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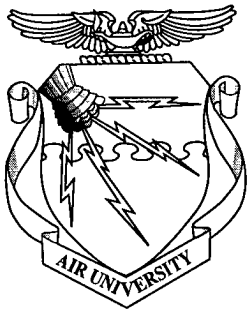
Demand the Advantage

When Is Airpower Central to a Campaign?

ERNEST G. HOWARD, LT COL, USAF

School of Advanced Airpower Studies



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Abstract

The purpose of this study is to provide joint planners with a means to determine when airpower should be the central element of a campaign. Additionally, this study can help planners understand not only when airpower should support surface forces but also when the roles of joint forces may be expected to change as the campaign progresses.

To accomplish its purpose, this study provides an analysis of two island campaigns in which air, land, and sea forces were employed; the Guadalcanal Campaign of 1942 and the South Atlantic War of 1982. This study documents and analyzes how the role of airpower evolved and changed in relative significance to other forces during course of each campaign.

Finally, this study may provide a useful framework for campaign analysis, in general, or for the study of the historical practice of operational art. Future students, who wish to research the tensions and complementary effects associated with planning joint operations and employing joint forces, may capitalize on the framework used in this study to pursue their studies.

About the Author

Lt Col Ernest G. Howard (BA, University of Montevallo; MA, Golden Gate University) is a fighter navigator/weapons systems officer. A recent graduate of the inaugural class of the School of Advanced Airpower Studies, he was just assigned to the Plans Directorate, Strategic Command, Offutt Air Force Base (AFB), Nebraska. Also a graduate of Air Command and Staff College (ACSC), his previous assignment was chief, Theater Plans and Forces, ACSC, Maxwell AFB, Alabama. Previous assignments include chief, Professional Development, and chief, Fighter WSO–EWO Management at Langley AFB, Virginia, and chief, Weapons and Tactics at Moody AFB, Georgia.

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I am grateful to Dr. Harold R. Winton, professor of Military History, who gave me the opportunity to study theory and doctrine in his research seminar and thereafter supported and encouraged this study. I acknowledge three officers who made contributions to this study: Lt Col Kurt A. Cichowski, Lt Col Silvanus T. Gilbert III, and Maj Stanley J. Dougherty. Colonel Cichowski gave me his fighter experience in criticizing my early drafts. Colonel Gilbert gave freely his knowledge and special insight into airpower doctrine. Major Dougherty drew my attention to pertinent aspects of airpower theory and offered many suggestions to improve this study.

Introduction

Since the inception of airpower, military theorists and practitioners have debated the proper roles, functions, and uses of airpower.[1] Airpower theorists have traditionally viewed airpower as a means to conduct air warfare, while surface warfare theorists have generally viewed airpower as an adjunct means to accomplish land or naval objectives.[2] Consequently, officers responsible for joint campaign planning do not always fully understand airpower's capabilities or the extent to which airpower can influence campaign objectives. The planner may need to know the answer to a basic question: Under what conditions does airpower become the central element of a campaign or a particular phase of a campaign? This study answers that question and thereby provides the campaign planner with a means to determine when airpower should be the central element of a campaign. Additionally, this study will help the planner understand when airpower should support surface forces, and when roles of the forces may be expected to change as the campaign progresses.

To find the answer to the question, this study examines the historical practice of operational art. Specifically, it analyzes the Guadalcanal Campaign of 1942–43 and the South Atlantic War of 1982. The campaigns were chosen because they involved elements of air, land, and sea power and demonstrated some of the tensions and complementary effects inherent in planning and employing joint forces. Finally, this study documents how the role of airpower evolved and changed in relative significance to other forces during the course of the campaigns.[3]

The framework for analyzing airpower's role in the campaigns rests on the historical narrative revealing which of the forces was the central element in each of the major phases of the campaigns. With regard to airpower, either or both of two criteria must be met for airpower to be considered the central element of the phase. Specifically:

1. Was airpower employed as the sole instrument of the campaign or phase of the campaign?
2. Did air forces become predominant in campaign execution as the campaign evolved?

Once the central element of each phase is determined, the analysis will investigate what conditions appeared to make airpower the critical element or, conversely, which placed airpower in a support role. The analysis is based on examining the following conditions during each phase of both campaigns:

- What was the primary function of the phase?
- What was the prevailing environment or climatic conditions that existed during operations?
    1. Daylight or darkness?
    2. Weather conditions?
    3. Visibility?

- What topographic or geographic conditions prevailed during operations?
- What concentration of forces or force composition prevailed during the phase?
    1. Were forces concentrated or dispersed?
    2. Did similar or dissimilar forces engage each other?
- What capabilities did each force possess?
    1. Speed?
    2. Range?
    3. Persistence?
    4. Mass?
    5. Maneuver?

Once these questions are answered they can be compared and contrasted for each phase of the campaign to determine similarities and differences of the central element and, in particular, conditions that shaped airpower's role. With the comparisons, some conclusions can be drawn concerning the role of airpower and its place within each campaign. From these conclusions, the planner may be able to decide more effectively when airpower should be the central element of the campaign or a phase thereof.

Guadalcanal Campaign (7 August 1942–7 February 1943)

Strategic and Operational Context

The American conduct of the Pacific War was influenced to some extent by two basic concepts developed prior to American entry into World War II. The first concept asserted that the course of a Pacific War would be mostly decided by naval surface engagements. The second concept maintained that an invasion of Japan would be essential to achieving victory.[4] The impact of the two concepts served to retard the development of airpower's overall capabilities because airpower was considered ancillary to surface forces and, therefore, an adjunct means to achieve surface objectives. The planning for the Guadalcanal Campaign occurred under the general influence of the two concepts as modified by subsequent combat experience with Japan at the apogee of its military expansion.[5]

Following the naval victory at Midway, the United States gained a large measure of the initiative in the Pacific. However, before the Battle of Midway, the Japanese had already moved to extend their defensive perimeter by occupying Tulagi and Guadalcanal in the Eastern Solomon Islands.[6] The Japanese believed they needed to develop Tulagi and Guadalcanal as a seaplane and airfield complex, respectively. Doing so would safeguard their main operating base at Rabaul by holding forward, fortified air bases to meet Allied attacks.[7]

On 5 July 1942, Allied reconnaissance aircraft discovered the Japanese were building an airstrip on Guadalcanal's Lunga Point.[8] What the Japanese

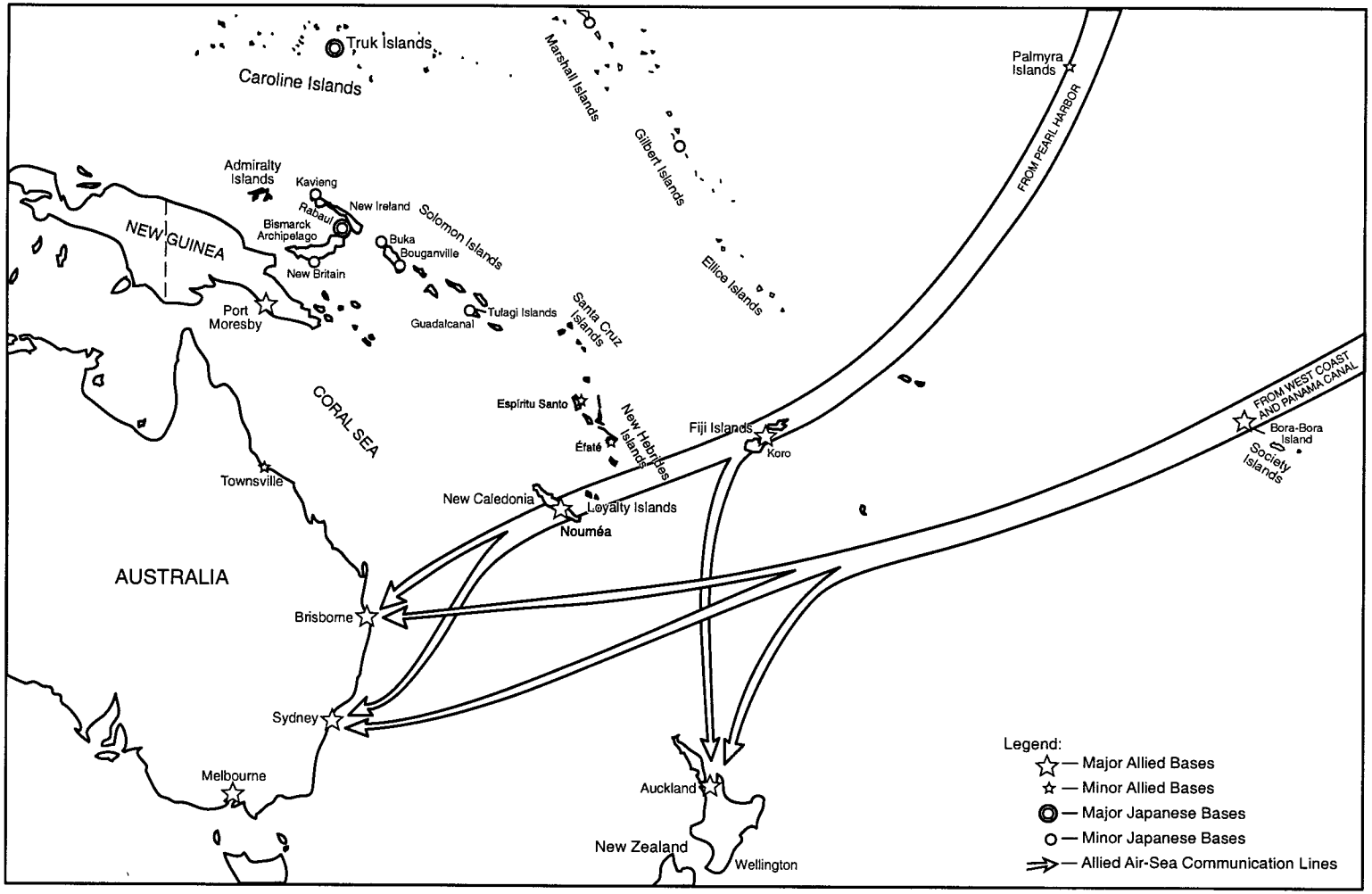
planned as a forward base complex to defend Rabaul, the Allies viewed as an attempt to cut the sea lines of communication to Australia (fig. 1).[9] The Allies, who were already planning a three-phase offensive starting with Tulagi and the Santa Cruz Islands and ultimately leading to Rabaul, were now forced to reconsider their plans with a new sense of urgency.[10] On the afternoon of 5 July, Admirals Ernest J. King and Chester A. Nimitz deleted the Santa Cruz Islands from the initial phase of the plan and substituted Guadalcanal.[11]

Planning and Landings

Fortunately for the Allies, 1st Marine Division planners had intended to land a substantial number of troops on Guadalcanal, as they started deliberate planning to "seize Tulagi and adjacent positions" as part of the original Solomons campaign proposal.[12] For Maj Gen Archer Vandegrift, commander 1st Marine Division, and Adm Robert L. Ghormley, commander, South Pacific Force and Area, the selection of objectives on Guadalcanal was relatively simple. They believed air superiority would be critical, so the principal objective would be the airfield at Lunga Point. Capturing the airfield would give the Americans control of the Southern Solomons and adjacent waters. The airfield also assumed great importance because Japanese aircraft were numerous in the Solomons and within range of Guadalcanal, while American land-based aircraft were few.[13]

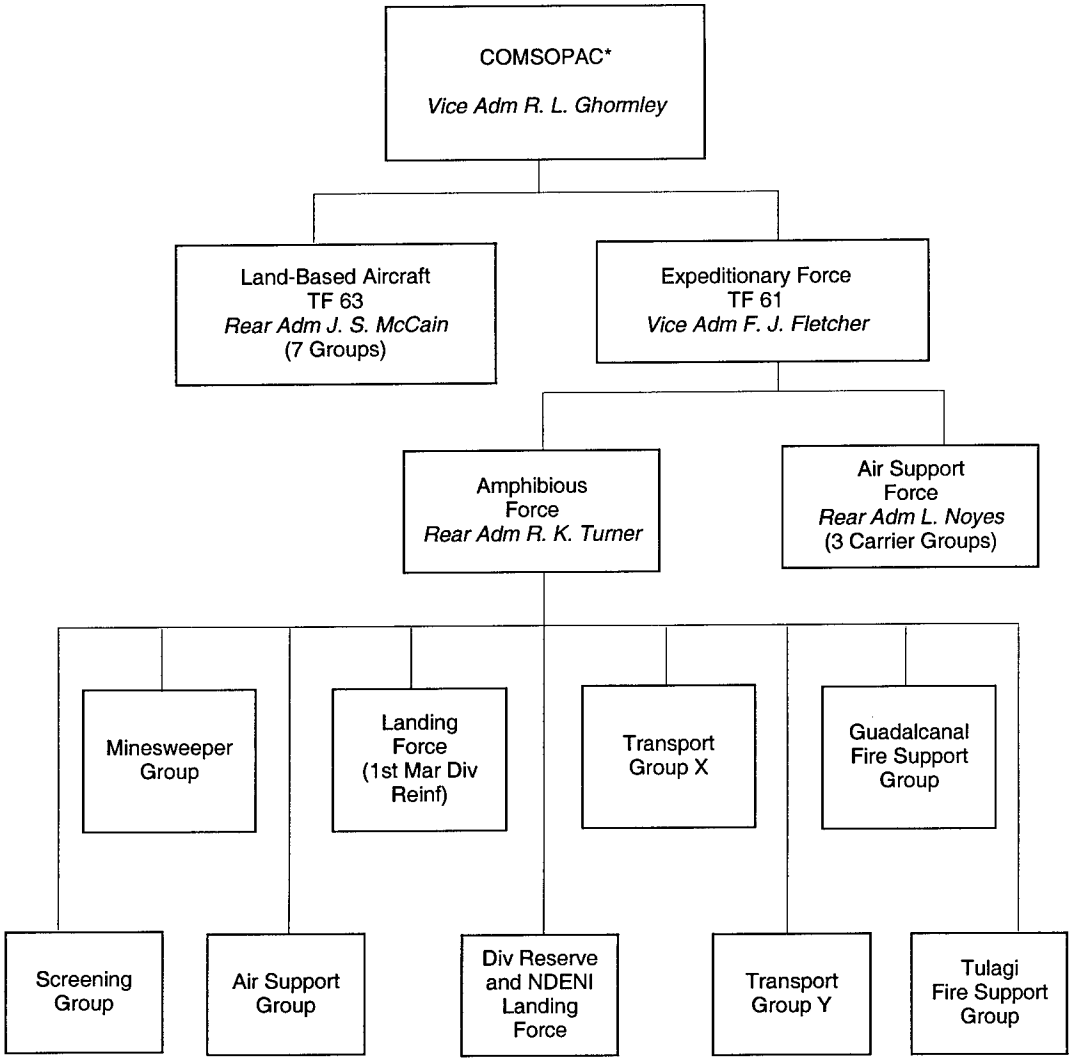
The aircraft support plan developed for Guadalcanal called for four basic actions. First, prior to D day, land-based bombers would perform counterair missions, attacking hostile airfield and antiaircraft installations in the Tulagi-Guadalcanal area.[14] To support the landings, Gen George C. Kenney, commander of the South West Pacific Area Air Force, proposed counterair missions against the Japanese airfields near Rabaul and other Japanese airfields in the area.[15] The second action called for fighters to maintain cover for the landings.[16] Cover for the landings would come from the carriers USS *Enterprise,* USS *Saratoga,* and USS *Wasp.*[17] However, Adm Frank J. Fletcher, the task force commander afloat (figs. 2 and 3), announced that the carriers could cover the landing for a maximum of 48 hours.[18] Fletcher's announcement made the capture of the airfield even more important, putting great pressure on the surface ships given the task of protecting the transport ships supporting the landings from air, surface, and submarine attack. The third task called for carrier-based Marine aircraft to station themselves over Guadalcanal-Tulagi during daylight for close air support until they could operate from the airfield on Guadalcanal. After gaining air superiority over Guadalcanal and supporting the landings, airpower would be used to "neutraliz(e) . . . hostile forces on Guadalcanal-Tulagi" by performing interdiction.[19]

Guadalcanal was the Marine Corps's first amphibious operation of the war, and it quickly became a logistics nightmare for the lst Division.[20] The Navy could not secure adequate sealift for all the troops and their equipment. As a result, the landings and subsequent operations required continuous,



Source: John Miller Jr., *United States Army in World War II*, vol. 2, *The War in the Pacific, Guadalcanal: The First Offensive* (Washington, D.C.: Historical Division, Department of the Army, 1949).

