic Intelligence Summary, 25 Oct. to 1 Nov. 1942. There is some doubt that the figures given here include all the sorties flown by the 66th Fighter Squadron. Prior to 19 November 1942 the 66th was operating under the operational control of the 239 Wing, RAE. Maj. Porter R. Chandler, A-2 of the 66th, stated in a memorandum to Maj. U. F. Graven, Chief, Combat Operational History Br., AMHI, 21 November 1944: "I know from personal experience that we were sometimes completely out of touch with the 57th Group Headquarters. We tried to send our sortie reports during this period thru both British and American channels. I know that during the period of the Battle of Alamein our own squadron was running three to five missions per day; and I don't know whether these ever got into the official figures for the 57th."
Chapter III


3. Interview with Col. Robert G. Card, 31 Dec. 1943 [Card interview].


5. It is interesting to note in this connection that the United States furnished 31 Diesel locomotives for the Western Desert railway. The Diesel engine is particularly suited for desert operations because it requires much less water than the steam locomotive. "Behind the British Victory in North Africa: The Story of Supply," [By a British officer] Foreign Affairs, XXII (Jan. 1943), 312-333.

6. Ibid.

7. Complete statistics on losses inflicted on Axis shipping after the arrival of the U. S. heavy bombers in the Middle East are not available to the writer. Estimates vary but apparently the monthly losses of Axis shipping bound for North African ports rose from 10 or 20 per cent to 40 or 50 per cent. See Beresford Report and "Narrative of the Battle of El Alamein."

8. "Narrative of the Battle of El Alamein."


10. Card interview.

11. Ibid.


13. Lt. Col. R. H. F. Carver [British], A Short History of the Seventh Armored Division, October 1942 to Nov 1943 (History of 7th Armored Division); OI-15-10366, Cairo to ADHE; MI 2108, 23 Oct. 42.
15. CI-IL-1033, Cairo to AGWAR, AM-2116, 25 Oct. 42.
17. Reports of the actual number of sorties carried out vary from 43 to 54. The figure 48 is given in "Battle of Egypt," 41, while the figure 54 is given in CI-IL-1033, Cairo to AGWAR, AM-2116, 25 Oct. 42.
20. CI-IL-10066, Cairo to AGWAR, AM-2109, 23 Oct. 42.
22. History of 7th Armored Division.
24. Ibid.
28. CI-IL-11954, Cairo to AGWAR, AM-2162, 23 Oct. 42.
29. "Narrative of the Battle of El Alamein."
31. Record of Combat Activities, 57th Fighter Group.
32. Ibid.
33. "Narrative of the Battle of El Alamein."
34. Ibid.
35. CI-III-929, Cairo to AGMAR, A-MSL 2281, 3 Nov. 42.

36. "Narrative of the Battle of El Alamein."

37. Ibid.


40. CI-III-834, Cairo to AGMAR, A-MSL 2270, 2 Nov. 42.


42. CI-III-834, Cairo to AGMAR, A-MSL 2270, 2 Nov. 42; CI-III-00473, Cairo to AGMAR, A-MSL 2256, 1 Nov. 42.

43. CI-III-2412, Cairo to AGMAR, A-MSL 2253, 5 Nov. 43.

44. According to one account, the 10th Division was reduced to 25 per cent of its strength, the Italian Trento Division had been practically wiped out, and the 50th Light had suffered heavy casualties. War Office Weekly Intelligence Summary No. 169, 4 to 11 Nov. 1943.

45. History of 7th Armored Division.


47. "Narrative of the Battle of El Alamein."


49. CI-III-1705, Cairo to AGMAR, A-MSL 2306, 4 Nov. 43; "Battle of Egypt," 43-44.

50. Ibid., 44.

51. Ibid.

52. CI-III-1705, Cairo to AGMAR, A-MSL 2306, 4 Nov. 43.

53. Econson Report; CI-III-2280, Cairo to AGMAR, A-MSL 2280, 5 Nov. 43.
54. CI-III-1559, Cairo to AGMAR, "MSIL 2314, 4 Nov. 42.

