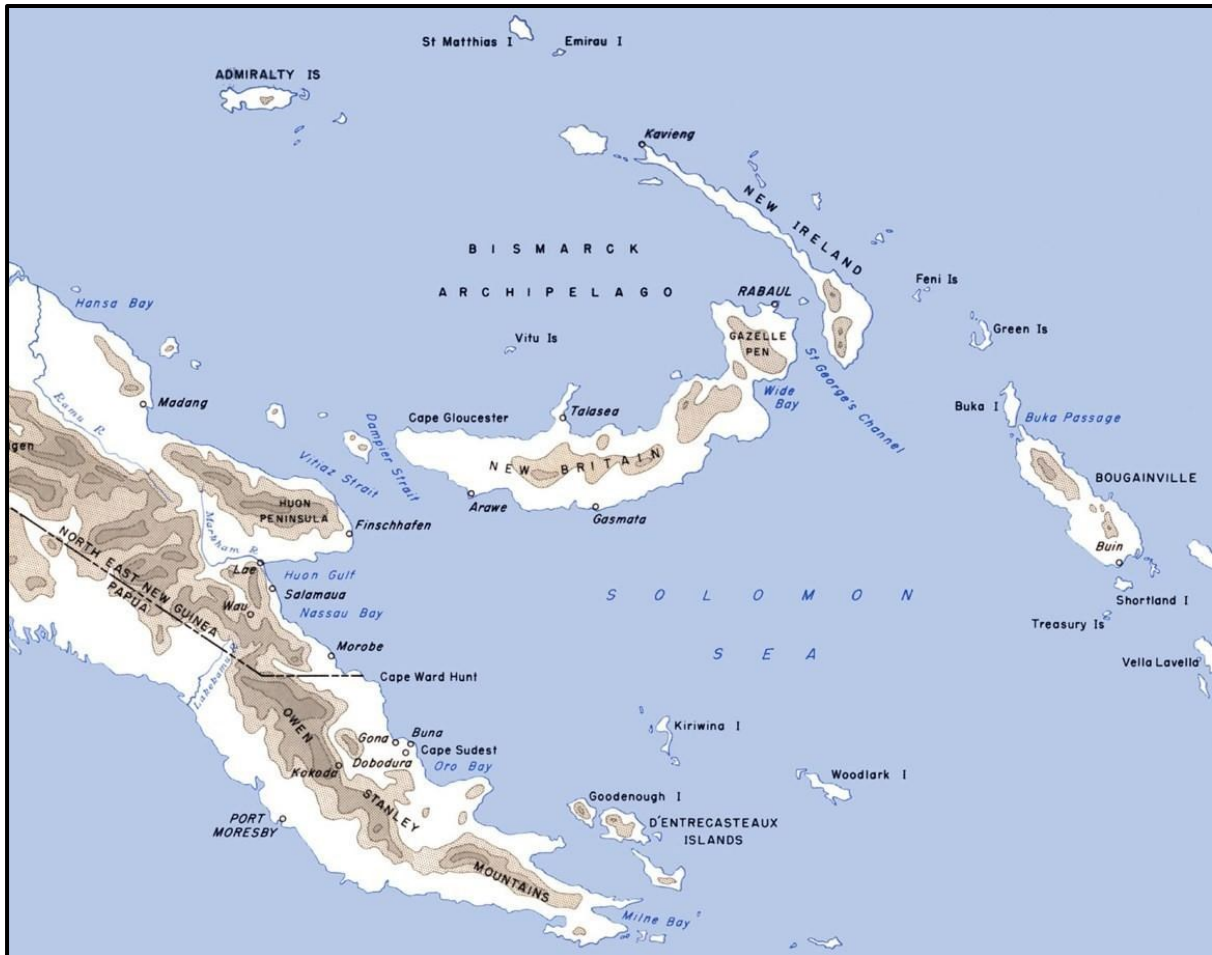


The brief but intense Battle of the Bismarck Sea proved a decisive tactical victory for the Allied forces in the South West Pacific Area (SWPA). Contrary to the name, it was a battle fought largely from the air, and culminated in a ferocious 15-minute period on 3 March when the Allied Air Forces (AAF) decimated a Japanese reinforcement convoy bound for Lae in New Guinea. The Bismarck Sea represented the culmination of a significant period of learning and adaptation by the AAF since commencing operations in the theatre. The AAF's operational approach, tactical doctrine, and aerial techniques had undergone significant transformation to meet the conditions of the theatre under the energetic and innovative leadership of Lieutenant-General George C. Kenney. The adaptation of aircraft for the specific task of shipping interdiction and the development of techniques like mast-height bombing were combined with critical intelligence advantages and thorough planning and coordination between the Australian and American squadrons and proved vital factors in the Allies' decisive victory. It heralded the maturation of the Fifth Air Force (5AF) as a tactical air force and validated Kenney's conception of air power in the theatre.

The Battle of the Bismarck Sea occurred at a time when the SWPA theatre was still contested and uncertain. The Allies did not possess material superiority, whilst the Imperial Japanese Navy (IJN) and Imperial Japanese Army (IJA) still held considerable forces to strike throughout the Pacific. Neither force had delivered a knockout blow, but the next clash in the larger contest for Rabaul and New Britain would be in New Guinea. The main engagement of the battle itself was brief, lasting only 15 minutes, but within that time the Japanese hopes of reinforcing New Guinea against the coming Allied offensive were dashed, with the loss of nearly 3,000 troops, twelve vessels, and at least 30 aircraft. Significantly, this convinced the Japanese to abandon any further attempts to reinforce the Lae-Salamaua area directly via sea. The engagement fundamentally shifted the initiative and balance in the theatre in favour of the Allies for the coming campaign in New Guinea.