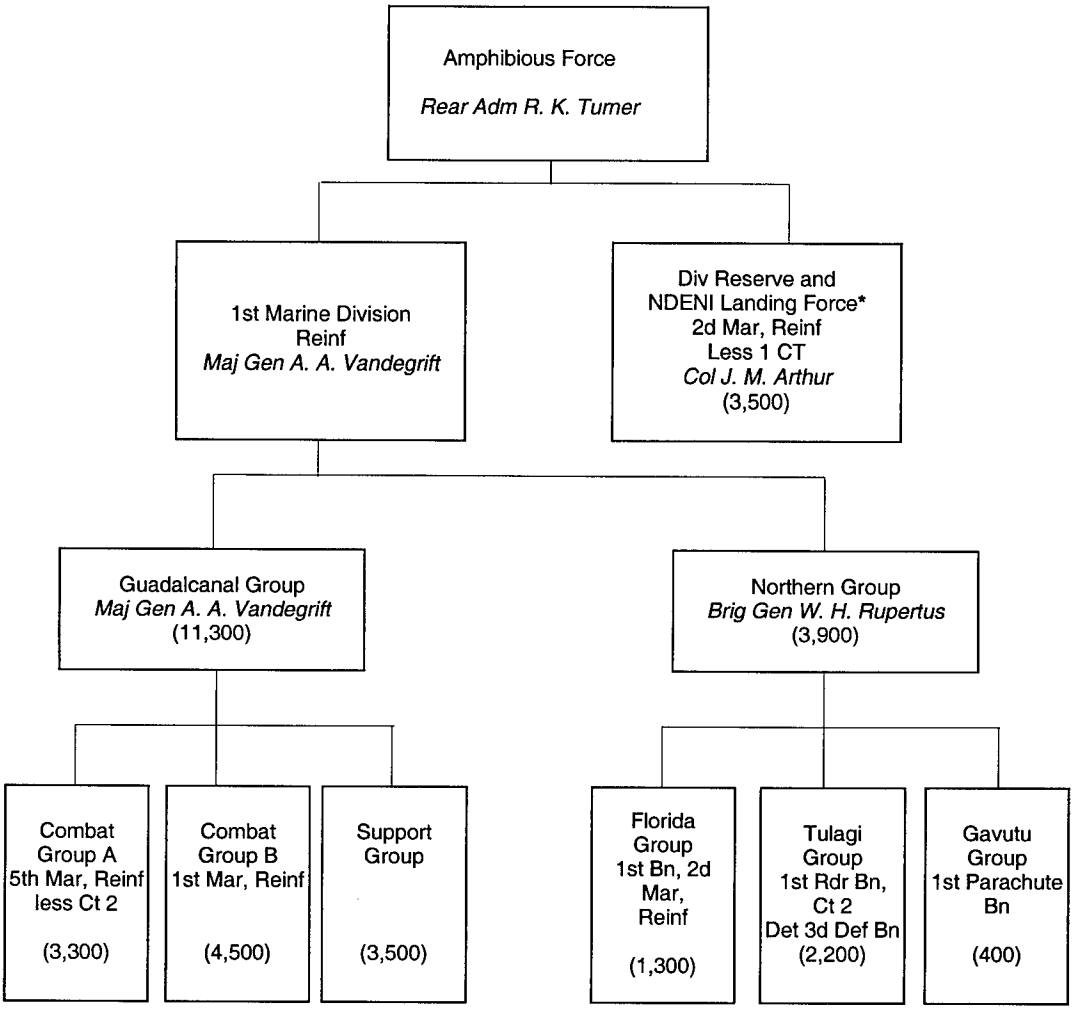
Figure 1. Map of Strategic Situation



*Replaced by Admiral Halsey, 18 October 1942

Source: John Miller Jr., *United States Army in World War II*, vol. 2, *The War in the Pacific, Guadalcanal: The First Offensive* (Washington, D.C.: Historical Division, Department of the Army, 1949), 29.

Figure 2. Organization of Forces for Task One



*Division reserve was released to Vandegrift 7–9 August.

Source: Miller, 29.

Figure 3. Organization of Landing Force for Task One

uninterrupted resupply once the invasion began. When Adm Richmond Kelly Turner, the Amphibious Force commander, put to sea, the division's amphibious ships carried 60 days of general supplies and 10 days of ammunition. However, less than half of the vehicles, engineering, and aircraft equipment were placed in early shipments and would, therefore, have to be delivered after the landings.[21] This made success of air operations even more important, especially in keeping the sea lines of communication open.

At 0910, 7 August, one week before Japanese fighters were to begin using the airfield,[22] Marines waded ashore on Beach Red, five miles east of Lunga Point.[23] The landings achieved total surprise and went largely as planned, with the first two Marine battalions landing without firing a shot.[24]

Although the Marines got ashore with considerable speed, the very success of the landings brought its own dangers and demonstrated the deficiencies of logistics planning. Without vehicles, equipment, manpower, and organization, the Marine ground party was overwhelmed and could not unload landing craft as quickly as the transports could send them ashore.[25] Grounded landing craft and containers littered the beaches and surf. Nonetheless, the Marines were able to push inland, but the congestion made the landing very vulnerable to air attack. However, Japanese air units in the area were preparing to support the Japanese operations on Papua and, as at Midway, the Japanese lost precious time reconfiguring aircraft to attack the American transports at Guadalcanal.[26]

General Vandegrift assumed Guadalcanal was manned by five thousand Japanese, including a regiment of twenty-one hundred infantry.[27] However, the main combat force was on Tulagi and Guadalcanal was manned by only twenty-five hundred construction troops, with a guard unit of 150 men facing a landing force of ten thousand Marines.[28] As a result of the overwhelming American strength on the island, the Marines were able to capture the airfield the following day, 8 August.[29]

Early Operations of the Japanese Defense

Even with his success, General Vandegrift feared a rapid counterstroke. He was particularly concerned the Japanese might bring their superior numbers in the area to Guadalcanal and attempt a forced lodgment against the Marine beach defenses with armored landing craft, naval gunfire, and aircraft, thereby destroying Marine forces on the island.[30] The Japanese did react quickly, but it may have worked to the advantage of the Americans.

The Japanese had underestimated the size of the American landing force, believing it to be only the tentative beginning of a larger operation.[31] As a result, the Japanese did not pause to prepare an adequate counterlanding, and their efforts to retake Guadalcanal were piecemeal. For example, the first units sent to Guadalcanal set sail at 2200 hours on 7 August, the night of the landings. However, they were recalled to Rabaul the following day after learning the airfield had been captured by the Marines.[32] Although the speed of the Japanese response may have hurt their efforts to effect a forced

lodgment on the island, their efforts at sea and in the air had an early influence on the campaign.

As soon as Adm Isoroku Yamamoto learned of the American landings, he ordered Adm Gunichl Mikawa, commander of Eighth Fleet, Outer South Seas Force, to attack the ships at Guadalcanal with every available land-based bomber.[33] At Rabaul, the 25th Air Flotilla with 32 Betty bombers and other attack aircraft, escorted by 18 long-range Zeroes, took off at 0930 for Guadalcanal. The Japanese aircraft approached their targets in early afternoon and were engaged by Wildcats from *Enterprise, Saratoga,* and *Wasp.* In the air battle that followed, the Zero proved superior to the Wildcat, downing one-half of those participating. However, clouds obscured the American transports when the Betty's arrived and their bombs were released into the sea with no damage to the landing force.[34] Nine Japanese dive-bombers arrived at midafternoon, hit one destroyer and set fire to one transport, both eventually sank.[35] However, after the initial air battle, the Japanese had not achieved their objective of disrupting the American landing. Nonetheless, the air raids continued the following day with great effect. Most significantly, Admiral Fletcher, who had promised two days of carrier support for the landings, was compelled to withdraw his carrier force on the evening of 8 August. Fletcher, who had lost the USS *Lexington* at Coral Sea and the USS *Yorktown* at Midway, was concerned about Japanese air attacks and was determined not to lose a carrier at Guadalcanal.[36] By 9 August the Japanese were flying over Guadalcanal unopposed by American aircraft.[37]

The Battle of Savo Island

In the meantime, Admiral Mikawa organized his warships for an engagement against the American transports and sailed with a force of seven surface combatants on 8 August.[38] The ships passed undetected south of Savo Island into the sound between Guadalcanal and Tulagi.[39] Although the Japanese fleet was spotted steaming southeast toward Guadalcanal, the reports were delayed eight hours because the search pilot did not break radio silence to report the sighting while airborne. Furthermore, the ships were misidentified and were reported to have seaplane tenders in the force. The information led Admiral Turner to believe the Japanese would strike by air attack and, therefore, would not make a night attack.[40] The Japanese attack was, in fact, made at night, with naval artillery and torpedoes—a form of naval warfare at which the Japanese were well trained and experienced.[41] In 30 minutes four Allied ships were sunk and three others damaged.[42] The Japanese force escaped almost unscathed, the only loss coming at the hands of the American submarine S-44 on the morning of 10 August as Mikawa's force returned to Rabaul.[43] The Battle of Savo Island was the first large surface action since the Spanish-American War fought by a predominantly American force. The battle was not decisive, but it initiated a series of naval surface engagements that would characterize much of naval warfare in the area for the next year. Although the battle of surface forces resulted in the loss of four

surface combatants, the Navy achieved its objective. The Japanese did not reach the American transports.[44]

Force Buildup and Expansion of the American Perimeter

What followed for the next two weeks was an attempt by both sides to build up their forces on the island. Thus far, the Japanese had resisted the American landings with the air and naval resources on hand, with the action based on the initiative of the local commanders.[45] The Japanese believed the island had to be reinforced and held. To accomplish their reinforcement, the Japanese would have to control the air and sea around Guadalcanal. On the other hand, General Vandegrift knew he must prepare a fortified perimeter and provide reinforcement and adequate supply to his command if he were to eliminate Japanese army units from Guadalcanal. Both sides understood the airfield, now named Henderson Field, would give the Americans the permanent airpower to resist Japanese reinforcement and counter both Japanese naval and air bombardment. On 20 August the first two of 15 Marine fighter and fighter-bomber squadrons landed on Henderson Field.[46]

During the buildup the Japanese sent scattered reinforcements and supplies to their forces on Guadalcanal. However, most of the Japanese reinforcement came at night by fast destroyers, which were unsuited for the task. During the day, the Americans controlled the air, and thus the sea, around Guadalcanal. However, at night, when darkness hampered flight operations, the Americans would cease flying and the Japanese would regain control of the sea, which allowed the "Tokyo Express" to resupply their units ashore.[47] During this period the Japanese were able to land a one thousand man unit on the island, but that was still inadequate in the face of 15,000 Marines. The Japanese unit was destroyed during the night battle at Tenaru River, 20–21 August.[48]

This period also marked the beginning of a series of long-range air battles over Guadalcanal with Marine, Navy, Army Air Force, and New Zealand air force units participating in actions against the Japanese. The air campaign raged for six months with both carrier-based fighters and fighter-bombers, augmented by land-based bombers to protect Marine positions from air attack and destroy Japanese shipping inbound to Guadalcanal.[49] Henderson Field became an unsinkable aircraft carrier, critical to the campaign, and it could only be captured by reinforcing Japanese units on the island.[50] A great battle with significant reinforcement was imminent if the Japanese were to capture Henderson Field and retake Guadalcanal.

The Battle of the Eastern Solomons, 22–25 August

Having decided that Guadalcanal must be retaken, the Japanese army command on Rabaul planned a reinforcement with fifteen hundred additional men, still apparently unaware that 15,000 Marines were on Guadalcanal.[51] However, the Japanese had lost their best opportunity to reinforce their small garrison on Guadalcanal by failing to exploit their victory at the Battle of

Savo Island.[52] The Japanese Combined Fleet sortied on 23 August to destroy the American Southwest Fleet, recapture Guadalcanal, and protect their convoy of men and equipment committed to the landings.[53]

Admiral Yamamoto assembled two task forces totaling 58 ships, including six carriers with a total of 177 planes.[54] Reconnaissance aircraft and Australian coast watchers alerted the Navy to Japanese preparations.[55] Admiral Fletcher had three carriers with a total of 259 planes. However, American strength was reduced by one-third when a faulty intelligence assessment persuaded Admiral Fletcher that it was safe for *Wasp* to sail south and refuel, thus equalizing the strength of the two air arms.[56]

Yamamoto believed his forces must accomplish two tasks for the Japanese landings to succeed. First, Yamamoto needed to destroy the American fleet; and second, he needed to protect the Japanese convoy en route to Guadalcanal. Yamamoto understood the Japanese situation on Guadalcanal was critical and the reinforcements that were desperately needed could not be delivered as long as the American fleet existed around the island. Furthermore, the fleet supplied both Henderson Field and Marine ground forces, and therefore had to be destroyed. To accomplish the first task Yamamoto planned to sink the American carriers, destroy the remaining defenseless surface ships, and then put Henderson Field out of action with Japanese carrier-based aircraft.[57]

Yamamoto intended to accomplish his second task by subjecting Henderson Field and the Marine ground units to an intense night bombardment from his heavy cruisers while the convoy slipped into Guadalcanal under cover of darkness. To help accomplish both tasks, Yamamoto stationed the small carrier *Ryujo* one hundred miles from Adm Chuichi Nagumo's main-carrier force and dedicated it to attacking Henderson Field.[58] Yamamoto believed that stationing the carrier away from the main force with its own escorts might conceal its location and make the attacks on the airfield more successful if the main body was engaged by American airpower.[59]

Midmorning, 24 August, air reconnaissance made contact with the Japanese carrier *Ryujo* and Admiral Fletcher ordered units of *Enterprise* to locate and attack the carrier. Over 20 aircraft armed with bombs took off at 1230 to engage *Ryujo*. An hour later Fletcher launched an additional 30 bombers and eight torpedo planes from *Saratoga* to join those already airborne.[60] In the meantime, *Ryujo* launched 21 aircraft joined by bombers from Rabaul for an attack on Henderson Field.[61] They were detected by *Enterprise's* radar and engaged by units on the island. The airfield suffered only minor damage, but the Japanese lost more than 20 aircraft to American fighters. As the air battle over Guadalcanal raged, aircraft from *Saratoga* found *Ryujo* turning into the wind to launch her remaining combat air patrol aircraft against *Saratoga's* aircraft. *Ryujo* would not be afloat to recover her aircraft. It took hits from four to 10 one thousand-pound bombs and one torpedo before it sank.[62]

Next came the Japanese counterstrike. Anticipating it, Fletcher retained over 50 fighters aboard *Enterprise* to meet any attackers when he launched

the American attack on the Japanese task forces.[63] At 1638 Japanese dive bombers with fighter escorts attacked *Enterprise*. *Enterprise* took three bombs and was burning, but there was no damage to her hull.[64] As *Enterprise* burned her complement of aircraft recovered on Guadalcanal, further bolstering the island's defenses.[65] Ironically, by putting *Enterprise* temporarily out of the fight and accomplishing part of his first objective, Yamamoto made accomplishment of his second objective much more difficult.