55. "Battle of Egypt," 44.

56. CI-III-2080, Cairo to AGMAR, "MSIL 2350, 5 Nov. 42.

57. War Office Weekly Intelligence Commentary No. 169, 4-11 Nov. 1942.

58. CI-III-2080, Cairo to AGMAR, "MSIL 2350, 5 Nov. 42.

59. CI-1937, Cairo to AGMAR, "MSIL 2337, 5 Nov. 42.

60. CI-III-1873, Cairo to AGMAR, "MSIL 2321, 4 Nov. 42.


63. "Narrative of the Battle of El Alamein."

64. CI-III-2206, Cairo to AGMAR, "MSIL 2360, 6 Nov. 42.

65. Narrative of the 57th Fighter Group.

66. CI-III-2205, Cairo to AGMAR, "MSIL 2383, 7 Nov. 42.

67. "Narrative of the Battle of El Alamein."
1. GI-III-3540, Cairo to AGWAR, MESSAGE 2420, 9 Nov. 42.
3. GI-III-5727, Cairo to AGWAR, MESSAGE 7983, 13 Nov. 42.
4. GI-III-6992, Cairo to AGWAR, MESSAGE 2557, 16 Nov. 42.
8. Based on information obtained in Ibid., 47, and in History of the 66th Fighter Squadron.
9. History of the 66th Fighter Squadron.
10. Ibid.
11. Ibid.
13. For experiments in low-altitude bombing and lessons learned, see Phantom Mission of 1 August 1942, AAF Historical Studies No. 6.
14. GI-III-11353, Cairo to AGWAR, MESSAGE 2763, 25 Nov. 42.
15. Ibid.
17. GI-III-3389, Cairo to AGWAR, MESSAGE 3954, 4 Dec. 42; GI-III-6956, Cairo to AGWAR, MESSAGE 3250, 16 Dec. 42.
18. GI-III-5367, Cairo to AGWAR, MESSAGE 3245, 8 Dec. 42; GI-III-6816, Cairo to AGWAR, MESSAGE 3108, 10 Dec. 42; History of the 66th Fighter Squadron.
19. Ibid.


27. C.II-10379, Cairo to A.G.A.R., AM551 3716, 23 Nov. 42.


31. History of the Ninth Bomber Command.

32. C.II-2249, Cairo to A.G.A.R., AM551 1890, 5 Dec. 42.

33. C.II-3590, Cairo to A.G.A.R., AM551 3025, 7 Dec. 42.

34. History of the Ninth Bomber Command.


36. The 13th Bombardment Group was by this time (23 December 1942) separated into three parts: some were located at L.C. 56, some at L.C. 142, and some at Kairun. Unit History of the 13th Bombardment Group.

33. History of the Ninth Bomber Command.
34. Ibid.
40. CI-III-3031, Cairo to AGMAR, "AIR/SC 3626, 5 Jan. 43.
41. History of the Ninth Bomber Command; CI-III-4163, Cairo to AGMAR, "AIR/SC 3781, 9 Jan. 43.
42. CI-III-5033, Cairo to AGMAR, "AIR/SC 3923, 10 Jan. 43.
44. History of the Ninth Bomber Command.
45. Ibid.
47. "Report on Tripoli Harbor from 21 November 1943 to its Evacuation by the Axis Forces," "Report on Tripoli Harbor," Middle East Interpretation Unit, RAF, in ADIHI files.
48. CI-III-9064, Cairo to AGMAR, "AIR/SC 4021, 18 Jan. 43.
50. "Report on Tripoli Harbor."
52. History of the 65th Fighter Squadron.
53. The word "scramble" is borrowed from RAF terminology. It means a situation in which the fighters are ordered off the ground in a hurry, without advance briefing, for the purpose of interceptions.
55. CI-III-9125, Cairo to AGMAR, "AIR/SC 7096, 20 Jan. 43.
57. Ibid.; CI-III-9336, Cairo to AGMAR, "AIR/SC 4106, 31 Jan. 43.

