U. S. Air Force Historical Study No. 96

THE ARMY AIR FORCES IN AMPHIBIOUS LANDINGS IN WORLD WAR II

Prepared by the USAF
Historical Division,
Air University
1953

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IN
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USAF Historical Division
Air University
July 1953

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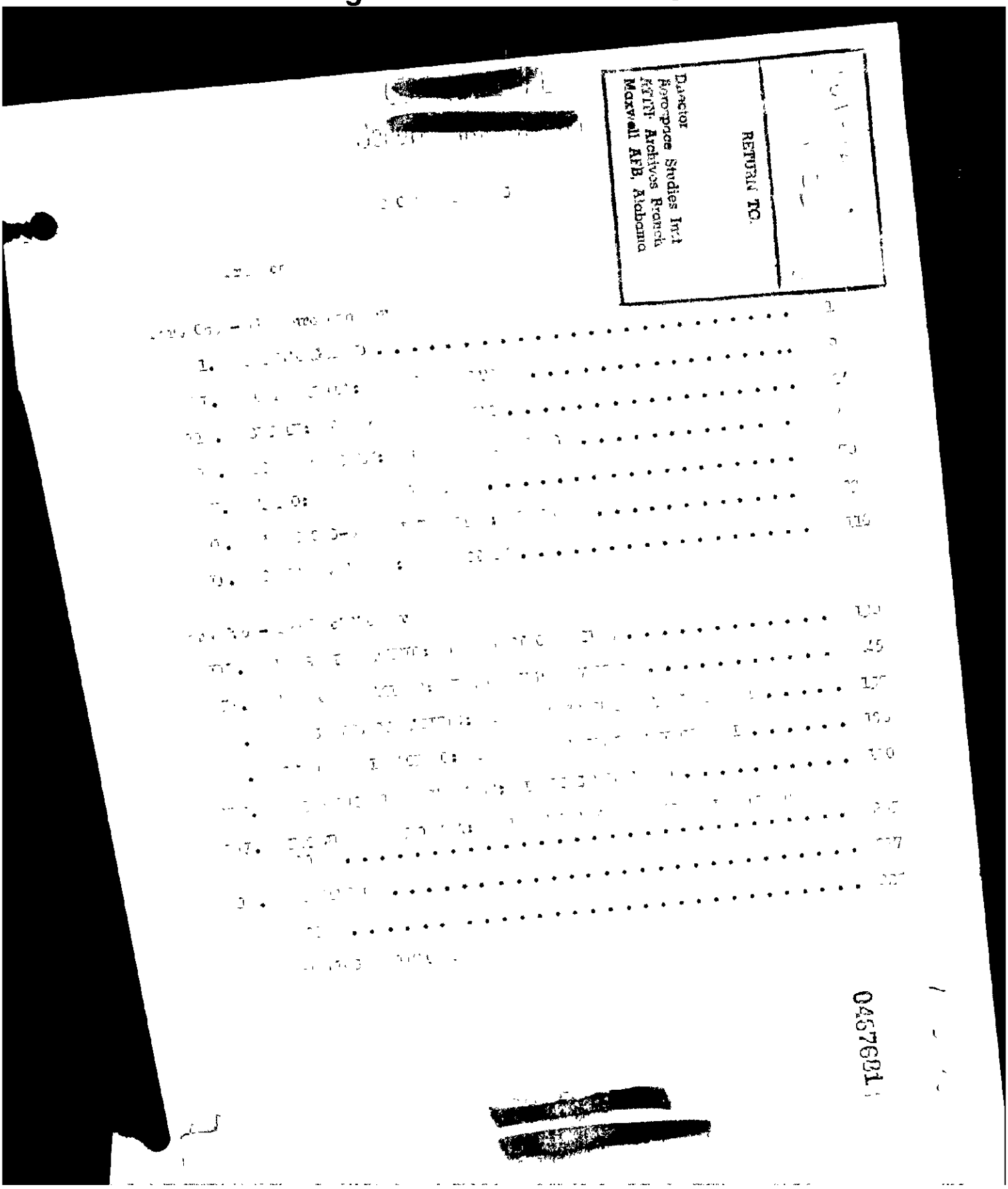
FOREWORD

This study was written by Dr. Harry L. Coles, Ohio State University, for the USAF Historical Division, Air University, Maxwell Air Force Base, Alabama.

Like other Historical Division studies, this history is subject to revision, and additional information or suggested corrections will be welcomed.



MAPS AND CHARTS

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PREFACE

It is the purpose of this study to examine the role of the air forces in the main amphibious landings in World War II. It is an operational study and deals only incidentally with administrative and logistical matters. The aim is to examine what the air forces actually did and to interpret the meaning of experiences in the various theaters of operations.

The subject naturally divides itself into two broad phases: the European and the Pacific. In the European theater landings were made preliminary to a prolonged campaign on a large land mass. The land areas seized had strategic and political importance in and of themselves. There is a continuity in the European story which I have tried to develop. In the Pacific theater landings were of the island-hopping variety. Bases were seized not for their intrinsic importance but as stepping stones to further operations. Even in the Southwest Pacific, which in some respects resembled the European theater, the areas seized, though part of a land mass, were generally surrounded by impassable jungle which restricted the area of maneuver and made the occupying forces dependent upon long over-water lines of communication. Each of the Pacific theaters, it seems to me, had problems and patterns of operations peculiar to its locale. I have therefore tried to bring out the peculiarities and the lessons to be learned from each of the theaters.

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Chapter I

BACKGROUND

"A landing on a foreign coast in face of hostile [illegible] has always been one of the most difficult operations of war. It has now become much more difficult, [illegible] not impossible, because of the vulnerable target which a convoy of [illegible] offers to the defender's air force [illegible]....[illegible] [illegible]... [illegible] historical [illegible]...."[1] Thus wrote Liddell Hart in 193[illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

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an amphibious invasion of great magnitude conducted with modern weapons was the British landing in Gallipoli during World War I.

It was Gallipoli that supposedly relegated amphibious landings to the ash heap of outmoded tactics. That ill-fated venture was conceived in 1915 by Winston Churchill, First Lord of the Admiralty, as a scheme to drive Turkey out of the war. It was a "combined" operation in that both British and French troops were involved. About half a million men were landed in various assaults on the Gallipoli Peninsula. Largely because of inept and indecisive command, plus poor planning and preparation, the enterprise turned out to be a dismal failure with nearly 250,000 casualties. It was to a considerable extent the influence of this "horrible example" that caused military minds to regard amphibious landings as hazardous and visionary. But there were other reasons as well. The technological advances of the late nineteenth and early twentieth centuries seemed to favor the defender at the expense of the invader. With off-shore mines, torpedoes, the increased fire power of land based weapons, and above all the increased speed and offensive power of the airplane, such landings were regarded, in the words of Liddell Hart, as "almost impossible."

Apparently the skeptics failed to realize, as one historian has said, that "one man's poison may be another man's meat."[3] They did not comprehend that weapons ordinarily thought of as primarily defensive might be turned to offensive use. They failed to realize that the submarine and the airplane, which presumably had doomed amphibious invasions to failure, could be massed under and over an invasion fleet to protect it from the enemy and to aid in the manuever of ships and the advance of troops on the shore.

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All invasions are hazardous operations but the most difficult point to land is one of the most difficult of all forms of warfare, but it involves many elements that must be blended into a successful operation. Amphibious landings are to be undertaken when no other way is feasible; they should be resorted to only in extreme circumstances and only after careful diplomatic and preparation. Like modern surgery, technological advances and a high degree of specialization and training have made possible and common place operations which a few years ago were considered fatal. In fact, this form of warfare has become to such a high degree of perfection that in the Pacific, the amphibious theater of operations, the defense abandoned some of effectively established amphibious assault (as distinguished from the commando which relies on landing on rear beaches). At the time of Okinawa they virtually abandoned the beaches because they knew that they could not successfully defend them. No higher tribute could have been paid to the effectiveness of American tactics.

American mastery of amphibious warfare was the result of a number of factors including thorough training, careful planning, effective cooperation among the services, and above all the skill and valor of the men who hit the beaches. A factor of prime importance also was application of science. The scientists came to the aid of the military in solving some of the most difficult problems. Improvements were made on old types of landing craft and new types were developed. One very good example is the DUK, a seagoing two and one-half ton Army truck that could successfully negotiate sand, coral, and hard roads. One of the most difficult problems in amphibious invasions is to land the craft at the right places. Developments in radar now make it possible for ships to find their way to exact spots

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on the beach shore at night and under all weather conditions. The development of rockets and rocket launchers made it possible to deliver a great volume of high explosives onto beaches from landing craft and from aircraft. Tools and devices were developed for locating and destroying underwater obstacles and demolition crews were specially trained in the techniques of removing such obstacles. Long range fire throwers and mortars were invented to reduce pillboxes, strong points, and underground fortifications.[4]

Another factor that helped to maintain the success of the United States in the fact that in spite of general neglect the Marine Corps took amphibious warfare as its special province in the period following World War I. Marine exercises and study were based upon the general assumption that in any conflict in the Pacific, Japan would be the antagonist, and that any to defeat Japan would be by an island-hopping advance across the Central Pacific. This was an obtainable objective for available resources. In 20 years of unspectacular but real study, among other things, produced: a Marine Division, a fully self-contained force capable of rapidly moving its troops over at least 1,000 miles; a Shore Party battalion, specially trained to the complex of logistical problems; the amphibious tractor capable of crossing coral reefs, swamps, and other difficult terrain; and a system of front line air support and naval gunfire control.[5]

Probably the most significant contribution of the Marines, however, was in the field of doctrine. As early as 1920 the Navy had approved a manual to instruct naval personnel in the conduct of shore operations. But only 7 out of 760 pages were devoted to procedures in actual landings. In a revision of the manual issued in 1927 the section on landing operations

was covered in a mere five pages. That the Marines were not alone in their concern was brought out by the fact that in January 1933 the Joint Board of the Army and Navy, a forerunner of the Joint Chiefs of Staff, issued a publication entitled, Joint Overseas Expeditions. This document, though incorporating many definitions and solutions that later became standard, was general and brief. It remained to work out the details. Using the Joint Board pamphlet as a point of departure the staff of the Marine Corps School at Quantico began in November 1933 the preparation of a manual on landing operations. The result was the publication in 1934 of the Tentative Manual for Landing Operations. This manual became the basis for all theoretical instruction in amphibious warfare in the Marine Corps Schools and served as a guide book for the landing exercises conducted annually by the Navy from 1935 through 1941. It was adopted with revisions by the Navy in 1938 under the title Fleet Training Publication 167.

Meanwhile the Army started work on a similar publication and in November 1940 the Command and General Staff School at Fort Leavenworth issued "landing Operations on Hostile Shores." This draft was issued as Field Manual 31-5 on 2 June 1941. FM31-5 and FTP 167 followed the same general arrangement and used the same illustrations and sketches. Though there is no need here to make a detailed examination of these early publications, some of the basic principles set forth are of interest. In regard to command, FM 31-5 stated that "coordination of operations of Army and Navy forces is by mutual cooperation or by exercise of unity of command."[7] Throughout the early documents there runs the assumption that air power is a mere adjunct of naval or land power. Although the

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importance of local air superiority is mentioned, counter air activities are listed as only one function along with observation, reconnaissance, and close support. There is nothing here about the isolation of the battlefield; no mention of the necessity of preventing troops and material from reaching the battle area.

Landing operations doctrine should be considered in conjunction with doctrines of air support of ground forces for they are closely allied subjects. Air support doctrine which guided the early campaigns of the war was set forth in FM 31-35 of April 1942. Again there was the same basic assumption, the subordination of aviation to the needs of the ground force commander. The doctrine that aviation units may be specifically allocated to the support of subordinate units of the army and that "final decision as to the priority of support rests with the commander of the supported units," was tried during the early stages of World War II and found wanting. In their fighting across the western desert the British Eighth Army and the RAF worked out a battle tested doctrine of air-ground cooperation. The essence of this doctrine was that air power should not be parcelled out and frittered away, that a high degree of air superiority in the theater of operations must be achieved and maintained, and that troops presumably should be interdicted before reaching the battle of operations. With the invasion of the British and American forces in Tunisia and the appointment of Air Chief Marshall Sir Arthur Tedder as commander in Chief, Mediterranean Air Command, these principles were gradually introduced in the North African fighting. The result was a revolution in the American doctrine of the command and employment of air power. The

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U. S. Air Force had long struggled for these principles but it was the Middle East and North African experiences that made the revolution a reality. On 21 July 1943 FM 100-20, Command and Employment of Air Power was issued. This document set forth the basic principles that were henceforth to guide all air force operations in amphibious landings or otherwise.

The new regulation stated that land power and air power are co-equal and interdependent forces, neither of which is subordinate to the other. In order to exploit flexibility, air power's greatest asset, control must be centralized and command must be excrcised through the air force commander in a theater of operations. Henceforth the missions of a tactical air force would be in the following order of priority: 1) to gain the necessary degree of air superiority; 2) to prevent the movement of hostile troops and supplies into the theater of operations or within the theater (isolation of the battlefield); and to participate in a combined effort of air and ground forces to gain objectives on the immediate front of the ground forces (direct support).

Strangely enough, all the landings down to the invasion of the Philippines had been carried out before these principles were formally engrafted into amphibious doctrine. The old manual of 2 June 1941 was not superseded until November 1944 when an entirely new version of Landing Operations on Hostile Shores was issued. The new manual stated that an amphibious operation was a joint undertaking in which the Army and Navy units act together as a single force, usually under a designated joint commander. This joint commander exercises his authority through three separate commanders of the ground, naval and air forces. He does not

command any force directly unless specifically authorized by higher authority to do so. The principles of employment of air power were essentially the same as those in FM 100-20.

So far as the role of the air forces in amphibious operations is concerned it is obvious from this brief sketch that operations shaped doctrine rather than doctrine shaping operations. The lessons of the war were hammered out on the anvil of experience.

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Chapter II

NORTH AFRICA: THE GREAT GAMBLE

The first large scale Allied amphibious operation in World War II was the invasion of North Africa. Besides being the "first" the North African operation has several other distinctions: it was the riskiest of all large scale Allied undertakings both from the point of view of military and political considerations; it was mounted in a spirit of haste and improvisation; and it was viewed with considerable skepticism and distrust by the American military commanders.

In the last respect the North African invasion was unique for on no other occasion did the Commander in Chief overrule his military advisers on a major issue of strategy. In their grand strategy the American Joint Chiefs of Staff held firmly two major premises. The first of these was that the combination of totalitarian states must be annihilated by striking the strong European front first and then dealing with the Pacific forces. The second major premise was that Germany could be most expeditiously eliminated by a direct blow--a cross-channel invasion. On the first major premise there was never any serious disagreement between the United States and Great Britain. On the second there was considerable disagreement. For many reasons the British favored a policy of encirclement as opposed to the direct blow. They did not want to see Russia in central Europe after the war; they did not wish to risk failure by a premature mounting of a cross-channel invasion; and they recoiled with horror at the thought of a prolonged blood-letting such as they witnessed during World War I.[1]

It was the deterioration of the strategic situation in the spring of

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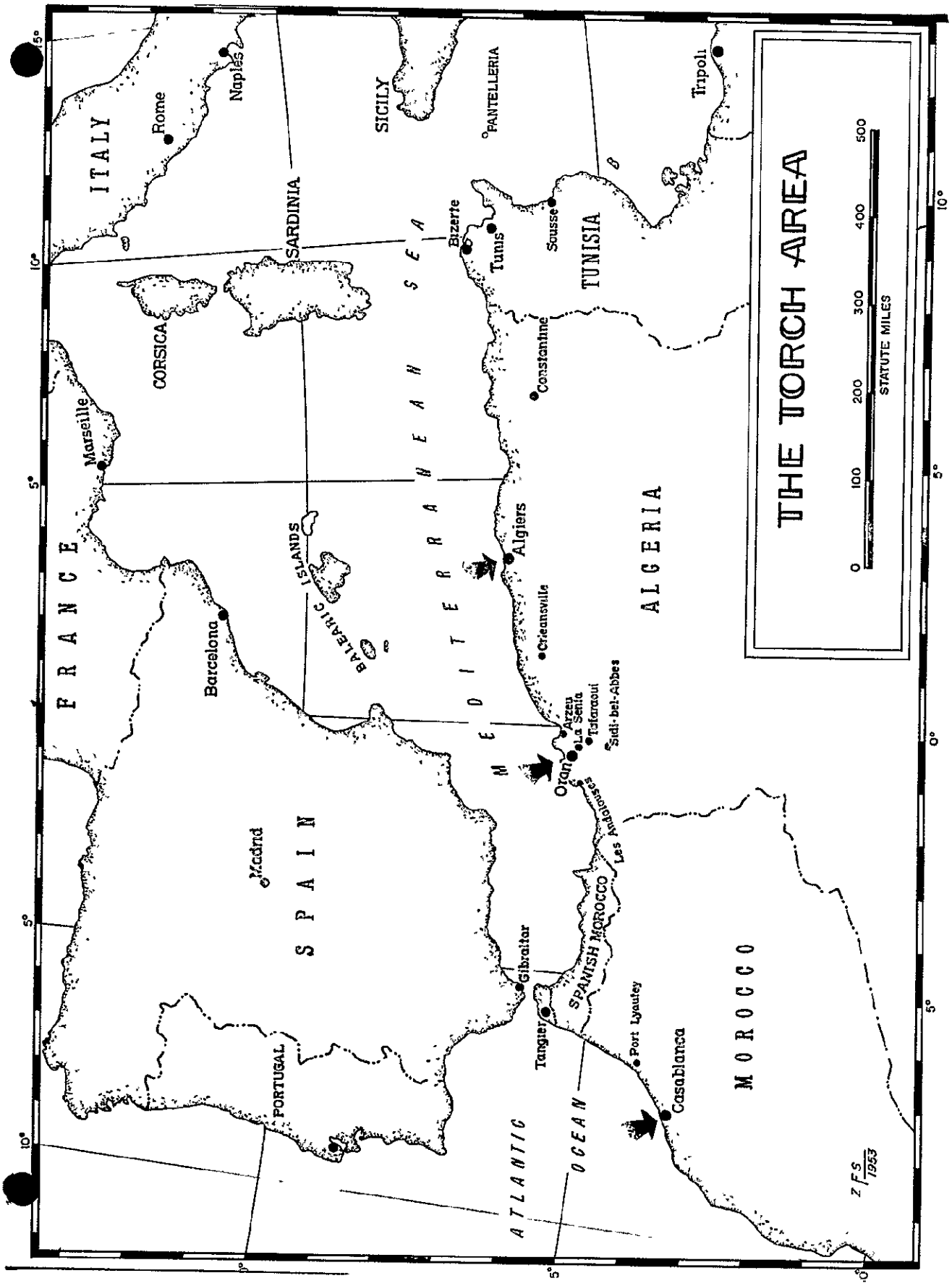
1942 that had the Americans successfully to counter the direct blow in favor of encirclement. The invasion of the USSR in the winter of 1942 had prohibited six weeks to concentrate the bulk of their forces in the east and something had to be done to relieve the pressure on the Russian front. Stalin's telegrams demanding increasingly severe action. The Allies were thus faced not only with the choice of invasion areas but also with the possibility of having the whole line-up reversed. In the face of these terrible contingencies President Roosevelt and Prime Minister Churchill decided that a second front must be undertaken. After a thorough canvassing of the situation, North Africa was decided upon on 25 July 1942 and the target for the landings was set for early in November. There were scarcely three months for the planning, organization, and training for the largest amphibious operation in history of any kind to that time. It is against this background of haste, improvisation, and apprehension that the North African operation must be viewed in all its aspects. Neither the Army, Navy, or Air Forces had sufficient training. Inadequate preparation was a risk the Allies had to accept because they could not afford to wait.[2]

The Plans

Strategically speaking, the basic problem in the planning for TORCH was whether the landings should be concentrated too far east to make a rapid and powerful push into Tunisia, or spread out with a landing on the west coast of Africa to insure the safety of the line of communications. In the directive given him on 13 August 1942 by the Combined Chiefs of Staff (COS), General Eisenhower was to establish "firm and mutually supporting lodgments" in the Oran-Algiers-Bougie area on the North African coast and in the Casablanca area on the west coast. From these lodgments, control



was to be extended over French North Africa with the primary object of driving a wedge between the Axis forces in the western theater. Preparations to invade Spanish Morocco were to be made to handle any possible action that developed by way of Spain.[3]

The first plans drawn by General Eisenhower's staff suggested the elimination of the landings at Casablanca and concentration on the north coast. In place of a frontal attack on Casablanca from the Atlantic, the American force would strike at Oran and Algiers and cut across French Morocco and Algeria from the land side. General Eisenhower felt—and this was the British view also—that a Moroccan landing would spread his forces too thinly. If the maximum effort were not exerted to the east, the Axis could get into Tunisia and once there could build up more rapidly than our Allied forces. The Joint Chiefs of Staff (JCS) were unwilling to accept this theory. In their view, cancellation of the landings on the west coast would greatly increase the risk of having the Allied line of communications cut. They refused to accept such a tactical risk and ordered that the west coast landings be retained.[4]

It was to support JCS 37 that the Twelfth Air Force was activated on 20 August 1942. In view of the short time available it was necessary to acquire air units by withdrawing them from other theaters. The only source from which such units were available was the Eighth Air Force. Consequently, it was decided to turn over most of the Eighth Air Force operating units, except heavy bombers, to the Twelfth.[5]

The JCS air plan provided for two air forces—one American and the other British—with separate tasks and areas of responsibility. The Northwestern Air Command, under Air Marshal Sir William Welsh, was to have the Algiers and Oran objectives; the Twelfth Air Force, under Brig. Gen. James

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H. Doolittle, was to have its headquarters at Oran. The Eastern Air Command was to be responsible for fighter defense in the Algiers area while the Western Air Command, or Twelfth Air Force, was to furnish fighter defense in the Casablanca and Oran areas. The actual assaults were to be supported in the first instance by carrier based planes under orders of the naval task force commanders. After the capture of airdromes, the Eastern Air Command, Twelfth Air Force (and its XII Air Support Command) were to relieve the naval aviation, as far as possible, and continue air support as directed by the respective task force commanders. The air plan contemplated coordination, not integration of the two air forces. The development of air units to achieve any particular strategic purpose after the initial phase of the operation would be determined by General Eisenhower as Commander-in-Chief, Allied Force.[6]

The Twelfth Air Force was provided with a strength almost three times as large as the Eastern Air Command. It had over 1,200 aircraft with which Allied Force Headquarters (A HQ) hoped to meet enemy air reaction on a strength basis of two to one. The air plan emphasized the vital need for maximum air strength at the outset in order to create among the French the impression of force majeure in the face of which they could honorably lay down their arms.[7]

During the assault phase of TORCH, General Doolittle, Commander of the Twelfth Air Force, was to remain with General Eisenhower at the command post on Gibraltar while the air force units at Oran functioned under Colonel Lauris Norstad, A-3 of the Twelfth Air Force, and the XII Air Support Command operated at Casablanca under Brig. Gen. John K. Cannon. Both the subordinate commanders would be directly responsible to the ground commanders

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on the respective task forces. Thereafter, General Doolittle would establish his headquarters at Oran and take over command, first, of Northwest Air Forces, and later of XII Air Support Command. He would then await Eisenhower's directive for the further employment of the Twelfth.

In general, Spaatz's air forces based in the United Kingdom were to bend their efforts to insure the success of Operation Torch. Their role was to undertake a vigorous air offensive to keep the German Air Force fully occupied in northwest Europe. The Eighth was specifically directed to strike at submarine yards and the Biscay ports with the object of protecting the TORCH convoys.

Air force participation in the landings would be largely dependent upon the capture of airdromes. Plans called for six squadrons of Air Force bombers of the XII Air Support Command with the ground forces, and for their participation in the assault of the three objective forces operating against Oujda, Nemours, and Sofia. As the airdromes were captured, the air detachments were to prepare suitable fields for the planes of the XII Air Support Command. The most important airdrome in the area of the Algerian landings was Tafaraoui, with its hard surface runways, and the primary objective of the assault forces, 34th I.D. As soon as Tafaraoui airfield was captured, the P-40's of the 33d Fighter Group were to be ferried from carrier flight decks to join in the action against the French. The important plan for the employment of the 33d included special training and preparations. Following the debarkation of the carrier borne 33d Group, the 31st Fighter Group (P-39's) was scheduled for the Tafaraoui area, followed by one squadron of the 47th Light Bombardment Group (A-20's) and two squadrons of the 15th Observation Group on D plus 4 and D plus 5.[10]

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The detailed plans for air force participation in the landings in the Oran area called for the dropping of parachutists by the 60th Troop Carrier Group at the two most important airdromes in the vicinity, Tafaraoui and La Senia. The paratroopers were to destroy enemy aircraft at La Senia and to hold the paved runway at Tafaraoui until relieved by troops landing to the east and west of the city. After Tafaraoui had been secured, Spitfires of the 31st Group (US), waiting at Gibraltar, were to fly in to furnish support against the French. Air force troops arriving on D-day and subsequent convoys had the mission of preparing for the reception of additional units flying in from England and Gibraltar.[11]

Casablanca

Strategically speaking, the main object of the western landings was to make secure a line of communication to Allied troops in Tunisia. As defined by the TORCH outline plan the Western Task Force's mission included the occupation of the port and airdromes at Casablanca, the establishment and maintenance of communications with Oran, and the build up of land, air and striking forces for possible use against Spanish Morocco. The plans called for three surprise landings and the securing by the end of D-day of at least one airdrome for land based aircraft. The Western Naval Task Force, or Task Force 34, under command of Rear Admiral Henry K. Hewitt, USN, included three battleships, seven cruisers, and many destroyers, oilers and minelayers. This fleet was to land 37,000 ground and air force troops under command of Maj. Gen. George S. Patton.[12]

Under Maj. Gen. E. N. Harmon the sub-task force BLACKSTONE was to land at Safi, capture the port and operate against Casablanca from the south. The main assault was to be at Fedhala, and the sub-task force BRUSHWOOD, under Maj. Gen. Jonathan W. Anderson, who commanded about 20,000 men, was to press southward toward Casablanca.

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The main object of the northern thrust [illegible], to be carried out by the assault force GOALPOST, commanded by Brig. Gen. Lucian K. Truscott, was to be at the Fedala airfield by the end of D-Day.

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Defenses along the coast at Casablanca were for mobile. The shore line is broken up by rocky points, low shelving beaches, and rocky outcrops. Mired vehicles are common even in good weather, and soft weather is rare in autumn. The French had taken the natural defenses with numerous concrete pillboxes and had moored in Casablanca harbor the incomplete battleship Jean Bart with its 15-inch guns. Some 1 August forces contained about 55,000 reportedly well-equipped troops. The aerial strength of the French in the Casablanca area was reported at about 130 planes, most of which were of outmoded types. The air forces were not expected to put up a sustained fight because of lack of gasoline and service facilities. The French naval forces were another matter. Well trained, well equipped, and well led, they could be counted upon to resist stoutly. In view of the disadvantages of terrain and the probable French defenses our U. S. military opinion held that a successful amphibious assault against the shores of Morocco was impossible--or at least highly improbable.

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And yet successful landings were made, covered by what was reportedly the coldest fog in 60 years. The men began debarking at 0400 on November 8. The troublesome terrain, as probably, with the aid of accurate naval gunnery, Safi was safely in the hands of the 47th Infantry by the end of D-Day. The initial objective, on the other hand, was accomplished with considerable confusion. Many units landed on the wrong beaches and one group of troop ships entered the Casablanca harbor where they were actually challenged by the battleship guns. Even the artillery fire, however,

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Oran

The Allied landings at Algiers, carried out by the Eastern Task Force, were primarily British in character, although the small proportion of American troops and the presence of an American commander, General Lydda, were supposed to give it an American complexion in the eyes of the French. The Algiers landings encountered no serious opposition; the city surrendered at 1 00 hours on D-day. Air support for the Eastern Assault Force was in charge of the Royal Navy's Fleet Air Arm and the Royal Air Force. The landings at Oran, on the other hand, were stiffly contested, and the Twelfth Air Force made a significant role in their operation.

Situated about 230 miles west of Gibraltar, the port of Oran enjoyed considerable natural protection. It lies in a semi-circular bay and its artificial harbor is bounded on three sides by cliffs. On the land side the city is ringed about by a chain of salt marshes. Three miles to the west of Oran is the auxiliary harbor of Mers-el-Kebir, also artificial and also at the foot of a cliff. Oran was well defended by coastal batteries, particularly on the high ground between the ports of Oran and Mers-el-Kebir. There were an infantry division and a mobile artillery in Oran, while Sidi-bel-Abbes, 35 miles to the south, was the headquarters of the Foreign Legion. In addition to the two principal airdromes at La Senia and Tafaraoui, there were several other landing grounds that figured in the Twelfth Air Force plans. The air force in the area consisted of about 55 fighters and 40 bombers, all obsolete. The local air force personnel were supposed to be predominantly pro-Allied in their sentiments.

The Center Task Force consisted of British naval elements and American ground and air force troops. Vice Admiral Thomas Troubridge, Royal Navy, commanded the naval forces, which included 46 vessels. The naval aircraft included 24 Seafires and 9 Albacores on the Furious, 15 Hurricanes on the Biter, and 9 Hurricanes on the Dasher. Brig. Gen. Lloyd R. Fredendall, USA, commanded the ground troops, which consisted of the First Infantry Division, both Combat Commands of the First Armored Division, a battalion of the 509th Parachute Infantry, and the 1st Ranger Battalion. Once command of the Troubridge, General Fredendall had control over all troops, air, and services until established in the Casablanca area. Colonel Lyman Lemnitzer, G-3 of the Twelfth Air Force, went to Oran on the headquarters ship as was in charge of all Twelfth Air Force operations until the arrival of General Doolittle.[20]

The missions of the Center Task Force were: to occupy the ports and airfields in the Oran area; to extend east and west to establish defensive flanks; to build up Army and Marine ground forces in case the Axis should attack from Spanish Morocco; and to extend eastward to Orleansville to meet the forces coming from Algiers. The amphibious missions were to be accomplished by simultaneous landings at Arzew, Mers el Kebir, and Oran. Troops were to be brought within the harbor area of Oran by a double envelopment under cover of naval gunfire. Two British cruisers, filled with U. S. troops, were to enter the harbor of Oran at 0600 to unload and then proceed to Mers el Kebir to reinforce the troops there. The 1st Battalion was to be landed on the docks of Oran by the 60th Troop Carrier Group. Paratroops were to be dropped at the airfield of La Senia, depending on whether the French resisted hostilely or peacefully. Responsibility for

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Security Information

the protection of the convoys and support of ground troops lay with the Fleet Air Army until airfields were secured and the air groups could fly in from Gibraltar.[20]

The Center Task Force left England on 25 October and passed through the Straits of Gibraltar on 6 November. The military establishment at Oran was alerted on the morning of the 7th by aerial reconnaissance, but the alert was abandoned as the convoys passed eastward. The invasion fleet was evidently mistaken for another attempt to provision Malta. During the moonless night of the 7th, the Center Task Force slipped back and took its position. H-hour was 0100.

In the center there was disaster. The plan to seize the harbor installations of Oran by anti-sabotage troops was a complete failure. The Walney and the Hartland were hit by fire from French ships in the harbor and both vessels blew up. Most of the men were lost.[21]

To the west of Oran, the 26th Regimental Combat Team landed unopposed at Les Andalouses. The advance to Oran was delayed by enemy artillery, but by mid-morning the western column of Combat Command B took the airfield at Lourmel. On the eastern flank the landings were made at Arzeu, and that outpost fell to the First Infantry Division by 0745. The eastern column of Combat Command B took Tafaraoui airfield by noon of D-day.

The Twelfth Air Force now received its cue to enter on the stage. On being notified that the Tafaraoui field had been taken, General Doolittle at Gibraltar ordered 24 Spitfires of the 31st Fighter Group to take off. This contingent arrived over Tafaraoui at 1700 on 8 November and had a brush with the not-so-friendly French air force. It had been arranged that four Hurricanes from a carrier would cover the landing. As the planes of the 31st came in for their landing four French Dewoitines

flying high over the field were mistaken for the friendly Hurricanes. As the pilots went in for their landing the Dewoitines attacked. One Spitfire was shot down. The remaining ones took off against the Dewoitines and brought down three.[22]

Despite this initial encounter, the French air strength had been crippled by the time the land based planes arrived on the scene. The last peep out of French air force at Oran was heard on the morning of the 9th when a single bomber dropped a lone bomb on Tafaraoui. Before noon, the French planes at La Senia had departed from Morocco. On the same day the first contingent of the AAF ground personnel rolled into Tafaraoui. By means of improvisation and use of French ammunition and gas, they kept the Spitfires flying.[23]

The aircraft of the 31st Group based at Tafaraoui lent important support to the American ground forces around Oran, which were encountering unexpectedly stubborn resistance. Shortly after dawn on 9 November, three Spits on reconnaissance patrol observed a large force moving northward against Tafaraoui. This column turned out to be a detachment from the famed French Foreign Legion moving up from Sidi-bel-Abbès. A continuing series of attacks, lasting four to five hours, was maintained against this target. The light French tanks were no match for the Spitfires with their 20-mm. cannon. At least five tanks were destroyed, numerous trucks were put out of commission, and troops were scattered by the determined efforts of the air forces. The battered French column at last turned back and was not molested further. At the time this action was taking place, Combat Command B was fully occupied in the assault on La Senia, and the action of the Spitfires probably prevented the recapture of Tafaraoui.

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The land based aircraft rescued Tafaraoui from a menace in another sector. About noon on 9 November, French artillery batteries began shelling the airfield with 75's from a hill two and a half miles away. Two flights of the 31st Group attacked and quickly silenced these guns.[24]

During the afternoon of the 9th, General Doolittle arrived from Gibraltar in a B-17 to take personal command. By this time radio communication with the headquarters ship, Largs, had been established in order to carry out missions in support of the ground forces. The command ship assigned several missions. In one instance, the air forces were directed to attack an enemy column east of La Macta on Arzeu Bay. By the time the message reached the air forces it read west of La Macta. Two aircraft flew over a column to the west, which turned out to be American troops. No damage was done to the ground troops but two of the American planes were shot down. This mishap resulted in the establishment of a program of recognition training whereby the ground troops were given instruction in aircraft recognition and the pilots studied mechanized equipment of the Army.[25]

There was another case of mistaken identity, occurring almost at the same time. The U. S. artillery requested the air forces to attack a column of tanks. In this case General Doolittle himself asked the artillery officer who had made the request if he were positive the tanks in question were French. The planes went out and took one pass at the tanks, which promptly displayed an American flag. Seventeen missions, totalling 45 sorties were flown against various French targets on 9 November, and close liaison was maintained with Combat Command B.[26]

Meanwhile the ground forces were making progress. On 9 November contact was made between the eastern and western arms of Combat Command B.

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Once a junction was effected the fate of Oran was sealed: the only recourse left was street to street fighting within the city itself. The French comprehended the situation and started armistice negotiations around noon on 10 November. After the 8th few profitable targets presented themselves to the fliers of the 31st Group but they continued to carry out missions involving convoy escort, tactical reconnaissance, and ground support.

Most accounts of the North African invasion have overlooked or underemphasized the contribution of land based aircraft. One popular account, for example, states that: "the Twelfth Air Force's contribution to the taking of Oran was small and without weight."[27] And yet, at the time, air and ground commanders alike agreed that the fighters had done a splendid job. General Doolittle, a man not given to exaggeration, said: "I cannot speak too highly of the work done by those groups. They twice stopped mechanized columns that were attacking the airport at Tafaraoui from the south...had it not been for the prompt and efficient action of the Spitfires, Tafaraoui and our air units would have been lost and the war at Oran lengthened and made much more bloody."[28] Maj. Gen. Terry Allen praised the work of the 31st in a letter of commendation on behalf of the 1st Division. Aircraft losses during the three days battle were moderate. Altogether seven planes were lost: one in combat; four to ground fire (two of which were brought down by friendly guns), and two in taxiing.[29] It was no mean accomplishment: the beachhead had been secured and Algeria was now open to aerial reinforcement for the campaign developing to the east.

Although the air forces played a more prominent role than they have generally been given credit for, it would probably be a mistake to attempt to draw too many lessons from the amphibious phase of TORCH. As compared

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to later landings, air force activity was certainly on a limited scale. There was no preliminary bombing, there almost no counter air force activity, and the fighting did not last long enough to put close support to a real test. So far as the air forces were concerned the real lessons derived not so much from the amphibious phase as from the fighting that followed the landings. The Tunisian campaign brought out the inadequacies of American doctrine as set forth FM 31-35 of 9 April 1942 which provided that aviation units could be specifically allocated to subordinate units and that the final decision as to the priority of targets would rest with the commander of the supported unit. Apparently the planners of TORCH ignored the principles of the employment of air power that had been learned in the Western Desert.[30] The essence of the doctrine that had been evolved by trial was that: "The Soldier commands the land forces, the Airman commands the air forces; both commanders work together and operate their respective forces in accordance with a combined Army-Air plan...."[31]

Since June 1942 when he arrived in the Middle East General Lewis H. Brereton, Commanding General of the Ninth Air Force, had been sending a steady stream of messages and reports on the system of air-ground cooperation as it existed in the Western Desert but apparently this information had not materially altered U. S. thinking at the time of the landings.[32] Subsequent fighting in Tunisia, however, effected an alteration in U. S. doctrine. By February 1943 General Eisenhower had organized his forces so as to provide for army, navy and air commanders and the principles of the employment of air power developed in the Western Desert had been introduced.

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Chapter III

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The amphibious assault on Sicily (HUSKY), 10 July 1943, was the result of strategic decisions made at the Casablanca conference. At this Conference meeting held in January 1943 the American military planners argued again for the direct blow against Germany. By dwelling on the difficulties of a cross-channel invasion in 1943 and pointing to the advantages of continuing the main effort in the Mediterranean, the British scored another but temporary victory for the policy of encirclement.