The Battle of the Bismarck Sea was a product of the strategic situation in the SWPA during early 1943 which centred on the major Japanese base at Rabaul in New Britain. Rabaul was a focal point in Japan's defensive perimeter protecting Truk in the central Pacific. It was strongly garrisoned and provided the primary air and naval facilities via which the Japanese could strike into the SWPA and South Pacific (SOPAC). This made it the crucial objective in the Allies strategic offensive plan, which had been determined in July 1942. Likewise, protecting Rabaul as a base for continued operations in New Guinea and the Solomon Islands, and for the potential to recommence offensive operations, was a key consideration for Japanese Imperial General Headquarters (IGHQ). However, from mid-January 1943, the Japanese began disengaging from their two major operations in Papua and the Solomons. The Allied victories in these campaigns – at the Beachheads in Papua in January and on Guadalcanal by early February – resulted in an operational pause in the theatre. The

disruption of Japanese shipping had been a critical factor in both the Allied victories – with 5AF successfully isolating the Beachheads battlefield and preventing Japanese ships from resupplying the garrisons from mid-December, and the increasing destruction of “Tokyo Express” convoys contributing to the decision to evacuate from the Solomons.



Map 1: The South Pacific and South-West Pacific Areas, 1943.¹

Whilst the Allies regrouped in Papua and in the Solomons, Japanese IGHQ switched to a strategic defensive. It focused its efforts on preparing to defend the north-east coast of New Guinea to prevent the Allies from establishing further airfields which could be used to attack Rabaul. The IJA substantially reinforced the theatre with troops from the 20th, 41st, and 51st Divisions from China and Korea to consolidate its defensive perimeter, which ran from the northern Solomons to northern New Guinea. The Japanese still retained considerable naval forces for offensive actions, though they were badly losing the battle of attrition in the air. The Japanese Eight Area Army under General Hitoshi Imamura, which had been formed to coordinate the dual campaigns in the Solomons and

¹ From: Leo Hirrel, *US Army Campaigns of World War II: Bismarck Archipelago, 15 December 1943-27 November 1944* (Washington DC: Centre of Military History (US Army): 1994), 4-5.

Papua, instructed Lieutenant-General Hatazo Adachi's XVIII Army to secure positions at Wewak, Madang, and Lae to defend New Guinea.

Holding the strongpoints at Lae, Madang, and Wewak was vital. Lae was the optimal disembarkation point for the defence of New Guinea as it provided a bulwark against the Allied forces and was particularly crucial because of its airfield and harbour. It also provided an overland route back into Papua. However, it was within range of Allied medium bombers. Wewak and Madang were more secure as they were only within range of heavy bombers, but until the Madang-Lae road was completed, delivering supplies and troops to these locations presented serious logistical and transportation difficulties. It was from Lae that the Japanese launched their attack on the Australian airfield at Wau during early January 1943. However, 5AF's failure to stop the Japanese Operation 18 convoy, which sailed from Rabaul to Lae on 7 January with over 4,000 troops and their equipment, shook confidence in airpower's ability to reliably isolate battlefields. The Eighth Area Army recognised the threat Allied aircraft posed to its naval convoys in the area, though it was buoyed by the success of Operation 18 which had delivered most of its troops and cargo for the loss of only two transports. Subsequently, elements of the 20th and 41st Divisions were sent to Wewak in January and February, though the overland route south to Madang and Lae was still prohibitively difficult. It was then decided to dispatch the 51st Division and Headquarters XVIII Army directly to Lae.

The ability to exert air power to support or enable operations was proving increasingly important in the Pacific theatre. The SWPA was unique as a maritime theatre because its archipelagic geography meant there were many islands which could base aircraft, and narrow seas which made it ill-suited to aircraft carriers and naval aviation. These were largely reserved for the open oceans of the south and central Pacific where they were less vulnerable to land-based airpower. Land based aircraft were therefore crucial to controlling the sea, which in turn controlled the land. Papua and New Guinea's value were as the sites for airbases to continue the offensive against Rabaul by attacking its lines of communication and dislocating the supporting Japanese strongholds.

The responsibility for striking Rabaul during early 1943 fell to the AAF. Air power was the SWPA's primary offensive capability; the Allied Naval Forces lacked the type and number of vessels needed and did not possess any aircraft carriers, whilst the Allied Land Forces lacked mobility until further naval and amphibious resources were allocated to the theatre. Achieving air superiority in the theatre was a priority for the AAF to enable future operations, attack on Japanese shipping, and to protect the Allies' own vessels. The AAF represented to combined Australian and American air forces in the SWPA theatre. Its primary combat component was 5AF, which was made up of predominantly American combat squadrons for operations over Papua, New Guinea, and New Britain. An Advanced Command (ADVON5AF) led by Kenney's trusted deputy Major-General Ennis

Whitehead was established in Port Moresby to exert operational control close to the action. 5AF was comprised of the V Fighter Command under Brigadier-General Paul Wurtsmith, V Bomber Command under Brigadier-General Kenneth Walker and later Brigadier-General Howard Ramey after Walker was shot down over Rabaul, and No.9 Operational Group RAAF under Group-Captain William “Bull” Garing and later Air-Commodore Paul Hewitt. Whilst it was a coalition command, 5AF operated largely on American principles, but there were many RAAF airmen filling out USAAF aircrews. The cooperation between Australian and American planners and squadrons proved a critical factor in the execution of the Bismarck Sea engagement plan.

