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AN EVALUATION OF  
**AIR**  
**OPERATIONS**

AFFECTING THE U.S. MARINE  
CORPS IN WORLD WAR II

RESTRICTED

1975-50  
AO-6-bvc  
IN REPLYING ADDRESS  
COMMANDANT OF THE MARINE CORPS  
WASHINGTON 25, D. C.  
AND REFER TO



SERIAL MC- 558459 HEADQUARTERS U. S. MARINE CORPS  
WASHINGTON

11 October 1945.

From: Commandant of the Marine Corps.  
To : Senior Member of the Board to Re-Examine Adequacy  
of Present Concept of Missions and Functions  
of the Marine Corps, Marine Barracks,  
Quantico, Virginia.

Subject: U. S. Strategic Bombing Survey - Japan.

References: (a) Ltr Senior Member U. S. Strategic  
Bombing Survey to CMC dated 28 Aug 45.  
(b) Memo of Rear Adm. R. A. Ofstie, USN.

Enclosures: (A) Copy of reference (a)  
(B) Copy of Memo of Rear Adm. R. A. Ofstie, USN.

1. Under a Presidential directive a survey and study is being conducted of the effect of the U. S. aerial effort in the war against Japan. Mr. D'Olier, President of the Prudential Insurance Company, is the chairman of the committee conducting the study and Rear Admiral R. A. Ofstie, U.S.N., is the senior naval member.

2. The Presidential directive has been interpreted to include a comprehensive evaluation of the entire air effort directed against Japan. It is expected that the results of this study will form a basis for major decisions in determining the composition of the future national security structure.

3. In order to assist in the evaluation of the air effort as it affected ground operations and the direct support of troops, the senior member of the U. S. Strategic Bombing Survey has requested the assistance of a ground officer or officers familiar with the direct support of ground operations by aircraft.

4. It is therefore directed that the board of which you are senior member prepare a paper evaluating air operations in the Pacific War as they affected the U. S. Marine Corps. In accordance with the request of the U. S. Strategic Bombing Survey it is desired that the technique and operation of close air support be accorded particular stress in the treatment.

*A. A. Vandegrift*

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MARINE CORPS SCHOOLS  
QUANTICO, VIRGINIA

MBT/edl

31 December 1945.

From: Board to Reexamine Adequacy of Present  
Concept of Mission and Functions of The  
Marine Corps.

To: Commandant of the Marine Corps.

Subject: U.S. Strategic Bombing Survey - Japan.

Reference: (a) MC-558459, dated 11 October, 1945

Enclosure: (A) Study and evaluation of air opera-  
tions affecting the U.S. Marine  
Corps during the war with Japan.

1. In accordance with reference (a), there is submitted herewith a study and evaluation of air operations affecting the U.S. Marine Corps during the war with Japan in four (4) parts, as follows:

- I. The Mission of U.S. Marine Corps Aviation.
- II. Close Air Support - A U.S. Marine Corps Development.
- III. The Influence of Air Power on Major U.S. Marine Corps Operations During the War, With Particular Emphasis on the Close Support of Ground Forces.
- IV. A Brief Summary of Operations of U.S. Marine Corps Aircraft During the War, with statistical appendix.

*M. B. Twining*  
M. B. TWINING.

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An Evaluation  
of  
AIR OPERATIONS

Affecting the U. S. Marine Corps in World War II.

RESTRICTED

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**PART I**

**THE MISSION OF U.S. MARINE  
CORPS AVIATION**

## PART I

### THE MISSION OF MARINE CORPS AVIATION

Marine Corps Aviation is an integral component of Naval Aviation, charged by the Chief of Naval Operations with the following missions:

1. THE SUPPORT OF THE FLEET MARINE FORCE IN AMPHIBIOUS LANDINGS. (e.g., Okinawa)
2. THE PROVISION OF REPLACEMENT SQUADRONS FOR NAVAL AIRCRAFT CARRIERS. (e.g., Honshu, Hokkaido, Kyushu)

The second mission, as assigned, necessitates the constitution and training of Marine Air Squadrons on a basis which will insure efficiency and continuity whenever they are employed as a part of the aircraft complement of aircraft carriers. Such continuity can only be assured if the Marine Squadrons are organized and trained exactly as are their naval counterparts.

In addition to preparation for the complex carrier operation task, Marine air units are required to be prepared to support the Fleet Marine Force in all the phases of the amphibious assault as well as in advance base defense. These requirements as stated actually charge the

Marine air arm with preparedness for participation in the entire spectrum of offensive and defensive amphibious warfare. It will be seen at once that these [redacted] basic missions are widely variant in their character, and that effective execution of all [redacted] demands an air component possessing a wealth of special qualification.

Marine Corps pilots are line officers or enlisted men who receive their initial training in the various Navy Flight Schools. When qualified, they hold the designation of Naval Aviator, as do similar personnel in the Navy. Enlisted personnel of the ground crews are trained (in their particular specialty) in the appropriate Naval Training Schools. During their training period, pilots, crew members and ground crews receive the same instruction as do all naval personnel similarly detailed.

Aircraft armament and equipment used by Marine Air Squadrons are supplied by the Navy Bureau of Aeronautics and are identical with such materiel furnished by the Bureau to Navy units.

Thus it is that upon organization a Marine Air Squadron is in all details similar to a Navy Squadron of the same type. Basic training, equipment, armament and aircraft are the same, and the two units are, at this point, in every respect interchangeable.

The primary mission of Marine Aviation - the support of the Fleet Marine Force in amphibious landings - requires an extensive supplementary period of specialist training for Marine Aviation organizations. This is accomplished by provision of further technical and tacti-

cal education or air officers and enlisted men, and by joint training periods exercising both air and ground elements of the Fleet Marine Force. Such training periods embrace not only conventional land operations, but also stress the technique of combined action in the amphibious assault. During this essential training phase, emphasis is placed on the development of air ground teamwork and coordination to bring about the closest form of tactical support from the air on behalf of the ground effort, particularly during the critical ship-to-shore phase of the landing attack. During this phase, full use is made of the opportunity to perfect the tactical relationship between the naval components and the Marine ground and air elements.

The largest tactical unit of Marine Aviation is the wing which forms an integral part of the Marine Amphibious Corps. It is capable of supporting either from the decks of carriers or from adjacent land bases, or bases seized during the early phases of the amphibious assault.

It will be seen then, at the outset, that the particular capabilities of Marine Corps Aviation distinguish that arm from similar elements of the Army Air Forces in its ability to operate from aircraft carriers, and from Navy Aviation in its special qualification for effective support of amphibious operations from either shore or carrier bases.



# **PART II**

**CLOSE AIR SUPPORT - A U.S.  
MARINE CORPS DEVELOPMENT**

## PART II

### CLOSE AIR SUPPORT - A U. S. MARINE CORPS' DEVELOPMENT

#### INTRODUCTION

The basic principles and functional technique of close air support, as employed during the war just ended, are a U. S. Marine Corps development. They represent a significant contribution to the act of offensive warfare and are a strong example of the objective teamwork which is so characteristic of the Marines.

In its accepted military sense, "close support" is a generic term implying immediate and specific assistance by one arm or weapon to another. The term carries with it certain definite and well recognized implications. These are (1) that the assistance is of a character lying peculiarly within the capabilities of the supporting arm and, conversely, pertains to a field of military action in which the supported arm is relatively ineffective or inferior, and (2) that momentarily, at least the supported arm is occupying the dominant role on the battlefield, the supporting arm playing a supplementary or contributory part.

No term in the military lexicon, however, is subject to greater misconstruction. For example: it is quite correct to speak of such services as supply, communications, ordnance, as supporting services because they are not direct instruments in the application of armed force. They manifest themselves only indirectly through the increased power

and efficiency which they give to the offensive weapons they serve. On the other hand, it is quite wrong, or at least a dangerous generalization, to classify definitely any weapon or combatant arm as occupying a supporting role in the absolute sense that its employment is always in the fulfillment of a subservient or subordinate mission.

Thus the cannon, for centuries relegated to a purely "supporting" role on land, reigned unchallenged at sea during those same centuries, as the dominant weapon of naval warfare. Moreover, even on land, World War II has seen instances of artillery employment not in support of foot troops at all but directed toward an independent tactical end entirely disassociated from infantry action - (e.g., New Georgia - Interdiction of Munda airstrip by heavy artillery in order to maintain air and naval supremacy in the Central Solomons). Tanks, aircraft, combatant vessels, artillery and infantry are merely the weapons placed by the nation in the hands of the field commander for the sole purpose of applying armed force in the interest of United States policy. They may be employed singly or in concert. On occasion each will momentarily play the dominant role; likewise on occasion each must devote its major efforts toward assisting one or more of the others. The over-all end is success in battle - the accomplishment of the military objective which gave birth to the array of force disposed for the purpose. This is only achieved by the highly integrated and coordinated concert of armed blows by a self-contained and complete war making machine completely responsive to the will of the nation as expressed

through and by the commander. Whether it be the case of a squad protecting the approach of a tank or a major fleet action covering an invasion, there can be no proper use of the term "support" in a sense of inferiority or subserviency. The arms, the weapons and the services are by themselves only parts. The machine itself is composed of all these parts, welded by an effective command system into a balanced instrument of warfare. Thus the arms and services employ their resources in battle, each in accordance with its specialized capabilities, not to enhance the military reputation of its commander nor its service prestige, nor for any reason whatsoever, but to make possible the attainment of ends sought by the United States.

This conception of the duty of the armed forces under the Constitution has always been clear to the Marine Corps - a fact due to the special position it has occupied throughout its existence. As a small force, it has seen some independent service. However it has usually been employed as part of much larger forces of the Army or Navy. In this capacity it often occupied a secondary, supporting or auxiliary role. Since historically most of its operations have been of a joint character, the Corps acquired early in its history an acute consciousness of the vital necessity for coordination in joint operations and an awareness of the danger born of ignorance or disregard for the capabilities of other services.

In one hundred seventy years of almost continuous participation in joint operations, usually in a subordinate role, the Marine Corps has never acquired the view that to support or assist another arm or

branch in performing a service to the nation was to suffer either indignity or loss of prestige. For this reason, it is hoped that the report which follows and the conclusions offered may be received with greater attention than the small size of the forces on whose combat experience they are based might seem to entitle them.

#### Air Support in General

It is the Marine Corps' conception that support by aircraft embraces performance of any act lying within the capabilities of aircraft which is of direct assistance to the ground forces. In this general sense, it may find expression in any one of the following forms, most of which have been widely and successfully employed by the Marine Corps for a period of twenty-five years:

Attack of ground objectives - employing dive or glide bombing, incendiary agents, aircraft cannon and machine guns, rockets, smoke and chemicals.

Reconnaissance - visual, photographic and electronic.

Troop transport.

Cargo transport.

Parachute delivery of supplies.

Command and courier service.

Air spot and adjustment of fire.

Evacuation of casualties.

While all of the above are subject to differences of opinion in

the progress of developmental discussion, only the first falls within the field of general controversy. Further consideration will therefore be confined to that which is, without question, the most important form of supporting air action - the attack of enemy ground objectives.

The attack by aircraft of ground targets in a manner which will provide direct assistance to the progress of ground forces may take several forms:

- (a) Progressive destructive bombardment of specific objectives which are subsequently to be assaulted by ground forces, preliminary to initiation of such assault. The heavy pre-landing bombardment of Iwo Jima or the destructive saturation of Cassino fall in this category. Both were specific ground force objectives, but air attack launched against them could be executed without precise coordination between air and ground.
- (b) The attack of targets by aircraft immediately prior to assault by ground forces but on a time schedule basis. Such a time schedule precludes the necessity for maintenance of direct and continuous coordination between the air and ground arms. Pre jump-off strikes on targets which will be subsequent ground objectives fall in this group. Timing of the air attacks, arranged in conjunction with other preparatory measures is complete before the preparation is initiated and no further precise air-ground coordination is necessary. This

character of air attack presupposes targets which are not in such close proximity to front lines as to require direct communication between attacking aircraft and front line units.

- (c) The attack by aircraft of ground targets immediately confronting advancing ground forces in a manner wherein the air effort is tactically integrated with the ground effort and, as the operation progresses, is adjusted to achieve the maximum contribution consistent with the situation existing at the moment.

The first two forms of air support are common, having been practised throughout the war by all air arms. Their success is predicated mainly on intelligent target selection, adequacy of briefing, and proper arming and operation of the attacking aircraft. Their contribution is a corollary to the specific ground effort and not a part of it. The third form of air attack, by far the most complex, undertakes to integrate the great shock effect of the air arm with the precise destructive power of artillery and the fluid adaptability of the infantry and armor. It is to the accomplishment of this difficult task that Marine aviation set itself, both before and during the war just ended, and it was in this complex specialty that the Marine air component demonstrated its greatest effectiveness.

CONCISE STATEMENT OF  
THE MARINE CORPS DOCTRINE OF CLOSE AIR SUPPORT

1. GENERAL. This doctrine relates essentially to methods of providing close air support to amphibious ground forces engaged in the seizure and exploitation of a beachhead and subsequent operations involved in the establishment of a base.

2. DEFINITION OF CLOSE AIR SUPPORT. In its narrowest sense the term "close air support" is defined as: ATTACK BY AIRCRAFT OF HOSTILE GROUND TARGETS WHICH ARE AT SUCH CLOSE RANGE TO FRIENDLY FRONT LINES AS TO REQUIRE DETAILED INTEGRATION OF EACH AIR MISSION WITH THE FIRE AND MOVEMENT OF THE GROUND FORCES IN ORDER TO INSURE SAFETY, PREVENT INTERFERENCE WITH OTHER ELEMENTS OF THE COMBINED ARMS AND PERMIT PROMPT EXPLOITATION OF THE SHOCK, CASUALTY AND NEUTRALIZATION EFFECT OF THE AIR ATTACK. It does not include missions executed off the battlefield or at such range from the ground forces as to require no specific coordination of air and ground action beyond the general delineation of a zone in which air action is unrestricted.

3. REQUIREMENTS. For maximum effectiveness in providing close and continuous support for amphibious operations, the following are requisite with respect to

a. Aircraft.

- (1) Must be of a type capable of operating from carriers.
- (2) Must be of a type suitable for attack by dive bombing, glide bombing, rocket attacks, or by ground strafing at minimum altitude.
- (3) Must be fitted for selective arming with bombs, rockets, and automatic weapons.
- (4) Must mount communication equipment suitable for air-ground communication.

b. Organization.

- (1) Must be capable of conducting initial support operations from aircraft carriers.
- (2) Must be capable of shifting to land bases as the situation permits without interruption of support operations, and must be self sustaining when ashore.

c. Personnel.

- (1) Must have specialized training with respect to close support of ship-to-shore operations and subsequent operations ashore.

4. EMPLOYMENT OF LAND BASED AIRCRAFT.

Land based aircraft of a type suitable for close support may be employed in support of the initial stages of the landing attack if land bases within effective supporting distance of the target area are available. Experience indicates, however, that this method has seldom been fully successful due to the distances involved and the attendant difficulty of securing an effective degree of coordination. In the latter stages of an operation such aircraft may operate more successfully from bases seized in the area of operations.

5. EMPLOYMENT OF NAVAL CARRIER BASED AIRCRAFT. In the initial stages of an amphibious operation, naval carrier based aircraft of a type suitable for close support may be employed with success if operating personnel are fully trained in the technique of supporting the ship-to-shore movement and ensuing ground operations. In the absence of such training, experience indicates that they should be employed on attack missions of a general character, not involving a high degree of coordination with the ground forces nor in close proximity thereto. Since the great preponderance of naval aviation elements do not possess such specialized training, the close support function falls naturally to Marine Corps aviation units.

6. COMMAND. In the initial stages of an amphibious operation, the Attack Force Commander will command all support aircraft. However, as soon as the Landing Force Commander has established his headquarters ashore, command of all support aircraft operating in support of his force will be released to him.

7. ASSIGNMENT OF SUPPORT AIRCRAFT. Since the basic function of support aircraft is the provision of close support for ground forces, such aircraft, when carrier based, will be assigned this duty as their primary task. Only under circumstances of such gravity as to constitute a major threat to the enterprise as a whole will direct support aircraft be diverted to reinforce ASP, CAP or fighter formations.

8. CONTROL.

a. General.

The effectiveness of close air support demands that the shock and destructive effect of the supporting aircraft be delivered against those targets which are immediately opposed to the front line troops. Control of such attacks must be effectuated by forces on the ground on a direct observation basis, and under circumstances wherein direct communication is maintained between the front line air liaison party and the supporting aircraft.

b. Control organization - ship-to-shore phase.

The elements of the ship-to-shore control organization are:

Air Support Control Unit (Seaborne), consisting of a control and communication organization embarked with the overall commander, equipped and authorized to act for that commander in all matters involving the control of support aircraft.