In accordance with the Casablanca directive General Eisenhower set up Force 141 to plan for the invasion. After [illegible] produced a plan which called for eight simultaneous assaults along a front of only 100 miles of coastline in south east and southeastern Sicily. The primary consideration in choosing this front was the airfields which were considered to be [illegible]. The Eastern Naval Task Force, conveying the British Eighth Army under command of General Sir Bernard L. Montgomery, was to land on the southeastern shores, while the Western Naval Task Force, conveying the U. S. Seventh Army under Lt. Gen. George S. Patton, was to land on the southwestern shores. The American troops were divided into three assault forces, JOSS, DIME, and CENT. The CENT-DIME assaults, under immediate command of Maj. Gen. Omar N. Bradley, in command of II Corps, were to land in the Gela-[illegible] area, capture the airfields, and make contact with the British in the vicinity of [illegible]. The JOSS assault under command of Maj. Gen. L. K. Truscott was to land in the Licata area, capture the port and airfield, protect the left flank of the invasion, and, on the right, gain contact with II Corps.

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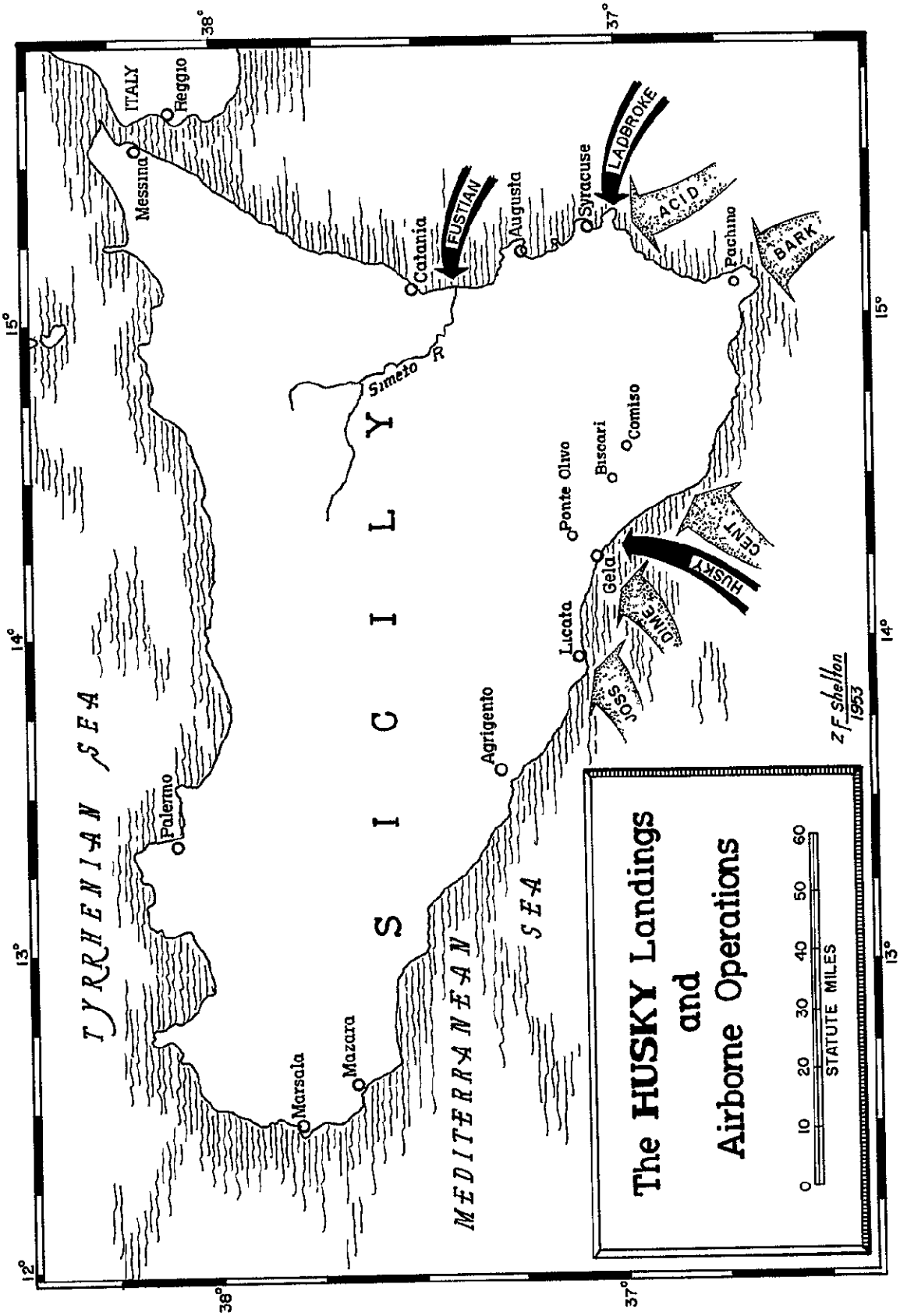

Although the establishment of special headquarters and planning staffs further complicated an already involved air organization, there was no fundamental change in the system of command set up on 18 February 1943 for the Mediterranean theater. At that time the Mediterranean Air Command (MAC) had been established. MAC was a small policy and planning staff made up of American and British officers headed by Air Chief Marshal Sir Arthur W. Tedder. On the command level directly under MAC were the Northwest African Air Forces (NAAF) commanded by Lt. Gen. Carl Spaatz, the Middle East Air Command under Air Chief Marshal Sir Sholto Douglas, and the Malta Air Command under Air Vice Marshal Sir Keith Park.[2]

By far the largest of these commands was NAAF, which was organized into three main sub-commands. Northwest African Strategic Air Force (NASAF), under command of Maj. Gen. James H. Doolittle, was charged with the direction of all bombers and escort fighters for strategic operations. The main components of NASAF were the XII Bomber Command and the 330 and 331 Wings, RAF. The Northwest African Tactical Air Force (NATAF), under Air Vice Marshal Sir Arthur Coningham, coordinated the efforts of the air force operating in support of ground troops. The Tactical Air Force consisted of the Desert Air Force, the XII Air Support Command, and the Tactical Bomber Force. The Northwest African Coastal Air Force, under Air Vice Marshal Sir Hugh P. Lloyd, had responsibility for the air defense and sea-air reconnaissance of Northwest Africa, as well as control over antisubmarine operations, shipping strikes, and air-to-air and air-to-ground recognition systems. NACAF consisted of 242 Group RAF and the XII Fighter Command. In addition to the above, NAAF included an air service command, a training command and a photographic wing.

The Ninth Air Force was the American component of the Middle East Air Command. By the time of the Sicilian campaign only two B-24 groups (98th and 376th) were operating from their Cyrenaican bases under control of Maj. Gen. Lewis H. Brereton. The units of the IX Fighter Command were operating under NAAF as follows: the 57th and 79th Fighter Groups were under Desert Air Force and the 324th Fighter Group was attached to XII Air Support Command; the 12th and 340th Bomber Groups (H) were under Tactical Bomber Force.[3]

Pantelleria

A necessary preliminary to the invasion of Sicily was the reduction of Pantelleria, and the less important islands of Lampedusa, Linosa, and Lampione. Not only did these islands lie directly in the path of invasion but the powerful Freya radio direction-finder stations on Pantelleria and Lampedusa provided advanced listening posts from which the movement of aircraft over the central Mediterranean could be detected, while the ship watching stations could record the movement of shipping. In addition, the airfield on Pantelleria, believed to be capable of accommodating 80 single engine fighters, would help provide the close fighter support necessary during the initial stages of the forthcoming invasion. The plan was to launch an intense aerial attack against the island with the idea of so terrorizing and paralyzing its defenders that it could be seized without the use of ground troops, or to give such an assault every chance of success with the minimum of loss. As it turned out, intense air and naval bombardment made an assault by ground troops unnecessary but most of the essential elements of the Mediterranean-European pattern of amphibious landings were worked out in Operation CORKSCREW.

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In the first place, a joint command, directly responsible to General Eisenhower was set up. Rear Admiral R. F. McGrigor of the Royal Navy, Lt. Gen. Carl Spaatz, commander of the Northwest African Air Forces, and Maj. Gen. W. F. Clutterbuck, the general officer of the 1st British Infantry Division, were placed in command of the naval, air and ground forces respectively. A combined headquarters was established at Sousse. From the time of embarkation this advance organization was to be aboard a headquarters ship from which it would direct all forces taking part in the operation. Should an assault be necessary, D-day would be 11 June. The air plan provided for two periods of preparatory bombardment. Up to and including 6 June steady and increasing pressure would be maintained. To avoid any indication that Pantelleria had been singled out for invasion other targets in Italy, Sicily and Sardinia would also be bombed. Beginning 7 June the island would be bombed around the clock. Since Pantelleria was being used as a sort of laboratory experiment of the ability of air power to neutralize strong defensive positions, targets were chosen with the greatest of care and scientific estimates of the bombing effort necessary to knock out such targets were made. To carry out the bombing program NAAF had slightly over 1,000 planes against 900 enemy planes on or within range of Pantelleria.[4]

Although Pantelleria had been hit intermittently during the closing days of the Tunisian campaign, the real offensive began on 18 May and increased in intensity until the island surrendered. Attention was focused at first on the harbor and airdrome but as these targets were neutralized emphasis shifted to coastal batteries and gun emplacements. In attempting to neutralize some 80 gun positions it was recognized that direct hits

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would be few. If, however, as many as one third of the guns in each battery could be knocked out it was believed that the remainder could be silenced by such secondary factors as damage to scientific instruments, disruption of communications, destruction of supplies, and demoralization of crews.[5]

According to plan, two opportunities were given the defenders to surrender, one on 8 June and another on 10 June. When the second invitation brought no response three convoys sailed from Sousse and Sfax. Before it became apparent that the defenders were trying to surrender on the 11th the assault craft were approaching the beaches and could not be recalled. The full air cover planned for the ground force was accordingly given until the first phase of the occupation was completed. With the exception of a small number of prearranged flights, all Tactical Air Force activities were controlled by the air force officer in the combined headquarters on board H.M.S. Largs. As precaution against possible sinking of the Largs, a stand-by headquarters was stationed on board H.M.S. Royal Ulsterman. Only small arms fire opposed the landing and as soon as the Governor of the island could be located he signed the terms of surrender. Following the example of Pantelleria, the Pelagie Islands, Lampedusa, Linosa, and Lampione, surrendered on 14 June.[6]

The capture of Pantelleria not only cleared the way for Sicily but furnished many valuable lessons that were applied in later landings. Some of these lessons included the desirability of developing a better system of communications, the avoidance of premature crossings of the bomb line by invading troops, more comprehensive briefings, coordination of intelligence in the three arms of the combined force, and the importance of aerial photography in such an operation. The system of controlling the tactical

air forces from a headquarters ship was to be used and improved upon in subsequent operations. Probably the most important lesson had to do with bombing data. Some of the more enthusiastic advocates of air power hailed Pantelleria as proof positive that air power alone could induce heavily defended positions to surrender. More sober critics realized that the defenses and defenders of Pantelleria offered unusual opportunities for the exercise of air power, opportunities that were unlikely to present themselves with great frequency in the future. Furthermore, Pantelleria brought out certain limitations as well as potentialities of air power. It was found, for example, that even with the huge quantity of bombs dropped and even with little or no enemy interference it was extremely difficult to obtain direct hits on gun emplacements. Examination of the 80 guns that had been bombed revealed that only 2 had received direct hits. However, 43 were damaged and of these 10 were completely unusuable. It was found that since the 1000-lb. bomb had an effective radius only about one and a half times that of the 500-lb. bomb, the latter should be used against small targets because of the greater number of bombs that could be employed. It was also found that bombs fuzed with a delay of .025 seconds gave better results than bombs instantaneously fuzed.[7] In other words the experience of Pantelleria pointed to the desirability of making a careful study of terrain and soil in the target area before deciding on the type of bombs and fuzing to be used.[8]

Pre-Invasion Operations

The elimination of Pantelleria and Lampedusa cleared the way for concentration on bombing in direct preparation for Sicily. The Plan for the Employment of the Northwest African Air Forces and Attached Air Forces

issued in May 1943 reflected doctrines of the employment of air power that had been developed in the Western Desert and Tunisian campaigns. These doctrines, soon to become official U. S. doctrine, held that the air forces could make their greatest contribution to an amphibious operation, or any other war-winning operation, by establishing superiority over the enemy air force and preventing it from interfering with the invasion and by preventing troops and supplies from entering the assault area. These missions accomplished, the air forces could then lend effective direct support to the advance of the land forces. Accordingly, NAAF, assisted by the air forces in the Middle East and Malta, was to destroy or neutralize the enemy air forces within range of the invasion area, protect naval operations and assault convoys, attack enemy shipping and naval forces, and protect Northwest African and captured areas of Sicily against air attacks. It would also participate in the cover plan and in diversionary operations aimed at keeping the enemy air forces as widely dispersed as possible.

Four phases of operations were contemplated: a preparatory period, an assault period, a period covering the attack on Catania, and a period covering the reduction of the remainder of the island. It was not intended to apply more than ordinary pressure until D minus 7, since many units needed rest and refitting and it was necessary to avoid heavy losses during this period. From D minus 7 to D minus 1, the air forces were to step up their offensive against the enemy air forces with the object of making them incapable of interfering with the landings. Targets would be the main enemy airdromes in Sicily, Sardinia and southern Italy together with submarine bases, communications lines, and industrial plants. In concen-

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fleeting targets, since such attacks usually produced only emphemeral results at high cost. A 12-hour notice would in general be required before attacks by medium and heavy bombers could be executed.

The air plan dealt for the most part with broad policies to be followed in the application of air power, but it was not related in minute detail to the Army and Navy plans. This was deliberate. All commanders were agreed that the primary function of the air forces in all phases of the attack was the neutralization of the enemy air force, a target that could not be pin-pointed in advance. Furthermore, it was foreseen that one landing might go well, while in another area the ground situation might become extremely precarious, in which case it would be necessary to shift aircraft from one sector to another.[9]

In accordance with the air plan, the primary targets during the preliminary phase were the main enemy airfields in Sicily, Sardinia, and southern Italy. The effect of the effort developed in June was the withdrawal of his bomber force from Sicily and Sardinia. Having driven the enemy back thus far, the Allied air forces continued with an attempt to force a similar withdrawal of the small bomber force still based in the heel of Italy. On 2 July, 91 Liberators of the Ninth Air Force attacked with good results the Grottaglie and San Pancrazio airdromes where GAF bombers were based, and also Lecce, a German fighter base. On 3 July bombers of NAAF attacked all the advance landing grounds in Sardinia.[10] For the next three days, the combined air striking power was concentrated in an onslaught against the enemy's airdromes in eastern Sicily, where the bulk of his fighter strength was now based. During the period, 4 to 9 July, NAAF flew nearly 3,000 heavy and 560 medium bomber sorties against Gerbini

and its satellites, while the B-24's of the Ninth flew 79 sorties. Catania and Biscari also were plastered. The effect of this unprecedented blitz against enemy airfields as a prelude to invasion was to render many of the Sicilian airdromes unserviceable and to drive upwards of one-half of the enemy air force either out of Sicily or to unknown landing grounds. Sardinian airfields were practically neutralized after 3 July.[11] Although no figures are available as to the exact number of aircraft destroyed on the ground during the pre-invasion period, one report states that up to 13 August approximately 1,100 aircraft, including those abandoned as well as destroyed, had been examined by Allied personnel on the island. As had been expected, also, the persistent bombing of airfields had the effect of forcing the enemy to come up and fight. During the week, 3 to 9 July, 139 enemy aircraft were destroyed in air combat as compared with 31 destroyed during the week of the invasion.[12]

During the pre-invasion period 76 per cent of the total Allied bomber effort was devoted to airfield attacks and over 3,000 tons of bombs were dropped in more than 2,000 sorties. So successful was the effort to neutralize the enemy air force prior to the commencement of the land battle that it was possible after D-day to reduce the scale of attacks on airfields to 21 per cent of the total bomber effort.[13]

The efforts to neutralize the enemy air force prior to the invasion of Sicily pointed to several lessons that would be of use in future operations. For one thing, it was learned that attacks, to achieve maximum results, must be well-timed and often-repeated. Spasmodic attacks, though capable of causing temporary damage, seldom produced decisive results. It was found desirable also to define clearly the aim of each attack, as the immedi-

ate aim varied from time to time. In some cases the airfield area was divided into definite sections which were assigned to certain formations. In attacking airfields over a wide area, one device adopted was to concentrate upon all airfields in a given section with the exception of one or two, with the purpose of causing aircraft still in the air to be diverted to those fields. A concentrated attack would then be made against the fields hitherto left unscathed. During the pre-invasion period about 50 per cent of the night effort of the Wellingtons operating under NAAF was employed in airfield attacks. Light and medium bombers of NATAF were also used on night missions during the moon period.[14]

In order to achieve maximum dispersion the enemy resorted more and more to the use of satellite strips. To counter this move, mass strafing attacks by fighter-bombers (principally P-40's and P-38's) were employed with excellent results. It was found that the 20-lb. fragmentation bomb was particularly effective against grounded aircraft. During the last two days of the pre-invasion attack demolition bombs were used on a greater scale than fragmentation in order to make the fields unserviceable by cratering. The fusing was usually either instantaneous or short delay. Five-hundred pounds bombs with six-hour and 12-hour delay fuses were dropped in small numbers.[15]

In addition to the operations against enemy airfields, the Allied air forces also carried out a bombing program against certain focal points to prevent the enemy from rushing in troops and supplies to meet the threatened area. These focal points included the Messina bottleneck, terminal ports on the Tyrrhenian Sea--chiefly Naples, Palermo, and Trapani--railway marshalling yards at these ports and along the western coast of the Italian boot, and the small ports in southern and eastern Sicily. In an attempt to interrupt transportation down the boot, medium bombers attacked the

[illegible] guards at Selemo and additional. A large concentration of [illegible] industrial and communication centers in northern Italy was open to attack. These were also the objectives of Sardinian ports and bases. In this period [illegible]; but because the major part of the air effort was directed against airfields, as indicated above. These [illegible] first objectives were continued almost exclusively to night [illegible] by [illegible] Lightning-bombers.[16]

The Northwest African Tactical Air Force played an important role in the invasion of Sicily. In addition to special reconnaissance photographs required for the planning stage the [illegible] of 12,000 square miles of Sicily was covered. A scale of 1:5,000 [illegible] was used for the majority of 1 to 50,000. All [illegible] beaches were covered from Gibraltar to the Adriatic and twice a day for the major ports in the Italian Flying Boat Command. Ports in Sardinia [illegible] were covered once a day. The Air Force's photo service was required to cover all airdromes in Sicily, Italy, Sardinia, and Corsica. Towns, industrial areas, and communication lines, in addition to airdromes, were photographed to provide information for the Allied Air Force in the selection of targets.[17]

Tactical defense, convoy protection, shipping strikes, anti-submarine activity, and special reconnaissance carried out by the Northwest African Tactical Air Force (NATAF). Strength of the invasion was 1,646 aircraft, 13% of which were [illegible], 2% [illegible], and 2% [illegible]. Practically the entire strength of the fighter and fighter-bomber units was used to build up the protective umbrella over the beaches so that time could be gained to [illegible] the vulnerable transport aircraft and gliders on the ground.

In addition to guarding the life lines of the Allied armies, it was the mission of Coastal to dislocate and destroy those of the enemy. In the period between 24 June and 9 July the ship striking force damaged two large merchant vessels, and sank at least one 800-ton schooner, a 6,000-ton cargo vessel, and a 3,000-ton auxiliary craft.[18]

On the eve of invasion the Allies enjoyed overwhelming air superiority. The German and Italian Air Forces were estimated to have a total of 1,500 to 1,600 aircraft based in Sardinia, Sicily, Italy and Southern France, compared to an Allied force of some 4,000 aircraft. There were approximately 114 British and 146 American squadrons. Axis aircraft were believed to have an average 50 per cent serviceability, though probably in the battle area it was even less.[19]

The Assault Period

From 8 July onward protection of the assault convoys represented a heavy commitment of the air forces. Off the coast of Algieria and Tunisia the convoys were protected by the NACAF, assisted by the 33rd Fighter Group based on Pantelleria. Malta-based aircraft took over the protection of convoys as they came within 50 miles of the island. The enemy made no attempt to attack the convoys while en route. Admiral Hewitt stated that convoy protection was the most carefully planned and most successfully executed of all air force roles.[20]

On the night of 9 July intensive and varied operations were carried out. Although it is not within the province of this study to consider the details of the airborne operations, mention should be made of their role in HUSKY for they formed an important part of the operation and the experience gained was useful in later landings, notably Salerno and Normandy. The object of

[redacted] the two brooms, [redacted] Field Order No. 1, [redacted] airborne invasion, [redacted] nature of defensives these capture would [redacted] assignment to the ground troops. [redacted] Division was landed in Tunisia by the 51st Troop Carrier Wing; in Field Order No. 1 the 52d Troop Carrier Wing was assigned to the 82d Airborne Division [redacted]. Because of the necessity of avoiding friendly naval vessels which would be fired on by all firearms, [redacted] for navigational aids, the combination was considered desirable; course runs from Tunisia to Malta were more nearly similar. Of the 143 gliders released in the 144 serials, only 12 landed in the general vicinity of their objectives, at least 47 landed in the sea, and the remainder were scattered in the southeastern part of Sicily. [redacted] of the glider-borne troops, the 2 battalions of 65 gliders each were landed in one drop zone (DZ) extending in rear of their objective, the canal bridge south of Syracuse, and holding it until relieved by the ground troops. Heavy winds and faulty navigation caused the 2,700 paratroopers of Field Order No. 1 to miss their check points and to land in widely separated areas. Nevertheless a single battalion of paratroops was able to seize the primary objective, the high ground and junction with village and road, a position that would have enabled the 82d Airborne Division to reinforce it by the morning of D-1 day. In addition to the real paratroops, some 600 dummies were dropped on night of D-1 to acquire the misled hostiles.[21]

If Field Order No. 1 were undertaken, Field Order No. 2, carried out on the night of 11 July, was a disaster. The reinforcing mission of about 2,000 paratroopers of the 504th Combat Team had not only to fly the same complicated route of the earlier airborne mission but also to

[redacted]

previous two battle fronts for about 25 miles. Only too late was it learned that friendly aerborne troops had already landed behind the enemy's main line of resistance by glider and parachute; and that the C-47's carrying the paratroops were fired on by friendly naval and ground units both while en route to and while over the drop zones. Of the 144 C-47's which took off, 23 failed to return and over half of those that returned were so badly damaged as to be out of commission. The paratroops took practically two days to consolidate their position and establish effective communications with friendly troops. Their casualties were unofficially reported as running very high and to be "in excess of any actual troop bulletin on the enemy."[23]

The fourth airborne operation in Sicily was the airborne division, [redacted], carried out on the night of 13 July. This division encountered many of the same difficulties of the previous operations but was slightly more successful. The objective of "DOT" was to seize and prevent the demolition of the bridge over the Simeto River until the British XIII Corps could take across. Fifty-four gliders and 137 transport aircraft and 17 tow aircraft to lift a total of 1,700 troops. Only 45 of the transports succeeded in dropping their paratroops on or near the drop zones and 12 of the tow aircraft released their gliders at the proper points but the gliders were forced to ditch and prevent its demolition. Eleven of the transport aircraft were destroyed and 40 per cent of the total number were put out of commission directly as the result of friendly anti-aircraft fire. A report characterized every flight as "inaccurate" and "ill-fated flight, as 'very inaccurate.'"[23]

In addition to the four large scale airborne missions there were a

[redacted]

group of small missions called CHESTNUT, designed to attack and harass enemy lines of communication.[24]

Despite the errors made and the heavy losses incurred, the airborne operations made an important contribution to the success of HUSKY. General Patton, commander of the Seventh Army, stated that at least 48 hours were saved by the action of the 82d Airborne Division in the western assault area;[25] while General Montgomery, commander of the British Eighth Army, estimated that the airborne assaults against the two bridges south of Sryacuse and south of Catania accelerated his advance by no less than a week.[26]

These achievements were accomplished, however, only at a high cost in both men and material and it was evident that much remained to be learned about airborne operations. Immediately after the invasion steps were initiated to review the Sicilian experience in order that lessons learned might be put to good use in future operations. An important doctrine that emerged from these studies was that the use of airborne troops should be confined to missions suited to their role and the final decision should rest with the air force commander. Such a decision should be made in time to permit notification of all air, ground and naval forces. The use of airborne troops as reinforcements should be confined to serious emergencies. In spite of all the shortcomings and failures General Eisenhower thought that the outstanding tactical lesson of HUSKY was the potentialities of airborne operations.[27]

But to return to the night of 9 July. In addition to protection of convoys and the dropping of real and dummy paratroops as well as gliders, NAAF carried out bombing attacks to soften resistance, to provide diversionary assistance to the airborne assaults, and to prevent the rush of enemy reserves

to the threatened areas. Medium and light bombers carried out attacks against varied targets in the western area of Sicily while RAF Wellingtons, Halifaxes, and Liberators bombed targets in southeastern area to weaken resistance to the initial assault.[28]

H-hour was 0245 on 10 July. Planning and execution of the approach from the point of view of navigation and seamenship was, according to General Eisenhower, one of the highlights of the operation and "left nothing to be desired."[29] Despite unfavorable weather conditions most of the assault waves made their landings not more than a few minutes behind schedule. The greatest delay occurred in the case of the 45th Division landings, where H-hour was postponed a full hour. A large degree of tactical surprise was achieved.[30]

It was anticipated that the enemy air force would exert every effort to attack the shipping and beaches early on the morning of D-day. The number of Allied fighter aircraft available was not adequate to provide continuous cover over all beaches throughout the 16 hours of daylight. Sufficient fighter strength was present in the theater, but the limiting factors were : (1) the operational capacity of the airfields on Malta and Pantelleria, (2) the long distance from the operating fields to the assault areas and the resulting short time of cover provided by each sortie, and (3) the large commitment of fighter escort for the bombing missions. In view of these circumstances it was agreed that continuous fighter cover should be provided over two of the beaches throughout daylight; that all landing areas should have continuous protection for the first two hours of daylight and for the last one and a half hours of daylight ; and a reserve wing should be kept at a high degree of readiness to reinforce any area as the situation demanded.

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...following allocation of aircraft are made in order to avoid the necessity for employment of the fighter forces:[31]

Area	Type	Use
VJ1	5 Bomber squadrons	Malta
VC	5 " "	"
CVT	5 " "	"
DV2	1 & 1/3 fighter group(Chase)	Home
JC33	1 " " " (P-40's)	Ambellasia

During the assault phase all fighters, including those operating from Ambellasia, were under control of CTF 3, Adm. [redacted], U.S.N., operating provided forward direction of the 2/3 in the DV2 and JC33 areas, and the U.S.S. Iowa, did not in the CVT area. Subordinate to the convoy commander providing visual direction over VJ1 and VJ2 were the U.S.S. Chicago and Pittsburgh, both heavy CA. Over all air hovered the land (Army) based escort commander, who had great weight as fighter control aboard the convoy. The U.S.S. Iowa's fighter director units on board the flagships were used for ship and task force defense only for the Ambellasia invasion. The aircraft were highly trained, but had no experience in amphibious and had no opportunity for practice. In spite of these handicaps, and in spite of certain technical problems concerning the fighter direction of the assault area, the force commander was completely convinced that the air cover was adequate, but preferred the use of the fighter directors ships, in the opinion of Admiral [redacted], "and excellent."[32]

Orders for air cover involving VJ1's and VJ2's were sent by radio from Admiral [redacted] to the U.S.S. Iowa, whose fighter director officers and radio

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through XII Air Support Command (Rear), located on Cape Bon Peninsula. Requests that required light and medium bombardment aircraft were passed by XII Air Support Command to higher headquarters. Tactical reconnaissance was furnished by 111th Reconnaissance Squadron, which flew predetermined routes. Spot reconnaissance was also provided by diverting planes from fighter cover. Special reconnaissance missions were treated as air support requests. During the assault phase, 10-12 July, the 31st and 33d Fighter Groups were located on Gozo and Pantelleria, respectively, and the other units were located on the Cape Bon Peninsula.[33]

It is typical, perhaps, of divergent service view that the Navy maintained that "close support by aircraft in amphibious operations, as understood by the Navy, did not exist in this theater,"[34] whereas NAAF maintained that the "cover proved successful."[35] In support of its view the Navy pointed out that the average number of fighters over each of the areas CENT, DIME, and JOSS was approximately 10 aircraft; that there were several "holidays" in the schedule when no cover existed; and that patrols were maintained at one level only. Even when requests for close support were granted, the time lag, according to the Navy, was excessive, sometimes as much as 12 hours.

In support of its view NAAF pointed out that on the day of the invasion the fighters flew over 1,000 sorties. Although the Navy was prepared for the loss of up to 300 ships during D minus 1 and D-day, the number lost from enemy air attacks to nightfall on 10 July was only 12. The majority of these losses occurred in the JOSS and DIME areas, where the air attack was strongest and where the anchoring of ships as far out as six miles had the effect of over-stretching fighter patrols and permitting the enemy to get

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through the screen. Furthermore, fighters on patrol were continuously fired upon by Allied ships, so that patrols ordered at 5,000 and 8,000 feet were forced up to 10,000 and 14,000 feet. At greater heights friendly fire was less hazardous but the danger of enemy aircraft breaking through was enhanced.

Further data presented in the report of the Western Naval Task Force itself would seem to warrant the conclusion that, although operating under extremely difficult conditions, the air forces performed a creditable job in protecting the invasion fleet. According to this report, during the period 10 to 12 July, approximately 200 enemy flights were plotted on the operations board. Of this number, over half were inland flights that did not reach the assault areas. There were 89 plotted enemy raids aimed at the assault areas, of which 26 were intercepted and driven off prior to entering the areas. The remaining 63 raids were, in most cases, engaged by the fighter cover.[36] Not included in these 89 plotted raids were frequent low-level attacks that could not be picked up by radar. These raids achieved a good deal of surprise by coming in very low, flying down the valleys, and darting over the ridge of hills onto the beaches.

With little effective opposition from the low-grade Italian forces defending the beaches, Allied ground troops made excellent progress once they were ashore. By the end of D-day all beachheads in both the American and British sectors were secure. The Pachino landing field and the port of Syracuse fell during D-day. On the 11th the enemy launched his major effort to throw the invaders back into the sea. The main weight of the counterattack, which began early in the morning and lasted throughout the day, fell against the Americans near Gela. Enemy infantry, spearheaded by Mark IV tanks, at

on his route beneath an obstacle 3,000 yards in depth. Every inch of it was covered by small arms and artillery fire. By the end of the day the Seventh Army had established under hard circumstances a firm bridgehead and extended its beachhead on both flanks to a depth of 4 miles. On the 12th the enemy resumed his counterattacks in an effort to eliminate the bridgehead by thrusting his tanks and infantry against the U. S. Division south of Gela. By the 13th most of the enemy had been repulsed and the enemy force was to abandon its effort to drive the Americans into the sea. The captured airfield was operational during the morning, while on the extreme right, elements of the 45th Division contacted the British Eighth Army. During the afternoon the advance troops of the corps moved ashore from the [redacted] and established themselves in force. The critical phase of the battle was over and the operation was officially to stay. [37] On the right the other brigade was occupied on the 14th of 15/16 July in mopping up enemy naval bombardment.

The force established was increased during the night. On the day excellent targets on the enemy roads were presented and a large number of enemy motor transports were destroyed. On the 11th a total of 36 C-47's of the Twelfth Air Force were sent on flight operations while 120 C-47's were diverted to attack motor transport columns, trains, and airdromes in Sicily. In these attacks it was claimed that 243 motor transports, two locomotives, two C-47's were destroyed on the ground by our pilots and aircrew members. On the following day over 1,000 sorties were flown by fighter and fighter-bomber aircraft striking at lines of communication in southern and central Sicily. Under cover of these attacks the enemy was officially known that the Allies were able to strengthen and enlarge the beachhead. [38]

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In encounters with the enemy air force during the assault, Allied fighters were conspicuously successful. Of the estimated 100 or more enemy fighters encountered on D-day, the Spitfires shot down 12, probably destroyed 3, and damaged 11 at the cost of 11 of their own number. The following days became even more costly to the enemy. After 12 July the enemy began to diminish his day effort but not his night sorties to increase the scale of his night attacks. To provide the best protection against night attacks ground control interceptors (GCI's) were installed in USAAF fighter planes in the XXII, XIX, and XII TAC areas. Three airborne GCI's were in operation during the first two nights following the landing, and although the sets available for installation and training was inadequate, the results achieved required well for the future.[39]

In addition to the fighter and fighter-bomber effort which was to prevent the enemy's invasion force, the full weight of the Strategic Air Forces was brought to bear against the enemy during the assault period to neutralize his air force and prepare the way for the Allied advance. From D-day onward the main emphasis was on communications targets. Four groups of B-17's and five groups of B-24's from 15 Bomb Command, were in almost continuous operation. The result of the combined efforts of the Strategic and Tactical Air Forces was a reduction of air resistance. The night was the best day on which the enemy was able to put up any effective opposition in Sicily. The loss of his coastal radar stations and other vital installations on D-day meant that the enemy had recourse to county control only. His night effort increased temporarily, but that too was effectively countered.[40]

The essential pattern of air force participation in large scale amphibious operations was first established in the invasion of Sicily. The main

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characteristics of the air phase of the Philippine operation as they emerged from this experimentation is follows: (1) reduction of enemy resistance by a pre-invasion destruction of enemy airfields and communication centers; (2) interdiction of the invasion flow of reserves, supplies and other materiel; (3) concentrated efforts against critical centers of communication to isolate the battle field; (4) close support of ground troops by tactical bombing and strafing before the advance of our ground forces; and (5) a concentrated effort during the initial assault operations.

In all but the most unfavorable weather the XCI's ordered and executed all the assault beaches. The subsequent XCI's were in operation on the first two nights following the landings and were brought ashore at the earliest opportunity. These forward control stations enabled night fighters to operate with high degree of efficiency and relieved long range enemy night attacks.

The air forces were criticized for not giving ground commanders exact information as to what support could be expected. Due to the difficulty of translating the requests of ground commanders, inexperienced for the first time in the use of air power, the air commander is responsible for giving air power in all sectors and for distributing the air operations in relation to the enemy air activity. A unified command because the American military doctrine of ground commanders having subsidiary control of air units operating in local support of their forces. In spite of all criticism it is now generally agreed that casualties from enemy air action were considerably lighter and a large number of ships were able to land troops and supplies without serious loss or interference from the enemy air forces.

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The troop carrier operations that spearheaded the assault were the least satisfactorily executed phase of HUSKY. The salient shortcoming was in night navigation. The dropping of a parachute brigade within Allied lines on the second night of operations purely as a reinforcement was unsound in principle. Failure to arrange a safe corridor for passage resulted in high casualties inflicted by friendly troops and ships. Dummy paratroops were used with success and this form of diversion was recommended for future operations. The experience in Sicily pointed clearly to the conclusion that the Air Commander in Chief should have the major share of control of airborne operations and his word should be final as to whether such operations should be undertaken.

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Chapter IV

SOUTHERN ITALY: THE FIRST CHALLENGE

Definite plans for post-HUSKY operations had not been agreed upon when the TRIDENT conference was held in Washington in May 1943. This conference served to bring out again the basic differences between British and American strategy. At the first meeting the Prime Minister produced arguments for a continuation and enlargement of the war in the Mediterranean. Unimpressed, the President thought an Italian campaign might result in heavy attrition of Allied forces and might be a drain on resources, especially if Italy had to be occupied and supplied. The Prime Minister countered this by saying that it would be unnecessary to occupy all of Italy--it would suffice to hold such ports and air bases as were needed for operations against the Balkans and southern Europe. Finding themselves in disagreement the President and Prime Minister turned the matter over to the COS. The upshot of TRIDENT was that General Eisenhower should plan such operations in exploitation of HUSKY as would be best calculated to eliminate Italy from the war and to contain the maximum number of German forces.

In accordance with this directive a number of plans were drawn at Allied Force Headquarters, but final decisions had to await the outcome of the Sicilian campaign. On 19 August 1943 General Eisenhower announced that he had decided upon two main operations: one coded BAYTOWN (an amphibious assault against Reggio) and another coded AVALANCHE (an amphibious assault against Salerno). These operations were approved by the COS at the QUADRANT conference held at Quebec. At the same time the Allied leaders formulated plans for other operations that gave first priority to OVERLORD(the cross-channel invasion of Europe

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in 1944) and POINTBLANK (the Combined Bomber Offensive). In other words, the same set of decisions that inaugurated the invasion of southern Italy also relegated that theater to a secondary role. The three-fold task of forcing the collapse of Italy, creating diversions of enemy forces, and destroying vital installations on the continent would have to be accomplished without top priority on men and supplies. Operations were to be in three phases: (1) Italy was to be eliminated as a belligerent, and air bases were to be established as far north as the Rome area; (2) Corsica and Sardinia were to be seized; and (3) constant pressure was to be maintained on German forces in northern Italy, and there was to be created a situation favorable for eventual entry of Allied forces--including the bulk of the re-equipped French army and air forces— into southern France.[1]

First of the two main amphibious assaults was BAYTOWN, to be carried out on 3 September 1943. It was to consist merely of moving two divisions across the narrow Strait of Messina and landing them in an area where Axis defenses were believed to be weak. One division of the British Eighth Army was to land at Gallico and Catona and another division was to land at Reggio. Both landings were to be covered by artillery from the Messina side of the Strait and by naval fire. Air cover was to be provided from near-by Sicily by the Desert Air Force, made up largely of British units. The immediate objectives of the Eighth Army were to seize Reggio and the airfields in the toe. The ultimate objective was to advance northward for a junction with the U. S. Fifth Army and eastward for a junction with other British forces that were to land near Taranto between D plus 2 and D plus 7 (Operation GIBBON).[2]

AVALANCHE, an assault on the beaches south of Salerno, was to be launched on 9 September. Invasion forces were to consist of the American VI Corps and

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the British 10 Corps and follow-up troops. The Allied forces in AVALANCHE would total about 125,000 troops against enemy forces estimated at 39,000 on D-day but capable of being increased to more than 100,000 by D plus 3. The objective of the Fifth Army was to seize Salerno and the airfield at Montecorvino and then, driving inland, to capture the port of Naples and secure the nearby airfields.