Nevertheless, the Japanese instrument to retake the island, a convoy with fifteen hundred troops, was still steaming for Guadalcanal.[66] It was a long night for the combatants with the Japanese launching both aerial and naval bombardments against the island, and Guadalcanal's air units retaliating.[67] On the morning of 25 August, Marine dive bombers looking for the Japanese carriers, instead, found the transports 125 miles from Guadalcanal.[68] Aided by eight B-17s from Espiritu Santo, the aircraft sank a transport and destroyer.[69] What remained of the convoy had to retire.[70]

The Battle of the Eastern Solomons prevented the Japanese convoy from landing on Guadalcanal. It was also the third battle of the war where the surface units never made contact and the outcome was decided by air action only. It was, however, unique in that it was the first time a Japanese assault force and convoy had been turned back solely by air action.[71]

The Battles of September and October

Due to the Tokyo Express nighttime reinforcement, the Japanese managed to get sixty-five hundred troops on the island by mid-September. These troops attacked Lunga Ridge, near Henderson Field and a key to the defensive perimeter. However, they were repulsed by the Marines who exchanged two hundred men for two thousand Japanese in the fighting.[72]

Over the next month, a series of reinforcements was made by both sides. American strength on Guadalcanal was brought to over 23,000 men, while the Japanese strength was about 13,000.[73] A series of battles, centered around the airfield, took place with the largest battle beginning 22 October as a double envelopment of Henderson Field. The Japanese offensive was one of the most vicious of the Guadalcanal campaign, but the Marines held and the Japanese retired on the morning of 26 October.[74]

While the Japanese attack on Henderson Field was being repulsed, Adm William F. "Bull" Halsey, now in command of the South Pacific Area, decided to take the battle to the enemy.[75] Yamamoto also sought decisive battle with the American fleet, particularly given the continuing failure of the Japanese army to recapture Guadalcanal. Yamamoto sent his forces south on 25 October divided in two task forces.[76] Early on 26 October the forces made contact, with both forces sighting each other at approximately the same time. Each fleet launched air attacks simultaneously, while maintaining a reserve for combat air patrol in the event of enemy attack.[77] As the battle progressed, the Americans hit and damaged the carriers *Zuiho* and *Shokaku*. In the meantime, the *Hornet* was found in the open and attacked by dive bombers.

Later the *Enterprise* was also damaged by dive bombers. By midafternoon 26 October the *Hornet* was still under attack, taking a mortal blow from the Japanese bombers. The *Hornet* was abandoned while the crippled *Zuiho* and Shokaku steamed north to safety.[78]

As both sides retired, the Battle of the Santa Cruz Islands was over. *Enterprise's* losses were not heavy; and although the *Hornet* was lost, her aircraft were not, having recovered on the *Enterprise*. The American carriers had taken a beating. The Japanese had won a victory, but a Pyrrhic one, losing over one hundred aircraft, although none of their ships were sunk.[79] Once again the surface units never made contact and the decision came from air units alone. For the time being, the situation at sea was stalemated by the Japanese failure to isolate Guadalcanal, thereby giving the Americans time to reinforce and prepare for the next battle.[80] The battle was a turning point because the Japanese subsequently stopped their continuous air attacks on Henderson Field and Marine positions on Guadalcanal. When they did attack, the Japanese often jettisoned their bombs at the sight of American fighters rather than proceeding toward their targets.[81]

As October closed the Americans were able to take the offensive on Guadalcanal because American strength had grown to the equivalent of two divisions and the threat of Japanese air attack was greatly reduced.[82] As the Marines began to meet success on the ground the Japanese finally decided to attack Guadalcanal with a sizable force. They prepared a reinforcement contingent of 13,000 men in 11 transports protected by 11 destroyers and four large surface combatants to prepare the landing site and shell Henderson Field.[83]

The Naval Battle of Guadalcanal, 12–15 November

Phase one of the battle began as Admiral Turner's Task Force was unloading troops and equipment on Guadalcanal. Learning of the approach of Japanese Betty bombers and dive bombers, Turner quit unloading. As Turner sailed he was immediately engaged by the aircraft. In the action that followed, a destroyer and cruiser were damaged. Adm Daniel J. Callaghan, commander of the surface support task group, escorted the transports safely away and reversed course toward the oncoming Japanese task force designated to shell the island installations. Late night 12 November Admiral Callaghan's force made radar contact on the Japanese bombardment force.[84] As the forces closed to near point-blank range the Japanese sighted the American task group and opened fire.[85] In the fighting that followed, losses were heavy on both sides, with the Americans losing two admirals, one of them Callaghan. Tactically a draw, the first phase of the battle was strategically an American success. The planned bombardment of Henderson Field was repulsed and the convoy of 13,000 troops was turned back.[86]

Phase two began during the daylight of 13 November with intensive air activity on both sides. Yamamoto remained determined to land the reinforcements on Guadalcanal. As the Japanese Task Force regrouped, he

ordered the convoy to start south again. By noon the Japanese Task Force was reunited and within minutes was attacked by dive bombers from Guadalcanal. The dive bombers were joined by B-17s and the mixed force damaged one transport and sank two others. These losses, added with losses from earlier action, left the Japanese with only four fully capable transports and four others damaged.[87]

In the meantime, the American Task Force—centered around *Enterprise*—still remained south of Guadalcanal looking for the Japanese carriers. With good air reconnaissance and the subsequent dive bomber attack, Admiral Halsey was fairly certain as to the size, location, and objectives of the Japanese landing forces. With this information Halsey decided to protect his only carrier, and station *Enterprise* south of Guadalcanal. It would be up to the surface combatants to prevent a bombardment of Henderson Field. However, the order came too late, and no surface combatant could reach the area before daybreak on 14 November, which left nothing at sea between Henderson Field and the Japanese.[88] As a result, Henderson Field suffered a deluge of fire from the Japanese ships. However, miraculously, when the losses were counted the following morning, only a few planes had been lost and the field remained operational.[89] In the meantime, the remaining Japanese transports with troops, escorted by a large combatant force, were steaming south toward Guadalcanal.[90]

As morning broke phase three of the battle began with reports revealing the location and size of the approaching Japanese force. Aircraft from Henderson Field and later *Enterprise* attacked the force, concentrating on the surface escorts. In the initial attacks, the Japanese lost one heavy cruiser and suffered damage to four others. The next wave of attackers, consisting solely of land-based dive bombers, torpedo bombers, and B-17s concentrated on the transports. Later *Enterprise* launched its second strike of bombers against the transports. These planes recovered at Henderson Field, reconfigured, and launched to fly another strike against the transports before returning to *Enterprise*, thus increasing their combat sortie rate. At a cost of only five aircraft, the Americans sank seven Japanese transports and many of the 13,000 troops with airpower alone. However, there were still four damaged transports and 11 surface combatants approaching Guadalcanal.[91]

Many lessons were learned that day concerning airpower. First, both sides learned what happens to lightly protected ships sailing under enemy-controlled airspace. The destroyer screen with fighter cover was ineffective in defending the landing force. Second, more antiaircraft defenses were needed to protect the fleet. Third, the Japanese realized they needed another airfield in the area to protect their ships running the "slot." Finally, the Americans witnessed how the effectiveness of carrier-based aircraft could be increased when given the option of using an unsinkable "land carrier" during combat operations.[92]

The battle ended with a surface engagement over the night of 14–15 November against the remaining ships of the Tokyo Express trying to land at Guadalcanal. In the action a Japanese battleship and destroyer were lost at

the cost of three American destroyers sunk and the battleship USS *South Dakota* damaged. For a time the battle raged between 14 Japanese combatants and the lone United States Navy battleship, *Washington.*[93]

In the end the Japanese had to withdraw. However, they managed to land two thousand men under the extreme combat conditions of the previous three days. The Japanese soldiers were without supplies. During the battle the Japanese lost all of their supplies except 260 rounds of artillery ammunition and a four-day supply of rice for the troops ashore.[94] The net result of the battle was to give the Americans control of the air and sea around Guadalcanal and assure final victory in the campaign.[95]

Securing Guadalcanal and Japanese Withdrawal

On 18 November General Vandegrift began offensive operations along the western coast with other units pushing eastward to eliminate the Japanese from the island.[96] As the attacks progressed, the Marines on Guadalcanal received the good news that they would be relieved by the American division of the United States Army, commanded by Maj Gen Alexander M. Patch. General Patch assumed command on 9 December.[97]

It would take two more months of bitter fighting for General Patch to secure the island and physically drag the Japanese from their concealed positions. The final blow came to the Japanese in the last week of January and first week of February when the Japanese finally withdrew from Guadalcanal on 6 February 1943.[98] Prior to the war the Army knew that Japanese defensive doctrine was based on establishing forward positions which were to be held "to the last extremity."[99] So it proved on Guadalcanal. After a tenacious defense the Japanese realized they could not take Guadalcanal and began withdrawing the remaining 13,000 troops on 1 February 1943. Due to a skillful deception, the Japanese completed the evacuation on 7 February without being detected by the Americans.[100]

Analysis—Guadalcanal

Determining the Central Elements

Planning and Landings. Clearly the Guadalcanal Campaign was planned as an amphibious operation. Although the objective of the landing was to capture the Japanese airfield on the island, the instrument planned to gain access to the airfield was the landing force. As a result the landing force was the central element during planning and the landing phases of the campaign (table 1). An amphibious operation requires naval transport to arrive at the objective area, but it is clear that the transport supports the landing force. Finally, the air support plan made it very clear that airpower was considered a support element for the landings.

Early Operations. After the initial success of the landings, the Japanese launched aircraft against the landing force to disrupt the landings. Although

Table 1

Determining the Central Element—Guadalcanal

↓Phases Elements→	Air	Land	Sea
Planning and Landings		★	
Early Operations	★		
Savo Island			★
Force Buildup		★	
Eastern Solomons	★		
September/October Battles	★		
Naval Guadalcanal	★		
Consolidation and Withdrawal		★	

the Japanese failed to achieve their primary objective, the presence of Japanese airpower forced Admiral Fletcher to consider the risks of exposing his carriers to Japanese air attack and compelled him to withdraw his carriers beyond Japanese aircraft range. Fletcher's decision did two things. First, it left both the Marines and the transports vulnerable to air attack. Second, it placed Guadalcanal at or beyond the range of the fighter and attack aircraft tasked to support the landings. Concerns over Japanese air attack and the resulting decision to withdraw the carriers elevated airpower to the central element of the phase, although Japanese airpower failed to have a decisive impact on the landings.

The Battle of Savo Island. Although the battle resulted in the loss of four American surface combatants and proved to be indecisive, the surface fleet prevented the Japanese from engaging the American transports supporting the early landings on Guadalcanal. As a result the sea arm was the central element because the Japanese fleet was beyond the reach of land forces; and airpower had been withdrawn earlier on the carriers. Although the battle area may have allowed land-based bombers to enter the fight, darkness precluded both accurate target identification and accurate weapons delivery.

Force Buildup. During this period the airfield was completed and named Henderson Field. Although important, it was overshadowed by the Marines who held the airfield, completed it and expanded the perimeter around it to keep it safe from Japanese attack from within the island. The airfield allowed

the Americans to assume control of the air and sea around Guadalcanal during the day. Likewise, naval transport was important in allowing the force buildup to occur. However, the failure of both air and sea power to stop the Tokyo Express from reinforcing the island relegates both to support status behind the land component, which was the central element of this phase.

Battle of Eastern Solomons. Clearly airpower was the central element of this phase. The battle was beyond the reach of land forces. It was also the third battle of the Pacific War in which naval surface forces never made contact. Additionally, the battle marked the first instance that a Japanese assault force and convoy were turned from an objective by air-action alone.

Battles of September and October. During this period the Marines successfully defended Henderson Field from Japanese counterattacks and extended the perimeter around the field. The defensive action on the island was vital to keeping the airfield operational. However, the efforts of the Marines were overshadowed by the Battle of the Santa Cruz Islands. During the battle *Hornet* was lost and *Enterprise* was damaged. However, *Hornet's* aircraft recovered on *Enterprise*, which remained seaworthy. The Japanese lost no ships, but lost over 100 aircraft. In addition, two Japanese carriers were damaged and withdrawn from the fight. Once again, surface units never made contact. The importance of the battle was twofold. First, the Japanese were unable to isolate Guadalcanal; and second, Japanese air strength was depleted to the point they could not continue daily air attacks on Guadalcanal. Furthermore, removal of Japanese carriers placed Japanese fighter and attack aircraft at the extreme limits of their operational range when attacking Guadalcanal, while the Americans were literally fighting over their own airdrome.

Naval Battle of Guadalcanal. The Naval Battle of Guadalcanal began with a Japanese air attack on American transports unloading troops and supplies at the Guadalcanal anchorage. Admiral Turner was compelled to stop unloading and leave the island to avoid air attack. In a night engagement that followed the Japanese air attack the United States Navy lost two admirals while preventing Japanese landing forces from reaching Guadalcanal. Although the surface engagement prevented a Japanese landing early in the battle, it was not the central element of the campaign because most of the destruction and damage to the Japanese fleet came at the hands of airpower in subsequent air attacks. The battle concluded with a night surface engagement against the few remaining Japanese transport and escorts. However, airpower had controlled the air and sea around Guadalcanal, destroying virtually all equipment and supplies of the landing force, that came ashore with little more than two thousand men of the planned 13,000 man force.

Consolidation and Withdrawal. Although both airpower and sea power contributed to the successful conclusion of the campaign, the final offensives under General Vandegrift and, later, General Patch were central to the final phase of the campaign. Airpower provided both close air support and interdiction of sea lines of communication, while sea power increased its

control of the sea. However, the Japanese had to be expelled from the island and land forces were central to the effort.