Landing Force Air Support Control Unit, an organization similar in concept and mission to the Air Support Control Unit (afloat). During the ship-to-shore phase, the Landing Force Air Support Control Unit maintains continuing liaison with the Air Support Control Unit (afloat) and is prepared, upon displacement ashore of the Landing Force Commander to accompany him, establish ashore, and when directed, to assume control of all direct support aircraft assigned.

Air Coordinators (Airborne), highly qualified aviation personnel employed in orienting attack air groups and assisting the Air Support Control Unit in the prompt execution of missions assigned.

Division Air Liaison Party, organized, trained and equipped to assist the Division Commander in exploiting the capabilities of aircraft assigned, and to advise the Division

Commander of the air situation during progress of the operation.

Regimental Air Liaison Party, organized, trained and equipped to execute the same function for the Regimental Commander as Division Party does for Division Commander.

Battalion Air Liaison Party, provides the same assistance for Battalion Commander as provided by Division and Regimental Parties in their respective echelons. In addition, this organization observes progress of direct support air operations within the battalion zone of action, transmits requests for direct support aircraft and controls strikes from front line localities.

c. Control Organization - Land Phase.

Upon displacement ashore of the Corps Commander and his staff, the Landing Force Air Support Control Unit is established ashore, initiates communications, and when directed assumes control of all support aircraft assigned. Other elements of the air support organization remain unchanged from the ship-to-shore phase.

9. COMMUNICATIONS.

Within the air support control system the following communication nets will be operated:

a. Support Air Direction Net, controlled by Commander Air Support Control Unit and monitored by Corps Division, Regimental and Battalion Air Liaison Parties. This net is operated for the purpose of directing aircraft in close support missions.

b. Support Air Request Net, employed by Air Support Control Unit and all air liaison parties. Its function is to provide a means for request, coordination, and adjustment of close support missions. One such net is normally assigned to each corps in a landing.

c. Support Air Observation Net, employed for communication with air observers. Normally one such net is assigned to each division.

d. Air Support Command Net, used for both operational and administrative traffic between air support control units, carrier task forces and shore based tactical air units.

e. Air Control Net, used for operational and administrative traffic between the senior air support control unit and the commanders of land-based air forces.

f. Inter-Commander Air Support Net, used for lateral communication between air support control units.

Further details on air support communications, with particular emphasis on types of equipment employed, will be found in "Appendix I, Section I".



## 10. TRAINING.

### a. Control personnel.

The senior member of each air liaison party will be a qualified pilot in active flight status. All air liaison parties will be given supplementary instruction in ground organization and tactics and in the tasks surrounding air-ground coordination. Subordinate members of air liaison parties and air support control organizations will be educated in the technique of their special tasks with particular emphasis on the peculiarities of air-ground communication.

### b. Flight personnel.

Flight personnel employed in close support operations will be provided special training in close support of ground troops to include ground organization and tactics, characteristics and capabilities of ground weapons, physiography and joint training operations with ground troops.

For further details on training of close air support personnel see "Appendix I, Section IV".

## 11. TECHNIQUE.

### a. Mission requests.

Air support missions will be requested by front line air liaison parties attached to battalions in contact with the enemy, employing the SAR net. Regimental and division

air liaison parties will signify approval of requests by silence, and will interject disapproval when considered advisable because of danger to adjacent units, interference with existing tactical plans, or necessity for conservation of resources. Upon approval by Commander Air Support Control Unit the mission is assigned to an appropriate flight group which is given initial briefing by the Air Coordinator.

### b. Execution.

Briefing by the Air Coordinator is supplemented where necessary by additional instructions from the front line air liaison party in control of the strike. Targets are marked by smoke, and where advisable, front lines are identified by panels or smoke. Dummy runs, led normally by the Air Coordinator, are conducted and if considered satisfactory by the air liaison personnel observing, the strike is executed.

## 12. SAFETY.

Based upon strict adherence to the principle that strikes in immediate proximity to the front lines will be observed and controlled by the air liaison party attached to the unit involved, the assumption of risk devolves upon the commander of the front line unit immediately concerned. That commander will consider the hazard to his troops and the possible saving of

life which can result from successful conclusion of the strike, as opposed to the loss of life probably attendant upon advancing without air support. Regimental and division headquarters will normally not oppose execution of a mission because of its proximity to front lines of the unit requesting that mission. Such higher headquarters will, however, consider the effect of each requested mission upon adjacent units as well as upon the execution of the over-all fire support plan. Should the requested mission constitute an unjustified hazard to adjacent troops or require an unwarranted interruption in the existing fire plan, that headquarters will assume responsibility for cancellation of the mission.

13. COORDINATION WITH OTHER SUPPORTING ARMS.

Close air support is only one of a coordinate group of supporting arms, the full exploitation of which is essential in insuring the most economical capture of objectives opposing our forces. Aircraft will be employed only in execution of those missions which are beyond the effective capabilities of the other supporting arms except where the employment of aircraft is desired in the reinforcement of other means for neutralization and/or destruction. Coordination at all levels will be accomplished by the combined action of

air, artillery and naval gunfire liaison personnel in determining the most effective means of attacking each target and in advising the commander. At the division and higher levels this coordination will be conducted within the framework of the Target Information Center.

# PART III

THE INFLUENCE OF AIR POWER  
ON MAJOR U. S. MARINE CORPS  
OPERATIONS DURING THE WAR

with particular emphasis on the  
close support of ground forces

PART III  
THE INFLUENCE OF AIR POWER ON MAJOR U. S. MARINE  
CORPS OPERATIONS DURING THE WAR

INTRODUCTION

This section is concerned with the study of air power as it affected the major amphibious operations of the Marine Corps during the war, from the point of view of the ground arms. The many imponderables which surround the recorded description of a battle make a dogmatic assessment of the contribution of any arm or arms to the successful conclusion of the action subject to a wide latitude of error. With a clear realization of that fact in mind, there is set forth herein an objective description of the part which air power played in the major Marine Corps offensive efforts of the war.

Marines are front line troops. As such their operations are only indirectly affected by strategic air action. However, in those cases where a logical index is present, the effect of the strategic effort will be included in the general evaluation.

Through the succession of accounts there runs a series of facts which would seem to warrant certain conclusions of

fundamental significance in the evaluation of the overall air contribution. They are:

(1) Attack from the air has small casualty effect on entrenched troops, but is effective in the destruction of materiel objectives, the interruption of communications, effective interdiction of daylight troop movement along roads, and the impairment of morale.

(2) The delivery of close support, within the meaning of the Marine Corps definition, is an essential adjunct to the effective and economical conduct of offensive combat under circumstances similar to those encountered in the Pacific war.

(3) An amphibious offensive even though covered by sea supremacy can be defeated or seriously jeopardized in its initial stages by an opponent who possesses a clear superiority in aircraft.

#### Early Experiences in the Use of Air Power.

In the first World War, Marine Corps aviation combat activities were confined to anti-submarine patrol operations based on the Azores, and to participation in the activities of the Northern Bombing Group based on the French channel coast. This group was engaged in strategic bombing but did participate in support operations to the extent of supplying

by air drop certain French units isolated during the German breakthrough in 1918.

Possibly with this experience in mind, Marine Corps Aviation was employed in Santo Domingo and Haiti in the years following the war in an effort to implement and facilitate the activities of the ground forces engaged in the pacification of those countries. Beginning with the year 1920 in these countries, dive bombing, ground strafing and supply drop were developed and regularly used in support of ground operations. Experimental operations included air-ground radio communications and the dropping of combat personnel by parachute. Panels were used for communication supplemented by air drop and pick up of messages.

The Nicaraguan occupation of 1927-1932 saw the same technique in use on a much larger scale, and the adoption of air transport as a regular means of moving combat formations of ground troops.

These embryonic beginnings formed a basis of confidence in, and respect for, the capabilities of aircraft in missions of cooperation which was further developed by the Fleet Marine Force in the United States during the years prior to Pearl Harbor. Fleet Marine Force training during this entire period was solely directed toward the perfection of all phases of the technique of landing operations, and the

Marine Aviation component was thoroughly schooled in its specialized tasks - neutralization of the enemy beach defenses during the period between the lifting of supporting naval gunfire and the landing of the first wave of troops, and the attack of those objectives which offered immediate obstruction to the advance of the attacking troops. During this period they developed a technique of attack which was to remain essentially valid and to become the basis of modern methods. It should be noted that this sustained and intensive training and development effort was conducted during a period of economy and cautious conservatism when other services ignored the problem entirely or paid it the merest lip service.

#### DEVELOPMENT OF MARINE AVIATION

The Marine aviation organization which, in the period following the first World War, had pioneered the study of aircraft employment in support of ground forces, was pitifully small in size as we entered the period of pre-war expansion. In June of 1939 the entire establishment numbered only nine squadrons organized in two air groups. The personnel which made up this organization, however, were possessed of a wealth of experimental knowledge, and were prepared for the swift expansion to come.

Congress, in late 1940, authorized the construction of the "Two Ocean Navy" which included an air arm of 15,000 planes. Of this number, the Marine Corps was allocated 1,764, to be organized in two wings and totalling thirty-two (32) squadrons. It is most significant to observe that each of these wings was scheduled to be assigned directly to one of the two Marine Divisions, - proposed but not yet activated. Even at this comparatively early date, the singular importance of close support aviation was recognized, and the new air units were to be placed under the control of the units to be supported.

The expansion was hardly under way when a joint board of Navy and Marine Corps observers returned from a

survey of the European war. As a result of their recommendations the General Board of the Navy proposed, and Congress approved, a plan to roughly double the authorized strength of the Marine air component, adding an additional wing and four base defense air groups.

The outbreak of the war found the Marine Air Arm in the process of this rapid expansion. Seven of its squadrons were already overseas and the remainder were undergoing intensive training in the United States. The first anniversary of the Japanese attack saw twenty-two (22) Marine squadrons overseas, and eighteen (18) more under training on the mainland.

The Navy's 27,500 plane program of late 1942, as subsequently modified, provided for five Marine air wings of about 4,000 planes. This goal was met and surpassed, so that on 15 August, 1945, Marine Corps Aviation had grown from its humble nine squadron beginning to the stature of one hundred and forty-nine squadrons - eighty-nine of which were overseas.

It will be recalled, from Section I, that one of the assigned missions of Marine Corps aviation is the replacement of Naval squadrons on aircraft carriers. The end of the war found Marine fighter squadrons acting as replacement units on fleet carriers. Meanwhile the Marine carrier

program, as laid down in 1944, called for the Marine Corps to man sixteen (16) CVE's for purposes of providing close air support for ground forces. When the Japanese sued for peace, six (6) of the proposed sixteen (16) Marine carriers were manned and enroute to, or in, the combat zone.

THE INFLUENCE OF AIR POWER ON THE GUADALCANAL

OPERATION

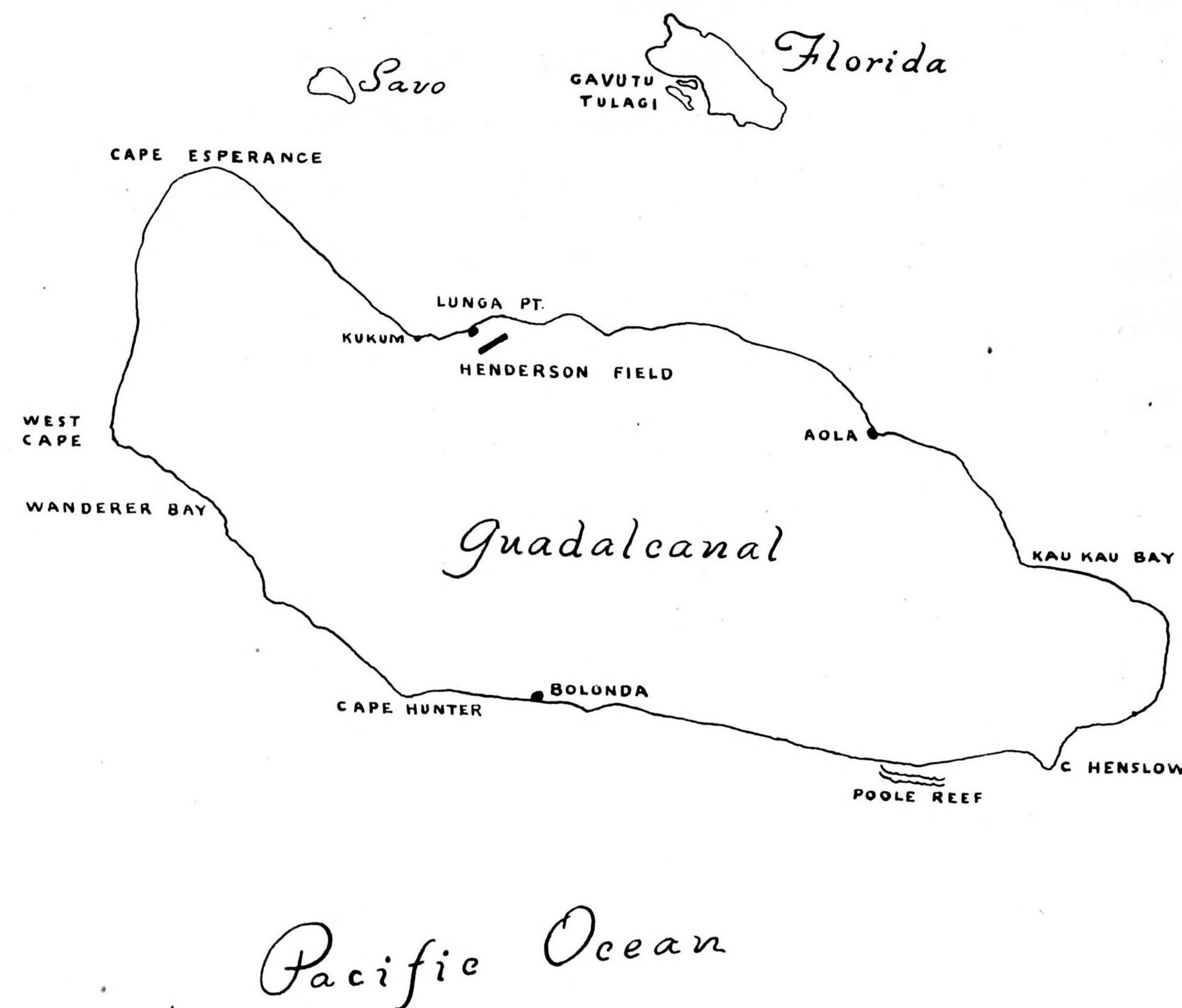
GENERAL

Guadalcanal, our first offensive ground blow in the Pacific had, as its immediate objective, the development of our air power. Sea and ground action were, in this case, to be the means of advancing our air potential to a point where interdiction of the enemy's sea lanes and neutralization of his air bases would halt the Japanese strategic advance to the southward, thus relieving the apprehension of enemy action in the New Caledonia-New Zealand-Eastern Australia triangle.

An operation in the Solomons had been envisaged as early as April 1942 by the Combined Chiefs of Staff, and the need for such an effort was accentuated during the ensuing two months as the enemy increased his strength in the GUADALCANAL-TULAGI area. Construction of a bomber field near Lunga Point on GUADALCANAL had been initiated and our air searches revealed a gradual expansion in Japanese naval activity in TULAGI Harbor.

Accordingly the Joint Chiefs of Staff issued a directive on 6 July to CINCPOA requiring capture of one or more localities in the southern SOLOMONS. This directive was implem-

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ented on 16 July by COMSOPAC by an operation plan requiring seizure, occupation, and defense of the TULAGI-GUADALCANAL area and the SANTA CRUZ Islands.

The First Marine Division, possessed of the best knowledge and most effective techniques thus far devised in the subject of amphibious warfare was mounted for the enterprise in New Zealand, conducted rehearsals in the FIJIS and landed over the beaches east of Lunga Point on 7 August 1942 with concurrent landings on TULAGI and GAVUTU.

Preliminary air operations against the objective area began as early as 4 May, when carrier planes struck shipping in TULAGI Harbor, sinking a destroyer, two minesweepers and a cargo vessel. The next air attacks were not undertaken until about 1 August, when B-17s of the 11th Bombardment Group (U. S. Army Air Force) based on New Caledonia, commenced a series of six attacks on the airfield site on GUADALCANAL. The number of planes involved never exceeded ten and there is no evidence that the attacks caused extensive physical damage or seriously interrupted construction work, as the field, begun sometime after 4 July, was 80% completed by 8 August when it fell into our hands. Captured diaries, however, indicated that even these small scale sorties had an adverse effect on enemy morale -- the first indication of the war that the enemy was

very susceptible to the effects of high explosives in any form.

The carrier air component of Task Force 61 which supported the landing during the period 7-9 August provided general protection for the attack force during the approach and during the landing phase, as well as support for ground operations. They were instrumental in breaking up large scale attacks on the naval forces in Lunga Roads during the afternoon of 7 August and again on the following day.