The Western Naval Task Force, composed of the Control Force, the Southern Task Force, the North Task Force and the Support Carrier Force, was to transport the assault troops to their points of debarkation off the beaches and to support them by naval gunfire and carrier-based aircraft until they were firmly established ashore. The Southern Task Force was to convey VI Corps to its beaches, while Northern Task Force was to transport 10 Corps. The Support Carrier Force, consisting of one carrier and four escort carriers, was to supply the maximum practicable fighter protection to the naval forces and to assist the Sicily-based fighters of the XII Air Support Command in controlling the air over the beaches. The Control Force included the flagship, USS Ancon, a Picket Group to screen the attack forces from hostile surface elements, and a Diversion Group, which was to make a feint against the beaches northwest of Naples to draw off enemy forces.[3]

The Air Plans

The broad general tasks assigned to the air forces in both AVALANCHE and BAYTOWN were as follows: (1) to neutralize the enemy air forces; (2) to prevent or effectively retard the movement of enemy forces into the assault area; (3) to provide air protection over the assault convoys, the assaults, and subsequent operations, and (4) to transport and drop paratroops in connection with AVALANCHE. In addition to these major tasks, NAAF had also a

number of complementary air countermeasures, including the defense of territory already taken by the Allies, protection of Mediterranean convoys, attacks on Axis convoys en route to Italy, antisubmarine reconnaissance and strikes, air-ground tactical photo reconnaissance, air-sea rescue, and air transportation.[4]

For the primary job of those tasks the Allied air force retained by the operational commander-in-chief would be active throughout the Sicilian campaign. As a subdivision of the overall air forces was established the Mediterranean Air Command (MAC). Responsibility for the protection of the convoys was divided between the Tactical Air Force (TAF) and MAC. Generally the TAF was to guard the convoys from the time they left their original ports until they reached a point within 40 miles of their destinations; beyond that point the tactical units would take over. For the latter, MAC would be responsible for guarding until the ships reached a point within 40 miles of their destinations; beyond that point the tactical units would take over. For this combination of known convoy routes it was to employ two squadrons of P-38's based on each of Sardinia's two airfields. One squadron of Spitfires to operate over the route on each side would result over-all. From 4 to 40 Spitfires were to be on constant patrol over the convoys from dawn to dusk.[5]

The task of interdiction air cover for the assault and subsequent supply operations was to be the TAF's responsibility. The distance from the Allied airfields in the Tripoli area to the Sicilian assault beaches was 175 miles; from the Sicilian airfields, it was 100 miles; and from the Sardinian and Tripoli areas, 220 miles. Protective cover could be provided only by using the full strength of the Strategic Air Force, and by keeping the Spitfires of tactical squadrons constantly overhead. It was estimated that a minimum of three groups of P-38's flying two aerial patrols per hour over the assault area), as one group

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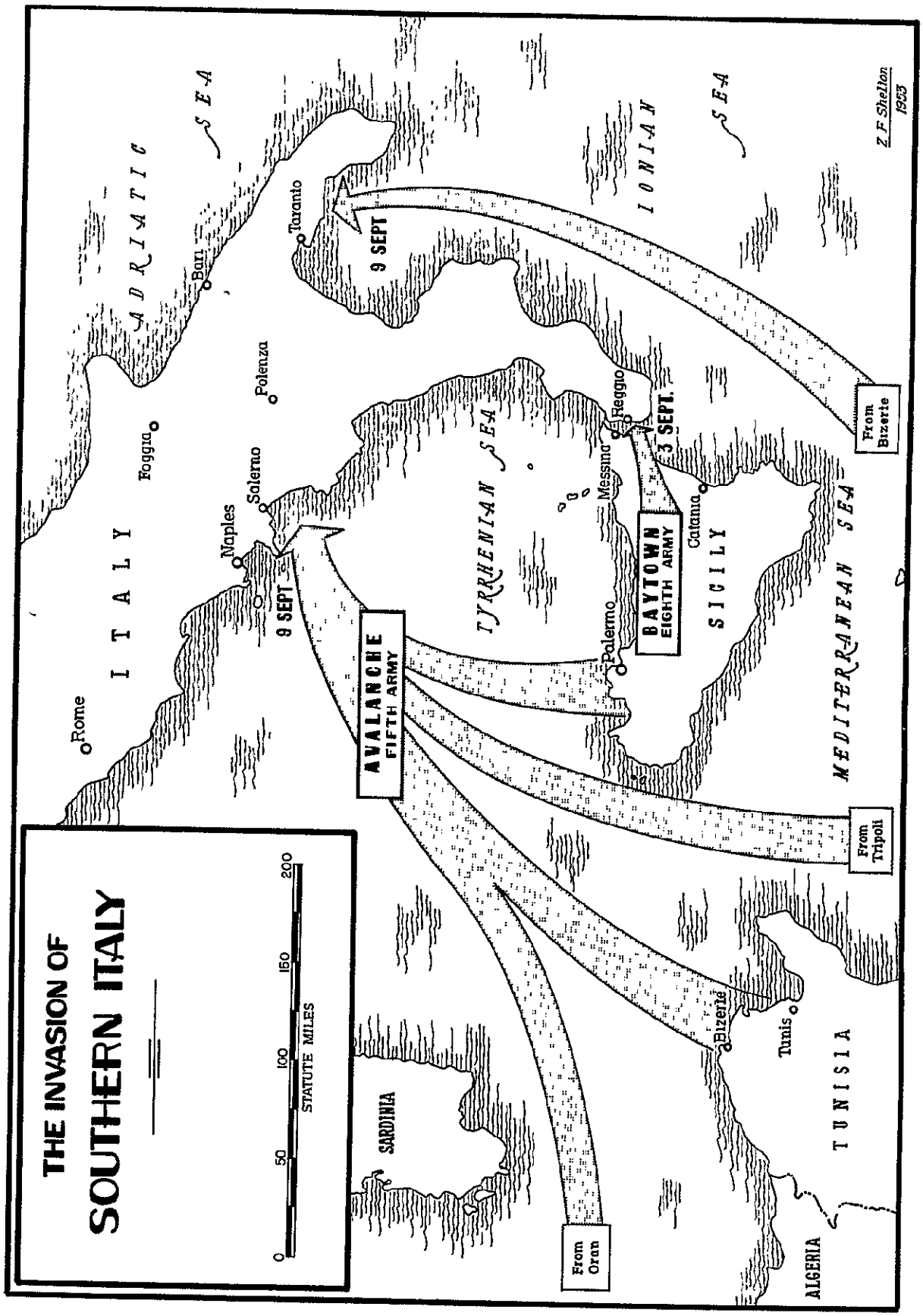
of U. S. bombers and up to 12 squadrons of P-51 Spitfires each flying two combat (20 minutes over the Canadian border), an average of 36 aircraft could be maintained over the border area continuously (2 plus 1 on succeeding days. In addition, 720 fighters (from each of the carrier and four escort carriers) would be available to provide either a covering or escorting force, a continuous patrol of 22 aircraft being maintained day and night by aircraft on a plus 1. This would give a total of 58 aircraft over the objectives at all times during the daylight hours of D-day. In order to control enemy fighters over the assault area during the first hour of daylight on the first day of work, one group of P-38's are to be specially trained so that it could intercept bombers from as much as 100 miles inland.

One of the first major objectives of the ground forces was the establishment of airfields, since the range of the fighter aircraft was limited. In order to get the fighters operating as soon as possible, the aviation engineers were to follow the assault troops ashore and begin work on the construction of emergency landing strips in the assault area. Fighter planes would begin to use these strips as soon as they could be made ready, particular emphasis being placed on the construction of [illegible].

The ground forces, after establishing a beachhead, were to drive rapidly inland to secure the airfield sites and the control areas of Caen and Bayeux. The [illegible] would then continue to advance and establish defensive positions in the high ground [illegible], in coordination with ground troops, and give reconnaissance. In order to facilitate the operations from the airfields to be established in the control areas of Caen and Bayeux, to secure and direct



[illegible] or [illegible] possible to [illegible] Quarters, [illegible] Army.

During the assault [illegible] role of [illegible] Support Command would be to provide [illegible] security for [illegible] beaches against air attack. The 111th [illegible] under control of XII [illegible] on call. [illegible] were to send their requests [illegible] Air Support Control on the Ancon. [illegible] were [illegible] to provide communication with [illegible] Air [illegible] Control. [illegible] Air Support Control for liaison. [illegible] officers [illegible] to [illegible] requests from naval [illegible] for [illegible] cover [illegible].

[illegible]

[illegible] Sicilian [illegible] fighter [illegible] airfields [illegible] concentration of [illegible] on 25 [illegible] widespread [illegible], was against the [illegible] fighter [illegible], north of [illegible], [illegible] the

bomber bases at Kirkenes, north of Norway. Numerous aircraft were destroyed or damaged in both raids and extensive damage was inflicted on buildings and facilities. The Liberators delivered one pre-invasion attack against the Ploesti oilfields on 23 August, and a few aircraft were flown by shuttle operations to the north of Russia to bomb airfields in Hungary. Only one large-scale attack was made by Allied bombers of the Strategic Air Forces, and that was against the Ploesti base at Targoviste, in Rumania, on 26 August.

The technique of the enemy air forces allowed RAF to concentrate its major attention on the railways and lines of communication during the period 12 August - 2 September. Over this period the weight of bombs fell on the marshalling yards, but other targets included roads and railways, armoured vehicles, bridges, and barges. There was good reason for concentrating on the Italian railways. Aside from a few minor lines, all the south-bound traffic had to pass through Rome, Pescara, or Foggia. It followed that maximum damage to the railway system could be inflicted by heavy attacks on the marshalling yards at these three bottlenecks. The marshalling yards at Rome and Pescara had already been severely damaged, but those at Foggia, although damaged, were still in full operation. The American bombers' main attack during the pre-invasion period were therefore concentrated on the Foggia group of targets, the marshalling yards and industrial areas at Foggia, in particular. Of 17 attacks specifically to be coordinated with the ground advance, 12 were carried out by 142 aircraft and 71 Liberators. The 630 tons of bombs cut the lines to Naples, Benevento, and Foggia, inflicted severe damage on the locomotive and repair sheds. When the British Eighth Army entered Foggia on 27 September, it was reported that "every bridge was down, plus Liberator bombing,

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had been "most effective," and that actual damage had exceeded all previous estimates.[10]

Other large scale attacks were made against the Sulmona marshalling yards (at the junction of the Rome, Pescara and Terni lines), the Terni marshalling yards, northeast of Rome, and the Bologna marshalling yards on 27 and 28 August and 2 September. Small raids were carried out against yards at Aversa, Orte, Bari, and Taranto, and the vital supply line through the Brenner Pass. The last-mentioned raid, carried out 2 September, paid dividends far out of proportion to the investment. By hitting certain key bridges in the vicinity of the pass the U. S. Fortresses were able to halt temporarily all supplies coming into Italy via the Brenner, the shortest and most direct route between Germany and Italy. Most of the heavy bomber missions were carried out by the XII Bomber Command, but IX Bomber Command added its weight by attacking the railway station, air depot, and marshalling yards at Cancello on 21 August. The IX Bomber Command also made other attacks on Pescara, Foggia, Taranto, and Bari.[11]

The medium bombers concentrated their attacks against marshalling yards and industrial targets in southern Italy. One of the chief targets was Salerno against which 139 Wellington and 112 U.S. medium bomber sorties were flown. Between HUSKY and AVALANCHE the combined efforts of heavy and medium bombers of NAAF against communications totaled more than 4,500 sorties.[12]

The results of attacks on rail communications were highly satisfactory. By the time the Allies were ready to make their first landing in Italy, the lines were blocked and all railway activity had ceased south of a line Naples-Foggia. Repairs were being made at Littoria (Rome) and Battipaglia, near Salerno. Large quantities of rolling stock had been wiped out. These constant

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attacks forced the enemy to rely more and more on road transport. This placed a strain on fuel reserves and made the enemy's problem of supply difficult.[13]

In the week preceding BAYTOWN air attacks were delivered against fortified positions, gun emplacements, and troops concentrations. These attacks, carried out by escorted light bombers and on occasion by B-25's, were not intended to saturate the landing areas. Rather, particular targets were pinpointed, such as gun positions at Reggio, fortifications at San Giovanni, and Axis Army Headquarters at Rosarno and Orte. These attacks were kept on a small scale for two reasons: a more concentrated attack would have disclosed the exact spot at which the landings would be made and it was known that the area within which the Eighth Army was to land was weakly defended. It seemed better to preserve the element of surprise than to knock out limited enemy defenses.[14]

In general the German fighter reaction was inconsistent, except in the Naples and Foggia areas where it was generally strong and aggressive. During the period 18 August - 3 September, NAAF destroyed over 260 enemy planes and probably destroyed 80 more. This constant attrition, plus the heavy attacks against airfields, forced the enemy to withdraw his bombers from southern Italy and to concentrate his fighters, his best pilots, and his heaviest anti-aircraft defenses in the Naples sector.[15]

On the eve of BAYTOWN it was estimated that the Axis had about 1,500 operational aircraft of all types in Italy, Sardinia, Corsica, and southern France. Of these, about 900 were Italian, and 600 German. The Italian planes were out of date and their pilots were of low calibre in both experience and morale. As for the GAF, at least one-third of its 600 planes were unserviceable.[16]

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By D minus 1 the Allied air forces had successfully accomplished their preliminary tasks of neutralizing the Axis air arm, crippling lines of communication, isolating the battle area (for BAYTOWN but not for AVALANCHE), and softening up Axis defenses. On the evening of 2 September, 300 landing craft were lying in wait at eastern Sicilian ports ready for the first assault on the European mainland.

BAYTOWN

The movement of ships and men got under way in the early hours of 3 September. The Eighth Army crossed the Straits to the Calabrian shore against only dispirited resistance. There being no hindrance from mines or demolitions, the beachheads were soon made secure.[17]

Air cover for the crossings and the assault was furnished by the Desert Air Force, which was primarily British in composition but contained the 57th and 79th U. S. Fighter Groups. Only a few enemy fighters appeared to contest the landings and two of these were shot down. The desultory efforts of the enemy air force enabled DAF by the middle of the day to shift to the offensive. Light bombers and fighter-bombers attacked gun positions, rail and road crossings, bridges, convoys, and troop concentrations in the lower part of Calabria. NATAF's B-25's and A-36's bombed the airfields at Comigliatello and Crotona, where increased fighter strength had been reported by reconnaissance aircraft. D-day closed with an armed reconnaissance mission that destroyed small groups of enemy vehicles. During the next two days the advance of the Eighth Army was held up only by demolitions. No contact was made with German forces. On 4 and 5 September, with the exception of a few enemy vehicles, few suitable targets presented themselves. On the 4th the enemy's first and only effort at

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obstacles the leading echelon was broken up and several of its vehicles were shot down. Although our fighter aircraft had the record for each combined to increase. By 0 hours our 47th Fighter Wing was in the neighborhood of Colmenarejo. While our tactical air forces were carrying out the operations in support of the Fifth Army, Strategic Air Force was continuing its bombing program directed against lines of communication and enemy air forces in Italy.

Operations ordered by the Allied Force Headquarters on 3 September to be the beginning of Phase II of the campaign. For example only on the 50 missions flown by XII Tactical Air Command bombers [illegible] did not all, and only in three instances could the opposition be described as determined. On seven Allied planes shot down on 7 and 8 September in the entire Mediterranean theater, for which reports could be obtained, 40 to 50 enemy fighters were destroyed. Attacks on enemy headquarters installations also brought forth minimal resistance. From these experiences it was evident that the enemy was rapidly reducing the [illegible] of his defensive air strength for the more critical areas of Italy.

Just before the invasion of Salerno was launched the Axis broke down Italy and agreed to unconditional surrender. This in no way affected Allied air plans, for the Italian forces had already been disarmed and [illegible] a negligible factor.

[illegible], 9-16 September

Air Activities

The [illegible] air forces [illegible] of more than 600 sorties, but nearly [illegible] in the [illegible] of convoys and ports of es

from D minus 6 to D minus 1. The majority of ships of the Southern Task Force sailed from Oran and Algiers, while most of the Northern Attack Force sailed from Bizerte and Tripoli. All the ships of the great fleet met north of Palermo on D minus 1. By sundown of the same day the convoys were in position and had started their approaches at a point some 50 miles west of the beaches.[20]

The convoys were not subjected to attack until late on D minus 2. During that night and the afternoon of D minus 1 they were attacked five times. The first attack, carried out by torpedo bombers apparently from southern France, caused no damage. The four other raids, which came on the afternoon of D minus 1, damaged an American LCI and sank a British LCT. Between 2000 and 2400 hours on D minus 1, the Northern Attack Force was subjected to repeated raids by small groups of torpedo bombers, while the Southern Force encountered two heavy and five light attacks. Only one LST was hit. Good fighter cover, heavy antiaircraft fire, and poor performances by the attacking bombers prevented more extensive damages. Antiaircraft fire accounted for five enemy planes and Coastal Air Force night fighters claimed five probables.[21]

After 2400 hours, when the ships began moving into their final positions and until 0330 hours (H-hour), when the last of the assault troops left for the beaches, there were no attacks by enemy planes. With the exception of a sector in the north where the British naval units were firing in preparation for the landing of 10 Corps, the whole front, from Salerno to Paestum, was quiet. Apparently the Germans planned it that way. As soon as the troops approached the beaches the Germans greeted them with the announcement: "Come on in and give up. We have you covered." Then came a great barrage of artillery, machine gun, and mortar fire. Although these tactics caused some

[illegible], G-2, AF

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[illegible] considerable confusion, which brought bitter remarks and began [illegible] belief.

[illegible] no unbiased account of the Allies in Sicily is ridiculous [illegible] criticism of high-level decisions become. Political expediency [illegible] but basic errors were not [illegible]. Sicily [illegible] brought by lack of [illegible] brought [illegible] lack of Italian currency only between Algiers [illegible]. [illegible] Tunisia, [illegible] Sicily [illegible] Mitchell.

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On D-Day [illegible] over the assault area [illegible] Sicily was furnished by two squadrons of P-38's, one squadron of P-39's, and one of Spitfires. The [illegible] of land-based aircraft, which would at [illegible] the northern limit of their operations. The [illegible] was responsible for patrolling the northern end of the Gulf of Gela and the [illegible] Capri. Sicily-based planes protected the center and south sectors, with P-38's flying top cover, P-39's medium cover, and Spitfires low cover. The number [illegible] was more than 200 combat sorties, with the Sicily-based fighters flying almost 700. All these activities were directed toward one objective, [illegible] those ships lying off the assault beaches given to the ground troops. After [illegible], the [illegible] took over until [illegible] of the [illegible] Sicily.

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[illegible], ground forces differed widely in their estimates of the extent and effectiveness of the enemy's resistance on D-Day. The Western Naval Task Force record of the air activity was "second only to [illegible] ...in connection with the landing of troops and

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particularly of boats at the beaches. Beginning at approximately first light regular and persistent bombing and strafing attacks effectively interrupted unloading activities...The scale of these attacks has never before and never since been equaled in this theater."[25]

Beside this may be placed the Air Force statement that "very little enemy action in the air was encountered the first day."[26] Practically all NAAF's operational and intelligence summaries agree that the enemy's air reaction to the landings was not severe. From an analysis of the various conflicting reports, it would appear that the enemy flew enough small missions over the beaches and shipping, and flew them regularly enough to keep the Allied forces constantly on the alert and to hamper troops engaged in unloading activities. However, the sum total of enemy operations was moderate, his attacks were persistent but not very effective, and they caused only minor damage. If the size and importance of the invasion be taken into account, the damage suffered from enemy air action was small indeed. During the day only one ship (an AT) was sunk and one LST was damaged. There is no means of estimating casualties to personnel and damage to equipment on the shore, but there is no evidence to suggest it was extensive.[27]

The estimated 60 to 75 enemy sorties were met by the standing patrols of USAAF, RAF, and Navy fighters, in accordance with the Air Plan of keeping around 36 planes over the assault area at all times. The enemy took advantage of cloud cover and the mountains behind the beaches to strike quickly at widely scattered points. Operating in small groups of from 1 to 6 planes he would hit the northern and southern beaches simultaneously in order to confuse and divide the Allied fighter defenses. In spite of these tactics the Allied standing patrols were able to break up or turn back a large pro-

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portion of the enemy raids. During D-day Allied fighters destroyed four planes and damaged one for the loss of two P-38's in combat and one Spitfire in noncombat.

The fighters performed creditably, but they were hampered in their actions by the unsatisfactory performance of the fighter control center on the Ancon. Several factors appeared to be responsible: the near-by hills caused echoes; the ship was not well equipped and was badly located; and the control center was not receiving enough information from the troops ashore.[28]

The D-day activities of the Strategic Air Force were aimed at the isolation of the battlefield. The heavies and mediums hit roads, railway junctions, and bridges mainly in the Naples-Avellino area. Some attention was also given to the southwest area near Potenza and Sapri in order to hinder the enemy's movement into the Salerno sector. Sixty B-17's destroyed two road bridges and damaged the railway bridge over the Volturno River at Capua. The heavies further hampered communications above Naples by damaging the approaches to the Cancello bridges between Capua and the coast. Enemy air fields at Foggia and Scanzano (in the south) were bombed with good results.

In all, the land based aircraft flew about 1,700 sorties in support of D-day operations. The air forces claimed 14 enemy planes destroyed, 3 damaged in combat, and 4 destroyed on the ground against the loss of 9 planes.[29]

Extending the Salerno Beachhead, 10-11 September

In spite of stubborn opposition the Fifth Army retained the initiative for the next two days. Salerno and Montecorvino airfields were occupied during the morning of the 10th but Montecorvino was still within range of enemy artillery and could not be brought into use. Fighter cover would have to continue to be furnished largely on a long-range basis, with possibly some assistance from temporary fighter strips that were being readied inside the beachhead. [redacted]

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On the 10th and 11th the enemy increased both the quantity and quality of his air resistance; on both days about 100 planes bombed and strafed the beaches and shipping. Tactical Air Force met this increased activity with the same system of patrols used on D-day. On the 10th the day fighters broke up or turned away about 40 attacks, one-fourth of which contained formations of 10 or more planes. On the nights of 9/10 and 10/11 the Beaufighters were in action as usual and performed well. They might have performed even better had it not been that their radar coverage was interfered with by the high ground to the east and the Ancon could give only limited help.

On the 11th the GAF concentrated its efforts on Allied shipping with some success. The USS Savannah was hit by a radio-controlled bomb that exploded below deck. HMS Flores was damaged by a near-miss, while the USS Philadelphia suffered damage from an enemy plane that crashed some 15 feet away. The attack on the Savannah came at a time when the fighter cover had been somewhat reduced, partly because the fighters had been diverted to the assault area against enemy transport and partly because of pilot fatigue. The diversion of fighters to the assault area had appeared feasible in view of the small enemy air reaction on D-day. After the Savannah was hit, normal cover was restored and continued throughout the day.[30]

According to a Marine Corps observer, the air cover at Salerno during the first three days was excellent. The attack force in the northern area had maintained "about 98 per cent control of the air during all daylight hours and a possible 90 per cent control during the hours of darkness," so that "very few German planes broke through this cover."[31]

Despite the good showing so far there were disturbing elements in the picture. Flying in cramped cockpits over long distances the pilots were

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beginning to show signs of fatigue, and accidents were increasing rapidly. All the while the GAF was exerting itself to the utmost to inflict heavy damage on personnel and equipment.

In addition to their beach and shipping patrols, NAAF's planes continued their efforts to isolate the battlefield. On 9 September Mediterranean Air Command informed the Tactical Air Force that it would be responsible for destroying enemy personnel and equipment south of a line Battipaglia-Potenza-Bari, while Strategic would be responsible north of that line. Road communications used by the enemy to reinforce his battle lines were to be the main targets. Fighters on patrol over the beachhead did double duty. The planes were equipped with bombs, and the pilots, receiving their bombing instructions while in flight, would carry out their bombing and then proceed to patrol duties. This system, which was used principally over 10 Corps area, sometimes enabled the XII Air Support Command to furnish air support within 10 to 30 minutes after ground troops had sent in their requests. In general, however, air-ground cooperation was not satisfactory until Allied planes moved to bases in Italy. The land lines were unreliable, maps were poor, changes in bomb lines came in slowly, and, when requests from ground troops had to be sent to Sicily, the planes often did not arrive until four hours after the initiation of the request.[32]

Tactical reconnaissance essential to close support, artillery fire, and intruder missions in the battle zone was furnished by P-51's of the 111 Tactical Reconnaissance Squadron and the British Spitfires of 225 Squadron. Until D plus 3, tactical reconnaissance was carried out on a pre-arranged basis with a set number of missions each day, but after 12 September the 111th operated with VI Corps and 225 with 10 Corps. Each squadron carried out about six missions a day.

During the 10th and 11th the Luftwaffe employed its entire fighter strength offensively against Allied ground forces and columns. There was no attempt to intercept the strategic bombers or to attack Allied air bases or installations outside the battle area. During 11-12 September Allied aircraft flew more than 2,700 sorties, 1,000 of which were flown by fighters.[33]

The Turning Point in the Critical Period, 12-13 September

The first phase of Allied success was over by the afternoon of 11 September. It had been accomplished chiefly by the Germans' overextending themselves for a counterattack which would have hurled the Allied invaders back into the sea. By 12 September Field Marshal Albert Kesselring was able to bring extensive air reinforcements to bear on the battle area. In view of the fact that the commander of the air forces could be withdrawn from the battle area to defend the Reich, the efforts of the air forces to isolate the battlefield could be accomplished at considerable distance.[34] On the other hand, the efforts to interdict the battle area were not entirely successful. The German counterattack was a near-success but not a success. Without the harassment of his lines of communication the enemy might have been able to maintain the counterattack until the ground forces could wipe out the breakthrough.

Peculiar conditions surrounding the 3d Army area should also be taken into account. The terrain was treacherous everywhere in that it afforded the defender many interior roads surrounding the beachhead. From these positions they could continually outflank the Allied forces and thus undermine their strength in order to counter every Allied advance. General Clark stated that he himself did not realize the full extent of the German advantage until

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[illegible] con-[illegible]."[35]

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10 Corps [illegible] 13th [illegible] 14th. [illegible] 1,000 yards [illegible] 13/14 [illegible].[36]

[illegible] 14th, [illegible] 1,000 yards [illegible] fire [illegible].[37]

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As the battle reached its critical stage, the entire resources of NAAF were shifted to direct aid of the Fifth Army. Fighter and fighter-bombers carried out more than 1,000 sorties on patrol over the beachhead and off-shore shipping and in bombing and strafing attacks against targets of opportunity in the battle area. A-36's and P-38's dropped 160 tons of bombs on enemy vehicles, troops, gun positions roads, bridges and marshalling yards. The medium and heavy bombers directed their efforts at the roads leading into the Salerno area and at concentrations of troops and supplies in the Battipaglia-Eboli area.[38]

The fury of the air assault was not abated on the 15th. NAAF planes of all types flew about 1,400 sorties. To name all the localities hit would "sound like a miniature Baedeker of the Salerno area,"[39] but special emphasis was laid on the Eboli, Battipaglia, Avellino, and Auletta areas. The staggering pressure of bombardment was kept up through the night of 15/16 September. By the 16th it was apparent that the enemy counterattack had spent itself. There were no great changes in positions, but the reinforced Fifth Army had consolidated its positions and was ready soon to go on the offensive.

During the critical period all the planes of NAAF, Strategical and well as Tactical, were employed in direct support of the land battle. Some of the planes of the Strategic Air Force bombed so close to the front lines that an error of a few hundred yards might have spelled disaster for the Allied troops. NAAF poured into the target area an average bomb density of 760 tons per square mile. How many enemy troops were killed by land based aircraft there is no way of knowing, but reports indicated that over 300 vehicles were destroyed and some 200 damaged by fighter-bombers alone. The Naples-Salerno

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roads and railways were virtually closed to traffic as a result of heavy Allied attacks. "Never before," said Mediterranean Air Command, "have bombs been employed on a battlefield in such quantities or with such telling effect."[40]

General Spaatz felt that the Salerno experience had demonstrated "to a greater extent than ever before the importance of Air Force flexibility in organization and operations and the decisive effect which air power had in combined operations."[41] General Clark, the ground commander, said that the air forces "contributed much" to the success of the operations and "all were most enthusiastic in their acclaim of the close and continuous support which had been given them by the Air Forces."[42] General Sir Harold Alexander pointed out more specifically that:[43]

> The tremendous air attacks added greatly to the morale of the ground and naval forces and, in addition, have inflicted on the enemy heavy losses in men and equipment. They have seriously interfered with his movements, interrupted his communications, and prevented his concentration of the necessary forces to launch large scale attacks.

Although bare statistics can never convey the urgency of a desperate battle situation, the heroic efforts of over-worked pilots flying in cramped cockpits, or the quality of performance, they do convey some idea of the volume of activity. From 1 to 15 September NAAF's fighters and bombers flew approximately 17,500 sorties in furtherance of the BAYTOWN and AVALANCHE operations. They dropped some 10,000 tons of bombs and claimed the destruction of 220 planes in air combat for the loss of 90. During the four critical days NAAF's pilots flew over 6,000 sorties and dropped 3,500 tons of bombs. Three-fourths of these were flown by U.S. planes of the Twelfth Air Force. Planes of the Northwest African Photographic Reconnaissance Wing flew about 100 sorties and planes of the Coastal Air Force--which did not operate over the mainland--

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flew about 400 sorties. It was an impressive record.

Putting to good use the lessons learned in Tunisia and Sicily the Allied forces were able to cope successfully with the first challenge of an Allied invasion by high grade German troops. The pattern of counter air force operations developed in previous campaigns was applied with minor modifications to prevent serious interference from the enemy air force. The efforts to isolate the battle area were successful for BAYTOWN but not for AVALANCHE. Although the air forces attained considerable success in their attacks on marshalling yards and rolling stock, the Germans were able to mount a counter attack against the beachhead. The Allies had yet to learn how to isolate an invasion area where the enemy enjoyed better positions, had reserves for reinforcement, and possessed alterrate means of communication. In a negative way Salerno taught another lesson: the utility of deceptive measures. There was no surprise in Avalanche; it is now definitely known that the Germans expected the main landings would be not in the Toe but in the Naples-Salerno area. They had several good reasons for believing this and the pattern of Allied attacks on radar sites, communications and airfields around Naples and Foggia lent credence to their suspicions.[44] Henceforth all amphibious operations in the Mediterranean-European theaters would be preceded by deceptive bombing and other devices calculated to prevent disclosure of the point of invasion. The long distance of the Salerno beaches from airfields in Sicily and the failure to bring the Montecorvino airfield into operation underscored the importance of rapid airfield construction immediately behind the battle line. Probably the most important lesson of the Salerno experience was the demonstrated ability of air power to be shifted and massed to retrieve a desperate ground situation, a lesson that was to be brought out with even greater clarity at Anzio.

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Chapter V

ANZIO: THE NEAR DISASTER

After weathering the critical stage of the Salerno landings the Fifth Army seized the offensive and pushed on to Naples. On the east coast the Eighth Army advanced and seized Foggia. With Naples the Allies had one of the best ports on the west coast of Italy, and the nearby airfields provided ample bases for tactical support in the push up the Italian peninsula. On the east coast they had the important port of Bari, and possession of the great complex of air fields around Foggia made possible a two way bombing of Germany.

At the Cairo Conference in November 1943 the basic differences in British-American strategy were aired again. The major objectives of the Italian campaign having been accomplished, the Americans recommended that no additional operations be mounted in the Mediterranean except as a direct supporting move to the cross-channel invasion. The British favored a continued and all-out prosecution of operations in the Mediterranean even, if necessary, at the expense of OVERLORD. The decision at Cairo was to continue the build-up for OVERLORD and to continue the redeployment of troops from the Mediterranean to England. The British made this concession apparently on the assumption that Rome soon would be in Allied hands.[1]

A month of fighting did not produce the prize so dear to Churchill's heart. The Allied armies advanced to a line just north of the Volturno and Sangro Rivers and there they stopped. There was no lack of heroic effort on the part of Allied ground forces but they were faced with an almost impossible situation. The enemy was favored by difficult terrain, exceptionally bad

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weather, and strong defense positions in the Winter and Gustav lines. When the Allied chiefs met at Tunis on 25 December 1943 the advance had bogged down but the Prime Minister again elaborated on the psychological importance of taking Rome. In his opinion it would be folly to allow the campaign in Italy to drag on and to face the cross-channel operation with a half-finished and therefore dangerous situation in Italy. General Alexander proposed an amphibious landing around the enemy's right flank to compel a withdrawal. The Prime Minister supported this proposal strongly. Generals Eisenhower and Clark, though approving the idea generally, doubted that the two partially skeletonized divisions that Alexander proposed to use would be sufficient to carry out the operations successfully. Another difficulty was the shortage of landing craft. Furthermore General Eisenhower pointed out that the Anzio attack might not compel a withdrawal from the front of the Fifth Army. The enemy might choose to draw in reinforcements from outside Italy and fight on both fronts. In this surmise General Eisenhower was correct, for the immediate result of Anzio was a stalemate on two fronts instead of one.[2]

The key with which the Allied leaders hoped to unlock the system of German defenses around Rome was a high hill mass called Colli Laziali, or the Alban Hills. This promonotory guards Routes 6 and 7, the two main highways by which the Gustav Line was supplied. The object was to land at Anzio, move inland to capture this point, and thus to control the enemy's communications to the main front. It was hoped that this end run would do away with two handicaps hitherto barring the Allied advance--weather and terrain.

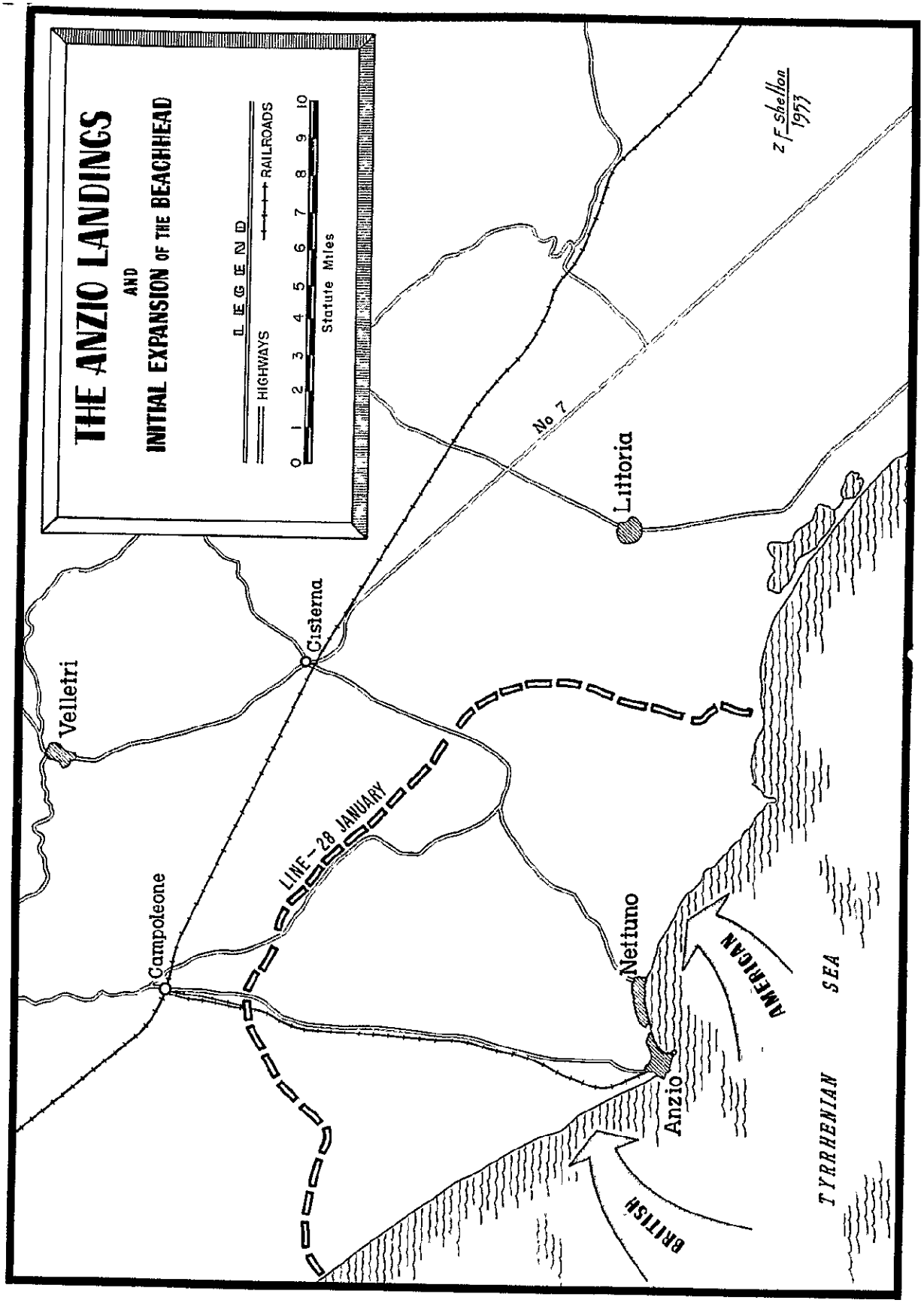
The SHINGLE plans called for three amphibious landings around Anzio to take place on 22 January. American and British troops, with follow-ups, would total about 110,000. Just before the landing the Fifth Army was to make a strong attack against the Gustav Line in the hope of breaking through the

Liri Valley and joining forces with the beachhead. Eighth Army was to make a demonstration in eastern Italy to prevent the enemy's drawing reinforcements from that sector.[3]

The general tasks of the Allied air forces at Anzio were essentially the same as at Salerno, namely, the destruction of as much of the enemy's air force as possible; the disruption of enemy supply lines to the battle area by attacks on communications targets, this time in central and northern Italy; the provision of air protection for the assault convoys, the assault, and subsequent operations; and assistance to ground operations by air attacks.

Since AVALANCHE important changes had been made in the organization of the air forces in the Mediterranean. In order to supplement and strengthen the heavy bomber effort from England the Fifteenth Air Force had been created as of 1 November 1943. The creation of the Fifteenth as a Strategic Air Force meant that henceforth the Twelfth would in effect be a tactical air force, and the heavy bombers of the Twelfth served as a nucleus from which the Fifteenth was built. The Fifteenth was to be employed primarily against targets as directed by COS, but in the event of a tactical emergency the theater commander was authorized to use any part of the Fifteenth for purposes other than its primary mission. On 10th December 1943, Mediterranean Air Command was consolidated with NAAF headquarters to form the Mediterranean Allied Air Forces. Under the new arrangement MAAF would direct operations through a single combined operational staff to assure real unity in planning and execution by the AAF and RAF elements.[4]

The Allied bombing program for SHINGLE fell into three phases. During the preparatory phase (1 to 14 January), railway communications in central Italy were to be disrupted in order to limit the enemy's supply and reinforcement of the forward areas. Operations in support of a cover plan were to be



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carried out also. These were to consist of attacks on northern Italian targets to simulate a landing against a point north of Rome. During the second phase (15 to 21 January), an all-out effort was to be made to isolate the battlefield. In the third phase, which extended from D-day onward, isolation of the battlefield was to be continued and close support was to be furnished the ground troops.