Kenney was a firm believer in the United States Army Air Forces’ (USAAF) tactical doctrine which prioritised establishing air superiority to enable, in order of importance, the interdiction of enemy lines of communication and the support of ground forces. He insisted that the best contribution his air forces could make was ‘to sink ships and shoot down planes’.² This was best achieved by destroying Japanese aircraft on the ground or drawing them into combat in defence of convoys, and by attacking ships in harbour. Ships at sea proved much harder targets until 5AF adapted its tactics and techniques to suit the conditions under which it was operating and its available aircraft. The failure to stop the Okabe Detachment from reaching Lae in early 1943 had stung Kenney and the 5AF’s reputation. Despite several different attack missions by heavy bombers, only one transport was sunk and one disabled and most troops and equipment made it ashore. This came at the cost of 21 bombers damaged or destroyed. However, the failure yielded several useful lessons for conducting air operations against convoys. The air attacks were scattered and uncoordinated and did not combine the effects of different aircraft. Allied aircraft had also enjoyed success against Japanese escort fighters, shooting down an estimated 60 aircraft. This spoke to the broader problem for the IJA and IJN aviation which were losing the technological edge and too many experienced pilots in the theatre.

Fifth Air Force had spent the latter half of 1942 honing its capabilities and increasing its number of operational aircraft to improve its effectiveness. It had to adapt, innovate, and improvise to overcome barriers posed by operating in a difficult environment and at the end of a very long supply line. Kenney recognised that innovation was essential to succeeding under such conditions:

I encourage personnel who have any ideas to go right ahead with them. It makes no difference what the man's rank or his previous experience. If he has an idea that sounds feasible he is told to go ahead and he is given every assistance.³

² George C. Kenney, Diary, 3 September 1942, RG54 B1 VII, MacArthur Memorial.

³ George C. Kenney, "Air Power in the Southwest Pacific," *Air Force* 27 (June 1944): 59.

This led to numerous attempts at different levels to address some of the flaws in USAAF tactical doctrine and endorsed techniques for anti-shipping operations. Doctrine advocated for heavy bombers to employ medium to high-altitude (10-20,000ft) daylight attacks against shipping, but this required clear conditions, exceptional accuracy, and anticipating a ship's evasive manoeuvres. However, most Japanese convoys ran during poor weather or at night, which hindered observation, and most crews were not yet experienced enough to achieve the necessary accuracy. Heavy bombers like 5AF's B-17s and B-24s were also hampered by maintenance issues and a shortage of replacement parts which kept many airframes on the ground. Under Kenney's direction, 5AF commenced experimentation with low altitude attacks and employing medium and light bombers, which were faster and more manoeuvrable.

From this experimentation came the adoption of skip-bombing techniques. Skip-bombing had been used in the European and Mediterranean theatres to some success by the RAF but was not part of the USAAF's standard operating procedures. Experiments with skip-bombing were initially opposed by Walker. He was a conventional airman who firmly believed in the USAAF's strategic bombing theory which made him ill-suited to the Pacific theatre which, at this stage, did not possess the bombers nor the targets for such an approach. Nor did Walker want to stray from established tactical doctrine and techniques. However, he was succeeded by Ramey in February 1943, who came with a more open mindset. Ramey had been a staff officer under Kenney at the Fourth Air Force and was more progressive and flexible with innovation. He endorsed skip-bombing by medium and light bombers.

Skip-bombing enabled aircrews to achieve the accuracy needed to hit commerce vessels and destroyers which made up Japanese naval convoys. However, it was a difficult and dangerous technique. It required an aircraft to approach between 100-300ft altitude at maximum airspeed before releasing its bombs 50-100ft from the target. The intent was for the bomb to skip across the water before exploding along the hull's waterline. Initial trials using B-17s found them too slow, lacking manoeuvrability, and lacking forward firepower to suppress enemy anti-aircraft (AA) fire. Faster and more manoeuvrable B-25s and A-20s proved far better suited to the approach and the attack. A final adjustment was made by arming the bombs with a 5-second delay fuze and releasing them to directly strike the side of the vessel before dropping beneath the waterline before exploding (see Figure 1). This refinement was called mast-height or masthead bombing.