The withdrawal of all naval forces on 9 August, following the disastrous surface encounter during the preceding night, left the landing forces ashore on GUADALCANAL and TULAGI entirely without protective or supporting aircraft until 20 August.

During this critical period the enemy enjoyed unchallenged supremacy at sea and in the air, and subjected our positions to constant attack from both elements. He also utilized this opportunity for building up his forces ashore by night landings to the east of Henderson Field, made under cover of surface bombardments. Had the enemy perceived or been able to take full advantage of this favorable opportunity by moving in force from RABAUL and TRUK, it would have become difficult, if not impossible, to maintain our positions.

Henderson Field was operational on an emergency basis on 8 August, but no planes arrived until 20 August. This failure to commit land based aircraft to the operation at the earliest possible moment served to place in serious and needless jeopardy that which had been won at such great cost in naval strength.

The arrival of Marine aircraft on GUADALCANAL on 20 August, 1942, marked a turning point in the operation. It provided the most effective form of defensive striking power conceivable under the circumstances -- a means of attacking troop laden enemy transports approaching the area. In addition, it provided a reliable means of obtaining information concerning the approach of enemy forces -- a prerequisite to effective counter-offensive operations by the ground forces, since in the absence of such information troops could not safely be committed to any extensive field operations remote from the vital Henderson Field area.

The operations of these aircraft in clearing the skies and the surrounding sea areas of enemy forces were the most vital of all contributions to the successful defense of our first foothold in the Solomons. They caused the enemy his first great losses in aircraft, shipping and naval combatant vessels. They reduced the scope of hostile surface

activity to night landings and night bombardments, and as a result the large enemy land forces which were eventually built up ashore were never as fully effective as they might otherwise have been. On two occasions, 13 October and 15 November, they effectively shattered large scale attempts to land overpowering forces, and when in mid-November our surface forces regained naval supremacy in the southern SOLOMONS, it was evident that the defensive phase had passed to a successful conclusion.

During this period, the air forces participating in the defense, while predominantly made up of Marine Aviation units, also consisted of Navy and Army Air Force organizations based on GUADALCANAL. These forces at all times operated effectively and harmoniously under a single air command in spite of the adverse operating conditions which prevailed in the area throughout the entire period.

While it would be difficult to over-emphasize the part played by aircraft of all services based on GUADALCANAL, it is to be noted that they received some additional assistance from long range aircraft, Army and Navy, based on the islands to the eastward. It is possible, likewise, that the outcome of the SANTA CRUZ carrier engagement fought to the northeast of GUADALCANAL in mid-October, 1942, may have been of

considerable indirect benefit in making possible the improvement of the local situation. On the other hand, the small attacks by air forces based on New Guinea against RABAUL and BUIN appear to have had no appreciable effect on hostile operations in the SOLOMONS.

#### CLOSE AIR SUPPORT AT GUADALCANAL (Landing Phase)

There are likewise some lessons to be learned from air support activities in the early phases of the SOLOMONS Operations. Here the initial landing was made with air support furnished by carrier planes from Task Force 61 consisting of the SARATOGA, ENTERPRISE and WASP. These were Navy squadrons, veterans of Coral Sea and Midway, but not experienced in supporting ground operations. There was likewise no opportunity for conference prior to formulation of final operational plans for the landings on GUADALCANAL, TULAGI, and GAVUTU. Consequently the support planned was purposely framed on an elementary level, in keeping with the circumstances, and with every emphasis placed on certainty and simplicity.

The only attack involving detailed coordination was that delivered against the enemy center of resistance on the eastern end of TULAGI Island. This attack, prearranged to fit the selected scheme of maneuver, was based on the presumption that the enemy's main strength would be encountered here in

an area largely defiladed from naval gunfire due to sharp reverse slopes. The landing forces remained west of a pre-established line until the planes employed in the H-Hour strikes had re-armed and re-fueled on their parent carriers. This was necessitated by the limited number of planes available. The strike was to be delivered on call from the TULAGI Landing Force Commander, but not before H plus 1 hour and 30 minutes, to allow for the above rearming. The attack was to be launched on a pyrotechnic signal from the TULAGI Landing Force. Planes orbited on station at the appointed hour and the pyrotechnic execution signal was observed by the Air Group Commander. The attack was delivered as planned.

Air Support operations during the landing phase in the SOLOMONS were controlled and coordinated by means of an air control center established in the USS McCAWLEY, flagship of the Attack Force Commander. This control center maintained radio contact with aircraft on station as well as with the carrier task force. A fundamental weakness, and one which had been foreseen long before the operation was the fact that the Landing Force had no means of direct communication with aircraft on station. The seaborne Control Center acted as the clearing house for all air support operations, translating requests for air support from the landing forces into terms of

attack missions assigned the aircraft on station. The lack of flexibility in this scheme was manifest.

#### CONCLUSIONS (Landing Phase)

The landing phase of the GUADALCANAL operation was not one which required detailed air support, nor could such support have been rendered effectively had it been required, due to the following factors:

- 1- Inexperience in this type of operation by air units assigned.
- 2- Lack of appropriate communication facilities and absence of air liaison parties and organized air support control units.
- 3- Lack of opportunity for prior joint planning, training, and rehearsal.

On the whole, and to the extent that it was required, however, air support in this operation was effective and in keeping with expectations. That this was so is directly attributable to the two officers who worked out the assault and defense air plans and established and operated the system of control.

Both of these staff officers were Marines, qualified by years of experience in naval aviation and possessed of a general knowledge of ground tactics and problems. Because of these qualifications they were able to improvise means of utilizing the striking power of naval aircraft in a primitive but effective

form of ground support.

Conclusions drawn from the landing phase of the SOLOMONS campaign were as follows:

1. Air support is an essential element in the successful assault of a defended beach regardless of the amount and quality of naval gunfire available.
2. A more positive means of control and communications is required.
3. It is desirable that direct radio contact be established between the supported and supporting unit and this presupposes the availability of highly portable air-ground communication means.
4. Air support will be neither responsive nor timely if requests must filter back through command channels. Superior control echelons must, however, be able to intervene promptly where necessary to conserve resources or to prevent action endangering other units.
5. To be fully effective, air support for landing operations should be carried out by air forces specially trained in this type of operation as a primary mission, and this training must include a thorough knowledge of the ground problem by supporting pilots.

#### AIR SUPPORT IN THE DEFENSIVE PHASE, GUADALCANAL

Several days prior to the landing on GUADALCANAL, the general plan for organization of the defense was drafted by Commander Landing Forces. This specified that the defense of the island would be conducted primarily by the attack action of land based aircraft, and only secondarily by the action of ground forces. The major threat, formations of enemy troop transports, was to be opposed by the most suitable weapon at hand -- aircraft. This scheme of defense was put into effect upon the arrival of the first aircraft, and proved successful.

Land action was confined to operations against enemy forces which evaded our air forces and succeeded in establishing themselves on shore in force. This resulted in a prolonged period of sanguinary ground combat during which the situation was seldom considered so critical as to justify the diversion of any large number of planes away from the primary general defensive task to which they had been assigned. For this reason, the GUADALCANAL defense offers less opportunity for the study of close air support than might at first be supposed.

In the early weeks of the defense, the duty of providing close support for ground forces was assigned to a squadron of Army Air Force P-400 fighters, which had proved incapable of meeting the enemy Zero fighters or reaching his twin engine bombers, due to

limited ceiling and mediocre general performance. Their armament and characteristics were, however, suitable for low level attack on ground objectives, and they were so employed together with any dive bombers that could be made available.

On 8 September, they supported an attack by the First Raider Battalion on enemy positions at the village of Tasimboko, twenty miles east of Henderson Field. Communication difficulties reduced their effectiveness as all messages had to be relayed from the ground force commander to the Division Command Post to Henderson Field, thence back to the planes overhead.

Six days later, the same squadron assisted in completing the rout of the main Japanese force which had been repulsed in a large scale attempt to break through our positions immediately south of Henderson Field. Targets were indicated by ground force commanders on large scale aerial photographs which were marked and handed to the flight leader before take off. This was highly successful but only in view of the exceptional circumstance that the fight was in progress only a few hundred yards away from the airfield itself.

The ground force commander had repeatedly requested that air liaison parties, of the type which had been developed in peacetime by the Fleet Marine Force, be furnished the forces on GUADALCANAL. As these were not forthcoming, such parties were improvised and trained on the island for future operations. This system proved a

partial solution to the problem of air-ground liaison for close support purposes, but two salient weaknesses remained. These were a serious lack of suitable air-ground communications means, and a technique of controlling support aircraft while in the execution of a support mission.

Thereafter, available aircraft were used to support repeated attacks made by our ground forces in the MATANIKAU RIVER region to the west of the Airfield. The dense jungle canopy made target designation and assessment of damages a difficult task, but on the whole the effectiveness of close air support was noticeably improved. This was attributable chiefly to increased experience and better communications. In general it can be stated that the GUADALCANAL defense did not provide either a true or extensive test of the effectiveness of close air support.

#### GENERAL CONCLUSIONS

Air power rendered a powerful contribution in the conduct of the GUADALCANAL operation. Often, however, the value of the air effort was measurable more in the lessons to be gained therefrom than from the results. Among the general conclusions to be drawn from the GUADALCANAL operation, in addition to those noted in the Landing Phase, are the following:

1. The preliminary air attacks had little effect on the operation. In order to be effective, preliminary bombardment must be sustained, accurate, and must follow a logical plan.

2. The P-400 type of Army pursuit airplane was a satisfactory close support aircraft, despite its great inferiority to the standard enemy fighter plane in other respects.

3. The Marine Corps and Navy carrier type aircraft were most satisfactory as close support weapons, as well as maintaining a comparable quality with enemy aircraft.

4. Even when provided with extensive air cover, transports with light anti-aircraft protection are vulnerable to air attack. This was manifestly demonstrated in the successful attacks by Marine planes on the major Japanese reinforcement operations of October and November 1942.

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GENERAL

Following the successful conclusion of the GUADALCANAL enterprise, our forces undertook a laborious advance up the SOLOMONS chain in the direction of the enemy's major operating area in the vicinity of RABAU and KAVIENG. Operations were initiated for the capture of NEW GEORGIA and VELLA LAVELLA, and were successfully concluded in September, 1943.

The next major Marine Corps operation occurred in November when the First Marine Amphibious Corps, consisting of the Third Marine Division, the 37th Infantry Division, the First Raider Regiment, the First Parachute Regiment, along with subsidiary Corps troops, was committed to the task of capturing a small beachhead, measuring about six by eight miles at EMPRESS AUGUSTA BAY on BOUGAINVILLE ISLAND. The purpose of this operation, as at GUADALCANAL, was the advancement of the American air potential to a point where accompanying fighter aircraft could effectively support dive and torpedo bombers in a program of destructive attacks on installations and shipping in SIMPSON HARBOR (RABAU). The outline of the plan was developed in late September, and the order for its execution was issued by ComSoPac on 12 October



Components of the task forces were given their preliminary and final training in GUADALCANAL, NEW CALEDONIA and at ESPIRITU SANTO in the NEW HEBRIDES. During this training period, the Third Marine Division made conscientious attempts to capitalize upon the experience gained in GUADALCANAL where the First Division had clearly concluded that the necessity for a close air support technique, as well as the personnel and equipment to implement this technique, were essential.

### PRELIMINARY OPERATIONS

#### AIR

The enemy held the BUIN-SHORTLAND-BALALLE-CHOISEUL BAY area in strength. Between this powerful installation and the important air and supply base on BUKA, off the northern tip of BOUGAINVILLE, the coastline was lightly held and afforded many excellent opportunities for a beachhead operation consistent with the mission.

Two serious apprehensions, however, developed in examination of any plan devised for the seizure of such a beachhead. They were:

1. The close proximity of powerful enemy air bases at RABAU, BUKA and BUIN-SHORTLAND.
2. The ready ability of the enemy to shuttle reserves by road or by barge from his strong bases nearby to any selected landing area on BOUGAINVILLE ISLAND.

These two very real threats were countered by neutralization efforts in the air and on the ground.

Commencing on 1 October 1943, ComSoPac directed the Commander Aircraft North Solomons to initiate neutralization activities against enemy installations in the target area to the full extent of his capabilities. During the ensuing month, aircraft under his command undertook the neutralization of the five major airfields in the BOUGAINVILLE area, attacking anti-aircraft positions, cratering runways and striking supply dumps. The five large fields in the vicinity of RABAUL lay at the extreme range of our land based planes, and attacks on these areas though most hazardous, were to be undertaken whenever possible and were supplemented with occasional B-25 attacks by planes of the 5th Air Force.

Concurrent with the neutralization effort, a Marine photographic squadron, VMD -754, the only unit of its type extant in the Solomons at this time, commenced an intensive program of photographic coverage of the enemy installations in the target area. The photographic effort continued throughout the progress of the campaign, providing effective photo coverage during the operation.

Prior to the arrival of the assault task force off the EMPRESS AUGUSTA BAY beaches, the neutralization effort had achieved certain unquestioned success. The airfields in the BUIN-SHORTLAND-BALALLE area were inoperative. The great majority of enemy aircraft assembled on those fields were either destroyed or damaged

beyond the repair capabilities of the ground forces in the area. The airfields at BUKA were damaged but operative. Interdiction was of such dimensions as to weaken the repair and rehabilitation capabilities of those fields, but of insufficient strength to prevent offensive operations therefrom or to prevent the arrival and assimilation of replacement aircraft. The five fields in the vicinity of RABAUL, however, remained operational. Daylight barge traffic, south of BUKA, was reduced to an ineffective level. Night barge traffic, of course, continued unimpeded.

During the period, air engagements, brought on by the challenge of our repeated sorties into the enemy area of strength, achieved the destruction of 394 aircraft which might otherwise have exerted a considerable effect during the ship-to-shore phase of the operation.

#### PRELIMINARY GROUND OPERATIONS

In order to provide effective air support control and air warning for the EMPRESS AUGUSTA landing, the Eighth New Zealand Brigade was landed on TREASURY ISLAND (south of Bougainville) on D-5 day (26 October 1943). As a diversion, in an effort to cause the movement of the enemy's reserve forces in the SHORTLAND area away from the zone of our actual attack, the 2d Marine Parachute Battalion was landed (in landing craft) at VOZA on CHOISEUL ISLAND on D-3 (27 October 1943).

## FIGHTER PROTECTION

The neutralization of the Japanese airfields in the BOUGAINVILLE area reduced the threat of enemy aerial opposition from that quarter but as has been noted, the enemy still had five airfields in operation in the RABAUL area, a scant 200 miles from our TOROKINA beachhead. The air command, Commander Aircraft, North Solomons, which was a forward echelon of the First Marine Aircraft Wing, went ashore on D-Day with its primary function - "the active air defense of the BOUGAINVILLE REGION".

As the BOUGAINVILLE landing force moved towards its objective on the night of 31 October, it was covered by both Marine Corps and Navy night fighters. One hour before dawn, fighters (Marine, Navy, Army and New Zealand) began reporting on station to protect the task force. One hour after the first troops reached the beach, the first enemy air attack was launched but the attack was broken up by the fighter cover. The fighters providing this cover were based at VELLA LAVELLA, ONDONGA (NEW GEORGIA) and MUNDA until the TOROKINA fighter strip was operational. The size of the fighter cover varied from 24 planes on station during normal days to as many as 60 or more on days when convoys were unloading supplies. The aircraft for this cover were about 50% from Marine squadrons. During the first six weeks of the operation, the aggressive nature of the enemy air effort was of such dimensions as

to render the protection of the beachhead by friendly fighters an essential.

Fighter direction on D-Day was handled from a destroyer. On the morning of D plus 1 day, fighter direction shifted ashore, and was effectively conducted by a Fighter Director organization under control of the First Marine Aircraft Wing for the balance of the operation.

### CLOSE AIR SUPPORT

The great importance of close air support was recognized by the Marine command prior to the operation and, within the limits of personnel and equipment available, a determined effort was made to develop an effective air support control technique. In August 1943, three officers and six enlisted men of the First Marine Aircraft Wing were attached to the Third Marine Division for air liaison duty. The officers were qualified naval aviators, familiar with the technical problems of light bomber aviation, while the enlisted men were especially trained in the use of portable radio equipment and in aviation communication procedure. A close air support school was organized under the direction of the Division Air Officer and was attended by officers from each infantry regiment and battalion headquarters.

Based on GUADALCANAL experience, three main objectives were sought in air support studies conducted by the Third Division. These were: improved means of target designation, exploration of

the precise effect of bombs and fusings of various types, and the determination of safety margins necessary for protection of our own troops. The employment of varied colored smoke for target designation was studied as a means of decreasing the effectiveness of the enemy's previous attempts to confuse our target designation with white smoke. During the instruction, air liaison party personnel were given intensive training in the use of field communication equipment and in air-ground communication procedure. Thus, when the Third Marine Division went ashore at BOUGAINVILLE, its subordinate units included trained air liaison parties which could advise the ground commander in matters of air support, could transmit requests for such support and could assume tactical direction of any aircraft assigned.