Analyzing Conditions When Sea and Land Power Were Central

The purpose of this analysis is to determine what conditions existed to place a particular element in either a central or supporting role (table 2). Five conditions were identified for expanded analysis:

1. The function performed by the central element.
2. The prevailing environment or climatic conditions.
3. The topographic or geographic conditions impacting the central element.
4. The force composition or concentration of the central element and adversary.
5. The capabilities the central element brought to the battle.

The central elements of each phase were identified in table 1. Of the phases presented, sea power was determined to be central in one phase while land forces were central in three.

Sea. Since only one phase of the campaign, the Battle of Savo Island, was discovered in which sea power was the critical element, no trend exists. However, with only one exception, the conditions present when sea power was central were uniquely different from conditions present when either land or air were central. For example, sea power was central in the only battle fought exclusively at night. Additionally, sea power was central in the only engagement where only similar forces engaged each other. Furthermore, sea power was central in the only phase exclusively involved with sea control.

Most surprising were the findings in the area of capabilities. One often thinks of ships as possessing inherent maneuverability. However, in this case there was far more mass than maneuver, as the ships sailed predictable tracks very close to each other during the heaviest of the fighting. To some degree, the nature of the archipelagic formation restricted both operational and tactical maneuver. Additionally, sea forces are considered to possess persistence because of their ability to maintain presence in an area for extended periods of time. However, the Battle of Savo Island was the shortest engagement of the shortest phase surveyed. The fighting lasted no more than 30 minutes; and the time between the first shot fired and the last ship sunk was little more than an hour.[101]

Again, with only one phase to examine, there can be no trend analysis. The conditions that existed during the only phase in which sea power was central were different from other phases. Specifically, the function, environment, and capabilities demonstrated during the only sea control phase were found in that phase only. Nonetheless, although sea forces lost four cruisers during the short phase, the Japanese did not disrupt the landings and retired.

Land. Land forces were identified as the central element in three of the eight phases surveyed. With regard to the conditions that existed when land power was central, the highest degree of correlation between phases was found in capabilities land power possessed and the manner in which

Table 2
Analyzing Conditions—Guadalcanal

Conditions→ ↓Phases	Function	Environment	Topography	Forces	Capabilities
Planning and Landings	Offensive Forced entry/invasion Establish beachhead Close operations	Daylight	Island/Archipelago Beach	Amphibious Land Sea Air	Mass Persistence Maneuver
Early Operations	Interdiction Counterair TASMO	Daylight Generally clear visibility	Ocean/Archipelago	Air Sea	Speed Range Mass Maneuver
Savo Island	Sea Control	Night	Ocean	Sea only	Mass
Force Buildup and Perimeter expansion	Offensive/defense Close infantry operations	Day/night Varying climatic	Land - Mountainous jungle (restricted maneuver, somewhat)	Land Air (latter part of phase airfield completion)	Mass Persistence
Eastern Solomons	Counterair TASMO Interdiction	Daylight Generally clear visibility	Ocean	Air Sea	Speed Range Mass Maneuver
September/October Battles	Counterair TASMO	Daylight Generally good visibility	Ocean	Air Sea	Speed Range Mass Maneuver
Naval Guadalcanal	Counterair TASMO Interdiction	Mostly daylight operations	Archipelago (ocean and land)	Air Sea (naval bombardment)	Speed Range Mass Maneuver
Consolidation/ Withdrawal	Offensive Close infantry operations	Day/night Varying climatic conditions	Land - coastal area	Land Sea Air	Mass Persistence

Airpower Central Element

operations were conducted in accomplishing the missions assigned to land forces. However, let us first review the variable conditions of environment, topography, and forces as they applied to land forces in this campaign.

The environment in which land forces were central was highly variable. The only exclusively daylight operation was the initial landing on Guadalcanal. Thereafter, land forces fought day and night, and in highly variable climatic conditions. This in part may be explained due to temporal factors. Land forces tended to fight longer engagements during longer phases than either air or sea forces.

Surprisingly, the topography associated with the phases in which land power was central was highly variable. The landings were obviously on the beaches, which characterize an archipelagic formation. However, the force buildup and perimeter expansion occurred in the interior of the island, which was a mountainous tropical jungle. The final phase, during which the Japanese withdrew, was fought on a fairly narrow coastal plain with the ocean on the northeastern flank and mountainous jungle to the southwest.

The force composition during land-central phases always involved elements of other forces. This was particularly true of the landings and the final phase, during which the Japanese withdrew. The closest land forces came to fighting a pure land versus land phase was during force buildup. During the phase the US Marines were subject to air attack, particularly during the time after the carriers left and Henderson Field was completed. However, the airfield was completed during the end of the phase giving the Marines much needed air cover and close air support to consolidate the perimeter around the only friendly airfield in the Solomons. Completion of the airfield accentuated the American ability to protect friendly lines of communication, and ultimately win the battle of the buildup on Guadalcanal. Nonetheless, land power first captured the airfield, built it, expanded the perimeter around it, and protected it, while bearing the burden of battle during the period.

The condition made up of the functional mission elements of each phase showed a definite correlation, not in mission type, but in the manner that land missions were conducted. Not surprisingly, in every case where land power was central, the dominant feature characterizing land missions was close operations, although missions varied in type from offensive to defensive. Once again this may be explained by the generally longer land phases, during which the relationship between offense and defense is in a continual state of flux due to the dynamic nature of combat.[102]

There appears to be a high degree of correlation between the land central phases with regard to capabilities. In all three phases that land power was central, mass and persistence dominated other capabilities. The only notable exception was with the planning and landing phase during which maneuver was also present. The exception may be explained with regard to the amphibious operation and the unique characteristics of amphibious forces as sea power transitions to land power.

One must understand that correlation does not equate to causation. The absence of obvious maneuver and deep operations does not necessarily mean

land power possesses no capability of maneuver or no ability to conduct deep operations. The reason there appears to be an absence of maneuver may be related more to the variable topography (beach, mountainous jungle, and coastal plain), environment (day, night, and weather), and the relatively small size of the island, than to an inherent lack of capability with regard to land forces during this campaign. All of these factors would reasonably seem to restrict operations to some extent. Nonetheless, during the Guadalcanal campaign, the dominant capabilities of land forces were mass and persistence while operations were characterized by close operations.

Airpower as the Central Element

Airpower proved to be unique with regard to this analysis of the Guadalcanal Campaign. There appears to be a stronger correlation among the conditions present during each phase when airpower was the central element than was the case with land power. For example, during the four phases when airpower was central, the functions performed were always counterair and tactical air support to maritime operations (TASMO); and all but one phase involved interdiction of sea lines of communication. All air-central phases were fought predominantly during daylight when visibility was good. The forces participating invariably were air and sea with both air versus air and air versus sea engagements. Finally, airpower was central when there was a need to bring speed, range, mass, and maneuver to the campaign.

The only condition which seemed to have no correlation between phases was topography. The air-central phases were fought equally over open ocean and areas of land-water contrast. The reason airpower was central over such areas may have several reasons. First, the speed and range of aircraft allowed them to leave ships and land bases to meet Japanese aircraft approaching the fleet or Guadalcanal. Second, target acquisition is easier in an area where cover is not readily available and large targets abound. Although ships can disperse, such dispersal is uniquely different from cover and concealment available to land forces in a tropical, mountainous jungle. Both the preceding reasons give rise to a third. Invariably, aircraft engaged air weapons, whether in the air, at sea, or on land. Furthermore, the impact of airpower could be felt to a greater degree by air and sea forces than by the relatively small number of dispersed land forces. Therefore, the relatively higher concentration of air and sea forces may have worked with the preceding factors to make air versus air and air versus sea engagements the dominant characteristic of air-central phases, which by implication excludes both land topography and land forces.

The preceding paragraph explains to some extent why the missions of air-central phases involved counterair and TASMO in every instance. In two phases surface forces never made contact. In one case the counterair aspect was negative, with Admiral Fletcher ordering his carriers to depart Guadalcanal during the early operations, in part, to take them beyond the reach of Japanese land-based aviation. Therefore, the threat of Japanese air

attack had an early impact on the Americans' capability to employ airpower during the campaign.

Quite often the object of air attacks was the carrier force (counterair). However, to penetrate enemy defenses often required engaging both fighters (counterair) and escorts (TASMO) protecting the carrier. Even when the object of the mission was attacking logistics ships (interdiction), the general principle applied. Therefore, an attack on any naval force (air or sea) required both counterair and TASMO mission elements to have reasonable chance of success.

The characteristic environment of air-central phases was daylight and good visibility. This is not surprising, especially when accounting for the technology of 1942. However, such factors still influence air operations today. Only a minority of modern aircraft have an accurate all-weather delivery capability for conventional weapons. Likewise, few aircraft have a true all-weather, beyond visual range capability for air-to-air combat.[103]

Most striking were the capabilities airpower brought to the campaign. Although it is no surprise that airpower brought speed and range to the campaign (both speed and range are generally accepted characteristics of airpower); what is striking is that airpower brought a combination of both mass and maneuver to the campaign that can best be explained as the capability to bring mass with maneuver to the campaign. In all air-central phases large numbers of aircraft participated, with, at times, hundreds of aircraft airborne simultaneously. Additionally, the forward presence Henderson Field provided gave the Americans the ability to reach the Japanese and strike from almost any direction. Although the ability to employ mass with maneuver was important to air forces, the absence of persistence among airpower's capabilities during the campaign is evident at a glance (see table 2) and important if one is to understand the nature of airpower. Airpower's lack of persistence was a limitation during the campaign and is still a limitation today. It would seem the only way to compensate (and maybe only partially) for this lack of persistence is through greater accuracy and weapons effects.

Airpower Summary—Guadalcanal

The air support plan for Guadalcanal began by calling for airpower to play a support role. After a brief counterair phase, the planners believed airpower would support the landing force with both close air support and interdiction missions. However, they did not foresee engagements such as the Battles of the Eastern Solomons and Santa Cruz Islands, when Japanese convoys were brought under air attack by carrier- and land-based air and turned back by air-action alone. They did not foresee the impact land-based air would have on carrier operations intended to support surface engagements. The defeat of the Japanese Naval Air Force during the campaign ensured Japanese resistance could not be sustained on land, sea, or in the air and was more devastating to Japanese naval aviation than the Battle of Midway.[104] Control of the air was

essential to the success of every major military operation during the campaign. General Vandegrift acknowledged the role of airpower in the campaign noting, surface forces "cannot project anything forward unless adequately covered by air."[105] Airpower controlled its own element during the campaign. Japanese surface forces were unable to cope with American airpower that established local air superiority in all areas of operations, destroying Japanese fighting power on the surface and in the air. In large part airpower was able to do this because of its unique ability to bring mass with maneuver to the campaign.

South Atlantic War (2 April–14 June 1982)

Background, Strategic, and Operational Context

Over 40 years ago, the government of Prime Minister Clement Atlee began the program of decolonization which followed the Second World War. Today only a few scattered colonies remain in the British Empire. They are normally characterized by one of two features: (1) the lack of a self-sufficient economy; or (2) the threat of annexation by a more powerful neighbor.[106] The Falkland Islands are characterized by both, and the Argentinian claim to sovereignty over the islands proved to be the more important in the spring of 1982.[107]

The Argentinians had never actually occupied the islands. Discovery of the islands is usually attributed to the Elizabethan navigator, Capt John Davis, who sighted and charted them in 1592. The first documented landing was made in 1690 when the English ship *Welfare,* commanded by John Strong, sent a party ashore. Captain Strong named the islands Falkland after the then First Lord of the Admiralty. The first settlement was French, founded by Antoine-Louis de Bougainville in 1764. However, in 1767 the French settlement was formally transferred to Spain. As this occurred, the British claimed the islands in 1765 and established a base on them the following year. Superior strength allowed the British to prevail by 1770, but the Spaniards never renounced their claim to the islands. It is from the Spanish claim that the current Argentinian claim arises, because they regard themselves as Spain's inheritors in the South Atlantic.[108]

In 1829 the first Argentinian settlers arrived at the Falklands and found British settlers there. Clashes between settlers led to British administration over the islands when Britain annexed them in 1833 and expelled the Argentinian settlers. Although Argentina did not attempt to establish anymore settlements on the islands, it never relinquished its claim.[109]

More recently, in 1970 Argentina and Britain agreed to settle the dispute by negotiation. A series of agreements was reached over the next decade concerning the relations between the islands and Argentina. However, in 1981 talks began to stall after Argentina rejected a British proposal to "freeze" the dispute for an agreed period of time during which both sides could cooperate to develop the islands' resources.[110] After a period of tensions the Argentinian

military junta decided, during March 1982, to invade and "recover" the Falklands on 2 April.[111] The operation, code-named Operation Azul, was "to land on the Malvinas Islands, to dislodge the British forces and authorities stationed there."[112]

On 2 April the Security Council of the United Nations condemned the Argentinian invasion in Security Council *Resolution 502.*[113] Prime Minister Margaret Thatcher announced the intention of her government "to see that the islands are freed from occupation and are returned to British administration at the earliest possible moment."[114] British public opinion demanded military action in recovering the islands, despite the fact that the British forces developed predominantly for defensive purposes in Europe would have to conduct offensive operations seven thousand nautical miles (NM) from home.[115] The Argentinians would have to maintain control of the islands with a force neither prepared or expecting a war with Britain.[116]

Operation Azul

Once the military junta decided to reclaim the islands by force, Argentine crisis-action planning began. The Argentinians established an amphibious landing force, commanded by Rear Adm Gualter O. Allara with the following units:

- The landing force—2d Marine Battalion, an amphibious commando unit, an army rifle company, and reserves.
- The transport group—troop carrier *Cabo San Antonio,* icebreaker *Almirante Irizar,* and transport *Isla de Jos Estados.*
- A support, escort and landing group—destroyers *Hercules* and *Santisima Trinidad;* and the corvettes *Drumond* and *Granville.*
- A special task force group—the submarine *Santa Fe.*[117]

The task force objectives were to occupy Stanley, capture the airfield at Stanley, and control the islands' inhabitants in order to establish a provisional government. Additionally, for political reasons, the junta wanted the objectives accomplished without British loss of life. On the night of 1 April, all ships were at their assigned positions and the air force attack squadrons were ready if needed for the invasion. Other than 40 Royal Marines on the islands, the closest British military unit was the HMS *Endurance* 400 NM away.[118]

At 2300 on 1 April, 92 Argentinian marines left the destroyer *Santisima Trinidad,* to land on the extreme eastern portion of East Falkland Island, approximately three kilometers south of Stanley. Having landed unopposed, they marched overland to neutralize the Royal Marines posted three kilometers west of Stanley and then proceeded on to Stanley.[119]

Following this landing, at 0400, the submarine *Santa Fe* dropped off frogmen north of Stanley to act as a beach reconnaissance party in support of the main landing force, the 2d Marine Battalion, which disembarked from *Cabo San Antonio* at 0600. This unit secured the airfield and advanced toward Stanley from the east.[120] The action of the two landing parties acted as a pincer on the capital while sealing the withdrawal routes of the defenders.