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Appendix 1 - Ninth Air Force Operations Summary

<table>
<thead>
<tr>
<th>Group</th>
<th>Month</th>
<th>Missions</th>
<th>Sorties</th>
<th>Wt. of bombs</th>
<th>Hours flown</th>
<th>A/c</th>
<th>Victories</th>
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<td>Lat Provisional Group (H)</td>
<td>June 42</td>
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<td>70</td>
<td>233,000</td>
<td>46:00</td>
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*Prepared by 26th SQM and forwarded as inclusion to Historical Record of Ninth Fighter Command, 15 Dec. 1943, AFHQ files.
<table>
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<th>Month</th>
<th>Missions</th>
<th>Sorties</th>
<th>Lb. of bombs dropped</th>
<th>Hours flown</th>
<th>A/c</th>
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Appendix 2 - Strength, Commissioned and Enlisted

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<th>Flight &amp; Officers</th>
<th>Warrant Officers</th>
<th>Total</th>
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Net Monthly Increases

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<th>Enlisted Men</th>
<th>Flight &amp; Officers</th>
<th>Total</th>
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</tbody>
</table>

* Based on information in "Administrative History of Ninth Air Force, June 1942-October 1943," compiled by the Adjutant General, Ninth Air Force. AFIHI files.
Appendix 3 - Changes of Station

**Hal Bombardment Squadron**

Arrived Fayid, Egypt, from the United States, 2 June 1943.
Departed Fayid, Egypt, 20 June 1943.
Arrived Lydda, Palestine, 30 June 1943.

Became a part of the 376th Bombardment (B) upon its activation at Lydda, Palestine, 1 November 1943.

**9th Bombardment Squadron**

*Advanced Combat Relocation*

Arrived Fayid, Egypt, from Allahabad, India, 23 June 1943.
Departed Fayid, Egypt, 20 June 1943.
Arrived Lydda, Palestine, 30 June 1943.

*Recon Relocation and Command Post*

Arrived Lydda, Palestine, from Allahabad, India, 3 July 1942.

This organization returned to India in October 1942.

**376th Bombardment Group (B)**

Activated from the 1st Provisional Bombardment Group, consisting of a headquarters and two combat squadrons, namely the Hal Bombardment Squadron and 9th Bombardment Squadron, at Lydda, Palestine, 1 November 1943. The Group consisted of the following organizations:

- Group Headquarters
- 512th Bombardment Squadron
- 513th Bombardment Squadron
- 514th Bombardment Squadron
- 515th Bombardment Squadron

Changes of station have been:

Departed Lydda, Palestine, 7 November 1943.
Arrived Abu Sueir, Egypt, 7 November 1943.
Departed Abu Sueir, Egypt, 23 January 1943.
Arrived L. G. 139, 4 February 1943.

98th Bombardment Group (H)

The Ground Echelon departed Brooklyn 16 July 1942 and arrived at Suez, Egypt, 16 August 1942 where it was divided and the 343d and 346th Bombardment Squadrons went to St. Jean, Palestine, arriving there on 21 August 1942. The Headquarters, 346th and 415th Squadrons departed Suez, Egypt, 19 August 1942 and arrived at Ramat David, Palestine, 20 August 1942.

The Air Echelon departed Lakeland, Florida, as follows:

- 344th Bombardment Squadron and Headquarters, 17 July 1942.
- 415th Bombardment Squadron, 19 July 1942.
- 343d Bombardment Squadron, 30 July 1942.

The Air Echelon arrived at Ramat David, Palestine, as follows:

- 344th Bombardment Squadron and Headquarters, 26 July 1942.
- 415th Bombardment Squadron, 31 July 1942.
- 346th Bombardment Squadron, 5 August 1942.
- 343d Bombardment Squadron, 7 August 1942.

Subsequent changes of station for each unit are:

**Group Headquarters**

- Departed Ramat David, Palestine, 13 November 1942.
- Arrived Fayid, Egypt, 13 November 1942.
- Departed Fayid, Egypt, 25 January 1943.
- Arrived L. G. 140, 23 January 1943.