The airborne component of the close support framework began its preparations when the headquarters of Commander Aircraft, North Solomons was formed and began functioning as a part of the 1st Marine Amphibious Corps. ComAirNorSols was charged with, (1) the active air defense of the BOUGAINVILLE region, (2) the establishment of an Air Warning Service for the TOROKINA-TREASURY AREAS and (3) the establishment of air support control for the TREASURY and TOROKINA AREAS. To carry out this function, ComAirNorSols was given operational control of all aircraft (except carrier based) in the BOUGAINVILLE area. Until the airfields at TOROKINA were open, this control was exercised by radio over the aircraft assigned to ComAirSols at MUNDA.

The landing force at EMPRESS AUGUST BAY made use of close support aircraft from the beginning. As the first assault wave was entering the landing craft, Marine torpedo bombers based at MUNDA arrived over the task force. When the landing craft left the shelter of the transports and headed for the beach, torpedo bombers started their bombing runs. Four planes loaded with one-ton bombs attacked assigned targets on Torokina Point, while others dropped strings of 100 pounders in the jungle just beyond the landing beaches. The planes returned to strafe after the bombing runs were completed. The bombers carried out their assignment efficiently but the report of the First Marine Amphibious Corps declared that "While the bombing and strafing of the beaches was considered excellent, it was not considered to be in sufficient strength." Further reports emphasized the effectiveness of the larger bombs, while doubt was cast on the destructive capabilities of smaller types.

No call was made for close support by bomber aircraft until 9 November. Then, the 3d Marine Division called for 18 TBFs to be on station over PIVA village at 0915 the following day to bomb Japanese positions and soften them up for an infantry attack which was scheduled for 1015. Four additional planes were requested to be on station at 1015 to answer calls for support during the infantry attack. Twelve TBFs reported on station at the scheduled time and radio contact was established with the air liaison party on the ground. Friendly lines were marked with smoke and the planes were instructed

to bomb from the smoke markers to PIVA village. Bombs were promptly dropped to within 120 yards of friendly troops and the target area was well covered. The flight of SBDs which arrived on station at 1015 was not needed, since the infantry attack was successful. The enemy abandoned their positions, leaving behind much equipment.

On 14 November, close air support was again effectively employed by the 3d Marine Division against a strong enemy position 2500 yards north of PIVA village. Eighteen TBFs loaded with 100 pound bombs were assigned to the mission. The target, which was 100 yards from friendly positions, was bombed and strafed. When the infantry launched its attack, it found the area to have been abandoned. The planes were credited with 95% hits in the designated target area.

No further use of direct support was made until the ground troops met heavy opposition on "Hellzapoppin Ridge". On 13 December, the 3d Marine Division requested air support for the following day. Three SBDs and three TBFs which happened to be at TOROKINA Strip (they were still MUNDA-based), were assigned to bomb the target that afternoon.

The following morning, 16 TBFs bombed the 50 yard target with 90% hits but this, plus the infantry attack which followed, failed to dislodge the Japanese on the ridge. On 15 December, the same



target was accurately bombed again by 18 TBFs, but the infantry was still unable to advance. In the belief that the bombs, which were fuzed to explode 1/10 of a second after impact, were not penetrating to the well dug in enemy, a strike was requested for 18 December using 4-5 second delay fuses. Six TBFs attacked at 1200 that day, scoring 100% hits in the target area only 75 yards from the friendly positions. The planes landed at TOROKINA and five made a return visit to another part of the ridge at 1600. They strafed after dropping their bombs and then made dummy runs to cover the successful advance of friendly troops. The action report of the 21st Marines declared that the final air attack on "Hellzapoppin Ridge" broke the enemy resistance.

The last call for close air support made by the 3d Marine Division in the BOUGAINVILLE operation was for a series of missions on 25 and 26 December against enemy positions on and near Hill 600A. The targets varied from slit trenches to splinter proof emplacements and were marked for the planes with white mortar smoke. The TBFs made two attacks on 25 December and one on 26 December. After the third attack, our patrols found the target area, which showed evidence of having been occupied by 800 Japanese, completely abandoned.

The missions carried out in support of 3d Marine Division troops during the BOUGAINVILLE campaign were well worthy of the designation "close support". On all missions, the target area was within 500 yards of friendly positions and on two occasions only 75

yards separated the target from our own lines. Communications between aircraft and ground forces however, were never highly satisfactory, indicating a further need for development of communications technique. Furthermore, it is certain that with improved communications means and increased confidence gained from success of the principle, many more occasions might have been taken to employ close support aircraft.

In addition to the close support missions performed by Aviation, SBDs and TBFs were used to supplement the information provided by aerial photography. Frequent missions were flown to the front lines to observe for the ground command. Closely allied and sometimes combined with these liaison flights were artillery interdiction missions and artillery spotter flights. Approximately 750 such sorties were flown by planes based at MUNDA between 27 October and 11 December (when 6 SBDs were based at TOROKINA to take over the task).

As a counter-measure to Japanese mortars and artillery, which at first inflicted damage upon unloading ships, SBDs loaded with bombs were kept on station during the daylight hours when a convoy was unloading. Although these planes rarely dropped bombs on enemy artillery positions, their presence had a strong effect in keeping enemy heavy weapons silent.

## SUPPLY AND EVACUATION BY AIRCRAFT

Aircraft made a significant contribution to the progress of the BOUGAINVILLE operation in the conduct of large scale supply and evacuation activities. These efforts fell into two groups -- the delivery of supplies by parachute drop and the execution of evacuation missions by both seaplane and land plane.

The South Pacific Combat Air Transport, equipped with R4D (C47) type aircraft, manned by Navy, Marine and Army personnel, conducted the BOUGAINVILLE air logistical operations. Marine aircraft were assembled administratively under Marine Air Group 25 while Army aircraft were administratively responsible to the Commanding General, Thirteenth Air Force. Naval personnel involved were under the administrative control of Commander Fleet Aircraft South Pacific. This heterogeneous organization, embracing elements of all three branches, functioned efficiently and contributed materially to the success of the BOUGAINVILLE enterprise. The over-all commander of the system was a Marine officer.

Initial logistical efforts by the South Pacific Combat Air Transport in the BOUGAINVILLE operation took place during the period 28 October - 3 November, in support of the parachute battalion on CHOISEUL ISLAND. During this period, transport aircraft based on GUADALCANAL, and flying under fighter cover provided from

MUNDA and VELLA LAVELLA, supplied rations and ammunition to the diversionary group. These para-drops were executed at a longer range than any previous thereto in the Pacific war. The packing and launching operations were conducted by Marine Corps parachute air delivery personnel and during the progress of the operation, over 80% of the volume dropped was successfully recovered. Subsequent supply drops were made to ground troops in advance positions in the EMPRESS AUGUSTA beachhead prior to the opening of the first landing strip within the beachhead at TOROKINA.

Evacuation of the seriously wounded to hospitals at MUNDA, VELLA LAVELLA and GUADALCANAL was effected initially by the employment of PBY (Catalina) patrol aircraft. These planes, flying under fighter cover, performed admirably in the execution of high priority evacuation missions. Upon the establishment of the TOROKINA air strip, all air evacuation was undertaken by R4D planes of the South Pacific Combat Air Transport. During the whole of the BOUGAINVILLE operation, this organization evacuated a total of 1217 casualties and delivered 840 tons of high priority supplies to the EMPRESS AUGUSTA area.

### CONCLUSIONS

The BOUGAINVILLE operation, by far the largest undertaken until that time, marked a long stride in the evolution of the part aircraft was to play in the support of the amphibious advance. Conclusions developing therefrom were:

1. Efforts at airfield neutralization, wherever the targets were well within the range capabilities of aircraft at hand, were effective and constituted an important contribution to the success of the operation.
2. Attempts at airfield neutralization in localities at or near the extreme range of planes available was ineffective since the enemy was completely free to effect replenishment of aircraft and supply from localities outside the arc of our activity.
3. The efforts at destruction of enemy supply installations even when well within the range of our aircraft were relatively ineffective.
4. Weight for weight, large sized high capacity bombs are more effective in the attack of protected installations than an equal weight of smaller bombs.
5. The approach of the assault task force and the activities on D-Day could have been seriously affected by enemy air intervention had not the task force been provided with adequate fighter cover.
6. The necessity for fighter cover to protect unloading operations in the landing area was necessary for the first forty days of the operation. Without adequate fighter cover this logistical effort, and in consequence the tactical effort, would have been seriously compromised.

7. The potentialities of close support aircraft were further developed but the technique of close air support control was still in a rudimentary stage. Principal shortcomings were lack of effective portable communication means and lack of a centralized control agency for support aircraft. The few efforts at close air support which were undertaken demonstrated clearly, however, the vital part which such operations can play in the advancement of the over-all strategy.
8. Until airfields are seized within the beachhead area, it is of prime importance that close support aircraft be based within short range of the scene of operation. If land bases are excessively distant, support must be executed from aircraft carriers.
9. Pinpoint interdictory missions aimed at silencing enemy artillery was an effective measure against Japanese artillery. The employment of aircraft in adjustment of artillery and naval gunfire was effective.
10. The delivery of supplies by airplane drop and the evacuation of casualties by aircraft demonstrated their worth in the over-all offensive structure.

THE INFLUENCE OF AIR POWER  
ON THE GILBERT ISLANDS OPERATIONS  
STRATEGIC FEATURES OF THE OPERATION

In the summer of 1943 the overall strategy dictated an offensive effort in the Central Pacific to go forward in concert with the northward advance through the SOLOMONS and the progressive operations in NEW GUINEA. Accordingly directives were issued and plans formulated for the seizure of NAURU, BETIO ISLAND of the TARAWA Atoll and APAMAMA Island. Subsequently NAURU was discarded as one of the objectives and MAKIN Island substituted therefor.

Strategic objectives of the operation were to:

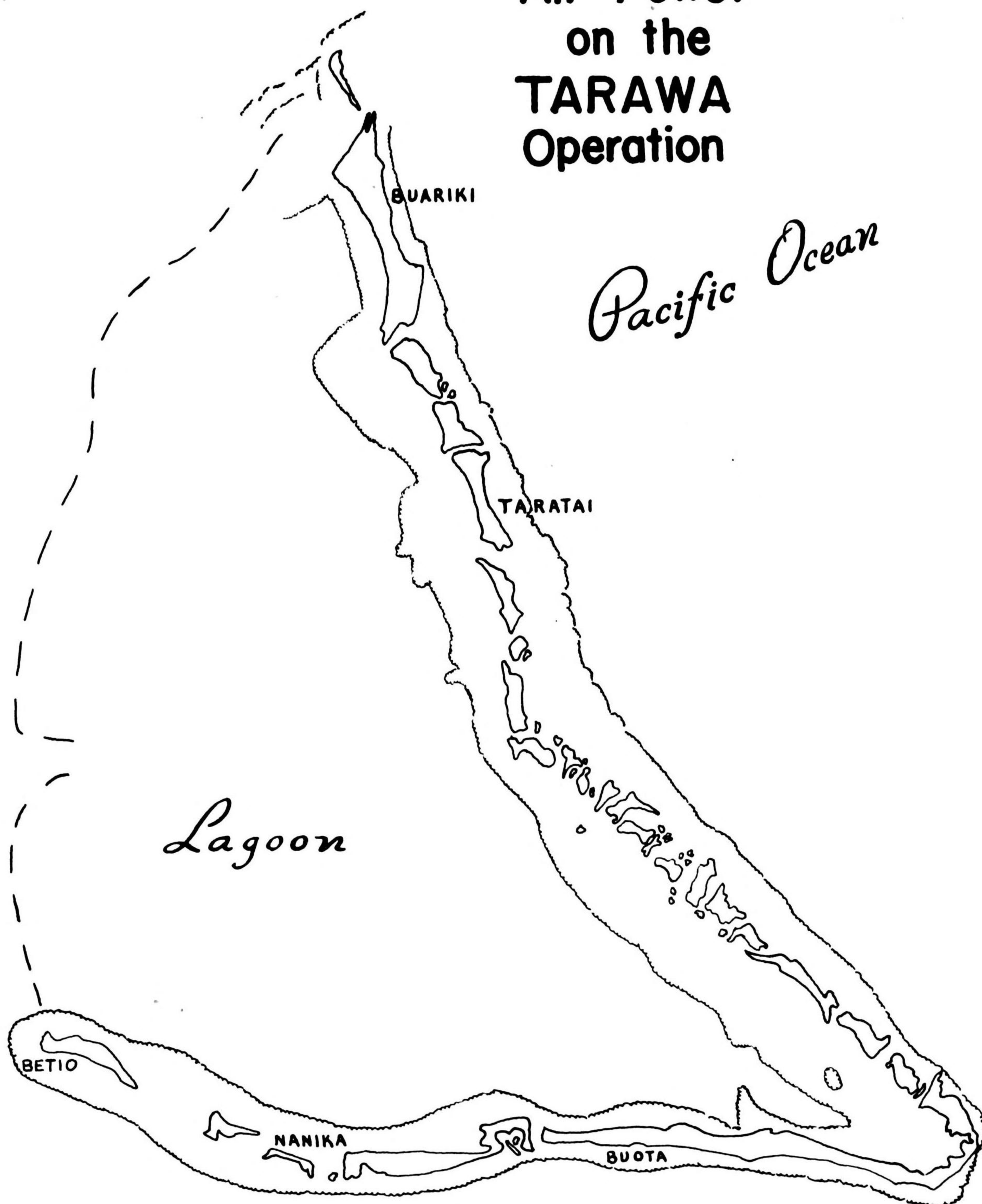
- (a) Gain control of the Gilbert Islands.
- (b) Prepare to gain control of the Marshalls.
- (c) Improve the security of lines of communication.
- (d) Inflict losses on the enemy.
- (e) Support the operations in South-Southwest Pacific and Burma areas by extending pressure on the Japanese.

The Fifth Fleet was to prevent enemy interference by destroying or repelling enemy forces, and by attacks on enemy airfields in the Gilberts and Marshalls.

Shore-based air was to support the Central Pacific campaign by all possible air operations including the following:

- (a) Photographic reconnaissance of objectives and their supporting bases.

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- (b) Long range searches in the objective areas and in the sea approaches thereto.
- (c) Night strikes against objectives and their supporting bases.

Carrier-based aircraft were to execute the following missions in support of the operations:

- (a) Establishment and maintenance of aerial superiority.
- (b) Assistance in the destruction or neutralization of enemy defenses on the objectives.
- (c) Provision of close support for the assault.
- (d) Medium range searches forward of each task unit.
- (e) Fighter protection of each task unit, and of objectives after landing of friendly troops.
- (f) Anti-submarine searches adjacent to each task unit.
- (g) Gunfire spotting for fires on objectives.
- (h) Continuous observation and report of situation at the objectives.

The total aircraft available for this operation by types were:

|               | VB(H) | VB(M) | VSB | VTB | VF  |
|---------------|-------|-------|-----|-----|-----|
| Land-based    | 21    | 82    | -   | -   | 131 |
| Carrier-based | -     | -     | 203 | 191 | 366 |
| TOTAL         | 21    | 82    | 203 | 191 | 497 |

The Commander Southern Carrier Group had available two large carriers, one medium carrier and five escort carriers for support missions at TARAWA.

Preliminary air bombardments started for the GILBERT Operations on 5 November 1943, by carrier-based air which damaged cruisers and destroyers in RABAUL Harbor. This strike had the expected results of partially immobilizing the main elements of the Japanese Fleet, because of lack of light forces, thereby preventing any interference with the operation by enemy surface forces.

MILLE was bombed on November 14, 15, 17 and 18; JALUIT November 15 and 16; MALOELAP November 16 and 17, and NAURU on November 18. TARAUA was bombed on November 14, 17, and 18. On November 19, MAKIN was bombed by both carrier-based aviation and shore-based planes.

Air strikes prior to D Day gained; and the covering carrier force maintained complete aerial supremacy during the assault. Enemy air activity was limited to an occasional snoop, and in the later stages, unsuccessful night attacks.

#### TACTICAL FEATURES OF THE OPERATION

The tactical plan adopted for execution of the GILBERT Islands Operation involved three ground task units:

- (1) The Southern Landing Force consisting of the 2d Marine Division, less 6th Marine Regiment (Reinforced) was directed to land, seize, and occupy BETIO Island; then conduct further operations to reduce the remainder of TARAUA Atoll, under support air and naval gunfire.