The bombing in preparation for SHINGLE was inaugurated on 2 January with a series of attacks that had as their primary aim the furtherance of the cover plan. Seventy B-26's attacked railways and bridges east of Nice, while fifty B-17's bombed transportation targets in the Turin area. A-36's of the 12th Air Support Command raked over the docks at Civitavecchia. In addition to the air force activity, landing craft and troops were rather ostentatiously gathered in the Sardinia and Corsica areas to foster the belief that an Allied landing was imminent north of Rome, with Civitavecchia as the most likely point of attack. During the next ten days of the first phase medium bombers of the Tactical Bomber Force concentrated on the central Italian railway system. Attacks against enemy airfields were on a limited scale. Operations were hampered by weather, but there was no need for an all-out blitz, for estimates of the enemy's air strength credited him with only about 550 operational aircraft scattered from southern France to Crete. Altogether MAAF flew nearly 13,000 sorties in the first phase of SHINGLE.[5]

During the second phase, the mission of the air forces was to cut the supply lines to the battle area in order to prevent counter attacks. To achieve destruction in depth a detailed plan was worked out by the Tactical and Strategic air forces. Bombers of Strategic were to begin with targets far to the north, while Tactical would operate as far north as Florence. As

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D-day approached, both would move south, with Strategic concentrating in the Florence, Pisa, Leghorn and Arezzo areas and Tactical working north of Rome as far as Perugia. To prevent repairs night bombers would be used. In accordance with this plan, B-17's of the Fifteenth Air Force flew around 600 sorties and medium bombers of the Tactical Air Force flew over 800 sorties against transportation targets in the period 16 to 22 January. As a rule, the B-25's, equipped with the Norden bomb sight, concentrated on railway bridges, while B-26's were briefed to attack choke points and marshalling yards.

A high degree of success attended the efforts to isolate the battlefield. It should be pointed out, however, that in an area as large as Italy and as well controlled by a strong enemy force it would be unreasonable to expect a permanent and total isolation by air power alone. But on each of the four first priority railway lines leading into the Anzio area there was at least one point of interdiction. The air planners had set up nine points of primary importance in the Italian transportation system--five bridges and four marshalling yards. By D-day the air forces knocked out four of the bridges, had made one of the marshalling yards unserviceable, and had damaged the others. The beaches around Anzio were not isolated in the same sense that an oasis in the middle of the Sahara desert is isolated, but they lay open to an invader provided he got there quickly and with sufficient strength.[6]

The Assault Period, 22 January - 14 February

The assault convoys began their journey from Naples before dawn on 21 January. Fighter protection was the responsibility of the Coastal Air Force until the convoys reached Ponziane Island. From that point to the landing area the XII Air Support Command took over. The convoys proceeded entirely unmolested by the GAF. The pre-invasion attacks on the enemy's long-

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range reconnaissance base at Perugia and the breakdown of the German radar system deprived the enemy of any fore-knowledge of the invasion.[7]

Disembarkation began at 0200 on the 22d. British troops, comprising an infantry division and supporting artillery and tanks landed north of Anzio, and an American Corps consisting of infantry, Rangers, artillery, tanks and other units out shore to the southeast of Anzio. Complete tactical surprise was achieved, and only token resistance was encountered for several hours. Thus favored, troops and supplies poured ashore and by nightfall the ports of Anzio and Nettuno were in Allied hands.

Before the end of D-day, however, the GAF did what it could to hinder unloading. Enemy fighters made a tardy appearance about mid-morning and carried out about 50 sorties before the end of the day. But the MAAF fighter patrol scheme prevented the Luftwaffe from seriously interfering with the landings. Patrols over the beachhead and convoy area consisted of four Spitfires at 20,000 to 25,000 feet, twelve Spitfires at 16,000 to 18,000 feet (eight over the beachhead and four over the convoy area), and sixteen P-40's at 8,000 feet (half over the beachhead and half over the convoy area). Warnings of enemy aircraft were given to the patrolling fighters from a control ship. Interception was then carried out visually. During D-day XII Air Support Command's fighters intercepted six enemy fighter-bomber missions and destroyed seven planes and damaged seven other for the loss of three fighters. RAF Spitfires provided spotting of gun fire for the Navy, and U.S. P-51's spotted for Army artillery. As men and supplies were being unloaded, Allied medium bombers and fighter-bombers attacked road junctions behind the beachhead, while the heavies attacked road and railways in the Florence and Rome areas and in the Liri Valley. These operations were intended to support not only

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the amphibious assault but also the offensive on the main Fifth Army front. In all, more than 1,200 sorties were flown by MAAF in support of D-day operations.[8]

On D plus 1 and 2 the same scheme of defensive patrols was used as on D-day. The high degree of air superiority made it possible to evolve a pattern of operations that made the fighters a triple threat. Each patrol flew to the beachhead a few minutes before its patrolling period began and dropped bombs on suitable targets under cover of the patrol it was relieving. After completing their patrol assignment the fighters would strafe enemy vehicles or other targets, depending on their supply of ammunition.[9]

With no formidable opposition either on the ground or in the air, Allied ground troops occupied a beachhead seven miles deep and 15 miles long within three days. From this position they might have driven inland and seized their objective, the high ground around Colli Laziali, but things were not going well on the main Fifth Army front. In ten days of bloody battle the Fifth Army had not been able to break through the Gustav Line, and there was little hope of an early junction with the forces put ashore at Anzio. Furthermore, the enemy was now bringing reinforcements to bear against the beachhead. Had the Anzio forces pushed far inland they might have been cut off from supplies and equipment. It seemed better to consolidate positions within the beachhead. By 2 February the enemy's forces in the assault area probably exceeded five divisions.[10] Against such a force the outnumbered troops in the beachhead were unable to take the offensive.

During the early days of Anzio the enemy air forces made fairly regular though not highly successful attacks against shipping and troops in the beachhead with 50 or 60 planes. Then suddenly on 29 January 110 enemy planes

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attacked. This was the heaviest enemy air attack since the landings in Sicily in July 1943. It was made possible by the transfer of two JU 88 groups from Greece and Crete and by the return of a number of bombers that had been moved out of Italy in December and early January. Air reconnaissance revealed about 170 enemy fighters and perhaps 200 long-range bombers in northeast Italy, most of them located on fields in the Udine area.

MAAF accordingly planned a series of counter measures. On 30 January, the day after the big enemy raid, the Fifteenth Air Force carried out an attack that showed real ingenuity. A force of 200 B-17's and B-24's took off and flew at normal altitudes so as to be plotted by enemy radar. After the bombers had left, 60 P-47's went out over the Adriatic and flew very low so as to escape being plotted on the radar screens. When they overtook the bombers, they climbed high and headed for the target area. Arriving 15 minutes ahead of the bombers they caught the enemy's fighters in the act taking off and assembling for combat. Having flushed their game, the P-47's moved in for the kill. Thirty-six enemy fighters were shot down and six were probably destroyed in the air. The bombers then came and almost without opposition dropped 29,000 fragmentation bombs on the airfields. Photos taken during and after the attack indicated 77 aircraft destroyed or damaged on the ground. The enemy aircraft shot down by the bombers and escorting P-38's brought the total destruction to about 140 enemy planes. More aircraft were destroyed and further damages were done in a follow-up raid on 31 January. In addition to the heavy attacks in the Udine area, Strategic Air Force also struck at enemy airfields at Lavarino and Aviano in Italy and Klagenfurt in western Austria. Following these counter air force operations the enemy's air activity was on a reduced scale although small numbers of his planes continued to strike at

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[illegible] of the [illegible] reached [illegible] destruction of the [illegible] General [illegible] from [illegible] 14th [illegible] the Allied lines. [illegible] stopped the Allied offensive on 1 February and he hoped to [illegible] unable to gather sufficient strength until the 14th. The delay in [illegible] was probably caused in [illegible] interdiction program. For almost a [illegible] after the [illegible] 11 miles from the north to [illegible] cut in one or more places. [illegible] for the Allied air forces—on 21 January enabled the [illegible] to [illegible] line to [illegible]. [illegible] by extensive use of motor transport [illegible] in enough reinforcements to [illegible] offensive on 15 February. [illegible] full use of rail [illegible] probable that [illegible] could have launched his offensive around the 1st of February [illegible] Allies [illegible]. Such a blow could conceivably have upset the whole Allied time table of operations. [illegible], the delay enabled [illegible] to build up its forces [illegible].[12]

[illegible], 22 January - 14 February

The coast [illegible] on 16 February. [illegible] every effort [illegible] to produce [illegible] 170 [illegible], out otherwise [illegible] 170 [illegible] Forces. [illegible], [illegible] to

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attack assembly areas, troop concentrations, and tanks. Heavy bombers, as in the critical days at Salerno, were employed in all-out direct support. They directed their efforts at the communications lines feeding the Rome area. General Clark, who was highly critical of certain phases of air operations in the Mediterranean, said that "reports from the beachhead showed that the men had been vastly encouraged by ...that concentration of close support."[13] At the end of the first day the enemy had made only slight gains.

The Germans made a night attack on the 16th and then on the 17th unleashed the full fury of their assault. By mid-morning the Allied troops were fighting desperately to hold the last line, the original D-day beachhead about seven miles from the water. Commanders went among the front-line troops exhorting them not to give an inch. Coming to the aid of the hard-pressed infantry the air forces rained death and destruction on the enemy. Over 800 aircrafts of all types dropped almost 1,000 tons of bombs on front line positions. This represented the greatest concentration of air power in direct support of a ground action in a single day up to that time. The heavies concentrated on road junctions; the light and medium bombers hit command posts, dumps, gun emplacements and assembly areas. Fighters flew the usual beachhead patrols. Interrogation of enemy prisoners revealed that the close support operations had a very adverse affect on the morale of enemy troops who had been led to believe that they enjoyed air superiority. During the night the Wellingtons kept up the attack on enemy-held towns and roads radiating from the bridgehead.

Fighting continued desperately on 18 February. At several points a breakthrough seemed imminent and in some cases there was hand to hand fighting. The bitter struggle was fought out under an overcast sky that prevented a repetition of air support on the scale of the previous day. Medium and heavy

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bombers were prevented by weather from taking off, but light bombers and fighter-bombers flying 144 sorties gave effective support against enemy tanks and infantry. The full weight of the superior Allied artillery was brought to the aid of the infantry also. The heaviest onslaught came late in the day, but the best efforts of the enemy were not good enough. In the evening the fighting began to slacken.[14]

During the temporary lull in the fighting, VI Corps troops reestablished a line of defense and restored communications between units. The enemy made one more strenuous effort on the 19th, but again the Allied line held. Bad weather again prevented the heavy bombers from making their presence felt in the beachhead, but nearly a hundred mediums dropped a heavy concentration of 20-lb. fragmentation bombs on enemy troops and supply dumps. Light bombers and fighter-bombers maintained a continual attack against troops concentrations, tanks, vehicles, and strong points. By the evening of the 19th it had become apparent that VI Corps had broken the back of the attack Hitler ordered.[15]

The attempt to erase the Anzio beachhead failed despite the fact that the German drive had started with many advantages in its favor. The Germans had nearly 10 divisions to the Allies' five; their troops were fresher and they held better positions. From the areas around the beachhead they were able to look down the throats of Allied troops and to subject them to merciless artillery fire. The congested beachhead presented an excellent target for enemy bombers. Yet with all these advantages the Germans could not win. The reasons were several: Allied superiority in artillery and supremacy in airpower, the inability of the enemy to employ his tanks in masses, the breakdown in enemy morale, and, most important of all, ground troops that refused to give up.

In the long run the Anzio operation paid off handsomely, but before results

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could be achieved the force had to be built up to more than six divisions. In the short run no primary objectives were gained, and the Fifth Army was now faced with stalemate on two fronts instead of one. In addition to its commitment to a front extending from sea to sea across the Italian peninsula, MAAF was committed also to the defense of troops and supplies concentrated in a narrow, exposed beachhead.

In undertaking the Anzio landing with what was recognized as an inadequate force the Allied commanders relied heavily--too heavily--on air superiority to see them through. Apparently they did not comprehend--or chose to ignore--the limitations of air power. The fact that bad weather is capable of retarding or altogether stopping air operations was not taken into account sufficiently. Furthermore, air power was not always employed to its maximum advantage. General Arnold pointed out, for example, that the air forces did not always concentrate their available air power so as to hit selected areas with sustained mass attacks. Night operations, which are necessary for systematic and lasting isolation of the battlefield, should have been employed on a greater scale.[16] This was one of the major lessons of Anzio. An effective isolation of the battle area cannot be achieved unless lines of communication and troops and supply movements are attacked around the clock. Also, any rupture in the enemy's defenses achieved by large scale air support must be followed up and exploited immediately by the ground forces. There is an old Army doctrine that a demolition to be effective must be defended. This would apply to demolitions by air forces as well as artillery.

On the positive side, it should be recognized that the landing at Anzio was possible only because the Allies possessed superiority in the air. The air forces made it possible for the Allies to land without serious interference.

because of the failure of the Fifth Army to be at the Gustav Line and the inability of the Eighth Army to attack on its front, the Fifth's beachhead could not be enlarged rapidly and was subject to counterattack. It is counterattacks that have on occasion come close to cutting the beachhead but it has not been for the interdiction carried out by the air forces. When the counterattacks did come, which were rare, including the initial effort of the strategic bombers, they could be controlled. However the chief use of the Eighth Army Air Force, the reason why the air forces could substantially so weaken the enemy before the drive, became evident in the full course of the ground battle, as the reduced Luftwaffe proved unable to supply

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Chapter VI

THE CROSS-CHANNEL INVASION: FRUITION

Operation SHINGLE may be considered the last major commitment to the policy of encirclement. After the transfer of General Eisenhower to England and the establishment of Supreme Headquarters Allied Expeditionary Force (SHAEF) in January 1944, there could be no doubt that the American strategy of the approach direct held the upper hand: henceforth OVERLORD was to have unquestioned priority. Italy of course remained a heavy commitment and another large amphibious invasion was to be mounted from the Mediterranean. But the offensive to Rome and beyond was authorized mainly for the purpose of assuring the success of OVERLORD and the landing in Southern France was considered an important but subsidiary phase of the main landing in Normandy. With operation OVERLORD the Americans finally reached the strategic goal toward which they had been striving since the beginning of the war.

A necessary preliminary to the cross-channel invasion, as for all amphibious operations, was the establishment of air superiority. In a broad sense all the strategic bombing carried out by the RAF and AAF from bases in the United Kingdom may be considered as contributing to this end.[1] Until 1944, however, the strategic bombing was carried out with the broad general objective of dislocating the German industrial system. It was not until 13 February 1944 that the COS issued a directive that shifted the emphasis to the one specific objective of destroying the German Air Force by all means available.[2]

Meanwhile, in November 1943, the Fifteenth Air Force had been created to carry out strategic bombardment from bases in Italy. To coordinate the operations of the Eighth and Fifteenth Air Forces the U.S. Strategic Air Force

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[illegible] contribution to [illegible] Force. [illegible] of OVERLORD.

An early account of [illegible] for control of the air [illegible] Allied air superiority [illegible] invasion [illegible] OVERLORD [illegible] April 1944. [illegible] in January 194[illegible] Joint [illegible] Plan ([illegible]) [illegible] February 1944 called for [illegible] Atlantic coast to the Loire. [illegible] controversy over the

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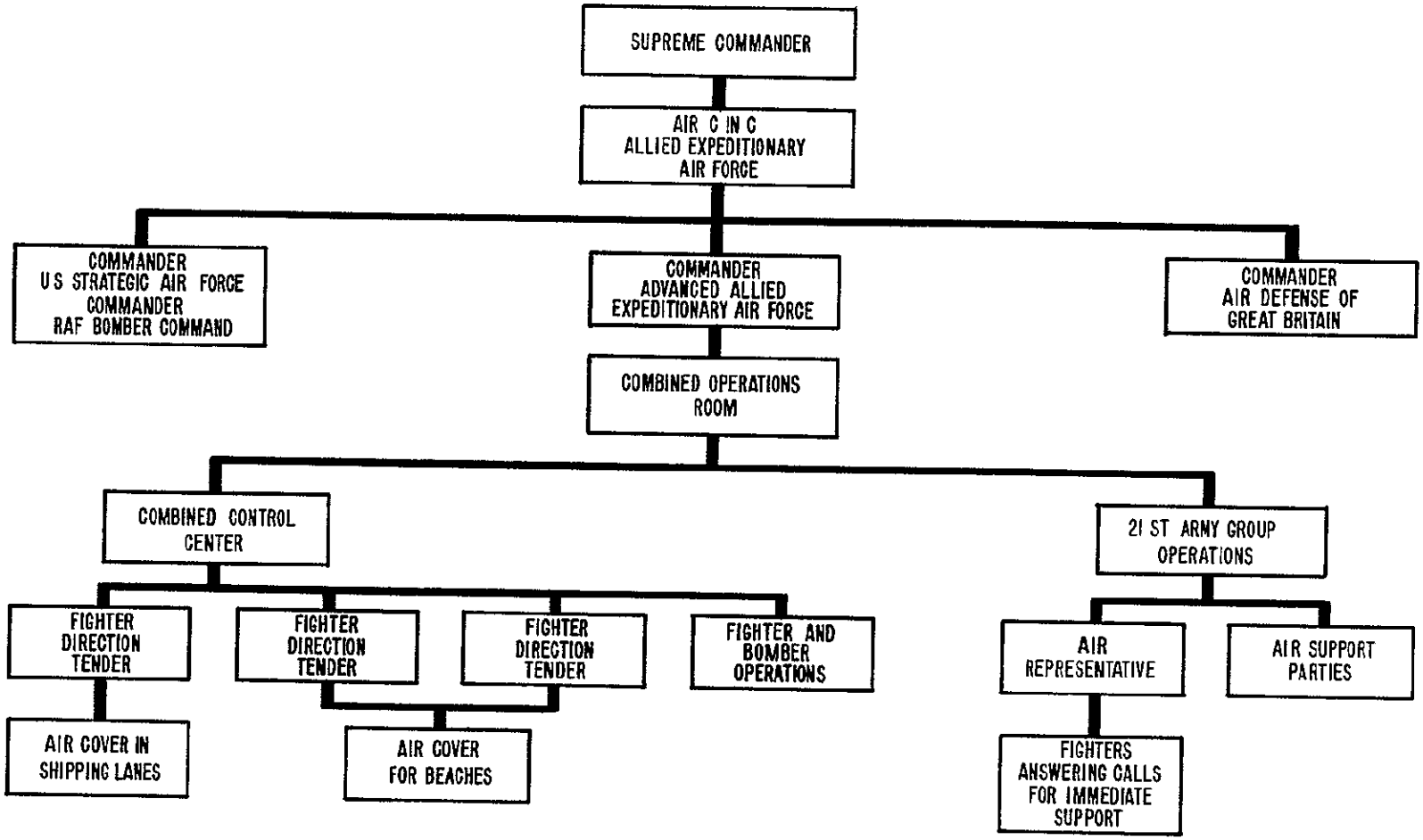
proper employment of strategic air forces in preparation for OVERLORD. There was general agreement that there would be a program of bombing transportation targets to prevent the moving of reinforcements into the battle area and to isolate the battlefield. The disagreement came over the method to be employed. The program laid down by AEAF and advocated by Leigh-Mallory and Air Chief Marshal Tedder, Deputy Supreme Allied Commander, called for a long term program of attrition by attacks on rail centers in French and Belgian towns which would destroy marshalling yards, stations, repair shops, locomotives, rolling stock, etc. This plan was opposed by General Spaatz, Commanding General, USSTAF, and Air Chief Marshall Harris, of RAF Bomber Command, who advocated interdiction, that is, line cutting, strafing, bridge breaking, and the destruction of a few focal points. Such a program would be carried out immediately before the invasion and in the meantime the heavy bombers could be profitably employed against other than transportation targets. On 5 March Spaatz submitted to General Eisenhower a plan calling for attacks against the enemy's oil and rubber industries. Spaatz felt that the bombing of these two vital industries would weaken the whole German economy and would so disrupt troop movements that the enemy might give up altogether. The battle of interdiction vs. attrition raged through most of March. The divided counsels did not run along national lines but criss-crossed between them.

Time was growing short and a decision had to be made. The matter was finally brought to a head at a conference presided over by General Eisenhower on 25 March. Arguments on all sides of the questioned were aired. General Eisenhower drove to the heart of the matter by pointing out that the first five or six weeks of OVERLORD would be the most critical. "The greatest contribution that the air forces could make," he said, "was that they should hinder enemy

COMMAND AND CONTROL, OPERATIONS OVERLORD



SOURCE AIR OPERATIONS BRIEFS, TACTICAL NOTES COMPILED BY THE ARMY AIR FORCES BOARD, 30 NOV 1944

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[illegible]ment." To those [illegible] the transportation plan would have small effect, he countered that in the absence of [illegible] alternative it was necessary only that there will be some chance of success, however small, to justify adopting it.

That the transportation plan would have "some" effect was generally conceded. The question then [illegible] which was the better alternative. General [illegible] air [illegible] oil than transportation. The oil plan would therefore lead to further attrition of the enemy air force. An oil campaign would have decisive effects within six months.

General [illegible] oil [illegible] but he made his decision in favor of the transportation. Explaining his decision to General [illegible] he wrote: "There is no other way in which this tremendous air force can help us, during the preparatory period, to get ashore and stay there." In the same line, however, he left the way open for the oil plan to come in the critical phase of OVERLORD [illegible]. In view of all the circumstances, [illegible] that Eisenhower's decision was justified.

But the British cabinet——Churchill, [illegible] doubts that the transportation plan——was still [illegible] convinced of the wisdom of the decision. [illegible] killed in [illegible] some [illegible] 160,000. General Eisenhower, while absolutely [illegible] the transportation plan, did [illegible] Churchill [illegible]. Under these circumstances

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the Prime Minister and the British cabinet never approved the bombing of railway centers but they did cease active opposition.

On 14 April General Eisenhower took over command of the strategic air forces in support of OVERLORD. The directive he issued three days later called for the destruction and disruption of the enemy's rail communications, "particularly those affecting the enemy's movements toward the OVERLORD lodgment area."[10]

Main Features of the OVERLORD Air Plan

While the oil-transportation controversy was raging the air plans for OVERLORD were being prepared. The overall air plan issued 23 April called in general for the attainment and maintenance of an air situation in which the GAF would be incapable of interfering with the Allied landings. In accordance with the familiar pattern developed in the Mediterranean theater the plan made provision for a preliminary phase, a preparatory phase, and an assault phase. In the first phase, which extended from D minus 50 to D minus 30, counter-air force operations and reconnaissance were to receive the main emphasis. In the second phase a bombing program was to be carried out with the following priorities: (1) the GAF, (2) strategic railway centers, (3) selected coastal batteries, and (4) airfields within 130 mile radius of Caen. During the assault phase the missions of the air forces would consist of protection for the convoys, dropping of paratroops, protection of the beaches and support of group troops. In the post-assault phase the main tasks of the air forces were to delay the movement of enemy reinforcements into the invasion area, to support the ground forces, and to provide air transport.[11]

After they had been furnished the overall air plan the various components of AEAF worked out the details of their individual missions. Some of the

heaviest responsibilities in OVERLORD fell upon the U.S. Ninth Air Force which published its plan on 26 April. Some idea of the size and complexity of the whole operation may be gained from the fact that the battle plan of the largest tactical air force ever to operate as a unit contained 1,300 pages of legal size paper and included over 100 maps and charts.[12]

During the preliminary phase, IX Bomber Command would devote its attention to training and to attacking railway centers, robot-bomb installations, airfields and coastal batteries. These tasks would be continued through the preparatory phase and the additional mission of neutralizing airfields within 130 miles of Caen and selected radar stations would also be assumed. The IX Fighter Command had the task of providing escort for bombers, performing reconnaissance, and carrying out offensive sweeps over France. Continuous daylight patrol over the convoys was to be provided by six groups of P-38's, two from the Ninth and four from the Eighth Air Force. During the assault phase five groups of P-47's would fly high cover over the beaches. Two P-38 groups and four P-47 groups would bomb enemy gun batteries beginning about H-hour. Five fighter groups would be held in readiness as a reserve fighting striking force.[13]

The heavy bombers of the Eighth Air Force and RAF Bomber Command had important assignments in the plans for OVERLORD. After long debate it had been decided that the heavies could best contribute to the success of OVERLORD by extensive railroad bombardment program. RAF Bomber Command assumed a large share of the transportation campaign. Beginning D minus 4 the Eighth Air Force was to continue attacks against transportation and airfield targets in northern France and was to institute a series of blows against coastal defenses, concentrating on those in the Pas de Calais, in furtherance of the Cover plan

to suggest landings in that area. Conservation of bomber strength for D-day was to be effected by the employment of only 50 per cent of the available strength each day.[14]

A highly controversial feature of the OVERLORD air plans called for saturation bombing of the landing beaches. The air commanders doubted the efficacy of such an attack against casemated enemy batteries, strong points, and beach obstacles.[15] The ground commanders, however, maintained that such an attack would have an adverse effect on enemy morale and would prevent the crews from manning their guns. Faced with these arguments the air forces agreed to carry out the attack. To avoid deep craters that would hinder the movement of troops and vehicles on the beaches 100-lb. demolition and fragmentation bombs were to be used except for strong points and areas where craters would not impede the movement of ground forces. To provide a comfortable margin of safety for ground troops, final plans provided that bombings cease five minutes before touchdown if visual conditions prevailed, and 10 minutes if skies were overcast. This would allow a safety zone of about 1,000 yards.[16]

In addition to its beach saturation mission on D-day, the heavy bombers of the Eighth were to carry out three other missions directed at the severance of communications lines between the beachhead defenders and reserve elements with targets consisting largely of road chokepoints around Caen and several small Normandy towns. Leigh-Mallory ordered these missions to hinder German military movements toward the invasion area. Spaatz criticized the plan for D-day employment of the heavies on the ground that it was too inflexible. It absorbed all resources available and left nothing to provide for changing battle conditions. The bombing of French towns Spaatz criticized as being not only inhuman but unlikely to have any appreciable on the battle. Leigh-

[redacted]

Mallory, threatening to resign as air commander in chief of OVERLORD, had his way; Generals Spaatz and Doolittle, however, were allowed to drop leaflets on all French towns near the coast warning them of impending bombings.[17]

Prior to D-day aircraft of the VIII Fighter Command were to engage in normal escort operations. On D-day four P-38 groups were to fly high cover with the Ninth Air Force. P-47's and P-51's were assigned missions in support of bomber operations consisting of constant air patrols to the front and flanks of the beachhead area. Strafing missions were assigned on completion of patrols. Target priorities for these strafing missions were rail transportation, road transportation, ammunition dumps, troop concentrations, and airfields. Another D-day commitment of the VIII Fighter Command was to protect RAF bombers and IX Troop Carrier Command transports withdrawing from France.[18]

All invasion plans rested on the assumption that the Allies enjoyed overwhelming air superiority. Although pre-invasion estimates underrated the Nazi air strength, this assumption was fundamentally sound. On the eve of the invasion the combined strength AAF and RAF in the United Kingdom was over 10,000 combat aircraft, exclusive of transport and troop carrier planes. Roughly, the breakdown was as follows: 3,500 heavy bombers, 1,500 medium, light, and torpedo bombers, and 5,000 fighters.[19] Records discovered after the invasion indicated that the Germans had over 3,000 fighters and bombers available for combat.

Allied air forces alloted for direct participation in OVERLORD were under the operational command of the Air Commander-in-Chief, AEAF, who coordinated strategic and tactical operations under the general direction of the Supreme Allied Commander. Control of the tactical air forces was exercised by Commander Advanced Allied Expeditionary Air Force through the Combined Operations Room and the Combined Control Center, located at Uxbridge, England. The Combined

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Control Center controlled all fighter operations and issued instructions for fighter and bomber operations as directed by the Combined Operations Room. Advanced AEAF dealt directly with the overall ground commander, Field Marshal Montgomery, whose 21 Army Group established at Uxbridge an element to relay ground force requests and to provide information helpful in the development of effective air-ground coordination.

Fighter cover in shipping lanes was controlled by three fighter direction tenders under the orders of the Combined Control Center. One tender operated in shipping lanes in conjunction with a shore station in England. The other two controlled beach air cover, one being in each task force area. This latter function passed to control centers on the continent once they were set up.

Air support parties were to land with each regimental combat team. By means of VHF and HF radio sets they transmitted their requests to Combined Control center through the 21st Army Group Operations Room located at Uxbridge.

This system of control necessarily involved a highly complicated communications and signals set-up. The overall air plan provided for ship-to-shore, point to point, and ground to air signals. The derivative plans of lower headquarters contained signal annexes bulky with bewildering detail. An air representative was to be aboard each of the five headquarters ships scheduled to accompany the initial landing force to advise assault commanders and to direct Allied aircraft to targets in the Channel or on the beaches. Requests originating in the Task and Assault Force Flagships were given to the Air Representative embarked and were transmitted directly to Uxbridge; those originating in the Assault Force Flagships were monitored by the Task Force Flagship. All requests were filtered in the 21st Army Group Operations Room

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Pre-Invasion Operations

In accordance with [illegible] pre-invasion air [illegible] the only [illegible] of the [illegible] railway [illegible], [illegible] of [illegible], [illegible] of oil [illegible], and [illegible]. All [illegible] directed [illegible] velocity bombs [illegible] should be [illegible] fully [illegible]. Furthermore, within [illegible] of the pre-invasion [illegible] in the [illegible] of [illegible], carrier air force activity [illegible] to obtain [illegible]. Of all the pre-invasion [illegible], the [illegible] effort [illegible] of the [illegible] in the attacks.

At this point [illegible] that [illegible] should [illegible] advocates of [illegible] approved an [illegible] of such. Actually, before the campaign was over, [illegible] of [illegible]. There [illegible] opinion [illegible] to [illegible] in [illegible].

In obtaining [illegible] all [illegible] would [illegible] by [illegible]. However, [illegible] to occur [illegible] all [illegible] be [illegible] to [illegible].

large numbers especially after the fighters began to drop belly tanks on stalled trains and to set them afire by strafing.

In May also the air forces undertook what proved to be a brilliantly successful campaign against bridges. In the beginning there was some doubt concerning the feasibility of attacking bridges. These doubts were swept aside by an experimental attack on 7 May. Using 1,000-lb. bombs eight P-47's of the Ninth Air Force demolished a railway crossing over the Seine near Vernon. An extensive interdiction program was then prepared which called for the cutting of all bridges up the Seine to Mantes and up the Loire to Blois and at critical points in the so-called Paris-Orleans gap stretching between the two rivers. Considerations of security made it necessary to reserve the Loire bridges until D-day. The bridges over the Seine led to the Pas-de-Calais as well as Normandy.

The campaign against the Seine bridges opened on 24 May. It soon became clear that in bridge breaking the B-26 was the choice weapon. The best combination was something like this: B-26's dropping 2,000-lb. bombs, P-47's diving with 500-lb. bombs, and Typhoons firing rocket projectiles. By D-day a line of interdiction along the Seine had been effectively established. To keep the bridges below Paris impassable Marauders, Thunderbolts, Lightnings, and Typhoons bombed round-the-clock.

By D-day the Allied air forces had dropped a total of 76,200 tons of bombs on transportation targets: 71,000 on rail centers, 4,400 on bridges, and 800 on open lines. That the railway campaign seriously interfered with the enemy's ability to move in reinforcements there can be no doubt. Between 1 March and 6 June rail traffic declined 60 per cent. In the Region Nord, the area most heavily bombed, three fourths of the normal traffic was knocked off the rails.

In general those who had favored interdiction all along ascribed the favorable results of the campaign to that forms of bombing, while the advocates of attrition were certain that rail center attacks had accomplished the job. Interrogation of German commanders threw little light on the subject for they held opinions quite as varied as the Allied commanders. It is possible to maintain, of course, that since the object of the campaign was successfully achieved it makes no difference which method was the more effective. It should be borne in mind, however, that the Allies could afford the luxury of experimenting with both methods because they enjoyed overwhelming air superiority. In future operations such a wide margin of air strength may not be available and a choice of methods may have to be made. A careful weighing of the evidence seems to declare unequivocally in favor of interdiction for by that method more decisive results were achieved with greater economy of effort.[24]

Neutralization of German Air Bases

The general weakening of German air power and the campaign to reduce the German fighter force had been carried out under the POINTBLANK and ARGUMENT programs and had reached a climax early in the spring of 1944. The successful execution of these programs did not mean, of course, the total vanquishment of the GAF. A month or so before the invasion the Allies estimated that the Germans still had around 900 aircraft, including 450 bombers that might be used against the invaders. No target is more vulnerable to an air attack than a large amphibious force and even a depleted air force may be capable of inflicting heavy damage on such a target. Although the Germans had moved most of the aircraft from the 100 fields within a 350 mile radius of the landing beaches, these fields could be utilized on an emergency basis in an attempt to stop an amphibious assault. Furthermore, experience had shown that the

Germans would use their depleted air power in an entirely offensive role and their fighters were capable of operating from tattered fields and nearly-ruined installations.

In the face of these circumstances the master plan for reducing the threat of interference from the GAF called for a three-fold program: continued policing to keep the Luftwaffe in a feeble condition; heavy bomber invasions deep into Germany just before and just after the invasion to discourage the sending of air reinforcements to France; and a three-day blitz on French air fields around Caen immediately preceding D-day. Airfields within a radius of 130 miles of Caen were designated Area I while those beyond this area but still within 350 miles of Caen were designated Area II. In Area I, 8 airfields were assigned to RAF Bomber Command, 12 to AEAF, and 20 to Eighth Air Force. In Area II, 59 airfields were assigned to the Eighth and Fifteenth Air Forces.[25]

The pre-invasion bombing of airfields was inaugurated by the Ninth Air Force on 11 May. By D-day, 34 airfields in Area I were attacked by 3,915 Allied aircraft with the result that 4 airfields were placed in Category "A" (completely destroyed) and 15 in Category "B" (severely damaged, further attacks warranted). Of a total of 6,717 tons, 3,197 were dropped by the Ninth Air Force, 2,638 by the Eighth Air Force, and 882 by the RAF.[26]

There can be little doubt that the airfield campaign accomplished its main objective which was to deny the enemy serviceable bases within good striking distance of the beachhead. One of the most remarkable facts about the whole invasion was that the GAF did not make a single daylight attack against the Allied forces in the Channel or on the beaches. This achievement was the result not only of the airfield campaign but also the cumulative effects of the counter-air force campaign and especially the missions of the Eighth Air

Force against vital German industries which prevented the Germans from shifting their airpower from the industrial heart of Germany to the invasion beaches.[27]

Attacks on Coastal Defenses

One of the things that gave the Allied leaders most anxiety in the planning of OVERLORD was the much vaunted Atlantic Wall. As they were constructing the hideous mass of shore defenses the Germans developed the habit, as one writer has said, of "pouring a new rumor of impregnability with each bucket of concrete."[28] The Allied planners were not taken in by those rumors but the Atlantic Wall could not be discounted entirely and every precaution had to be taken to reduce its effectiveness.

Of particular concern to the Allies were the coastal batteries along the Atlantic Wall, each of which had two to six guns ranging in caliber from 105mm. to 406mm. The batteries were camouflaged, well-located, and encased, so it was believed, with steel and concrete. Nothing short of a direct hit could neutralize such a weapon.[29] In view of these circumstances OVERLORD plans until April 1944 did not call for air force action until D-day at which time it was hoped that by bringing a continuous heavy volume of air and naval fire to bear the enemy defences could be rendered ineffectual during the critical stage of the assault. During the spring of 1944, however, both the Army and Navy began to bring pressure on the air forces to attempt to neutralize the coast batteries before D-day. The other services pointed out that bad weather might prevent or at least hamper the last minute saturation of gun positions. When, in April, it was discovered that eight of the major coastal batteries in the invasion area had not been casemated and their lids had not yet been fitted, the air forces agreed to try to knock them out.[30]

In the counter-battery campaign, as in all other pre-invasion operations,

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security was a major concern. In order not to show special interest in the Normandy batteries, two targets outside the invasion area were chosen for every one inside it.[31]

The counter-battery campaign was opened on 13 April by medium bombers (A-20's and B-26's) of the Ninth Air Force and Second Tactical Air Force. During April the 8 uncompleted batteries inside plus 16 uncompleted ones outside the invasion area were attacked. In May the mediums were joined by the heavies of RAF Bomber Command and the Eighth Air Force. Attacks were continued with a crescendo up to D-day; on the day before the invasion 5,904 tons of bombs and 495 sixty pound rocket projectiles were unloaded on coastal batteries in the invasion area.

In addition to the pre-invasion bombing the coastal batteries were subjected to intense air and naval bombardment on and after D-day. It became difficult therefore to separate for purposes of assessment the damage of pre-invasion from the damage of the assault and follow-up periods. It appears, however, that relatively few gun emplacements were destroyed by the pre-invasion attacks. But not to be overlooked were the effects of unbalancing and dislocation guns and the demoralization of crews. Here, as in all phases of the war, the cumulative effects of air superiority must be kept in mind. The Atlantic Wall was breached not only because of bombs aimed directly at in but also because the fortification were far from complete on D-day. A shortage of materials, due both to production and transportation difficulties, hampered all fortification work. A shortage of cement, which began to appear during the winter, was greatly aggravated by the transportation capaign.[32]

Another important pre-invasion task of the air forces was to neutralize the very intricate and highly efficient system or enemy radar coverage. The

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[illegible] oil [illegible] ports [illegible] bridges and [illegible]. [illegible] destroy [illegible].

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Planning of the Campaign Against Oil

It was during the pre-invasion period that the oil campaign, one of the most successful uses of [illegible], was opened. Ultimately the oil [illegible] to have a direct and crucial effect on the outcome of the war but [illegible] on [illegible] the invasion [illegible].

The Allied air forces had long [illegible] the important role which oil played in the German economy [illegible] in the conclusions of [illegible]. [illegible] of 1944, however, the air forces [illegible] to [illegible] with [illegible]

commitments and with the exception of the famous low level attack on Ploesti in August 1943, were unable to launch an extensive campaign. It will be recalled that General Eisenhower's decision on 25-26 March in favor of transportation did not entirely rule out an oil campaign, provided favorable opportunities presented themselves. A little imagination and latitudinarian interpretation of directives could easily provide such opportunities. General Eisenhower's directive of 17 April to the Strategic Air Forces gave first priority to the destruction of the GAF. Did not the GAF use oil products and would not attacks on oil targets force the GAF to come up and fight? General Spaatz contended all along they would. At any rate it was worth trying. Besides the synthetic refineries presented a good target for they were grouped together in central Germany.