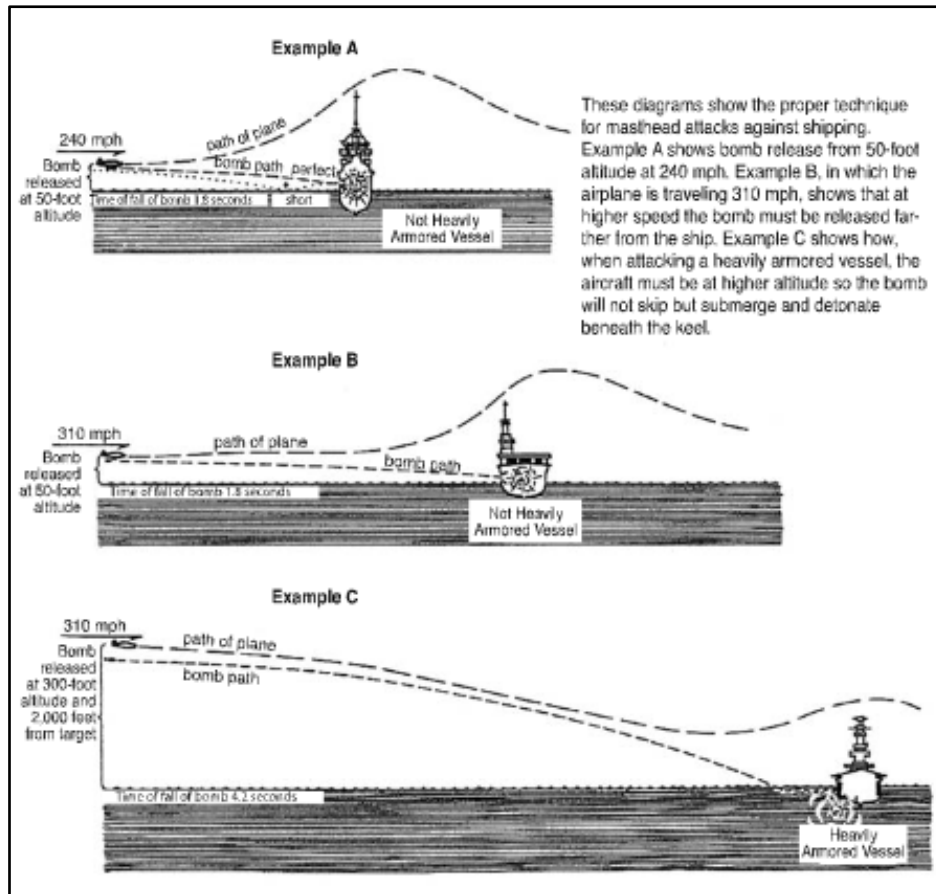


Figure 1: Masthead Attack Techniques.⁴

In addition to adapting tactics and techniques, 5AF also undertook technical improvisation and innovation to adapt its aircraft to fulfill specific needs. The paucity of aircraft in the SWPA and the prioritisation of new aircraft for the European theatre placed a premium on modifying and adapting the airframes available. Fortunately, 5AF possessed tinker-extraordinaire Major Paul “Pappy” Gunn. Kenney had been greatly impressed by Gunn’s ingenuity and had added him to his staff to manage special technical projects. Gunn’s focus had been on improving the range and firepower of 5AF’s light and medium bombers. He had modified the 89th Bombardment Squadron’s A-20s by adding an extra four .50cal machineguns into the nose compartment to complement the existing four fixed .30cal machineguns and had added fuel tanks into the bomb bays. Kenney then authorised Gunn to ‘fill [a B-25] with .50cal machineguns’. Gunn set to work on the 90th Bombardment Squadron’s aircraft by mounting eight forward-firing .50cal machineguns into the front of the plane. This produced a fearsome volume of firepower ideally suited to suppressing enemy AA guns and destroying commerce vessels. Tactics were further adopted to make best use of the aircrafts’ firepower by ensuring that B-25s attacked in pairs, with one aircraft strafing a target

⁴ From: Matthew Rodman, *A War of Their Own: Bombers over the Southwest Pacific* (Maxwell: Air University Press, 2005), 70-71.

stem to stern to neutralise anti-aircraft positions whilst another attacked beam-on to bomb it. By early 1943, 5AF had both the aircraft and the methods to interdict Japanese convoys. The next Japanese attempt to reinforce Lae would see these approaches tested.

Considering the Allies’ growing air superiority, Eighth Area Army acknowledge great risk in attempting to reinforce New Guinea via sea. However, it committed to reinforcing Lae with the 51st Division as part of Operation 81. The convoy comprised eight destroyers from the 3rd Destroyer Flotilla and eight transport vessels, massing 37,324 tons of cargo capacity under the overall command of Admiral Masitomi Kimura (See Figure 2). This convoy would substantially bolster the garrison’s strength and resources. This included five fully equipped battalions, plus artillery, engineers, supporting units, along with three months of supplies including 1000m³ of fuel, 500m³ of ammunition, 500m³ of provisions and stores, 500m³ of aircraft material, 30 artillery pieces of varying calibres, 23 trucks and a variety of smaller wheeled transports, 34 motorised landing craft and barges, and 40 collapsible boats. One hundred IJA and IJN fighters were assigned to escort the convoy. Meanwhile, anti-submarine patrols would sweep the route whilst Allied airfields at Port Moresby and Milne Bay would be attacked to ground aircraft. The convoy would be routed north of New Britain rather than along the south coast to deceive the Allies into thinking it was bound for Wewak rather than Lae. Despite the considerable resources committed to the operation, staff planning predicted it had a 50% chance of success and would likely cost half of transports and 30-40 aircraft.