- (2) The Northern Landing Force consisting of the 165th Infantry Regiment (Army) (Reinforced), was directed to land, seize, and occupy BUTARITARI Island; then conduct further operations to reduce the remainder of MAKIN Atoll, under supporting air and naval gunfire.
- (3) Corps Reserve, the 6th Marine Regiment (Reinforced), was directed to be prepared to land, on order, on beaches to be designated on either TARAUA or MAKIN Atolls.
- (4) The Reconnaissance Company, Fifthphibcorps, (less one platoon), was directed to land from submarine on APAMAMA, which reports had shown to be unoccupied.
- (5) An alternate plan called for the 2d Marine Division (less 6th Marines Reinforced) to land on two islands of the APAMAMA Atoll and on order to seize and occupy these islands; then to conduct further operations to reduce the remainder of APAMAMA Atoll. The Corps Reserve, (6th Marines Reinforced) was to be prepared to pass to control of the 2d Marine Division, on order, for the execution of the above mission.

#### EXECUTION

Execution of the ground plan took the following form:

The 2d Marine Division landed on BETIO on D Day (20 November 1943), and the 165th Infantry on MAKIN. The Fifth Amphibious Corps Reconnaissance Company landed on APAMAMA on 21 November 1943, at

1900. At 1420 on 20 November 1943, Corps Reserve was released to the Commanding General, 2d Marine Division to assist in capturing TARAWA Atoll.

Organized resistance on MAKIN Atoll ended on D plus 2 day. The few Japanese (about 26 in number) on APAMAMA were cornered by the Reconnaissance Company, and by D plus 5 were either killed or committed suicide. Organized resistance on TARAWA Atoll ended about D plus 3 day after sixty hours of fighting which was not exceeded in bitterness throughout the war.

The air schedule for D Day was executed according to plan, the attacks being effectively coordinated with gunfire, and furnishing material assistance to the landing troops. Adequate support aircraft were available on station throughout that day and thereafter during the assault.

Combat Air Patrols were maintained throughout the operation. Control was exercised from a fighter director destroyer, as in the initial stages of the BOUGAINVILLE operation.

Upon being relieved, Combat Air Patrol flights were required to report to the Support Aircraft Commander for execution of close support missions, prior to returning to base. However, this plan did not achieve the desired results occasionally when returning combat Air Patrol flights failed to report to the Support Aircraft Commander upon relief, thereby unnecessarily reducing the number of aircraft available for close support missions.

#### CLOSE AIR SUPPORT

Each Landing Force unit, down to and including the battalion was provided an air liaison team, composed of Marine and Navy personnel at TARAWA, and Army personnel on MAKIN, for the purpose of assisting

the unit commander, in the selection of suitable air targets, and conveying the target designations to the Support Aircraft Commander at each objective.

The Assault Force flagship at each objective was equipped to monitor communications in all phases of the supporting air activity. Over this communications system the Force Commander was able to control the air operations, through his Support Aircraft Commander. A mobile shore-based air net duplicating the one on each flagship was provided the Landing Force Commander for employment ashore, at such time as command of support aircraft might be relinquished by the Assault Force Commander.

Extensive use was made of liaison planes, each piloted by a senior aviator who was conversant with the ground plan and in radio contact with the Support Aircraft Commander. These planes maintained constant surveillance of the objective and assisted in the execution of close support missions. This scheme, the forerunner of the present Air Coordinator, proved most satisfactory.

On D Day supporting carrier aircraft executed a dawn strike on BETIO with the primary mission of destroying coastal defense batteries and a secondary mission involving destruction of A/A batteries; construction, and personnel. Torpedo bombers attacked coastal defense batteries, barracks areas and other construction while scout bombers armed with 100 pound bombs attacked A/A guns and major gun emplacements, and

fighter planes strafed exposed personnel. Five minutes before H hour fighters strafed the beaches, as the landing craft approached them; while torpedo and scout bombers armed with 500 and 100 pound bombs attacked the secondary defenses behind and on each side of the landing beaches. This constituted the entire pre H hour air effort. It will be seen that, by current standards, this preparation was extremely light, and the bitter resistance subsequently offered the assault troops demonstrated this preparation, along with the horizontal bombing efforts of 14, 17, and 18 November, to have been quite insufficient. It was clearly indicated that a more painstaking destructive effort, employing heavy bombs and precision methods, is required if the enemy's power to resist at the beach line is to be greatly reduced.

Due to the small size of BETIO Island and the confusion of the close quarters combat, it was difficult for the forces on the ground to determine the exact locations of our own front lines, thus rendering close support air operations most complicated. However, once air liaison teams were oriented on the ground and had established communications with carrier-based planes, they achieved excellent results. On frequent occasions close support missions calling for strafing within 100 yards of our own front lines were accomplished with paralyzing effect on the enemy.

During the short but intense fighting at TARAUA, carrier-based planes are known to have flown a total of 440 sorties, with 413 of these planes actually attacking their objectives and dropping a total of 143 tons

of bombs. The above reports do not include sorties flown by planes of the carriers LISCOME BAY, CORREGIDOR, and CHENANGO; from which no reports were received.

### CONCLUSIONS

Immediately upon completion of the conquest of the GILBERT Islands, the construction of airfields was initiated. From these fields land-based planes could operate against other Japanese holdings in the Central Pacific and undertake a methodical destruction of all supply and communication installations within range.

Among the valuable lessons learned on this operation concerning the function of air power were the following:

(1) A more intensive preliminary bombardment than that employed at TARAWA must be delivered on the objective before attempting to land troops, and the bombardment effort must be carefully planned and coordinated, employing pin point bombing techniques.

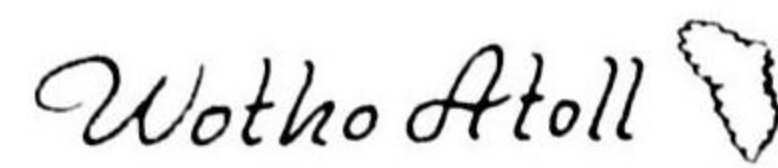
(2) Repeated photographic coverage must be made of the objective in order to insure accurate and dependable information as to the extent, strength, location, and character of the defenses to be encountered.

(3) The system of close air support control employed in the GILBERTS operations was satisfactory and warranted general adoption. It was further demonstrated to be essential that air liaison parties and air support control organizations should be trained immediately for future operations, and that methods of training and equipment of these parties should be standardized along the lines employed by the Marine Corps.

(4) It was clearly evident that carrier air groups must have adequate opportunity to maneuver with the ground forces under air liaison party control, and that the pilots must all be thoroughly schooled in the technique of close air support.



The  
Influence of Air Power  
on the  
MARSHALLS  
Operation



Pacific  
Ocean

THE INFLUENCE OF AIR POWER  
ON THE MARSHALL ISLANDS OPERATION  
STRATEGIC FEATURES OF THE OPERATION .

In the fall of 1943 the Fifth Amphibious Force, including the Fifth Marine Amphibious Corps, was alerted for operations against the MARSHALL Islands as an element of the over-all Central Pacific strategy. Plans were formulated, embracing lessons learned from the preceding GILBERTS Operation. The principle strategic features of the MARSHALLS plan were as follows:

- (a) An intensive, methodical bombing by Central Pacific shore-based aircraft of all defended islands of the MARSHALLS, beginning D minus fifteen Day.
- (b) Destruction of enemy aircraft in the MARSHALLS by carrier attacks on the airfields, on KWAJALEIN, ENIWETAK, WOTJE, and MALOELOP Atolls, beginning D minus two Day.
- (c) Destruction by friendly shore-based aircraft of enemy aircraft, and interdiction of enemy airfields, on MILLE, JALUIT, NAURU, WOTJE, MALOELOP, and WAKE.
- (d) Softening up of enemy defenses, and destruction of supplies on KWAJALEIN Atoll, by carrier and shore-based air attacks and bombardment by new battleships. Destruction of enemy supplies on MALOELOP and WOTJE by cruiser and destroyer bombardment.

- (e) Attacks on enemy naval and merchant shipping by a concentration of submarines in the CAROLINES.
- (f) The operation of four large carrier groups in covering positions with respect to KWAJALEIN Atoll, and the direct support of landing operations by two of these groups, beginning D-Day.
- (g) The simultaneous capture by three naval attack forces of the southern and northern portions of KWAJALEIN Atoll, and of MAJURO Atoll.
- (h) The consolidation of the defenses of the captured positions, and the construction or rehabilitation of airfields for offensive and defensive use.

Capture of ENIWETOK as a part of the MARSHALLS Operations was considered, but owing to uncertainties as to what fraction of the available troops the capture of KWAJALEIN would absorb, operations against ENIWETOK were not prescribed in the major directives. However, tentative plans were drawn up and directives prepared for issue should success at KWAJALEIN prove sufficiently rapid to justify the extension of the operation to the westward.

#### TACTICAL PLANS

The ground task force for the MARSHALLS effort included:

- (1) The Southern Landing Force, consisting of the 7th Army Division (Reinforced), assigned the task of seizing and occupying KWAJALEIN Island.

- (2) The Northern Landing Force, consisting of the 4th Marine Division (Reinforced) directed to land, seize and occupy ROI-NAMUR Island:
- (3) The 22d Marines (Reinforced) and the 106th Infantry (Reinforced, less the 2d Bn), were directed to land, seize and occupy ENIWETOK.

The tactical plans adopted for the capture of both the southern and northern halves of KWAJALEIN Atoll involved the following features in common:

- (a) On D Day, the capture of small islands within artillery range of the main positions on KWAJALEIN and ROI-NAMUR Islands, for the purpose of setting up strong concentrations of field artillery for assistance in the capture of the final objectives.
- (b) The capture of islands near ship entrances to the lagoon, and the sweeping of the channels and anchorage areas in lagoons to permit the early entry of fire support vessels, transports and screening vessels.
- (c) The employment of very heavy aircraft bombing and ship bombardments on D Day and D plus one Day, for the destruction of beach defenses, garrisons, gun positions, and stores, as preparatory measures for the main landings.
- (d) Main landings on D plus one Day on KWAJALEIN and ROI-NAMUR Islands, supported by the heaviest possible aircraft bombing.

- (e) The continued support of the advance of the troops by shore, ship, and aircraft bombardment.
- (f) During and after the conclusion of the operations for the capture of the main positions, as troops became available the capture of other defended islands; reconnaissance of all islands of the atoll; sweeping of all passes leading into the lagoon for mines; and a hydrographic survey of the atoll.
- (g) The landing of the garrison forces and the re-embarkation and withdrawal of the assault troops.

#### EXECUTION OF TACTICAL PLAN

In accordance with the tactical plan, D Day was set for 31 January 1944. The landing and occupation of ROI-NAMUR and KWAJALEIN Islands were executed successfully, the capture of ROI-NAMUR being completed on 2 February, while capture of KWAJALEIN was overcome on 4 February.

Units sortied from KWAJALEIN on 15 February capturing ENGEBI on 19 February and ENIWETOK a few days later.

#### STRATEGIC AIR OPERATIONS

For its success with minimum losses to ourselves the MARSHALLS Operation required the early and simultaneous elimination of enemy aircraft from all fields on KWAJALEIN Atoll and within striking distance

thereof. The strength of the enemy on the objective islands indicated the need for a heavier and more protracted bombing than had been conducted in the GILBERTS;

A great fraction of the preliminary bombardment task was discharged by far ranging carrier forces which pounded PONAPE, WAKE, ROI, WOTJE, KWAJALEIN, TAROA, MILLE, NAURU and KUSAIE. Meanwhile the enemy field at MILLE and the seaplane base at JALUIT were neutralized by the land-based aircraft from the newly won GILBERTS bases.

The almost complete absence of enemy aircraft over the target area during the operation testified to the effectiveness of the strategic air operations.

Long range searches were undertaken commencing D minus seven Day for the purpose of obtaining early knowledge of enemy raiding forces which might attempt operations against our assault shipping. The search planes carried out this mission effectively, and were able to destroy a considerable number of small enemy supply craft as well.

### TRAINING

Training of aircraft squadrons in combined operations with landing craft and ground forces in specific preparation for the MARSHALLS Operation was undertaken one month prior to final departure from Pearl Harbor. These exercises included all the features of typical landings with the exception that live ammunition was not used. In addition to participating in flight operations, pilots and squadron intelligence officers visited the amphibious training area and took part in landing craft and ground force exercises in order to familiarize themselves with the equipment used

and the general conduct of surface operations.

### REHEARSALS

Prior to embarkation, rehearsal exercises were held in the HAWAIIAN Islands, which duplicated the air plan for the operation.

This rehearsal brought to light certain weaknesses, and a general conference of representatives of the ground forces and aircraft squadron commanders was held immediately thereafter.

Rehearsals with aircraft held for units of the Fourth Marine Division at Camp Pendleton provided excellent drill for air liaison teams.

### SUPPORT AIR

The performance of close support air activities was more effective in the MARSHALLS Operation than in any preceding Pacific operation. The improvement was due in a large part to prior training and to uniformity in the control system. Air liaison parties, whose effectiveness was so clearly demonstrated at TARAWA, were attached to each infantry battalion and regiment, while over-all control of close air support was vested in the Commander Support Aircraft, embarked in the Attack Force flagship. At Pearl Harbor Marine officers were placed aboard all carriers assigned to the operation to thoroughly brief the pilots on all phases of the MARSHALLS plans. This close liaison proved to be of great value, and after the seizure of KWAJALEIN experienced junior officers were again embarked in carriers assigned to the ENGEBI-ENIWETOK landings to explain the features of those operations to the close support pilots.

During the two days of heavy fighting at ROI-NAMUR, a total of 345 sorties were flown in support of ground troops. On D Day 223 sorties were executed while 122 were flown on D plus one.

In support of troops landing on ENIWETOK, 159 bombing sorties were made along with 206 strafing runs.

Air Coordinators were aloft throughout the day and kept the Commander Support Aircraft advised of the situation, directed certain air attacks and generally maintained a continuous picture of surface activity.

Once troops were established ashore in the ROI-NAMUR phase the execution of close support missions was complicated by the highly restricted land area. On ENIWETOK Island, however, air liaison parties made 28 requests for close air support. Of this number 24 resulted in effective close troop support missions.

### CONCLUSIONS

The part played by air power in the MARSHALL Islands operations laid strong emphasis on certain conclusions which had been indicated in previous operations. Principal among these were:

- (1) Prolonged deliberate accurate air strikes over a long period prior to the main attack are essential in attaining the degree of neutralization necessary to insure successful operations at the beachline.
- (2) The coordination of close air support with ground forces requires careful advance planning and the training of skilled specialists, both flyers and air-ground liaison teams. Prior



training of pilots in close support technique is an essential.

- (3) Subordinate ground commanders must be consulted during the preparation of the overall air plan so that it may be adjusted as far as possible to the exigencies of the small unit tactical plans.
- (4) The responsibility for execution of called air strikes wherein danger to our own troops exists must rest with the ground commander involved.