With General Eisenhower's verbal consent the oil campaign was opened on 12 May when more than 800 heavies bombed synthetic oil plants at Zwickau, Merseburg-Leuna, Brux, Lutzendorf and other cities. Severe damage was inflicted on the refineries and, as had been hoped, the GAF reacted vigorously. OVERLORD commitments prevented further attacks until 28 May when another series of attacks was made. Meanwhile the Fifteenth Air Force continued its efforts against the Ploesti refineries. These excursions deep into enemy territory discouraged the transfer of aircraft toward the invasion area and inflicted further attrition on the enemy air force. Entirely aside from its merits as a counter-air force measure, the oil campaign had immediate results on the fuel situation in Germany. Synthetic oil production for June was only half of the March output and by August all the German forces were hampered by shortages of fuel and lubricants. The pre-invasion oil attacks were only a beginning but they set in motion a campaign that, according to Reichminister Albert Speer, brought about the decision of the war.

Air Reconnaissance

An important task of the air forces in any amphibious invasion is to provide air reconnaissance. Probably in no operation in history did the air forces do a more thorough job in this respect than in OVERLORD. Air reconnaissance was of two types: tactical and photographic. The Ninth Air Force and Second Tactical Air Force carried out a broad pattern of tactical reconnaissance both as part of the deception plan and to gather information concerning troop movements, activity in repairing bridges and railroad tracks, and the like. A total of 400 visual reconnaissance sorties were flown by the Ninth Air Force between 15 May and D-day, in addition to 140 weather reconnaissance sorties.[35]

Although they already had mosaics of the entire coast line of western Europe and photos of the Normandy and Pas-de-Calais beaches from 3,500 feet, the invasion planners required still more detailed information. Reconnaissance planes were therefore sent out to photograph the proposed assault beaches from various distances and at zero altitudes so that the unit commanders would know what their objectives looked like from several miles out, at 1500 yards, and from the shore line. The Ninth Air Force Photographic Group also made mosaics of the landing and drop zones for the IX Troop Carrier Command and the Airborne Division. A particularly hazardous mission was the photographing from low altitudes of the shallow water and beach obstacles so that the exact nature of such beach barriers might be known. The information thus obtained was of vital importance in showing the assault commanders which of the obstacles were wood, concrete, or steel, whether mines were attached, and where the belts were the thickest.[36]

In all the preparatory air operations security had always to be provided

for. It is very remarkable that the transportation program, the bombing of air fields and beach defenses, and the pre-invasion reconnaissance operations were all carried out without indicating to the enemy the point of attack. The air forces had prepared the way and the assault forces were to achieve tactical surprise in the largest amphibious invasion in history.

Operations During the Assault Period

The original D-day was 5 June but owing to unfavorable weather it was postponed to 6 June. H-hour for the seaborne landings on the American beaches, UTAH and OMAHA, was 0600 while on the British beaches the time for touchdown varied from 0700 to 0730.

The first important D-day commitment of the air forces was in connection with the troop carrier operations. The 82d and 101st Airborne Divisions were dropped on the Cotentin Peninsula on the night of D minus 1. Reinforcements were flown in on D-day and on the morning of D plus 1. A second air force commitment involved the drenching of coastal batteries and shore defenses in the early morning preceding H-hour. The Eighth Air Force, which was to bomb targets chiefly on the OMAHA and British beaches and chokepoints in Caen, dispatched 1361 heavy bombers between 0155 and 0529 hours. Weather forecasts indicated that instrument bombing would have to be employed. A complicated pre-dawn assembly, which involved the forming of 225 flights of six aircraft each, was successfully executed by all flights except three which did not make contact with the H2X leader. On leaving the English coast the units adopted six-squadrons abreast formations. Of the 1,198 bombers dispatched against beach installations, 1,015 attacked the assigned targets. At Caen, 47 of the 163 aircraft dispatched carried out their attacks as planned. The principal reasons for failure of units to attack as planned were the inability

to locate P2X leaders, poor definition on the Pathfinder scope, and absence of assigned Pathfinder aircraft as in the case of the 3d Bomb Division units assigned to the Caen targets. On the whole the bombing runs were well executed and all attacks were well within the allotted period. A total of 2,944 tons of bombs were dropped with no interference from the GAF and with the loss of only one aircraft to enemy ground defenses.[37]

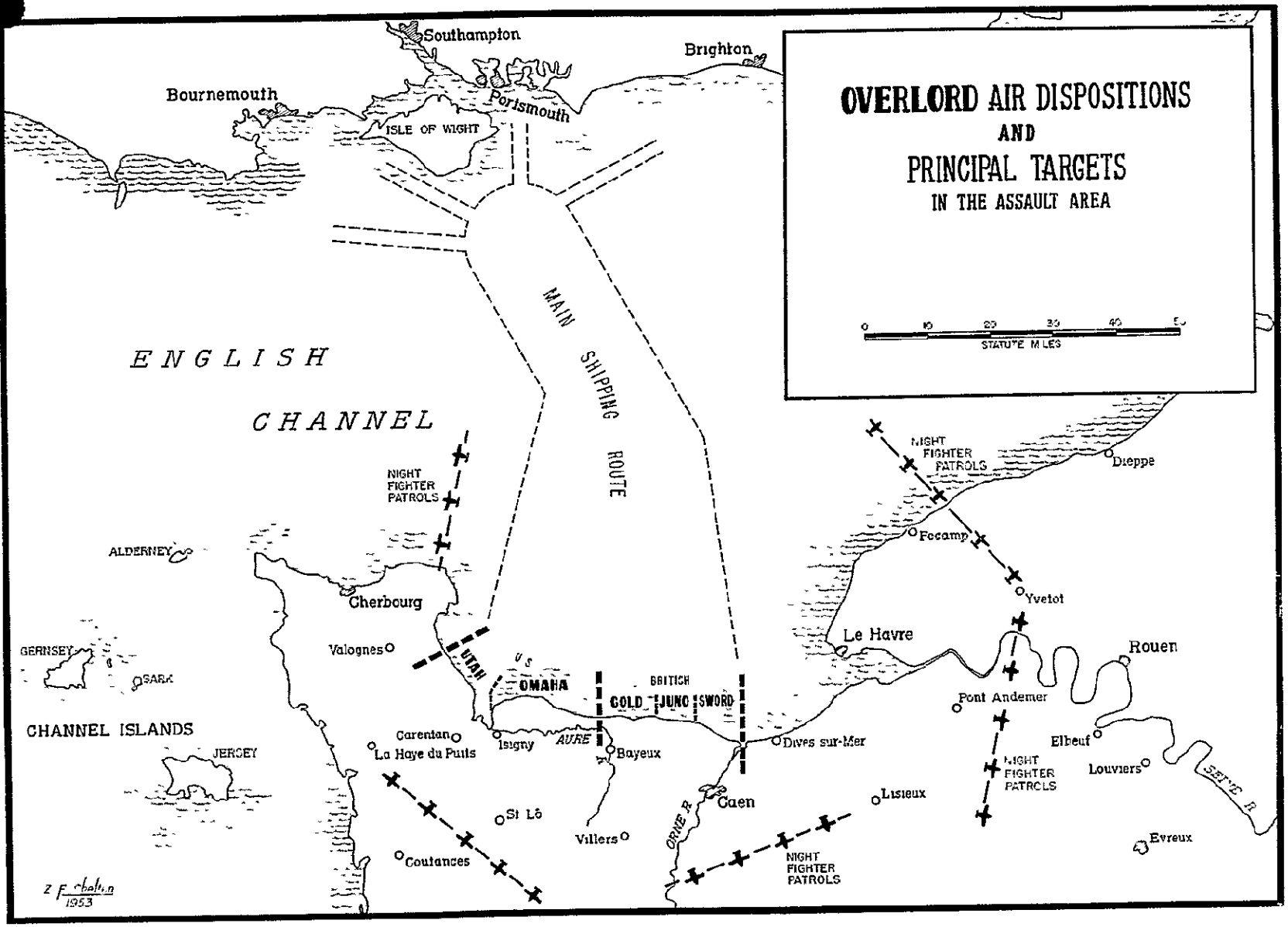
Medium bombers of IX Bomber Command, assigned targets in the UTAH area, took off between 0343 and 0500 hours. Flying in boxes of 18 planes, the 269 aircraft dropped about 550 tons. Owing to weather conditions the visual attacks on the seven defended localities in the UTAH area were made at unusual levels--between 3,500 and 7,000 feet.[38] Fighter-bombers of the IX Fighter Command delivered their attacks between 0550 and 0638 hours. Coastal batteries at UTAH beach were hit by 33 aircraft dropping 47 tons while railway installations at Carentan were bombed by 129 planes dropping 83 tons.[39]

Evaluation of the results of D-day bombing of coastal defenses was extremely difficult for several reasons. Because of cloud cover, strike photos were of limited value. Both naval and ground forces poured a tremendous amount of artillery fire into the assault on and after D-day. Later, cleaning-up operations further obscured the picture. Nevertheless, one or two generalizations can be made. In these pre-H hour attacks the danger of shorts was great and in the interest of safety pathfinder bombardiers were instructed to delay up to 30 seconds after the release point showed on their scopes before dropping. The safety precaution resulted in some cases in the main concentration of bombs falling too far inland. On UTAH beach only an estimated 43 per cent of the bombs fell within 300 feet of their targets. The beachlines from OMAHA east were left untouched. The heavy casualties suffered at OMAHA later caused severe criticism

of the air forces but the necessity for taking precautions against short bombing is the obvious explanation. It is believed that no guns in emplacements were destroyed on D-day--a result predicted by air forces. The main contribution made by the last minute bombing of coastal defenses was the demoralization of enemy troops and the disruption of signal and transport communications, which hindered the deployment of immediate reserves.[40]

While the early dawn attacks were being made the largest invasion fleet ever assembled--more than 4,000 ships, not counting small craft--was making its way to the assault beaches. Continuous cover was furnished exactly as planned. P-38's from the Eighth and Ninth Air Forces protected the troop-laden ships as they moved across the rough Channel. As the troops spilled ashore the RAF furnished low and the IX Fighter Command furnished high cover over the beaches. Enroute not a single enemy plane came within striking distance of the convoys. Three enemy planes (FW-190's) were sighted and driven off. In fact there was no enemy air action in the invasion area until nightfall when 22 enemy planes attacked shipping. This token effort caused no serious damage.[41]

After the troops began pouring ashore, another task, direct support of the ground forces, was added to the duties of the air forces. As soon as the air support parties were functioning on the beaches requests began to be received at the combined control center at Uxbridge. Of thirteen requests received on D-day, five were refused because of unavailability of aircraft, weather, or the late hour but the remaining eight requests resulted in 11 missions. Three of these were armed reconnaissance along the roads leading from Coutances to Carentan, St. Lô, and La Haye du Puits. Railway targets and a highway were bombed. An urgent request for divebombing gun emplacements north of Isigny



resulted in claims of hits in the target area. Other batteries shelling the beaches from the vicinity were attacked. Scattered targets, including six gun positions, were reported hit between Isigny and Bayeux. A single day's experience with the control center at Uxbridge showed that it was too complicated and resulted in too long delays in fulfilling requests. The control plan was accordingly revised so that air alert squadrons were placed at the disposal of the air representative on board the Ancon, headquarters ship anchored off OMAHA beach. Targets were reported to the Senior Air Representative by the Air Support Party on shore, or determined by reconnaissance whose reports were intercepted by the Ancon.[42]

Throughout the whole of D-day both the Eighth and Ninth Air Forces were tactical and both joined in an all out effort to get the ground troops ashore and keep them there. In addition to the airborne operations, convoy and beach patrol, last-minute softening-up operations, and direct support, the air forces continued and intensified the interdiction program. Heavies of the Eighth Air Force bombed chokepoints and bridges in the assault area while the mediums of the Ninth Air Force attacked coastal batteries on both flanks of the invasion area in addition to transportation targets. VIII Fighter Command executed its three missions, FULL HOUSE, STUD, and ROYAL FLUSH, substantially as planned. These operations were carried out in areas on the perimeter of the assault zone with the purpose of preventing or delaying enemy movements. Aside from weather flights, leaflet dropping, and reconnaissance, the Eighth and Ninth Air Forces dispatched 8,722 aircraft on D-day. Considering the size and importance of the operation, losses were remarkably low--only 71 planes, mostly fighters, to air combat and flak.[43]

D-day served to emphasize what was well known anyway--that the Luftwaffe

was a sadly depleted force. Though alerted to the Allied invasion, it could put up no more than 250 sorties and most of these planes were forced to jettison their bombs and fight before arrival in the battle area. Not a single daylight attack was made against Allied forces in the Channel or on the beaches.[44]

Close Support on the Beachheads

By the end of D-day the UTAH beachhead was reasonably secure. During its advance south to capture Carentan on the 12th and its push north to gain the ground on Quineville ridge on the 14th, the VII Corps was supported by attacks on gun positions, roads, and near-by bridges. Heavy casualties were inflicted on fleeting targets and the commander of the German 77th Divisions was killed by roving fighter-bombers while he struggled to direct the escape of his troops to the south. Attacks on road centers were devastating but of such little tactical importance that the enemy was led to wonder what their "deeper significance" might be. Considerable accuracy was achieved in attacks on defense installations but later examinations disclosed that not even 2,000 pound bombs materially damaged heavy cement structures.[45]

It was at OMAHA beach that air support was particularly important. In spite of strenuous efforts the V Corps had been able to penetrate only about a mile and half by the end of D-day. To speed his advance Maj. Gen. Leonard T. Gerow called for continuous fighter-bomber support to search out and attack enemy artillery firing on the beaches. Maj. Gen. Elwood Quesada, Commanding General, IX Tactical Air Command, who was on the far shore, telephoned his group commanders to inform them of the urgency of the situation. Since the V Corps front was highly fluid, pinpoint attacks were not feasible. A bomb line was accordingly drawn on the Aure River and IX Tactical Air Command was directed to provide continuous armed reconnaissance of the area Aure River-Bayeux-Airel

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in squadron strength from 0600 until 2230 hours on 7 June. In the action which followed specific targets were generally selected by squadron leaders; in only two cases did the headquarters ship direct attacks on specific targets. Enemy batteries held a high priority but armor and trucks on roads as well as troop concentrations received attention. Close support was continued, weather permitting, and by 12 June the V Corps had driven inland 15 to 20 miles and had effected a junction with VII Corps. On the 13th, V Corps was ordered to limit its offensive action to aggressive patrolling while VII Corps continued its offensive.[46]

Air support in the beachhead was greatly facilitated by the establishment of control facilities on the continent. Air support operations had originally been directed by the Ninth Air Force Advance Headquarters at Uxbridge, subject only to such modifications as might be effected by the controller on board the Ancon. On 10 June the 70th Fighter-Bomber Wing, based on the continent, took over the control functions hitherto performed on shipboard. Beginning 18 June IX Tactical Air Command Advance Headquarters assumed the major responsibility for the direction of air support from the continent. IX Tactical Air Command filtered ground requests for assistance, ordered missions as it saw fit, and transmitted to Uxbridge only such requests as it could not meet with its own resources. These developments were made possible by the efficient work of the Ninth Air Force signal units in establishing the necessary communications equipment on the continent.[47]

Another development which greatly facilitated tactical operations was the constructions of air fields in Normandy. As in the case of previous landings, aviation engineers had hit the beaches immediately behind the assault troops. One emergency landing field was ready by the end of D-day and other, more

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extensive installations, followed rapidly. By 19 June fighter-bomber groups were operating from Normandy airfields. This made the application of air power more timely and economical and permitted more prompt dissemination of orders and information. A five-minute flight would now carry a plane from flight to target and aircraft could operate from continental bases when weather prevented operations from the continent.[48]

The capture of Cherbourg was a vital part of the invasion plan, and it was to be effected with the least delay to provide the main port of supply for the invading forces. VII Corps planned a direct attack on the city from the south. On 21 June the battle for Cherbourg reached a critical stage and General Collins made a request for a vast air support project, the air pulverization of an area of some 20 miles. The air commanders entertained grave doubts concerning the effectiveness of such a program but agreed to carry it out when ground force commanders explained that the purpose was not so much the direct preparation for the ground advance as demoralization of the enemy troops and disruption of communications. A plan was accordingly worked out by AEAF, Second Tactical Air Force, and Ninth Air Force Advance Headquarters whereby fighter-bombers and medium bombers were to neutralize the enemy defenses by bombing and strafing from H minus 2 to H-hour followed by pin-point bombing from H to H plus 1. A safety zone was established by withdrawing friendly troops 1,200 yards from the bomb line which was marked by white smoke laid on by artillery.[49]

H-hour was 1400 hours, 22 June. Ten squadrons of fighter-bombers from Second Tactical Air Force attacked from 1200 to 1300 hours. Twelve groups of fighter-bombers from the Ninth Air Force attacked from 1302 to 1355 hours. Three groups of fighter-bombers and eight groups of mediums attacked from 1401

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to 1455 hours. In a total of 713 sorties 629 tons of general purpose bombs were dropped. On the following day 213 sorties were flown and 311 tons of general purpose and five tons of fragmentation bombs were dropped. Results, so far as immediate tactical developments were concerned, justified air force misgivings. Only a small fraction of the area drenched by bombs had been taken after two days of ground fighting. Poor results were obtained in the attacks against Fort du Roule guarding the south approach to Cherbourg. Some of the outer walls and AA guns on top of the fort were destroyed but no damage was done to fixed gun positions. The ground forces generally agreed, however, that the main purposes of the saturation bombing before Cherbourg--disruption of enemy communications and morale--had been achieved. At any rate the air forces continued their close support and on 25 June units of VII Corps entered the city.[50]

By 1 July American troops had cleared the Cotentin Peninsula and elsewhere the Allied beachheads had become a continuous strip of territory stretching along the Normandy coast to a firmly held position east of the River Orne. At one point, where the Allied spearhead had thrust out to Caumont, the beachhead was 20 miles deep. Besides Cherbourg and other towns in the Cotentin Peninsula, the Allies held Isigny, Carentan, and Bayeux. Caen was still in German hands. The first critical phase was now definitely over and the fighting assumed the nature of a conventional land campaign conducted on a wide front.[51]

Isolation of the Battlefield

One of the most important contributions made by the air forces to the success of OVERLORD was the isolation of the battlefield. In the discussion above it was pointed out that the Allied plan for sealing off the battlefield called for the attack of all bridges, viaducts and other critical points up

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the Seine to Nantes, up the Loire to Blois, and in the Gap between the two rivers. Since the bridges over the Seine led to the Pas-de-Calais as well as Normandy they could be, and were, neutralized. By D-day all rail and highway bridges from the environs of Paris to the sea had been rendered impassable to rail traffic. Despite the fact that two bridges were re-established, no traffic crossed the Seine from the North into the tactical area during the entire campaign with the exception of one train which crossed the re-established bridge early in August.[52]

Immediately after the landings, with security no longer a consideration, selected points on the Loire were subjected to systematic attack. The importance of the bridges to the Germans is indicated by the following extract from the telephone log of the German Seventh Army: "The Loire bridges must be protected under all circumstances, since these bridges are of vital importance..."[53] By 15 June over 2,650 tons of bombs had been dropped, almost entirely by heavies, causing the destruction of 8 of 10 bridges in the Loire section. Only 14 trains got across the Loire in the week ending 16 June. In the Gap Section between the Seine and the Loire 17 cuts were achieved. A total of 482 trains crossed the Gap during the first week in April whereas during the week ending 16 June only four trains crossed. No traffic whatever moved across the Gap during the following three weeks.[54]

Other targets related to the objectives of interdiction were also attacked. Rail center attacks were continued. In fact targets within and without the interdiction line increased in number after D-day and attacks were scheduled daily on the basis of intelligence reports regarding rail activity. A total of 50,000 tons was dropped from D-day through 20 August when the shift in the military situation eliminated the need for such attacks. Making allowance for

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repair and recovery it was estimated the rail center bombings alone effected a 57 per cent reduction in German traffic.[55] Rail cutting also received emphasis after the assault--cuts within the line of interdiction being designed to prevent movement inside the theater of operations, those beyond it to prevent movement into it. Despite the resourcefulness of the enemy in making repairs during bad flying weather, the cuts caused traffic jams which offered juicy targets to Allied planes, including armed reconnaissances. In addition to rail transportation, high bridges, troop concentrations, motor columns, and traffic centers were also attacked as part of the interdiction program. Ravenous fighter-bombers would even hunt down individual vehicles. German staff cars resorted to the use of spotters fore and aft, to give warnings of the approach of Allied planes. All parts of the interdiction program were interwoven and its effects were widespread and pervasive.[56]

Did the interdiction program achieve its tactical object which was to prevent the enemy from rushing supplies and reinforcements into the battle area? The evidence on this point is extensive and overwhelming and can only be summarized very briefly here. The war diary of the German Seventh Army recorded on D-day that the deep and rapid penetrations could be ascribed to the "great superiority in the air and on the sea." On the 11th the diary recorded that "troop movements and all supply traffic by rail to the army and within the army sector must be considered as completely cut off." Similar statements are found throughout the battle of the beachhead. On 8 July Field Marshal Rommel stated that "the losses through hostile artillery and air attacks are such that, even on comparatively quiet days, our combat strength and our already diminished transport capacity decreased farther. The superiority of the German infantryman will never come into play so long as the enemy air power

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a constant flow of personnel, munitions and supplies into the beachhead. Ground forces were able to dispense with the time and labor-consuming camouflage procedures. Of major importance was the fact that the morale of Allied troops was never jeopardized by the nerve-shattering ordeal of large scale air attacks. The reduced scale of air opposition also made it possible for the tactical air forces to devote the major portion of their effort to offensive operations.

Prior to the invasion of the continent there were considerable doubts in the minds of some that the second phase of air force doctrine, the isolation of the battlefield, could be accomplished on a large scale. The experience in Italy, particularly, led many to question the soundness, or feasibility, of this doctrine. OVERLORD dispelled all doubts on this score and the evidence is overwhelming that this phase of operations was outstandingly successful.

In the third phase of operations, direct cooperation with the ground forces, all the weight of the vast air power that had been built up in the United Kingdom was brought directly to bear to insure the success of this operation.

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Chapter VII

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The amphibious landings in Southern France on 15 August 1944 were the last in a long series of such operations in the Mediterranean. No basic changes in the employment of air power were introduced but refinements in technique were made and the many lessons learned in the Mediterranean and European theaters were applied to make this the most nearly perfect amphibious operation from the point of view of both planning and execution. In the account that follows no attempt is made at an exhaustive history of the operation. The aim rather is a brief analysis to show the essential features of amphibious operations as they were developed in the European-Mediterranean theater.

From the beginning, ANVIL (after August 1944, DRAGOON) was thought of as an operation to insure the success of OVERLORD. The directive issued to General Eisenhower in December 1943 stated that both operations would be carried out in May 1944. In February 1944, however, the COS decided that the invasions could not be mounted simultaneously. There were a number of reasons for postponing ANVIL: the Allies had been unable to break the Italian stalemate during January and February; the Anzio landing, temporarily at least, had made matters worse instead of better; and there was the eternal shortage of landing craft. During the next few months there was a period of doubt and indecision during which the operation on again off again. In general it can be said that the Americans favored the operation. Basing their reasoning almost exclusively on military considerations, they felt simply that ANVIL was the quickest way to insure the success of OVERLORD and to end the war. The

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British, ever conscious of political considerations, had in mind post-war eventualities when they advocated an advance into the Balkans. During the first six months of 1944 the matter was argued back and forth between the American and British chiefs of staff and when they found it impossible to agree they tossed the question into the laps of the President and the Prime Minister. The President backed up General Eisenhower who strongly favored the operation and on 1 July the Prime Minister reluctantly gave his consent. On 2 July the C S directed General Sir Henry Maitland Wilson, Supreme Allied Commander Mediterranean (SACMED) to make every effort to meet a target date of 15 August. Thus the final decision on ANVIL came only one and a half months before it was to be launched.[1]

Fortunately, however, planning was already well advanced. In fact, a rough outline plan had been issued by AFHQ on 25 June. The larger purposes of the operation were to assist the Normandy attack by engaging German forces that might otherwise be used in Northern France; to capture a major port through which large-scale reinforcements could flow; to liberate France; and to join up with the cross-channel invasion forces for a decisive battle with the German armies of the west. The Seventh Army, which had made the assault on Sicily, was made responsible for carrying out these tasks. The operation was to be carried out in accordance with the principle of joint command. The Army, Navy, and Air Forces were co-equal and operated under the direction of the Theater Commander. The Naval Task Force Commander was to assume command of the entire seaborne expedition from the time of sailing until the ground force was firmly established ashore. The Ground Force Commander was to have command of all ground forces participating in the operation while the Air Commander in Chief was to name an Air Task Force Commander whose responsibility

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would be to provide full air support for the operation. The commanders of the forces involved were: Maj. Gen. Alexander M. Patch for the ground forces; Vice Admiral Henry K. Hewitt for the naval task force, and Brig. Gen. Gordon P. Saville in charge of the air task force.[2]

The Army Invasion Plan provided for a triple daylight assault by the 3d, 36th, and 45th Infantry Divisions (reinforced) of VI Corps, supported by the 1st French Armored Division (Combat Command). The landings were to commence at 0800 hours on 15 August on beaches between Cap Cavalaire and Agay. The area chosen for the landings could be covered by fighters based on Corsica, it afforded good beaches, proper exits, and terrain suitable for the construction of fighter strips. The landings were to be preceded by an airborne landing the object of which was to prevent the movement of enemy troops from the Le Puy sector into the assault area.[3]

The Western Naval Task Force, consisting of over 800 ships and craft and over 1,200 ship borne landing craft, would carry the Seventh Army to the beaches, contribute to the silencing of the shore batteries and exploit port facilities to ensure troop maintenance. The Navy's Aircraft Carrier Force, which had over 200 Seafires, Wildcats, and Hellcats, was to cooperate with the land-based aviation by providing fighter protection, spotters, and close support missions. While in the assault area the carrier-based planes would operate under control of XII Tactical Air Command.[4]

In accordance with a pattern that had long since become standard, MAAF's Outline Air Plan issued 12 July outlined the basic tasks as neutralizing the enemy air forces, protection of convoys and beaches, interdiction of enemy movement into the battle area, and close support of the ground forces. To these familiar tasks another was added, cooperation with the Maquis. The various air forces under MAAF had their specific tasks. NASAF was concerned

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with a pre-invasion bombing program to be carried out in four phases. Responsibility for the provision of air protection to shipping and beaches was divided between MAC'F and XII Tactical Air Command. Coastal was to provide protection, day and night, for all assault and follow-up convoys to a point within 40 miles of the coast of southern France; XII TAC would take over north of that line. MAC'F was also charged with the protection of embarkation ports, intruder missions, shipping reconnaissance east and west of Toulon, shipping strikes at Navy request, and defense of territory in the rear of the battle area.[5]

Obviously the major burdens for the invasion would fall upon the Tactical Air Force. Maj. Gen. John K. Cannon, besides planning for the assault operations, had to reorganize his entire air force and occupy new bases. General Cannon decided to leave the Desert Air Force to cooperate with the armies in Italy and to move XII TAC, an outfit consisting chiefly of fighters and fighter-bombers, to Corsica. Two medium bomber wings were to be held in readiness to assist either Desert Air Force or XII TAC as circumstances might require. XII TAC was to be responsible for day and night cover for the convoys and assault beaches, for air-sea rescue in the assault area, and for support of Strategic Air Force between 0550 and 0730 hours on D-day, with attacks at maximum strength on active gun positions.[6]

Plans for control of aircraft conformed in general to methods followed in the invasions of Sicily and Italy. Provision was made for a Headquarters Ship and Stand-by, for a Fighter-Director Ship and three Stand-bys, for an Air Sea Rescue Ship, and for floating GCI stations. The most significant improvement in control techniques was the employment of a separate Fighter Direction Ship to control defensive operations, instead of using the Headquarters Ship for this purpose. The need for a fighter direction ship was one of the major lessons learned at Anzio.[7]

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As in the case of the cross-channel invasion, elaborate measures were taken to achieve tactical surprise. Since it was manifestly impossible to conceal the build-up of forces and equipment, the object was to mislead the Germans as to the point of attack. An effort was made to explain away the preparations by suggesting an amphibious attack on the Genoa area to outflank the Pisa-Rimini line. In addition to planting the tale in enemy hands, the plan of deception called for considerable air effort in the Genoa area to lend verisimilitude to the fake landings.

Another pre-invasion task for MAAF was to build up primitive, malarial Corsica into a satisfactory spring board for air participation in the landings. Medical officers, engineers, and signal and supply troops performed this feat. By D-day XII TAC, under Brig. Gen. Gordon A. Saville, was effectively installed on 14 Corsican airfields with all the supplies needed to maintain about 40 U. S., British, and French squadrons, plus some 6 squadrons on loan from Strategic Air Force.

Pre-Invasion Operations

[illegible]'s Bombing Plan, issued on 4 August, called for a program divided into four phases. In the first phase, covering the period to 9 August, counter air force operations, interdiction of communications, and attacks on submarine bases were to be emphasized. The preliminary phase may be said to have begun on 29 April when a heavy daylight attack was made on the port of Toulon. In the period to 10 August MAAF flew more than 6,000 sorties and dropped 12,500 tons of bombs on southern France. These attacks included normal antisubmarine operations, interdiction of supply lines into Italy, and the smashing of French marshalling yards. About one fourth of the effort was directly connected with the forthcoming landings; the remainder may be considered

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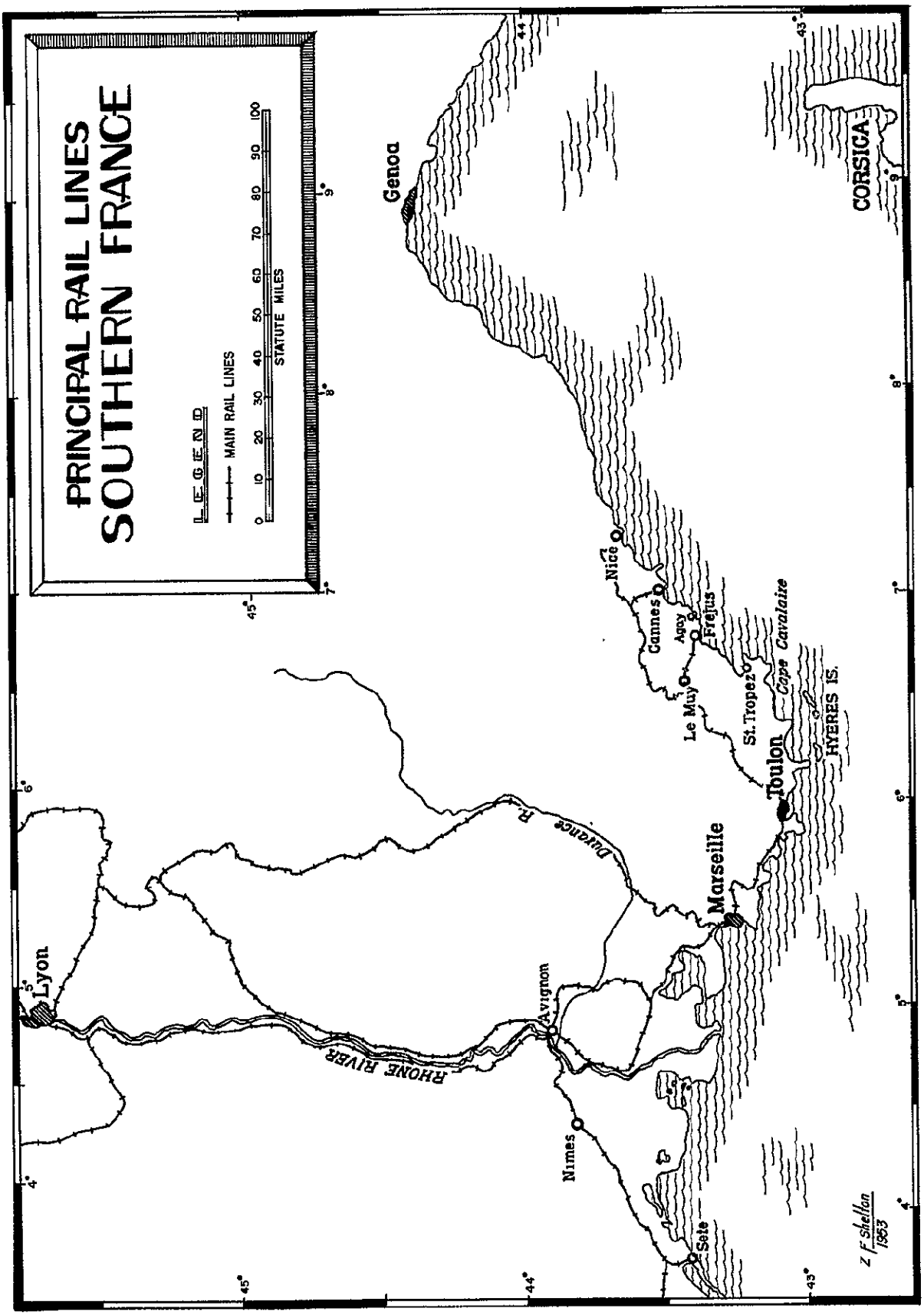

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as indirect support and assistance to the Normandy invasion.[10]

So sadly depleted was the LW that only a small amount of effort needed to be expended against airfields in the pre-invasion period. Beginning late in July and continuing through 10 August fighters and fighter-bombers hit airfields intermittently in the Po Valley and in southern France. But there was only one major attack during this period: on 9 August nearly a hundred medium bombers bombed Bergamo-Lariate, the enemy's most important air installation in northern Italy. Of the 12,500 tons dropped during the period 29 April through 10 August, only 372 tons fell on airfields and landing grounds. In like manner the subsidiary problem was so well in hand that an intensive campaign was unnecessary. Only one heavy attack, on 6 August, was made on the Toulon area.[11]

By far the greatest proportion of the preliminary effort was against lines of communication in southern France. The results achieved were less effective. By D-day five of the six major railway bridges across the Rhone between Lyon and the coast were unserviceable. The Germans, by strenuous repair efforts were able to open restricted traffic over the sixth bridge at Avignon.[12]

Beginning 10 August, D-minus 5, a second phase (Operation NEPTUNE) was inaugurated. The three tasks of phase I continued to be air force responsibilities but a new set of assignments was given priority. NEPTUNE called for the neutralization of the main coastal defense batteries in the assault area, neutralization of the main coastal radar stations, and concentrated bombing attacks aimed at lowering enemy morale. The air force commanders objected to the pre-D-day bombing of coastal batteries on the ground that such bombings, unless carried out all along the southern coast of France, would disclose the

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place of attack. Also, such attacks would be made at the expense of the oil, communications, and counter-air operations. Army and navy commanders insisted, however, and the attack was carried out. To avoid tipping off the enemy as to the place of the amphibious assault, similar offensive action against identical targets in four coastal localities was to be taken as follows: Genoa area, assault area, Marseilles area, and Sete area. By alternating and scattering the intense bombing effort among those four areas, it was hoped that the fiction of a landing near Genoa could be maintained. The scale of effort needed to neutralize each of the small targets was carefully studied and assignments were made accordingly.[13]

Although weather interfered with the execution of WITVEG, virtually the entire program was completed by D-day. Nearly 5,500 sorties were flown and 6,700 tons of bombs were unloaded. Great damage was inflicted on enemy defenses and, as was intended, the enemy was confounded as to where the amphibious assault would come. That the enemy air remained weak is evident from the fact that during this period only five hostile aircraft were claimed as shot down or damaged.[14]

The third phase of the bombing program was to last only about four and one half hours. Operation TONNY was to begin at 0350 on 15 August and to last till H-hour. This phase was designed to cause maximum destruction to enemy beach defenses. Its specific targets included any enemy artillery that could be brought to bear on shipping in the assault area, enemy guns, and other military installations which could bear directly on the ability of the ground troops to advance over the beaches. One half hour before the landings all bombings over the beaches were to cease. The bombing pattern extended to a depth of 400 yards inland and 75 yards to seaward. Twelve groups of escorted

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heavies, two medium bomber wings, and the full striking power of XII TAC were utilized. All aircraft were assigned rigid lanes of approach to the assault area. Bomb loadings for beach attacks were fragmentation and demolition, instantaneously fused, and not exceeding 260 pounds. For gun positions large demolition bombs with short delay fusing were used.[15]

Weather difficulties on D-day prevented YOKUM being carried out exactly as planned. A large percentage of the heavy and medium sorties were non-effective because of overcast conditions. The assault against gun positions was only partly successful but the final bombardment of assault beaches was highly satisfactory. Underwater obstacles and beach defenses were beaten down, defending troops were disorganized, and a number of coastal guns, previously missed, were covered. General Patch, who personally witnessed the bombing of one beach, said that it was the best he had ever seen. General Laker, who examined the beaches soon after the assault, thought the bombing remarkable in view of the fact that it was done largely by Pathfinder technique.[16]

The fact that the last minute bombings met no opposition again showed the weakness of the Luftwaffe. Pre-invasion estimates placed enemy strength in south and southwest France at about 220 aircraft. Against this small force MAAF had not fewer than 5,000 aircraft, with more at call. The discrepancy between the ground forces on the eve of D-day was hardly less extreme. Only seven weak divisions comprising the German Nineteenth Army were deployed around the invasion area. Against this the U. S. Seventh Army could throw in a force of 10 crack U.S. and French Divisions plus an assortment of paratroop, Commandos, and Special Service forces. A very inconsiderable German navy would face, if it dared, 450 British, U.S., French, and Italian warships, including five battleships and 10 aircraft carriers.[17]

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fired on patrol. The mediums concentrated on strong points and road bridges between Nice and Hyères. The heavies attacked coastal defenses and then joined the mediums and fighters in operations designed to isolate the battle-field.[20]

The Allies hit with such overwhelming strength that southeastern France was quickly overrun. By the end of the first week Toulon was surrounded, Marseille was almost surrounded, and armored forces were rushing rapidly northward toward Lyon. During this time the air forces continued to protect the convoys and beaches, to cooperate with the ground forces, and to attack enemy lines of communication.[21]

An important improvement in the technique of control of aircraft in amphibious landings was introduced in DRAGOON: defensive control was handled from a separate fighter control ship built exclusively for that purpose. Fighter Direction Tender (FDT) No. 13, a converted LST with a mixture of U.S. and British equipment, was made responsible for the control of defensive patrols over the beaches and for broadcasting warnings to the fleet and installations ashore. Daytime control was handled primarily by 64th Fighter Wing personnel. After D-day fewer than 30 fighter aircraft on an average were kept over the assault area for the protection of the fleet and the beaches. This is in contrast to the 60 or 80 aircraft which were used to protect the landings at Salerno, an operation covering a smaller area. Night fighter activity was handled by British personnel, with one U.S. controller on duty to handle all other matters. There were four to six night fighters on patrol, and some of these were handed over to the various GCI stations whenever conditions permitted. An Army antiaircraft liaison officer on FDT 413 maintained radio communication with his batteries ashore. Information on hostile raids and

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friendly flights was passed by him to his shore batteries, which in turn gave him any information they had. In a few cases where friendly night fighters entered the Inner Artillery Zone, they were fired upon. Except at dusk, when identification was difficult, the control of antiaircraft fire was good, and no friendly aircraft was shot down.