Destroyers	Transport Vessels	Tonnage	Personnel
<i>Shirayuki</i> (Flagship)	<i>Aiyo Maru</i>	2,716	252
<i>Yukikaze</i>	<i>Kembu Maru</i>	950	N/A
<i>Tokitsukaze</i>	<i>Kyokusei Maru</i>	5,493	1,203
<i>Arashio</i>	<i>Oigawa Maru</i>	6,494	1,324
<i>Asashio</i>	<i>Shinai Maru</i>	3,793	1,502
<i>Asagumo</i>	<i>Taimei Maru</i>	2,883	200
<i>Shikinami</i>	<i>Teiyo Maru</i>	6,870	1,923
<i>Uranami</i>	<i>Nojima Maru</i>	8,125	N/A

Figure 2: Composition of Operation 81 Convoy.⁵

The AAF’s planners anticipated the Japanese would make another attempt to reinforce New Guinea during the first quarter of 1943. 5AF developed three plans to account for each likely reinforcement scenarios. The first relied on heavy bombers to intercept a convoy bound for Wewak. The second accounted for the convoy splitting and allocating targets based on the vessels’ destination and aircrafts’ range. The third plan was based on the convoy heading to Lae and engaging it in the Huon Gulf. This enabled the maximum number of aircraft to be employed, but the

⁵ From: Phillip Bradley, *To Salamaua* (Port Melbourne: Cambridge University Press, 2010), 6-8.

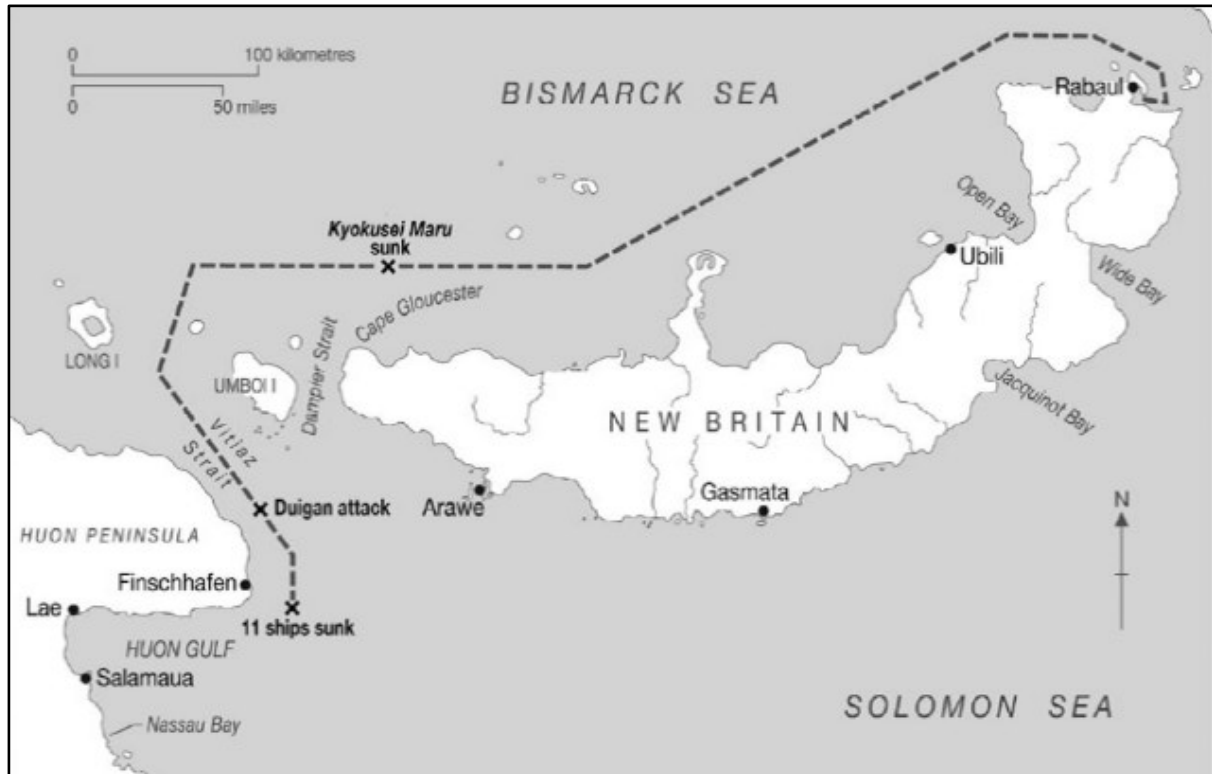
engagement area was close to the convoy's destination which meant the attack needed to be complete and decisive to prevent it from delivering its cargo.⁶ Garing worked closely with Whitehead to formulate the plan. Whitehead had six RAAF and 17 USAAF squadrons available for operations, totalling 154 fighters (P-39s, P-40s, P-38s, and Beaufighters), 34 light bombers (A-20s and Beauforts), 41 medium bombers (B-25s and B-26s), and 39 heavy bombers (B-17s and B-24s). Key considerations were to mass the arrival and effect of the aircraft attacking from multiple altitudes whilst dealing with enemy fighter escorts and suppressing AA fire. They initiated a 6-week period of training so that bomber crews could practice their techniques.

Intelligence also proved a critical factor in Allied preparations. Reconnaissance flights over Rabaul on 22 February revealed 59 vessels equating to approximately 299,000 tonnes of shipping in the harbour, which suggested the formation of a convoy. Additionally, Japanese anti-submarine flights over shipping routes and raids against Allied airfields further suggested an impending naval operation. The most valuable piece of intelligence was from the ULTRA signals decryptions which indicated a convoy would sail for Lae between 28 February and 12 March. Kenney informed Whitehead of these developments and moved as many aircraft as possible north of the Owen Stanley Range to avoid possible disruptions due to bad weather. On 28 February, a full rehearsal was conducted in Port Moresby Harbour to test formations, timings, and coordination under conditions which would replicate a possible engagement in the Huon Gulf. The first attempt revealed a lack of coordination and cohesion, but a subsequent rehearsal proved much better. The Japanese convoy left Rabaul harbour that evening, shielded by poor weather.