*Saipan*

*Tinian*



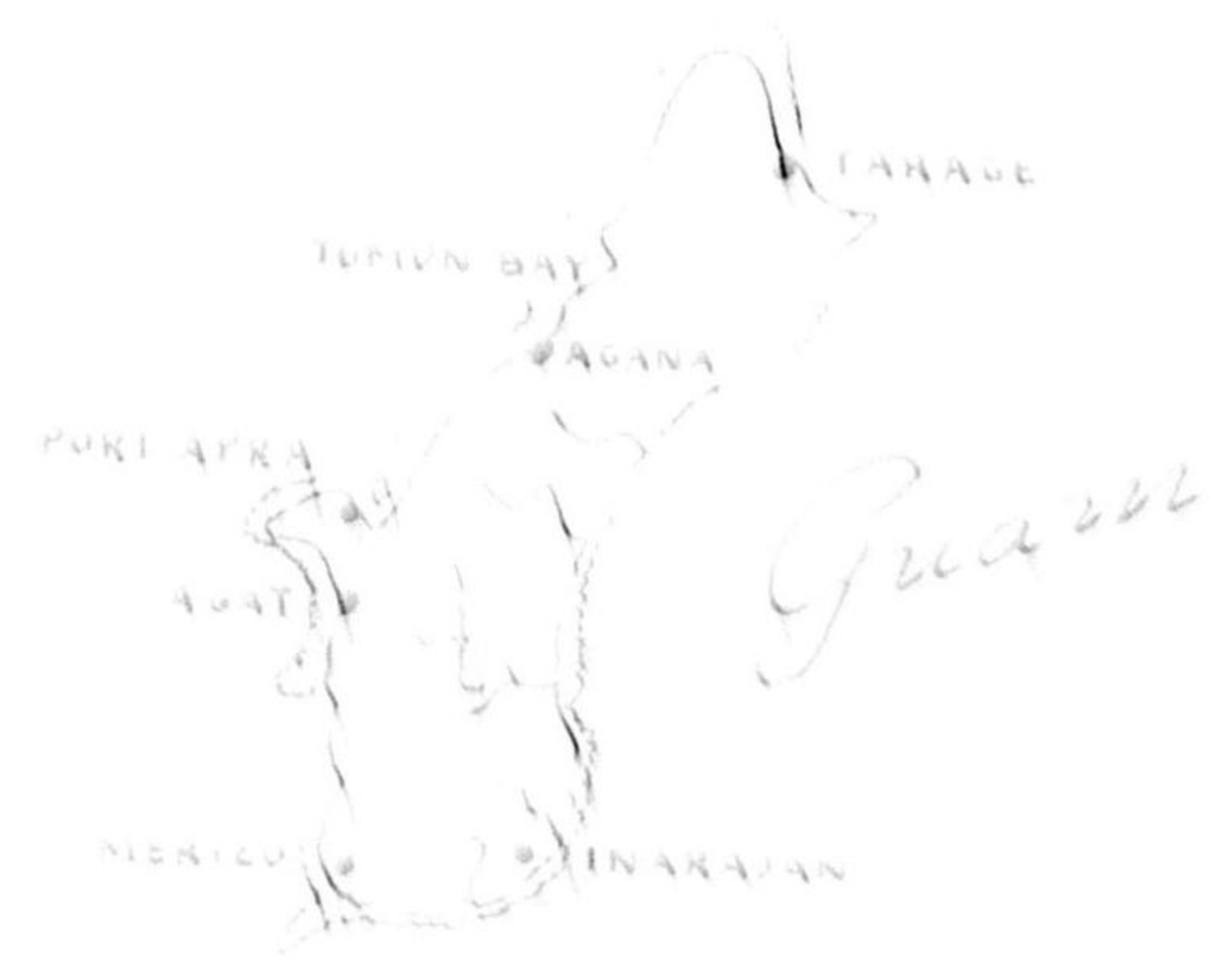
TINIAN TOWNS

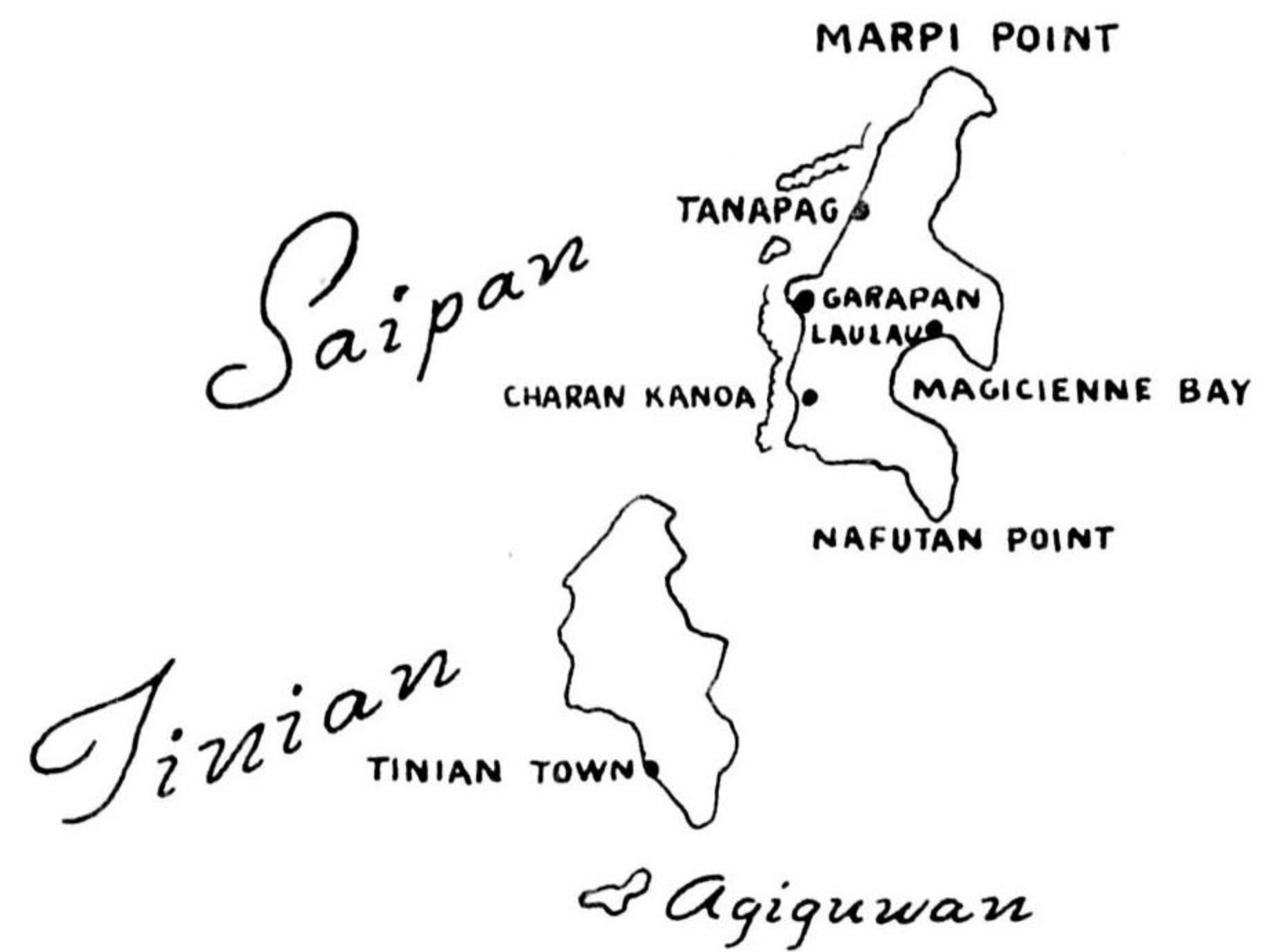
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The  
Influence of Air Power  
on the  
**MARIANAS**  
Operations

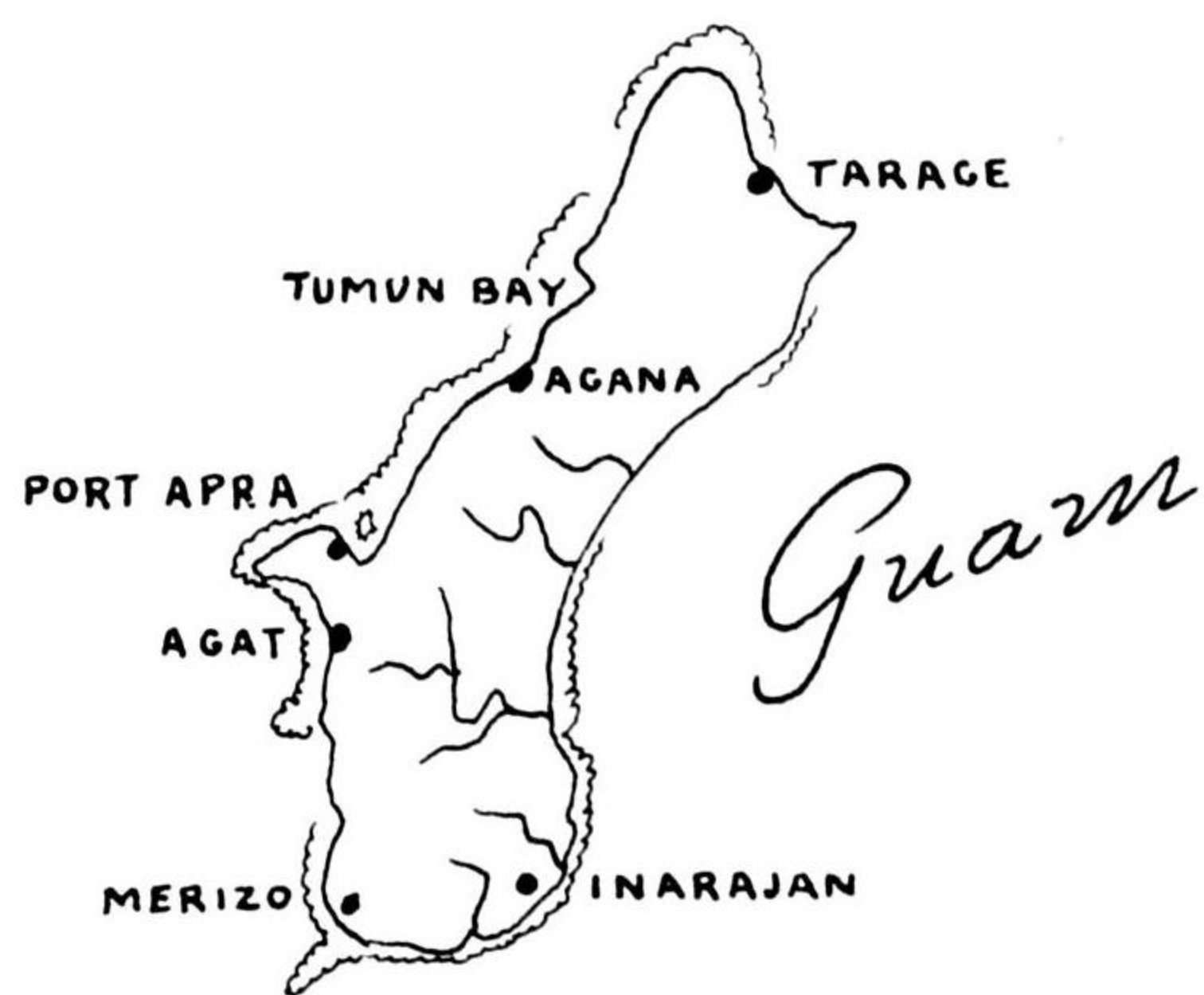




*Pacific Ocean*



**The  
Influence of Air Power  
on the  
MARIANAS  
Operations**



THE INFLUENCE OF AIR POWER ON THE MARIANAS OPERATION  
STRATEGIC FEATURES OF THE OPERATION

Early in January of 1944, the Commander in Chief, U. S. Pacific Fleet and Pacific Ocean Areas, distributed, as an aid to long-range planning, his Campaign Plan GRANITE which was based on the decisions of the Joint Chiefs of Staff of 23 December, 1943. This plan set forth the concept and outlined the tentative schedule of operations for the Central Pacific campaign of 1944. Operation FORAGER was included as the final operation in GRANITE and involved the seizure, occupation and defense of SAIPAN, TINIAN, and GUAM in the Southern MARIANAS.

Strategic features involved the following tasks for the air arm of the Pacific Ocean Areas:

- (1) Destruction of enemy aircraft and neutralization of air bases in the CAROLINES, PALAUS, YAP, NEW GUINEA and HALMAHERA by bombardment planes:
- (2) Destruction of enemy aircraft and neutralization of enemy airfields in the MARIANAS, beginning D-4 Day, with occasional raids against CHICHI JIMA, IWO JIMA, YAP, and PALAU, by the Fast Carrier Task Forces:
- (3) Softening up of enemy defenses and destruction of fortifications on SAIPAN, TINIAN, and GUAM, beginning D-2

days, by aircraft of the Fast Carrier Task Forces and by CVEs.

- (4) Scouting and anti-submarine patrols by large patrol planes based on SAIPAN as soon as bases could be established.
- (5) Establishment on SAIPAN of shore-based aviation and its use for troop support and protective missions.
- (6) Support of operations of the Northern Landing Force for seizure of SAIPAN and TINIAN, and for the capture of GUAM by the Southern Landing Force as soon as the SAIPAN situation permitted.

#### EXECUTION

It was contemplated that the MARIANAS operation would be executed in three phases: Phase I, Capture of SAIPAN; Phase II, Capture of GUAM; and Phase III, Capture of TINIAN.

Expeditionary Troops, (Task Force 56) was activated on 1 May, 1944, as a task force of the FIFTH Fleet. It was directed, with the support of all forces in the Pacific Ocean Areas, to capture, occupy and defend SAIPAN, TINIAN, and GUAM, and to be prepared for further amphibious operations. Forces were mounted in the HAWAIIAN Islands, SOLOMON Islands, and on the west coast of the UNITED STATES. The Expeditionary Troops for all three phases were organized into the Northern Troops and Landing Force (V Amphibious Corps) for use in Phases I and III; the

Southern Troops and Landing Force (III Amphibious Corps) for use in Phase II, and the Expeditionary Troops Reserve (27th Infantry Division). In addition the 77th Infantry Division was alerted in HAWAII as a General Reserve.

While the original plan had been to use the Expeditionary Troops Reserve as a reserve for both SAIPAN and GUAM, and to capture these two islands simultaneously, it early became apparent that all of the reserve was required on SAIPAN and that the strength of the Southern Landing Force alone was inadequate to insure success on GUAM. It, therefore, became necessary to delay the GUAM attack in order to hold part of its troops in reserve for SAIPAN, and also to provide time for a transport turnaround to HAWAII to bring forward the General Reserve. As a result, the SAIPAN effort was executed alone and the later TINIAN and GUAM operations were concurrent.

Northern Troops and Landing Force landed on SAIPAN on 15 June 1944. The island was announced secured on 9 July 1944. Southern troops and Landing Force landed on GUAM on 21 July 1944. The island was announced secured on 10 August 1944. Northern Troops and Landing Force landed on TINIAN on 24 July 1944. The island was announced secured on 1 August 1944.

PARTICULAR IMPORTANCE OF AIR  
POWER IN THE MARIANAS OPERATIONS

As was true in so many of the other Pacific operations, the chief purpose behind the decision to seize bases in the MARIANAS was the advancement of our air power farther along the road to TOKYO, this time to bases from which all of the JAPANESE home islands could be brought under heavy bombardment from land-based planes. Other results expected to be attained were the isolation of the CAROLINE group and the possibility that the powerful effort would bring to Japanese Fleet to battle.

In addition to being the principle arm to benefit from the MARIANAS enterprise, air power was required to play a powerful part in execution of the operation.

The importance of the role assigned the air arm in the operations for the capture of SAIPAN, TINIAN, and GUAM is emphasized by the proximity of the target area to the JAPANESE home islands, with their many bases and aircraft at least potentially capable of influencing the action. Since this was the largest amphibious operation which had been undertaken in the Pacific up to that time and the first to be fought in the enemy's home waters, the magnitude of the task assigned the air arm was unprecedented with regard to control of the air, neutralization of enemy bases, and scouting missions, as well as the all important close support of the Landing Forces.

Because of the broad expanse over which the air battle was fought in this operation and the complexity of the missions assigned, almost

every known type of modern combat plane from Army, Navy and Marine aviation was called upon at one time or another for general strategic support. However, almost all tactical support was furnished by carrier-borne aircraft. This was particularly true during the preliminary bombardment and early phase of the SAIPAN operation. During the latter phases at SAIPAN and throughout the fighting on GUAM and TINIAN some Army planes (principally P-47's) operating from captured fields teamed with the carrier planes.

#### PRELIMINARY AND COINCIDENT STRATEGICAL AIR OPERATIONS

During the interval between the MARSHALLS and MARIANAS operations, land-based aircraft from the MARSHALLS, South Pacific, and Southwest Pacific, and carrier-based aircraft of Task Force 58, conducted the progressive neutralization of enemy held bases in the CAROLINES. On 9 June daily strikes against major JAPANESE bases in the CAROLINES were initiated by land based aircraft. In addition to raids in the CAROLINES, Fast Carrier Task Forces conducted destructive raids against the MARIANAS and against enemy aircraft installations on WAKE and MARCUS islands.

It is of interest to note that the landings in the MARIANAS were made without the benefit of a long and heavy preliminary bombardment of the target itself by land based aviation. During the assault and occupation stages, however, land based aircraft continued the interdictions of JAPANESE bases in the CAROLINES while Fast Carrier groups



neutralized JAPANESE bases in the BONIN and VOLCANO islands.

Our aircraft operations prior to and during the operation coupled with the interception and defeat of major elements of the JAPANESE Fleet on 19-20 June, proved successful in isolating the battle area from enemy surface forces and from all but small scale air raids. How well the air arm performed in strategic support of the MARIANAS operation is indicated by the comments of the Commanding General Expeditionary Troops in his action report following the operation. "Preliminary air strikes and air support during the operations on SAIPAN, GUAM, and TINIAN proved so effective that complete dominance of the air was gained prior to D-Day".

#### TACTICAL AIR OPERATIONS

General. Strike groups for troop support were furnished for the most part by the fast carriers of Task Force 58, while the Anti-Submarine Patrol, Combat Air Patrol, Photographic Planes, Smoke Planes, Air Observer, Air Spotter and Air Delivery missions were performed by aircraft from the CVEs.

The Air Support Plan provided that attacks could be directed either by Commander Support Aircraft from the headquarters ship, Landing Force Commander Support Aircraft, Air Coordinator or Flight Leader. The decision as to which agency to employ was made by the Commander Support Aircraft on the basis of which had the best information available on the particular attack to be executed. In this function

as well as in orienting strike groups in the air the services rendered by the various Air Coordinators was invaluable.