By 0800 Stanley was secured and the junta announced at 1120 that the British governor, Rex Hunt, had surrendered unconditionally.[121] As the blue and white banner of the Argentine Republic flew over Stanley, all that was left to do was secure other important geographic points on the islands, such as Goose Green, Darwin, and Port Fox. By afternoon marines were loaded on transports and returned to mainland bases.[122] The Argentinians had carried out Operation Azul with clock-like precision. "Misión cumplida."[123]

Deployment and Buildup (3–30 April)

In Britain, Parliament was recalled on 3 April for the first Saturday session in over 20 years. Prime Minister Thatcher called the session to inform the House of Commons of the situation in the South Atlantic, to announce the government's decision to reclaim the islands, and to inform the full Parliament and public of the measures already taken by the prime minister prior to the session.[124] The British soon thereafter initiated Operation Corporate to retake the Falklands and placed Adm Sir John Fieldhouse in command of all British forces in the South Atlantic. Rear Adm Sir John Woodward would command naval Task Force 318 and serve as naval commander for the operation. The air and land forces of Admiral Fieldhouse's Operation Corporate would be commanded by Royal Air Force Air Marshal Sir John Curtis and Royal Marine Maj Gen Jeremy Moore, respectively.[125] On 5 April the first of many deployments began when the aircraft carriers *Invincible* and *Hermes* departed Portsmouth with supporting ships including the civilian liner *Canberra,* that would serve as a troop and hospital ship.[126]

Probably the most important development during the British deployment period was the 7 April announcement by Secretary of State for Defense John Nott that "From 0400 Greenwich Mean Time on Monday 12 April 1982, a maritime exclusion zone will be established around the Falkland Islands. The outer limit of this zone is a circle of 200 nautical mile radius. . . . From the time indicated, any Argentine warships and Argentine naval auxiliaries found within this zone will be treated as hostile and are liable to be attacked by British Forces."[127] The announcement of the maritime exclusion zone (MEZ) was reinforced by an official British communiqué on midday 12 April announcing that the MEZ had been established as planned and that no Argentine warships or auxiliaries had been reported in the zone to that time.[128]

This move weakened the Argentine buildup.[129] Two British nuclear submarines, *Spartan* and *Splendid,* had sailed toward the South Atlantic on 1 April in anticipation of the Argentine invasion and were on station by 12 April when the MEZ went into effect. What the Argentines did not know was that British submarine commanders had not received permission to attack ships, because the Thatcher government hoped that negotiations to persuade the Argentines to withdraw from the islands might still succeed. Therefore, the establishment of the MEZ was largely a bluff. However, the Argentine leadership would not risk the navy and was compelled to supply their troops

on the islands mostly by air. Few Argentine ships sailed for the islands and fewer made the return trip, most being stranded in Stanley after hostilities began.[130] One of the ships that never arrived was *Ciudad de Córdoba.* It contained air defense weapons systems and ordnance as well as aluminum runway matting intended to extend the Stanley runway and allow the Argentinians to deploy their high-performance fighters forward from their continental bases.[131] This would have effectively doubled the reach of Argentine fighters and thereby limited British reach by forcing the carriers to operate at or beyond the extreme limits of Harrier capabilities to cover any landings.

The Argentinians established an "air bridge" across the MEZ to supply their units on the islands. They used every available transport, including aircraft of their international and domestic airlines. By the end of April they had flown over five hundred sorties, delivering 10,700 troops, and fifty-five hundred tons of cargo, mostly weapons and ammunition. However, the Argentinians could not satisfy their military needs on the island from air means alone and the defenders faced severe shortages of food and equipment when the British attacked.[132]

During the remainder of the period, the Argentinians redeployed units on the mainland, conscripted recruits, and continued supply of the islands.[133] The British spent the period planning, positioning equipment at their staging base on Ascension Island, and training for invasion.[134] By Friday 30 April it was clear that negotiations were failing. Britain announced that the MEZ would become a total exclusion zone (TEZ), with aircraft as well as ships liable to attack. Britain prepared the way for the announcement with a note delivered by the Swiss Embassy in Buenos Aires to the Argentines on 23 April. It read as follows: "Her Majesty's Government now wishes to make it clear that any approach on the part of Argentine warships, including submarines, naval auxiliaries, or military aircraft, which could amount to threat to interfere with the mission of the British Forces in the South Atlantic will encounter the appropriate response. All Argentine aircraft including civil aircraft engaging in surveillance of these British Forces will be regarded as hostile and are liable to be dealt with accordingly."[135] The main implication of the warning was that any ship or aircraft *approaching* the TEZ might be attacked if it was considered a threat to the British military units in the South Atlantic. This clearly had implications for the sinking of the *General Beigrano* on 2 May. Although the Argentines understood the intent of the message, they believed it might be a means to prepare the ground for air attacks on mainland air bases.[136] In response the Argentines deployed antiaircraft artillery units to Rio Grande air base to protect their Exocet-capable Super Etendard aircraft.[137] The stage was set for the Battle of 1 May.

The Battle of 1 May

The day of 1 May was dedicated almost exclusively to air operations. It began with a predawn attack by a single Vulcan bomber which dropped 21 one thousand-pound bombs on the Stanley (renamed Puerto Argentina)

airfield. The mission of 3,750 miles required in-flight refueling from 11 Victor tankers on both its inbound and outbound legs. The results of the Vulcan mission received criticism when it was learned the bombs were released late and only one bomb actually hit the runway, destroying a single Pucard ground attack aircraft.[138] However, a critical aspect of the mission was overlooked by many observers. If the Argentinians ever planned to recover the runway matting from the hold of *Ciudad de Córdoba* to extend the Stanley runway for their high-performance fighters, the Vulcan raid ensured the Argentinians would not reconsider the matter.[139]

The British followed the Vulcan attack with Harrier attacks on the airfields at Stanley and Goose Green (renamed Condor), approximately 50 miles from Stanley. The attack flight was launched from *Hermes,* while escorts were launched from *Invincible.* Strategic surprise was lost with the early morning Vulcan raid. Although the Harrier counterair attacks achieved a measure of tactical surprise, the attacks did little damage to the airfields.[140] It was during these attacks that the first aerial engagements occurred.

As aircraft from *Invincible* flew cover for the attackers, they were engaged by Dagger (an unlicensed Israeli version of the French Mirage V) aircraft from high altitude. However, the Daggers fired their missiles out of range. The results of this limited engagement were inconclusive, since the Harriers would not climb and the Daggers would not descend. Both flights disengaged, returned to base, and the first aerial kills came in the afternoon.[141] Ironically, this was the only day during which the Argentinians configured their Daggers exclusively for air-to-air combat.[142]

During the late afternoon the British positioned the destroyer *Glamorgan,* and the frigates *Arrow* and *Alacrity* south of Stanley for a naval bombardment of the airfield.[143] The purpose of the shelling was to make the Argentinians believe the British were preparing for imminent amphibious landings.[144] As the British began the bombardment, the Argentinians attacked the naval force and damaged *Arrow* slightly. Although the Argentinians claimed to have severely damaged four ships, *Arrow* was the only ship damaged during the attack.[145]

During the ship attacks, Argentinian aircraft were engaged by Harriers from *Invincible.* Two Daggers and one Canberra bomber were shot down by the British with AIM-9L all-aspect infrared missiles. One Dagger was apparently shot down by Argentinian antiaircraft fire from Stanley.[146] The Argentinians confirmed the loss of only two Daggers in the engagements, but claimed seven Harrier kills.[147] The Argentinians downed no British aircraft during the engagements and were surprised to see the AIM-9L in combat. The significance of the AIM-9L was the influence it had on future air operations. The Argentinians found the missile impossible to evade. They were already limited to less than five minutes engagement time due to the range of their bases from the action. Operating at the extremity of their range and faced with an all-aspect missile threat, the Argentinians had no fuel reserve to out maneuver the Harriers for a successful engagement. This dilemma forced the Argentine leadership to make the British fleet the sole focus of their air

forces. They decided to configure all Argentine aircraft for attack and waive any requirement for air superiority during operations.[148] The decision, arguably correct given the situation, subsequently proved deadly to Argentine pilots and aircrews.

Attrition (2–20 May)

Sinking of *General Belgrano.* On 2 May the *General Belgrano* sailed its last mission as it patrolled with two escorts, *Hipolito Bouchard* and *Piedra Buena,* between the Isla de la Estados and Burdwood Bank southwest of the Falklands. The main Argentine task force, with the carrier, *Veinticinco de Mayo,* was north of the Falklands and had attempted an air strike on the British task force at dawn. However, it aborted the operation when insufficient winds prevented takeoff from the carrier. The mission of *General Belgrano,* to the south, was to prevent any British warships from joining the British task force from the Pacific and to provide warning of any British movement towards the mainland.[149] The previous day Admiral Allara had ordered *General Belgrano* to pose a lateral threat so as to force the enemy to divide, and not to approach the exclusion zone or engage the enemy without further authorization. Additionally, it shared orders with the rest of the Argentine fleet to intercept enemy units that were damaged, isolated, or separated from the main British naval force if the opportunity emerged.[150]

Operating in the area was the British submarine, *Conquerer,* which had been sent there to search for *General Belgrano* and attack it when it entered the TEZ. After making contact with the Argentine ships in early morning of 2 May, *Conquerer* began to trail *General Belgrano* and requested permission to attack.[151] With task forces north and south of the British naval operating area, the British feared the Argentinians were attempting a pincer movement that could result in an Argentine surface-to-surface Exocet missile attack.[152] Adding to British concern was the fact that *Veinticinco de Mayo* was apparently attempting an offensive and the British submarine in the area, *Splendid,* was unable to make contact with the Argentine carrier.[153] At 1730 Conquerer acknowledged receipt of the attack message and signaled its intention to engage. At 2000 *Conquerer* was in position and attacked *General Belgrano,* which went down, taking the lives of 323 sailors.[154] Aware of international concern over the attack on *General Belgrano,* on 7 May the British announced the TEZ would extend to 12 miles from the Argentine coast, effective 9 May. After *General Belgrano* was sunk, no major Argentine warship ventured beyond the 12 mile limit.[155]

Revenge on *Sheffield.* The morning of 4 May began with a Vulcan bomber attack on the Stanley airfield.[156] At 0944 a flight of two Super Etendard aircraft of the 2d Naval Air Squadron scrambled after an Argentine C-130 crew reported British ships 75 NM south southeast of Stanley. After refueling on a KC-130 tanker, the flight eased below dense cloud cover and broke out over choppy seas, with limited visibility due to scattered clouds and rain. As the flight lead, Lt Cmdr Augusto Bedacarratz, and his wingman dropped

down to sea level, they found the ships on radar and headed straight for them. Skimming over the white caps, both pilots locked on to a large target and fired Exocets approximately 25 NM from the British ships.[157]

Among those ships was *Sheffield,* performing radar picket duty for the main *Invincible* carrier task force. *Sheffield,* a poor substitute for an airborne early warning (AEW) system, had been receiving false returns on its radar scope during its watch.[158] As *Coventry* and *Sheffield* discussed the technical problem one Exocet hit *Sheffield* at midship, tearing into the ship's fuel tanks and filling the ship with dense smoke. Because of the radar problem, *Sheffield* apparently did not realize it was under attack and never knew what hit it. After fighting fires for four hours, with no result, the captain ordered the ship abandoned.[159] It sank, under tow, a week later outside the combat area.[160]

Having fired two, the Argentinians had three Exocet missiles remaining.[161] After the exchange of *Sheffield* for *General Belgrano* the war moved to a crucial phase. The British Admiralty calculated the fleet was more at risk from Argentine airpower than from the navy. The threat the Exocet posed to the British fleet had a significant impact on the rest of the campaign, including naval air operations, task force positioning and maneuver, and the landings to come.[162]

Other actions. During the remainder of the period the British brought 24 additional Harrier aircraft into theater. However, the British lost two Harriers and a Sea King helicopter in noncombat accidents. Furthermore, the British naval vessels *Broadsword* and *Glasgow* were damaged when bombs struck both ships and failed to detonate. Finally, the Argentinians lost three A-4 aircraft in combat and the transport *Islas de Los Estados* to gunfire from *Alacrity.*[163] As efforts for a negotiated solution failed, both sides planned and waited for the war to move to the beachhead.

Landings and Breakout (21–25 May)

British planners had to answer three basic questions concerning a landing in the Falklands: When? Where? How? The easiest question to answer was "When?" The British believed the only advantage in delay would have been if the Argentine air forces suffered high attrition at the hands of Admiral Woodward's forces. However, the attrition rates believed to be necessary had clearly not happened. The Argentine air forces were intact and the British were frustrated because they had not successfully drawn them out.[164] In fact, only 16 Argentine fighter sorties were flown in combat from 5 May to D day on the Falklands.[165] Because of the Argentine air forces' low attrition and fears that the sortie rates that *Invincible* and *Hermes* could sustain would diminish around 1 June (after a full month of intensive carrier flight operations), Admiral Woodward was concerned that he could not provide air superiority for the landings. He therefore believed the landings should occur as soon as possible to limit the size of the Argentine buildup and to avoid the risk of a long land campaign in the South Atlantic, where winter would test the ability of supporting ships to stay at sea and sustain the operation.[166]

While determining when to attack was relatively easy, deciding where to attack was more difficult. Argentinian defenders were concentrated around Stanley, and therefore everyone agreed that an opposed landing near Stanley should be avoided. This led to friction between the requirements of the landing forces that wanted a short approach to Stanley and short lines of communication, and the requirement for the naval forces to have a relatively safe anchorage protected from both bad weather and air attack. As a result, many landing sites were considered during the planning phase. All possible landing sites on West Falkland were quickly ruled out.[167] Militarily, a landing on West Falkland would place British forces closer to Argentinian mainland air bases and further from their objective of Stanley. Furthermore, it would require an additional amphibious landing across Falkland Sound to reach East Falkland.