**343d Squadron**

- Departed St. Jean, Palestine, 13 November 1942.
- Arrived Kabrit, Egypt, 13 November 1942.
- Departed Kabrit, Egypt (Air Echelon), 25 January 1943.
- Arrived L. G. 159 (Air Echelon), 29 January 1943.

**31st Squadron**

- Departed St. Jean, Palestine, 13 November 1942.
- Arrived Kabrit, Egypt, 13 November 1942.
- Departed St. Jean, Palestine (Detachment), 13 November 1942.
- Arrived L. G. 130 (Detachment), 13 November 1942.
345th Squadron

Departed Ramat David, Palestine, 15 November 1942.
Arrived Fayid, Egypt, 15 November 1942.
Departed Fayid, Egypt, 24 January 1943.
Arrived L. G. 140, 24 January 1943.

325th Squadron

Departed Ramat David, Palestine, 13 November 1942.
Arrived Fayid, Egypt, 13 November 1942.
Departed Fayid, Egypt, 25 January 1943.
Arrived L. G. 140, 23 January 1943.

12th Bombardment Group (H)

Headquarters and the ground echelons of the 81st, 82nd, 83rd, and 434th Squadrons departed New York, N. Y., 16 July and arrived at Edmonton Airbase, Egypt, 16 August 1942. Headquarters and the ground echelons of the 81st and 82nd Squadrons departed Edmonton Airbase, Egypt, 18 August 1942 and arrived at Deversoir Airbase, Egypt, 18 August 1942. The ground echelons of the 83rd and 434th Squadrons departed Edmonton Airbase, Egypt, 15 August 1942 and arrived at Ismali Airbase, Egypt, 18 August 1942.

The air echelon of the 81st Squadron departed Morrison Field, Florida, 14, 15, 16, 17 July 1942 and arrived at Deversoir Airbase, Egypt, 21 July and 1, 2, 3, August 1942; 82nd Squadron departed Morrison Field, Florida, 21 July 1942 and arrived at Deversoir Airbase, Egypt, 2, 7, 11 August 1942; 83rd Squadron departed Morrison Field, Florida and arrived at Ismali Airbase, Egypt, 13 August 1942; 434th Squadron departed Morrison Field, Florida, 2 August 1942 and arrived at Ismali Airbase, Egypt, 14, 16, 17 August 1942.

"A" Party departed Deversoir and Ismali, Egypt, 15 October 1942.
"B" Party arrived L. G. 88, 15 October 1942.
"C" Party departed Deversoir, Egypt, 15 October 1942.
Air echelon departed Deversoir and Ismali, Egypt, 15 October 1942.
"D" Party arrived L. G. 88, 18 October 1942.
Air echelon arrived L. G. 88, 18 October 1942.
Recon echelons departed Deversoir and Ismali, 23 November 1942.
Recon echelons arrived L. G. 88, 29 November 1942.

"A" Party departed L. G. 88, 8 December 1942.
"A" Party departed Gahrut, Libya, 10 December 1942.
Front echelons departed L. G. 90, 1 January 1943.
Front echelons arrived L. G. 142, 3 January 1943.

"A" Party departed Lagrumin, Libya, 4 January 1943.
"A" Party arrived Ml Chei, Libya, 8 January 1943.
Air echelon detachment departed L. G. 142, 11 January 1943.
Air echelon detachment arrived Ml Chei, Libya, 13 January 1943.
Air echelon detachment departed L. G. 142, 14 January 1943.
Air echelon detachment arrived Ml Chei, Libya, 15 January 1943.
Air echelon of "A" Party departed Ml Chei, Libya, 30 January 1943.
Air echelon of "A" Party arrived L. G. 142, 1 February 1943.

57th Fighter Group

Group Headquarters

Three officers of Group Headquarters left Mitchel Field on 25 June 1942 for the Commet Naval Base, Guantanamo, Havana Island, where they boarded the USS "Ranger" together with other pilots of the Group. The aircraft carrier brought them to a point in the ocean near Lagos, Africa, where they took off on 19 July 1942. From there they flew to Haqueibia, Palestine, arriving there 31 July 1942.