A Landing Force Commander Support Aircraft was landed at each objective with necessary personnel and mobile communication equipment. This control party went ashore with the Landing Force Commander, established the necessary communications, and was capable of taking over control of support aircraft operations.

In some instances the control of attack missions was delegated to the Landing Force Commander Support Aircraft but his principal employment was in the coordination of air operations with artillery fire and in acting as liaison between the Commander Support Aircraft and the Landing Force Commander. Consequently the full control capabilities of this organization were not fully exploited.

#### TACTICAL AIR OPERATIONS - SAIPAN

The preparatory bombardment for SAIPAN was limited to carrier and surface strikes beginning on D-4. Aside from these attacks there was no extended preparation of the sort which was so effectively employed preceding the subsequent GUAM and TINIAN phases. The landing was vigorously opposed. Many casualties resulted, and it was obvious that the preparatory bombardment was inadequate and did not approach the optimum neutralization desired.

From dawn until H Hour on D-Day, naval gunfire, with the exception of counter-battery fire, was restricted to the beach areas to a

depth inland of 1000 yards. Support aircraft was assigned the mission of neutralizing all inland active enemy guns and preventing the reinforcement of the landing beach area by attacking enemy troops, vehicles and tanks. Small air patrols were assigned definite areas to accomplish this mission.

A pre-H Hour strike, consisting of 60 VF, 51 VSB and 54 VTB, commenced on schedule at 0700, was completed by 0727, at which time naval gunfire was resumed. This strike was made on previously assigned target areas along the landing beaches.

Prior to H Hour the selection of targets was left almost entirely in the hands of the Air Coordinator and the Flight Leaders. Small groups of planes under their respective Flight Leaders were detached from the Direct Support Groups and directed to patrol definite areas with instructions to attack active enemy guns, troops, tanks, and other targets of opportunity. This plan functioned with a large degree of success, and the same scheme was used after H Hour, with the exception that no aircraft were allowed to make attacks in the general area where our troops were operating without specific instructions from Commander Support Aircraft.

The H Hour strafing attack, composed of 48 VF and 24 VTB, commenced their attack when the leading wave of boats was 800 yards from the beach. The attack continued along the beaches until the leading wave was 100 yards from the beach, at which time the point of attack was moved 100 yards inland. The attack ceased when the leading wave reached

the beach.

The operation against SAIPAN was the first occasion that carrier-based aircraft were in widespread and urgent demand for close support missions. At times there were as many as ten or twelve "urgent" requests for air support. This was particularly true during the first few days, before artillery had been effectively coordinated.

Close support missions varied from heavy bombing and strafing attacks prior to a general advance to missions of two or three aircraft assigned to specific targets. Dive bombing, glide bombing, rocket and strafing attacks were all employed, depending on the type of target and mission.

After artillery had been established, close support missions were confined generally to attacks on targets, which, due to terrain characteristics, could not be effectively neutralized by other supporting arms.

The frequency of requests is evidence of the importance of such missions.

From 17 June until 22 June, few aircraft were available for troop support due to the departure of Task Force 58 incident to the Battle of the Philippine Sea. During this five-day period the air support rendered the ground forces on SAIPAN was limited to occasional flights composed chiefly of aircraft relieved from anti-submarine patrol and combat air patrol. This condition points to the need for the definite assignment of carrier-based air for the support of land operations up to the time that land-based air support is available and functioning.

With the return of surface units, CVE based aircraft of Task Force 52 and P-47 fighters based on ASLITO Field, beginning 22 June, rendered effective close support for the remainder of the assault operations. In addition, the first P-61 night fighters were launched on 24 June and were employed nightly thereafter with limited success.

Aircraft rockets were used extensively on SAIPAN for the first time in a Central Pacific Amphibious operation. In spite of insufficient training in their use and the fact that no delay fuzes were available, rockets proved to be a most valuable weapon.

#### ENEMY AIR ACTIVITY - SAIPAN

There were seventy-six (76) designated enemy raids during the period of 15 June to 7 July, each raid averaging one to three planes for an estimated total of one hundred and fifty aircraft in all. The largest single night raid estimated at twelve planes struck SAIPAN on 21 June. These raids may have originated in the BONINS, TRUK, PAGAN, ROTA, or GUAM but their approach indicated that the great majority came from the ROTA-GUAM area. Although some of these attacking aircraft penetrated the defensive cover, they were for the most part successfully repulsed.

#### TACTICAL AIR OPERATIONS - TINIAN

The actual operation for the seizure of TINIAN may be said to have begun as early as June 11, when the first aerial bombardment and surface shelling of the island was conducted by elements of Task Force 58 in their pre-SAIPAN strikes. Throughout the SAIPAN assault

numerous heavy strikes were directed against targets on TINIAN, and the preparatory bombardment delivered on TINIAN prior to the landings exceeded in duration and deliberate destructiveness any previous preparation of the Pacific war. Carrier-based aircraft of Task Force 52 and Task Force 58 and land-based fighters from ASLITO Field on SAIPAN all teamed in this assault under the direction of Commander Air Support. In addition to the air and naval gunfire bombardment, thirteen battalions of artillery (155mm guns and 105mm howitzers) added their support from positions on southern SAIPAN.

B-25 medium bombers joined in the aerial attack during the assault phase. The large number of aircraft available for troop support made possible both close and deep supporting missions and the repetition of attacks as necessary to destroy small or heavily constructed installations. The experience on SAIPAN emphasized the necessity for the deliberate, unhurried, destructive bombardment of observed targets. This practice was followed, and with gratifying results.

A new technique was introduced for the first time in the assault on TINIAN when fighter strikes were conducted employing Napalm belly-tank incendiary bombs. These bombs were used with notable effectiveness to burn canefields and wooded areas as well as against personnel in caves and open trenches. While more effective than WP and thermite against canefields and wooded areas with a high moisture content, the mixture used still did not produce the prolonged flame desired for such targets.

Air transportation and casualty evacuation were also notable features of the TINIAN operation. After USHI POINT Field was placed in operation on 27 July, transport aircraft operating between SAIPAN and TINIAN were of great value in the transportation of critical supplies and in the air evacuation of sick and wounded. This service was performed at a time when sea conditions made small boat operations extremely difficult.

#### TACTICAL AIR OPERATIONS - GUAM

Task Force 58, beginning on 11 June, had conducted strikes over a period of three and one-half days on GUAM as a part of the preparatory strikes against all the southern MARIANAS prior to the D-Day landings on SAIPAN. When W-Day for the attack on GUAM was postponed, the preparatory strikes by fast carrier forces of Task Force 58 were discontinued until further notice, principally due to the imminence of a fleet engagement. These strikes were later resumed because of the lesson learned from the difficulties encountered in the assault on SAIPAN. During the Battle of the Philippine Sea, however, the enemy airfields at GUAM which were being used as staging positions were struck by the aircraft of Task Force 58, and during the SAIPAN phase of the operation neutralization strikes were repeatedly directed against the fields at GUAM to destroy aircraft enroute from Japanese bases in the CAROLINES to the southward.

On 28 June the full power of Task Force 58 again struck GUAM, bombing and strafing installations and defensive positions as well as

airfields. This represented the beginning of a month long bombardment of the island during which intense, deliberate, destructive fires were delivered against observed targets. Experience had shown the necessity for this type of bombardment against an area as large as GUAM, where the obliteration technique employed on atolls was impractical, and any type of area bombardment inadequate.

As at SAIPAN aircraft contributed materially to the success of the landing force in delivering counter-battery, interdiction, and harassing fires against the enemy. On the night of W-Day, over one hundred planes were used to assist in repelling night counter-attacks on both flanks of the beachhead. Night illumination was maintained and night fighters based on SAIPAN were employed as combat air patrol.

#### CLOSE AIR SUPPORT - GENERAL

Certain noteworthy elements of close air support were common to all three phases of the operation. Among them were the following:

Carrier aircraft with infantry officer observers from each assault division were maintained in position to report the development of the ground situation to the commanding general. These observers reported on separate frequencies and operated more or less independently in carrying out their assigned missions. They were of great assistance to the Commander Support Aircraft in reporting front line positions, in discovery of new targets, reporting targets of opportunity and evaluation of attacks.



Light OY-1 and L-4 type artillery spotting planes were employed in all phases of the operation with excellent results. The cub, or light plane type, was found to be much more satisfactory for artillery spotting than carrier based aircraft, and by the use of cubs, naval aircraft were released for other missions. Since the need for spotting aircraft developed early in the operation, it was emphasized that such planes should be transported to the objective area in a flyaway status aboard CVEs.

Innumerable photographic missions were executed in compliance with requests received. Delivery of the negatives, and in some instances of prints, were made by drop either to the headquarters ship or to the headquarters ashore. Although the photographic missions were of great benefit to the conduct of the operations, they were not entirely satisfactory. Requests for photographic coverage were often made too late and called for photography that was beyond the capabilities of the equipment available. Some of the pilots and personnel of the photographic planes were inexperienced in this highly specialized work.

Smoke-laying planes were employed on only rare occasions -- the most notable example being at GUAM on W-minus-4 Day, when smoke was used very effectively to cover the activities of the underwater demolition teams working on the beaches in daylight. In view of the many small craft available to lay smoke and the availability of WP shells from the fire-support vessels, aircraft were employed for this purpose only as an emergency measure.

## CONCLUSIONS

The MARIANAS Operation was the first large scale amphibious effort to be carried out within the enemy's intermediate defensive arc. Throughout the progress of the operation there were repeated evidences of the decisive part which air would play in the subsequent steps toward JAPAN. Specific conclusions to be drawn from the MARIANAS Operation as regards the influence of air power include:

(1) The preliminary bombardment of SAIPAN was inadequate. Repeated mass precision air attacks are effective in reducing resistance at the beachline. They must be carried out on a systematic basis with intermittent aerial photographic assessments of damage. This conclusion was borne out in the excellent results which developed from the painstaking preparation before the landing on GUAM.

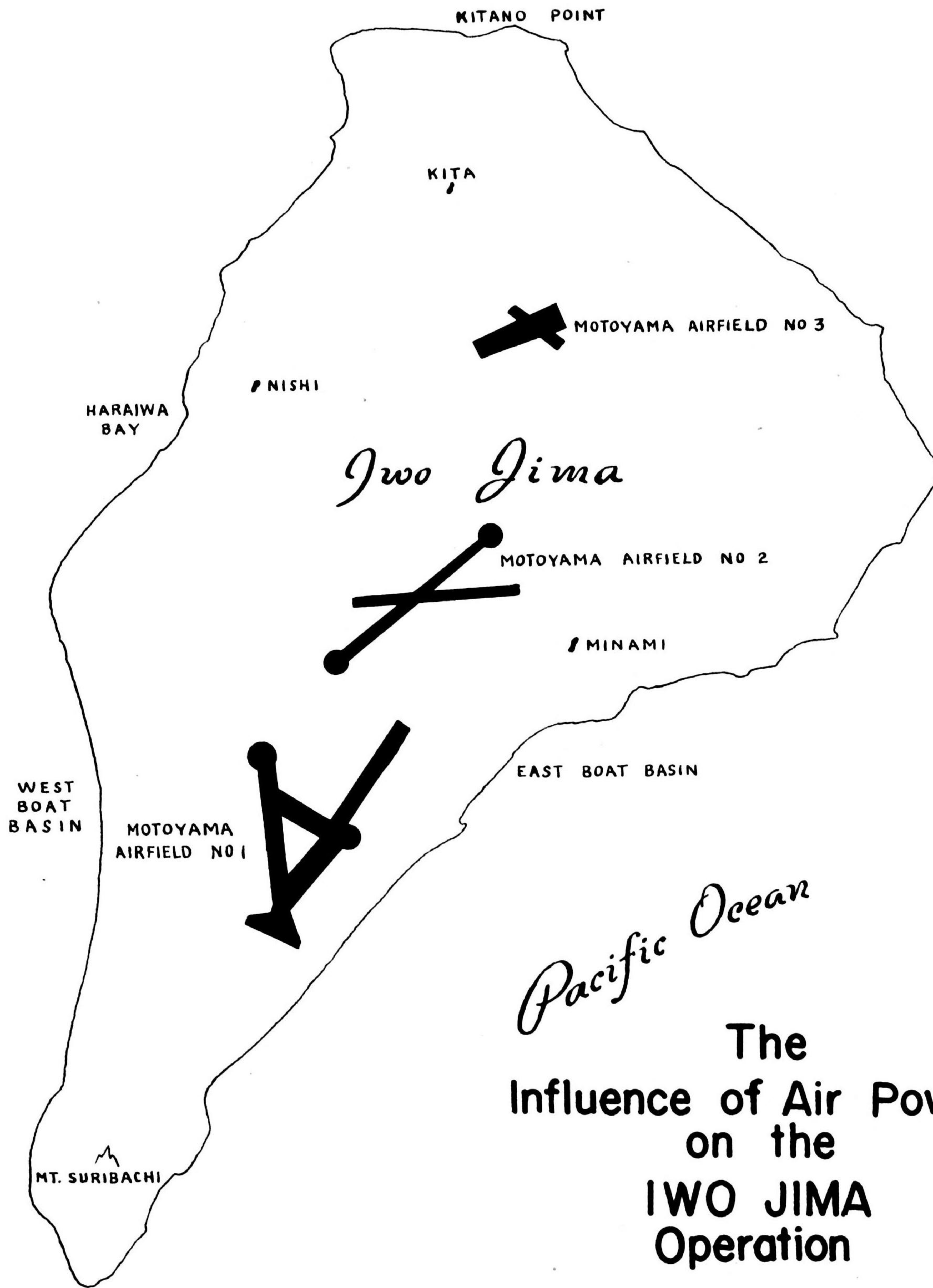
(2) The technique of close air support control as practised in both the III and V Marine Amphibious Corps was sound, and was brought further toward perfection during the operation. The greatest advance was in the formal organization of a shore-based air support control element which, though not permitted to display its full capabilities, was able to demonstrate the vital necessity for further development of such an organization.

(3) Close support air attacks at low altitudes and very close to the front lines were most effective in the reduction of enemy mortar and artillery positions in defilade in the mountainous SAIPAN interior.

(4) A reluctance to release control of an air strike to the front line air liaison party once it had been approved, continued to slow the execution of missions and increase the problems of target designation. It was apparent, as in preceding operations, that air liaison officers of the assault battalions should have direct communication with the Air Coordinator or Flight Leader and should control the strike once it is approved.

(5) The sudden departure of the Fleet for the Battle of the Philippine Sea left the Landing Force without the necessary support aircraft. This added weight to the long stressed contention of the Marine Corps that close support squadrons, embarked in CVEs should be assigned to support the Landing Force as their primary task. Further, since accelerating Fleet activity rendered close support training of fast carrier complements difficult, that the weight of the close support missions should be shifted in a greater degree to Marine squadrons in the smaller carriers.

(6) The value of Napalm and aircraft rockets was clearly demonstrated as was the great advantage in accuracy of dive bombing over glide bombing.



**The  
Influence of Air Power  
on the  
IWO JIMA  
Operation**

THE INFLUENCE OF AIR POWER ON THE IWO JIMA OPERATION  
STRATEGIC FEATURES OF THE OPERATION.

The capture of SAIPAN, TINIAN and GUAM served to establish our shore-based aviation in localities from which continuous air attacks could be launched against the enemy homeland. However, it became apparent soon after the long range bombing effort was begun that fighter support should be provided at the earliest practicable time in order to insure most effective operation. The provision of such fighter support required capture of an air base along the route between the MARIANAS and the homeland.

At the same time carrier attacks on PALAU, MINDANAO, the VISAYAS and LUZON in the autumn of 1944 revealed a weakness of enemy aviation in their forward areas which would permit an acceleration in the advance of our forces. In order to exploit this situation, however, it would be necessary to advance our air potential to localities from which we could effectively engage enemy aircraft over the EMPIRE itself.

IWO JIMA, key island of the NANPO SHOTO, afforded three sites for airfields, and would provide a fighter base for supporting long range bombers between the MARIANAS and the EMPIRE.

Several divisions were at that time deployed in the South and Central Pacific, from which positions they could be readily mounted for an assault on the NANPO SHOTO. The interval between the LUZON operation and the earliest subsequent operation of comparable size provided sufficient time to complete such an assault.

In consequence a directive was issued by the Joint Chiefs of Staff to CINCPAC, requiring occupation of one or more positions in the NAN-PO SHOTO about 20 January, 1945. The practicability of the operation was based on the assumptions that continued pressure was being maintained from all Pacific theatres on the enemy air force and that adequate forces were available to conduct the assault on IWO JIMA. Circumstances later required a delay in target date until 19 February.