Eventually, the conflict between land and naval requirements was settled in favor of naval forces. San Carlos was chosen for the amphibious landing for three reasons. First, it offered a good anchorage that could be protected against submarine attack. Second, the area around San Carlos was lightly defended and would be difficult for the Argentinians to reinforce quickly. Third, the low hills surrounding the inlet and anchorage provided reasonably good protection from sea-skimming Exocet attack.[168]

How to attack posed some problems for the British who had not performed an amphibious operation at brigade strength since the operation to retake the Suez Canal in 1956.[169] The landing would be in a lightly defended area, but local British air superiority was in doubt. Planners were told neither *Invincible* nor *Hermes* could be brought in shore and made available as helicopter platforms. They both would remain at sea to provide Harrier cover for the landings.[170] As a result, the decision to keep the carriers at sea constrained the number of helicopters available for the landings. Because the planners could not ensure local air superiority, they decided that the initial landings should be made under cover of darkness using landing craft only. The landing craft were tasked to place four infantry units and all available tanks ashore before dawn. After dawn the artillery, air defense units, and stores would be brought ashore by helicopter and all available landing craft.[171]

At 0250 on 21 May, Argentine soldiers spotted five vessels threading their way through San Carlos Strait. The naval gunfire intended to soften the beachhead, the increased air sortie rate over the area, and the harassment of Darwin by special forces were signs the Argentinians understood signaled an imminent British landing.[172] In early action the British took Fanning Head, the high ground overlooking San Carlos, and raided the airfield at Goose Green.[173] By day's end the beachheads around the towns of Port San Carlos and San Carlos were secured, and no Argentine ground action against the landing force had been reported.[174]

The Argentine air reaction was slow. Initially, the only air units to engage the San Carlos landing force came from the Falklands, with Pucara and MB-339 attack aircraft the first on the scene.[175] As the day wore on, the

Argentine air forces rose to the occasion and attacked British ships providing supporting fire for the landing force. At approximately 1400, Daggers from Naval Air Group 6 attacked the frigate, *Ardent.*[176] *Ardent* was seriously damaged by a one thousand-pound bomb that struck the engine compartment of the ship.[177] This attack was followed by two subsequent A-4 attacks at approximately 1445 and 1500.[178] *Ardent,* ablaze, without engine power, was abandoned and sank.[179]

Other British ships were damaged during the first day of operations off San Carlos. Both *Argonaut* and *Antrim* were seriously damaged when hit by one thousand-pound bombs which failed to detonate. Additionally, *Broadsword* and *Brilliant* suffered minor damage from strafing attacks.[180] During the day, however, the Argentinians lost 16 fixed-wing aircraft and four helicopters while attacking British shipping.[181]

During a lull in the air war on 22 May, the British consolidated their position on the island. However, the following day the frigate *Antelope,* sister ship of *Ardent,* suffered serious damage from A-4 aircraft of the Argentine air force and navy. *Antelope* was hit by two bombs that failed to explode and lodged in the engine room. As the British worked to defuse the bombs, one bomb detonated and the ship burnt and sank.[182]

The next two days, 24 and 25 May, brought more British ship losses. Three ships, *Sir Lancelot* and *Sir Galahad,* of the Royal Fleet Auxiliary and the frigate *Broadsword* were hit by one thousand-pound bombs that failed to detonate. Additionally, the destroyer *Coventry,* sister ship of *Sheffield,* went down after being hit by three 1,000-pound bombs. Finally, and maybe more important, the container ship *Atlantic Conveyor* was hit by an Exocet and sank five days later.[183] With *Atlantic Conveyor* the British lost three Chinook helicopters, capable of carrying 80 troops each; six Wessex-5 support helicopters; two Lynx helicopters; tents to accommodate four thousand troops; mobile landing strips for Harriers; and a water desalination plant. One Chinook was airborne and survived to give invaluable support to later operations.[184] The loss of the Chinooks that were to play a crucial role in the land war, severely limited mobility of British land forces.[185]

Since the start of action at San Carlos, seven British ships were damaged and four sunk from Argentine air forces. Many of the damaged ships survived only because Argentine bombs had not fuze-armed by impact and, therefore, failed to detonate. However, the British aircraft carriers were yet untouched. The Harrier force, reinforced by *Atlantic Conveyor* before it sank, was stronger than ever.[186] While the British had lost only one Harrier along with the helicopters on *Atlantic Conveyor,* the Argentinians had lost 30 fixed-wing and six rotary-wing aircraft.[187]

On land, while Argentine air forces attacked British naval forces, no Argentine ground forces counterattacked the British beachhead. In fact, the Argentine air forces were the only Argentine forces to attack the British beachhead with any strength. Even though Argentinian forces had not engaged the British to dislocate the landings at San Carlos, the Thatcher government, influenced by domestic public opinion, considered it

essential that the British engage Argentinian land forces at the earliest opportunity. As a result, the British landing force, which lacked extensive logistic support at the end of an immensely long line of communication, was pressured to conduct a land operation that the on-scene military command considered strategically irrelevant. Furthermore, while they conducted the required operation, the British would have to consolidate the beachhead with a single helicopter and a few landing craft, while preparing for the march across East Falkland to secure their ultimate objective, Stanley.[188] The damage inflicted on the British navy during the phase was a great morale boost for the Argentine forces, who understood the attacks would slow the British buildup. Additionally, the attacks had an influence on the Thatcher government's decision to demand a quick confrontation with the Argentinians that threatened to prolong the campaign to regain the Falklands. Nonetheless, 25 May marked the end of a phase and the nature of the war was about to change as the British strove to produce some evidence of success.

The Advance on Darwin and Goose Green (26–29 May)

By the end of 25 May the British had five thousand men and five thousand tons of ordnance and supplies ashore. The loss of *Atlantic Conveyor* caused the British to rethink their plan for land operations. The plan initially called for a rapid single thrust across the island from San Carlos to Stanley. The British planned to take advantage of the speed and maneuver of the helicopters expected from *Atlantic Conveyor* to "invest the Stanley defenses in one bound."[189] Without the helicopters, the British resurrected an earlier plan, calling for the 2d Parachute Regiment (2d Para) to raid Goose Green, south of San Carlos. In the meantime, other units would start pushing east, on foot, toward Stanley.[190]

Late on 26 May, 2d Para moved toward the Darwin Isthmus. The first contact with Argentine troops did not occur until the afternoon of 27 May when a British reconnaissance patrol engaged in a firefight with Argentine troops. The Argentinians, quickly outflanked and having no communications to request fire support, were overwhelmed. To make matters worse for the Argentinians, the leader of their unit was taken prisoner by the British. During interrogation, the British learned the Darwin garrison was much stronger than expected.[191]

By early morning 28 May, the Argentinians had reinforced their positions in Goose Green by helicopter and 2d Para was ready to attack. With information obtained from the Argentine prisoner, the British decided to advance south with C Company and overrun defensive positions in night actions. Following companies would mop-up during daylight hours to avoid civilian casualties.[192] At 0200 28 May, 2d Para began the attack on Darwin with supporting naval gunfire and Harrier air support. The Argentines offered staunch resistance, but were pushed out of their positions and into the settlement. The Argentines surrendered Darwin that afternoon and 2d Para pushed on to Goose Green.[193] The Argentinians were well dug in at Goose

Green and bitter fighting continued into the night. Both sides received air support during the battle. The British sent two Argentine prisoners of war through the lines to open negotiations with the Argentines. At first the Argentines balked at negotiation. As the British reinforced their positions with artillery, they threatened a major demonstration of firepower and more Harrier attacks if the Argentinians did not surrender. At 1100 29 May the last Argentinian troops surrendered to the British.[194] The British took over one thousand prisoners, including 120 Argentinian wounded, while sustaining casualties of 12 killed and 31 wounded themselves.[195]

The British victories at Darwin and Goose Green secured the British southern flank and lines of communications to the beachhead at San Carlos. Additionally, the victories gave the British an opportunity to assess the fighting qualities of the Argentinians. Finally, they gave the British ground forces a definite psychological advantage over the Argentinians, particularly after the British announced that a regiment of five hundred men defeated over fifteen hundred defenders to take Goose Green.[196] The British were now ready to make a two-pronged advance on Stanley.

The Advance on Stanley (27 May–14 June)

On 27 May, while 2d Para advanced on Darwin-Goose Green, the 3d Marine Commando Brigade's, 45th Royal Marine Commando (45 Cmdo) and the 3d Parachute Regiment (3d Para) marched northeast from the San Carlos beachhead to Douglas. They then marched southeast to the Teal Inlet, a 50-mile journey over rough terrain in inhospitable weather, and secured the area on 30 May.[197] Meanwhile, on 28 May a small force of Special Air Service (SAS) troops had been dropped by helicopter on Mount Kent, 10 miles west of Stanley, to secure a landing zone for follow-on troops. The SAS troops were joined by the 42d Royal Marine Commando (42 Cmdo) and a supporting light artillery unit on 1 June to establish control over the western approaches to Stanley. Both units were airlifted by helicopter to the objective area.[198]

During this time General Moore assumed direct control of all land operations and began a series of troop movements to press on quickly with the advance on Stanley. On 1 June the Fifth Infantry Brigade (5 Bde), composed of Scots Guards, Welsh Guards, and Gurkha Rifles, began landing at San Carlos. Additionally, when the Argentinians had abandoned Fitzroy, a town 18 miles southwest of Stanley, Moore ordered 2d Para to secure the town.[199] Fitzroy was important to Moore's plan to take Stanley.

On 4 June, Moore started moving elements of the 5 Bde, by sea, to positions in the Fitzroy-Cove Bluff area. The first troops arrived on 6 June and continued disembarkation through 8 June. The loss of the Chinook helicopters on *Atlantic Conveyor* had precluded airlifting the bulk of 5 Bde to the area. Therefore, the British reasoned that sealift was the only means available to move forward quickly and maintain the tempo of operations, while minimizing the risk of an Argentinian counterattack.[200] The loss of helicopter lift subsequently proved costly to British shipping.

The morning of 8 June found the cargo ship *Sir Galahad,* her sister ship *Sir Tristram,* and the frigate *Plymouth* south of Fitzroy in Pleasant Bay. The cargo ships were unloading supplies and ordnance in broad daylight when operations were hindered by Argentine air forces. A-4 aircraft arrived before the Rapier surface-to-air missile system, designated to protect the ships, was operational.[201] During the attack, *Sir Galahad* was hit by the flight leader's bombs, which tore through the ship's mess and exploded. Other aircraft attacked while secondary explosions erupted from the ordnance onboard. One pilot's attack was long and his bombs flew over *Sir Galahad,* ricocheted on the water, and slithered on the beach where they hit a Rapier air defense system's fuel tanks, causing a large blast with several secondary explosions.[202] *Sir Galahad,* mortally wounded, was subsequently scuttled. Meanwhile, *Sir Tristram* was damaged by another flight of A-4 aircraft, but did not sink. Finally, the frigate *Plymouth* suffered damage when it was hit by four bombs which failed to detonate. However, one bomb hit a depth charge, starting a fire that was extinguished within an hour.[203] Argentine airpower, thought to be severely diminished from previous operations, dealt a severe blow felt by the landing force, the logistics capability needed for the final push to Stanley, and the government in London.

By 10 June, the British had taken the high ground surrounding Stanley and, the next day began an artillery bombardment to prepare for the final Battle for Stanley. Royal Marines launched a night attack on three Argentine strong points: Mount Longdon, Two Sisters, and Mount Harriet. Despite tactical surprise, resistance was substantial at Mount Longdon on the north flank and Two Sisters in the center. Mount Harriet, enveloped from the rear, fell quickly. During the night of 11–12 June, HMS *Glamorgan* became the last British ship to come under direct attack during the war when a land based Exocet struck and damaged the ship, but failed to knock it out of action.[204]

A second phase of the Battle for Stanley took place on 13–14 June. Second Para made a night assault on Wireless Ridge three miles east of Mount Longdon. To the south, a battalion of Scots Guards took Tumbledown Mountain after a hard fight with Argentine marines. Gurkhas then passed through the Scots Guards to take Mount William, less than four miles from Stanley. A planned third phase of the operation proved unnecessary as Argentinian resistance collapsed. On 14 June the Argentine military governor, Gen Mario Benjamin Menendez, surrendered the Falklands to General Moore.[205] The British had successfully carried out a very difficult operation, on short notice, over very long lines of communications.

Analysis—South Atlantic War

Determining the Central Element

Operation Azul. The Argentinians planned the invasion of the Falklands as an amphibious operation and it clearly called for naval transport to deliver the landing force to the islands. Additionally, the Argentinians did not use

their air forces during the invasion until late in the afternoon when some of the invading marines were transported back to their mainland bases. Although the Argentinians understood the importance of the airfield, making it a primary objective of the operation, the 2d Marine Battalion was the main instrument used to take the airfield and occupy Stanley. As a result, the amphibious landing force was the central element of the phase (table 3). Both naval and air forces supported land forces during Operation Blue.

Deployment and Buildup. During this phase the combatants made different elements central to their campaigns. The Argentinians made airpower central to their buildup and deployment to the Falklands as they prepared to defend against an anticipated British invasion. Although airpower was crucial to the Argentinian effort, the decision they made in establishing the "air bridge" to the Falklands was essentially imposed by the British when they announced the establishment of the MEZ. British sea power influenced future Argentinian air operations when *Ciudad de Cordoba* failed to deliver runway matting intended to extend the Stanley airfield for high-performance jet fighters. Sea power was central when the British dispatched the submarines *Spartan* and *Splendid* to the South Atlantic in anticipation of hostilities and, later, when the British formed and deployed their naval task force. Taken as whole, the central element of this phase was sea power, which influenced air operations and the Argentinian decision to make airpower central to their operations.

The Battle of 1 May. As a phase devoted exclusively to air operations, this phase was clearly air central. The initial counterair missions on Stanley and

Table 3

Determining the Central Element—South Atlantic

↓Phases Elements→	Air	Land	Sea
Operation Azul		★	
Deployment and Buildup			★
Battle of 1 May	★		
Attrition	★		
Landings and Breakout	★		
Darwin/Goose Green		★	
Stanley		★	

Goose Green airfields along with the first aerial engagements set the stage for future operations. Compelling the Argentine air forces to operate from mainland bases over 450 miles from the objective area weakened the overall Argentinian air effort. The Harrier advantage in missile technology influenced Argentine air operations, forcing the Argentinians to make all fighters attack aircraft and abandon any ideas of gaining air superiority for their operations.

Attrition. The single most dramatic event during this phase was *Conquerer's* attack on *General Belgrano.* However, taken as a whole, airpower had more influence during this phase and more influence on future operations. The successful Argentinian attack on *Sheffield* forced the British to withdraw their aircraft carriers well to the east of the Falklands, beyond the reach of Argentine air forces. Nonetheless, the British air forces were able to operate from locations closer to the objective area, while maintaining their distance from Argentine air forces. However, the British still believed Argentinian airpower posed the most significant threat to their forces. But, by posting their carriers to the east, the British were not able to place combat air patrols (CAP) *between* the Falklands and the mainland. The loss of such a fighter screen allowed more Argentine aircraft to attack the shipping supporting the San Carlos landings. As a result, British air operations, build up of supplies ashore, task force maneuver, and the planning and execution of the San Carlos landings were all influenced by Argentine air.

Landings and Breakout. This phase was similar to the deployment and buildup phase because each combatant used a different element as a predominant part of their operations. However, airpower was central to the phase. In fact, the British landings were opposed by Argentine air forces only. Argentine airpower also influenced both British planning and execution of the landings at San Carlos. The British, concerned with Argentine airpower chose San Carlos, in large part, because it provided some protection against Exocet attack. Additionally, fear of Argentine air attack kept the British carriers from the landing area, which made British air superiority for the landings doubtful. Furthermore, Argentine airpower threatened to stall the British invasion on the beach when air attacks damaged seven British ships and destroyed four others supporting the landings. As a result, the landings were sustained, for a time, by a single helicopter and a few landing craft.

Advance on Darwin and Goose Green. Although 2d Para was supported by both naval gunfire and Harrier attack aircraft, land forces were central to this phase. The British needed a victory to secure the British southern flank and to boost morale after the Argentinian air successes against British shipping. Second Para captured Darwin, Goose Green, and Goose Green airfield to secure the British flank for the capture of Stanley. In addition, they gained a psychological advantage over Argentinian land forces by fighting outnumbered and winning.