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Offensive air warfare was scheduled and controlled from the USS Catoctin, Amphibious Force flagship for the operation. The communications and air control equipment on board this ship were enlarged into a Joint Operations Room (JOR). Here the air and naval officers carried out their various functions including: control of tactical reconnaissance and fighter-bomber missions; furnishing information on movements and status of aircraft; air raid warning and alerting the fleet; and stand-by for fighter direction. Fighter-bomber missions were flown by P-47's and P-38's based on Corsica and by carrier-based Hellcats and Wildcats. The 2d Air Cortat Control Squadron (Amphibious), activated as an amphibious fighter control squadron to serve aboard headquarters ships, handled air control for the Air Task Force commander. The fighter-bombers reported in to the Catoctin giving names and attack mission numbers, which were placed on the Fighter-Bomber Status Board. They were then told to attack either their primary or their alternate targets, or to proceed on a special mission. This system was necessary because the speed of the advance sometimes placed the briefed targets inside the bomb line. On other occasions, a special mission was given priority over regular missions because of particular needs of the ground forces. The special missions were usually against enemy transportation and were targets called in by Tactical Reconnaissance planes or received by XII TAC from the ground forces or other sources. Locations of targets, which were relayed to airborne planes in the clear, were given

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Chapter VIII

THE WAR IN PACIFIC: THE FIRST OFFENSIVE

The history of the Pacific war in the first six months after Pearl Harbor was a dreary story of defeat and retreat. Japanese aggression reached full tide in the spring of 1942, and then there came the naval engagements at Coral Sea and Midway that marked a turning of the tide. The battle of Coral Sea occurred in the South Pacific early in May when a U. S. carrier task force met a Japanese carrier task force that was covering an enemy invasion fleet headed for Port Moresby. Although the enemy inflicted greater losses than he sustained, the main purpose of his operation, the capture of Port Moresby, was thwarted by the American fleet.[1]

Undeterred by this initial set-back the enemy went ahead with other aspects of his plans, which included the taking over of the western Aleutians and the seizure of Midway Islands. The diversionary thrust at the Aleutians was checked and the main stab at Midway was parried by a decisive carrier victory at Midway in June 1942. At both Coral Sea and Midway surface forces avoided contact and the outcome was decided entirely by air action.[2] Japanese aggression having gone as far as it could, the stage was now set for an American offensive.

Responsibility for beginning the offensive in the Southeastern Solomons rested primarily with the Navy. Although the "beat Hitler first" strategy prevented an all out effort in the Pacific until Germany was defeated, it did not preclude raids, attrition tactics by air forces and submarines, and limited ground offensives when opportunity offered. The question of what offensive should be undertaken and where was complicated by the fact that there was never a single commander for the Pacific. In April 1942 the Pacific had

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Admiral Ernest J. King, Commander in Chief United States Fleet and Chief of Naval Operations, who as early as February 1942 had advocated a step by step advance through the New Hebrides, Solomons, and Bismarks, presented the Navy's views to the Joint Chiefs of Staff.[3] In view of the victories at Coral Sea and Midway General Marshall favored an offensive, but since Tulagi fell within SWPA he felt that the operation should be carried out under command of General MacArthur. Admiral King on the other hand felt that the Navy should be in command and he presented formidable arguments to support his position: the only amphibiously trained troops available were Marines and the only troop lifts were Navy transports. The decision was in the nature of a compromise: the JCS agreed that the initial offensive would be under command of the Navy but the subsequent drive to Rabaul would be commanded by MacArthur. On 2 July 1942 the JCS issued a directive to the commanders in the Pacific outlining a three fold plan whose ultimate objective was "the seizure and occupation of the New Britain, New Ireland and New Guinea areas."[4] This was to be carried out by the performance of three tasks. Task 1, the occupation of the lower Solomons, was to be carried out by the South Pacific forces with the assistance of the Southwest Pacific forces; Task 2, the occupation of the upper Solomons and New Guinea, and Task 3, the reconquest of New Britain, were to be primarily the responsibility of General MacArthur.

Guadalcanal

Acting under the terms of the JCS directive of 2 July, Admiral Nimitz ordered Commander South Pacific Force (COMSOPAC), Vice Admiral Robert Ghormley, to seize Tulagi and Guadalcanal. The operation was given additional urgency by the discovery on 4 July that the Japanese had landed troops and laborers on Guadalcanal and had begun construction of an air field. If the enemy were

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allowed to develop this base he would be in a position to threaten the Allied lifeline between Hawaii and Australia.[5]

Throughout the Solomons campaign the AAF units in the South Pacific were under the operational control of the Navy. During the Guadalcanal operation the COMSOPAC exercised this control through his air officer, Capt. John S. McCain, Commander Aircraft South Pacific Force (COMAIRSOPAC). In matters relating to administration and supply the land-based air forces were after 7 July 1942 under the U. S. Army Forces in the South Pacific Area (COMGENSOPAC). In operating under the Navy one of the chief concerns of the air forces was to preserve the organizational integrity of the air force units and to make sure they were employed according to their capabilities. It was therefore agreed that Admiral McCain would issue directives as to the types of operations to be expected from the various air components of his command, but Lt. Gen. Millard F. Harmon, COMGENSOPAC, would assume responsibility for training Army air units for these operations.[6]

Although the Navy and Marines took the lion's share of responsibility for Guadalcanal, the AAF units had a part to play. On 20 July the 11th Bombardment Group (H) was designated as the Mobile Force, Central Pacific, and within a few days was on its way from Hawaii to the South Pacific. Plans for the participation of land-based aviation called for searches northwest of New Caledonia by the 10 B-26's of the 69th Bombardment Squadron and daily search of the southern Solomons and their western waters by the 27 B-17's of the 11th Group.[7] AAF's planes were to reconnoiter the western and northern approaches to the Solomons and to bomb Rabaul. The whole operation was mounted in such haste and was plagued with such an insufficiency of troops, supplies, and material that its planners referred to it as "Operation Shoe-

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strike." In the light of what later happened, however, it is interesting to note that Admiral Ghormley and General MacArthur were agreed that the main need was for additional land based air. The two commanders joined in a request for a postponement of D-day but JCS refused.[9]

Beginning in July the 11th Bombardment Group flew search and reconnaissance missions over the Guadalcanal-Tulagi-Gavutu area from Efate, a distance of 710 nautical miles. In preparation for the landings the 11th Group was designated a task force and was directed to strike the landing area with maximum strength from 31 July through 6 August. During this period the group flew 66 bombing sorties and 22 reconnaissance missions.[9] On 7-8 August, under cover of carrier based planes, the reinforced First Marine Division was put ashore. The landings at Guadalcanal and Tulagi were accomplished with little opposition at the beaches, but at the small island of Gavutu there was fierce fighting for a couple of days.[10]

The contribution of land-based aviation to the first amphibious landing of World War II is somewhat difficult to assess. The commanding officer of the 11th Bombardment Group was inclined to attribute the relative ease of the landings at Guadalcanal and Tulagi to the preparatory bombing and to explain the difficulties encountered at Gavutu to the absence of air preparation in that area. Probably the connection was more apparent than real. The preparatory bombing by the heavies was too light and sporadic to have affected the situation greatly. After the troops went ashore they found that the runway on Guadalcanal was not badly damaged and there were large stores of supplies in the vicinity left unharmed by the air attacks. The principal contribution of land-based aviation was the reconnaissance missions flown during the two months before the landings.[11]

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Although the air force role in Guadalcanal was a relatively minor one, the operation brought out several lessons that were of importance in future operations. In the first place, command relations were not satisfactory. Admiral Ghormley, who as COMSOPAC, was in overall strategic command, chose to absent himself from the actual scene of hostilities and to delegate tactical command to Vice Admiral Frank J. Fletcher, who was Commander Expeditionary Forces. As Commander of the Amphibious Force Rear Admiral Kelly Turner was in the command echelon below Fletcher, but actually he had complete autonomy from the moment of sailing. Maj. Gen. A. A. Vandegrift's Landing Force (First Marine Division Reinforced) was subordinate to Turner.[12] In delegating his authority to Fletcher, Admiral Ghormley failed to make him responsible for all aspects of the operation. Failure to achieve unity of command at the implementing level brought the enterprise to the brink of disaster.

At the close of the second day of fighting (8 August) Admiral Fletcher, who commanded the carrier-based air forces, reported to Admiral Ghormley that his fighter strength had been reduced from 99 to 78 planes, that fuel for the carriers was running low, and because of the large number of enemy torpedo and bombing planes in the vicinity, air support should be withdrawn.[13] Withdrawal of the carrier force left the ships of the Amphibious Force without air protection. Therefore on the morning of 9 August Admiral Turner informed General Vandegrift that he was withdrawing his force. This despite the facts that plans had been based on the assumption that the transports would remain off shore until D plus 4 (11 August) and that by the night of 8-9 August not more than half the supplies embarked by the First Division had been unloaded. The departure of the Air Support and Amphibious Forces left the Marines without air cover or naval support. The beachheads on Guadalcanal became virtually a besieged garrison.[14]

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canal it became apparent that additional airfields were necessary to support operations against New Georgia. Accordingly the Russell Islands, 70 miles northwest of Guadalcanal, were occupied on 21 February. The landing was covered by fighters based on Guadalcanal but no opposition was encountered.[18]

By the time of the Russell landings the SOPAC had experienced considerable change in organization and personnel. On 20 September 1942 Admiral McCain had been succeeded by Rear Adm. Aubrey J. Fitch as COMAIRSOPAC and on 18 October the colorful and aggressive Vice Adm. William F. Halsey had relieved Admiral Ghormley as COMSOPAC. On 13 January 1943 General Harmon activated the Thirteenth Air Force and put Brig. Gen. Nathan F. Twining in command. Although the new air force possessed administrative autonomy, operational control remained as before with COMAIRSOPAC.[19]

In operating under Navy control General Harmon had insisted from the first that he retain direct responsibility for the control of all matters affecting administration, supply, movement, and training and that sound principles in the employment of air power be observed. During the spring of 1943 he began to feel that these principles were not being adhered to by certain subordinate commanders and staff officers. The situation was brought to the attention of Admiral Halsey who directed General Harmon and Admiral Fitch to iron out their difficulties in a direct conference. Such a conference was held, and it was agreed that the highest degree of effectiveness would be achieved by vesting combat command of the various air forces in their respective services, that any disruption of normal command channels would be held to a minimum, and the air forces would be employed in roles for which they had been organized, trained, and equipped.[20]

Meanwhile the Army had attempted to get a clarification of joint command

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responsibilities on the JCS level. In September 1942 it had introduced a paper outlining its view to the Joint Planning Staff(JPS). But the Navy did not wish to bind itself to unity of command on the basis of a rigid rule.[21] After sitting on the Army proposal for some months the Navy finally agreed on 20 April.[22] The principles embodied in the directive provided that in joint operations a single commander would be designated by JCS on the basis of the task to be performed. The joint force commander, who would not normally function in a dual capacity as commander of a component of his force, would be assisted by a joint staff. Participation by the joint commander in administrative matters would be held to a minimum and disciplinary matters would normally be handled through commanders of the services concerned.[23] It was under these principles that the Thirteenth Air Force operated until it was relieved from the South Pacific command and assigned to the Far East Air Force on 15 June 1944.[24]

After the Russell Islands the next step up the Solomons was Munda on New Georgia. Here the Japanese had constructed an airdrome which must be in Allied hands. Admiral Halsey did not deem the forces at his disposal sufficiently strong to justify a frontal assault, so it was decided that a Western Landing Force should capture Rendova Island while an Eastern Landing Force would land at Viru Harbor, Wickham Anchorage, and Toji Point, on southern New Georgia.[25]

In preparation for the landings the Allied bombers were to intensify their strikes against enemy bases on New Georgia and southern Bougainville. All forces were to destroy enemy shipping at every opportunity, and the photo-reconnaissance planes were directed to maintain a close watch on aircraft and shipping concentrations at Buka and around the southern end of Bougainville. The fighters were to provide cover for all forces in the Guadalcanal area, all

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units in the New Georgia area, and shipping bound to and from these points.

Admiral Fitch, COMAIRSOPAC, planned to move from Espiritu Santo to Guadalcanal about five days before D-day. He would retain direct responsibility for strategic operation of aircraft while on Guadalcanal, but for control in the forward area a new command was established known as Headquarters Air Force (COMAIR New Georgia). This new forward unit was composed of elements of the Command Echelon, 21 Marine Aircraft Wing. All aircraft assigned to bases in the Russell Islands vicinity of New Georgia could be used in take-off to this new organization. Fighter control in the forward area would be controlled by two fighter director groups under COMAIR New Georgia. Initially Group No. 2 from the Enterprise Air Group 11 would control from a destroyer until relieved by Group No. 1, when it would then go ashore on Rendova to establish itself as a standby fighter director group. 26 The Rendova landings were to be coordinated with SOPAC, where Halsey's forces were to seize Trobriand and Woodlark on 30 June.

The landings on Rendova, which began on 30 June, were covered by 32 Allied fighters flying at altitudes ranging from 5,000 to 20,000 feet. The enemy sent over three flights of from 30 to 50 planes on D-day and one flight on each of the following two days. The Allied patrol planes successfully fought off these attacks to disrupt the landings; only one ship was lost to enemy action. Shielded by excellent fighter cover the amphibious forces also made their scheduled landings in the Wickham Anchorage area, at Viru, and finally, after some delay, at Rice Anchorage. These flanking movements prepared the way for the main assault on Munda. On 3 July the leading elements of the 43d Infantry Division moved across the Blanch Channel to Zanana Beach, approximately six miles east of Munda. Against stiff resistance the various forces converged

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650 combat aircraft flown by a heterogeneous collection of squadrons drawn from four different air services. Included were AAF squadrons of bombers and fighters, Marine F4F's, SBD's, FM's, and F4U's, Navy Wildcats and Hellcats, PBY's, search planes of all types, and New Zealand P-40's and Hudsons. As in the case of the advance on New Georgia, a new air echelon, Air Com and Northern Solomons (COMAIRNORSOLS) was created to control all aircraft entering the Bougainville area. Control was to be exercised through two subordinate fighter commands, one for Treasury and another for Torokina.[31]

A most important task of the Allied bombers was to beat down the enemy's air forces. The projected landing area at Torokina was situated dangerously close to five enemy airfields. The Bougainville fields had been pounded during the New Georgia Operation, but by January 18 October the scale of attack was stepped up and continued through the critical phase of the landings. Although the enemy worked feverishly to restore damaged strips to serviceability, he was obliged under unremitting pressure to give way. Bombers met no interception on the last air missions in October and the final four missions dispensed with all fighter escort. On the day before the assault the enemy, by working around the clock, completed a new field at Kara only to have it rendered inoperative by an attack of B-24's, B-25's, P-38's and SBD's. Local air superiority was attained by the 1st the invasion was launched.[32]

Preliminary landings on Treasury Island and at Voza on Choiseul Island were carried out on 27 October. To cover the Treasury Island landings there were 16 P-38's on station divided into two groups of eight each, one at 20,000 feet and one at 25,000 feet. There were also 16 P-40's, all at 10,000 feet, and eight P-38's at 10,000 feet. In addition to these there were eight P-38's and eight P-40's orbiting in the general area 15 miles northeast of the Treasury Islands. The enemy sent in his air power but was able to score only two hits

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on a destroyer and to force her to retire. An interesting feature of the Treasury Islands landings was the use of Landing Craft Infantry (LCI's) in close support. An LCI-24 and an LCI-63 were armed with two 20-mm, three 40-mm and five 50-calibre machine guns and were used for fire support close to shore.[33] The experiment was found to have possibilities and was improved upon and used more extensively in later operations.[34] By 6 November mopping up operations on the Treasury Islands were complete. The landings on Choiseul were unopposed.[35]

The preliminary landings having gone well the time had now come for the main blow--a landing on the narrow beaches at Empress Augusta Bay. On 1 November the transports of Task Force 31, carrying the Third Marine Division, began unloading troops on 12 selected beaches. As expected, the enemy air reaction was swift and energetic. Repeated attacks against both the convoys and the beaches were made on D-day, but even on the few occasions when enemy planes broke through the fighter screen they were able to inflict only slight damage. In addition to air attack, the Bougainville landing was also subjected to attack by a surface force. A Japanese task force left Rabaul on D-day and headed for Bougainville. The enemy naval forces were attacked by Allied aircraft but without decisive results. During the night of 1/2 November a force of cruisers and destroyers under Rear Adm. Aaron Merrill attacked the Japanese forces and turned it back.[36]

The Japanese attached much importance to the drive up the Solomons that they decided to send reinforcements into Rabaul from Truk. Some 250 or 300 aircraft from the carrier fleet at Truk were thrown against the Allied air forces in SOPAC and SWPA, but few of them ever returned to Truk. On 5 and 11 November U.S. carrier forces delivered attacks against Japanese shipping at Rabaul. Carrier-based planes delivered the attack while shore based

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fighters flew cover. On Bougainville itself TBF's and B-25's of the Marine squadrons provided most of the air support. Fighters and medium bombers of the Thirteenth Air Force normally operated against objectives remote from the area of ground fighting. As soon as the beachhead was secure, airfields at both Treasury Island and Torokina were begun. The Torokina fighter strip was ready by 10 December, but the Stirling field did not become operational until early in January 1944.[37]

By way of summary it may be pointed out that the first amphibious landing of the war, the seizure of Guadalcanal, taught several lessons that were of value in later operations. Failure to control the sea and air at Guadalcanal resulted in the premature withdrawal of naval support and supply ships, which in turn exposed the Marines to air and sea counter attacks. Although the primary means of defending the island was to be land-based aircraft, the Navy in planning the operation failed to provide the supplies and equipment necessary to bring the airfield speedily into use. The entire operation also suffered from lack of unity of command. In spite of these shortcomings, the seizure of Guadalcanal [illegible] to the basing of the Navy, Marine, and Thirteenth Air Force planes at Henderson Field and extended their range to the Northern Solomons. Land-based air power was then able to bring Japanese bases and overwater supply lines under increasing pressure. Japanese air power was subjected to an attrition that made possible the series of amphibious landings up the ladder of the Solomons Islands. All these landings were successful because air superiority in the landing area had been established and because the land-based aircraft were able to protect convoys and beachheads from serious molestation by the enemy air forces. Another factor of importance was the fact that from the beginning Admiral Halsey insisted upon the principle of unity of

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[illegible] Force had full authority over all command [illegible] each commander [illegible] Force had full [illegible] components of his force. [illegible] in short [illegible] that he [illegible] called a "South Pacific [illegible]."37 [illegible] Air Force [illegible] lack of complete control over their operations occasionally did violence to the proper employment of [illegible] units, the fact [illegible] a high degree of coordination [illegible] Air made [illegible] the rapid progress through the Solomons. [illegible] island of Bougainville, [illegible] junction [illegible] the South [illegible] South Pacific Forces [illegible] Thirteenth took over from [illegible] Air Force [illegible] job of [illegible] 1943 [illegible] Air Force, [illegible] in [illegible] his [illegible] by [illegible]. Following [illegible] the South Pacific Forces [illegible] in [illegible] early in 1944. [illegible] on [illegible] on 20 [illegible] Island on 17 [illegible] on [illegible] on 20 [illegible].

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Chapter II

THE NORTH PACIFIC: A GEOGRAPHICAL SURVEY

The series of audacious leaps across the Aleutian chain, like the drive up the Solomons, was precipitated by the efforts of the Japanese to spread the perimeter of their conquests. On 3 June 1942 the Japanese extended the war to the North Pacific by attacking Dutch Harbor with carrier-based planes. The attacking force, known as the 2d Mobile Force, was composed of two aircraft carriers (Hiryu and Soryu), two heavy cruisers, and three destroyers.[1] The mission was diversionary: to neutralize carrier strike against the U.S. naval base at Dutch Harbor in coordination with the attack on Midway and to support landing operations in the western Aleutians. The initial landing on Kiska was effected on 6 June by the 301st Army Regt, 1,200 troops, consisting of a special naval landing force and a party of Japanese construction troops. This was preceded on the following day by one battalion of Army troops.[2]

The exhibitions were bloodless to which the Japanese forces landed on all islands were all affected by conditions peculiar to the North Pacific. These conditions were distance, terrain, weather, and so forth.

The most distant Japanese base points in Alaska can be visualized by considering the continental United States. It is farther from Attu to Seattle than from Seattle to the tip of the Aleutian chain which from Cape Flattery, Wash., to Los Angeles, Calif. The distance from Anchorage, the headquarters of the Alaskan Air Force, to Kiska, the northernmost of the Japanese occupied islands, is about equivalent to that of the distance from New York to St. Louis. It is farther from Tokyo, in southeastern Alaska, to Attu than from Attu to

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Aleyo. It is doubtful if any theater of the war afforded more hazardous conditions than the Aleutians. The chief characteristic was persistent overcast conditions. Forecasts were of limited value since weather was extremely local, conditions of fog, low ceiling, and clear weather being encountered within a distance of 20 miles. Occasional breaks in the overcast might occur in isolated areas but clear weather over large areas was seldom encountered. On Attu, rain and fog were the rule rather than the exception, and clear weather was likely to be experienced on not more than eight or ten days of the year. Another hazard peculiar to the Aleutians was the "williwaw," a wind of hurricane velocity. Williwaws were a scourge to both air and naval craft. In the Aleutians, as in few other places in the world, high winds and fog may persist together for many days at a time. The terrain of the Aleutians was rocky, treeless, and covered with tundra or muskeg, sometimes three feet thick. This mossy carpet had to be removed before a steel mat or runway could be laid for a runway.[3]

Operations were hampered not only by geographical factors but also by a complicated command situation. Strategic command in the Aleutian area was vested with naval authorities and was exercised through Admiral Nimitz, CINCPAC, through the commander of Naval Task Force 8. Tactical command of the Air Striking Unit of Task Force 8 was assigned to the Commanding General of the Eleventh Air Force but actually was exercised in large part by naval authorities. The Western Defense Command, with headquarters in San Francisco, had jurisdiction over all matters pertaining to the Alaska Defense Command. The latter command in turn had jurisdiction over all Army activities in the Alaska theater excepting that part of the Aleutian area where all operations, Army and navy alike, were under Navy control. It is, although practically all

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[redacted] was responsible to fulfill one of the basic requirements. A suitable operational airfield had to be secure for B-17s, and to be within range of the Solomons. And if the Japanese [redacted] on the islands, it would become vulnerable to land raid to counteract [redacted] on air cover. [redacted] could be established on Guadalcanal within 250 miles of [redacted] based at Rabaul.

The operational experience of the 11th Bomb Group [redacted] was limited to a total of 142 combat sorties [redacted] experience. [redacted] provided no experience [redacted] satisfactory, but [redacted] available. [redacted] for a heavy bomber's climb directly [redacted], so that may be [redacted] exploited. The port located also for such a bombing mission, approximately 200 miles west of Kahili, only 90 miles from Vella. Gen Kenney also directed that Guadalcanal be occupied and air bases be [redacted] available by 5 January 1943."[9]

The air plan for the occupation of Guadalcanal provided that B-17 medium and heavy bombardment aircraft should be divided approximately half-and-half between Henderson Field and [redacted]. The I Aircraft Command was to maintain a heavy reconnaissance of the Shortland-Faisi area, to the daily reconnaissance of the Shortland-Kahili to Buin, and to carry out periodic attacks on [redacted] considered of such importance. In addition, the IV Fighter Command was to maintain continuous air cover over Henderson Field of not less than four fighter aircraft during as much of the daylight period as possible.[10]

The occupation of Guadalcanal was carried out under command of Vice Admiral Thomas C. Kinkaid, who on 4 January 1943, relieved Rear Admiral Ghormley

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Pre-invasion operations were made more effective by the use of fighter aircraft as fighter-bombers. With the exception of Pachino, the distance to Sicily was whittled down to 85 miles or less, so that even eight fighter missions a day could be given to Sicily. The P-38's normally carried two 500-lb. bombs while the P-40's carried one 500-lb. and six 20-lb. fragmentation or incendiaries. Employing glide-bombing tactics the fighter-bombers were able to come down through moderate antiaircraft fire and score direct hits against well-constructed buildings of brick, stone, and mortar assets. The interdiction operations of April were carried out without enemy opposition. 17

On 21 April 1943, Admiral Hewitt issued Operations Order 1-43, which provided the over-all plan for Operation Husky. The naval attack force (Task Force 51) consisted of two battleships, one carrier, five cruisers, and several destroyers. The Northern Covering Group included three light cruisers while the Western Covering included four heavy cruisers. Two submarines were to land scouts prior to the main assault. 13

In phase 1, carrier-based planes were to be used primarily for cover and observation but were to be made available for ground support if necessary. Ship-based observation planes were to provide air spotting for naval gunfire. The Shore-based Air Group, under command of Maj. Gen. William O. Butler, was divided into an Air Striking Unit (Twelfth Air Force) and the Air Defense Unit (Control Army 4). The Twelfth Air Force was to provide general air support for the landing areas while Fleet Air Wing 4 was to carry out long-range sea searches and antisub sector coverage for the assault forces. Coordination of Army air operations was to be maintained by the Air Force officer of the Joint Staff, who was to be airborne on the scene

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of operations. [illegible] to be attached to the
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Co Under Landing Area and to each Battalion.

The mission of the Eighth Air Force in the ten days preceding the assault was as follows: to intercept enemy planes, to obtain photographs and thus, to harass enemy positions, to destroy key installations, and to destroy U-boats by air force. All P-38's were to be withheld and were to concentrate against Nau. Reserve of their escort was to be P-47's
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would concentrate on Nau.

Preoccupied by [illegible] mission and on that and withheld, were [illegible] clouds, but no enemy activities were reported. During the first few days of the [illegible] obtained photographs were taken that contributed almost a complete set of information concerning enemy installations on Nau. On the night of the 5th-6th it was possible to take an exact [illegible] of the Nau area. Due to
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[illegible] was substantially correct. The disposition of the enemy air forces formed no major part of the [illegible] encountered. The principal [illegible] were encountered in [illegible] period was subject to [illegible] of the preceding [illegible] on both sides, the enemy [illegible] Nau. [illegible] tons of bombs fell on Nau, [illegible] positions in Nau [illegible] probably hindered the [illegible] during all daylight [illegible]

day, the four days immediately preceding the assault.

The capture of Attu was the only amphibious invasion carried out in the North Pacific that was opposed by ground forces. It was a hard-fought infantry battle, carried out by the 7th Infantry Division and attached troops. These troops had received training in a California desert in basic infantry tactics and landing operations, but they were unacclimated to Aleutian weather and were unfamiliar with the terrain. The basic plan for the invasion called for a rather widely separated main landing and two subsidiary landings. The largest body of troops, known as the Southern Force, was to land in the Massacre Bay area. The Northern Force was to land in the north arm of Holtz Bay. The Western and Eastern forces were to effect a junction and advance to the east to drive the enemy from the island. The total number of troops taking part in the assault numbered approximately 11,000, of which some 8,000 were to be used in the main effort at Massacre Bay. To oppose this force the Japanese had a defending garrison of approximately 2,200 troops on Attu.[23] During the month of May the Eleventh Air Force had on hand and in operation an average of 229 aircraft. Japanese air strength in the Aleutians probably never exceeded 50 planes, none of which were land based. At the time of the invasion of Attu it is probable that not more than 15 enemy aircraft were in the Aleutians.[24]

D-day, originally planned for 7 May, had to be postponed on account of weather to 11 May. When it approached D-day found Attu shrouded in a fog that caused a delay on the main landings and resulted in the collision of two destroyers. Although all forces made their initial landings practically unopposed, a stiff resistance soon developed on all fronts. Air action in coordination with ground and naval operations on 11 May was planned in considerable detail. In addition to the usual planning charts and photographic

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On 30 [illegible] 30 [illegible]

out by 23 July. Both land and carrier bases were used to remove some 7,000 troops from the island.[34]

From the point of view of operations before the North Pacific terrain and certain treatment from the land-based air force was of nothing under conditions of minimum weather. One of the most notable weaknesses of air power is its inability to operate effectively in conditions of unfavorable terrain and weather. This fact led some to conclude that carrier based aircraft possessed an advantage in that they can be moved to the immediate vicinity of the scene of operations.[35] The experience in the North Pacific throws considerable doubt on any such conclusion. During times of particularly bad weather, carrier-based aircraft were no more successful than land-based aircraft in reaching the target. Furthermore, losses sustained from non-operational causes were as high from carrier as land-based aircraft. If airplanes sometimes collided in the blinding fog of the surface ships, the final destruction of carrier-based planes derives not from their supposed ability to overcome unfavorable weather but from the inherent difficulty, provided air operations have been established, of defending the relatively fragile ships against land-based air power, destroyed on flight-plans to and reconnaissance aircraft as they were being brought in, and through air reconnaissance, would finally all be intelligently directed by land-based naval forces.

Chapter X

THE SOUTHWEST PACIFIC: THE AIR CAMPAIGN TO CONTROL

In the Southwest Pacific it was the policy of General MacArthur to organize his major forces as a composite team of land, naval, and air forces. This arrangement allowed each force to operate as a coordinated entity and to concentrate its power. In April 1942 General MacArthur's command consisted of the Allied Naval Forces under Vice Admiral Herbert F. Leary; the Allied Air Forces under Lt. Gen. George H. Brett; the Allied Land Forces commanded by General Sir Thomas Blamey (an Australian); and the U. S. Army Forces in Australia under Maj. Gen. Julian F. Barnes. The last command was renamed on 20 July as the U. S. Services of Supply in the Southwest Pacific and placed under Brig. Gen. Richard J. Marshall.

The Allied Air Forces was a composite command consisting of Royal Australian Air Forces squadrons, a few Netherlands East Indies and Dutch, and remnants of the American Far East Air Forces, formerly based in the Philippines. In July 1942 General Brett was succeeded by Maj. Gen. George C. Kenney. When the Fifth Air Forces was officially constituted on 3 September 1942 General Kenney assumed command in addition to his position as commander, Allied Air Forces. Brig. Gen. Ennis Whitehead was made deputy commander, Fifth Air Forces and put in charge of forward operations.

Initially the broad aims of American strategy in the South and Southwest Pacific were to knock out Rabaul and to prepare for further advances toward the Philippines. The South Pacific forces, on the eastern flank of the advance, were to follow the Solomons Islands chain toward Rabaul, while on the western flank the Southwest Pacific forces were to move up the northeast coast

of New Guinea and into western New Britain. The plans for the offensive from New Guinea called for the occupation of Woodlark and Kiriwina Islands, near the southeast tip of New Guinea, one of Nassau Bay, and 50 miles northwest from Lorengau Harbor. On 19 February 1943 the naval elements of the Amphibious Force, South Pacific had been assigned the Seventh Fleet, and the Seventh Amphibious Force, South Pacific was created to carry out the Woodlark and Kiriwina operations. The landings on both Woodlark and Kiriwina were carried out on 30 June without opposition. The [illegible] Island was made on the 4th day, but the airfield in Woodlark and the anticipations resulted in slow progress. By 10 July, however, the airfield [illegible] for use toward Salamaua was being used [illegible] Japanese air forces were [illegible].

New Britain - Bougainville - New Ireland

The main objectives on the line [illegible] were the Japanese on the New Guinea coast near Lae and Salamaua. A carrier task force, General Harbor and [illegible] Island which could be used [illegible] and air bases could be established in such a way as to provide cover for the [illegible] of all [illegible] and to assure the isolation of each objective prior to the final assaults. In regard to this, sound principles [illegible] an extraordinary degree of success [illegible] operations in SWPA. The advance [illegible] Lae Salamaua could be [illegible] by sea, also, [illegible] by a series of [illegible] more closely [illegible] Japanese [illegible] the [illegible] Lae. The [illegible] of the [illegible] was [illegible] by the [illegible] and carriers of the [illegible] naval forces [illegible] by the [illegible] of the [illegible].

The [illegible] of the [illegible] was [illegible] of the [illegible] in SWPA. The [illegible] under [illegible] were [illegible] required [illegible]

required [illegible] approximately [illegible] air force headquarters. In such circumstances it was not difficult to close [illegible] and move it quickly to a new location. Air operations were continuous over a wide area and communication could not be interrupted. To meet this situation air task forces were established. Essentially these were the standard air force headquarters units less administrative sections. The first of the air task forces was established in April 1943 at Dobodura; the second was at Milli Milli; and in September 1943, a third was established at Guasa. The system of air task forces proved successful and was continued throughout the war.[4]

The plan for the seizure of Lae involved a shore-to-shore landing 15 miles east of Lae on Huon Peninsula, from which drives in two directions, one toward Lae and one toward Finschhafen, were to be initiated. Nadzab, an unused airfield 15 miles west of Lae, was to be seized by paratroops and airborne units. The convoys were to be protected by a 32-plane cover during daylight in addition to a constant alert. The decision to provide a continuous air umbrella over the convoy raised the question of how fighters maintained on ground alert would be coordinated with those participating in the escort. There were two fighter control vectors on the north coast of New Guinea, one at Dobodura and the other at Milli Milli. The radar coverage of the pass through which the convoy was to proceed was inadequate. Low flying aircraft from Wewak or Madang could fly behind the mountains toward Lae or, coming from New Britain, could sweep across Vitiaz Strait. In either case the enemy could not be picked up until it was too late to provide adequate warning. The solution was to post between Lae and Finschhafen a destroyer that would serve as a floating radar station. The destroyer Reid was to take a position approximately 45 miles south [illegible] of Finschhafen. On the destroyer there were two controllers and one

signal corps enlisted men with radio and radar equipment.

The main base from which the enemy might be expected to interfere with the landings was Wewak. In order to allow a build-up on Hollandia the Fifth Air Force deliberately held off for a while. Beginning on 17 August coordinated attacks, both high and low level, were carried out with devastating effects. With the destruction of 150 enemy planes the threat of air attack from Wewak was removed. On the days immediately preceding the landings, the air forces continued heavy attacks on airfields, shipping, and supply lines in both New Guinea and New Britain.[6]

The bombers continued their strikes as the amphibious forces took up their positions on 4 September. Shortly after 0300 the destroyer Reid took up its position off Tanahmerah as an aircraft warning lookout. The landings proceeded unmolested until 0705 when three twin engine bombers attacked. The hostile bombers were chased off by the P-38's and the landings proceeded without interference until afternoon. At 1/00, as the convoy was preparing to withdraw, the radar on the Reid picked up a large number of bogies (unidentified aircraft). Every fighter pilot carried a grid map in the cockpit of his plane and was constantly tuned into the radio frequency of his fighter controller. Thus by reading the grid references of the bogies over the fighter frequencies every minute to the fighter sectors at Dobodura and Tsili Tsili the Reid could trace the course of the approaching enemy, and this information could be plotted by each fighter pilot. Guided by information from the Reid at least 40 P-38's and 20 P-47's were able to intercept the Japanese attack and to shoot down 20 of the enemy planes. The interception did not prevent the enemy dive bombers from making direct hits causing damage or from killing about 50 men. Later in the day the beachhead was again attacked by an unidentified

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number of planes that fired on ammunition dump and killed one man and wounded others. Thus, though the shipping and beachhead sustained air attacks, the enemy did not succeed in seriously disrupting the operation. The land forces met such slight resistance that there were no close support missions requested on the beachhead.[7]

The capture of Sansapor on 13 September and of Middleburg Island made it possible to consider plans for an amphibious operation against Pinschhafen. Located on the Huon Gulf approximately 60 miles beyond Lae, Pinschhafen was to be developed as a concentration point and staging area for future advances and as a forward base for aircraft and light surface ships.[5]

Allied bombers started for the landing by making attacks on Japanese airfields, supply dumps, and reinforcement routes to Finschhafen. Fighter planes protected landing craft as they were towed from Buna to Lae and as they were loaded with troops and equipment. On this occasion, since the fighters were going to be with the convoy, it was decided that the control ship, the Reid, should be off the convoy, which then located some 60 or 70 miles away, as in the Lae operation. This would mean remaining 30 or 40 miles off Finschhafen, but a long morning was of little value if the fighters were already on patrol.

The landings, which were carried out 22 September, were virtually unopposed. Shortly before noon the ships in the convoy had begun anchor and started back to Buna. Less than an hour after their departure the fighter controller on the Reid picked up a large formation of bogies coming from New Britain. The Japanese chose an inopportune hour, from their point of view. Three squadrons of fighters had been patrolling the Lae-Finschhafen area for several hours and were about to be relieved by two other squadrons. Thus five squadrons were on the alert for the emergency. They drove away the Japanese

[redacted] [redacted] [redacted]

9

attack and in the process shot down 10 or more bombers and 20 fighters.

Neutralization of the Bismarck Archipelago

Although the capture of Lae gave the Allied forces control of the waters of northeast coast of New Guinea, the Japanese developed an intricate system of supply from New Britain to Wewak Island to New Guinea. In order to control the Dampier and Vitiaz Straits it was necessary to control western New Britain. Cape Gloucester afforded a suitable location for airfields for large bombers and for use in future operations. As a preliminary to the seizure of Cape Gloucester it was decided that Arawe, on the southwestern coast of New Britain, should also be taken. The object of this operation was to obtain a suitable location for a base for light naval forces. 10 Z-day for Arawe would be 15 December.