The air echelon left East Boston, Massachusetts, on 26 June 1942 for Mitchel Field, Long Island. From there it went to Key West, Florida, landing on air echelons of the squadrons of the group on 1, 2, 3 July. Travelling by air transport the air echelon arrived at Haqueibia, Palestine, on 12 and 13 July.

The ground echelon left East Boston on 4 July 1942 and arrived at Fort Dix, New Jersey, on the same day. From there it embarked on 16 July, arriving at Haqueibia, Palestine, 17 August 1942. Following a period of training the organization changed stations as follows:

Departed Haqueibia, Palestine, 13 September 1942.
Arrived Aqirya Transit Camp, Egypt, 15 September 1942.
Departed Aqirya Transit Camp, 16 September 1942.
Arrived L. G. 174, 16 September 1942.
Departed L. G. 174, 5 November 1942.
Arrived L. G. 172, 6 November 1942.
Departed L. G. 172, 7 November 1942.
Arrived L. G. 75, 9 November 1942.
Departed L. G. 75, 11 November 1942.
Arrived Sidi Assis, Libya, 12 November 1942.
Departed Sidi Assis, Libya, 12 November 1942.
Arrived Combit, Libya, 14 November 1942.
Departed Combit, Libya, 15 November 1942.
Arrived Martuba, Libya, 20 November 1942.
Departed Martuba, Libya, 29 November 1942.
Arrived Beleidch, Libya, 2 December 1942.
Departed Beleidch, Libya, 9 January 1943.
Arrived Hamala, Libya, 12 January 1943.
Departed Hamala, Libya, 17 January 1943.
Arrived Barragh West, Libya, 18 January 1943.
Departed Barragh West, Libya, 23 February 1943.

61st Fighter Squadron

On 23 June the Air echelon of the Squadron departed for Mitchel Field, Long Island, New York. The pilots then went to Quonset Naval Base, (Quonset, Rhode Island), and boarded the aircraft carrier USS "Ranger." This aircraft carrier took them to within a few miles of Lagos, Africa, where they flew off her deck and proceeded north to Haqueibila, Palestine, arriving there 31 July 1942. Crossing the Atlantic on the Yankee Clipper and flying across Africa the air echelon arrived at Haqueibila, Palestine, on 13 July 1942.

The ground echelon left East Boston, Massachusetts, on 5 July 1942 and arrived at Fort Dix, New Jersey, on the same day. It then proceeded to New York and embarked on 15 July for its overseas service. It arrived at Haqueibila, Palestine, on 19 August 1942.

Subsequent changes of station were:

Departed Haqueibila, Palestine, 14 September 1942.
Arrived L. 0. 178, Western Desert, 16 September 1942.
Departed L. 0. 178, Western Desert, 5 November 1942.
Arrived L. 0. 57, Western Desert, 5 November 1942.
Departed L. 0. 37, Western Desert, 8 November 1942.
Arrived L. 0. 75, Western Desert, 11 November 1942.
Departed L. 0. 75, Western Desert, 11 November 1942.
Arrived Sidi Assis, Libya, 12 November 1942.
Departed Sidi Assis, Libya, 13 November 1942.
Arrived Combit, Libya, 18 November 1942.
Departed Combit, Libya, 30 November 1942.
Arrived Martuba, Libya, 29 November 1942.
Departed Martuba, Libya, 8 December 1942.
Arrived Belnakh, Libya, 11 December 1942.
Departed Belnakh, Libya, 9 January 1943.
Arrived Hammamet L.G., 13 January 1943.
Departed Hammamet L.G., 23 February 1943.

56th Fighter Squadron

The air echelon of this organization departed from Miami, Florida, the first part of July 1942 and arrived at Iqusimila, Palestine, on 12 July 1942. The ground echelon embarked from New York on 15 July 1942 and reached Iqusimila, 19 August 1942. The pilots of the squadron came across the Atlantic on the aircraft carrier USS "Hanger," flew across Africa and reached Iqusimila, Palestine, on 29 July 1942.