The decisive engagement in the Huon Gulf was preceded by a series of interrupted attacks as the Allies sighted and then lost contact with the convoy as it travelled around New Britain and towards New Guinea. The convoy was first spotted by Allied reconnaissance flights on the afternoon of 1 March. However, the Japanese intercepted Allied radio communications confirming its sighting, which alerted them to expect attacks. Several heavy bomber missions were launched overnight but lost contact with the convoy in bad weather. The Allies began 2 March with all aircrews on standby and commenced attacking airfields in New Guinea to keep Japanese fighters on the ground. The convoy was spotted again early in the morning but thunderstorms and cloud down to 1,500ft provided it significant cover. Whitehead launched another attack with heavy bombers, this time by 26 B-17s escorted by 16 P-38s. The bombers located the convoy and attacked from 5,000ft whilst the

⁶ Major-General Ennis Whitehead, Commander ADVON 5AF, "Report on the Battle of the Bismarck Sea," 6 April 1943.

P-38s engaged the escorts. The bombers managed several hits on the transports, sinking the *Kyokusei Maru* and badly damaging the *Teijo Maru* and *Nojima*.



Map 2: Operation 81 Convoy Route and Engagements, 1-3 March 1943.⁷

Another attack was launched during the evening by ten B-17s but whilst it recorded some hits, there were no clear results and Japanese fighters interfered with the bombing runs. However, the convoy continued. The destroyers *Yukikaze* and *Asagumo* pulled almost 1,000 troops from the water before sailing at full speed to Lae to deliver their cargo and then returned to the convoy. Poor weather overnight again provided excellent cover but a lone Catalina from 11 Squadron RAAF, piloted by Flight Lieutenant Terry Duiggan, harassed the convoy, dropping below the clouds to keep sight. He noted the convoy's course change southwards once it cleared the Vitiaz Strait and headed into the Huon Gulf, which confirmed it was bound for Lae. Crucially, Admiral Kimura decided not to exploit the weather and make a fast run to Lae that night. It is possible he preferred waiting for air cover or hoped to exploit a coming storm for cover during the day.

Confirmation that the convoy's intended destination was Lae enabled 5AF to enact its planning for a coordinated massed air attack in the Huon Gulf. AAF Mission No.61 was quickly issued.⁸ Allied aircraft would rendezvous over Cape Ward Hunt at 0930 before proceeding to the

⁷ From: Bradley, *To Salamaua*, 14.

⁸ Allied Air Forces, Mission No. 61, 3 March 1943, cited in Gregory Gilbert, *The Battle of the Bismarck Sea March 1943* (Canberra: Air Power Development Centre, 2013), 42-43.

engagement area at 1000. No.30 Squadron's Beaufighters were paired to attack with a squadron of B-25s which had not been modified and therefore lacked forward-facing firepower. Meanwhile, Australian Beauforts No.100 Squadron armed with torpedoes took off from Milne Bay early in the morning. Whilst only two aircraft managed to attack the convoy and neither scored a hit, it had a significant effect as the threat of torpedoes would influence the convoy's response to the main attack several hours later. The main attack assembled as planned and to schedule, while other Allied aircraft struck Japanese airfields at Lae to denude the convoy of fighter cover.

Element	Aircraft	Altitude	Role/Ordnance/Timing
1.	1 Squadron B-17s 43rd Bombardment Group	7-10,000ft	1000lb Demolition Bombs, Instant Fuzes Initiate Attack
2.	1 Squadron B-25s 38th Bombardment Group	3-6,000ft	500lb Demolition Bombs, Instant Fuzes Immediately after Mast-Height Attacks
3.	1 Squadron B-25s 3rd Bombardment Group	3-6,000ft	500lb Demolition Bombs, Instant Fuzes Simultaneous with Second Element
4.	1 Squadron Beaufighters No.30 Squadron	Mast-height	Strafing Immediately after First Element Coordinated with Fifth Element
5.	1 Squadron B-25s 38th Bombardment Group	Mast-height	500lb Demolition Bombs, 5-Sec. Delay Immediately after First Element Coordinated with Fourth Element
6.	1 Squadron B-25C-1s 3rd Bombardment Group	Mast-height	500lb Demolition Bombs, 5-Sec. Delay Immediately after First Element
7.	1 Squadron A-20s 3rd Bombardment Group	Mast-height	500lb Demolition Bombs, 5-Sec. Delay Immediately after First Element
8.	2 Squadrons P-38s 35th & 49th Fighter Groups	-	Escort

Figure 3: Aircraft and Attack Details from AAF Mission No.61, 3 March 1943.⁹

The attack was conducted in three waves just minutes apart. The first wave of B-17s drew heavy AA fire whilst the Japanese fighter escorts peeled away to engage the bombers and P-38s. The B-17s attacking from medium altitude did not score any hits, but the attack scattered the convoy and weakened its defensive formation. The dispersed ships were highly vulnerable to the incoming mast-height attacks of the B-25s and A-20s. The escort destroyers' 13mm and 25mm guns lacked punch

⁹ Allied Air Forces, Mission No. 61, 3 March 1943, cited in Gregory Gilbert, *The Battle of the Bismarck Sea March 1943* (Canberra: Air Power Development Centre, 2013), 42-43.