Part of the preliminary bombing for the south coast operation was directed at Rabaul and points east in order to gain tactical surprise at Arawe. On Z-1 the bombers switched to the invasion area. On Z-day bombardment operations were limited to one strafing and bombing attack just before the landings. From 0730 to 0900 one squadron of B-25's was on air alert in the area. Two squadrons of A-20's were on round alert throughout the day. Fighter cover was maintained in the area throughout the day. Fighter sweeps were sent out every two hours along the north and south coasts in the direction of the principal Japanese air bases. Although the Allied forces were subjected to two enemy air raids on Z-day, the effectiveness of these raids was minimized by the friendly fighter cover. After Z-day the enemy continued to send sporadic attacks against Arawe but he lost heavily to the Allied fighters and failed to inflict

10 Until early days the term was called "Z-day" to avoid confusion with "D-day" for the main landing at Gloucester.

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significant damage.[11]

On 18 December the air assault on Cape Gloucester was stepped up. As the bomber effort reached its peak, every installation of importance in the area was hit. Some 1,345 sorties were flown and nearly 4,000 tons of bombs were dropped in the pre-invasion strikes. This was the first time in the Pacific war that saturation bombing had been possible and it paid handsome dividends. On D-day the troops of the First Marine Division walked ashore "with their rifles on their shoulders" for air pulverization practically eliminated resistance to the assault. "Gloucesterize" became the word for saturation bombing in the SWPA.[12]

It was not long after that another amphibious landing was carried out against Saidor, on the New Guinea coast opposite Cape Gloucester. The intensive air operations that had preceded the Arawe and Cape Gloucester landings served in a general way as preparation for the Saidor landing. Attacks on Wewak and increased pressure on Madang and Alexishafen during the latter part of December greatly reduced the possibility of enemy interference. On D-1, B-24's and B-25's saturated the landing beaches. On 2 January about 7,200 troops, mainly of the 32d Division, landed unopposed except for one ineffective bombing attack. With the taking of Saidor the conquest of the Huon Peninsula was complete.[13]

The invasion of western New Britain gave the Allies control over a large part of the Bismarck Archipelago. Conquest of the Admiralty Islands, constituting the northeastern group of the Bismarcks, was regarded as necessary to complete that control, to isolate Rabaul and Kavieng, and to provide bases for further penetration of the Japanese empire.[14]

The initial objective in the Admiralties was the island of Los Negros upon which would be built an airdrome to support operations both in the Southern Carolines and up the coast of New Guinea. The 6th Photographic

[redacted]

the 5th Bombardment Group of the Thirteenth Air Force had moved with its B-24's onto Nemetos.[16]

On 12 March 1944 the JCS sent a directive to MacArthur and Nimitz whereby an attack on Hollandia was to be launched on 15 April in order to establish heavy bombardment groups there. At the suggestion of MacArthur the target date was postponed from 15 to 22 April.[17]

The Hollandia operation is of particular significance for several reasons: the pre-invasion bombing brought about the defeat of the Japanese air forces; it was a masterpiece of deception; it was the largest amphibious operation in the Pacific down to that time; and, it was the first leading operation in the Southwest Pacific supported by carrier-based planes.

Prior to the invasion the air forces were charged as usual with the neutralization of enemy air forces in the invasion area. Although attacked by Japanese aircraft since mid-1943, Hollandia was the headquarters for the Japanese Eighteenth Army and the Fourth Air Army. It was also garrisoned by combat troops that might oppose the projected Allied landings at Aitape. General Kenney's aim at Hollandia was not only to neutralize an air base but to wipe out supplies, barges, lighters, and personnel. The pre-invasion blitz of March, beginning on 11 March and continuing until the 27th, accomplished General Kenney's aim. Over 3,000 tons of bombs were dropped in 1,500 sorties. Concerning the obliteration of Hansa Central Kenney wrote: "On the 16th there was no target left. The runways were full of craters 50 to 75 feet across and burned out aircraft littered the airdromes and dispersal bays. Even the trees in the vicinity looked like mount skeletons..."[18] So great was the destruction that the Japanese soon had their Fourth Air Army headquarters back to Hollandia on 25 March. The interdiction of water movements into and out of

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[redacted] to attacking that the ground echelons of the Fourth Air Army were left literally to walk back to Hollandia.

The air attack on Hollandia was deliberately delayed in order to encourage the Japanese to concentrate their strength and lead them to believe that the invasion would come at Wakde Isl and Sarmi, instead of Aitape and Hollandia. To encourage the Japanese to believe that the Americans did not dare to make a daylight attack with unescorted bombers General Kenney would not permit nighttime but unescorted reconnaissance to go beyond Nowak. Lulled into a sense of false security the Japanese built up their strength at Hollandia and parked air planes almost wingtip to wingtip. Large gasoline and ammunition dumps were located on the edges of the fields. This was precisely the sort of thing that invited a low-level surprise attack. Photographic coverage of the three airdromes at Hollandia showed a strengthening of anti-aircraft and machine gun batteries. To knock out these defenses General Kenney proposed that A-24's carrying a maximum load of fragmentation bombs be sent in first. These would shower the place with 20-lb. frags which could kill Japanese, knock out machine guns, destroy airplanes, and cause general havoc. The medium and light bombers could then concentrate on the airfields proper. Three all-out attacks were planned. The first day's attack would be directed primarily at anti-aircraft machine gun positions and fuel dumps; the second attack would concentrate on the airplanes themselves; and the third day would be devoted to a final clean-up. These attacks, carried out on 30 and 31 March and 3 April, established undisputed air superiority in the Hollandia area. Further attacks were carried out but these merely added to the destruction.[20]

The cumulative effects of the Sowak-Hollandia campaign and the attacks

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[illegible] Rabaul [illegible]. The Japanese air arm was never to regain its former power and efficiency. According to [illegible] by April 1944 the Japanese Air Force had lost more than 95 per cent of its experienced pilots having between 300 - 600 hours flying time. All its reserves of experienced crews, technicians and [illegible] also had been lost. The [illegible] was to rebuild in numbers but never regain quality.[21]

Hollandia was the largest amphibious operation in the Pacific up to that time. The RECKLESS Task Force, commanded by Lt. Gen. Robert L. Eichelberger, consisted of the 24th Infantry Division, which was to land at Tanahmerah Bay, and the 41st Infantry Division, less one RCT, which was to go ashore at Humboldt Bay. The PERSECUTION Task Force, under command of Brig. Gen. Jens A. Doe, consisted of 163d RCT of 41st Division, and was to make the landing at Aitape. Rear Admiral Daniel E. Barbey commanded the 200 ships that were to land nearly 80,000 men. The naval commander remained in full control until each landing force commander could take command ashore. The invasion fleet sailing from [illegible] and [illegible] followed a circuitous route for a deception [illegible]. The landings, which took place on 22 April, were preceded by intensive air bombardment from both land and carrier-based planes and by naval bombardment. The troops went ashore at Tanahmerah, Humboldt, and Aitape without aggressive opposition.[22]

Since Hollandia was [illegible] beyond the effective range of fighter-cover, [illegible] the landings were covered by carrier-based planes. [illegible] that the Navy attributed success to the use of carrier-based aviation. In his evaluation of the operation [illegible] concluded: "The tremendous advantage of CV aircraft over shore-based aircraft in supporting amphibious operations was clearly demonstrated..."[23] Such a conclusion is no less than amazing. After what the Fifth Air Force had done to the Japanese

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air force, the convoys could have gone into Hollandia under the protection of the naval airplanes, as of a covering troop.

Capture of Wakde and Sarmi Airfields

With the capture of air superiority in the Hollandia operation would advances in that area become possible. In furtherance of this decision to conduct such operations as might culminate in the seizure of Halmahera, General Krueger proposed to advance up the Geelvink coast and to seize an airfield site in the Vogelkop. A similar world out, plans called for the seizure of the following: Biak on 17 May, Biak on 27 May, Noemfoor on 2 July, and Sansapor on 30 July.

In the early preliminary operations in the Hollandia area the plan was established would be followed. A second amphibious assault would be provided. This invasion would be preceded by a bombing mission designed to gain control of air control over the landing area and to protect Allied fleets, which became increasingly vulnerable as the attack moved northward. The enemy forces would be isolated from reinforcement by sea. Since planes based at Biak could bring fire to bear, Biak Allied troops would be destroyed. Cover would be maintained over the amphibious operation on Biak, during the landing operation, and on the way back. And close support to surface forces during beach landing operations would be provided.

Several factors obstructed [redacted] the "Hollandia" attack and Biak before the troops went in. Although both places had been attacked before, the air bases near Hollandia to be invaded had on 23 April. In addition to Wakde, Biak, and Sarmi airfields, which were hit repeatedly through May, Noemfoor and Vogelkop airfields were also attacked. The 163 task force was to land first at Wakde on the north coastal fringe, protect the artillery

for close support, and rear, on Columbus, to be known hereafter as Landing Beach Able.

The area for this echelon's landing was very limited. In addition to the difficulties of artillery fire from Corregidor, which is particularly terrorizing to the troops in addition to the actual damage it can do, the [25] area. Although the main curtain was the seizure of Caballo Island, the island itself was too small and its beaches too limited to support the landing of a reinforced regiment. In addition, the enemy, in possession of the mainland, could subject the landing forces to artillery fire. Seizure of Caballo Island, which is located directly off the mainland, would enable the enemy to subject the landing forces to artillery fire. Because of these factors, the echelon's landing was planned to be made on the south coast about four and one half miles [26] east of Caballo Island.

The landing on the mainland was unopposed. Caballo, however, 300 Japanese troops were well entrenched and for a while put up a stiff resistance. Twelve Douglas A-20's were directed on close support missions against enemy positions by ground forces "Combat Chin." By the following day all organized resistance on the island ceased and the 151st Field Artillery landed on Caballo Island on 24 May. [27]

Since of particular importance in LCT plans both because of its [28] and its airfield potential. Located in the immediate center of Manila Bay it had been used as a naval base by the Japanese. The [29] force, under command of Brig. Gen. George H. Fuller, consisted of elements of the 41st Infantry Division. This force was to land at Locket on the southern coast of the island and to clear the area.

This was objected to as a [30] area. Some [31] 2,200 men of the battalion were dropped in a period of [32] operation. This

[redacted] destroyers, [illegible] of the [illegible], [illegible] Tassafaronga, [illegible] Savo Island, [illegible] [illegible] [illegible] [illegible] heavy cruisers. [illegible] [illegible] [illegible] [illegible], General Kenney exclaimed, "We have it all to do in Korea."[2]

Despite the lack of opposition at the beaches the Japanese began soon to put up a stout defense. The terrain of the island favored the defenders. Beyond a narrow coastal plain there were ridges and cliffs, honeycombed with caves that provided a natural fortress for the defenders. For the first time in the SWPA heavy bombers were used in close support. Thirty Liberators were sent against subsidiary fields on 29 May. Medium and light bombers gave direct support also, both on call and by pre-arrangement. The last of the Japanese airdromes on Biak was in Allied hands by 20 June. The delay in capturing and readying the airdromes on Biak caused the Fifth Air Force to look about for alternate bases. Such a base was discovered at Owi, a flat, uninhabited island about two miles south of Biak. Owi was to become an important heavy bomber base.[30]

The Biak landing was unique in that it was the only amphibious invasion in the advance along the New Guinea coast that precipitated a positive Japanese naval reaction. Recognizing that the Allied advance meant a threat to the Philippines, the staff of the Combined Fleet on 29 May put into effect their "Kon" plan. The object of this operation was to send a steady stream of reinforcements into Biak and to shell Allied positions as opportunity offered. The first element of reinforcement came on 3 June. Six Japanese destroyers, three of which were laden with troops, were picked up by 10 B-17's covered by P-38's, near Amberdam Island. The AAF pilots sank one troop-laden destroyer and damaged three other vessels. The Japanese convoy turned back

[redacted]

[redacted] 31

[redacted] Japanese bases [redacted] Okinawa. [redacted] by [redacted] Allied destroyers who circled [redacted]. [redacted] the last efforts of the Japanese [redacted] air forces [redacted] could be isolated [redacted]. With the possible exception of one small detachment [redacted], it [redacted] was ready to reinforce [redacted].

The most important [redacted] Kyushu [redacted] was [redacted] Kagoshima [redacted], which lies [redacted] the north [redacted] of Kagoshima Bay. The bare [redacted] floor would [redacted] a [redacted] base for the [redacted] of the [redacted], maintain the reestablishment of Japanese airfields, and back up any Japanese effort to avoid [redacted]. The [redacted] of [redacted] forces was followed: attacks on airfields in the [redacted] area, [redacted] against shipping, intensive [redacted] of the beaches, and the support of [redacted].

During June [redacted] with the [redacted] claimed the destruction of over 100 Japanese vessels, of which [redacted] 24 were [redacted] the most, [redacted] and [redacted]. The Kagoshima airfield, [redacted] to be bombed in preparation for [redacted] had already [redacted] neutralized. On 19 June [redacted], the [redacted] with the [redacted] was transferred from the South Pacific Forces [redacted] Western Air Forces under command of Admiral Kenney. Sunset of [redacted] by [redacted] and [redacted] the Forces of [redacted] on 30 June and by 1 July 300 tons of [redacted] had been poured into the [redacted] which [redacted] 14 miles long and 13 miles wide. Just [redacted] the bridges in [redacted] Air Forces returned the beaches. [redacted] had to be done with great precision. The island is surrounded by a corral [redacted] which B-24 air forces [redacted] not to enter because they [redacted] might have to cross it. Sixteen B-24's placed their 250-lb. instantaneous demolition bombs [redacted] on the Japanese defenses and [redacted]. [redacted] described this [redacted] as "the best example of

[redacted]

[illegible]

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This [illegible] could be used [illegible] the [illegible] had [illegible] of Bill not only, in logistical [illegible], in [illegible] the [illegible], military [illegible], but [illegible] tactical [illegible] and in [illegible] battle. Profiteering in these rubbers enabled Quartermaster to [illegible] on hostile shores. Bob Hope in his [illegible] of [illegible] [illegible] of corsets and [illegible], [illegible] of millions [illegible].

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[illegible] OF [illegible]

The amphibious [illegible] in the S.W.P., with the possible exception of those of I Wing, were all subject to some degree of land based air support. The forces in that area were organized according to the principle of unity of command, whereby [illegible] Army, Navy, and Air Force commanders under the Supreme Allied Commander. By contrast all of the amphibious [illegible] in the Central Pacific, from Iwo Jima to Okinawa, were covered by carrier based aircraft, and the land based aircraft were under the operational control of the Navy. The two theaters therefore present important points of comparison and contrast.

The Central Pacific

From its establishment, 8 February 1942, until 14 July 1945 the Seventh Air Force was under the operational control of CINCPOA. In matters of administration, supply, and services the Seventh was under Lt. Gen. Delos C. Emmons, commanding general of the Hawaiian Department. On 16 August 1943 these functions were assumed by U. S. Army Forces in the Central Pacific Area, which was in turn replaced by the Army Forces, POA on 1 August 1944. Although supreme operational control was vested with CINCPOA, this control was exercised through various intermediate commands. In the early phases until command of the Ellice Islands received their operational orders through the Hawaiian Department. Units ashore assigned received their orders through various naval commanders. Until November 1943 VII Bomber Command operated under the direction of the Aerial Patrol Wing 2 (Fleet Air 2). In preparation for the seizure of the Gilbert Islands, Admiral Nimitz created the Central Pacific Force, U. S. Fleet under command of Vice Admiral Raymond A. Spruance. All those based aircraft contributed to the operation were included

in Task Force 57, commanded by Vice Admiral John H. Hoover. As operations continued apace, the Pacific units of the Seventh Air Force were assigned to various task force commanders.[1]

The principles of amphibious operations in the Central Pacific were essentially those of Dieppe elsewhere in the Pacific: to seize naval and air bases from which to prosecute further advances, to deny certain positions to the enemy, and to induce a decisive battle reaction. The peculiar terrain conditions influencing the pattern of operations in the Central Pacific: distance, the fortified nature of the objective, and heavy reliance on the beachline.

The vast distances between Central Pacific and the United States and between areas within the Central Pacific made for both logistical and tactical difficulties. It took about 55 days between routine supply requisition to the United States and delivery to forward units (by surface vessel). The tactical difficulties imposed may be envisaged from the fact that during the planning of Okinawa operations, one of the landing forces were separated by as much as 6,000 miles. Distance made also for intelligence difficulties. Detailed physical reconnaissance, such as was carried out before the cross-channel landings in France, was rarely possible. Aerial photographs were obtainable only in conjunction with carrier strikes or long-range bombing attacks and the uniform flow of such photographs could not be assured.

Most of the key objectives derived their importance from their geographic location rather than size. In many cases the nature of the objective made it impossible for a commander to develop his troops within an area, so that the full strength of his forces might be brought to bear against the enemy. Coral reefs surrounding many of the atolls or island beachheads. A personal

enemy . provided in the development of the amphibious tractor. This enabled assault troops and light equipment to be moved in, but the problem of moving heavy material—trucks, tractors, bulldozers—remained. The Navy succeeded in overcoming these difficulties by underwater demolition teams that blasted channels through reefs and by pontoon causeways that bridged shoals surrounding them.

The bitter resistance encountered at the beachline brought into concern focus the importance of supporting fires. Where there were prolonged and carefully planned preliminary fires the assault troops went ashore with a minimum of casualties; where such bombardment was lacking, there were heavy losses.[2]

The Gilbert Islands Campaign

By way of background to the operations that were launched in the Central Pacific in November 1943 it should be pointed out that the defeat of the Japanese naval air forces in the Rabaul-Solomons area insured that whatever air opposition was encountered by the carrier-based air forces would be low in quality and quantity. The Navy had approximately 900 aircraft, about four times the number of combat aircraft possessed by the enemy in the Gilbert-Marshalls area.[3]

The various directives issued for operations in the Central Pacific defined the purposes to gain control of the Gilbert Islands and Marshall Islands, to secure a base area for an attack on the Carolines, to improve the security of the lines of communications, and to extend the measure on the Japanese. The final plans for Operation GALVANIC called for the seizure of Tarawa and Makin on 20 November and Apamama on 26 November 1943. The main objective on the Tarawa Atoll was the island Betio, where the Japanese had built a

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reef-coral runway. Stiff resistance was expected at Betio, which was heavily and cleverly fortified, but less trouble was anticipated at Makin and Apamama.

The pattern of amphibious operations in the Central Pacific was fairly well defined in these initial operations. The major combat forces were the Assault Force, the Carrier Force, and the Defense Forces and Shore-Based Air. The Assault Force consisted of ship-board troops who were to be put ashore; escort carriers whose mission was to provide air cover for the convoy en route and to give close air support to the landings and beach operations; and supporting battleships, cruisers, and destroyers. The Carrier Force, which included the main force of large and small aircraft carriers, battleships, cruisers, and destroyers, launched air strikes before the arrival of the Assault Force to neutralize enemy air forces and shipping; protected the operation from interference by the fleet or naval forces; and assisted in close air support and surface combat during and after the establishment of the beachhead. The Defense Force and Shore-based Air for the Gilbert Islands operation and for most of the Central Pacific campaigns consisted of the Seventh Air Force, land-line base air defense units, and naval search and reconnaissance groups. This force, operating from bases as far forward as possible, was responsible for pre-invasion bombardment of the objective area, for search and escort missions, and for air defense of the base area.

During the Gilbert Islands operations the Seventh Air Force B-24's struck at Jaluit and Wotje, the atolls to be invaded, and at airbases from which the enemy could interfere with the landing operations. These included Jaluit, Wotje, and Mille as well as Nauru. The Seventh Air Force Pacific Fleet concluded that "these attacks did little decrease of any military

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[illegible] October, and there is no indication that any fields were closed for [illegible] duration of the attack." In assessing early operations in the General Pacific it must be borne in mind that the Fourth Air Force had only two B-17 bomber groups and these were operating from widely dispersed bases. [illegible] 7 average flying [illegible] distances (round trips of 2,000 miles, sometimes) over vast [illegible] of water, here there were few or no interceptions to [illegible]. Airfields were unavailable and had to be [illegible] often found [illegible], usually small [illegible], could be obscured from [illegible].

Because of operating difficulties the landings of Japanese were preceded by only seven bombardments by land-based aircraft: the VII Bomber Command dropped only 60 tons of bombs in six missions. It was estimated that 20 per cent of the pre-invasion fire was delivered by surface vessels, 10 per cent by carrier planes, and only 10 per cent by land-based aircraft. The 2d Marine Division's assault on Iwo on 20 [illegible]. In 72 hours of bitter fighting it suffered about 20 per cent casualties - more than 15,000 troops.

The broad [illegible] the [illegible] [illegible] and if we are to profit from each [illegible] of military history we should concentrate on early operations, for it is during the initial [illegible] of a war that weapons, materials, and experiences are in short supply. This is especially [illegible] if we examine the early operations in the various theaters of war we find [illegible] errors committed and important lessons learned. This was true in North Africa, at Guadalcanal, at Iwo, and it was no less true in the early months of the General Pacific campaign. In none of these initial operations did the land-based air force play a leading role, but since these experiences vitally affected amphibious warfare, it is well to note briefly at least the

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The heavy casualties suffered at Tarawa invite comparison with Cape Gloucester. Tarawa was flat and raised above the sea only a few feet. The Japanese had the advantage of dug-in-positions that offered poor targets to naval guns against a flat trajectory. Cape Gloucester also was defended by dug-in-positions, but the preliminary fire was delivered chiefly by land based air and the assaulting forces were able to go ashore, with few casualties. Terrain covered by such defenses having little depth but the superiority of air bombardment seems to be obvious. Another advantage of land based bombardment was that it could be concentrated and sustained. At Tarawa the interval between the lifting of the final bombardment and the first wave of the assault was too great.[13]

The U.S. 27th Division which made contact at Makin encountered determined resistance from 600 to 800 Japanese defenders but the island was under control by the following day with light casualties. Tonmara Island was captured on 26 November with no visible resistance.[14]

The Marshall Islands Campaign

The invasion of the Marshall Islands, Operation FLINTLOCK, was to be under command of Vice Adm. Spruance who would assume tactical command only if the forces flushed out and challenged. Otherwise tactical command would be exercised by Rear Adm. Richmond K. Turner until the ground forces were ready to take over. The land based air forces operated, as before, as part of Task Force 57 under command of Admiral Hoover.[15] Unlike the Gilberts, the land-based aircraft bore the major burden of preparatory air operations. During the seven weeks preceding the landings the carriers of the Pacific Fleet were given a much needed rest, overhaul, and refresher training.[16] With the rapid deployment of the Seventh Air Force on Tarawa,

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Kwajalein, and thereby the strikes preparatory to the landings were begun. Enemy bases at Wille, Jaluit, Maloelap, Mobile, and Wotje were constantly hit by heavies, mediums and fighters of the Seventh. The heavies concentrated on Kwajalein, dropping 200 tons on the atoll during the softening period.[17] Right before D-Day (beginning 29 January) the Fast Carrier Force (TF 58) under Rear Adm. Marc A. Mitscher, moved in and pounded enemy bases in the Marshalls. By D-Day, 31 January, the land and carrier based planes had established unquestioned air superiority in the Marshalls; not a single enemy air plane appeared to contest the landings.[18]

Three initial objectives were to be hit simultaneously by the amphibious forces: Kwajalein Island and Roi-Namur Islands in the Kwajalein Atoll and Majuro Atoll, roughly 270 miles to the southeast. Three attack groups composed of 217 ships and carrying 53,000 troops were assigned to these objectives. The forces were organized in the same basic patterns as for the Gilberts Islands, with the addition of a "Neutralization Group" whose task was to maintain neutralization of the two enemy air fields at Mobile and Taroa during D-Minus 2. Against slight opposition the American forces were in occupation of the Roi-Namur Islands by 3 February, and by the 6th the occupation of Kwajalein was complete.[19]

The Islands in the Kwajalein Atoll were taken with relative ease because the lessons learned in the Gilberts were applied to good advantage. ALLIED was an improvement over GALVANIC in almost every respect. In the first place the preparatory bombardment, both air and surface, was heavy, prolonged, and accurate. Although new doctrine had been against risking capital ships too close to shore, Rear Adm. Richard L. Connolly, who had led one of the amphibious groups in the Sicilian landings, maneuvered old battle ships to less than 2,000

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strength was increased into Tokyo Bay, and Yokosuka and Yokohama Naval Base were to be seized.[22]

Responsible for the distribution of forces in the Central Pacific was Admiral Nimitz. On 1 May 1945 the Central Pacific Area, commanded by Admiral Nimitz, and Task Force 50, was created. Maj. Gen. William W. Wyman, formerly commanding general of the Fourth Air Force, was made CG AAF CPA, and was made responsible for the operation of all Army based aircraft in the forward area. He continued to operate under command of Admiral Nimitz, Commander, Forward Area. Admiral Nimitz, in turn, was under command of the Joint Chiefs of Staff as Commander Central Pacific Area, now known as the Pacific Ocean Areas.

In addition to the division of responsibility in the Carolines, there was a similar division of responsibility for U.S. strategic air operations. There, a second strategic air force, the operation of which was controlled by Admiral Nimitz, was ordered to be established in the Central Pacific.[23]

The Ryukyus Islands Campaign

The invasion of Okinawa was essentially the same as that used in the Gilberts and Marshalls. Task Force 58 made strikes which all but neutralized the enemy air strength on the islands of the Ryukyu Chain. D-day for landings was 1 June; H-hour, the beginning of landings, was 0406 for 18 June. Despite the heavy shelling of Kerama by naval vessels, Japanese artillery and mortars were able to cause considerable casualties and inflict heavy casualties on the marines. At first, neither carrier based air nor naval gunfire was able to destroy artillery positions which were [redacted] on the cliffs. Although land-based air contributed indirectly by attacking other islands, Okinawa itself was not

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subjected to bombardment because of the long distances involved. There was no possibility, either, of artillery support from islands within range as had been the case at Kwajalein, Eniwetok, and Emirau.[24]

On 22 June 22 P-47's of the Seventh Air Force were flown in to support the ground troops. These P-47's were transported by escort carriers to the area and catapulted from the decks in a manner reminiscent of the landings in North Africa. From the air strip, later known as Isely Field, the P-47's were employed against entrenched troops, gun positions, and strong points. All organized resistance on Saipan ceased on 9 July, but mopping up operations continued for months.[25]

Owing to the stiff resistance encountered on Saipan, D-day for Guam was postponed until 21 July. The postponement allowed ample time for coordinated air strikes and surface bombardments. Carrier and land-based aircraft were able to destroy or partially neutralize enemy artillery positions. As a result, the 19,000 infantry and 37,000 marines employed in the assault were able to go ashore against only feeble opposition. As the troops moved inland strong[26] opposition developed but all organized resistance was overcome on 10 August.

Meanwhile a landing on Tinian was made on 24 July. Tinian, being separated from Saipan by a channel less than three miles in width, was subjected to extremely heavy aerial, artillery, and naval bombardment. In the words of a Marine historian, "...the Tinian operation must stand as an over-grown river crossing."[27] Only light resistance was encountered and the island was declared secure on 1 August. With the addition of another squadron of P-47's the landings at both Guam and Tinian received direct support from land-based aircraft. The versatile P-47's carried out a variety of operations: they could double as bombers, strafe with .50-caliber machine guns, or launch 4.5-inch rockets.

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[illegible] attitude of checking on possible [illegible] also. Auxiliary fuel tanks, [illegible] with a surface of [illegible] oil [illegible] and liquor [illegible] [illegible], were provided on all, all protected [illegible] with the Thunderbolts. A pilot could climb [illegible] normally by 75 [illegible] and [illegible].

The Action

The [illegible] in the Southwest Pacific [illegible]. The [illegible] for over [illegible] [illegible] [illegible] to be [illegible] [illegible] Strategic [illegible] [illegible] from which to [illegible] into the [illegible] installations. The Operation Staff [illegible] of [illegible] [illegible] [illegible] [illegible] Division and 71st Infantry Division, reportedly, on 15 October. The [illegible] with [illegible] [illegible] in these [illegible] [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible], the [illegible] of [illegible] [illegible], and maintenance of [illegible] [illegible] [illegible]. [illegible] of the attacks designed to soften the [illegible] for [illegible] were carried out by [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] by [illegible] of the Pacific Fleet carriers and Fifth Air Force [illegible], but [illegible] [illegible] early in [illegible] shared by Japan as with 15 planes on [illegible] and with a serviceable [illegible] on Ujelang and Jaboltheim. Photographic attacks were carried out by [illegible] nightly until 14 September. From 23 August to 5 November, 348 sorties based on [illegible] dropped over 700 tons on Kindrolum and [illegible] installations in the Palaus. On 6 September a [illegible] [illegible] took over [illegible] [illegible] [illegible]. With close support furnished by carrier planes the landing on [illegible] took place on the 15th, as [illegible]. Initial [illegible] were made [illegible] and [illegible] but [illegible] Japanese [illegible] [illegible] were soon [illegible]. As it turned out, [illegible]

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was the most heavily defended small island in the Pacific outside of Iwo Jima.[31]

There were several deficiencies in the Palaus operation that made it costly. For one thing, the enemy exploited to the full an intricate system of natural caves and a dense undergrowth that covered the island of Peleliu. Intelligence failed to reveal the nature and extent of the enemy's defense system. Three days' preliminary naval bombardment was insufficient, but it is doubtful that even a longer preparation by naval guns with their flat trajectory would have been effective against the enemy's caves and underground positions. Finally, there was the failure to provide adequate reserve troops for the First Marine Division.[32]

On the other islands in the Palaus less formidable opposition was encountered. Angaur was seized on the 17th, Ulithi on the 23d, and Ngesebus on the 28th.[33]

The pattern of amphibious operations in the Central Pacific gave priority of place to the Navy and Marines. Throughout the Central Pacific drive the Seventh Air Force was under the operational control of the Navy and until the Marianas campaign, its role was essentially a supporting one. Whether the purpose of the operation was to soften up an island for assault or to maintain the neutralization of a by-passed island, the type of mission was pretty much the same: long overwater flights to strike at enemy bases on small atolls. This type of operation had its own peculiar hazards but it involved relatively little contact with the enemy. When the Central Pacific forces moved into the Marianas, the Seventh began to provide more directly with the enemy as the P-47's provided direct support for ground troops on Saipan, Guam, and Tinian.

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Chapter VII

[illegible] OF [illegible]: [illegible] RECONSIDERED

Official plans for the invasion of the Philippines called for the seizure of intermediate bases at Leyte and Samar by Army forces and at Yap by MacArthur's forces. Even with these bases, General Kenney in July [illegible] held doubts that planes were not in hand commensurate with air commitments. He had maintained that the distances between Saipan, Ulithi, Ie Shima, and Leyte were too much for optimal operations and had recommended the earlier seizure of intermediate bases so as to achieve a build-up of air power over Yap to 30 days.[1] On 16 October 1944, however, General Kenney rode to General Headquarters that he thought the Japanese were "about through," and recommended operations should be speeded up by striking at once.[2] Independently Admiral Halsey had come to a similar conclusion after the third of carrier strikes against the Philippines in October 1944. Describing the Japanese air forces as a "hollow shell on a one-two punch," he recommended that Yap, Talaud, and Sarangani Bay be by-passed and a direct assault on Leyte be made. Upon receiving these reports and recommendations, JCS sent a directive to Admiral Nimitz and General MacArthur that a seizure of further intermediate bases would be omitted and all plans revised on current on 20 October 1944.[3]

Issues

[illegible] concern at [illegible] abandonment of the [illegible] Philippines operations which had been followed so successfully in the Pacific. Previously, land-based air power had been employed in such a way as to provide cover for the movement of all surface elements and the isolation of each

objective prior to the assault. In the one exception, Hollandia, the assault troops had gone in under cover of carrier-based planes. Perhaps the planners felt that Leyte would be another Hollandia. If so, they failed to take into consideration the obvious and important differences. In the first place the landing at Hollandia was made only after land-based air power had established air superiority in the objective area. Secondly, Hollandia, unlike Leyte, was not within easy distance of numerous enemy airfields. Thirdly, Hollandia, though important, was not vital to the enemy. [illegible] could be expected to [illegible] every air-[illegible] [illegible]. The risk of [illegible] land-based air [illegible] was taken because it was assumed that the Japanese air force had been reduced to a state of impotence and because it was not foreseen that the widespread use of kamikaze tactics would be adopted.

Leyte demonstrated the [illegible] pattern in [illegible] way: there was no unity of command. Although General MacArthur was responsible for the success of the operation, he did not have command over all forces assigned. The Seventh Fleet, [illegible] Forces, was in his chain of command. The Third Fleet, on the other hand, though [illegible] Forces, was not in the chain of command and its participation depended on cooperation. There was no superior command short of the [illegible], 10,000 miles away. The un-[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of Leyte.

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[illegible] in general followed the [illegible] plan. [illegible] recommended that the Army, Navy and Air Force, [illegible] Army Air Forces, [illegible] be charged with the defense of the Americas, and be charged [illegible] in the Caribbean area, to consist of [illegible] of the Army, and be charged [illegible] in the Caribbean area and the Southwest Pacific area. In addition to providing aerial reconnaissance and photographic coverage, the Army would [illegible] with the Third Fleet [illegible] air forces [illegible] to cover shipping [illegible]. The Caribbean Air Force, [illegible] Army Air Forces, was charged with the task of [illegible] in Panama and the Caribbean [illegible] would be [illegible] to the Caribbean Defense Command. The Fourth Fleet was responsible for [illegible] convoys and directed the defense of the Army [illegible] Navy [illegible]. The Third Fleet was to [illegible] the Hawaiian Air Force, [illegible], and [illegible] Luzon [illegible] to be [illegible]; to [illegible] in Panama [illegible] on [illegible] and 17 October; to [illegible] in the Philippines on [illegible] 10 October; and to support the Dutch [illegible] in case [illegible] [illegible].

The responsibilities [illegible] were not carried out. [illegible] of the responsibilities, [illegible] 10 October [illegible], Major General Delos [illegible] was relieved from duty in the Philippines. [illegible] Army Air Forces [illegible] the Hawaiian [illegible] of this area, and was charged with the duty of [illegible] the [illegible] area, [illegible] Army Air Forces [illegible] no [illegible] was available for [illegible] [illegible]. [illegible] [illegible], [illegible] [illegible]

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[illegible] Table [illegible] the last critical period of the battle. [illegible] of [illegible] of Fast Carrier [illegible] its search patterns to include the Eastern Philippines [illegible] in the northern Visayas and the Mindanao area.6

Meanwhile the Japanese [illegible] the Third Fleet withdrew. Limited [illegible] returned to the support of the Leyte operation. Luzon, Cebu, Negros, Panay, and Mindanao were subjected to fast carrier strikes from 17 to 20 October. During these preparatory operations the naval pilots were outstandingly successful in their engagements with the Japanese: they destroyed 650 aircraft on the ground and in the air. U. S. losses, both combat and operational, amounted to only 176 planes. This was an excellent record, but two considerations should be kept in mind. In the first place the Japanese pilots were inferior at this time in training and experience. Furthermore, although the carrier-based planes inflicted [illegible] losses [illegible] their [illegible], they did not succeed in neutralizing [illegible] air facilities, either on Formosa or on the Philippines. Chief reason for the inability of the carrier planes to achieve the necessary degree of neutralization was their limited [illegible] capacity. Despite their losses the Japanese were able to bring in new planes on both Formosa and Luzon shortly after the carriers of the Third Fleet retired.7

The general concept of operations against Leyte, designated KING II, was to interpose Allied forces between Japanese forces in the southern Philippines and those in the north and to establish bases for subsequent operations in the Philippines. This was to be done by the seizure of strategic points on the east coast of Leyte and on adjacent islands and the control of adjacent waters.

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Southern and Central Forces, to demolish the Allied forces in the Philippines. The U. S. Seventh Fleet was disposed so as to guard the northern entrance. The Third Fleet stood guard over the San Bernardino Straits. Convinced that the Southern Force contained the main body of Japanese battleship power, Admiral Halsey had moved north on 24 October in an attempt to engage the Japanese forces, thus leaving the San Bernardino Straits unguarded. Nimitz was concerned mainly about the fast carriers and he reasoned that to guard San Bernardino Straits while the enemy to the north was forcing for a knock would be "childish."[11] While Halsey was behaving like an adult the Japanese Central Force slipped through the San Bernardino Straits on the night of 24/25 October. The Seventh Fleet, already heavily engaged with the Southern Force, faced the new threat under tremendous odds. The enemy ships, all of which had been employed for the Leyte action, were low on ammunition and fuel; the escort carriers covering Leyte were shielded only by a little destroyer screen; and many aircraft were engaged in the hopeless battle with the Southern Force. The carrier based aircraft were soon in dire straits. Many, although badly damaged, had to commit themselves with diminishing chances of the decrepit fleet. Unable to land on damaged carriers, many were forced to land on the unfinished airstrip at Tacloban, only to crash in the process. To add to the difficulties the Japanese steered up their landing craft to various points in three beaches. The Japanese Central Force was in sight of its goal, the soft transport shipping, when its commander ordered a withdrawal. What his reasons were are not definitely known but, among other things, he feared land-based air attack from Tacloban, the unfinished Allied airfield on Leyte.[12]

Turning the trouble of Leyte Gulf the Japanese forces faced worse disaster:

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[illegible] the Indo of the Pacific War. The valiant Indo, [illegible] could not be mobilized and concentrated to retrieve a precarious situation. Carrier air was broken down, and without flexible land-based planes could not be counted on. On the afternoon of the 25th the very informed Japanese Headquarters at Rabaul were completely crippled and there would be no further cover for the Japanese. Since the Japanese had flown in reinforcements and had about two hundred fighter planes against our ground troops, there was a great need for land-based air power. The Fifth Air Force was not scheduled to take over the defense of Leyte until 1 December, but in view of the breakdown of carrier air support, 38 P-38's were flown in on 27 October, as soon as the Dulag airfield could receive them. By 31 October all the carriers were either on their way out of the battle area.[13]

The loss of air superiority in the Leyte battle was not because of a revival of Japanese air power. Of the thousands of planes in the Philippines only about 300 (excluding naval craft) were operational.[14] The loss of superiority was caused rather by the inherent weakness of carrier-based aviation: the vulnerability of the carrier to air, surface, and submarine attack, and the difficulties of maintenance. The pilots of carrier-based planes were not as highly trained as those of land-based planes; the pilots in skill, but the carriers counted for little if the victorious pilots returned to find the base sunk by a suicide attack. The physical limitations of carrier-based aviation were brought out by the fact that even after the retirement of the Japanese fleet, we still found that carriers had a relatively short period of operations for landing reinforcements. Land-based aviation was not subject to such limitations and could maintain its superiority over the area.[15]

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[illegible] of [illegible] possibilities of [illegible] forced [illegible] on [illegible] close [illegible] [illegible] to [illegible]. [illegible] close [illegible] Force [illegible] action [illegible] his [illegible] [illegible] Force [illegible]. [illegible], the [illegible] close [illegible] 27 October to 31 December [illegible] 1000 [illegible]. [illegible] over 300 [illegible] probably destroyed [illegible] loss of only 16 [illegible] until 20 [illegible], all [illegible] from [illegible] or the [illegible].[16]

[illegible] Philippines, included heavy land [illegible] 12 [illegible] the [illegible] Ormoc [illegible], [illegible] the Allied [illegible]. [illegible] of [illegible] land [illegible]. [illegible] of the [illegible] the Fifth Air Force had [illegible] control of [illegible] of 7 December, [illegible]. [illegible] this was the [illegible] by the Fifth [illegible] 77th Division [illegible], about three miles south of Ormoc. [illegible] out with all [illegible]. [illegible] with [illegible] [illegible] from the [illegible].