Advance on Stanley. Both airpower and sea power supported land operations by providing land forces with tactical mobility, operational maneuver, and firepower. However, the offensive by Royal Marine and British

army units was central to the final phase of the campaign. Argentine forces concentrated around Stanley had to be defeated and expelled if the British were to regain sovereignty over the islands. The efforts of land forces allowed the British to conclude the war by reclaiming the Falklands.

Analyzing Conditions When Sea and Land Forces Were Central

As with the previous Guadalcanal analysis, the purpose of this section is to determine what conditions existed to make a particular element either central or supporting (table 4). Again the five conditions considered in expanded analysis are function, environment, topography, forces, and capabilities. The central elements of each South Atlantic phase were identified in table 3. Of the seven phases identified in the South Atlantic, sea power was central in one phase and land forces were central in three.

Sea. The deployment and buildup phase was different from the only sea power central phase during the Guadalcanal campaign. The conditions present during the south Atlantic sea central phase were also present in other phases. Additionally, it was the longest phase of the South Atlantic War. Furthermore, it was a sea versus air phase in which sea power prevailed. It was a phase during which Argentine perceptions of British strategic naval reach had a great influence on, both, the phase and preparations for future operations.

The perceptions of British naval reach allowed the British to prevail in the only phase devoted exclusively to sea control. The British, after announcing the establishment of the MEZ, which at first was largely a bluff, were able to control the size and intensity of the Argentine buildup from afar. Finally, the capabilities of sea power made an enormous impact on events. Specifically, range, mass, maneuver, and persistence allowed the British to prevail in the only nonlethal phase, during which no fire was exchanged.

Land. Land forces were central in three of the seven phases identified. The conditions under which land power was central showed a high degree of similarity between phases. However, there were conditions such as the environment and topography, which varied significantly during the phases.

The environment in which land forces were central was highly variable. There were no exclusively daylight operations. In fact, most land operations began under cover of darkness. Clearly land operations were performed in varied climatic conditions, particularly in view of the severity of the weather in the South Atlantic.

The topography associated with land central phases was also highly variable. Operation Azul was performed over sea, beaches, coastal plains, mountains, and urban settings. Both the advance on Goose Green and Stanley were fought over equally varied topography. Additionally, soldiers found the Falklands generally barren, with many wide, open areas making approach and closure with the enemy difficult. Cover and concealment was found in such places as land depressions, grassy knolls, and crevices of rock formations.

Table 4
Analyzing Conditions—South Atlantic

Conditions→ ↓Phases	Function	Environment	Topography	Forces	Capabilities
Operation Azul	Offensive Forced entry/invasion Establish beachhead Close operations	Night (mostly) Daylight	Island Beach Urban	Amphibious Land Sea	Mass Maneuver Persistence
Deployment and Buildup	Sea Control	Varied	Ocean Island	Air Sea	Range Mass Maneuver Persistence
Battle of 1 May	Counterair – Airfield attack – Aerial engagement	Night Daylight (mostly)	Ocean Island	Air only	Speed Range Mass Maneuver
Attrition	TASMO Counterair	Day/night Varied climatic	Ocean Island	Air Sea	Speed Range Mass Maneuver
Landings and Breakout	TASMO Counterair Close Air Support	Day/night Varied climatic	Ocean Intercoastal Waterways Land	Air Sea Land	Speed Range Mass Maneuver
Darwin/Goose Green	Offensive Close Operations	Varied, but emphasis on night operations	Land Coastal Plain Urban	Air (CAS) Sea (Naval Bombardment) Land	Mass Maneuver Persistence
Stanley	Offensive Close Operations	Varied conditions	Island Mountain Coastal Plain Urban	Air (CAS) Sea (Naval Bombardment) Land	Mass Maneuver Persistence

Airpower Central Element

Force composition of land central phases always involved elements of other forces. However, airpower was generally absent from Operation Azul. With that exception, air support for land operations was a prominent feature in operations at Goose Green and Stanley, providing lift and firepower to land forces. It was after the British threatened more Harrier strikes with artillery barrages that the Argentinians surrendered Goose Green. Additionally, sea power was used in all three land central campaigns. Clearly, sea power provided lift for Azul and the battle for Stanley. Finally, naval gunfire supported British land forces in both the Goose Green and Stanley phases.

The function of land forces was similar during each phase in that each land central phase eventually called for close operations. This function is starkly different from the nonlethal sea central phase, in which sea control occurred from afar. Each land central phase was offensive in nature, with forced entries and offensives to capture important geographical points on the islands.

In addition to the mass and persistence normally associated with land forces, land central phases were also characterized by a high degree of maneuver. Each phase involved operational maneuver including, air and naval lift, flanking maneuvers, and pincers to set the tempo of operations and control events on land. The British land central phases also integrated air and naval firepower with organic artillery to fix the enemy while land forces maneuvered for advantage.

Airpower as the Central Element

Airpower central phases appear to have somewhat stronger correlation among the conditions present during each phase than either sea or land central phases. Counterair operations were a part of each phase in which airpower was central. TASMO was a function performed in two of three air central phases. Although air central phases were conducted in variable environmental conditions, daylight operations were predominant during air phases. There appeared to be a chronological progression in the types of forces used in air central phases. The first air central phase was fought by air forces only. The second, attrition, saw both air versus air and air versus sea engagements. The final air central phase saw air, land, and sea forces involved. Air central phases were fought over vast ranges when speed to the objective area was vital to current operations. Finally, they were generally characterized by airpower's ability to bring mass with maneuver to the objective area for an immediate, but sometimes fleeting, impact on the campaign.

The air central phases were conducted over all topography available within the theater, from open ocean to mountains within the interior of East Falkland. The reasons airpower was central over such varied topography are much the same as those reasons explained in the Guadalcanal analysis: speed, range, lack of adequate cover and concealment, consequential ease of target acquisition, and the tendency of air weapons to engage air weapons.

These factors, in addition to the topography around the Falklands, combined with the impact of both airpower and sea power had on operations and subsequent force deployments, can explain why air became central in the three middle phases of the campaign.

First, Argentine concern over British sea power initially prevented the Argentinians from extending the runway at Stanley. Furthermore, Argentinian concern over British airpower, after the Vulcan attack of 1 May, ensured the runway would not be extended. Subsequent British concern over carrier vulnerability at the hands of Argentine airpower, particularly after *Sheffield,* persuaded the British to place *Hermes* and *Invincible* well to the east of the islands. This decision prevented the British from establishing CAPs *between* the Falklands and the Argentinian mainland to engage aircraft as they approached the Falklands. Without an effective air screen, aircraft from both forces, operating at or near the limits of their ranges, met over the Falklands. Topography prevented adequate dispersion of British shipping in and around San Carlos and Pleasant Bay. The concentration of British shipping in restricted waters effectively accentuated the mass and firepower of Argentine airpower and placed the British invasion in jeopardy.

The preceding paragraph offered an explanation of why Argentine TASMO missions were effective. Another reason for Argentinian TASMO success can be explained by technology. All-weather flight instrumentation helped the Argentinians arrive at the target area in all types of environmental conditions. Additionally, the technology of the Exocet had dramatic consequences when it was successfully employed. However, most of the damage and destruction to British shipping came from gravity-drop bombs.

The South Atlantic War further demonstrated the capability of airpower to bring speed, range, and mass *with* maneuver to a campaign. Although airpower is not normally associated with persistence, airpower in the South Atlantic had a persistent influence on operations. Although the action involving airpower was fleeting, its influence was pervasive. Airpower posed significant problems for British force planning, deployment, and employment. However, while Argentine air lift provided vital support to land forces, Argentine airpower was not as effective as British airpower in supporting land forces in combat. This may be explained by the fact that the Argentines used far less sophisticated weapon systems for close air support.

Airpower Summary—South Atlantic

Argentina never developed an appropriate strategy for the South Atlantic War and thereby placed too much of the burden on their air forces. The Argentinians adopted a very simple, but ultimately inadequate strategy: destroy British shipping. The use of high technology Exocets seemed to give the advantage to the offense over the defense. But the Exocets were best used with the element of surprise. None of the ships hit by Exocets appeared to be aware that they were under attack. Nonetheless, the Exocet, in effect, made the Argentine air forces larger than their numbers.

Likewise, the AIM-9L gave the Harriers a definite advantage in aerial combat, with 75 percent of the British kills directly attributable to the Sidewinder. Indeed, while the Harriers tallied an impressive number of kills, the British lost no Harriers to Argentine aircraft.[206] As with the Exocet, the AIM-9L made the British air forces larger than their numbers.

High technology weaponry allowed airpower to control its own element and influence sea and land power. However, on land, where the Argentines used less capable aircraft, results were not as impressive. The lack of capability possessed by Argentine close air support aircraft limited the environment in which they could operate, while diminishing accuracy and payload (mass). By neglecting the temporal, spatial, and force aspects of the principle of mass, the Argentines never gave airpower the opportunity to stop the British march across East Falkland. However, by adhering to those same aspects, the Argentines placed the British invasion on a very tenuous footing at San Carlos and Pleasant Bay.

Conclusion

Comparison of Conditions—Air Central Phases

The Guadalcanal and South Atlantic campaigns were fought 40 years apart. In addition to the years, several generations of technology separated them as well. However, it is remarkable how similar the air central phases of each campaign were (table 5). Also similar is the way in which air, land, and sea forces interacted and found themselves, rather than independent military arms, interdependent, influencing each other. Indeed, the early airpower practitioner, Marshal of the Royal Air Force Sir Arthur Tedder, recognized the interplay in 1946. In a lecture to the Royal United Service Institution, Marshal Tedder explained, "the operations of land, sea, and air forces are closely related. The relative size of forces and the relative scale of effort of those forces will vary in different campaigns and in different stages of each campaign. But whatever those variations, the operations in the three elements are inter-dependent." Tedder's insight is relevant to Guadalcanal, the South Atlantic, and any other joint campaign.

Although, there were many similarities, differences were noted and should be highlighted. First, the Argentinians were not as successful at interdicting British shipping as the Allies were at interdicting Japanese shipping. This may seem to be a contradiction, particularly in light of the heavy damage done to British shipping at the hands of Argentine air. However, because Henderson Field was in Allied hands, Japanese shipping could be attacked at great range from Guadalcanal. Additionally, Henderson Field allowed airpower to project power forward and protect the American buildup on Guadalcanal. The failure of the Argentinians to improve the Stanley runway for high-performance aircraft severely limited Argentinian airpower's reach. It also meant that all TASMO and interdiction missions were flown from mainland bases, conducted relatively close to the Falklands, and with fewer

Table 5
Comparing Conditions of Air Central Phases—Guadalcanal and South Atlantic

Conditions→ ↓Phases	Function	Environment	Topography	Forces	Capabilities
Early Operations	Interdiction Counterair TASMO	Daylight Generally clear visibility	Ocean/Archipelago	Air Sea	Speed Range Mass Maneuver
Eastern Solomons	Counterair TASMO Interdiction	Daylight Generally clear visibility	Ocean	Air Sea	Speed Range Mass Maneuver
Sep/Oct Battles	Counterair TASMO	Daylight Generally good visibility	Ocean	Air Sea	Speed Range Mass Maneuver
Naval Guadalcanal	Counterair TASMO	Mostly daylight operations	Archipelago (ocean and land)	Air Sea (Naval Bombardment)	Speed Range Mass Maneuver

SOUTH ATLANTIC

Conditions→ ↓Phases	Function	Environment	Topography	Forces	Capabilities
Battle of 1 May	Counterair – Airfield attack – Aerial engagement	Night Daylight (mostly)	Ocean Island	Air only	Speed Range Mass Maneuver
Attrition	TASMO Counterair	Day/night Varied climatic	Ocean Island	Air Sea	Speed Range Mass Maneuver
Landings and Breakout	TASMO Counterair Close Air Support	Day/night Varied climatic	Ocean Intercoastal waterways Land	Air Sea Land	Speed Range Mass Maneuver

aircraft flying fewer daily sorties than would have been possible from a developed Falklands air base.

Therefore, the basing of aircraft played a significant role in both campaigns. Close proximity of air bases to the objective area means more firepower for the theater commander, with more flexibility in its application. However, if air bases are to be located close to the objective area, they must be protected by both active and passive air defense measures.

Second, there were fewer aircraft involved in the South Atlantic than at Guadalcanal. However, British carrier strength near the Falklands was approximately the average Allied strength near Guadalcanal. The single Argentine carrier withdrew after an aborted attempt to launch an offensive against the British task force early in the campaign. Although the total numbers of aircraft participating were fewer in the Falklands, in general, they were more capable. Comparing the two campaigns in numbers, technology, and air results clearly demonstrates the meaning of the term *force multiplier*. The Exocet and AIM-9L made the Argentinian and British air forces, respectively, larger than their numbers. Additionally, flight instrumentation for all-weather flight allowed aircraft to function when those at Guadalcanal were grounded. However, weather still played an important role, with the most significant air operations conducted in daylight and visual conditions.

Finally, the distance of the theater from the combatants' home and source of strength was another major difference. At Guadalcanal both the Japanese and Allies were many miles from their shores, but both set up logistics and staging bases relatively close to the objective area. However, in the South Atlantic, the Argentinians were close to the objective area and the British were forced to conduct offensive operations eight thousand miles from home, with the closest support base, Ascension, 3,750 miles away. The Argentinian failure to take advantage of Argentina's proximity to the Falklands (which was the result of a lack of serious thought and planning about what to do after the success of Operation Azul) resulted in the eventual defeat of Argentinian forces.

Several similarities between the two campaigns are evident from an examination of table 5. First, as noted above, most air central phases were conducted in daylight, under visual conditions. Although the more modern aircraft in the South Atlantic campaign were able to fly in conditions that would having grounded aircraft at Guadalcanal, weather instrument conditions limited the effectiveness of airpower. This does not mean that airpower is not all-weather capable. But it does mean that planners must take prevailing weather conditions into account when planning to integrate airpower into a campaign. Although airpower may be able to fly, weather can still limit its effectiveness. For example, one may only look to Desert Storm to see the impact weather had on the operations of the most technologically advanced, all-weather air force ever assembled. In short, planners must understand exactly what air officers mean and the limitations involved when air weapon systems are described as "all-weather."

Additionally, this analysis found land forces involved in air central phases only once and all but one of the air central phases involved sea forces. From all phases surveyed and particularly, air central phases, air weapons appeared to achieve greater success against sea forces than against land forces. This fact does not imply air forces are superior to sea forces, nor does it imply that air forces should not be used to augment the organic firepower of land forces. This result may be reasonably explained by the contention that ship attacks are more suited to airpower and air weapons than attacks on land forces. Ships are relatively large, point targets; and, as such, they are easier to see and attack, once found. Consequently, the inherent maneuverability of aircraft tends to make ships easier targets against which to concentrate aerial firepower. Finally, ships tend to fail catastrophically when hit by concerted air attack. The lack of comparable success against land forces can be explained by the fact that land forces generally find it somewhat easier to take cover, conceal positions, and disperse. In contrast to ships, land forces, except in special circumstances, tend to fail incrementally rather than catastrophically. This leads one to conclude that airpower should not be the first weapon chosen to work the close-kill problem once close operations commence. If air weapons are to be more effective in that role, they must have better means to locate, target, and attack enemy land forces. Finally, the size of the islands did not allow for interdiction of land forces. Interdiction occurred at Guadalcanal; but sea forces were those interdicted, as the Japanese attempted to build their presence on the island. Had there been more opportunity for interdiction or battlefield air interdiction, it is possible the results of air versus land engagements may have been altered. Nevertheless, this analysis of two island campaigns showed air central phases involved land forces only once and point targets, such as ships, appeared to be more vulnerable to air weapons.