On 5 August the air echelon departed Iqusimila for the Island of Cythera, arriving there the same day. On 29 August it returned to its base in Palestine. On 16 September the squadron left Iqusimila and arrived at L.G. 174, Western Desert, on 16 September 1942.

Following further training and then participation in the battle of Alamein the squadron moved westward. Changes of station have been as follows:

"A" Party departed L.G. 174, 6 November 1942.
"A" Party arrived L.G. 172, 7 November 1942.
"A" Party departed L.G. 172, 7 November 1942.
"A" Party arrived Sidi Zarou, L.G. 75, 7 November 1942.
"A" Party departed L.G. 172, 9 November 1942.
"A" Party arrived L.G. 75, 9 November 1942.
"A" Party departed L.G. 75, 10 November 1942.
"A" Party arrived Sidi Amein, Libya, 12 November 1942.
"A" Party departed Sidi Amein, Libya, 12 November 1942.
"A" Party departed L.G. 75, 14 November 1942.
"A" Party arrived Martuba West, Libya, 16 November 1942.
"A" Party departed Martuba West, Libya, 19 November 1942.
"A" Party arrived Martuba West, Libya, 21 November 1942.

Departed Martuba West, Libya, 3 December 1942.
Arrived Belnakh, Libya, 11 December 1942.
Departed Belnakh, Libya, 9 January 1943.
Arrived Hammamet, 12 January 1943.
"B" Party arrived Marqeh, 17 January 1943.

66th Fighter Squadron

This organization departed from New York on 15 July 1942 and arrived at Beit Elor, Palestine, 19 August 1942. An Advance Party from the squadron left the Palestino station on 27 August and arrived at Iqrit, Egypt, the same day. It then proceeded to L. G. 97 on 2 September and returned to Iqrit on the 7th. On 16 September 1942 it departed Iqrit for L. G. 174, arriving there the same day.

The remainder of the squadron departed Beit Elor on 13 September and arrived at Arakiya Transit Camp, Egypt, on 15th. On 17 September 1942 it departed Arakiya and arrived at L. G. 174.

On 6 October the squadron left L. G. 174 and arrived at L. G. 91. On 5 November it proceeded to L. G. 105, arriving there the following day. On 9 November 1942 it departed for and arrived at L. G. 101, leaving there 11 November and arriving at L. G. 76. It left L. G. 76 the following day and arrived at Gambut, Libya, on 13 November. From there it went to Cenala, Libya, on the 15th, left there on 19 November and arrived at Tabuba, Libya, on the 20th. On 8 December the squadron left for Debndah, Libya, arriving there 11 December 1942.

Other changes of station were:

Departed Debndah, Libya, 9 January 1943.
Arrived Mersa Iot, Libya, 13 January 1943.
Departed Mersa Iot, Libya, 17 January 1943.
Arrived Marqeh West, Libya, 18 January 1943.
Departed Marqeh West, Libya, 26 February 1943.
Arrived Tabuba, Libya, 26 February 1943.

76th Fighter Group

This group departed Indiantown Gap Military Reservation, Pa., 5 October 1942 and arrived FIC 21, Kasfaret, Egypt, 12 November 1942. It departed FIC 21, Kasfaret, Egypt, 13 November 1942 and arrived L. G. 174, Egypt, 19 November 1942. Here the group was broken up into "A" and "B" parties. Changes of station of these parties were:

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Subject: Critique of Army Air Forces Historical Studies: No. 50, Ninth Air Force Participation in the Normandy Invasion to 15 January 1945
MEMORANDUM FOR J. D. DEWITT, USAF (Attention Assistant Chief of Air Staff, Intelligence, Historical Division)

Subject: Critique of Army Air Force Historical Studies: No. 30, Bluff Air Force Participation in the Desert Campaign to 71 January 1943
MEMORANDUM FOR THE COMMANING GENERAL, ARMY AIR FORCES: (Attention
Assistant Chief of Air Staff, Intelligence, Historical Division)

Subject: Critique of Army Air Forces Historical Studies
No. 39, Ninth Air Force Participation in the
Desert Campaign 1942-January 1943.