The purposes of the operation as conceived were:

- a. To maintain unremitting military pressure against JAPAN.
- b. To extend control over the Western Pacific.
- c. To establish a base from which to:
  - (1) Attack the enemy homeland.
  - (2) Protect our MARIANAS bases.
  - (3) Cover our surface forces and conduct reconnaissance of the approaches to the EMPIRE.
  - (4) Provide fighter escort for very long range bombers.

Specific tasks envisioned were:

- a. Reduction of Japanese naval and air strength and production facilities in the EMPIRE.
- b. Destruction of enemy naval and air strength in the BONINS.
- c. Seizure, occupation, and defense of IWO JIMA followed by development of an air base on that island.

The Joint Expeditionary Force (Task Force 51), a part of the Fifth Fleet, included the following principal components:

- a. Amphibious Support Force (Task Force 52)

- b. Attack Force (Task Force 53)
- c. Gunfire and Covering Force (Task Force 54)
- d. Expeditionary Troops (Task Force 56)
  - 1. Landing Force (Task Group 56.1) consisting of the Fifth Amphibious Corps (Fourth and Fifth Marine Divisions)
  - 2. Garrison Force
  - 3. Expeditionary Troops Reserve (Third Marine Division)
- e. Air Support Control Units (organized for both seaborne and shore based operation).
- f. Joint Expeditionary Force Reserve.
- g. Transport Screen
- h. Service and Salvage Group
- i. Hydrographic Survey Group
- j. Defense and Garrison Group

Bases in the HAWAIIAN ISLANDS and the MARIANAS served to mount the expeditionary forces, which totalled 111,308 ground troops. Bases in the MARSHALLS and the MARIANAS functioned as regulating stations, providing protection for the sea and air lines of communication and facilities for staging. Harbor facilities in the MARIANAS were employed for the assembly of the combined task force (numbering 495 vessels) prior to the final movement to the objective .

## STRATEGIC AIR ACTIVITIES

The first, or strategic phase, extended over a period of several months preceding 16 February, 1945, during which attacks by carrier and land based aircraft were carried out at periodic intervals against the objective, the neighboring BONIN ISLANDS, the islands of the NANSEI SHOTO, and the home islands of the EMPIRE. Assistance was provided by various other forces in the PACIFIC OCEAN-CHINA area as follows:

The 14th Air Force conducted searches from China bases, and provided limited information on enemy surface activity in the CHINA SEA - FORMOSA area.

The Pacific Ocean Areas and Southwest Pacific Area Air Forces conducted long range reconnaissance over the Western Pacific reaches.

The 20th Air Force supported the operation by attacks on the EMPIRE proper in conjunction with the fast carrier strikes.

The fast carriers, whose air groups included a number of Marine Corsair squadrons, carried out heavy strikes on the TOKYO area and then withdrew in order to furnish direct air support at IWO JIMA on D and D plus 1 Days.

IWO JIMA proper was attacked by heavy bombers for seventy two consecutive days prior to the attack. During the last thirty days before the landing the tempo of the raids gradually increased to the point where heavy MARIANAS-based bombers were making at least one daylight attack, interspersed with night harassing missions, every twenty-four hours. Fighter sweeps, photo-reconnaissance and air-sea rescue missions were



conducted as required.

Marine medium bombers (VMB-612) equipped for night attack operations assisted in the blockade of the target area by thwarting enemy attempts to run in supplies and reinforcements in small craft during hours of darkness, obtaining 18 probable kills by rocket attacks.

Evaluation of the horizontal bombing effort indicates that it was less effective than at first anticipated. Destruction of aircraft on the ground and neutralization of the airfields was successfully accomplished although it was frequently noted that runways damaged on one day were repaired within the ensuing 24 hours. However, the effectiveness of horizontal bombing against targets which were even lightly protected proved much lower. Gun emplacements, blockhouses, pillboxes, shelters and other strong points proved to be unprofitable targets for area bombing efforts due to the thorough manner in which these installations were prepared against such attacks. Likewise the rugged terrain with its countless caves afforded excellent protection from the blast and fragment effect of high level bombing.

Results obtained in this operation demonstrated once again that horizontal bombing is effective against aircraft on the ground as well as buildings and vehicles and other installations above ground which are exposed to lateral blast and fragment effect. Likewise, that horizontal bombing is not effective against protected gun emplacements, pill boxes and block houses, unless direct hits are obtained by large calibre bombs, preferably semi-armor piercing. Such direct hits come mainly by chance, and are relatively few in number. Consequently it developed that despite the magnitude of the strategic bombing effort, many of the defensive in-

stallations were intact and operative on D Day.

The strategic efforts of the fast carrier task forces produced destructive results, particularly in their attacks on the EMPIRE proper. They demonstrated again the value of precision dive bombing -- photographic interpretation revealing a commendable percentage of hits in the designated target areas. However, the attacks on IWO JIMA itself were of less effectiveness since the defiladed and cleverly concealed defensive installations were difficult to locate, and were difficult to hit even when found.

#### REHEARSALS

Rehearsals were carried out first in the HAWAIIAN Area and later at SAIPAN and TINIAN.

The activities in the HAWAIIAN Area took place at MAALAEA BAY, MAUI, and KAHOO LAWE ISLAND during the period 11 to 18 January, 1945. These exercises included both actual and simulated air and naval bombardments.

As had frequently been the case before, rehearsals of air support activities fell short of desired objectives. With the exception of daily anti-submarine patrol, and live bombing and strafing exercises on 17 January, the majority of air support functions and actions were simulated. The exercise was thus principally a test of communication facilities and procedures.

Further it was necessary to substitute locally available squadrons for those actually scheduled to participate. Such an arrangement serves the purpose of meeting requirements of the scheduled use of aircraft, and pro-

vides mechanical drill for members of the air support control units. However, the important element of the training of air groups to be used in the operation and the coordination of these same groups with the control team is lost.

Final rehearsal for the conduct of the operation was held in the MARIANAS ISLANDS on 12 and 13 February, 1945. In this exercise it was possible to effect a truly realistic rehearsal of the direct air support functions because of the convenient appearance and participation of both the fast carrier and CVE air groups which were scheduled to take part in the actual operation. However, the Landing Force Air Support Control unit was not landed, and insofar as this unit was concerned, the rehearsal was merely another communications drill.

## TACTICAL AIR OPERATIONS

### General

The fast carrier task force, upon completion of the TOKYO attacks, withdrew to the vicinity of IWO JIMA, where on D Day, 19 February 1945, its strength supplemented that of the small carriers.

The pre H-Hour strikes against the beach and flanks were exceedingly well executed and were effective in accomplishing the neutralization of the beaches during the critical period of approach and landing of the first waves. Seventy two (72) fighters and bombers attacked the beaches, flanks, and adjacent areas with rockets, bombs and machine guns at H-55 minutes, followed by a separate group of forty-eight (48) fighters which

dropped Napalm, fired rockets, and strafed these areas. Approximately 45 Army heavy bombers were scheduled to take part in the pre H-hour strike. Of this number about one third reached the target and dropped bombs. The remainder, failing to arrive on time, were directed to return to their base.

The support group CVEs continued to provide aircraft for support missions throughout the assault and occupation phases. Their number was augmented by fast carrier aircraft from D Day to D plus 3 Days, after which the fast carrier task force struck the BONINS and TOKYO, returned again to the vicinity of IWO JIMA and then departed for a sweep through the NANSEI SHOTO.

The CVEs provided aircraft for close support call missions, pre-jump off strikes, day combat air patrol, anti-sub patrol, naval gunfire spotting by specially trained fighter pilots, tactical air observation and artillery spotting by trained Marine observers, photographic missions, air distribution of propaganda leaflets, and insecticide spraying. One carrier from Task Force 58 provided night combat air patrol until forced to withdraw from the area due to battle damage. Another fast carrier then assumed these highly important patrols as well as the performance of intruder missions against the BONINS. Navy flying boats operating from a base near the southern end of East Beach performed search and air-sea rescue missions, and mail runs.

As soon as garrison aircraft could be accommodated at South Field Iwo, they flew in from SAIPAN. The first were Army P-51 day fighters and P-61 night fighters which arrived on 6 March 1945, and took over

local day and night Combat Air Patrol. Two days later additional P-51s and a squadron of Marine torpedo bombers arrived. By 11 March all tactical air support at IWO was provided by shore-based aircraft operating from the captured fields.

Defensive air cover, as provided by the Carrier Support Groups and the Garrison Air Forces, was adequate and effective. It was rare that enemy aircraft succeeded in closing the objective area although frequent attempts were made by single aircraft and small formations both by day and night. The largest and most destructive of such attacks was made on D plus 2 Day by enemy planes which divided into small groups for the purpose of striking at our carrier forces and amphibious craft. In this engagement 16 enemy planes were destroyed - one by the Combat Air Patrol and 15 by ships' anti-aircraft fire.

The lack of effectiveness in the enemy air intervention may be attributed to the small number of planes which the Japanese were able to commit to the action. The destructive raids on EMPIRE fields as well as those in the NANSEI SHOTO had indeed isolated the battlefield. This is in sharp contrast with the situation which obtained in the early days of the OKINAWA campaign, wherein complete isolation of the battle area was not achieved. (See OKINAWA Operation below.)

#### CLOSE AIR SUPPORT

IWO JIMA provided a difficult test for the close air support technique which had been in the process of steady evolution since GUADALCANAL. The tortuous weird terrain, thoroughly organized and well

camouflaged as it was, rendered aircraft orientation extremely difficult, and the irregular character of our front lines added immeasurably to the difficulty of delivering effective strikes close to the assault elements. Despite all of these difficulties, close air support was extensively employed, and contributed heavily to the final outcome of the operation.

Initially the close air support responsibility was discharged by Navy and Marine planes flying from CVEs and CVs. These squadrons, which had participated in rehearsals with ground forces at SAIPAN, functioned with great effectiveness. From D-Day (19 February) until carriers were withdrawn, these planes conducted 188 direct support missions including 2719 sorties, dropping 854 tons of bombs and firing 8501 rockets.

The great effectiveness of Napalm in destroying camouflage was demonstrated again, as at TINIAN and the 5" rockets proved extraordinarily accurate in destruction of fixed emplacements. The close quarters at which it was necessary to deliver supporting strikes rendered low level approaches essential. These, in turn, were complicated by a shortage of delay fuzes for bombs. Forced to employ instantaneous fuzes, pilots were continually subjected to the hazard of bomb blast. Despite this difficulty the close air support rendered was of a high order.

Upon withdrawal of carriers from the area it was necessary to pass the close support task to the Garrison Air Force. Army P-51 squadrons were assigned this mission. Since the Army pilots were entirely unfa-

miliar with air-ground technique, it was necessary, despite the urgent press of events, to take time to provide them with a brief indoctrination. They were given oral instruction at Landing Force Headquarters followed by practice runs on small islets around IWO. Thereafter, they were assigned missions at considerable distances behind the enemy lines and were gradually moved closer as their technique improved.

This provides a clear example of a fundamental, though not well known point of variance which existed during the war, between the Army on one hand, and the Navy and Marines on the other, in the matter of tactical assistance to ground forces by aviation units. Navy and Marine air units concentrate heavily on the perfection of the technique of close support for forces on the ground. The Army Air Force, however, considers this practice to be relatively unprofitable, and lays no stress on its development.

Air support control, as practised at IWO JIMA, closely approached the pattern for which Marines had been striving since the first operation in the Pacific. Trained air liaison parties were present in each battalion, regiment, and division, and a well organized Air Support Control Unit was in operation in the USS ELDORADO, flagship of the Joint Expeditionary Force Commander. The extremely critical tactical situation ashore interfered to some degree with air support communications and encouraged a degree of over-centralization of control in the Air Support Control Unit. This tendency, noted in previous operations, occasionally reduced the rapidity with which supporting strikes were executed.

It had been clearly determined in the operation on SAIPAN (see MARIANAS Operation above) that the organization of a shore based air support control unit was required. Such a unit was provided for the IWO JIMA operation. It was established ashore and assumed control of all close support air operations from 1 March through 15 March, when close air support was no longer required. The excellent liaison which this unit was able to maintain with Landing Force Headquarters produced a considerable acceleration in the speed with which support missions were conducted.

A forerunner of the Target Information Center control scheme which was later used with such effectiveness at OKINAWA was developed at IWO for coordinating air attacks with artillery fire. Each air strike was given a number and the following information was included: Time bracket, target area, direction of approach and retirement, number and type of aircraft, minimum altitude and any other pertinent information. The artillery was thus able to control its fire so as not to interfere with strikes, and a complete shut-down of artillery was necessitated only on rare occasions in order to run a tree top level Napalm attack. Whenever two or more battalions of artillery were firing on the same target, that information was passed to the Air Support Control Unit with the maximum ordinate, and aircraft were warned to keep clear.

#### AIR DELIVERY

The Air Delivery Section of the V Amphibious Corps, consisting of three officers and eighty-one enlisted men, was established on SAIPAN to support the IWO JIMA Operation with air drops or air freight delivery.



During the ensuing twenty-three days, seventeen supply missions were executed, all accomplishing the 1400 mile round trip without serious incident.

The first seven missions were executed by parachute drop and the remainder by air freight delivery. Five-hundred and eighty-nine parachutes with containers or slings were used in dropping seventy-eight tons of cargo, while forty tons were delivered by air freight. Forty-eight C-47s and eighteen C-46s were used to carry the supplies requested.

Air delivery operations began on 28 February when three SAIPAN - based C-46 planes made the first drop to froces on IWO JIMA, and on the following day mail was delivered in the same manner.

#### CONCLUSIONS

In a period of approximately three weeks from the day of the landing, IWO JIMA was transformed from a strong point of Japanese defense to an Allied air base of great strategic and tactical importance in the over-all air offensive against the EMPIRE. Its capture and development denied its use to the Japanese as a defensive position in the path of our B-29s based in the MARIANAS, and as an offensive weapon against those same bases. It immediately paid dividends by affording an emergency haven for aircraft returning from raids against the EMPIRE which otherwise might have been lost. It provided an advance base for search and reconnaissance. It further provided a base within fighter range of the EMPIRE. Although the range was long, fighter sweeps or escorted bombing raids

proved practical, permitting daylight attacks at lower altitudes, with resulting increased accuracy and greater security than otherwise would have been possible. It afforded a staging point for bombers, permitting greater bomb loads in lieu of gasoline, as well as a refueling stop for short range aircraft enroute to possible future bases.

In addition to the general results developing from the IWO JIMA Operation, the following specific conclusions may be drawn in regard to the influence of air power:

- (1) Strategic bombing efforts are of greatest effectiveness when brought to bear on the enemy's concentrated primary sources of power, and are of much less effect when dispersed on other missions.
- (2) Horizontal bombing is relatively ineffective, except on area targets - and then mainly in those cases where the targets are not protected by concrete or earth. Particularly unprofitable targets for horizontal bombing are those requiring precision registration and those which are underground.
- (3) Dive bombing is more effective than horizontal bombing against precision targets, but is seriously hampered also by concrete protection and underground installations.
- (4) Close air support, as practised by the Marine Corps and Navy, contributed materially to the success of the operation, and is founded on sound doctrine.
- (5) Close air support technique must be developed by progressive education and combined training. The necessity for such

procedure was clearly demonstrated in the weakness of the Garrison Air Force P-51 squadrons.

- (6) The necessity for heavy bombs was re-emphasized, along with the need for delayed action fuzes.
- (7) The employment of a shore based Air Support Control Unit was shown to be an essential factor in the maintenance of effective control, once the senior ground echelon is established ashore.
- (8) The need for some form of coordinating body to resolve the operating problems of air, naval gunfire and artillery was apparent.

## THE INFLUENCE OF AIR POWER ON THE OKINAWA OPERATION

### STRATEGIC FEATURES OF THE OPERATION

The Joint Chiefs of Staff having directed the capture of one or more localities in the NANSEI SHOTO to provide strategically located sea and air bases in the advance on JAPAN proper, the Joint Expeditionary Force (Amphibious Forces, U. S. Pacific Fleet) as part of the FIFTH Fleet was assigned the mission for the capture, occupation and defense of the OKINAWA GUNTO. The FIFTH Fleet was assisted by other forces under the control of the Commander in Chief Pacific Ocean Command and a British Carrier Task Force. The strategy employed in this operation may be described as follows:

- (a) OKINAWA and its satellite islands provided excellent facilities for establishment of the airfields necessary to maintain continuous air operations against the JAPANESE homeland and to interdict the already tenuous lines of communication between JAPAN proper, the CHINA COAST and the remote areas of the imperialist empire. Once again an amphibious enterprise was mandatory as a means of placing air power in a position to exert its influence in the advancement of offensive strategy.
- (b) The WEST COAST of the UNITED STATES, the HAWAIIAN ISLANDS, MARIANAS, MARSHALLS, CAROLINES and LEYTE in the PHILIPPINES served as bases for the operation.