Although the intent of this study is not to present evidence for or against sea-based airpower, some observations can be made. In general, aircraft carriers are only a viable weapon system to the nations that can afford to protect them. Admirals Fletcher, Nagumo, Allara, and Woodward were forced to withdraw their carriers from land objective areas to prevent their destruction. The need to defend them detracts from the carrier's overall offensive capability, by either forcing the carrier to conduct more defensive counterair operations or forcing a withdrawal beyond enemy air reach. Furthermore, carrier-based airpower at Guadalcanal found it increased its impact when operations were conducted, in part, from the "unsinkable aircraft carrier," Henderson Field. Nonetheless, carriers were indispensable to all but the Argentine effort, and, generally, land-based airpower is less effective than sea-based airpower when operating in central ocean areas. However, large air offensives, beyond the scope of raids, will generally require land-based air to generate the number of offensive sorties necessary for accomplishing offensive objectives.

Finally, the capabilities airpower can bring to a campaign, particularly when augmented by precision, launch and leave, and stand-off weapons, are

speed, range, and mass *with* maneuver. There are, however, finite limits to airpower range, even with aerial refueling. Planners need to consider the placement of air bases within the theater to prevent airpower from operating at, or near, the extreme limits of its reach. Such a situation slows the tempo of air operations, reduces airpower's mass, diminishes airpower's operational maneuver, which diminishes the impact and influence airpower has on the campaign. In fact, some operations may require efforts to take and hold airfields. When the Japanese lost Henderson Field and the Argentines effectively lost Stanley Airport for fighter operations, they both lost the initiative in the campaign. Effective and secure basing, combined with high-technology weapons, gives airpower an influence on the campaign disproportionate to its numbers. Both combine to give airpower its unique capability to bring mass with maneuver to the campaign. When is airpower central to joint operations? When environmental and instrument conditions do not preclude air operations, and theater commanders require speed, range, and mass with maneuver against distinct, point targets where air weapons can be used most effectively.

Having answered the research question, what practical guidelines can aid the campaign planner? The following are suggested.

- Without some degree of air superiority, air forces cannot effectively assist land or sea forces, or strike an adversary to accomplish theater objectives.
- Air forces should be based as far forward as practical in order to project power as far forward as possible. This gives airpower more reach, mass, and sortie capability in the objective area. Failure to secure adequate basing risks losing the initiative.
- Air weapons described as "all-weather" have definite limitations which influence the conduct of operations. Planners should seek specific advice on air capabilities from air officers once the prevailing weather, environment, and topography within the theater of operations are known.
- Airpower is generally better suited to engage definite point targets, rather than widely dispersed, nondescript targets. Consequently, airpower should not be the first weapon chosen to resolve the close-kill problem.
- Air central phases are generally characterized by tactical and operational offensive operations—even when on the strategic defensive. As a result, airpower can be used effectively when employed offensively, to seek and close with the enemy beyond close operations range.
- High-technology air weapons increase the impact of airpower disproportionately to its numbers. The air plan should give priority for such weapons to appropriate target sets that further the theater commander's objectives, while preventing indiscriminate use of such weapons.

- All the above should demonstrate that the operational orchestration of air, land, and sea forces for strategic effect is as important today as it ever has been. As a result, theater air operations require a well-reasoned air concept of operations to meet the needs of situation and accomplish theater objectives.

Why should planners, particularly those who have land and sea expertise, concern themselves with the question of when airpower is central to the campaign? Marshal Tedder knew that "The first round in modern war takes place in the air—the fight for air superiority; and . . . the Air war is of vital importance to the operations at sea and on land. It is natural, and indeed, essential, that Sea and Land Commanders should take a very real interest in what air forces are doing—just as the Air Commander must know exactly what is happening on land and at sea. Plans should, in fact, be joint—a Land/Sea/Air Plan . . . to gain [the] superiority . . . made possible only by unity."[207]

Notes

1. Bernard Brodie, *Strategy in the Missile Age* (Princeton, N.J.: Princeton University Press, 1965). Borrowing from Brodie, the term *airpower* is defined for the purposes of this work as follows: Airpower is that force, and complementary infrastructure of aircraft, and spacecraft which operates within the aerospace medium, either independently, in concert with, or in support of surface forces to achieve strategic, operational, or tactical objectives within a theater of war. This definition is inclusive of all airpower, whether land or sea based.

2. Robert Frank Futrell, *Ideas, Concepts, Doctrine,* vol. 1, *Basic Thinking in the United States Air Force, 1907–1960* (Maxwell Air Force Base [AFB], Ala.: Air University Press, 1989), 47, and 92–96.

3. Certainly not all aspects of the campaigns will be addressed due to the limited scope of this study. However, the author believes the phases chosen for analysis best illustrate the tensions that exist between air, land, and sea forces.

4. United States Strategic Bombing Survey, *Air Campaigns of the Pacific War,* no. 71a (Washington, D.C.: Military Analysis Division, July 1947). Hereinafter cited as USSBS.

5. Ibid., 9.

6. Paul S. Dull, *A Battle History of the Imperial Japanese Navy 1941–1945,* 5th ed. (Annapolis: Naval Institute Press, 1989), 166.

7. Hiroyuki Agawa, *The Reluctant Admiral: Yamamoto and the Imperial Navy* (Tokyo, Japan: Kodansha International, 1979), 323.

8. B. H. Liddell Hart, *History of the Second World War* (New York: Perigee Books, 1982), 357.

9. Ernest J. King, *United States Navy at War 1941–1945: Official Reports to the Secretary of the Navy* (Washington, D.C.: United States Navy Department, 1946), 49.

10. Combined Operations Headquarters, "Lessons Learned from Guadalcanal Operation, 1942," (Maxwell AFB, Ala.: Air Force Historical Research Agency [AFHRA], December 1943), file 508.171Y-17.

11. Richard B. Frank, *Guadalcanal* (New York: Random House, 1990), 36.

12. Ibid.

13. Maj Gen Alexander Archer Vandegrift, USMC, commander, First Marine Division, "Final Report Guadalcanal Operation" (Maxwell AFB, Ala.: AFHRA, 1 July 1943), file 180.1-1, pt. 2. Hereinafter cited as Vandegrift Report.

14. First Marine Division, "Aircraft Support Plan, Guadalcanal Operation" (Maxwell AFB, Ala: AFHRA, 20 July 1942), file 180.1-1, pt. 1. Hereinafter cited as Air Support Plan.

15. George C. Kenney, *General Kenney Reports* (Washington, D.C.: Office of Air Force History, 1987), 45.

16. Air Support Plan.
17. Samuel Eliot Morison, *The Two-Ocean War* (Boston: Little, Brown and Co., 1963), 166.
18. Samuel Eliot Morison, *The Struggle for Guadalcanal August 1942–February 1943* (Boston: Little, Brown and Co., 1951), 27. Fletcher has been criticized for this decision. However, he maintained that the three carriers represented 75 percent of the remaining United States carriers and no replacements were available until 1943. Furthermore, he believed the Japanese would outnumber his carrier strength in the area if he lingered near Guadalcanal too long. Both of these considerations made Fletcher believe the prospects of receiving more damage than he could inflict made any decision to stay longer than two days more than a calculated risk.
19. Air Support Plan.
20. Allan R. Millet, *Semper Fidelis: The History of the United States Marine Corps* (New York: Macmillan, 1980), 365.
21. Vandegrift Report, pt. 1.
22. Agawa, 323.
23. Vandegrift Report, pt. 2.
24. John Costello, *The Pacific War, 1941–1945* (New York: Quill, 1982), 323.
25. Vandegrift Report, pt. 2.
26. Costello, 323–24.
27. Vandegrift Report, pt. 2.
28. Dull, 184.
29. Vandegrift Report, pt. 2.
30. Ibid.
31. Agawa, 323–24.
32. Dull, 184.
33. Ibid.
34. Frank, 64–69.
35. Vandegrift Report, pt. 2.
36. Morison, *Struggle,* 27–28. Once again Fletcher received criticism for his management of carrier resources. However, there were submarines reported in the area. Furthermore, the Zero had demonstrated its superiority over the Wildcat; and, by implication, the effectiveness of the carrier defense was of considerable concern to Fletcher.
37. Dull, 184.
38. Agawa, 323.
39. King, 52.
40. Morison, *Struggle,* 25–26.
41. Dull, 185.
42. Agawa, 323.
43. King, 53.
44. Morison, *Struggle,* 61–63.
45. Frank, 141.
46. Vandegrift Report, pt. 3.
47. Dull, 194–95.
48. Vandegrift Report, pt. 3.
49. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II,* vol. 4, *The Pacific: Guadalcanal to Saipan, August 1942 to July 1944* (1950; new imprint, Washington, D.C.: Office of Air Force History, 1983), 38–41; and Millet, 367.
50. Dull, 194–95.
51. Ibid.
52. Morison, *Two-Ocean,* 178.
53. Dull, 197.
54. Frank, 159–60.
55. Morison, *Struggle,* 80.
56. Ibid., 83. Also see Stephen Howarth, *To Shining Sea: A History of the United States Navy, 1775–1991* (New York: Random House, 1991), 420.
57. Dull, 197.

58. Ibid., 198.
59. Morison, *Struggle,* 87.
60. Ibid., 88.
61. Dull, 200.
62. Morison, *Struggle,* 89–90.
63. Ibid., 89.
64. Dull, 202–3.
65. Morison, *Struggle,* 101.
66. Ibid., 104.
67. Dull, 202–3.
68. Morison, *Struggle,* 104.
69. Craven and Cate, 40.
70. Morison, *Struggle,* 104.
71. USSBS 71a, 20.
72. Frank, 245–46.
73. Ibid., 338.
74. Vandegrift Report, pt. 4.
75. Morison, *Two-Ocean,* 190.
76. Dull, 227.
77. Morison, *Two-Ocean,* 194, 229–30.
78. Morison, *Struggle,* 208–216, 220–21.
79. Dull, 233.
80. Morison, *Struggle,* 224.
81. Thirteenth Air Force Headquarters, "Memorandum on First Marine Division Commander's Final Report," 27 March 1944, AFHRA, Maxwell AFB, Ala., file 7SO.04-1.
82. Millet, 370.
83. Eric Larrabee, *Commander in Chief; Franklin Delano Roosevelt, His Lieutenants, and Their War* (New York: Simon and Schuster, 1987), 298.
84. Morison, *Struggle,* 229–31, 236–39.
85. Dull, 239.
86. Morison, *Struggle,* 258.
87. Dull, 242.
88. Morison, *Struggle,* 260–62.
89. Vandegrift Report, pt. 5.
90. King, 60.
91. Morison, *Struggle,* 264–65, 267–69.
92. Ibid., 269; and Vandegrift Report, pt. 5.
93. Morison, *Struggle,* 270–82.
94. Dull, 247.
95. Alexander Archer Vandegrift, interviewed by United States Army Intelligence Service, 3 February 1943, Maxwell AFB, Ala., AFHRA, file 142.034-1, 3. Hereinafter cited as Vandegrift interview.
96. John Miller Jr., *United States Army in World War II,* vol. 2, *The War in the Pacific, Guadalcanal: The First Offensive* (Washington, D.C.: Historical Division, Department of the Army, 1949), 204–9.
97. Miller, 213; and Vandegrift Report, pt. 5.
98. See Miller for full account of Patch's operations December 1942–February 1943.
99. Maxwell D. Taylor, "Tactical Doctrine of the Japanese Army," Military Attaché Report no. 9755 (Maxwell AFB, Ala., AFHRA, 1 April 1939), file 248.501-65C, 46.
100. Agawa, 338–39. The Japanese took advantage of the American practice of allowing uncoded messages in situations of emergency. The Japanese signaled Catalina patrol planes searching for the Japanese fleet. When the Catalina's responded, the Japanese sent a false message of a Japanese carrier sighting, south-southeast of Guadalcanal. This sent the patrol aircraft away from the Japanese ships withdrawing troops from Guadalanal.
101. Morison, *Struggle,* 34; and King, 53.

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125. Martin Middlebrook, *Operation Corporate* (London: Viking Peguin Books, 1985), 93–97.

126. Max Hastings and Simon Jenkins, *The Battle of the Falklands* (New York: W. W. Norton and Co., 1984), 95.

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128. Latin American Newsletters, *The Falklands: The Official History* (London: Latin American Newsletters, 1983), 15. Communiqué 12 April, 1330 hours.

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133. Ibid., 48–68.

134. Jeffrey Ethell and Alfred Price, *Air War South Atlantic* (New York: Macmillan, 1983), 31–32.

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136. Ibid., 251.
137. Middlebrook, *Malvinas,* 75.
138. Middlebrook, *Operation Corporate,* 123.
139. Ibid., 124.
140. Ethell and Price, 55–56.
141. Ibid., 61.
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143. Hastings, 145.
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149. Robert Scheina, "The Malvinas Campaign," US Naval Institute *Proceedings,* May 1983, 105–6.
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151. Freedman and Gamba-Stonehouse, 262–63.
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153. Freedman and Gamba-Stonehouse, 264.
154. Moro, 125.
155. White Paper, 7.
156. Newsletters, *Falklands,* Communiqué 4 May, 2115 hours, 27.
157. Moro, 149–50.
158. Hastings and Jenkins, 151.
159. White Paper, 7.
160. Ethell and Price, 253–54.
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162. John F. Lehman Jr., *Command of the Seas* (New York: Charles Scribner's Sons, 1988), 277.
163. Ethell and Price, 84–98.
164. Freedman and Gamba-Stonehouse, 327–28.
165. Moro, 169–201. Searching Moro's daily accounts of action from 5–19 May, one can find only 16 fighter sorties flown by the Argentinians during the period. At least two factors may account for this: poor weather and the fact that the British battle group was keeping its distance from the Falklands after the attack on the *Sheffield* on 4 May.
166. Middlebrook, *Operation Corporate,* 196; and Freedman and Gamba-Stonehouse, 328–29.
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171. Ibid.
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181. Bruce W. Watson and Peter M. Dunn, ed., *Military Lessons of the Falkland Islands War: Views from the United States* (Boulder, Colo.: Westview Press, 1984), 157; and Moro, 228.

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186. Middlebrook, *Operation Corporate,* 248.

187. Watson and Dunn, 156–59.

188. Hastings, 230–31.

189. Middlebrook, *Operation Corporate,* 251; quoting Brigadier J. H. A. Thompson, commander of landing forces.

190. Ibid., 251.

191. Moro, 259; and Hastings, 239–40.

192. Hastings, 240.

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195. Newsletters, *Falklands,* Communiqué 30 May, 1415 hours, 43.

196. White Paper, 10.

197. Ibid.

198. Vaux, 101–13.

199. White Paper, 10.

200. Ibid., 10–12.

201. Hastings, 276.

202. Moro, 295.

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