Figure 4: An A-20 of the 3rd Bombardment Group Conducts a Mast-Height Attack.¹⁰

and could not sustain the weight of fire needed to defend against rapidly approaching aircraft. Furthermore, the ships turned towards the attacking aircraft, mistaking them for more torpedo bombers, allowing the mast-height attacks to easily rake the ships from stem to stern with their machineguns and cannons. The Australian Beaufighters led the low-level attack. They had been instructed to target the ships' bridges and AA emplacements to knock out the vessel's command, communications, and defences. The first strafing runs wreaked havoc and confusion, making the ships easy targets for the A-20s and B-25s which followed immediately after. Flight Lieutenant Fred Cassidy, piloting a Beaufighter of No.30 Squadron, recalled:

In the Bismarck Sea battle we strafed from the front. The ships were careening in all directions...You also had to dodge the bomb-splashes...because the [bombers] were dropping from 6000-10,000 feet and they'd make huge splashes when we were about 20 feet off the sea. These splashes were thirty to fifty feet across and followed by a tremendous spout of water. We had to fly through those. The damage done to the Japanese was devastating.¹¹

¹⁰ From: Richard L. Watson, "Battle of the Bismarck Sea" in *The US Army Air Forces in World War II: The Pacific – Guadalcanal to Saipan, August 1942 to July 1942*, Vol. I, eds. Wesley Craven and James Cate (Washington DC: Office of Air Force History, 1983), 142.

¹¹ Flight-Lieutenant Fred Cassidy, No. 30 Squadron RAAF, cited in Gilbert, *The Battle of the Bismarck Sea*, 49.

After the chaos of the mast-height attacks, the third wave of bomber attacks commenced, but only claimed two hits. However, significant damage had already been done, leaving most of the convoy scattered, sinking, or badly damaged. Figure 5 shows the high degree of accuracy achieved by aircraft employing the mast-height technique compared to medium altitude bombing: Medium altitude attacks achieved 29 hits from 387 bombs at a 7.5% hit rate, whilst mast-height attacks achieved 49 hits from 137 bombs at a 35% hit rate.

Medium Altitude Attack			Mast-Height Attacks		
Bombs Dropped	Hits	Hit %	Bombs Dropped	Hits	Hit %
263 x 1000lb	19	7.2	137 x 500lb	48	35.0
114 x 500lb	8	3.5			
10 x 250lb	2	10.0			

Figure 5: Comparison of Medium Altitude and Mast-Height Attacks.¹²

The brief 15-minute period of the engagement demonstrated the value of coordinated, massed, and combined effects for air attacks. Seven transports and three destroyers had been disabled, sunk, or were sinking, and the convoy spread across 250km² of the Bismarck Sea. The remaining destroyers attempted to rescue survivors and lifeboats from the water. Four destroyers returned to Rabaul whilst the *Asashio* remained with the badly damaged transports. However, over 1,000 troops remained in the water. At 1500 5AF launched another coordinated attack which sunk two transports and a destroyer and forced another transport and two destroyers to be abandoned. The Japanese also lost 20 aircraft during the day. The cost for the Allies had been minimal: one Beaufighter and one B-25 had been damaged, whilst three P-38s and one B-17 had been shot down. The B-17 had been rammed by a Japanese fighter, forcing the crew to bail out, but they had been shot in their parachutes by Japanese aircraft. This incensed Allied air crews and meant that attacks renewed the next day were conducted mercilessly.

Whilst the convoy had been destroyed, the mission to prevent the Japanese from reaching Lae continued. This involved the grim business of ensuring the survivors did not make it to New Guinea. The barges and launches in the water remained legitimate military targets, but some aircrews were reluctant to conduct these missions. No.30 Squadron's report on the attack noted:

Although the necessity for the strafing of undefended barges was completely understood, and the targets accordingly thoroughly strafed, the two missions were most distasteful for the crews involved.¹³

¹² Adapted From: Air Evaluation Board Southwest Pacific Area, "Battle of the Bismarck Sea and Development of Masthead Attacks," (Maxwell: Air Force Historical Research Agency, 1945), 47.

¹³ No. 30 Squadron RAAF, "Attack on Convoy Off Lae, 3/3/43," A9695/621, National Archives of Australia.

However, some American crews saw it as a chance for revenge after the actions of the Japanese against the B-17 crew. During the afternoon of 4 March, a squadron of B-25s attacked the site of the convoy's destruction and expended 18,000 rounds of .50cal ammunition strafing targets and destroying small boats. Japanese submarines managed to rescue over 300 survivors during the night, but they were constantly harassed by Torpedo Patrol Boats and aircraft. A final Allied air attack against Lae on 5 March convinced the Japanese to withdraw their forward air units, giving the Allies air supremacy over the Bismarck Sea.

Initially, Allied intelligence reports claimed 22 ships destroyed and 15,000 troops killed. However, this had conflated two separate sightings of the convoy as two parts of the same convoy. Regardless, this was released as the 'official' statement in MacArthur's communique after the battle, and neither Kenney nor MacArthur ever retracted the claims. The actual losses were twelve ships – four destroyers and all eight transports – along with 30 aircraft and about 3,000 troops. About 2,700 troops were rescued from the water and the disabled vessels and returned to Rabaul. Only 1,200 troops found their way to Lae, largely by the two destroyers' night run on 3 March and by small craft which were scattered during the attack. Significantly, practically all military equipment and supplies were prevented from reaching their destination.

The AAF could point to the Battle of the Bismarck Sea as a decisive engagement with far reaching strategic effects, borne from an operational approach to air power and tactical and technical ingenuity and adaptability. The best tactics and techniques present the enemy with a dilemma: to counter one element, they must expose themselves to another. This was evident in how the Allies combined the threat of torpedo attacks, the disruptive effects of medium-altitude bombing, and the neutralising and destructive effects of low-level attacks to prevent the Japanese vessels from making an immediate or coordinated response. The mast-height attacks proved tremendously successful. Whitehead noted in a post action report, "It should be kept in mind that the enemy had not been subjected to such an attack previous to this. Surprise undoubtedly was a considerable factor in our attack bomber success," though in time the Japanese would themselves learn and adapt to defend against this technique.¹⁴ Importantly, the engagement had also demonstrated the need to coordinate and mass air actions to maximise effects. Prior to the Bismarck Sea, no Allied air attacks against land or sea targets had been mounted at a comparable scale. For the Japanese, the battle highlighted issues with a lack of coordination and understanding between the IJN and IJA, and the subsequent blame-shifting between the two services led the IJA to pull its air forces back to northern New Guinea to protect Army interests. Furthermore, it demonstrated the

¹⁴ Major-General Ennis Whitehead, Commander ADVON 5AF, "Report on the Battle of the Bismarck Sea," 6 April 1943.

waning technological advantage and the unsustainable losses to ships, aircraft, and most importantly, aircrews, at a time when Allied materiel superiority and experience was in the ascendancy.

The Battle of the Bismarck Sea had a definite bearing on later operations in New Guinea. However, the Allies failed to capitalise on the initiative immediately after the battle as they were themselves undergoing a period of refitting and rebuilding after the arduous Papuan campaign and still lacked amphibious craft. The Allies would not be prepared to attempt operations against Lae until September. At the time, XVIIIth Army reported it could not defend the Lae area. Had the Japanese convoy managed to deliver its reinforcements and equipment, it is worth considering how this might have changed the Allied prospects for Operation Postern. The operation was predicated on dispersing the 6,000-strong Lae garrison to defend against an Allied attack on Salamaua to enable an amphibious landing by the Australian 9th Division and an airborne landing by the Australian 7th Division to cut the Japanese lines of communication between Lae and Madang. The biggest complicating factor was the unknown time it might take to capture Lae. The Beachhead Operations had shown how difficult it could be to overcome a determined and dug-in enemy. If the garrison strength had been doubled by Operation 81, then the consequences could reasonably have led to a much-prolonged operation against Lae, with possible complications for the 3rd and 5th Australian Division's advance towards Salamaua, and may have allowed the Japanese to conduct a more aggressive defence.

March 1943 proved a disastrous month for the Japanese in New Guinea. After the convoy was destroyed, the main priority for the XVIIIth Army was simply to hold on. The Eighth Area Army ceased naval convoys from Rabaul to Lae, meaning any reinforcement or resupply had to be shipped to Madang, and then moved by barge along the coast until the Madang-Lae Road was finished. Whilst the losses in the Bismarck Sea were severe and dramatic, US Navy submarines also sunk another 26 transport vessels that month. The situation demonstrated that fundamentally, the SWPA would be determined by logistics and the ability to sustain operations. This was a battle the Japanese were beginning to lose badly. Lieutenant-Colonel Kumao Imoto, and Eighth Area Army staff officer, recorded:

Almost all of the anguish felt and discussions made by the staff officers...mainly concerned the problems of supply and transport with the very small numbers of ships and transports available. There were no [discussions] of active operations to destroy the enemy, only struggles and calculations of how to maintain the life [of our forces]. Even that was becoming more painful as the days advanced.¹⁵

¹⁵ Lieutenant-Colonel Kumao Imoto cited in Hiroyuki Shindo, "The Japanese Army's 'Unplanned' Campaign in the South Pacific," in *Australia 1942: In the Shadow of War*, ed. Peter Dean (Port Melbourne: Cambridge University Press, 2012), 73.

The AAF's increasing effectiveness in establishing air superiority and conducting interdiction was vital to the logistical battle.

There have been few victories more decisive in terms of the losses sustained by each force and the strategic, operational, and tactical effects achieved. The Battle of the Bismarck Sea established the critical role of air power in the theatre as both a striking element and as an enabler for littoral and amphibious operations. The cumulative effect of controlling the air was the ability to control the sea, and thence the land. The battle also marked the maturation of 5AF as a fighting force which had adapted its organisation and procedures to meet the operational circumstances of the SWPA. It had adapted to incorporate both Australian and American elements to create a combined coalition air force, had improvised and innovated technically to develop capabilities required for its missions, and experimented with tactics and techniques to improve effectiveness. The Battle of the Bismarck Sea was the culmination of all these processes and concerted preparations. Kenney wrote:

The Battle of the Bismarck Sea was not something that just happened. We didn't just see the convoy coming and go out and hit it. It was planned and rehearsed. We prepared. We even picked the spot for the engagement.¹⁶

The considerable losses incurred in such a single engagement had a profound effect on the outlook and application of air power in the theatre and shaped the context and course of the impending New Guinea campaign during the latter part of 1943.

¹⁶ Kenney, "Air Power in the South West Pacific," 60.