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[illegible] with reinforcement by time, on the other hand, [illegible] broken up and totally [illegible] air forces. The forces so converted [illegible] effective combatly [illegible] P-47's, 43 P-40's and 24 A-12's until every corps had [illegible] bomber, or both. Additional [illegible] Eighth Air Force, only to be detached to the [illegible] of the Ninth Air Force. [illegible] the [illegible] 97th Division. This [illegible] the various elements of the Ninth Army [illegible] the other two divisions on each. On 25 October the Ninth Army relinquished control of [illegible] corps sectors to the First Army.[17]

The [illegible] of the Ninth Army [illegible] the initial [illegible] of the Ninth Army [illegible] under cover of a [illegible] smoke [illegible] and [illegible] the initial [illegible]. [illegible], however, [illegible] of the [illegible] the [illegible] of the [illegible] Air Force [illegible] support. The [illegible] to reinforce his position [illegible] to be subject [illegible] and naval forces to heavy aerial [illegible]. Four unfavorable developments could [illegible] interrupted records: (1) the [illegible] could be made available in sufficient strength; (2) [illegible] of the [illegible] could prevail. The failure to build up [illegible] was [illegible] of the [illegible]. It [illegible] irreparably [illegible] to Lorient, but facilities [illegible] for [illegible] of other [illegible] did not exist. [illegible] slow [illegible] development was going to [illegible] from the enemy's [illegible] (lack of [illegible] priority), [illegible], [illegible] could [illegible], [illegible] of roads. [illegible] of [illegible] would [illegible] the [illegible] of the [illegible] would have been [illegible] withdrawn support from the objective area. This in turn would have [illegible] the Central Force

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Leyte to Mindoro presented crowded hazards, since it was in through narrow waters that lay close to enemy airfields and were in front of numerous defense airfields. Planners did their utmost to protect the ships by arranging for continuous daylight cover and dusk patrols by night fighters. Despite these precautions, one cruiser and one destroyer were damaged so heavily that they had to be scuttled.[19]

The landings were accomplished on the 15th of December without opposition except for air attacks which resulted in the loss of two LST's in exchange for the annihilation of 100 suicide planes.[20] The main Japanese effort to destroy the beachhead was undertaken by the Imperial Navy in the form of an attack by one battleship cruiser, one light cruiser, and six destroyers. Although air reconnaissance had proven adequately that the landings, one strip (#1) and #11 road) were short and soft. Furthermore the attack came around 1000 hours. Allied combat air patrols, with landing limits on, shuttled back and forth over the assault convoys that as aircraft could be refueled and reloaded with bombs. Before the engagement was over every vessel was attacked, and two destroyers were sunk and one heavy cruiser and one destroyer were damaged. Brig. Gen. R. C. Dunlap, commander of the Mindoro Air Force, proclaimed that: "This action of our air units on that night will stand forever...as one of the most gallant deeds to be established in the traditions of air fighting men."[21] In spite of continuing air raids the AAFSA built up the air forces so quickly as facilities were ready. By January the reinforcements were ready to furnish important support to the Luzon operation.[22]

Lingayen

The last major amphibious landing in SWPA was the invasion of Lingayen

help. The object of this operation was the seizure of Lingayen area
where were to establish airfields to liberate Manila. The Sixth
Army was to employ the I and XIV Corps in the seizure of four beachheads.
The major operations were similar to the Leyte and Lingayen
landings. The Seventh Fleet was to bombard, protect, and land the attack
forces by a route passing through the inland waters of the Philippines and
west of Luzon; air support was to be provided in the objective area by escort
carriers, while the land-based air forces neutralized by distance air force
to the southward and the fast carrier attack of Formosa, the Ryukyus, and
Luzon during and after the landings. Land-based air was expected to take
over in the objective area by D plus 10 division engineer aviation
23
units.

The carrier force was organized as an effective unit prior to the
invasion of Luzon. Limited strikes against the airfields at Clark
Field were made by Fifth Air Force bombers through exclusion during
January. Once each day, in the Manila area, was also hit by the
fast carrier forces. Palawan and Leyte airfields were hit by Halsey.
Every attacks
during Luzon landings were also made by aircraft from the third Fleet in
December and early January. On 7 January the forces coordinated light and
heavy carrier attacks over Luzon in all was carried out against Clark Field.
A total of 132 F-6's, 84 F-4U's and F-20's carried out. On one group of the Corsairs
and Helldiver strikes, 30 planes were attacked. In carrier and land based planes
by January 21 were the total objectives of carrier vs. land based air attack.
According to Vice Admiral Mitscher, carrier aircraft could only spell secrecy.
"Never once did I see surprise...[illegible] did not disrupt our operations," said the
Japanese. The land-based bombers, on the other hand, "gave us no rest and we
were unable to recover between attacks." In spite of the heavy losses of
24

his air force, the enemy was able to save some miscellaneous aircraft which were later committed to suicide attacks. Although the Allied forces enjoyed superiority it was impossible to prevent small attacks from well dispersed airdromes or to eliminate the sporadic [illegible] attacks.

In addition to counter air activities, the Fifth Air Force also carried out operations aimed at the destruction of ground communications. During the pre-invasion period, rail and road lines in central Luzon were hit by Allied fighter planes. Blockade of the west coast of Luzon was carried out by Mindoro-based planes.[25]

The Luzon operation afforded an excellent opportunity to assess the effectiveness of small escort carriers (CVEs) for cover and close support of amphibious operations. No enemy fleet was involved in the action and although the opposition came entirely from the [illegible] air force, the CVEs were unable to prevent considerable damage to themselves and to the convoys they were covering. On 4 January the [illegible] group, escorted by 12 CVEs, was attacked and one CVE was sunk. On the following day 50 or 60 enemy planes broke through the defense screen and hit two cruisers, two CVEs, and three destroyers. [illegible] sunk. Thereafter one CVE was sunk, three were put out of action, and two damaged. [illegible] attention [illegible] to [illegible] Luzon [illegible] direct air support in [illegible]. [illegible] to [illegible] the [illegible] of the Luzon Straits, [illegible] to [illegible] small Luzon [illegible]. [illegible] attack on northern Luzon on the 7th [illegible] claimed 75 planes

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Chapter III

I.O JIMA: CAPTURE OF THE VITAL AIRFIELDS

The landings in the Philippines increased the importance of those islands and the annexation of the Marianas line of communication to the vital southern resources area. The next move would be designed to secure the shortest possible line of communication to the Japanese homeland on Bonin Islands.

Iwo Jima

The primary consideration in the capture of Iwo Jima was its proximity to the B-29 operations. Striking through Two Jima's many obliging Allied airbases in Saipan, Tinian and Guam, 1,500 plus miles away, the B-29's were able to destroy 11 B-29's and to inflict damage on several others. Six B-29's had also been observed enroute to Japan, and in order to avoid interception they would be forced to fly a round-about course to their targets. Therefore, either of Iwo Jima's two airfields would be of great value to the B-29 operations. In addition to the considerations, seizure of Iwo would eliminate only 660 miles of the total 1,500 mile round trip. A JCS directive of 2 October 1944 ordered Admiral Nimitz and Lt. Gen. Holland M. Smith to occupy a position in the Nanpo Shoto on which suitable airfields could be built. Iwo Jima was the only practical possibility.[1]

"Never in military history will Iwo Jima's name be left out of any record of World War II." Probably it was to our people, by dint of the Corps' publicity: the only offensive in which they participated (Guadalcanal was part of only about a four months' affair); where there was no room for retreat; or where salt fires

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[illegible] were delivered [illegible] by [illegible] by rail [illegible]; by [illegible] by [illegible]; and by [illegible] by carrier [illegible].

Over-all control of operation DRAGOON was exercised by Lt. Gen. Jacob L. Devers, Commander of U.S. Sixth Army Group. Tactical control was divided between Vice Admiral Henry Kent Hewitt, Commander Joint Expeditionary Force and Lt. Gen. Alexander M. Patch, USA, Commander Joint Invasion Army Troops. Tactical command of the assault troops, designated Fifth Amphibious Corps, was exercised by Maj. Gen. Lucian K. Truscott, Jr. Two Amphibious Support Groups and the Bombardment and Covering Force were commanded by Rear Admirals A.G. Kirk and Lyal A. Spencer, respectively. A naval diversion of the Ligurian coast was made by [illegible] of TF-80.

It was originally agreed that the regular amphibious build-up of GT Force Commander would serve the purposes of both Anvil and Dragoon alike, but before the build-up was to be continued in the following order: (1) minesweepers would be released on D plus 3 and D plus 5; (2) [illegible] would be released by the TF-80's commander individually [illegible] on or about midnight [illegible] D plus 4/5 and midnight again on [illegible] D plus 7/8; (3) [illegible] would be made [illegible] by [illegible] on D plus 4; and (4) a division [illegible] would be released from Corsica on or about D plus 8.[3]

The principal [illegible] were [illegible] in amphibious operations: [illegible] of enemy shipping; [illegible] of airfields in the Toulon area; [illegible] to defend the beach for resupply. For protection [illegible] the Fifth Army [illegible] fighting force, [illegible] over-all [illegible] and about 140 [illegible] in the area.[4]

[illegible] by [illegible] on [illegible] the [illegible] had carried

[redacted]

[redacted]

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in all some 20 separate attacks. So far as breaking up these raids was concerned, the Seventh Air Force was outstandingly successful: after 2 January the Japanese made no further attacks. Neutralization of the enemy airfields on Iwo was, however, only partially accomplished. At no time were all runways inoperational and no runway was inoperational for even a full day. The reasons are clear enough: airfields cannot be effectively neutralized by a small force operating over long distances; to be effective, such attacks must be in mass and sustained.[7]

So far as softening defenses were concerned, results were even less effective. Most of the defense installations were deeply dug in and cleverly concealed. Shelters and gun positions were of such nature and construction that it usually required a direct hit to cause any damage at all, and even a direct hit by the type of bomb used (mostly 100- and 500-lb. GP) had very little effect except concussion. The fragmentation effect of any explosive was greatly reduced by Iwo's loose soil, which was composed of cinder and sand. Napalm was used in an effort to burn off cover from emplacements, but for a variety of reasons the experiment was not a success.[8] The Marines came to the conclusion that the only effect of air bombardment was to cause the Japanese to construct more extensive underground positions.[9]

If the pre-landing air bombardment was insufficient and ineffective, so was the naval. The Marines estimated 10 days of preliminary fires as necessary to prepare the island for assault. They got only three days' bombardment. A post-operational study concluded that with the force actually employed -- six old battleships and four heavy and one light cruiser -- the minimum time required to prepare the island as thoroughly as possible for occupation was eight days. Why were the Marines obliged to go ashore with

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inadequate preliminary fires. The answer is to be found chiefly in a tight operational schedule whereby Iwo was sandwiched between two major invasions, Linjayen and Okinawa. The needs of Iwo Jima had to be reconciled with these other major operations and of a carrier attack against Honshu in mid-February by Mitcher's Task Force 58. In the words of the marine historians, "the navy planned and delivered preliminary bombardment, not on a basis of accurately calculated requirements, but to conform with the strategical situation as the admirals estimated it at the time."[10] There was a certain irony about the situation. Ammunition was allotted to Okinawa in vast amounts at the expense of Iwo. Yet the Japanese tactic of abandoning the beaches at Okinawa rendered much of the preliminary fire against that island useless.

At 0900 on 19 February the first wave of landing craft hit the beaches. A narrow beachhead was established on the first day, but the Marines soon encountered one of the most fiercely contested battles of the entire war. The Japanese on Iwo Jima put up a fanatical, well-planned, and ingenious defense. Lt. Gen. Tadamichi Kuribayashi, the Japanese commander, made few if any errors in planning and executing his mission of inflicting maximum attrition. The Japanese were able to take 5,500 American lives--a toll equal to their own dead. From D-day until 16 March, when the island was declared secure, the Marines were forced to inch their way forward and to pry the enemy loose from well-entrenched positions.[11]

From 19 through 22 February the fast carriers were on hand to assist the escort carriers in providing close support. Thereafter the burden had to be carried by 10 escort carriers, a force inadequate to the tasks at hand. During the early stages of the operation the Seventh Air Force B-24's hit other islands in the Nampo Shoto and they, along with the carrier planes, were able to maintain

air superiority. The only serious air opposition came at dusk on 21 February when about a dozen enemy planes made a low level attack on a carrier unit. Although all intruders were shot down, they succeeded in sinking the Bismarck Sea and damaging the Saratoga, Lunga Point, and an LST.[12]

The first P-51's of the 15th Group began to arrive on Iwo on 6 March. With the withdrawal of all carriers on 11 March for rearmament and replenishment, the full burden of air defense and air support fell upon land-based aviation. The P-51's flew some 135 bombing and strafing sorties against pillboxes, cave entrances, gun emplacements, slit trenches, troops, and stores. Though the pilots were inexperienced in close support operations they learned quickly from the marine pilots and lent material assistance in the final reduction of the island. The 15th Group also furnished combat air patrol beginning 7 March and continuing practically to the end of the war. At night two P-61's generally flew patrol. With the arrival of other units the fighters also assumed the P-24's burden of neutralizing Chichi Jima and Hahi Jima.[13]

Okinawa

The landing on Okinawa was the result of the same decisions that had set up the Iwo Jima operation. On 2 October 1944 the JCS had decided to bypass Formosa and to seize Luzon, Iwo Jima, and the Ryukyus in succession. The directive received by Admiral Nimitz on 3 October ordered him to seize one or more positions in the Ryukyus by 1 March 1945. Okinawa was soon selected as the most suitable position but delays in the Luzon campaign forced a postponement of L-day to 1 April.[14]

Okinawa was the last, and probably the most difficult, step in the great sweep across the Central Pacific. The purpose of the operation was to seize a base for the final assault against Japan. Okinawa is about 60 miles long

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and from 2 to 18 miles wide, with a total area of 485 square miles. Situated only about 350 miles from the home islands, it offered numerous airfield sites from which planes of almost any type could reach the industrial areas of southern Japan. It had excellent anchorages and it was of a size sufficient for the staging of assault troops for subsequent operations. Even if an assault on Japan proper proved unnecessary, possession of Okinawa would permit American naval and air power to control the East China Sea, which commands the approaches to Korea, Manchuria, Formosa and the North China coast, in addition to Japan proper.[15]

In planning the operation (coded ICEBERG), air superiority was a consideration of prime importance. The enemy could be expected to resist to the full extent of his remaining strength. He could--in fact did--utilize what remained of his naval forces, but they were too weak to offer serious challenge. Tattered though his air forces were, Leyte had proven that by concentrating on the assault forces and by use of kamikaze tactics they could constitute a formidable menace. Okinawa was within reach of numerous Japanese airfields. It would be necessary therefore to neutralize air power not only in the objective area but also at the numerous staging areas, including the home islands, Formosa, the China coast, and the Ryukyus.

Okinawa was the largest amphibious invasion of the Pacific war. The total troops committed numbered over half a million, over 1,200 ships were used, and over 500 carrier-based aircraft participated. The Army-Navy task force, designated the Central Pacific Task Forces, was commanded by Admiral Raymond A. Spruance. The principal navy units were the Covering Forces and Special Groups (Task Force 50), commanded by Spruance personally and a Joint Expeditionary Force (Task Force 51), commanded by Vice Admiral Richmond K. Turner. The

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Expeditionary Troops (Task Force 56) were under command of Lt. Gen. Simon B. Buckner, commander of the newly activated Tenth Army. When Admiral Spruance decided that the amphibious phase of the operation had been successfully completed, General Buckner was to assume command ashore.[16]

Original plans for operation ICEBERG contemplated three phases of operations: the seizure of nearby Kerama Retto and Keise Shima Islands about a week before the main landings and occupation of southern part of Okinawa; capture of Ie Shima and occupation of the northern part of Okinawa; occupation of the remaining positions in the Nansei Shoto. Subsequent events made necessary changes in this schedule.[17]

All air forces in the Pacific had a part, directly or indirectly, in the attempt to isolate Okinawa. The Strategic Air Forces, POA, was to neutralize enemy air bases in the Carolines and Bonins, to strike Okinawa and Japan when practicable, and to provide fighter cover for the Twentieth Air Force missions against Japan. The Commander, Forward Areas Central Pacific, was to use his naval air strength to provide anti-submarine coverage, neutralize by-passed enemy bases, and furnish logistic support. Forces outside POA had important supporting roles. Planes from SWPA were to engage in searches and in continuous strikes against Formosa as soon as the situation on Luzon permitted. For the first time, B-29's would have an important role in an amphibious operation. Originally, the China-based XX Bomber Command was to carry out search and bombing operations against Formosa while the XXI Bomber Command from Marianas bases concentrated on Okinawa, Kyushu, and other points in the home islands. The decision in January to withdraw XX Bomber Command from Chinese bases canceled its part in the program except in regard to photo reconnaissance. According to the original JCS directive governing employment of very heavy bombers, Admiral

Nimitz, as theater commander could divert the XXI Bomber Command from its primary strategic bombardment mission by declaring a tactical or strategic emergency—an arrangement similar to that governing the employment of the Fifteenth Air Force in MTO. However, General Arnold, on the day before the invasion was launched informed Nimitz that XXI Bomber Command was to be used to insure the success of [redacted] at minimum cost of time and casualties. The Superforts were to be employed whenever and wherever they could have a decisive effect, regardless of whether an emergency existed.[13]

Air support at the target area was to be provided by the fast carriers of Task Force 58 and by the escort carriers of Task Force 52. For the first time the fast carriers were to be available at the target area for a prolonged time to furnish support and combat air patrols. The fast carriers were to cover mine-sweeping operations, hit targets on Okinawa that could not be reached by gunfire, destroy enemy defenses and air installations, and strafe the landing beaches. The escort carriers were to provide aircraft for direct support missions, anti-submarine patrols, naval and artillery gunfire spotting, air supply, and photo missions.[19]

The preliminary bombardment of Okinawa and supporting bases began months in advance of the landings. The first fast carrier attack had been made as early as October and subsequent attacks were made in January. On 18 and 19 March Vice Admiral Marc A. Mitscher's Task Force 58 raided airfields on Kyushu and Honshu and shipping in the Inland Sea. During February and March, land-based aircraft from the Marianas or [redacted] made almost daily attacks over the Ryukyus and adjacent waters. Search and patrol bombers helped to isolate Okinawa by destroying cargo vessels, lugger, and other craft.[20]

On 26 and 27 March the 77th Division made its preliminary landings in the

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Kerama Islands and Keise Shima. Although neither of these positions afforded airfield sites or base facilities, they were considered necessary for the fleet anchorages they offered. An unexpected windfall from the Kerama Islands operations was the capture of some 350 suicide boats that the Japanese intended using against the invasion convoys. On Keise Shima the Tenth Army mounted two battalions of 155-mm. guns to support the attack on Okinawa.[21]

On the 27th, 165 B-29's of XXI Bomber Command flew their first scheduled mission against airfields and defense installations in Kyushu. That night the very heavy bombers began sowing aerial mines in the Shimonoseki Straits in an effort to bottle up shipping in the Inland Sea during the assault.[22]

In preparation for the main landings on 1 April the Navy carried out a seven-day bombardment, and carrier planes raked over the island. It is impossible to estimate the effectiveness of the preparatory operations because the defenders chose to offer only token resistance at the beaches. Lt. Gen. Mitsuru Ushijima, Japanese commander at Okinawa, had instructed his troops: "We must make it our basic principle to allow the enemy to land in full."[23] Ushijima had withdrawn his garrison into well-prepared defenses, especially in the southern part of the island and had disposed his forces in great depth. The Japanese on Okinawa, as on Iwo Jima, took every advantage of rugged terrain and inflicted maximum attrition on the Americans. There were over 100,000 enemy troops and they were able to prolong the campaign for 82 days and to inflict 49,000 casualties, of which about 12,500 were killed or missing.[24]

The assault troops had expected the Japanese to put up a fanatical defense, but they had not anticipated a virtual abandonment of the beaches. Marine and Army infantrymen began storming ashore at 0830 on 1 April. By night fall, 50,000 troops were ashore and held a beachhead along the Hagushi

beaches. During the first days the troops pushed rapidly inland and fanned out to the north and south, well ahead of schedule. By 4 April the Tenth Army held an area 15 miles long and from 3 to 10 miles wide. This beachhead included two airfields, Kadena and Yontan. Air, as well as ground resistance, was light during the first days, but kamikaze planes managed to score hits on the West Virginia, two transports, and an LST.[25]

As the Army and Marine troops prepared to probe the main defenses in the southern and northern regions of the island, the enemy began his air and sea counterattacks. On 6 April the Japanese unleashed a ferocious attack by over 350 kamikaze and almost as many conventional planes. Expecting such attack, the antiaircraft and carrier planes destroyed around 300 enemy planes, but not before two destroyers, a minesweeper, two ammunition ships and an LST had been sunk and numerous other vessels damaged. That night the enemy fleet appeared to contest the landings in what was virtually a suicide engagement. Planes from TF 58 sank the Yamato, the Yahagi, and four destroyers and inflicted serious damage on one destroyer. The last sortie of the Imperial Fleet was thus broken up by air power. But the menace of kamikaze attacks continued. Altogether, from 6 April to 22 June, about 1,900 suicide sorties were flown. For this effort the Japanese were able to sink 25 ships and to score 180 hits and nearly 100 near misses.[26]

In addition to the B-29 effort, the Fifth Air Force pounded the suicide bases on Formosa throughout April.[27] The VLR fighters of VII Fighter Command also made a direct contribution to the success of the Okinawa campaign. On 16, 19, and 22 April the P-51's worked over the airfields on Kyushu and Honshu. Throughout the rest of the campaign the P-51's made periodic sweeps over airfields in southern Japan. They claimed 64 enemy planes destroyed and 130

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damaged on the ground, in addition to 10 shot down in combat. To achieve these results the VII Fighter Command lost 11 planes in combat and 7 from other causes. Unfavorable weather and the enemy's habit of shifting planes from field to field prevented the hoped-for widespread destruction.[28]

During the first week of the Okinawa campaign all direct air support was carrier-based. The first two groups of fighter planes to operate out of Yontan and Kadena Fields were Marine aircraft and throughout the operation the Marine pilots were in the majority. By the end of May a total of 270 Corsairs and 80 Army Thunderbolts were operating out of the Yontan, Kadena, and Ie Shima airfields.[29]

With the liberation of the Philippines and the seizure of Iwo Jima and Okinawa the preliminaries to the final knock-out blow had been accomplished. All the numerous landings in both the Central and Southwest Pacific Areas had been aimed toward the final goal—invasion of the home islands. Yet these preliminary operations had in fact accomplished the defeat of the enemy. Severance of surface communications, strategic bombardment, and finally the atomic bomb made the final great amphibious operation in the Pacific unnecessary.

Chapter II

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"The Demon of Discord, with her scorpions, had breathed her influence upon our councils; and it will be well if those around us, as of Caesar and Pompey, like one could not brook a superior and the other was impatient of an equal, do not betray the pride of one and the insolence of the other into a fatal rupture." Thus wrote the noble Smollett of the unsuccessful British expedition against Carthagena in 1741. Smollett laid his finger on one of the great fundamentals in all successful amphibious operations: there must be no discord. The experience of World War II showed nothing clearer than the need for unity of command.

In joint operations, unity of command means that there shall be one supreme commander who has under him commanders for the air, ground, and naval forces. This arrangement requires the best utilization of the capabilities of the various services and keeps at a distance the "Demon of discord." One of the principal virtues of air power is its flexibility, which makes it possible to employ the whole weight of available air power against selected targets in turn. If this flexibility is to be employed to the full, control must be centralized and command exercised through the air force commander. The North African campaign showed clearly the folly of parcelling out air power to individual commanders. Although the air forces played a more prominent role than they have been generally given credit for, the full weight of air power was not brought to bear at critical times. The situation was corrected in the Sicilian invasion, and unity of command prevailed in the European theater throughout the war. The soundness of this doctrine was well illus-

trated when the critical situation developed at Anzio in mid-February 1944. By concentrating the full weight of air power in the area under heavy attack, the beachhead was saved.

In this study an attempt was made to bring out the different types of command arrangements that prevailed in the Pacific. In the Southwest Pacific the principle of unity of command prevailed, and it is believed that in general the best results from the air point of view were achieved there. The air forces were employed in accordance with their capabilities, coordination between the various forces was of high order, and morale was generally good. In the North, Central, and South Pacific areas where the air forces operated under navy control air power was not always employed in accordance with its best capabilities, discord and wrangling between the services arose, and morale, at times at least, was unsatisfactory. The experience in the Pacific showed that an air force is extremely sensitive to any misdirection.

The importance of unity of command was amply demonstrated at Leyte. General MacArthur made a long series of amphibious landings preparatory to his return to the Philippines. He advanced without serious let or hindrance until he moved out of range of his land-based air power. In the landing at Leyte not only the land-based aircraft but the sound principle of unity of command was left behind. At Leyte General MacArthur, though responsible for the success of the operation, did not have command of the Third Fleet. The withdrawal of the Third Fleet at a critical time in the battle produced a near-disaster, which in all probability could have been avoided had unity of command prevailed.

Looking forward a bit, it might be pointed out that unity of command was

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or war soldered in [illegible]. [illegible] for the invasion of Japan brought out the fundamental and bilateral. General Arnold, representing the Air Force point of view, would be set astride a supreme commander who would have under him commanders of equal status for air, ground, and naval forces. However, the problem of personalities, Admiral vs. MacArthur, and service rivalry, Army vs. Navy, prevented the organization of the Pacific as a single theater of action. Far from bringing unity, the contemplated invasion of Japan brought about a more rigid bifurcation in the Pacific. After grappling with the problem of command for months, JCS on 3 April 1945 designated General MacArthur as Commander in Chief Army Forces in the Pacific with control of all Army resources in the Pacific theater, with the exception of those in the Southwest Pacific and in the Alaskan Department. By the same order Admiral Nimitz was given control of all naval resources in the Pacific, less those in the Southwestern Pacific. JCS would retain control of the Twentieth Air Force and normally would charge MacArthur with land campaigns and Nimitz with sea campaigns. Thus, as before, unity of command was not achieved short of the JCS in Washington.

The World War II experience showed also that probably the most important role of air power came in the pre-invasion period. The primary object of the pre-invasion operations is to establish air superiority. The term should be understood to imply a campaign, rather than a battle, which does not achieve finality until the enemy air force is vanquished. Air superiority may be local or temporary, as in the early phase of the Pacific war, or widespread and sustained, as in the final phases of the war in Europe. Before an amphibious landing -- or any war-winning operation, for that matter -- can be mounted it is necessary to arrive at a situation in which the enemy air opposition cannot interfere effectively. Air superiority was achieved

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in a variety of ways and by the use of all types of aircraft. Types of counter-air operations included air combat, fighter sweeps, and attacks on airfields, installations, supplies (especially fuel), repair bases, and aircraft factories.

The North African operation was unique in that it was preceded by no preparatory bombing. The invasion of Sicily was the first of the large European landings where a carefully planned program of pre-invasion bombardment was carried out. The chief effort was concentrated on airfields. It was learned that attacks to be effective must be well timed and oft repeated. It was found also that although airfield attacks could not of themselves be counted to defeat the enemy air force, such tactics usually resulted in making the enemy come up and fight. Preliminary bombings in the Mediterranean had the effect of forcing the enemy to withdraw his aircraft to rearward bases. None of the landings in the Mediterranean was seriously jeopardized by the enemy's air force.

In preparation for [redacted] the fight for air supremacy was waged over a long period and went through many stages. The British had established air superiority on the coast of Britain by the fall of 1940, and that superiority had been gradually extended by the RAF and USAAF over the coastal sea routes, the shores of Europe, and finally into the interior. The largest invasion in history was launched with only negligible interference from the enemy's air force. In the invasion of southern France the air opposition was even more helpless.

As in Europe, the battle for air supremacy in the Pacific began at the periphery and has tended gradually inward. By November 1943 the Japanese naval air power in the Pacific was virtually defeated by American land-and

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carrier-by and planes principally over Tokyo. Superiority over the Japanese air forces was successfully accomplished by about April 1944. This period saw the series of exhibitions of nations in the Southwest Pacific that brought the Japanese empire to a successful conclusion and a drive across the Central Pacific extended through the Gilberts and Marshall Islands. The degree of air superiority was, however, over-estimated in the decision to land in the Philippines without land-based air support.

The use of kamikaze tactics by the Japanese introduced a new factor in the equation of air superiority. The Japanese showed that even a defeated, ill-trained, and poorly equipped air force is capable of causing widespread damage to a concentration of ships, troops, and supplies. The answer to the kamikaze obviously is to destroy the enemy's bases and his air before he reaches the target area. The new factor simply called for a higher degree of air superiority than might otherwise have been considered necessary.

In addition to the attainment of air superiority, which implies a continuing one, an important part of pre-invasion operations is the intensive bombardment of the beaches softening up their defenses. So far as can be determined the softening of beach defenses played no prominent role in the landings in Sicily and Italy. The beaches were not heavily defended and chief reliance seems to have been placed in naval gunfire and army artillery. The air force effort was directed not at the beaches, which could be protected with relative ease, but on communications leading to the assault areas.

In the cross-channel invasion it was a very different story. The whole coast of France was studded with enemy batteries, strong points, and beach obstacles. Experience has shown that coast defense guns, in turrets or

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emplacements, could only be reached and neutralized by a direct hit. Either air nor naval bombardment had much effect on such obstacles as anti-tank walls, wire, minefields, and underwater obstructions. In view of these facts, air force planners originally aimed at withholding fire until D-day, when by a continuous heavy volume of fire the beach defenses could be made ineffectual during the critical phases of the assault. At the insistence of the Army, plans were changed to include a long pre-invasion campaign against coast defenses. So far as can be determined few gun emplacements were destroyed, but many were unbalanced and dislocated and crews were demoralized. Much the same argument between army and air forces took place before the landings in Southern France, with the army again winning out. Overall accounts of how the defenses in the landing areas were beaten down and the defending troops were disorganized by fire like the Allied troops hit the shore.

The importance of land based air in softening up operations was brought into sharp focus in the Pacific theater. In the South and Southwest Pacific the landing areas were bombed months before the assault and generally the troops went ashore with light casualties. The classic example of the saturation bombing of a landing area was Cape Gloucester, where the defenses were flattened before the marines went in. In the Central Pacific the pattern was different. Land based air power was used to protect bases already held, to neutralize by-passed bases, and to soften the base to be seized. Generally, however, the base to be seized was beyond the effective range of anything but heavy bombers, and these were not available in large numbers until late in the war. The intermittent efforts of the services were generally supplemented by carrier sorties. The result was that with the exception of Tinian

(within range of all types of aircraft), Guam, and Okinawa, the bases were not subjected to sustained heavy bombardment. The heavy casualties at Tarawa, Peleliu, and Iwo Jima are a matter of history. The striking differences between the relative ease and the extreme difficulty of landing operations in the Southwest Pacific and the Central Pacific cannot be explained by land-based vs. carrier-based air power alone. There were differences in terrain, distance, quality of enemy resistance, and logistical problems that helped to make the Central Pacific landings more costly in lives and equipment. But the greater effectiveness of land-based bombardment should not be obscured or explained away by these other factors.

In the North Pacific, land-based air power was operating under conditions of minimum advantage from the point of view of weather and terrain. The Navy claimed that carrier-based aircraft could overcome these disadvantages by their ability to move to the immediate scene of operations. The record did not bear out this claim. During times of particularly bad weather, carrier-based aircraft were no more successful than land based aircraft in reaching the target. Losses sustained from non-operational causes were as high among carrier as land based aircraft. The real advantage of carrier based aircraft derived not from their supposed ability to overcome unfavorable weather but from the increase of firepower that they provided.

In the pre-invasion period of amphibious operations the air forces also played an important role in the carrying out of deceptive measures. The need for surprise varied with the theater. In the Central Pacific, landings were not employed there was little need for deception. In continental landings where there was a choice of landing areas, tactical surprise was highly desirable. The pre-invasion bombing in the Hitape-Hollandia area was conducted to lead the Japanese to expect an invasion at Tanahmerah Bay and

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work. The cross-channel and Southern France invasions were masterpieces of deception. The pattern of pre-invasion bombing misled the planners in believing that the main attack across the channel would come in the area de Calais. A fake breach in the bomber was made and then the bulk was carried around right end. In Southern France fairly wide gaps were made at both ends and the bulk was carried through center.

The second priority of air force operations in amphibious landings, the isolation of the battlefield, was carried out with varying degrees of success. Isolation of the battlefield involved preventing the movement of troops or supplies to the battle area and within the battle area. This mission, like the first, begins before the assault and continues throughout the campaign. Sicily was effectively cut off from reinforcement by attacks on the Messina bottleneck, railways, and ports along the western coast of the Italian boot, and the small ports in northern and eastern Sicily. On the continent of Europe railways assumed particular importance. Although the air forces obtained considerable success in their attacks on marshalling yards and rolling stock, the effort to isolate the battlefield for the Salerno landings cannot be considered a success for the simple reason that the Germans were able to reinforce troops and to deploy them against the beachhead. The experience at Anzio brought out clearly the need for night operations if a systematic and lasting isolation of the battlefield is to be achieved. Lines of communication and troop and supply movements must be attacked around the clock. The experience in Italy has come to question the ability of air power to isolate the battlefield. All such doubts were dispelled by the experience in the cross-channel invasion.

In the Pacific, isolation of the battlefield usually meant attacks on shipping, for land lines of communication were few or non-existent. In the

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Central Pacific the Seventh Air Force was not conspicuously successful in its anti-shipping strikes, at least during the early stages of the war. Distances were too long generally for the use of medium bombers and the number of heavy bombers was too few for high level pattern bombing. In the Southwest Pacific areas early anti-shipping strikes off Guadalcanal and Papua were none too successful. Later, however, the Fifth and Thirteenth air forces developed a high degree of skill in anti-shipping strikes. When heavy bombers became available in large numbers a standard bomb pattern could be laid down, and results were improved by bombing from lower altitudes than had been used earlier. The B-24 radar-equipped "snoopers," which were introduced in limited numbers beginning in August 1943, proved themselves an effective weapon against shipping. The medium and light bombers, using tactics ingeniously devised in the South and Southwest Pacific areas proved, however, to be the most effective weapons against shipping.

In the assault period of landing operations the main functions of the air forces were convoy cover, protection of the beachhead, and close support of the ground forces. Convoy cover both by land and carrier-based planes was successful and although ships were damaged and sunk, no convoy was obliged to turn back because of air or sea attack. A beachhead with its concentration of shipping and crowded men and supplies offers a particularly tempting target to enemy aircraft. Aside from Salerno and Anzio the beachheads established in the European war were not subjected to heavy air attacks. In the Pacific the same was true until Leyte, which was subjected to repeated and heavy attacks before land based air power was effectively established. Leyte demonstrated that carrier-based planes can be relied upon to cover a beachhead only for limited periods and that the great advantage of land-based support is its striking power.

In most of the amphibious landings in World War II the direct support of land troops did not play a significant role. If the air forces did their job of gaining air superiority or isolating the battlefield by cutting all land routes for direct support until the battle was lost or won by land forces, the troops could usually be counted on clearly established positions, or on the flanks, to be ready for direct support, but were hardly ever actually committed with adequate air support to have materially altered such need. It is not within the province of this study to consider the whole subject of air support. It would seem, however, from a study of the various landings that direct support was the least satisfactorily executed of the various air force missions. The subject is generally considered in air force manuals, planning, and training. While it was not a major problem of highly effective aerial bombardment in the Pacific, Sicily, or Italy, and in several of the landings in the Southwest Pacific area, the development and effective use of rockets and napalm almost always relieved and saves improved materially the technique of landing against a heavily fortified island.

What of amphibious operations in the future? Has the atomic bomb made amphibious warfare obsolete? This, perhaps, is a fair question from a historian who felt that air power had made amphibious landings practically impossible. We do not propose to commit a similar error. Yet it would certainly be unwise to maintain that the development of atomic power has changed nothing. In this connection the influence not only of atomic bombs but of such weapons as the guided missile and atomic mines, although of a possible landing beach, must also be considered. With complete control of the air and with proper dispersion the effects of an

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[illegible] might be slightly compared. But even so it would be necessary to [illegible] under which both M'Lou, controlled [illegible] from point [illegible]. Losses to these and other mobile [illegible] in the future. Combat [illegible] presently known, however, are [illegible].

Although it is not within the province of this [illegible] to consider the use of [illegible] weapons in [illegible] operations, it is appropriate to [illegible] subject [illegible]. Consideration must be given [illegible] as an indication of possible future trends.

[illegible] possible [illegible] will be [illegible] with any confidence. One thing, however, does seem fairly certain: [illegible] in the future will not depend on [illegible] techniques, useful though [illegible]. Scientific, atomic [illegible] have [illegible] of warfare. One of the lessons of history is that [illegible] to [illegible] with [illegible].

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[illegible] published [illegible] unpublished [illegible] [illegible] to [illegible] [illegible] in World [illegible] [illegible]. [illegible] finishing [illegible] [illegible] will [illegible] [illegible] in this study [illegible] run to several [illegible]. [illegible] listing of all the materials [illegible] [illegible] would [illegible] be [illegible]. [illegible] would be [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] however, [illegible] chiefly on the [illegible] in the Archives Branch, Historical Division, [illegible] [illegible] [illegible]. [illegible] contains [illegible] [illegible] [illegible] quantity of [illegible] [illegible] in this depository. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible]