Autumn Readings

- Air Base Defense
- Kenney in the Pacific
- Wartime Manpower

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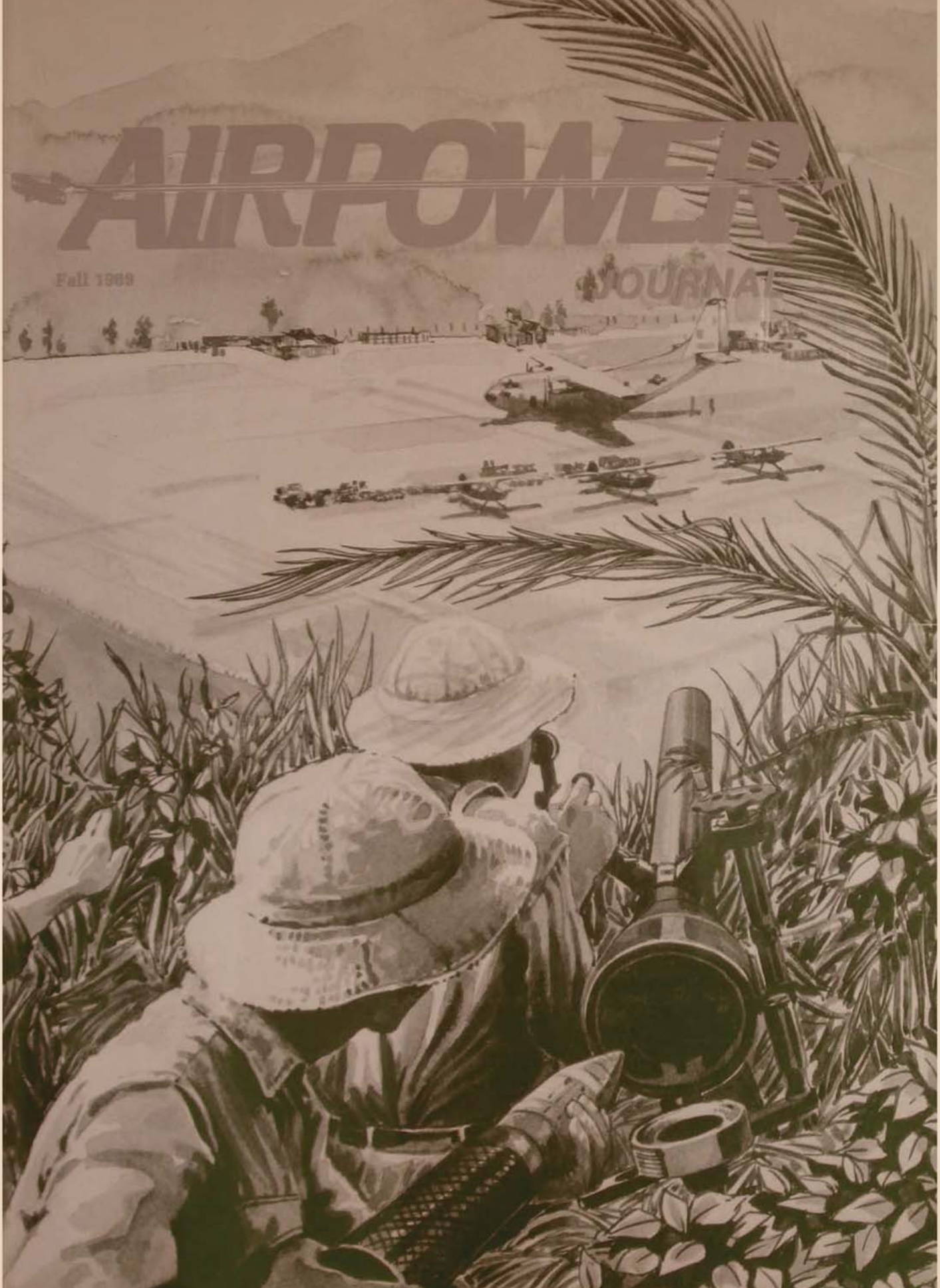
AIRPOWER
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Letters to the editor are encouraged. All correspondence should be addressed to the Editor, Airpower Journal, Walker Hall, Maxwell AFB AL 36112-5532. We reserve the right to edit the material for overall length.

RECONNAISSANCE

(Editor's Note: The following letter is in response to two articles from earlier editions of Airpower Journal*—specifically, "Tactical Employment of Strategic Air Power in Korea" from Winter 1988 and "Air Battle 2000 in the NATO Alliance: Exploiting Conceptual and Technological Advances" from the Winter 1987–88 issue.)*

We are living in the age of information. Telecommunications and the electronic transfer of data and information occur at a rate that is staggering to the mind. The battlefield of tomorrow is no different. The battle lines will demand faster means of gathering and disseminating information than ever before. I believe that the future of aerial reconnaissance lies in remotely piloted vehicles (RPVs) and in improved systems for aircraft that are currently in the inventory. Each threat level—low, medium, and high—presents a different challenge to the designers of any system or platform that will meet the needs of each situation.

Aerial reconnaissance is worth its weight in gold. Some of the missions in which it will most likely be used include (1) advance warning of troop transfers (indicating escalation, potential outbreaks of hostilities, and related information), (2) target acquisition (including identifying, pinpointing location, and assessing strength of materials needed to engage ground targets), (3) battle-damage assessment (determining the results of strikes against targets), and (4) other general-purpose intelligence gathering.

This list is by no means complete. I believe that the current platforms are adequate for missions in low-threat environments and most of those in medium-threat environments. Aircraft such as the C-130 Hercules and even the older C-47s have proven themselves reliable and cost-effective for these types of missions. Their overall size and stability provide excellent platforms for even the nost advanced cameras and equipment. The medium-threat environment can certainly be met by such platforms as the RF-4 and other reconnaissance aircraft that are equipped with electronic countermeasures devices. It is within the high-threat environment that I feel most changes could and should be made.

As an example, let's look at the mission of battle-damage assessment. Under heavy fire and in situations requiring up-to-the-minute intelligence, we have relied upon the audacity and daring of reconnaissance pilots and their expensive hardware.

Now, imagine a scenario in which an RPV carrying advanced sensing equipment were to accompany a strike force on a run. After the first aircraft made an attack, the inexpensive drone could loiter in the vicinity of the target and instantaneously relay information to the striking aircraft, showing whether a second aircraft needed to attempt a run. This would reduce the exposure of manned aircraft to enemy fire. The RPVs I have mentioned are certainly not a new idea, but an idea whose time has come.

Advances in the technology associated with such vehicles clearly point the way. Providing that drones remain inexpensive, I see no reason why we could not expect to see them operational within four to five years. By "inexpensive," I mean that the optical and sensing equipment would account for the major portion of the cost.

Shifting this mission to unmanned vehicles would free up more equipment and funds for primary attack and fighter aircraft. As mentioned earlier, the ideal system would include the ability to directly transfer the imagery to the aircraft accompanying an RPV on the mission. This could also be expanded to include the transfer of information to the rear, where unit commanders could assess the situation firsthand. Other advantages would be that the drone could then be expendable, since the information would not have to be retrieved and processed like film before it could be used. "Expendability" in this sense means that the drone could be directed into hostile fire and remain close to

both the ground and the target. Even as it goes to its destruction, it could provide close-up images that would allow more accurate assessments of the damage.

Increased availability to instantaneous information implies emphasis on the associated training that would be required of unit commanders. In fact, there would be a need for personnel at every level to become aware of the principles of photo/imagery interpretation so as to prevent good information from becoming bad analysis. If commanders are to have access to more information, they must also increase their ability to mentally process and use the information. Of course, this could not replace the experience and talents of professional photo-interpreters. There will always be a demand within the military for this skill, and any efforts made toward remotely piloted aerial reconnaissance would merely enhance their work rather than replace it. Oddly enough, there is a fear among pilots that their positions are somehow threatened by remotely piloted reconnaissance drones. I do not see this as a valid concern. There will always be a need for trained, skilled, and talented pilots. Yet, to fend off the inevitable advances in the field of remote drones is to be rather shortsighted. Let us welcome the future technological breakthroughs with open arms; they will allow us to put lives on the line only when there is no viable alternative. Where we have the capability, I do not see how we could take any other course. After all, is not the preservation of life and the quality of that life the reason for a military system in the first place?

Cadet Jeffrey J. Godfrey, AFROTC
Brigham Young University, Utah

HOT AIR BALLOONS

Congratulations to Maj Franklin J. Hillson on his Summer 1989 article "Barrage Balloons for Low-Level Air Defense." It was well written and provocatively supported.

Shame on him, though, for being so politically naive as to think that a simple, nondevelopmental, cheap, effective, and readily available system has a chance at all of being seriously considered. He should know that even a concept that has stood the test of combat operations in two world wars has no chance of implementation unless it is expensive, technologically oversophisticated, unsupportable, and subject to career building. I thought we were training our iron majors better than that. He won't survive long in the big world of Washington yuppie politics unless he mends his ways.

To make this program a success, Major Hillson will have to address safety consideration (how do we keep our own pilots from running into them? I suggest we install global positioning system [GPS] locating beacons on each balloon and exchange precision location information via Joint Tactical Information Distribution System [JTIDS] Class IV terminals). He will also have to address how to make them capable of withstanding hurricane-force winds (hurricanes are very common in the Central Region. I suggest we tether them to a ground control module [GCM], suitably configured for nuclear, biological, chemical [NBC] operations, all-terrain traversal, and with interactive-distributed, precision, semiactive, redundant control capabilities. The tether could be of fiber-optic-capable, multilayered, KEVLAN II, composite construction.) Major Hillson will also have to address cost sharing, multislice funding, and balloon-off testing before we can even begin to consider going to the acquisition board for consideration. He has a lot of work to do.

A good first effort, though.

Col Wayne A. Possehl, USAF
Norfolk, Virginia

AN EOD DEFICIENCY

Lt Col Joe Boyles and Capt Greg K. Mittelman ("Paradox of the Headless Horseman," Spring 1989) point out that the deficiency concerning explosive ordnance disposal (EOD) is one of ill-equipped but otherwise capable and adept noncommissioned officers (NCOs). Yet, their solution is not to properly equip these capable NCOs but to provide long-term (commissioned) officer leadership. Their solution doesn't fit the problem–another paradox.

Because all solutions must fit problems, surely they're not suggesting that "dedicated, long-term officer leadership" must be the tools or the equipment EOD senior NCOs need to use to develop the "vision, doctrine, and bureaucratic apparatus necessary to carve out a mission statement." Neigh. That's too much like a horse of a different color.

Their sentiment about EOD senior NCO leadership reminds me of another one: only commis-

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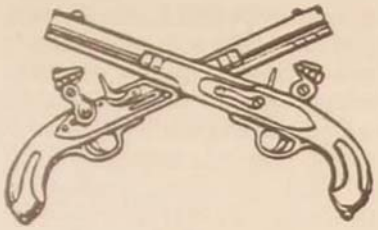
TO PROTECT AN AIR BASE . . .

BRIG GEN RAYMOND E. BELL, JR., USAR, RETIRED

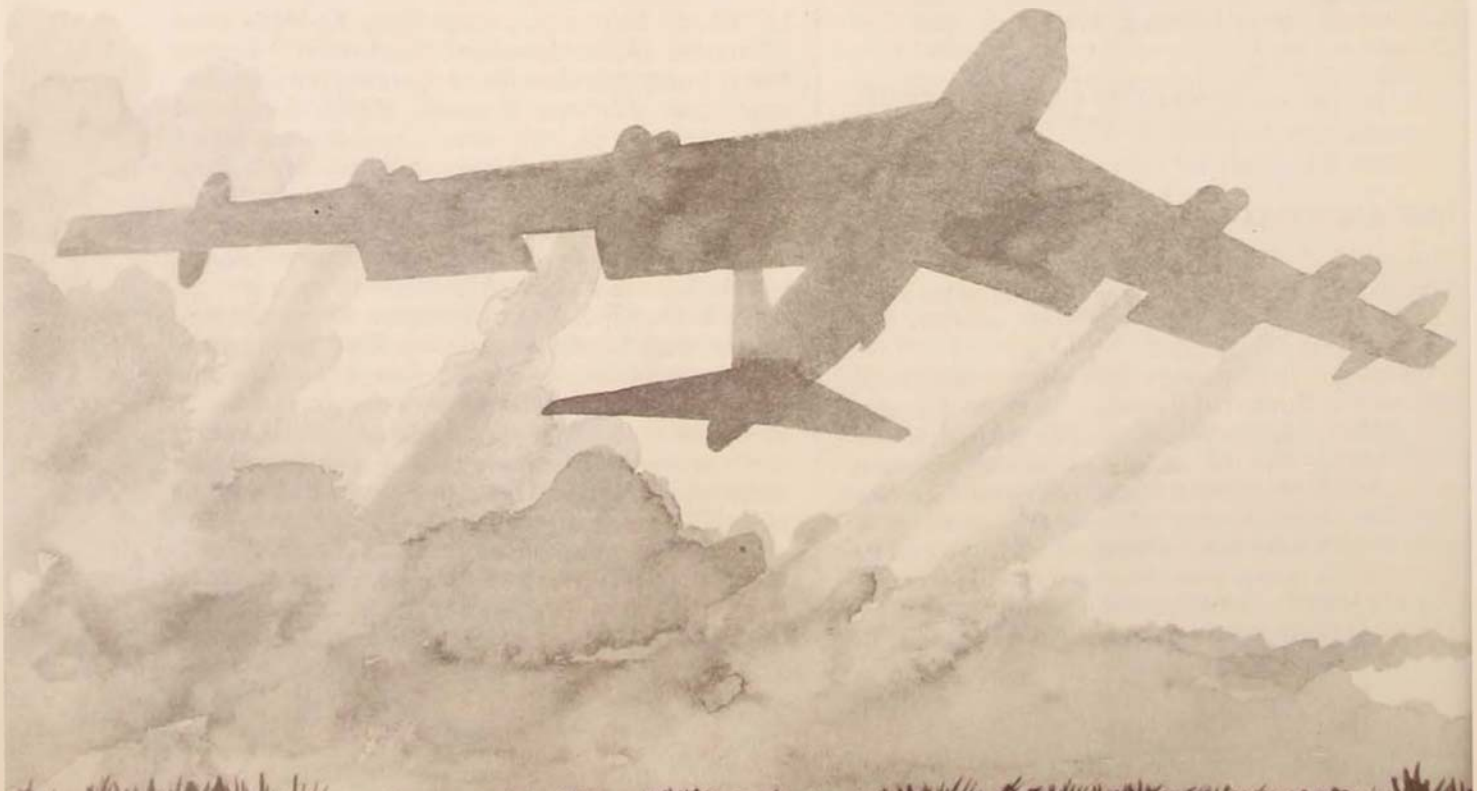


A rebel band took its Stingers to the Soviet air base at Qandahar [Afghanistan], set up shop not far from the end of the runway. . . .

Wall Street Journal

IT IS a rigorous challenge to protect an air base against ground attack. It was for the Soviets in Afghanistan. It will be for the US Central Command (USCENTCOM) as well. This article therefore focuses on USCENTCOM's area of operations in Southwest Asia where unilateral efforts at Army-Air Force ground defense integration are required, unlike in Europe where air base ground defense is a multinational NATO challenge. This challenge, to be sure, is not new—except, that is, for the United States Army.

In Vietnam, for example, air base ground defense was a major problem for both the US Air Force and Marine Corps. In fact, from the establishment of the first airdrome until 1 November 1964, ground defense of airfields was pretty much an academic exercise for the US military. Then, on that



November day—two days before the US national elections—harsh reality stung the United States. At the large air base at Bien Hoa, north of Saigon, South Vietnam, a sudden Communist ground attack killed four Americans, wounded another 76, and destroyed 27 aircraft.

It was the turning point for the Air Force, which heretofore had concentrated almost exclusively on internal base security. The attack left the Air Force little choice but to start looking beyond the base perimeter.

It would take another twenty years, however, for the US Army to become doctrinally involved. Throughout the Vietnam conflict, the Army was but a casual participant in protecting Air Force bases. In August 1965, for example, Lt Gen John L. Throckmorton said Army troops would not secure air bases. There were not enough soldiers for the mission. In December 1965 Gen William Westmoreland reiterated the Army stand. He felt that every US military member, regardless of service, must be prepared to engage the enemy in combat. The result was that no Army troops were ever completely dedicated to the task.

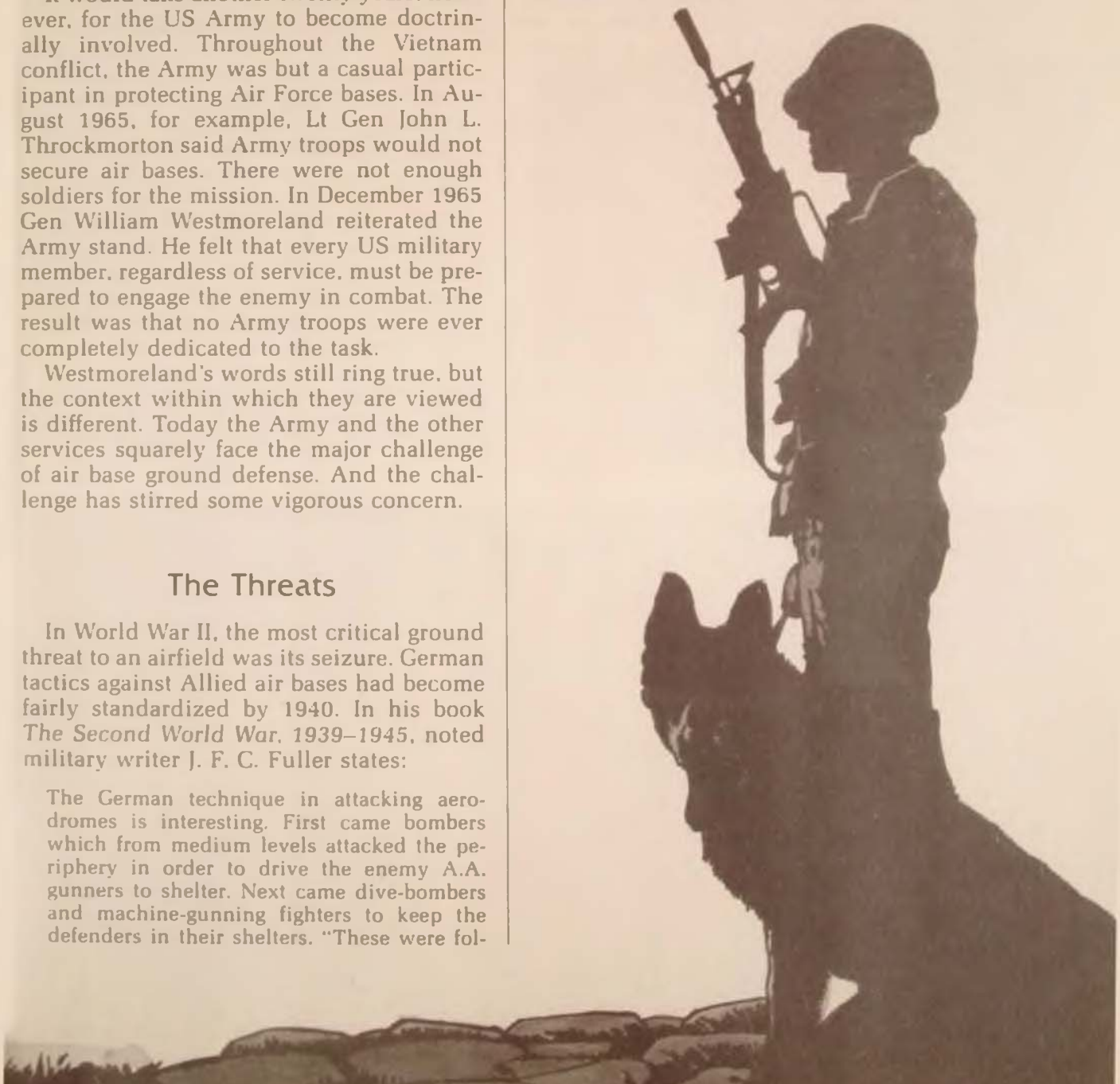
Westmoreland's words still ring true, but the context within which they are viewed is different. Today the Army and the other services squarely face the major challenge of air base ground defense. And the challenge has stirred some vigorous concern.

The Threats

In World War II, the most critical ground threat to an airfield was its seizure. German tactics against Allied air bases had become fairly standardized by 1940. In his book *The Second World War, 1939–1945*, noted military writer J. F. C. Fuller states:

> The German technique in attacking aerodromes is interesting. First came bombers which from medium levels attacked the periphery in order to drive the enemy A.A. gunners to shelter. Next came dive-bombers and machine-gunning fighters to keep the defenders in their shelters. "These were followed at once by parachute troops, dropped into the aerodrome. And so, when the defenders came up for air, they found themselves looking into the muzzles of tommy-guns."[1]

The Germans used these techniques in 1941 in the invasion of Crete, but the assault was a very costly airborne seizure operation. German paratroop and airlanded soldiers captured the British air base at Maleme, which was the key to driving the Commonwealth soldiers off the island. But in spite of its success, the assault also



meant the end of large-scale German airborne operations. The losses to the Luftwaffe and its airborne troops were so devastating that they deterred Hitler from ever trying such a scheme again. Nevertheless, we could expect the Soviets to follow a similar pattern today if they tried such operations.

Later, in Vietnam, air bases were also prime enemy targets, but the major threats there ended up being rockets and sappers. On 27 February 1967, for example, the Vietcong fired 56 Soviet-made 122-mm rockets into the Da Nang Air Base for the first time. The rockets were a favorite weapon of the Vietcong, and on this occasion the rockets caused considerable casualties and much damage. Until countered, they continued to be effective.

On the other hand, on 1 July 1965, an enemy sapper (demolition) squad got through the perimeter wire onto the flight line at Da Nang. It destroyed three C-130 transports and three F-102 fighters while damaging three more F-102s. The raiders came through the thickly populated area for which the South Vietnamese armed forces were responsible. Such actions happened many times.

Today airborne operations, rockets, and sappers continue to be important threats, but each have their drawbacks. Air assaults take time, surprise, extensive planning and air superiority. The effectiveness of rockets is decreased by aircraft dispersion, berms, bunkers, revetments, and emplacements. Alert and pervasive defenses can also thwart rocket attacks as well as sapper sorties. Against a well-defended air base, the sappers' chances of success rapidly decrease.

Although the aforementioned threats are still important, modern technology has provided an even more sinister threat—the shoulder-launched guided missile.

The Most Demanding Threat

"A rebel band . . . blasted a few Soviet planes as they tried to take-off with fuel and ammunition, then melted in the hills." So reported the *Wall Street Journal* on 16 February 1988.[2] For a potential horror story, substitute the words *United States* for *Soviet*. Enough said.

From Pearl Harbor to Da Nang, some people have thought that keeping aircraft lined up close together made sense, but it only provided lucrative targets for the enemy.

The wing commander's primary mission is to generate a large number of aircraft sorties. That is, he wants to launch as many armed aircraft as possible to fly missions against the enemy. He needs to be able to do that any time the aircraft are required, and he wants the sky as clear as possible over the air base, particularly when he launches.

It can be argued that an aircraft is most vulnerable when it takes off. The pilot has to be concerned with maneuvering with a full load of fuel and munitions. He is very busy at and just after lift-off, and his ability to protect himself against hostile attack is very limited.

An aircraft returning from a mission, on the other hand, is generally low on fuel and has expended its munitions. The pilot can usually go around for a second landing attempt if he needs to. He is actively looking for impediments to his landing. If the air base is under attack, he probably has the option of diverting to another field for more fuel and armaments. The launching aircraft, however, get no second chance at taking off or being diverted.

Enter then the aggressor with the shoulder-fired guided missile. The threat of missiles flying up the tail pipes of US aircraft as they lift off is real and hard to counter. If the need for air base ground defense ever needed a clarion call for immediate attention, this threat surely is it. So intimated Bernard E. Trainor in the 15 February 1989 issue of the *New York Times* when he wrote:

> American officers are also studying the effect of hand-held anti-aircraft missiles, like the

Maintenance areas (right) are lucrative targets for enemy attacks. Shelters (below) aid in preventing damage, as does the vigilance of security forces and maintenance personnel.

Stinger, on the battlefield. They are pleased with the Stinger's success, but worry about the consequences of that success on their own tactics.[3]

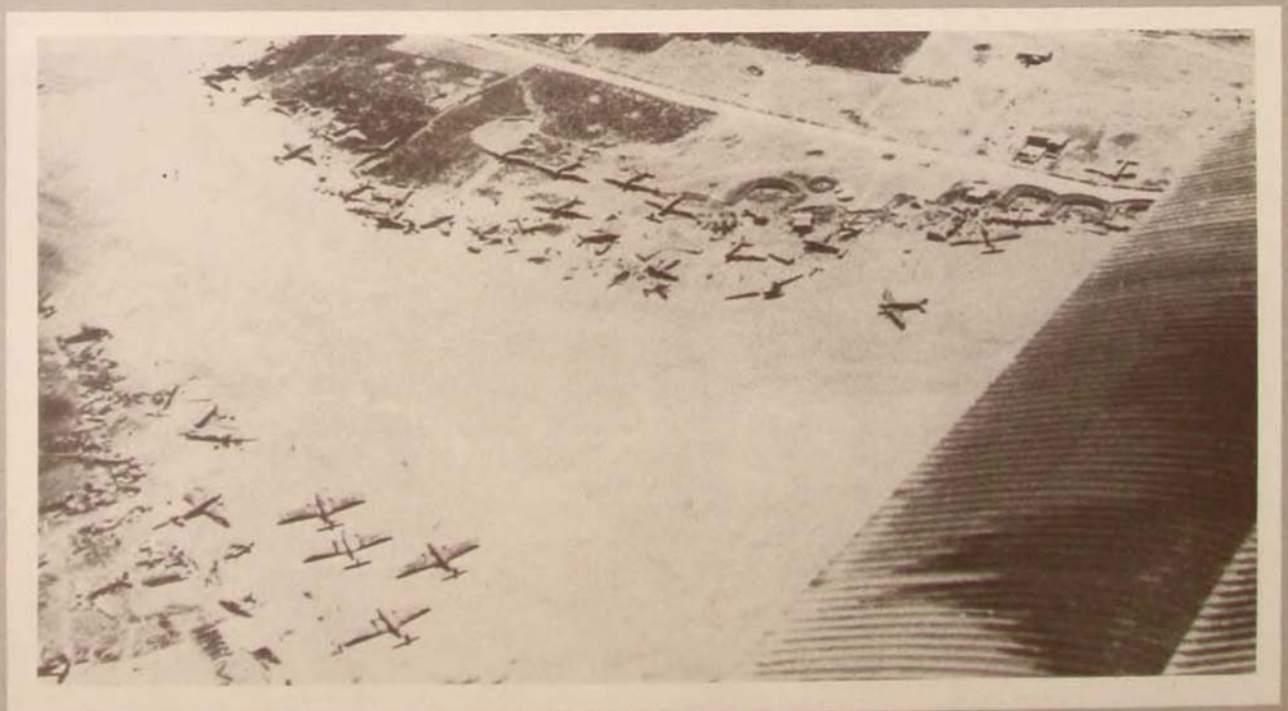
Who Will Counter the Threat?

Unfortunately, responsibility for countering the threat of hand-held antiaircraft missiles has long been a vague area for the Americans. Such is not the case for the British. Soon after the fall of the airfield at Máleme in Crete, the British moved to solve their own situation. In February 1942 the Royal Air Force Regiment was created. Full responsibility for local airdrome ground defense operations became the sole responsibility of the British Air Ministry. To this day, the Royal Air Force, with its integral ground component, executes the air base ground defense mission.

It also appears that the United States was moving in the same direction early in the war. On 12 February 1942 the Army Air Forces (AAF) began to form air base security battalions, but they were never fully organized and were inactivated in 1943. Later, the Key West Agreement of 21 April 1948 left out any mention of a ground combat mission on our bases for the new US Air Force.

In the Korean conflict, air base ground defense was a moot point. Although there were thousands of Korean guerrillas roaming the rear areas, they never attacked an airfield. Nevertheless, the Air Force almost quadrupled its police strength to 39,000 personnel in a year and a half. It also

Keeping one's head down during an attack can result in losing the battle, as the British found out in Crete during World War II. Enemy air attacks by the Germans were followed up by airborne assault and air landings. The same tactics can be expected from a Soviet assault on an air base.



aunched a crash program to procure armored cars, machine guns, recoilless rifles, and other infantry weapons.

It was the Air Force's Strategic Air Command (SAC) that first really picked up on the need for sound air base ground defense doctrine. In the October 1952 edition of SAC Manual 205–2, SAC recognized that the Army could not be expected to defend Air Force installations that were not vital to the accomplishment of the Army's own missions. SAC saw the responsibility resting firmly on the Air Force's shoulders. It hoped for the Army's participation but saw distance and other, more pressing missions as forcing the Air Force to having to go it alone.

In Vietnam, nevertheless, the Air Force at first ignored air base ground defense. Instead, it concentrated on physical security on the bases. The Vietnamese were left to provide protection outside the base.

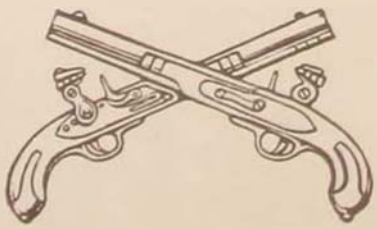
Not so, however, with the US Marine Corps. In March 1965 the 9th Marine Expeditionary Brigade was assigned to protect the air base at Da Nang. But it took a while to work out an effective and coherent plan. At first, battalions of the 9th Marine Infantry Regiment were employed in coordination with the Vietnamese. A provisional base defense battalion was organized and then disbanded in the summer of 1965. In 1966 the 1st Military Police Battalion (USMC) arrived and worked a three-tier protective operation. In addition to aggressively patrolling outside the base perime-

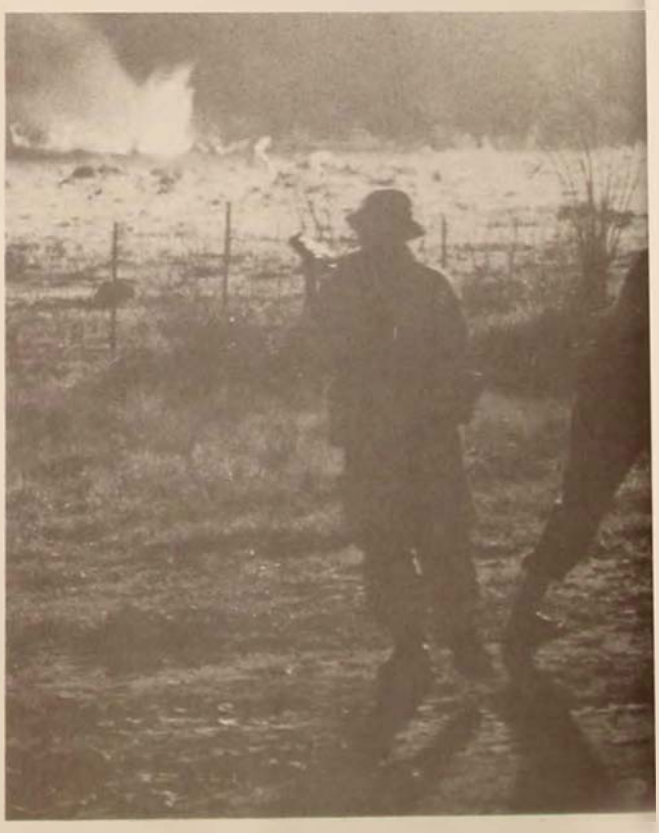
The British quickly realized the need for a dedicated defense force after the loss of Crete. The RAF Regiment now forms such a force. The US Air Force has determined that air base ground defense teams and Army forces should do the job.

Da Nang AB, Vietnam, 1967. An example of the kind of destruction that a quick, elusive enemy attack can cause.

ter, the Marines fortified and wired much of the installation. It took almost another 20 years for the Army and Air Force together to make a decision similar to that made by the Marines in Vietnam.

In 1984 mutual agreement between the Air Force and the Army was reached as to who would provide ground protection to Air Force bases. In peacetime and in the continental United States (CONUS), at all times, the responsibility is that of the Air





Force. Outside CONUS during war the responsibility for protection outside the air base belongs to the US Army Military Police Corps.

Air Force Security Forces

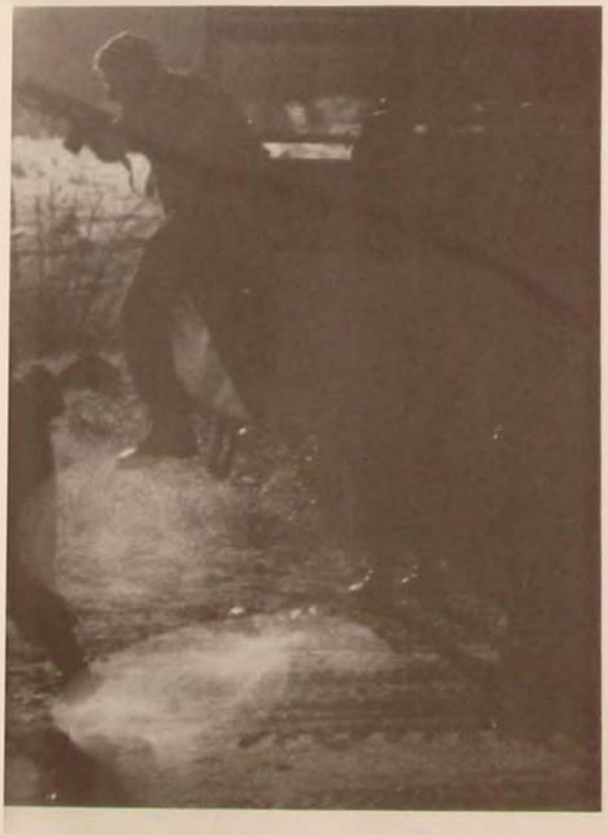
Whereas there is agreement between the Army and Air Force on who does what, there is still an internal dilemma within the Air Force. It is still not definitely determined to what extent the Air Force itself will participate in its own defense.

The successful defense of an air base is predicated on keeping the base functioning under all circumstances. Sortie generation is everything. Essentially this means launching aircraft into the air and on their way into battle. Once they return, the planes must be refueled, rearmed, and possibly recrewed as quickly as possible and dispatched forthwith.

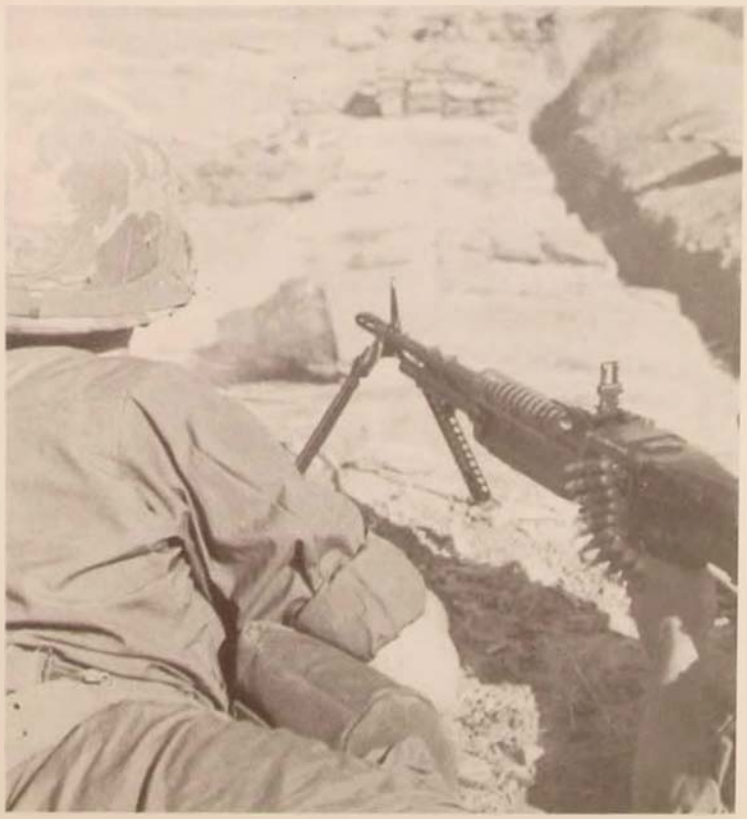
The problem arises as to what those Air Force personnel who are not charged specifically with guarding the base or have no aircraft to service do when the base is under ground attack. Do they grab weapons and fight, or do they "go to ground"? Considering the World War II German airfield attack technique, "going to ground" might mean the demise of the air base.

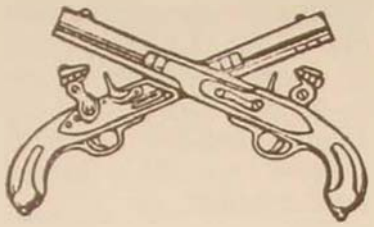
As a result of US War Department General Order 7 in 1927, marksmanship train-

Mobile air base ground defense teams are designed to defend the perimeter of a base from attack. The Air Force has shown its adaptability to ground warfare with such teams. Coordination with Army military police operating outside the perimeter will significantly improve base security.



The Air Force would like to see dedicated Army units assigned to defend air bases, but for the Army that is not a practical solution. Nonetheless, military police are assigned this role outside of the United States in wartime.





ing was denied Army aircraft mechanics and other technicians. Army Air Corps personnel were to receive no more infantry training than how to march and salute.

On the other hand, on 29 June 1941, after the fall of the base at Máleme, Prime Minister Winston Churchill of Great Britain ordered the Royal Air Force into a ground combat role. He noted that "every airfield should be a stronghold of fighting airgroundmen, and not the abode of uniformed civilians in the prime of life protected by detachments of soldiers."[4] There was not much doubt in the minds of the British airmen as to where their duty lay.

Today, however, the issue is not at all clear-cut. One of the biggest inhibitors to training all airmen to defend themselves and to function as infantry is cost-effectiveness. Is it worth the cost to train so many Air Force personnel for such a problematical situation as defending an airfield? An even more potentially dangerous situation would be the inability to coordinate properly all the firepower thus generated. Might it be better to have a few airmen who are well armed and trained to fight properly than have everyone shooting at everyone else, thereby also jeopardizing the successful defense of the base? There has been no firm Air Force-wide decision as of yet.

Security Police

The Air Force has, nevertheless, taken many positive steps to enhance its air base ground defense forces. Primary responsibility within the Air Force for such missions rests with the security police. For normal internal security and law and order functions, the security police are organized into security police squadrons that are much like US Army military police (MP) elements on Army posts. They are very much in evidence on duty at the gate and in patrolling throughout the air base. They are less obvious performing security duties on the aircraft ramps unless one tries to make an unauthorized entry into some off-limits area.

For the defense of the air base, the security police assume a different posture. They are organized into air base ground defense flights. The basic formation, consisting of 44 personnel, is equivalent to a Marine Corps infantry platoon and is also organized somewhat like one.

The flight is commanded by a captain and has a platoon sergeant known as a police superintendent. Three radio/telephone operators complete the five-member flight headquarters element. The flight is a heavily armed fighting unit with extensive communications capability. Each flight has three squads of 13 airmen each as its fighting elements. The squads are further divided into three teams of four airmen each and have a noncommissioned officer as squad leader. Each team leader is armed with an M-16 rifle. A second team member is also armed with an M-16, as is a third who carries an M203 grenade launcher attached to his weapon. The fourth team member is armed with an M-60 machine gun.

The standard air base ground defense unit does not have organic transportation. There are, however, mobile flights that are equipped with the new high-mobility multipurpose wheeled vehicle (HMMWV). In addition, all flights are well supplied with the materiel required to defend fighting positions. This includes copious amounts of sandbags, timber, and barbed wire to secure defensive sites.

The Air Force's Korean and Vietnamese experience regarding heavier equipment has also not been forgotten. As a result, the Air Force has continued to procure a variety of heavy infantry weapons. The 81-mm

mortar, .50-cal. heavy machine gun, 90-mm recoilless rifle, and 40-mm automatic grenade launcher are in the Air Force inventory.

Special teams that reinforce the basic organization fight against heavy weapons. There is the two-man heavy machine gun section that may be attached as reinforcement to a flight. The weapon is used in either its ground or vehicular-mounted configuration. There is also a two-man recoilless rifle section for employment against tanks and other armored vehicles. The 90-mm rifle is a good match for the light tracked fighting vehicles of the threat forces' airborne armor unit.

Then there is the four-man mortar section. Its function is to fire signal flares and smoke shells as well as to hit pinpoint targets. The range of the mortar allows it to be used in support of both the air base ground defense flight and the military police operating outside the perimeter.

In Vietnam, Army defensive units became quite adept at directing air support, such as this AC-47 gunship, in air base defense. That expertise needs to be regained to effectively defend air bases today.

Finally, there are other Air Force units designated to assist in base defense. But those units basically augment the standard air base ground defense flight.

In spite of all the necessary ingredients, however, there is one important element presently missing. There is no unit structure above the flight level, like an air base ground defense squadron, to effectively coordinate the defense against all the aforementioned elements. It is not yet known in the field how all the flights and teams will be organized to conduct operations under the aegis of the base defense operations center (BDOC). Thus some pertinent questions go unanswered. For example, is a standard air base ground defense squadron consisting of several flights and weapons teams to be organized for defense of large air bases? If so, will the air base commander be assigned several squadrons or will there be just one with several flights assigned to it per base? Such questions must be answered soon because the Air Force security forces are not the only ones concerned with the answers. The Army's military police also need to know the answers so they can fight beside the Air Force in a coordinated manner.

Army Air Base Ground Defense Forces

The US Army, charged with the task of guarding air bases under the 1984 Memorandum of Agreement, gave the job to its military police. A look at the military police combat support structure shows it is well suited to accomplish its share of the task.

The basic organization that will fight alongside the Air Force security police is the MP combat support company. It consists of a company headquarters and four identically organized platoons. The 33-member platoon has a headquarters staff of three people: a lieutenant platoon leader, a platoon sergeant, and a driver who also operates the vehicular radio. There are three squads of three teams each led by a noncommissioned squad leader for a total of 10 MPs per squad. Each team is armed with M-16 rifles, pistols, a grenade launcher, a machine gun, and light antitank weapons. In the near future, a squad automatic weapon (SAW) and the automatic grenade launcher will be introduced.

Thus a platoon, with its 10 mobile-mounted weapon systems, represents a potent fighting force when assembled as a unit. At the same time, because of its mobility, the platoon can operate effectively as scouts over a large area. The unit has the ability to communicate and move in both a vehicular and on-foot mode.

The platoon, however, is rarely employed as one element in the sense that a tank or mechanized infantry platoon would be. The platoon's principal worth is to be found in its ability to obtain information, to report it accurately, to call in supporting fires, and, only if necessary, to fight. The combat military policeman is really a "super scout." At the same time, however, he must also be an accomplished artillery forward observer and even a forward air controller. US Army military policemen must, therefore, learn the techniques for calling in aircraft flying close air support missions.

Calling in artillery fire and directing attacking aircraft are relatively new tasks for military police. But the exigencies of fighting in the rear areas make it mandatory that they be able to do so. In Vietnam, for example, the AC-47, dubbed "Puff the Magic Dragon," was particularly effective in destroying Communist airfield attackers. Since Vietnam was really one big "rear area" and "Puff" with its three 7.62-mm miniguns capable of firing 18,000 rounds of ammunition per minute was so lethal, "Puff's" modern version will again be very much in demand. Consequently, the employment of the up-to-date AC-130 Spectre is part of the Air Force security police training. It needs to be part of the Army's as well.

Air Force Operational Techniques

The Air Force has moved rapidly to train its security police in air base ground defense techniques. Such training has been and is being done at such places as Nellis AFB in Nevada. The concept of how to operate in a joint mode, however, needs much more practice. USCENTCOM, recognizing the shortfall, has already conducted a joint air base ground defense exercise.

If practice is lacking, doctrine is not. Basically, the Air Force security elements are responsible for defending the close defense area (CDA). This area includes all facilities and territory on the air base out to what is very roughly considered "the perimeter wire." This real or imaginary line, strung out along commanding terrain features if possible, is usually delineated by field fortifications manned by Air Force security police, who establish themselves as if they were infantry units in the defense.

Where the air base and all its ancillary elements are collocated, the task of providing internal base defense is relatively simple. The problem arises where the fuel supply—or more likely, the ammunition

dump—is some distance from the flight line and runways. Communications facilities located off the base also complicate matters.

If the dump, fuel point, communications site, or some other key installation is an exclusive Air Force responsibility, then the Air Force will provide the security. But if the facilities are shared with the Army, or host nation, then the responsibility is shared. Each facility would initially have to defend itself against the attackers. As the fighting escalates, military police and mobile Air Force security police would respond. Finally, a major tactical combat organization would be employed to defend against a major attack by airborne or airmobile forces.

To facilitate dealing with attackers, planners have established three levels of threat to determine the degree of response necessary. Level I threats are those that a US Army troop unit should be able to counter. Saboteurs and agents fall into this category. Level II threats are the military police's responsibility and consist of small groups of marauders that combat support or service support troop units cannot effectively counter. Level III threats require the employment of major Army combat forces, as in the case of an airborne assault in the rear area.

Air Force units use the Army's basic techniques to defend against threat Levels I and II "inside the wire." These techniques are taught to Air Force security police by the Army at Fort Dix, New Jersey, where all airmen with a security police Air Force specialty code (AFSC) are given basic and advanced individual training. This came about as the result of another Memorandum of Agreement which, in effect, made the Army the contractor for teaching airmen basic infantry fighting techniques. Infantry tactics or basic unit training for air base ground defense, however, is conducted on Air Force bases like Nellis AFB. If what can be seen at Nellis is any indication as to the effectiveness of the joint basic Army-Air Force training, one can be assured that the results are potent. A visit to the stone-strewn desert area quickly reveals just how good infantrymen Air Force security police can be.

Thus, the Army soldier who must fight alongside the Air Force "soldier" can be comfortable when he talks about fields of fire, aiming stakes, and fighting positions. The airman knows how to dig in, set up his weapons, and take the enemy under fire.

Army Operations

Whereas the Air Force's overall security role is fairly well defined, the Army's is less so. It is not that the Army's role is unusually difficult, but rather it is a matter of emphasis. Military police are most evident in a law-and-order mode. They also train to fight, but the operational requisites of peacetime often relegate such training to a backseat.

In wartime, however, the military police maneuver outside the base perimeter to execute air base ground defense tasks. They operate on the base only when their firepower and mobility are needed to repel aggressors who have penetrated the outer limits of the CDA. Basically, the military police mission is to detect and break up an enemy attack *before* it threatens the air base's operations. This, for example, is the best way to deal with the guerrilla with the hand-held missile. MPs act as light cavalry, constantly moving about and reconnoitering, keeping the potential attacker off-balance, not allowing him the luxury of just sitting at the end of the runway with a missile poised to fire at an aircraft.

The military police will conduct intensive patrol and combat operations over an area that extends from three to five kilometers from the base perimeter. The actual distance depends on an analysis of the unit mission, enemy threat, terrain in the area, and troops and time available. Beyond this area, which is called the main defense area (MDA) is the screening force area (SFA), also a military police responsibility.

The goal is to keep the enemy as far away from the air base as possible and particularly out of those areas directly under an aircraft's flight path. The accomplishment of that goal allows the air base to function effectively and helps prevent the enemy from shooting down launching aircraft. The best possible outcome is for the air base commander to never experience an enemy ground presence. If the military police are doing their job, the air base commander will not see the MPs either.

Any threat is handled basically the same way, much as the 1st MP Battalion of the Marines did in Vietnam, but with a large dose of intelligence and local indigenous coordination. The military police control the movement around and access into the air base by using a combination of highly mobile patrols—foot, motorized, and airborne—observation posts and traffic and straggler control points, and searches and ambushes. Again, they emphasize sanitizing the critical area under the aircraft's takeoff flight path. Actions range from interim checking of credentials and suspicious people to acting as the "eyes and ears" of a major combat force deploying to attack an enemy airhead. Because all these actions are highly dependent on utilizing an effective intelligence network, continuing cooperation with local police and authorities is very important.

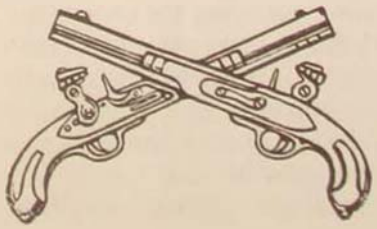
The MP companies performing the air base ground defense mission will operate in sectors. They will deploy the platoons to cover likely avenues of enemy approach and missile and rocket-firing positions and then establish a patrol and outpost plan. The MPs will stay as mobile as possible and will not be tied down to guarding fixed positions. When MPs dig in, they will only prepare hasty fighting positions so as to be able to move out quickly.

The vulnerable seam in this arrangement is the detailed on-the-ground coordination between the MP units and the security police. For example, since the air base ground defense flights have heavy weapons, rules of engagement must be closely coordinated. This goes as well for identification signals and fields of fire. The Air Force must have confidence in the Army troops in front of them. Thus, they must know when and when not to shoot in order to avoid fratricide.

The enemy airborne assault, either by parachute or helicopter, represents a serious challenge and makes Army-Air Force coordination especially important. The attacking force assembly area is the most vulnerable part of such an assault. MPs therefore pay particular attention to the fringes of landing or drop zones where assembling troops congregate. If possible, MPs preregister Air Force mortar or AC-130 fires as well as Army artillery because indirect fire is especially effective against troops assembling just after landing.

MPs must also keep from becoming decisively engaged in any situation where the enemy arrives in force. They will employ delaying tactics as they reposition themselves to accomplish their mission more effectively. If necessary, the MPs will withdraw into the base defense system itself. Once inside the perimeter, they will move to previously designated positions from where they can support the air base ground defense flights in stopping the attack. The MPs' mobility also allows them to be employed effectively as a mobile reserve.

In the event a major US Army combat formation is employed against a large enemy force, the MPs will operate as part of the combat formation. They will perform reconnaissance and fire-direction missions in the same manner they would for the air base commander. Having operated over the terrain over which the enemy is moving, terrain that would probably be new to the major Army unit, the military police would be in an excellent position to provide valu-



able information and assistance to the major unit commander.

Command and Control, A Major Issue

Basically, the control of all defense forces on or around the base becomes the task of the air base commander's chief of security police (CSP) who operates out of the BDOC. The BDOC is, in turn, tied in with the Army's command and control element for fighting the rear area battle, the rear area operations center (RAOC). The air base, when part of the overall area defense system, is considered a "base" or "base cluster" in Army parlance. A base is a self-contained defense system. A base cluster comprises two or more such systems. An airfield with 360-degree protection would be considered such a base. On the other hand, if elements of the air base cannot be tied together physically, yet are still mutually supporting, the entire air base could be considered a base cluster. Since the base or base cluster is most likely located within a zone for which the Army is responsible overall, the Army *must* provide it the same protection it would for Army units in the same zone. Thus, Army formations that fight the rear area battle for Army logistical and other support elements would do the same for the Air Force units also located there. But as straightforward as this delineation of responsibility is, there is still a problem with how much control over the MPs the Air Force gains and the Army loses.

The Air Force would like military police specifically dedicated to the air base commander to protect the installation on a continuing basis. The Army's position, however, is that it is going to provide the required assistance regardless of the specific command and control arrangement. That is, since the Army is responsible for protecting *all* the installations in the Army's areas of operations, an air base will get all the protection it needs. In fact, an air base would get a very high priority for protection since it is considered a critical installation. MP units are assigned missions according to priorities established, so air bases would be close to the head of the list of critical installations defended by military police. However, the number of installations that can be afforded protection will depend on how many MP units are available.

Unfortunately, the Army does not have sufficient military police resources to turn over to the Air Force for its exclusive use. But even if the resources were available, the Army does not favor the concept of putting such a valuable asset on the tight leash that "dedication" implies. The mobility, communications, and firepower of military police units give them a capability of operating effectively over a wide area. To tie them down in an exclusive air base ground defense role is to rob them of their full potential. The solution is to give control to the air base commander under the same conditions military police would be placed under the control of any base or base cluster commander requiring MP support.

A Final Challenge

A final important challenge concerns joint practice. Because military police and security police have seldom worked together to any great extent, they are not attuned to each other's normal modus operandi. This was also a major problem for the Air Force and Marines in Vietnam when working with the host nation. To meet this challenge requires a comprehensive joint training program from which will evolve a common understanding of everything from the nuances of the services' "lingo" to the application of the most sophisticated combat techniques.

The program needs to begin at the platoon/flight level. Because Southwest Asia is the one area where there are no

host-nation agreements, it is the most critical one for the Army and Air Force to get together. Nellis AFB, with its desert terrain and its established courses, is an ideal location to conduct such a program.

Within the context of this program, for example, the service-peculiar language challenge can be addressed. Thus the Army can learn to talk to Air Force aircraft. The Air Force can practice coordinating with military police operating in front of their positions. Both can learn to coordinate time-sensitive operations like the passage of friendly lines. Service-peculiar slang can thereby become viable tools instead of confusing nuisances.

Already Air Force officers and noncommissioned officers visit Army schools. Now junior US Army MP officers and noncommissioned officers need to be able to take advantage of the opportunities the Air Force has to offer.

To Protect an Air Base

The US Stinger missile's success in helping to turn the tide in Afghanistan has also clearly accentuated the task of protecting air bases against all types of threats. In addition, the lessons from Vietnam provide an excellent basis for the successful defense of air bases. The US Army and Air Force have both already sown the seeds for the necessary cooperation. Most important, however, the obstacles to effective execution of the mission have been identified and are within reach of being overcome.

Indeed, from the Army's perspective, air base ground defense is really not a new challenge. The MPs require no new orientation or extensive reeducation to accomplish the mission. The fundamentals presently employed in a rear battle combat role require no modification for successful execution of air base ground defense, only an intensification. They need only practice more with the Air Force security police.

What is new, nevertheless, is the emphasis that must be placed on precision of execution in keeping the enemy far from the airfield. Once the missileers "set up shop not far from the end of the runway," it is too late to save that heavily laden aircraft taking off. In reality, the attempt to protect an air base just failed. □

Notes

1. J. F. C. Fuller, *The Second World War, 1939–1940: A Strategical and Tactical History* (New York: Duell, Sloan, and Pearce, 1954), 67.

2. John Walcott and Tim Carrington, "Role Reversal: CIA Opposed Plan to Give Stinger Missiles to Afghan Rebels," *Wall Street Journal*, 16 February 1988, 31.

3. Bernard E. Trainor, "Afghans and the Soviet Psyche: Military Myths Fade as the Troops Pull Out," *New York Times*, 15 February 1989, 6.

4. Winston Churchill, *The Second World War*, vol. 3, *The Grand Alliance* (Boston: Houghton Mifflin Co., 1950), 776–77.

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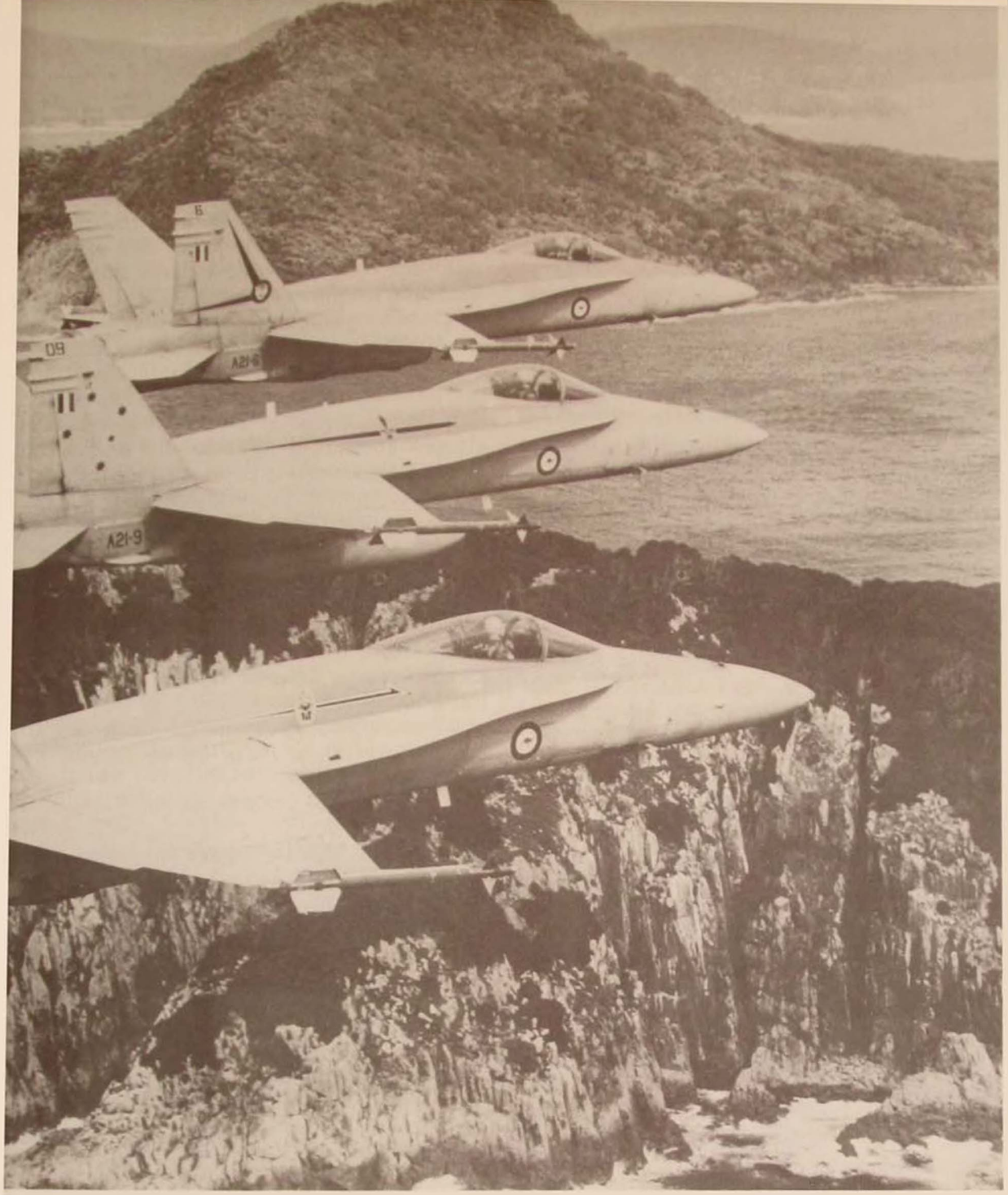
"One-A-Penny, Two-A-Penny..."

Air Power in the Defence of Australia— United or Divided?

Air power in penny packets is worse than useless. It fritters away and achieves nothing. The old fable of the bundle of faggots compared with the individual stick is abundantly true of air power. Its strength lies in unity.

THE debate over the role that air power should play in the defence of a nation is one that has ebbed and flowed since the beginnings of air forces. Today, among nations of the Western world, and certainly within Australia, the discussion is no less lively than



WING COMDR BRIAN L. KAVANAGH, RAAF
WING COMDR DAVID J. SCHUBERT, RAAF

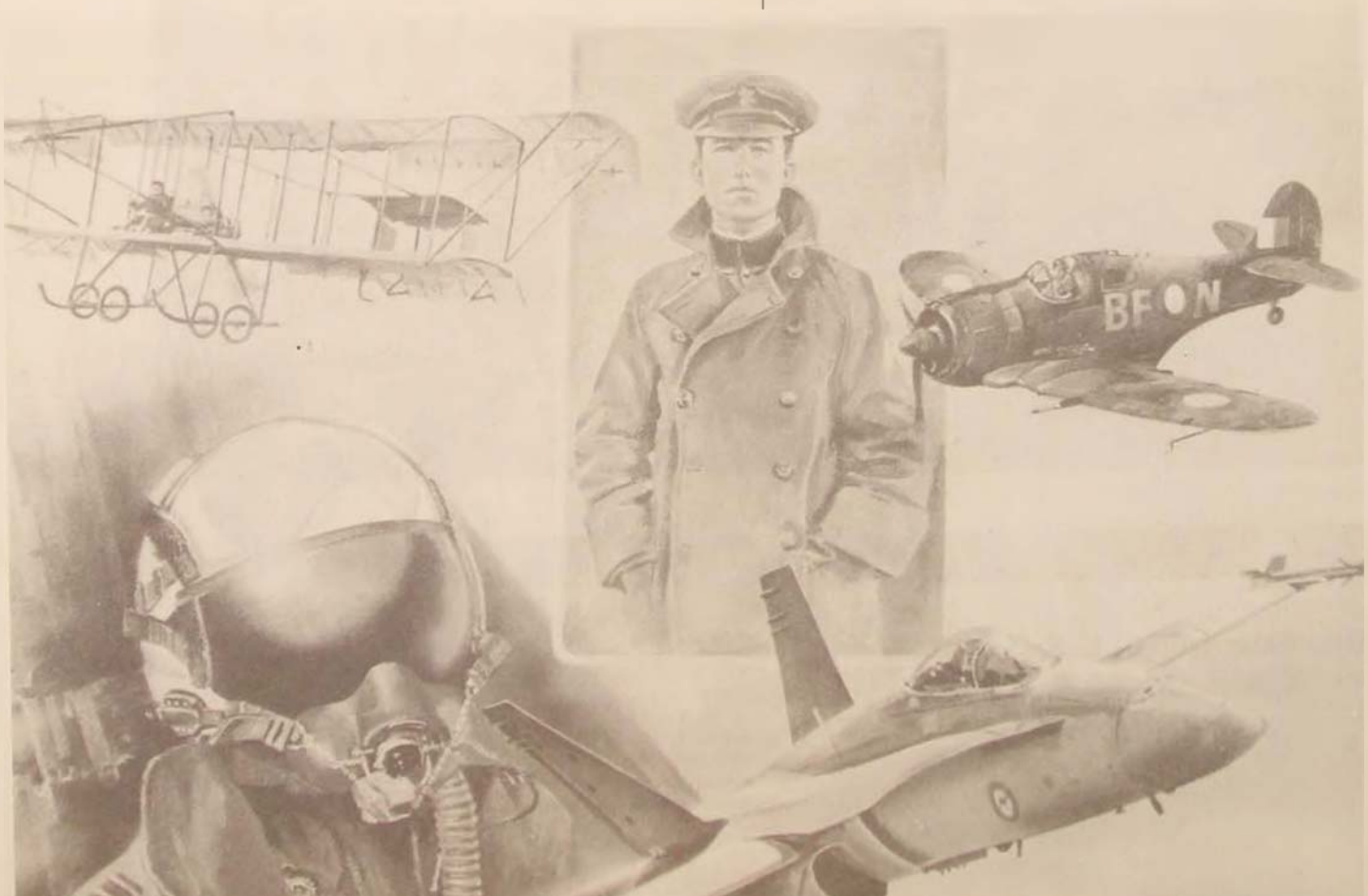
Editor's Note

This is the second article available to us from a project of the Royal Australian Air Force–the Chief of the Air Staff Project–to set down its doctrine in print. Those of you who read "The RAAF Writes Its Doctrine" (*Airpower Journal*, Summer 1989) will note that the present article addresses more specifically the environmental imperatives that underlie many air doctrines around the world.

it has been in the past. Although we encourage informed debate on the most effective use of the air arm of the Australian Defence Force (ADF), all too often in these days of increasing jointness and integration amongst defence forces, discussion centres on the part that air power should play in supporting the roles of the other services. At the same time, there appears to be insufficient understanding of air warfare or appreciation of its history to realise there are equally valid and compelling strategies for the employment of air power other than helping to win a land or sea battle. While no one doubts the importance of essential mutual support among the three services in achieving the war aim, some balance in the debate needs to be restored in order that we Australians might become aware of the full potential of that enormous force called air power in our possession and the part it should play in the defence of this nation.

In any appreciation of air power in Australia's defence, we might first ask ourselves why air power should play a prominent role—indeed, any role—in the defence of this country. Few antagonists will see no part at all for an aerial capability. Rather, the question is what contribution air power should offer to the Australian military equation, as compared with that of the more traditional land and sea powers. More explicitly, how should this form of combat power be employed and managed when it is interacting with land and naval forces? *The issue then becomes one of command and control of air power and distribution of its assets.* It is one of the more pressing defence issues within Australia today.

All too often, many people now see air power only as a force to be carved up



The Royal Australian Air Force traces its heritage to the early days of flight. This heritage is now threatened by the shortsighted thinking of some people who would dole out Australian air power to other services.

among the other two services. Occasionally they urge this action in the name of jointness, but more often they do so in order that the navy and army may better fulfill their respective tasks. This line of reasoning is oriented primarily to tasks or capabilities, whereby one thinks in terms of the optimum weapons or force mix—either biservice or triservice—necessary to fulfill a task or provide a capability within the joint force. Moreover, this reasoning takes little account of the various tasks each service can achieve.[1] With sensible application, force mixing has a valid place within our strategic thinking; each component of combat power, after all, is complementary. But force mixing must not be allowed to dominate our thinking to the exclusion of those hard-learned lessons of history that vindicate a continuing need to maintain three independent fighting arms of a defence force. If we need an integrated force from independent armed services to complete a task or mount a capability, we should carefully weigh the benefits of this action against possible disunity among the parent services.

Disregard for single-service unity is evident in Australia today. There is a persistent and irrational trend within the ADF to parcel out packets of air assets as each new requirement for joint-service capabilities is identified. Either in supporting the fleet at sea with a particular task such as maritime strike operations or in meeting a close-air-support requirement of the land commander, permanent allocation of air power seems to be the inevitable cry—and damn the consequences. Oftentimes, people advocate this course of action with little thought for the integrity of the air force as a unified entity or for the best use of scarce air power resources. In fact, in the interests of meeting a perceived single-service need—not to mention one of joint capability—we have gone to this extreme. The transfer of the battlefield helicopter to the army is the prime example. In this instance, however, we must inquire about the consequences: can the battlefield helicopter retain its multirole capability in its new livery? Will command and control of the battlefield helicopter become so decentralised in Australia that this weapon system will be unable to exploit the fundamental principles of mass and concentration?

The very fact that distribution of air power is such an important issue within the ADF is testimony to its relevance to Australia, yet the intricacies of the proper employment of air power are poorly understood within all arms of the services. This article explains the best use of air power for Australia and the fundamental need to keep it unified. We make these points by substantiating the importance of air power to our national defence, by explaining the concept of unity of air power, and by analysing the consequences of divided air services for this country.

Air Power's Relevance to Australia

The most conspicuous reason that the use of the air is essential for Australia is the nature of our continent—its geographical position, topographical profile, distribution of people and resources, and its lack of adequate lines of communications. Suffice it to say, the nature of the continent demands a force that can respond quickly, over thousands of miles, with enough flexibility to change roles rapidly, against a variety of targets in locations often inaccessible by surface means. The type of force needed is self-evident. Only by possessing an effective air component of our military force can we ever hope to exert influence within our region at a time and place of our choosing, during periods of both hostility and peace.

Linked with geographical realities is a national defence policy that gives priority to stopping an aggressor in the sea/air gap, especially to the north. The underlying military concept is that of defence in depth

Much of the hardware used in the RAAF, such as this F-111 (left), comes from the United States. But the demands of defence in Australia are not met by US defence doctrine. Therefore, the development of a doctrine appropriate for Australia is the purpose of the chief of the air staff's project. Just as the armament load of the RAAF's aircraft is versatile (above), so too are the roles that air power can play. Violating the principle of unity in air power diminishes this versatility.

Such a defence policy is as expedient as it is sensible because in most contingencies this buffer zone must be crossed by any aggressor, and here the enemy is most vulnerable—particularly to attack from the air. Further, we can ill afford a major lodgement on our continent. It is politically unacceptable, but—more pragmatically—our relatively low population would be a disadvantage in manpower-intensive warfare. For these and other more obvious reasons, Australia would try to avoid a major land battle, except as a last resort. Consequently, if the will of Australia is to protect offshore assets and prevent a hostile lodgement, it will need air power. In most cases, air power will be the initial and, most likely, the principal tool to use.

Indeed, any strategy of defence in depth requires air power. It is a primary element in maintaining surveillance of and gathering intelligence in the sea/air gap, in controlling this gap in times of threat, and in defeating hostile forces should they attempt to cross the seas or land on our shores. In short, air power in Australia "is needed to win the air battle, it is needed to win the maritime battle, and it is needed to win the land battle."[2]

These, then, are the reasons that air power is important for Australia. If this nation is to defend itself effectively and field the best possible deterrent forces, it

must maintain credible, operationally efficient, and state-of-the-art air forces that are powerful by regional standards. Our geography, manpower and economic resources, and access to technology all attest to this requirement, as does an Australian defence policy of self-reliance achieved through defence in depth. Most strategists and defence thinkers in Australia today will endorse these sentiments. What many of them forget, however, is that if the ADF is to have optimum military effectiveness, air power—like any other form of combat power—has to retain some unity of action and purpose within the total force. As we shall see, unity of air power is the cardinal tenet of air power doctrine; yet, paradoxically, it is being avidly challenged in Australia today.

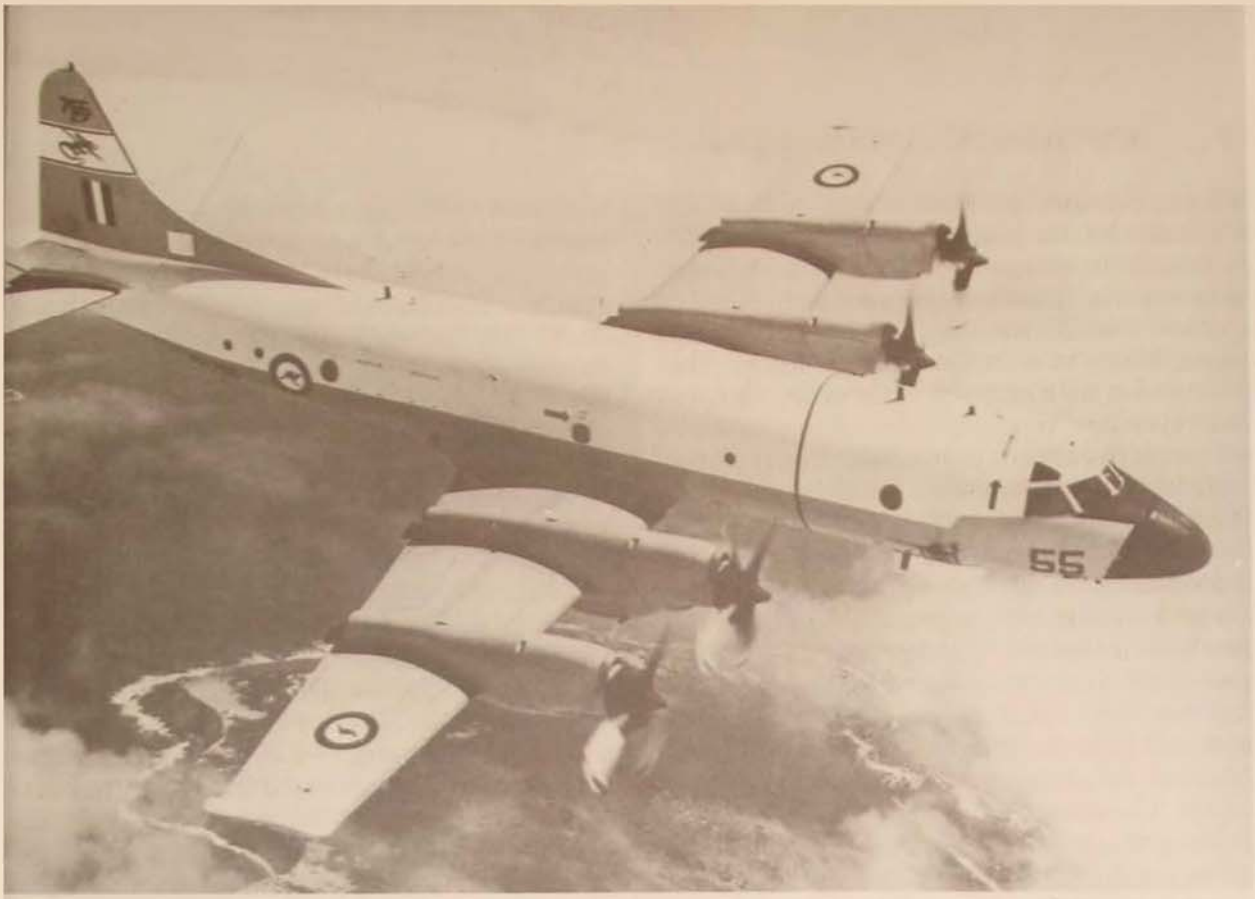
The Concept of Unity of Air Power

There is nothing mysterious or particularly difficult to understand about unity of air power. It evolved from hard-learned historical lessons—namely, that the operational and organizational processes of using the air for warfighting should be commanded and controlled at the highest practical level and by a single agency with the best expertise to do so. Nor is the concept of unity unique to air power. Indeed, operational and organizational unity is necessary with each form of combat power—be it on land, at sea, or in air—if each is to contribute fully to military effectiveness. Historically, land power and sea power were coordinated, organized, and commanded—each within its own dimension—for best effect. This traditional responsibility of each form of combat power for its own dimension was indeed the rationale for the evolution of armies and navies. Because the air is a separate and independent dimension, air power also needed a unity of coordination, organization, and command along environmental lines to assure its most effective use. Thus, this third dimension provided a similar basis for the evolution of centrally commanded air forces.

The Black Hawk helicopter (right, below) has already been transferred to the army in Australia, and there is pressure to turn over the RAAF's P-3 (right) to the navy. In both cases, the end result is decreased versatility and a corresponding decrease in capability within the Australian military.

Theoretically, unity of each form of combat power is simply a set of historically evolved principles. Practically, the application of these principles generates internecine argument because the application is really about command and control. Bluntly put, the debate centres on who within the total force should own and employ the resources of individual forms of combat power while ensuring that the unified action of each form is retained. Each service argues that for best effect its own traditional combat power demands command and control that should be, first, at the most appropriate level and, second, within the most appropriate service—two dictums that are common to land, sea, and air power.

The historical experience of air power accords with these two dictums. Thus, air forces argue in defence of unity of their own combat power that unity of air power means air assets must be retained under the highest practical level of centralised command and control and that they must be commanded by a leader experienced in the application of air power. Air forces, in fact, are adamant about these requirements because historical experience also shows that the impact of unity of air power has even greater consequences for military effectiveness than the impact of unity of the other combat powers. Similarly, experience and logical analysis show that divided air power produces disproportionately large reductions in military effectiveness in comparison with the effects of disunity in land or sea power. Aviators understand this adverse consequence, and they argue tena-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ciously for the *indivisibility of air power*, a phrase synonymous with *unity of air power*. Both phrases mean that air power assumes its greatest strength when it is applied holistically as a distinct entity, rather than in a collection of roles. The reasons for this conclusion warrant further analysis.

The introduction to this article suggested that support for the other services was only one of the strategies available to air power. Two other distinct but interactive aerial strategies have direct application for air forces and can have unmediated and independent influence on the outcome of the war. One is to attack an enemy's warfighting capacity—that is, to inflict moral or material damage directly on his homeland. The second is to oppose and defeat his air forces. These strategies are termed *strategic strike* and *air superiority*, respectively. The three aerial strategies are not independent actions whereby one follows another in some battle campaign sequence. All three are interactive and, in reality, would be pursued simultaneously. Their hierarchy of importance at a particular time must be determined in the light of strategic as well as tactical considerations.[3] This hierarchical determination requires a decision by a supreme commander, with the advice of a commander having full knowledge of air power employment.

The second reason for unifying air power is the ability to concentrate its force rapidly in time and space—its greatest innate advantage. Concentration enables a force to be decisive. If need be, the whole weight of the air power force can be employed against a single, most important target or, alternatively, against an array of lesser targets. Used properly (i.e., in accordance with the correct employment doctrine and concentrated in time and space) air power can be singularly decisive in affecting the outcome of the war, rather than merely influencing the land and sea battle by piecemeal application.

The ability to use concurrent aerial strategies and to concentrate air forces rapidly indicates a completely different perspective of time and space within which air power is employed in contrast to the perspective for land and sea power. The differences are substantial and deserve closer examination if we are to fully understand the aviator's concern over the misuse and division of air power and the diminution of its effect. If we look at the traditional evolution of command and control, the relative perspectives of time and space will be more evident.

First, the extent of military command and control is commensurate with the combat radius of action of the weapon system involved. For example, the combat radius of action of an infantry platoon, depending on the time frame, is a day's march or the trajectory range of small arms munitions. Therefore, it would make no sense to take divisional artillery weapons, with ranges of 50 kilometres or more, and parcel them out to command at battalion level or lower. As we know, this is not done; artillery assets are commanded at the highest possible level, where the "big picture" is more evident.

What sense, then, does it make to break up into penny packets a force with a combat radius of action of hundreds or thousands of miles, which can be used against a variety of targets by reroling or reequipping and which can have a big picture of strategic proportions, compared with the more tactical view of surface-locked combat units? Even navy fleet units at sea with speeds of advance of less than 40 knots and combat radii of action limited either to radar horizons or the ranges of surface-launched weapons are, within realistic time frames, tactical units. Air Force combat units are capable of being used in the macro (strategic) sense, whereas most other combat units belong to the micro (tactical) environment.

Linked directly with the "space" perspective is the difference in appreciation of time between air power forces and surface forces. Surface forces, by virtue of the limitations on their speed and mobility, think

more in terms of days and weeks to react to a threat, manoeuvre, or redeploy their forces. Air power operates in much shorter time frames; its commanders think in terms of hours and even minutes to complete a task. Again, what sense does it make to allocate sections of a highly responsive force to commanders who traditionally wage war at a much different pace? The quantum difference in appreciations of time and space between air forces and surface forces is the basal premise for unity of air power.[4]

There is a third, different aspect militating against the division of air power within the total force. Today's modern air assets are capable of more than one role. An antitank weapon within an army is an antitank weapon. Within an air force, however, it is also a battlefield air interdiction weapon, perhaps an offensive counterair weapon, and even an air defence weapon. Dividing up these flexible assets to meet narrow, specific requirements means that they are not available for reroling. A pertinent example is the P-3 aircraft in the Royal Australian Air Force (RAAF) today. If P-3 aircraft are permanently assigned to the navy for fleet support functions, they will not be readily available for first-echelon, layered defence roles of out-of-area reconnaissance and surveillance, as well as additional roles including electronic warfare, search and rescue, general transport, and airborne command and control. The result from this example and others is a reduction in multirole flexibility that decreases the efficiency and application of air assets and diminishes national military effectiveness.

The foregoing are three operational reasons that unity of air power is vital to national military effectiveness. In addition to these operational aspects, there are two other important factors that also attest to the necessity for unity of air power. They are the concept of critical mass and the importance of aerial expertise and continued professional development to air power's proper application.

Critical mass, used in this context, means the size of the entire body of an independent force needed to support its fighting edge—that is, the total infrastructure that, with the operational component, makes for an effective warfighting entity. The critical mass concept is especially relevant for air forces because they have an inherently high "tail-to-teeth" ratio; therefore, their critical mass is high. For example, it takes the whole force of about 22,000 permanent serving members in the RAAF today to maintain an organization whose sole aim in a war is to launch a few hundred individuals in a lesser number of aircraft to meet a hostile threat. This concept is difficult for many people to grasp, both within and outside the ADF. What many also fail to realise is that should these few hundred operational assets be divided among different agencies, each of these agencies then requires an inordinately disproportionate support "tail" to maintain its own limited air power capability, compared with the size of the tail required for a single air force.

The ADF, now that it is committed to self-reliance and if it is to achieve maximum military effectiveness, must be fully aware of both sides of the tail-to-teeth equation before dividing its assets. This cognizance was not so crucial in the past when Australia conveniently neglected the support aspect of critical mass, as it so often did because of its historical reliance on and alliance with the United Kingdom and United States. The ADF can no longer rely on superpower support, nor should it continue to model its defence forces on those of nations with vastly different resource bases and national objectives. As with other small, independent forces, Australia must develop an appropriate infrastructure to support the fighting edge of combat power or, conversely, reduce the size of the fighting force. Dividing air assets demands a larger base of support; if the support is not provided, effectiveness is reduced. Realistically, the ADF must compare its force structure and division of roles and assets with other small, independent, but proven

forces such as Israel's, rather than continue the traditional approach of half copying the forces of larger allies, particularly those of the United States.

Professional expertise, the second non-operational factor, is also woven into the argument for unity of combat power. This expertise is the origin of the second dictum that command must be retained within the appropriate military discipline. The notion is simple. Each service must exercise a professional ability within its own combat environment whilst at the same time acknowledging and respecting the other services' expertise to best operate and manage their own combat power assets. In Australia today, the army and navy frankly do not have the skill to properly employ the air power that may be placed under their permanent command. Nor, conversely, does the air force have the know-how to optimise land or sea power for its own use, should such a situation arise.

Few people will disagree that the army is naturally oriented to the land as its primary operational environment, just as the navy looks to the sea for its operations. The best army and navy officers will naturally be those most proficient in their particular service's respective environment—and rightly so. Just as some officers need to be trained to operate on the land or at sea, so do others need specialist training within the third dimension, the air, as a primary medium of operations. The air calls for different strategic and operational thinking as well as specialised skills, and it will continue to do so into the foreseeable future. Therefore, if the nation is to be served by the same quality of professionalism within the air environment, it must not allow air power to become divided and thus subordinate to other combat forces. Otherwise, a curtailment of professional development within the air environment would ensue because army and navy officers would be preoccupied with their primary environments, resulting in a gradual erosion of air power expertise.

In short, unity of air power constitutes a cardinal tenet of basic air power doctrine from which emanates all air force command and control thinking. In principle, its evolution is no different from that of the unity of other forms of combat power, but unity of air power contributes more to military effectiveness than does unity of land or sea power. Air power is a bigger contributor because its application allows concurrent prosecution of the three independently decisive air power strategies: support for the other services, strategic strike, and air superiority. Further, it enables a force to concentrate firepower rapidly in time and space, and it offers a nation all the benefits of multirole flexibility. Three premises underlie the conclusion that command of the air must be retained by an airman at the highest practical level and within an independent air service: the practicalities of controlling weapon systems with radically different combat radii of action and reaction times, the critical mass needed to properly apply air power in a high-technology force, and the requirement to generate the highest possible level of professional expertise within each individual service.

The Consequences of Dividing Air Power in Australia

All services have potential for disunity, but none so great as air forces because aircraft—unlike tanks or ships—are prominent in all forms of warfare and readily lend themselves to parcelling out. Air is also the pervasive medium in any conflict. Land and naval commanders are aware of the importance of air to the success of their own missions and naturally are desirous of having within their own control these flexible, responsive forces that can concentrate large quantities of firepower. If all demands are met discretely, air power becomes divided.

There are at times overwhelming tempta-

tions to divide air power assets. Succumbing to such enticements does not guarantee a favourable short-term result in the battle, and in the longer term it inhibits flexibility and an ability to concentrate one's force. Lord Arthur W. Tedder, in a lecture to the Royal United Services Institute in London in January 1946, warned that

> if your organization is such that your air power is divided up into separate packets and there is no overall unity of command at the top, once again you will lose your powers of concentration. Air power in penny packets is worse than useless. It fritters away and achieves nothing. The old fable of the bundle of faggots compared with the individual stick is abundantly true of air power. Its strength lies in unity.[5]

The RAAF today is a modern, reasonably well-balanced force with the capacity to employ all three air power strategies. It is also a force that has built up sufficient levels of expertise and support to ensure that the ADF receives the best return for the heavy investment it has made toward a complete and credible air power capability. Any weakening of the balanced force or reduction of its levels of expertise by disunity and decentralisation of command will have implications far beyond normal single-service, air force boundaries. Yet, this is happening. Some well-intentioned but misguided individuals see Australia's defence enhanced by the division of the country's combat air power.

As a middle-ranking power, Australia has too few available resources and its defence force is too small to maintain and operate three separate air services. Should this trend continue, important questions of efficiency and effectiveness will demand answers. Will the ADF realise any savings in terms of manpower and resources by taking this route? Here, one needs to carefully examine the real, total costs of current army and navy organic air. Will the ADF overcome unnecessary duplication of effort and wastage of resources in the future? More important, will divided air assets within the ADF offer the maximum military effectiveness for the defence of this nation? For all the reasons given in this article, the answer to these questions is a clear and categoric no. It is patently inept to have three air forces in this country—Australia can ill afford it economically or militarily.

What, then, are the most likely outcomes of allowing the evolution of what effectively are three independent air forces for Australia? The short term would see a weakening of air force capability and an increase in navy and army force structures to meet newly perceived capabilities. The air force would have to reexamine its functions and roles and concentrate its limited capability into specialised roles such as air defence. Eventually, each service would lay exclusive claim to both its own air assets and specialised air power roles for retention within that service rather than for the common good of Australia's defence. Even if they wanted to—and it is doubtful that they would—the three services could little hope to combine the three air service arms into a coordinated entity to concentrate the force in times of conflict. The experiences of the United States, with four military air arms, uphold this supposition. In the long term, this handicap would inhibit the use of flexibility and versatility to employ the total air power force in the best possible manner for the defence of this country, because each separate air service group would be anchored to its vested interests.

Second, the ADF would experience a general degradation of expertise and efficiency in the way each service operated its air assets. This decline would come about because the army and navy organizations do not have the necessary size and depth of infrastructure for the maximum development of personnel trained in air power and the most efficient use of its equipment. Nor do they have a natural orientation to operate in the air environment. Within the other two services, as far as operational and technical expertise are concerned, air power would eventually take a backseat.

In all, unless we direct our thinking in this country more toward retaining unity

within the most pervasive form of combat power available within our military inventory, the standard of air service provided by the ADF will drop significantly. This declivity will result in a weakening of our total air power capability and directly reduce the ADF's ability to protect Australia.

Perhaps in these days of competing priorities and limited resources, we need to occasionally go back to first principles. Let us then heed the words of Field Marshal Bernard L. Montgomery, one of the first senior military commanders to appreciate the essence of the unity of air power:

> The Air Force . . . must be centralised and kept under Air Force command. I hold that it is quite wrong for the soldier to want to exercise command over the air striking forces. The handling of an Air Force is a life-study, and therefore the air part must be kept under Air Force command.[6] □

Notes

1. The "capabilities" versus "services" approach to total-force structure is from a concept of Royal Air Force (RAF) Wing Comdr A. G. B. Vallance, who used a doctrinal development matrix with "the optimum mix of air/land/sea weapons systems" as the vertical perspective and the "balance . . . and interaction between the various air power roles" for the horizontal perspective. "Air Power Doctrine," *Air Clues*, May 1988, 163–68.

2. Air Marshal R. G. Funnell, "The Royal Australian Air Force: A Small Air Force and Its Air Power," the 1987 Sir Ross and Sir Keith Smith Memorial Lecture, published in *Aerospace* 15, no. 10 (October 1988): 10–15. Air Marshal Funnell is chief of the Air Staff.

3. For a much more detailed coverage of the hierarchy of aerial strategies—also termed *air power employment doctrine*—see RAF Wing Comdr A. G. B. Vallance's "strategies approach" to doctrine in "The Evolution of Air Power Doctrine within the RAF, 1957–1987" (Thesis, Queens College, Cambridge University, United Kingdom, August 1988).

4. The concept here is an extension of the idea of Air Vice Marshal Tony Mason (RAF) of determining levels of command and control by using comparative combat radii of action of weapon systems. After adding the perspective of time to respond, one can analyse command and control in the context of the two dimensions of time and space.

5. Lord Arthur W. Tedder, "Air, Land, and Sea Warfare," *Journal of the Royal United Services Institute*, January 1946, 61.

6. John Terraine, *A Time for Courage: The Royal Air Force in the European War, 1939–1945* (New York: Macmillan Publishing Company, 1985), 380.

SUMMER 1989

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AGGRESSIVE VISION

Maj Charles M. Westenhoff, USAF

More than most campaigns of World War II, New Guinea was won using current military concepts and organizations. From the start, operations were combined (multinational) and joint (multiservice).

THEATER air power progressively freed joint fighting potential as it won a succession of campaigns. And, as in many current contingencies, theater forces fought at the end of an extended logistical chain with few replacements. Ironically, the New Guinea* air campaigns are as poorly covered in popular historical accounts as they are rich in lessons learned.

The clearest way to review the New Guinea campaigns for operational lessons is from the perspective of the air component commander. Gen George C. Kenney commanded the Allied air forces, reporting to Gen Douglas MacArthur, commander of the Southwest Pacific Area (SWPA). A good look at General Kenney's theater problems, his first steps to create a winning air component, and his first decisive victory—the Battle of the Bismarck Sea—will demonstrate Kenney's style. By focusing on Kenney's relationship to his joint-force commander, we will see if he used any special keys to winning that might still work today.

*New Guinea is the name of the island where Southwest Pacific Area forces fought through 1944. Most operations described in this article took place in Papua, the country comprising the eastern half of New Guinea.

Challenges

When General Kenney reported for duty to General MacArthur on 29 July 1942, the strategic, operational, and logistical situations were far worse than most Americans—then or later—understood. They would get worse.

Strategically, the SWPA forces had been mauled for eight months in a string of battles and withdrawals. Japanese forces, with relatively short supply lines (fig. 1), were moving to sever the long supply line between America and Australia. Allied supplies to Australia were strained through a chain of island fortresses, each of which siphoned resources for its own buildup. From their growing base at Guadalcanal, Japanese forces immediately threatened

this logistics chain in the Solomon Islands and in New Guinea, where Allied forces were fighting to preserve a toehold at Port Moresby.

Japanese attacks on Australian cities had caused widespread alarm since the first mass air raid on Darwin in February 1942. In June miniature submarines had attacked inside Sydney's harbor, while larger submarines shelled the city's suburbs and sank merchant ships off the coast.[1] Frequent air raids eventually devastated Darwin. A visiting American airline pilot noted in his diary that

> Darwin is no more. . . . There is not a single building standing in the city or at the airport. . . . It is a scene of utter desolation. These things we do not hear of in the States.[2]

Most SWPA forces of all services were busy preparing to fight in Australia, and many voices urged abandoning Port Moresby immediately to concentrate on defending Australia's populated areas. Most of Kenney's operational forces would remain based in Australia, even after the Allies won the Battle of the Bismarck Sea.[3]

Operationally, conditions were similarly grim. Because Kenney's squadrons were

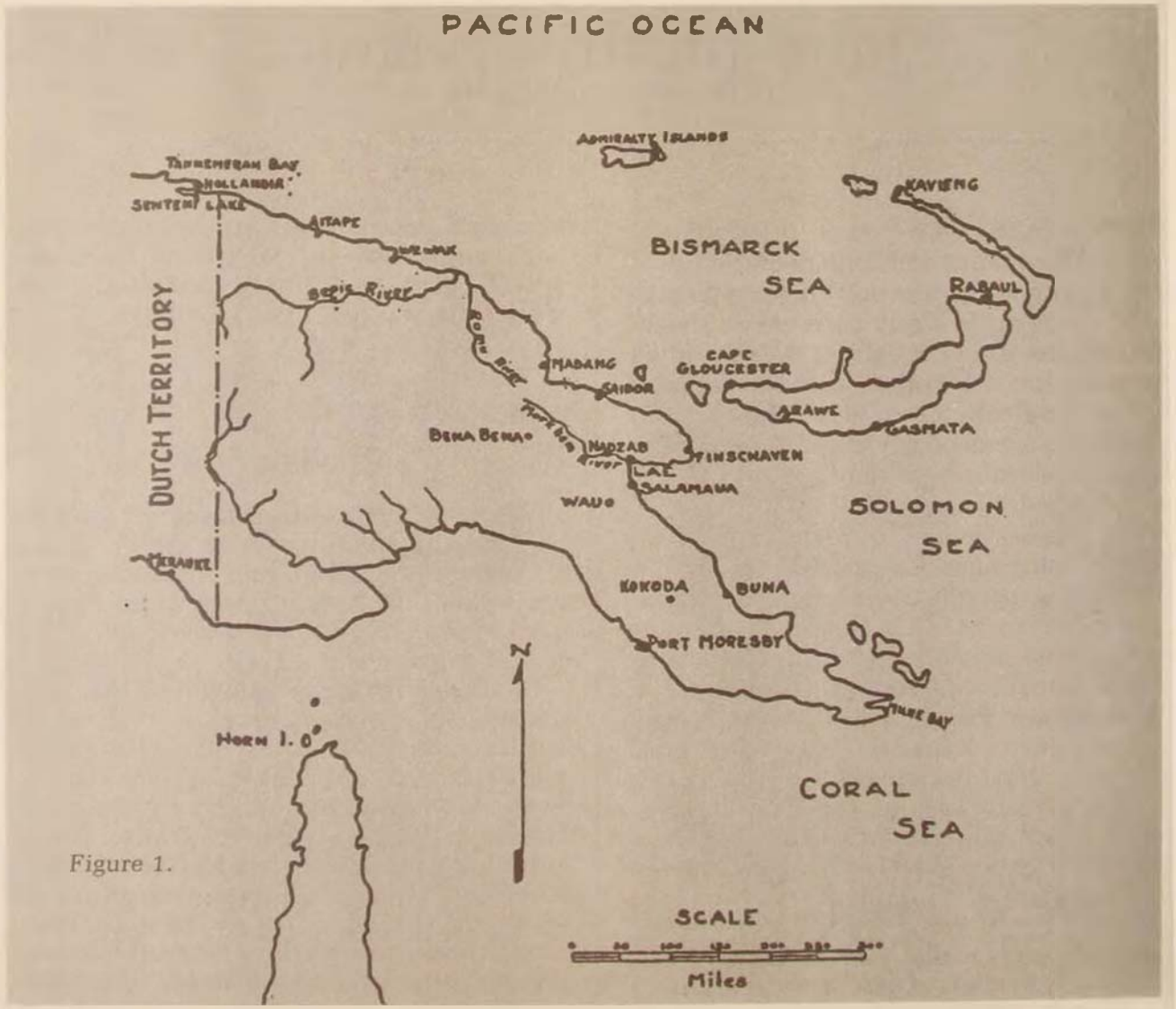


Figure 1.

locally outnumbered, they could be overwhelmed any time Japanese forces concentrated against them. Only his fighters were based in New Guinea, and they had no warning system since Japanese forces occupied all the potential radar sites in the mountains above Port Moresby. (In contrast, fighters based on Guadalcanal when Allied operations began there got ample warning from Australian coast watchers in the upper Solomons and could get airborne in time to meet attackers.)[4] Daily missions included air combat, resupply, reconnaissance of a broad ocean area, and interdiction of Japanese forces approaching Port Moresby. Kenney's assets were overtasked, and there was no relief in sight.

Kenney faced an immense logistical challenge. In this theater, transportation of the vast amount of bulk items needed for modern war depended largely on maritime shipping, which was scarce and vulnerable to air and submarine attack. Naval forces were already overtasked; by the fall of 1942, only one US aircraft carrier and one US battleship were in the Pacific, and the carrier was under repair for battle damage. (Major carrier actions were not resumed until November 1943.) Further, land transportation from Australia's southern ports was incapable of expeditiously moving even the few supplies that arrived by sea. Unfortunately, each Australian territory had its own unique rail system, with track widths ranging from 2′ 6″ to 5′ 3″ causing bottlenecks at each transshipment point. Finally, the fact that Kenney's air depot was in South Australia increased every repair and modification delay.[5]

If, on 29 July 1942, Kenney thought he had a full plate already, General MacArthur's first question didn't ease things: what could Kenney's SWPA air forces do to support the landing at Guadalcanal the following week (fig. 2)? Kenney took a whirlwind tour to assess his forces and reported back; his answer was not what MacArthur expected. Kenney had relieved his B-17s of other taskings so they could get ready for a big raid on the base at Rabaul, New Britain, Japan's chief air threat to Guadalcanal. About 17 bombers would launch from Mareeba, Australia, refuel at Port Moresby, and make the attack. (The mission would take 23 hours to fly.) Although 17 airplanes seem a small force, it would be the biggest air operation in the SWPA to date. Not only MacArthur but also the aircrews thought Kenney's plan was audacious . . . so would Japanese naval officers.[6]

In the same meeting, Kenney put himself on a new footing with his joint-forces commander. He explained the challenges facing the Allied air forces and how he would solve them, effectively taking responsibility for the air force and its pursuit of joint objectives. Kenney proposed organizing two subordinate commands—the US Fifth Air Force to fight in New Guinea, and a Royal Australian Air Force (RAAF) com-

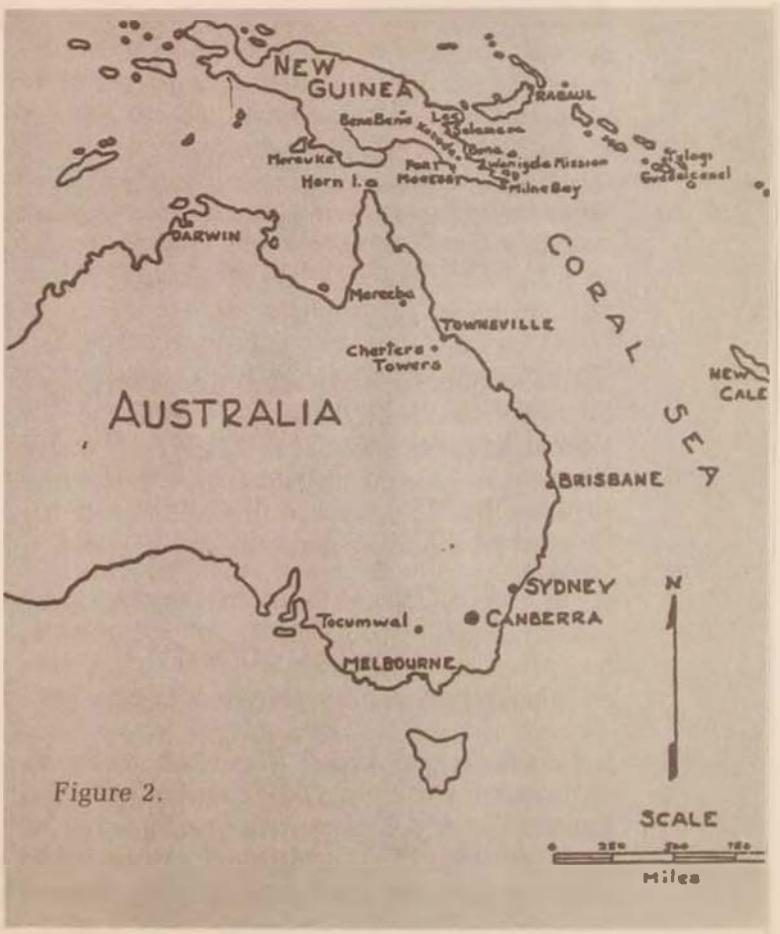


Figure 2.

General Kenney used his limited resources to airlift 5,000 troops (above) and heavy equipment (right) to the battle for Buna, avoiding the unhealthy overland route. Standard cargo aircraft, B-17s, B-25s, and civilian airliners took part in the operation.

mand to defend Australia's northern coast. Forces from both nations would be assigned to each command. More important, Kenney requested approval to pursue one primary goal: command of the air over his theater. MacArthur agreed.

First Operations: Winning Northern Bases

Kenney's principal aim—air superiority—was a long way off.[7] As August 1942 began, Kenney had to start, using what he had, to create the conditions for success. In other words, he had to apply operational art. Fortunately for Kenney, Japanese forces were divided between two campaigns—one to take Port Moresby, the other to control Guadalcanal.

Kenney's little "big raid" on Rabaul took place on 7 August; it started a seldom-noted chain of events that had unforeseen

This destroyed C-47 clearly shows that forward basing was a hazardous operation.

consequences. Japanese naval officers watched the raid, which hit an air base near the harbor, and were impressed by its size—13 of the B-17s got through. Consequently, the convoy to reinforce Guadalcanal was split to minimize vulnerability to air attack. This allowed an Allied submarine to pick off the cruiser *Kuko* and reduced the force available for the Battle of Savo Island.[8]

In New Guinea, the Japanese forces advancing overland on Port Moresby—interdicted by Kenney's whole tactical air force, from P-39s to B-17s—were stopped 30 miles from the base by Australian infantry in mid-September 1942. The Australians were soon pursuing the Japanese army to its bases around Buna on New Guinea's north coast, while Kenney's forces resupplied them and shut down the Japanese air base at Buna. Some strategists wanted MacArthur simply to contain the enemy at Buna. But an intact Japanese garrison, capable of patrols and raids, would have made this area unsuitable for MacArthur's plans; he needed forward air bases near Buna.[9]

The battle for Buna became a race for time. The moment the Japanese won or lost Guadalcanal, they could reorganize and swamp SWPA forces in New Guinea. For Allied ground forces, time and disease were more effective threats than enemy bullets. On Guadalcanal, Allied forces held a coastal position with a sea breeze to suppress disease. At Buna, though, the Allies approached from the swamps and were soon riddled by malaria, dengue fever, scrub typhus, and dysentery. One unit of 1,100 men was reduced to 95 unhealthy troops available for battle.[10] "The ultimate nightmare country" is how MacArthur's chief engineer described the almost impassable terrain that slowed each army movement.[11]

The initial plan was to transport troops and supplies close to Buna by sea,[12] but without forward bases, sustained fighter escort was impossible. In the absence of air superiority, this plan fizzled. Instead, General Kenney had a forward strip built and used airlift to bring troops and supplies close to the battle, and to evacuate casualties. In his typical fashion, Kenney used everything available for the prime mission: B-17s, B-25s, and civil airliners performed airlift to augment his C-47s, and all of these aircraft got fighter cover. In perspective,

Kenney established temporary and local air superiority to create conditions for later air supremacy. When Allied ground forces finally took the Buna area, MacArthur made a jubilant statement to the press:

> The Horii Army has been annihilated. The outstanding military lesson of this campaign was the continuous calculated application of air power, inherent in the potentialities of the Air Force, employed in the most intimate tactical and logistical union with ground troops.[13]

Bismarck Sea Buildup

Kenney lost no time building a network of forward operating bases near Buna. On 23 December Japan's Imperial General Headquarters ordered two fresh divisions forward to the Solomons. On 4 January 1943 Imperial General Headquarters decided to abandon Guadalcanal, and Japan's fresh divisions were diverted to Rabaul to load up for New Guinea. The overall plan called for reinforcing New Guinea with 100,000 troops.[14]

Allied ground forces were in terrible shape to meet any attack early in 1943; casualties in the Buna campaign were almost twice those at Guadalcanal. In fact, Allied ground forces were not ready for major operations until August. Kenney's air forces were the only operationally effective arm available.

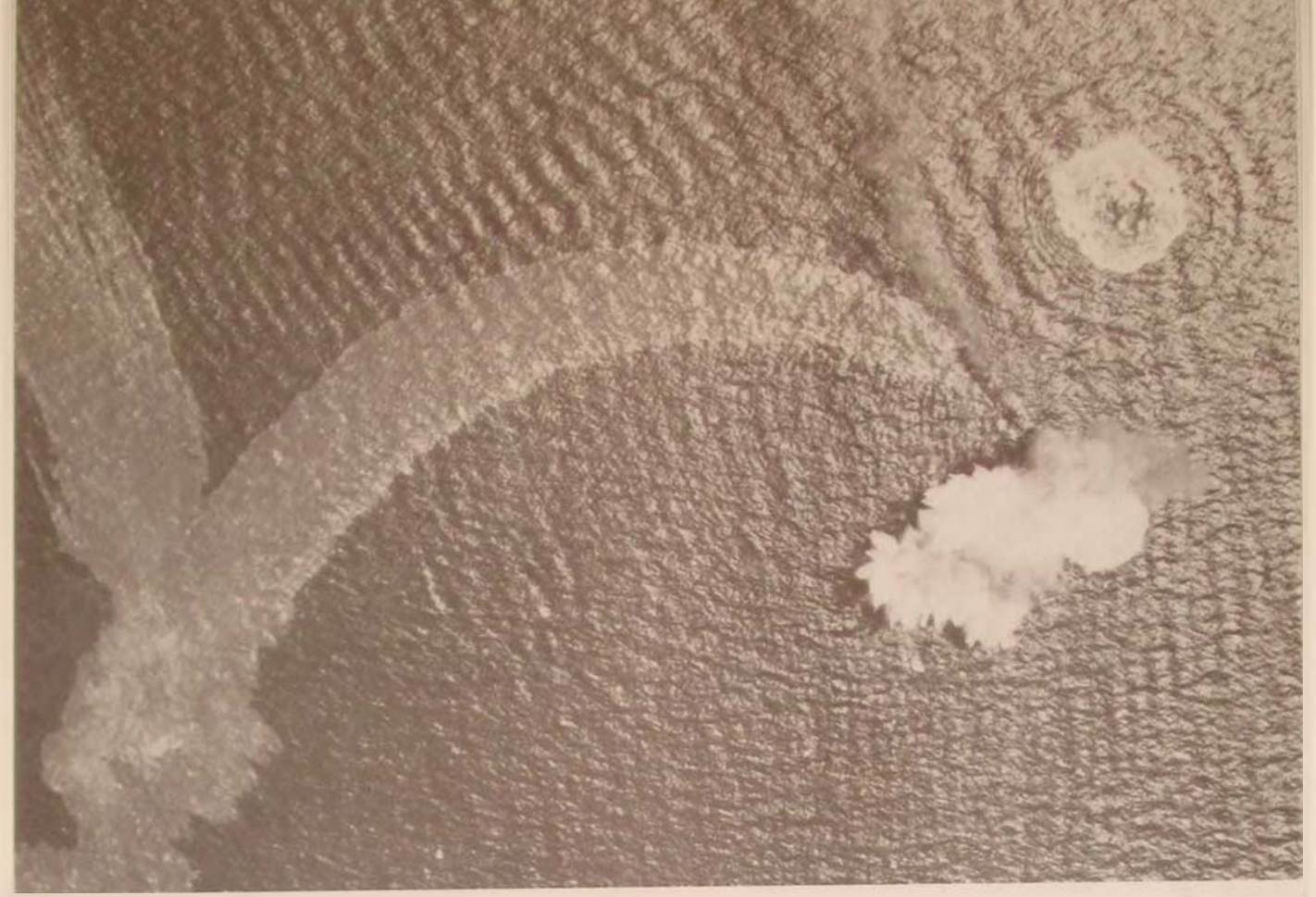
General Kenney anticipated the shift of Japanese strength and increased training for maritime operations. Practicing against a ship hulk near Port Moresby, his pilots became adept at low-altitude skip bombing, using five-second fuzes for safe escape. (Although skip bombing was originally devised for B-17s, B-25s and A-20s took over this role because of their better maneuverability.)[15] Kenney authorized installation of eight fixed, forward-firing .50-caliber machine guns in B-25 "commerce raiders," as well.

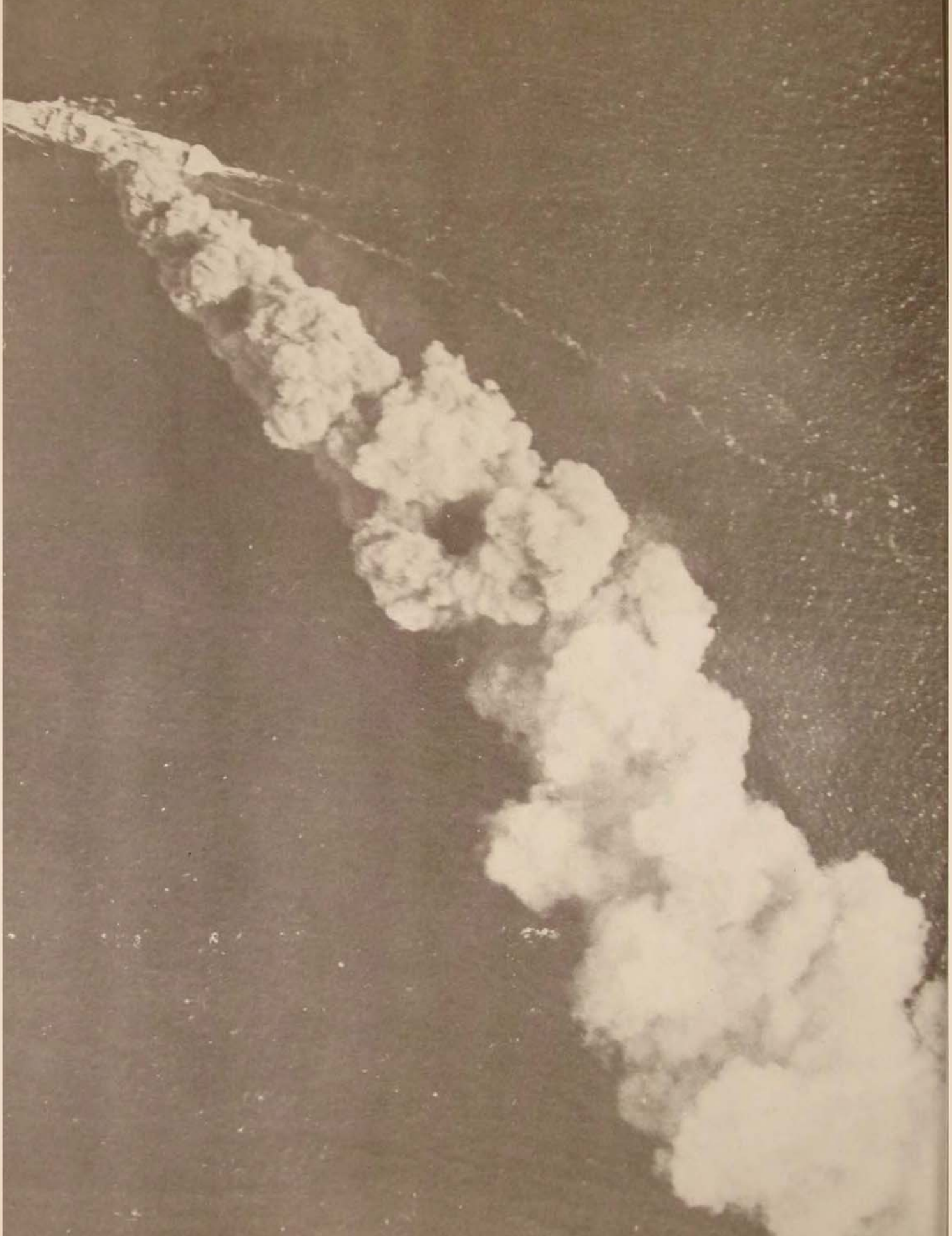
In Rabaul, Japanese staffs expertly planned a convoy operation for early March. They anticipated the reaction of SWPA air forces and distributed key supplies equally among eight freighters. Each was loaded so the most critical items would be unloaded first when the ships reached port in New Guinea. The convoy would be protected by eight destroyers and fighter escorts and would sail under cover of a big storm system.[16]

Battle of the Bismarck Sea

As evidence of an impending convoy mounted, Kenney increased the readiness of his forces. His reforms in maintenance

A Japanese destroyer (right) shows the effects of an attack by General Kenney's B-25s, early in the Battle of the Bismarck Sea. A Japanese merchant vessel (below), one of the 22 ships sunk during the battle, is seen under low-level attack.





Attacks by different types of aircraft operating at varying altitudes took their toll on Japanese naval forces, including an armed cargo vessel (left) and a destroyer (above), which was sunk despite its evasive maneuvers.

had doubled aircraft availability, which in turn allowed him to keep a third of his force operating from forward bases in New Guinea and another third in northern Australia as a ready reserve. The remainder of his forces recovered, transitioned to new aircraft, or trained.[17]

As the convoy assembled, Kenney moved all available forces forward. The complete force flew a detailed rehearsal of the coordinated attack plan (screened by fighters to preserve surprise) on 28 February, landed at its deployment bases, and then stood down. That night, at 2300, Lt Gen Hatazo Adachi and 7,000 troops sailed from Rabaul under the cover of the storm.

Kenney's B-24s were new to the theater and plagued by maintenance problems. The few available B-24s weren't enough to put into the attack plan, so they took over long-range reconnaissance duties and freed

more B-17s to attack en masse. It was a B-24 that briefly glimpsed the convoy through the storm clouds on 1 March. Because Kenney's P-39s, P-40s, and RAAF Bostons didn't have the range to participate in the attack, they strafed and bombed Japanese airfields in northern New Guinea to reduce interference.[18]

On 2 March another B-24 spotted the convoy, which was pressing on at seven knots under low clouds. The convoy was still so far away that only B-17s and P-38s could reach it, and most of the P-38s got separated in the clouds. Twenty-eight B-17s attacked that morning; the convoy scattered to hide under the low clouds, but one freighter was left sinking. A second nine-plane attack in the late afternoon was less effective, perhaps giving the sailors and soldiers in the convoy some false reassurance.

Imagine the sounds of Kenney's RAAF and US Army Air Forces (AAF) aircraft assembling on the morning of 3 March 1943: 13 Beaufighters, 12 B-25s, 16 P-38s, and a dozen A-20s took off from the bases near Buna. Thirty-four B-17s approached from Port Moresby. During the night the storm had shifted, and the scattered clouds couldn't protect the 15 ships remaining.[19]

As Kenney's forces came within visual range, the convoy scattered and began firing its air-defense guns. Far overhead, an escort of 26 Japanese fighters stayed high, expecting the "real" attack to come at high altitude. P-38s engaged them while the rest of the force maintained position to accomplish the coordinated attack plan they had rehearsed. (One B-17 and three P-38s were lost in the air-to-air battle, compared to Allied claims of downing at least 22 Japanese fighters. This far from Rabaul, the Japanese fighters could fight only briefly; effective Japanese fighter escort throughout the daylight hours was impossible.)

The first attack presented the convoy with a vertical dilemma: the RAAF Beaufighters approached for low-altitude strafing as B-17s at medium altitude prepared to drop bombs from overhead. (It's hard to shoot in one direction when threatened from another quadrant outside one's field of view.)[20]

The B-25 attack presented another dilemma, this time horizontal: should the captains turn broadside to mass their defensive fire or turn fore and aft to minimize the ships' cross section? Most captains apparently anticipated torpedo attacks and turned bow or stern to the B-25s. Consequently, only a few guns on each ship could try to disturb the aim of the "commerce raiders." Each B-25 carried three or four bombs and a battery of fixed guns loaded with a firing sequence of one tracer, two armor-piercing, and two incendiary rounds. The B-25s strafed the perfectly aligned ships and then dropped their bombs. Finally, the A-20s came in to strafe and skip bomb the ships.

In about one hour, all seven freighters and three destroyers were sinking or crippled. The battle was so short and violent that it was impossible, either then or later, to determine which aircraft or units contributed most to the result. More to the point, every single element of the Allied force was indispensable to the plan and its success.

The five remaining serviceable destroyers picked up as many survivors as possible and headed north to escape. Although worsening weather and increasing range prevented Kenney's full forces from repeating the morning's performance, a late afternoon reattack found and hit one destroyer. Characteristically, Kenney ordered reattacks for the next day; crippled ships were bombed and strafed until they sank. The final toll was eight of eight freighters and four of eight destroyers.[21]

Results of the Battle

Samuel Eliot Morison called the Battle of the Bismarck Sea "the most devastating air attack on ships of the entire war, excepting only that on Pearl Harbor."[22] We should

The last Japanese ship afloat, a destroyer, was sunk by nine B-25s in midafternoon. In all, Allied air power sank some 90,000 tons of enemy shipping during the battle.

note that Kenney's assault, unlike the Pearl Harbor attack, was against a force expecting opposition, and he defeated the Japanese strategy as well as the convoy. The Battle of the Bismarck Sea was decisive, a result that Kenney took pains to assure.

After this battle, Japanese planners never again attempted to reinforce their New Guinea forces with large ships. Instead, they relied on destroyers dashing to the coast, coastal barges, and submarines for replenishment. Without bulk shipping, Japanese air forces in New Guinea lacked the means to sustain the long fight for air superiority.[23] Deficient shipping weakened the Japanese land forces and reduced their patrolling, just as their reconnaissance flights were also dwindling for lack of fuel. Not having to worry so much about enemy reconnaissance, Kenney built a hidden forward base at Tsili Tsili, New Guinea, so he could mass forces for his first big counterair campaign in August 1943.

Finally, the burden of resupplying ground forces in New Guinea in the face of the Allied air threat increasingly tasked Japanese submarine forces.[24] Their withdrawal from Australian waters freed Allied shipping to build and sustain strong air and ground forces in New Guinea, which eventually allowed Kenney's airlifters and their fighter escorts to catch their breath. Control of the air, and thus the sea, allowed MacArthur and his small amphibious force to

begin a series of 56 enveloping operations, spearheaded and guarded by air from a succession of forward bases—a concept of operations that Winston Churchill would call "triphibious" warfare.

Questions of Numbers

The most important result of the Bismarck Sea battle was qualitative, not quantitative. Japan could replace 12 or so ships, but the Japanese strategy couldn't be repaired or salvaged.

In simple numerical terms, Kenney should have been out of business in the air war. Contemporary commanders were amazed at Kenney's boldness in attacking the convoy just when replacements had become critically few.[25] Before this battle, his monthly losses always exceeded his replacements, while Japanese air strength in New Guinea continued to grow until September 1943.

In trying to piece together the air orders of battle throughout the New Guinea campaigns, one inevitably concludes that the task is impossible. Aircraft moved hourly and were used for tasks beyond their designers' wildest dreams—or nightmares. Units from dispersed operating locations massed for their attacks and scattered again, minutes or days later.

Numbers of available forces became key considerations when, in Napoléon's traditional campaigns, mass armies overwhelmed smaller armies. But in modern campaigns, comparing numbers of assets available for battle can be simplistic. Availability is a matter of degree for modern forces, especially air forces. Operational decisions of force disposition, command and control, equipment, training, and tasking are key to making forces both effective and available for a given mission. And Kenney addressed all these factors to achieve decisive results.

Kenney's operational approach is best illustrated by counterair operations. In response to the Bismarck Sea battle, Japanese air forces attacked Kenney's three biggest air bases in overwhelming strength during April; within four days they attacked each base once. But when Kenney rebuilt his force and mounted his counterair campaign in August, he attacked each Japanese base in numerous waves for several days–and the target bases did not recover. Both forces put overwhelming numbers over their targets, but the Allied operation, quick-turning from forward bases, was persistent enough to produce decisive results.[26]

Kenney's Keys to Winning

Kenney put four important attributes to work when the chips were down: operational skill, creativity, brilliance at the air component commander's job, and vision. Each of these traits merits some discussion.

Since numbers didn't decide the outcome of the New Guinea campaigns, something else—some qualitative difference—must have been important. It wasn't simply airplanes and crews. The air forces of Japan's army and navy were skillful and experienced for the most part. Kenney and many of his pilots thought that most of the Allied fighters (P-39s, P-40s, and Spitfires) were inferior to those of their Japanese opponents. The difference wasn't tactics either, a fact that Kenney's crews attest to.[27]

The only qualitative edge Kenney could employ to offset his strategic and tactical disadvantages was his own operational skill. And, as one examines his actions, a pattern becomes evident: concentration on one objective, surprise, moving forces, logistics, throwing every useful asset into the right fight at the right time . . . Kenney's operational decisions flesh out the principles of war with remarkable consistency.

It was not that Kenney consciously applied the principles of war (his memoirs give us only hints on that question). The point, for us, is that these principles help us understand his brilliance. Perhaps more important, studying concrete examples

such as Kenney's campaigns builds a broader understanding of the principles of war, making them more useful and campaign lessons more memorable. By applying the principles of war, not as rote but as a means to recognize good and bad military operations, anyone with sufficient expertise in air power might plan sound operations with effective results.

But the most advanced computer in the world couldn't duplicate Kenney's second key to winning—creating what he needed to win. Much has been said about Kenney as an innovator. He played a critical role in developing parafrag bombs, the predecessor of current cluster bomb units (CBUs), and in fashioning attack aviation. Some other innovations credited to Kenney—such as daisy-cutter bombs, decoy aircraft, and dummy airfields—had already been used by the Japanese.[28] Although his memoirs gloss over the provenance of his ideas, Kenney said, "Any time I can't think of something screwy enough, I have a flock of people out here to help me."[29] In truth, Kenney's open-mindedness, encouragement of subordinates who had ideas, and ability to recognize both good and bad ideas gained him far more than his own creations, alone, could have.

Third, in his relations with MacArthur, Kenney set a standard for performance as an air component commander that would be hard to top. He started out by assuring the joint-forces commander of his complete dedication to the joint mission and immediately established his credibility with the 17-ship raid on Rabaul.

MacArthur had felt the sting of early Allied defeats deeply and personally, and appeared depressed or even defeatist at the time Kenney reported in. One of MacArthur's biographers reports that

> MacArthur's restoration to full health and activity might well be dated from the day that Kenney walked into his headquarters in Brisbane. . . . The importance of Kenney to MacArthur in the following three years cannot be overestimated.[30]

Over the objections of almost everyone else on MacArthur's staff, Kenney obtained MacArthur's permission for early airlift operations. This and subsequent successes increased MacArthur's open-mindedness and his confidence in Kenney, a situation that allowed Kenney increasing freedom to operate.

MacArthur's air component commander didn't hesitate to advise on Allied army and naval plans, which were inextricably linked with his air operations. Kenney's familiarity and competence with army and naval questions were indispensable for planning and fighting coherent joint campaigns—matters that had strategic significance.

What could be more joint than the Japanese convoy of 16 ships, carrying 7,000 troops and capped by a fighter escort? But the crucial fault of the Japanese forces was their lack of interservice unity. The Japanese army and navy staffs had approached the war with different, divergent strategies. Japan's Imperial General Headquarters was a temporary creation, with no peacetime predecessor. Japan's army air force had fought only on the Asian continent until the 6th Air Division was sent to augment the naval air force and oppose Kenney in New Guinea. Committed piecemeal, rather than under a single air commander, neither force was decisive. When Japan abandoned her offensive naval strategy and elected to defend air bases with land-based air power, Kenney's Allied air forces defeated this new strategy at its outset. As one Japanese commentator concludes, "It became impossible to transport construction and other basic materials for air bases and their defense."[31] The unity of Allied effort, spearheaded by Kenney, was indispensable to winning.

Finally, Kenney had an operational perspective on his theater that paid tremendous dividends in joint operations as well as air campaigns. He saw the possibilities of airlift, forward bases, and antishipping operations, and MacArthur approved his proposals. Soon after the Bismarck Sea bat-

tle, MacArthur would state that the purpose of operations in his theater was to advance the line of air bases.[32] Kenney's vision provided MacArthur with a broader, more effective view of his theater and its strategic possibilities.

When Kenney created Advanced Echelon New Guinea and placed tactical operations there under Brig Gen Ennis C. Whitehead, Kenney freed himself to concentrate on winning at the operational level. Kenney didn't stay aloof from crucial details like engineering support, weapons developments, and the welfare of his people, but he entrusted Whitehead with running daily operations in the war zone. Kenney equipped, trained, moved, and supplied forces to fight but only supervised the fighting.[33] Kenney's vision of possibilities—his drive to control the air over New Guinea from the start—provided a coherent direction for tactical, operational, and strategic choices. The unity of purpose that Kenney created provided the aim and momentum for MacArthur's command and its course to victory.

Final Assessment

MacArthur described Kenney in his memoirs:

> Of all the brilliant air commanders of the war, none surpassed him in those three great essentials of combat leadership: aggressive vision, mastery of air tactics and strategy, and the ability to extract the maximum in fighting qualities from both men and equipment.[34]

History should remember Kenney for reviving the offensive spirit and will of a joint-force commander who was soon infected by Kenney's aggressiveness, open-mindedness, and vision. The unity of purpose shared by these commanders, especially as it contrasted with the fragmented efforts of their opponents, was the foundation for joint success. □

Notes

1. Gavin Long, *The Six Years War: A Concise History of Australia in the 1939–45 War* (Canberra, Australia: Australian War Memorial and the Australian Government Publishing Service, 1973), 193.

2. Weldon E. "Dusty" Rhoades, *Flying MacArthur to Victory* (College Station, Tex.: Texas A&M Press, 1987), 67.

3. Wesley F. Craven and James L. Cate, eds., *The Army Air Forces in World War II*, vol. 4, *The Pacific: Guadalcanal to Saipan, August 1942 to July 1944* (Chicago: University of Chicago Press, 1950; Washington, D.C.: Office of Air Force History, 1983), 118.

4. Vern Haugland, *The AAF Against Japan* (New York: Harper & Brothers Publishers, 1948), 164.

5. Maj Gen Charles A. Willoughby and John Chamberlain, *MacArthur, 1941–1951* (New York: McGraw-Hill Book Company, Inc., 1954), 76.

6. Capt William Crawford, Jr., as told to Ted Saucier, *Gore and Glory* (Philadelphia: David McKay Company, 1944), 101. This account explains the 23-hour mission. Kenney's first two meetings are covered in George Churchill Kenney, *General Kenney Reports: A Personal History of the Pacific War* (New York: Duell, Sloan and Pearce, 1949; Washington, D.C.: Office of Air Force History, 1987).

7. Kenney called his later counterair operation of August 1943 merely "what looks to be a real step to control of New Guinea air." Lt Gen George C. Kenney, commander, SWPA Air Forces, to Maj Gen Ennis C. Whitehead, commander, Advanced Echelon (ADVON) New Guinea, letter, 17 August 1943.

8. Toshikazu Ohmae, "The Battle of Savo Island," in *The Japanese Navy in World War II: In the Words of Former Japanese Naval Officers*, ed. and trans. Dr David C. Evans (Annapolis, Md.: Naval Institute Press, 1986), 226, 241.

9. Long, 247; D. Clayton James, *The Years of MacArthur*, vol. 2, *1941–1951* (Boston: Houghton Mifflin Company, 1975), 282; and Samuel Eliot Morison, *History of United States Naval Operations in World War II*, vol. 6, *Breaking the Bismarcks Barrier, 22 July 1942–1 May 1944* (Boston: Little, Brown and Company, 1950), x, 41–42 (hereafter cited as *BBB*).

10. Gen Robert L. Eichelberger with Milton MacKaye, *Our Jungle Road to Tokyo* (Washington, D.C.: Zenger Publishing Co., 1982), 23, 41–44, 57; Kenney, 124.

11. Willoughby and Chamberlain, 96–97; *Reports of General MacArthur*, vol. 1, *The Campaigns of MacArthur in the Pacific* (Washington, D.C.: Government Printing Office, 1966), 42, 89 (hereafter cited as *Reports*). This volume of the reports narrates MacArthur's operations from his point of view and casts MacArthur in a good, almost flawless, light.

12. Headquarters Army Air Forces (AAF) SWPA Operations Instruction no. 26, 26 October 1942, in US Air Force Historical Research Center (USAFHRC) collection, Maxwell AFB, Alabama.

13. *Reports*, vol. 1: 98, contains the complete text of General Headquarters SWPA press release, 24 January 1943; the first sentence included here is normally omitted in quotations.

14. *Reports*, vol. 2, *Japanese Operations in the Southwest Pacific Area* (Washington, D.C.: Government Printing Office, 1966), 200. This volume of the reports contains invaluable materials that present the war from the Japanese view (in this book "the enemy" means the Allies).

15. Haugland, 160.

16. Morison, *BBB*, 55–56; Craven and Cate, 142; Long points out that Allied submarine strength required the Japanese to sail in convoys. Thus, submarines forced concentration, as air power would force dispersion (251).

17. *Papuan Campaign: The Buna-Sanananda Operation, 16 November 1942–23 January 1943* (Washington, D.C.: War Department, Military Intelligence Division, 1944), 199; Craven and Cate, 139–40; James, 198–99.

18. *RAAF Intelligence Resume*, week ending 8 March 1943, in USAFHRC collection; Samuel Eliot Morison, *The Two-Ocean War, A Short History of the United States Navy in World War II* (Boston: Little, Brown and Company, 1963), 272 (hereafter cited as *TTOW*); Craven and Cate, 139.

19. Air order of battle cited here is from *Summary of Operations, AAF SWPA*, "Daily Summary," dated 3 March 1943, in USAFHRC collection. Summary figures were compiled and corrected at the end of the month, rather than simply compiled from a day's reports.

20. Craven and Cate, 146–50; Steve Birdsall, *Flying Buccaneers: The Illustrated History of Kenney's Fifth Air Force* (Garden City, N.Y.: Doubleday & Company, Inc., 1977), 55–63. Both sources provide detailed reconstructions of the battle. Do not be misled by the word *illustrated* in the subtitle. This is no picture book; Birdsall's text is well researched and a good read.

21. On the basis of battle reports, Kenney believed that a higher number of ships were sunk; his belief was reinforced during postwar interviews with Japanese officers. But two detailed analyses, in 1943 and 1945, established the numbers given in the text. Craven and Cate, 146–50; Willoughby and Chamberlain, 111. Morison, in *BBB*, includes an acid paragraph declaiming Kenney's choice of figures on p. 205 of Kenney (64). James has the most recent and detailed coverage of the controversy, which is essentially unsolvable (297–303).

22. Morison, *TTOW*, 272.

23. Toshiyuki Yokoi, "Thoughts on Japan's Naval Defeat," in *The Japanese Navy in World War II: In the Words of Former Japanese Naval Officers*, ed. and trans. Dr David C. Evans (Annapolis, Md.: Naval Institute Press, 1986), 514.

24. Long, 292.

25. Eichelberger, 89.

26. Craven and Cate, 159–61, 178–80.

27. Edward T. Maloney, ed., *Fighter Tactics of the Ace's S.W.P.A.* (Corona Del Mar, Calif.: World War II Publications, 1978), passim; Lex McAulay, *Into the Dragon's Jaws* (Mesa, Ariz.: Champlin Fighter Museum Press, 1986), 11.

28. Compare McAulay, 10, to Kenney, 106–7, on daisy-cutters, for example. See also Headquarters AAF SWPA Objective Folder No. 65, 25 July 1943, "Japanese Camouflage and Deception Methods."

29. Herman S. Wolk, "The Great Innovator," in *Makers of the United States Air Force*, ed. John L. Frisbee (Washington, D.C.: Government Printing Office, 1987), 141. Wolk's work has an excellent assessment of Kenney as well as a valuable bibliography. His chapter "MacArthur's Premier Airman," in *We Shall Return!* ed. William M. Leary (Lexington, Ky.: University Press of Kentucky, 1988), is even better and has a better bibliography as well.

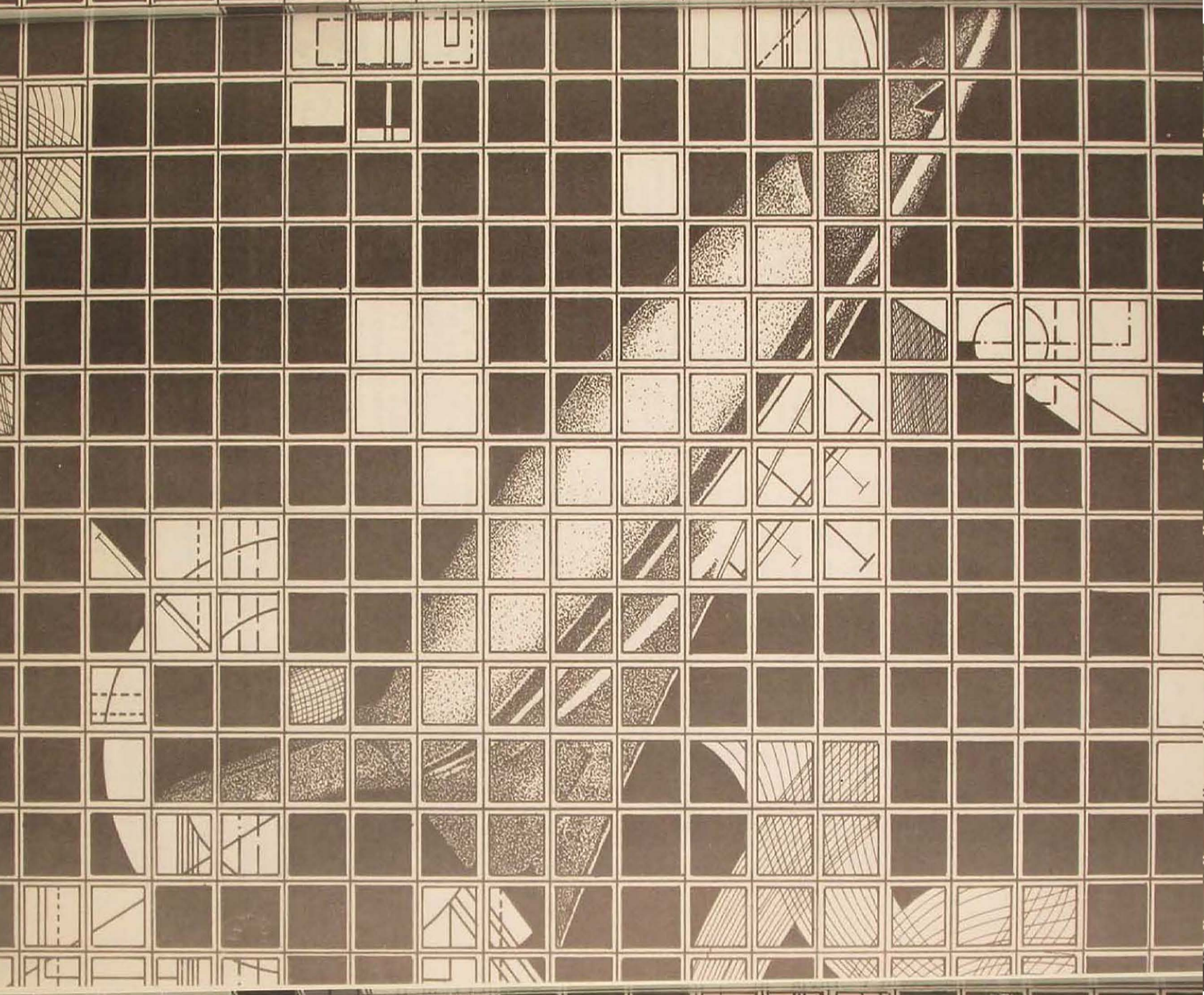
30. Clark Lee and Richard Henschel, *Douglas MacArthur* (New York: Henry Holt and Company, 1952), 167.

31. Ohmae in Evans, 220; Yokoi in Evans, 501–3; Ronald H. Spector, *Eagle against the Sun: The American War with Japan* (New York: Random House, 1985), 151.

32. General Headquarters Warning Instructions 2, 6 May 1943, quoted in John Miller, Jr., *Cartwheel, The Reduction of Rabaul* (Washington, D.C.: Government Printing Office, 1959), 29.

33. Not that MacArthur, Kenney, and Whitehead restricted themselves to their own responsibilities when important issues were at stake. Kenney prized Whitehead for his frankness as well as his skill and forwarded Whitehead's recommendations on army and theater strategy to MacArthur. For example, a letter of 13 July 1943, from Maj Gen Ennis C. Whitehead to Lt Gen George C. Kenney, recommends that MacArthur completely revise the strategic estimate of the Lae operation (in USAFHRC collection).

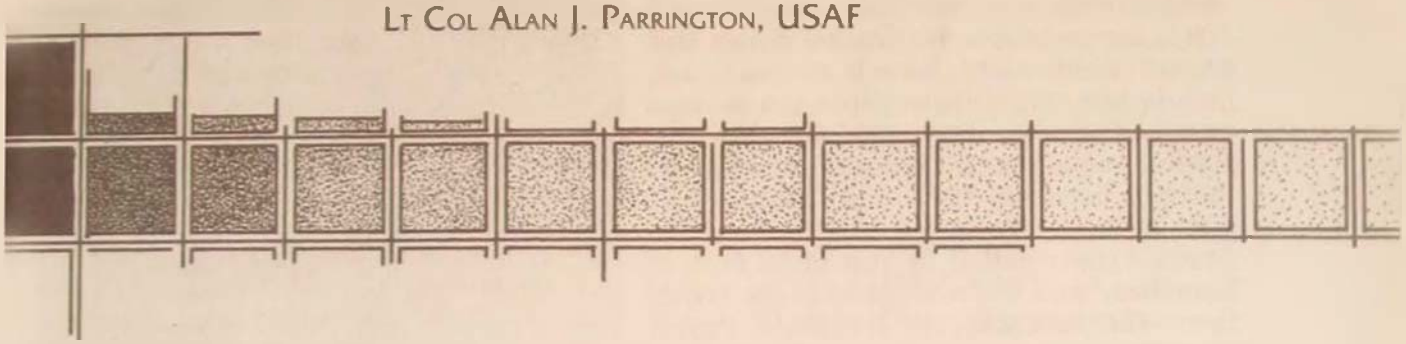
34. General of the Army Douglas MacArthur, *Reminiscences* (New York: McGraw-Hill, 1964), 157; quoted in Gavin Long, *MacArthur as Military Commander* (Princeton, N.J.: D. Van Nostrand Company, Inc., 1969), 107. Long also quotes Lee and Henschel's estimate of Kenney's influence on MacArthur.



US SPACE DOCTRINE

Time for a Change?

Lt Col Alan J. Parrington, USAF



"LOST in Space," exclaimed the cover story of the 17 August 1987 issue of *Newsweek*. "A year and a half after the space shuttle *Challenger* blew up on its way to orbit, the U.S. space program is a shambles: commercial satellites are backed up for launching; the Pentagon has only one spy satellite left in orbit, and sophisticated science probes are sitting in costly storage."[1] Several other leading national magazines ran similarly distressing stories in 1987 and 1988, and even such industry stalwarts as *Aviation Week & Space Technology* chimed in with summer editorials about the demise of American leadership on the newest frontier.[2]

Most critics argued that the problem was caused by a lack of vision, commitment, or money. A blue-ribbon National Aeronautics and Space Administration (NASA) advisory panel decided that "the U.S. space program now suffers from dissension between the Department of Defense (DOD) and NASA, confusion over goals, lack of consensus on content and major thrusts of space activity and, consequently, no general agreements on the need for or commitment to a long-term program."[3] Even DOD could not reach consensus on where it was headed: while President Reagan promised a space station and a hypersonic "Orient Express," the Air Force was backing away from manned space flight altogether.

The NASA conclusions and contradictory signals from Washington indicate a deficiency in space doctrine. The United States has not decided what it wants to do in space, how it can achieve its aims, or what equipment it needs for future space exploration. If the US government is to eliminate confusion and give direction to the space program, it must first develop a cohesive military space doctrine. Otherwise, we will continue to pursue different initiatives that have competing, if not conflicting, results.

The lack of a sound doctrine was most apparent in the programmatic decisions that followed the *Challenger* explosion. After the accident, the Air Force—as executive agent for DOD space launch—officially reversed its decade-old plan for primary reliance on the shuttle for military payloads and returned to the former policy of depending upon expendable launch vehicles (ELVs) such as the Atlas and Titan rockets.[4] However, the ELVs soon proved no more reliable than the shuttle, experiencing catastrophic failures and temporary groundings.[5]

Actually, the *Challenger* disaster in January 1986 was just the second in a string of mishaps that included the loss of two Air

Force Titan 34Ds, an Atlas Centaur vehicle, and a NASA Delta rocket.[6] No common fault was responsible for the five accidents; in fact, each of these launch systems statistically met or exceeded the success rates of similar earth-to-orbit vehicles. Through 1981, for instance, the United States lost one of every eight launch systems, and "while one might expect that the success rate has greatly improved over the last several years, the success rate was only 93 percent between 1977 and 1981."[7] The state-of-the-art Ariane 4 of the European Space Agency failed in four of its first 18 launches,[8] and the workhorse of the Soviet fleet—the "reliable and capable" Proton booster—was advertised by the Politburo as having only a 91.47 percent chance of reaching orbit.[9] Despite the tragic consequences of the *Challenger* explosion, the shuttle's success rate after 25 launches still compared favorably with all other existing systems.

The simple fact was that *all* contemporary launch systems of the 1980s used a ballistic missile approach to achieve orbital parameters and, as a result, depended on stable thrust for control during the critical stages of flight. Adding to the complexity was the formidable technological feat of lifting multimillion-pound platforms by means of highly explosive propellants. These factors combined to produce an inherently unstable method of reaching orbit.[10] Why then the consternation and headlines over US failures?

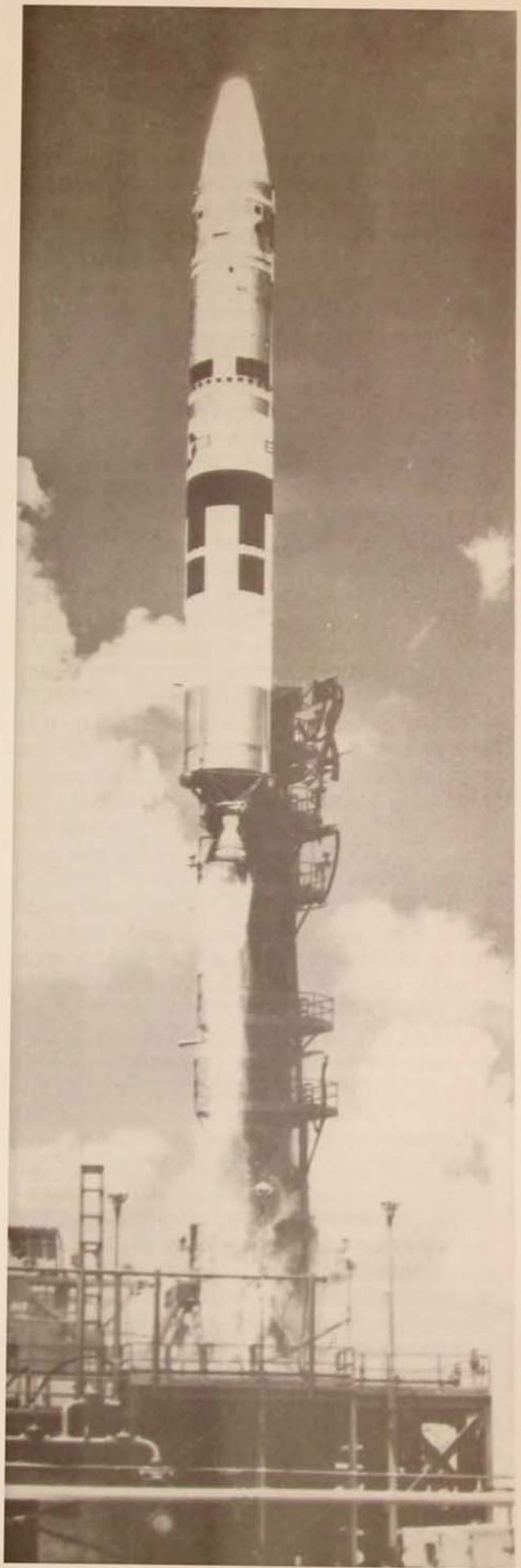
Between the late 1960s and early 1980s, Americans had come to consider their nation the world leader in space development. The unmatched successes of Apollo, Skylab, Galileo, and the space transportation system (STS) programs all contributed to considerable national pride and the general impression that the space program was on the verge of great accomplishments. Popular magazines bristled with stories about future moon colonies, US space stations, and interplanetary adventures. The Reagan administration broadened these expectations by suggesting that space might even be used to make nuclear war obsolete. The basis for each of these proposals was the popular belief that we had solved basic earth-to-orbit launch problems. Nothing was further from the truth.

Even before the *Challenger* accident grounded the orbiter fleet, unlaunched satellites had been stacking up at an alarming rate, and the Air Force had begun work on a complementary expendable launch vehicle (CELV) program for some of its own priority payloads. But the $2.1 billion CELV program financed only 10 vehicles that used old technologies and were no more reliable than the shuttle.[11] The going rate of $3,000 per pound to carry payloads to low earth orbit also made it unclear whether the United States could afford a greatly expanded space program.[12] In short, futurists' predictions about adventure on the high frontier were technologically and financially grounded by an inadequate space-launch program.[13]

Numerous proposals for improved launch systems surfaced after the *Challenger* mishap and after the Air Force upgraded the CELV program into a more ambitious agenda. But while nations like Japan, West Germany, France, and Great Britain moved to develop reusable manned systems, the United States was alone in returning to its policy of reliance on expendable ballistic vehicles and appeared to be pursuing a new space strategy by use of old doctrines and equipment.[14] In 1945 Gen Henry H. "Hap" Arnold warned future Air Force leaders about making this mistake:

> National safety would be endangered by an Air Force whose doctrines and techniques are tied solely on the equipment and process of the moment. Present equipment is but a step in progress, and any Air Force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security.[15]

When the cost of a single communications satellite/booster reached $1 billion per mission in 1988, that false sense of security came home to rest.[16]



Is the United States lost in space? Many experts seem to think so.[17] If this country is to clear up the confusion and get back on track, it must heed General Arnold's timeless advice and develop a doctrinal road map to the future. But, before getting too far into a discussion of what US space doctrine is and what it should be, we should briefly overview the history of space development to understand how the United States arrived at its current predicament.

History of Space Development

Many people consider the space age to be a post-World War II phenomenon, but some ideas about space flight are over a century old and can be traced to such visionaries as Konstantin Edwardovich Tsiolkovsky: "Though he never launched a rocket, Tsiolkovsky's contribution to the science of space travel was immense. He began in 1883 by explaining the principles by which rockets could fly in the vacuum of space." He was also the first person to introduce ideas about artificial earth satellites, liquid propellants, liquid oxygen-hydrogen engines, staging, spin stabilization, and correct orbital velocity.[18]

In the 1920s hybrid "aerospace" vehicles were first conceived, and Austrian scientist Eugene Sanger proposed a transatmospheric idea that the US Air Force vigorously pursued four decades later.[19] German scientists of the 1930s, under the tutelage of Wernher von Braun, perfected ballistic missile technology that culminated in the World War II production of the A-4 medium-range missile (the V-2 rocket). A prototype winged version—the A-4B—was

With the tragedy of the Challenger *accident, the Air Force expanded its interest in expendable launch vehicles, including the development of new systems and the refurbishment of older systems such as this Titan II.*

test-flown, but the war ended before it came to fruition.[20]

Following World War II, both the Soviet Union and the United States exploited German missile research, although the Soviets did so with a more definitive objective in mind: the development of an intercontinental ballistic missile (ICBM) to deliver nuclear weapons. A less coordinated US program, led by many of the German former experts, pursued space flight by means of ballistic missiles and winged aerospace vehicles.[21] Von Braun and his associates, as well as people in the National Advisory Committee for Aeronautics (the forerunner to NASA), believed that expendable missiles were of questionable value over the long term and that the correct road to space depended on some form of lifting surface. Therefore, winged vehicles such as the X-15 were an integral part of the early proposals.[22] Because the race to be the first into space took on increasing political significance, however, the simpler ballistic missile approach received more support.

The step up from ICBMs to low earth orbit required only a small increase in velocity. On 4 October 1957 the Soviets reached the pinnacle of international prestige by orbiting a man-made satellite. The 186-pound Sputnik, launched by a 588,000-pound ICBM, served no practical purpose—it was simply first of a kind.[23] What followed was a space race that demanded bigger and more powerful rockets.

Rockets—more precisely, ELVs—were the original choice of space engineers because, like balloons in the early days of aviation, they provided the most lift for the least technology when compared to reusable systems such as the US space shuttle, as originally designed. But ELVs, like balloons, were inflexible, cumbersome, nonmaneuverable, dangerous, and required extensive facilities and manpower to operate. NASA formally acknowledged these inherent limitations as early as 1963, realizing it could not afford to keep throwing away priceless hardware into the wastelands of space. By 1969 the agency had issued study contracts for the development of a totally reusable space launch system that would "shuttle" cargo and satellites to and from a space station and, in the process, make ELVs obsolete.[24]

The original space shuttle (phase B) design called for a two-stage vehicle that combined a purely aeronautical first stage with an aerospace orbiter second stage. The proposed vehicle resembled the current shuttle orbiter in its Boeing 747 piggyback ferry mode. The phase B would carry a 22,600-pound payload—sufficient for most satellites of the time, even in that premicrochip period[25]—and featured an "offset-launch" capability that could optimize space rendezvous capabilities. But the idea for a shuttle encountered two critical barriers to development that would inevitably alter its character. First, the space shuttle lacked sufficient launch demand to amortize its large development cost. The information age had only just begun, and no one in the 1960s could accurately forecast the coming explosion in space-based communications systems. A second related, but different, factor was that NASA lacked the US Air Force's moral support for the program.

In the early 1970s, the US Air Force made it known it did not want a shuttle and that it was content to continue using ELVs even though space shuttle development would not require DOD funds. In a move to acquire DOD's moral support while simultaneously increasing launch demand, NASA agreed to double the shuttle's payload capacity in order to accommodate *all* DOD satellites.[26] The impact of this decision on shuttle design was profound, in that the vehicle grew dramatically in size. Horizontal takeoff was no longer possible, and the aerodynamic first stage was replaced by two allegedly "refurbishable" solid rocket boosters (SRBs). To make room for the cavernous payload bay, engineers added a $30 million expendable external tank to carry fuel. A hands-off, computer-controlled vertical launch became the only option for such a massive, unstable vehicle.

and the final design took on the very characteristics of the ELVs it was supposed to replace.[27] A brief examination of the shuttle's operating characteristics will bear out this fact (see table).

US SPACE SHUTTLE SORTIE OPERATIONS

Operation	*Requirement*
Gross lift-off weight	4.463 million pounds
Gross payload	65 thousand pounds
Costs per sortie[a]	$170 million
Man-hours labor per sortie[b]	600 thousand
Orbiter turnaround time	30–60 days
Minimum satellite replacement time	150 days

Sources: (lift-off weight, payload, orbiter turnaround time) *Space Shuttle System Summary* (Los Angeles, Calif.: Rockwell International Space Systems Group, 1980), 25–26; (costs per sortie) Donald E. Fink, "US Adopts New Space Strategy," *Aviation Week & Space Technology* 121 (27 August 1984): 14–16; (man-hours labor per sortie) Charles H. Eldred, "Shuttle for the 21st Century," address to the American Institute of Aeronautics and Astronautics Space System Conference, 18–20 October 1982, Washington, D.C., and officials of the Boeing Airplane Company, discussions with author, March 1984; (minimum satellite replacement time) *Air Force Space Plan* (U) (Washington, D.C.: Headquarters USAF/XOS, 1984), 9–14.

a. Space-launch sortie costs are often manipulated to make one alternative appear better than the next. Low figures often include only hardware costs and leave out range and vehicle development, and manpower—costs that constitute the majority of the expense for vertical-launch systems. The figure quoted here is from NASA director James Beggs and includes all costs.

b. A large portion of manpower costs are attributable to the time required to program the five onboard, general-purpose computers that control the shuttle during launch, orbit insertion, and most other portions of the mission.

The US space shuttle is the third largest vehicle ever to fly, having a lift-off weight nearly seven times that of a fully loaded Boeing 747.[28] Its thrust exceeds that of 280 afterburning F-16s. Its extraordinary manpower costs are the direct result of its large size, vertical-launch requirements, and its limited operational envelope capabilities.[29] Its "Primary Avionics Software system is by far the most complex flight computer program ever developed."[30] The high total cost of each sortie can be attributed to these factors plus the obvious expense of throwaway components. Still, the shuttle was a remarkable technological achievement for the 1970s, and it compared favorably with ELVs of similar payload performance. By 1980 standards, it was the world's premier spacecraft, and it satisfactorily served a US policy calling for limited use of space. By the late 1980s, however, Soviet threats and domestic technological developments were making the use of ballistic missiles for space launch and its corresponding doctrine obsolete.

Space Missions

As with balloons in the early days of air power, the first military use of space was for observation purposes.[31] The dynamics of orbits tracking high across hostile territory was an ironic by-product of the Sputnik's maiden flight. Although not publicly admitted for almost 20 years, the satellite's ability to verify compliance with existing treaties added considerably to the maintenance of peace between the superpowers.[32] The overflight right of satellites was subsequently legitimized by United Nations protocol, but—like most international agreements—it was relevant only as long as the signatories were not in serious disagreement. In the late 1960s, the Soviets began development of an antisatellite (ASAT) system that could be used during hostilities.[33]

Satellites capable of monitoring treaty compliance in peacetime could obviously be reassigned to help target ships, airfields, fortifications, and even cities in wartime. Thus, the emergence of ASAT weapons was no more surprising than was the development of fighter aircraft as an antireconnais-

sance weapon during World War I.[34] In fact, the US military experimented with nuclear ASATs in the late 1950s and early 1960s.[35]

The Soviets were the first to develop a conventional ASAT weapon, which became operational early in the 1970s. Launched on an SL-11 ELV, the relatively primitive weapon was designed to first perform an on-orbit rendezvous with its target before destroying it with a shotgun-like device.[36] In response, the US began work on a conventional ASAT in the 1970s. Never a popular program with Congress, the F-15-launched US ASAT was continuously delayed by its critics, who had somehow concluded that unilateral US space disarmament could preclude a future space-weapons race.[37] Unfortunately, this hypothesis ignored both the Soviet threat and Western allies' weapon-development trends.

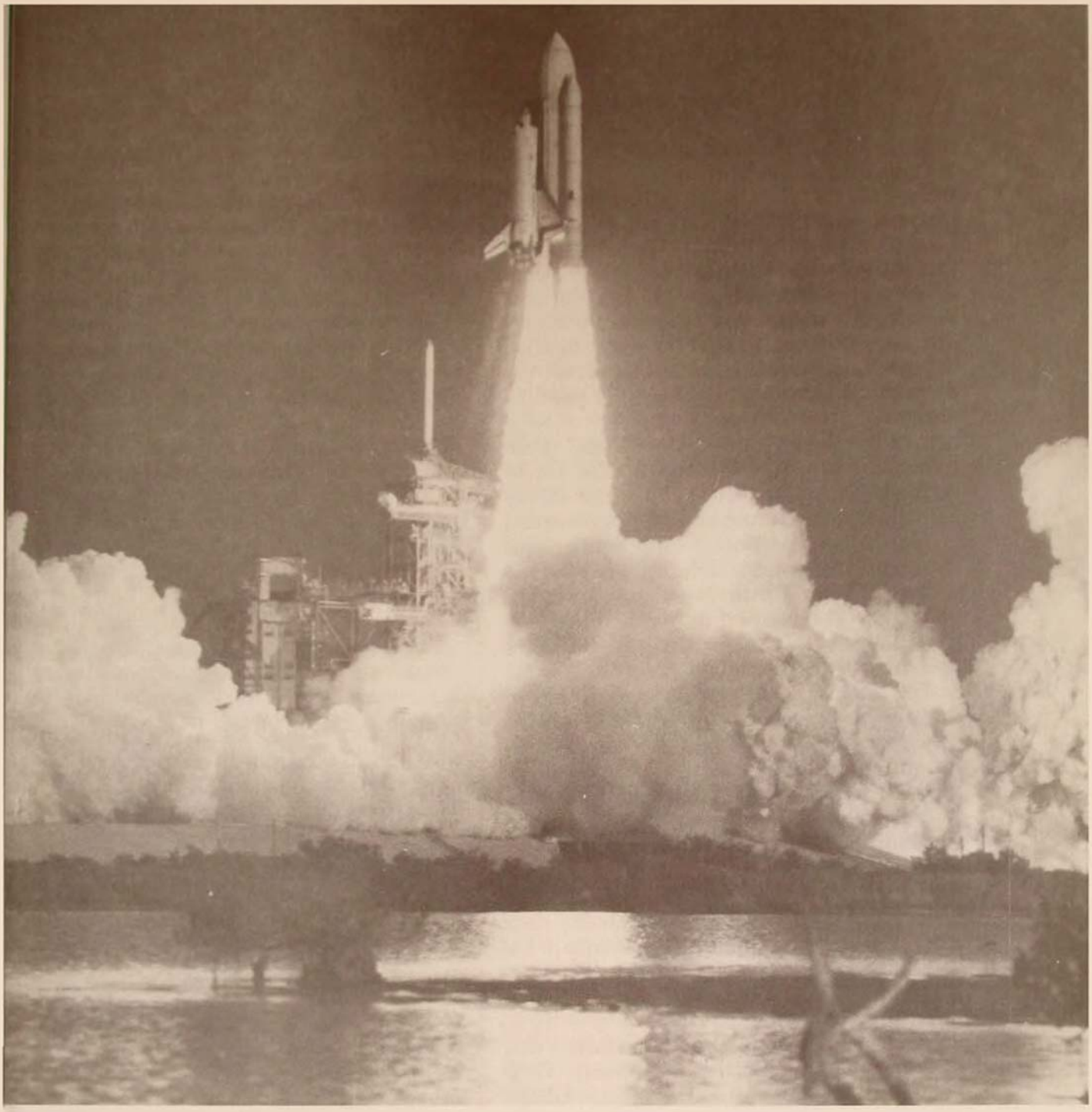
Not only did the Soviet Union continue its development of space weapons during the 1980s but also the US Army, Navy, and Air Force became increasingly dependent on friendly space forces for terrestrial missions. By the early 1980s, over 70 percent of US military communications went through space, and all major US commands were forced to rely upon satellites for command and control, intelligence, weather, navigation, and other primary functions.[38] Programs under development, like the global positioning system, were expected to further revolutionize warfare by permitting future munitions to improve their accuracy to several meters. If one trend was clear by the late 1980s, it was that military space forces would play a critical role in future terrestrial conflicts.[39] Strangely, the US space doctrine of 1988 made no mention of the importance of protecting friendly satellites; as a result, support for even the F-15 ASAT continually eroded. By the summer of 1988, the Air Force had dropped the funding request for its only near-term space weapon. Although Defense Secretary Caspar Weinberger, before his retirement, gave some lip service to the need for space control, official Air Force space doctrine remained passive and was at odds with all other US military doctrines.[40]

Space Doctrine

The term *doctrine* has many different meanings and is often confused with policy. In its broadest form, it weaves the various threads of a nation's armed forces into a coherent pattern of warfighting strategy and, in the process, defines the types and numbers of men and materiel needed to support national security objectives. It should be the guiding principle of all military programs.

Failure of American military planners to understand doctrine and its significance for future wars has cost many lives and resulted in unnecessary defeats. Prior to World War I, for example, the US military had not given serious consideration to the potential of heavier-than-air aircraft and had no doctrine for the airplane's use, employment, or design. Consequently, on the eve of the Great War, the United States government did not have an air force of any kind and ranked seventh worldwide in financial support for aviation—just behind Mexico.[41] And although Americans built the world's first airplanes, the Europeans built the world's first air forces. After four long years of war, US military aviation was still without an adequate doctrine and was so disorganized that no US-designed-and-built aircraft ever reached combat in World War I.[42]

In 1925 the US Naval Weapons Laboratory developed a system for locating ships and aircraft at long range and coined the name *radar* (for radio detecting and ranging); yet because of overreliance on a doctrine of offensive strategic bombing, it was the Europeans who first incorporated the idea into an effective air defense system. Incredibly, 18 months after radar demonstrated its capability to preclude a surprise attack in the Battle of Britain, US forces were caught asleep on that infamous day at Pearl Harbor. The tragic World War II story



The space shuttle was a miracle of technology for its time. However, the United States needs to look forward in time in developing a viable space doctrine. That doctrine should envision reliable technologies for space launch that may not even exist today.

of unescorted daylight bombing and the subsequent reacceptance of a doctrine of air superiority with long-range fighter escorts is similarly revealing but too well known to repeat here. What needs to be said is that all too often America's lead in weapons engineering has been lost to its inability to adapt warfighting doctrine to technological change.

There exists a *Military Space Doctrine* (AFM 1–6), but—instead of explaining how US space forces will be employed in future conflicts—it simply restates current public policy. In many ways it actually contradicts

AFM 1–1, *Basic Aerospace Doctrine of the United States Air Force*, on fundamental issues. While AFM 1–1 requires aerospace forces to be offensive and "act rather than react,"[43] AFM 1–6 states that US space forces will "react to threats to United States space systems" and that "we must be able to defend friendly space systems by avoiding or surviving attack."[44] This passive defense policy has been centered on the precept of survivability for the past 25 years.

In his paper "Space Doctrines," published in *Strategic Review*, Lt Col David Lupton, USAF, described the survivability principle as one founded on deterrence and "tit-for-tat" retribution.[45] The premise was that satellites were indefensible; thus, the only way to protect them was to discourage attack by threatening in-kind retaliation (i.e., you break one of mine, and I'll break two of yours). Through on-orbit sparing and other passive defenses, we hoped to achieve a "graceful degradation" of US space capability in time of war.[46] This unique hypothesis allowed for development of a retaliatory weapon like the F-15 ASAT, but it totally disregarded the need to actively protect US satellites that were needed for mission support of terrestrial forces.

To a large degree, the survivability doctrine was a by-product of an inadequate US earth-to-orbit launch system; nevertheless, it ignored General Arnold's charge to keep doctrine far ahead of equipment in order to drive the type and number of machines that the doctrine would later demand. Conversely, the conventional doctrines of the US Navy, Army, Air Force, and Marines have generally focused on the concept of superiority. Whether on land, on sea, or in the air, each service has aimed at gaining command of the battle environment as a prerequisite to all other military operations. Supporters of the survivability theory countered that space was unique and that the lessons of the past were invalid in the newest theater of operations.[47] A similarly incorrect argument was put forth by strategic bombing purists in early World War II.[48] In fact, space is not so unique as it is simply new, and the United States military has a long and successful tradition of adapting to new environments—albeit sometimes very slowly and usually as a direct result of war.

In the late nineteenth century when America was emerging as an international power, the US Navy was confronted with the task of developing a sea power doctrine for naval forces that were being revolutionized by the move from sail to steam. Capt Alfred Thayer Mahan, the father of US naval strategy and one of the most respected military theorists of all time, wrote that

> the purpose of naval strategy is to gain control of the sea. . . . To control the sea in war, it is first necessary to destroy the enemy's fleet. The destruction of the enemy's fleet is the first task of a navy in war. Everything else is a sideshow.[49]

Fifty years later, Gen William "Billy" Mitchell, fresh from his experience as the chief of Air Service for Group of Armies in World War I, similarly testified to Congress about the new environment of aviation:

> The principal mission . . . of aviation . . . is the destruction of the hostile aviation, in the same way that the principal mission of the navy is the destruction of the hostile navy, or the principal mission of an army is destruction of the hostile army.[50]

It would seem to follow that the principal mission of US military space forces should be the destruction of hostile space forces; in other words, we should strive for space superiority rather than space survivability. Indeed, we may need such a doctrine to protect our national lifeline to the future.

Sea power became important when imperialism created both colonies and the need to protect ocean access to raw materials.[51] Air power became important as a result of the industrial revolution that clustered war-making assets into strategic "vital centers." Now, space power has become an additional responsibility as a re-

sult of the next major socioeconomic shift.

John Naisbett, in his well-researched and immensely popular book *Megatrends*, stated that "this book is about ten major transformations taking place right now in our society. None is more subtle, yet more explosive, I think than this first, the megashift from an industrial society to an information society."[52] The two causes of this change, Naisbett claimed, were the jet aircraft and the communications satellite—the latter of which was by far the more important because "it collapsed the information float . . . and turned us into a global economy."[53]

If Naisbett is correct, then active defense of US military *and* commercial satellites is no more an option than the US Navy is a military luxury. To keep the commercial space lanes open in the future, space forces equipped with space weapons are just as necessary as aircraft carriers and advanced tactical fighter aircraft. Furthermore, if space forces are to be successful and complementary to other military operations, they must have a doctrine of superiority. In order to enact such a doctrine, the Department of Defense must initiate several fundamental changes.

Recommendations

The first priority is to develop, coordinate, approve, and issue a joint-service space superiority doctrine. This "basic doctrine," as AFM 1–1 describes it, should include the most fundamental and enduring beliefs that guide the proper use of aerospace forces in military action. Objectives should be clear, well understood, and focused upon the need to achieve space superiority in time of war by in-space destruction of all enemy satellites and by terrestrial destruction of earth-based systems such as ground-based laser ASATs. Deterrence is certainly a goal of such a doctrine but cannot be an end in itself.

The second objective should be the development of an operational space doctrine for the US Space Command. Operational doctrine is derived from basic doctrine and, in turn, should apply the basic principles within "the context of distinct objectives, force capabilities, broad mission areas, and operations environments."[54] More specifically, an operational doctrine of space superiority should define the types of personnel and equipment needed to fight a war in space, given a certain level of technology. This architecture should include future satellites, critical orbits, weapons, space stations, orbital transfer vehicles, and, of course, earth-to-orbit systems. But the concepts cannot be so far ahead as to leave serious windows of vulnerability.

An operations doctrine of space superiority would very likely have as its highest priority the development of a reliable, responsive, flexible, on-demand access to space. AFM 1–1 states that "success in warfare depends on getting sufficient men and machines in the right position at the right time."[55] Until the United States can routinely get to and from orbit when necessary, it can never protect, maintain, and replace its assets there. This is not to say that such a vehicle would eliminate the need for other launch systems. In all likelihood, the requirement for a few ELVs would still exist—just as blimps have survived into the 1980s. But a doctrine of space superiority would very likely force a return to orbit insertion by means of a staged lifting body, which is inherently more stable and flexible than the technique that uses the ballistic missile. Just as the need for air superiority forged the advancement in aircraft as a whole, so may space superiority change the entire nature of space operations.

Finally, the United States must develop a tactical space doctrine that applies basic and operational doctrine to specific weapon systems to accomplish detailed objectives. A tactical doctrine must supply practical solutions to real problems and not depend on technological breakthroughs for success or failure. Quantifiable requirements for operational statements of need

should evolve from this process. For example, one might develop a concept of operations for a fleet of military vehicles allowing them to stage on alert; launch on strategic warning; fly an atmospheric offset-launch profile; inject into a nominal low earth orbit; rendezvous within a minimum time with a desired target; identify, inspect, destroy, or replace the subject vehicle; and return to base in short order to combat-turn and restage on alert. Again, tactical doctrine should be based on tactical requirements rather than permitting technological adventurism to drive the end product. Real needs demand practical solutions.

Conclusions

At the beginning of the twentieth century, the US Army Board of Ordnance gave Samuel Pierpont Langley a very large sum of money to build two prototype aeroplanes. Professor Langley, as secretary of the Smithsonian Institution and associate of Alexander Graham Bell, appeared to be an aviation expert. But Langley's model concentrated on the problems of power in flight and ignored the more fundamental issue of maneuverability. To the Army's dismay, both of Langley's machines crashed into the Potomac River during their first takeoff, sinking with them the military's interest in airplanes. Still embarrassed by the incident three years later, the same board would not accept evidence of the Wright brothers' success, forcing the ingenious inventors to market their ideas abroad.[56] The United States returned to its reliance on balloons while its competitors forged ahead in aviation.

As before, other nations are busy exploiting the US lead in space and have begun to develop small, maneuverable, reusable, staged aerospace vehicles of their own. If the United States is to maintain its position as the leader in space, it will first have to update its military space doctrine to address twenty-first-century issues and bring it in line with our other proven theories of superiority in war. Or, as Maj Gen I. B. Holley, USAFR, concluded in his book *Ideas and Weapons*, "Failing here, the nation will repeat the sorry pattern of the air weapon, wastefully groping forward with each innovation."[57] □

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28. John W. Taylor, ed., *Jane's All the World's Aircraft* (New York: Jane's Publishing, Inc., 1984), 399.
29. Edward A. Gabris et al., "Concepts, Technology, and Operations for a Quick Response Highly Maneuverable Launch Vehicle," speech presented at the 21st Space Congress, Cocoa Beach, Florida, 24–26 April 1984, 1–6.
30. Carlow, 926.
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32. As President Lyndon B. Johnson was reported to have said in 1965, "I wouldn't want to be quoted on this but we spent 35 to 40 billion on the space program and, if nothing else has come out of it except knowledge that we gained from space photography, it would be worth 10 times what the whole project cost because tonight we know how many missiles the enemy has and it turns out that our [earlier] guesses were way off . . . we were doing things we didn't need to do, we were building things we didn't need to build, we were harboring fears we didn't need to harbor" (Baker, *The Shape of Wars*, 71).
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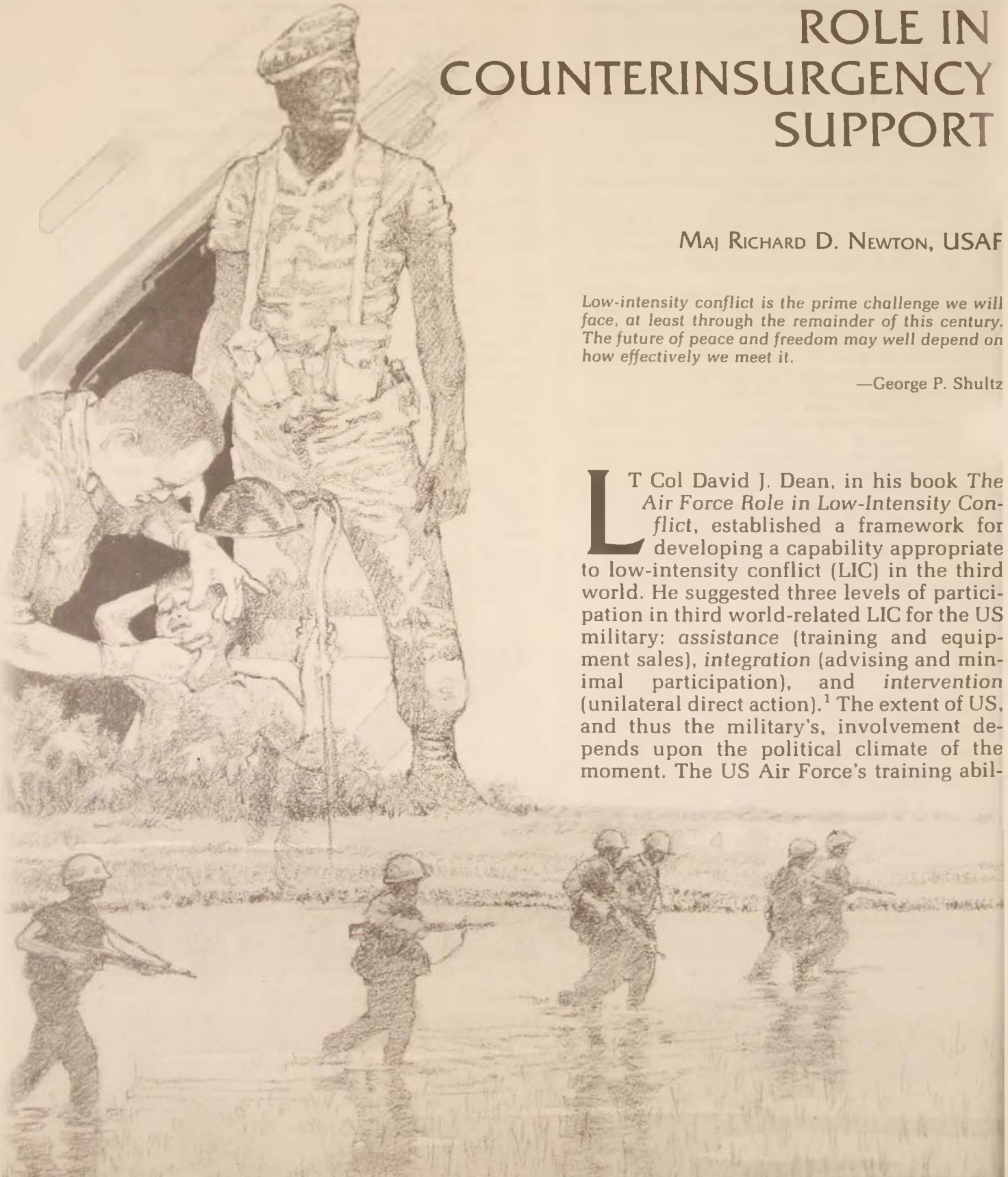
A US AIR FORCE ROLE IN COUNTERINSURGENCY SUPPORT

Maj Richard D. Newton, USAF

Low-intensity conflict is the prime challenge we will face, at least through the remainder of this century. The future of peace and freedom may well depend on how effectively we meet it.

—George P. Shultz



Lt Col David J. Dean, in his book *The Air Force Role in Low-Intensity Conflict*, established a framework for developing a capability appropriate to low-intensity conflict (LIC) in the third world. He suggested three levels of participation in third world-related LIC for the US military: *assistance* (training and equipment sales), *integration* (advising and minimal participation), and *intervention* (unilateral direct action).[1] The extent of US, and thus the military's, involvement depends upon the political climate of the moment. The US Air Force's training abil-

ity and the equipment it offers for export limit its effectiveness in the assistance and integration roles. This article proposes a way for the Air Force to assist allies who face revolutionary conflicts at the low end of the conflict spectrum—a capability noticeably lacking in the Air Force of the 1980s.

LIC/Insurgency Environment

The phrase *low-intensity conflict*, while often used in a narrow context, actually defies easy definition. LIC's broad, ambiguous nature makes it difficult for us to address policy and force-structure issues. In 1987 the Joint Chiefs of Staff (JCS) approved the definition of LIC contained in the *National Security Strategy of the United States*, which attempted to categorize the concept and eliminate its ambiguity. The general agreement is that LIC involves many uses of force up to, but not including, sustained engagements between conventional forces.[2] This article limits its focus to dealing with insurgency, which involves protracted, revolutionary warfare.

Dr Richard Schultz, Jr., in *Low-Intensity Conflict and Modern Technology*, offered a model to describe the spectrum of conflict from normal diplomacy through strategic nuclear holocaust (see fig. 1). He also showed what he thought the range of LIC to be as a subset of the total spectrum. Insurgency falls in the center of the LIC range. Schultz's model should be understood as a spectrum representative of conflict from our perspective. To fully appreciate what we are dealing with, we should also lay out a similar model for the environment on which this article is focused: revolutionary war (see fig. 2). According to Samuel B.

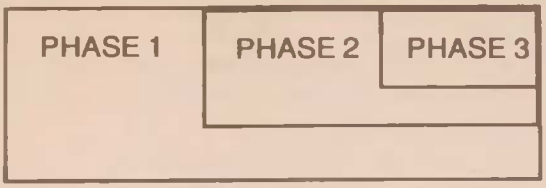


Figure 2. Revolutionary Warfare

Griffith, classic Maoist revolutionary warfare encompasses three phases—progressing from initial political organization through guerrilla warfare and culminating in conventional military operations.[3] The revolution itself may progress from one phase to the next or revert to a previous stage should circumstances require it. Significantly, each phase provides the underpinnings of subsequent stages; thus, phase 1 and phase 2 activities are present during phase 3 and never lose their initial importance. In our approach to revolutionary war, we must always consider the necessity of dealing with phases 1 and 2 even if a conventional military response to phase 3 is required. Our goal, in the context of Colonel Dean's framework, should be to restrict insurgency (revolutionary warfare) to—and defeat it in—phase 1 if possible (certainly, no higher than phase 2), and our efforts should focus on assistance (and perhaps integration) to avoid any need for intervention.

Normal Diplomacy	Political-Economic Sanctions & Peacekeeping	Sabotage Terrorism & Coups	Insurgency	Low-Intensity Conventional Warfare	Mid-Intensity Conventional Warfare & Unconventional Warfare	High-Intensity Conventional Warfare & Unconventional Warfare	Theater Nuclear War & Unconventional Warfare	Strategic Nuclear War & Unconvenional Warfare

Range of Low-Intensity Conflicts

Source: Dr. Richard H. Schultz, Jr., "Low-Intensity Conflict and US Policy: Regional Threats, Soviet Involvement, and the American Response," in *Low-Intensity Conflict and Modern Technology*, ed. Lt Col David J. Dean (Maxwell AFB, Ala.: Air University Press, 1986), 77

Figure 1. Spectrum of Conflict

The common mistake is to consider insurgency as simply an action, when it is more appropriately a number of activities growing out of and appropriate to an environment of revolutionary war. In effect, insurgency is both an environment and a collection of actions suited to it. Counterinsurgency (COIN) is the aggregate of political, economic, informational, and military actions taken by the target government to defeat the insurgency, and—for our purposes—foreign internal defense (FID) is the aggregate of like actions we take to assist the target government in its COIN activities. The military aspects of COIN cannot be denied. They must, however, fit hand in glove with the other objectives and are, properly, less important to solving the root causes of the conflict than other factors. The military has to mesh with and complement the political, social, diplomatic, and economic variables in the equation.

The limited funds and resources usually available to the nation experiencing an insurgency ought to be directed at the internal conditions that fomented the conflict and not on multimillion-dollar weapon systems. While it may be a status symbol for those developing countries wanting our help to have F-16s on their ramps, one has to question if these aircraft are proper for the COIN job. More important is the question of whether the particular country has the industrial, educational, and technical base to support such high-technology aircraft.

During the Vietnam War, the Air Force built a strong capability to support its own counterinsurgency operations and to assist allied nations. However, the inactivation of the Special Air Warfare Center significantly diminished that capability.

US Air Force personnel regularly train and exercise with allied air forces for conventional air operations, as did this US Air Force pilot and Royal Thai Air Force pilot at Cope Thunder. The Air Force needs in-place capability to train for low-intensity conflict as well.

Once the political decision is made to provide US assistance, the Air Force has a responsibility to offer *effective* help to those nations that have asked for it. That obligation includes advocating the proper aircraft, if any, for the situation at hand. It goes against congressional sensitivities for the Air Force to endorse other countries' products—even though our own defense industry might not produce the aircraft appropriate to a particular FID/COIN requirement. Moreover, Air Force research and development funds cannot be spent for systems intended for the exclusive use of foreign forces.[4]

The *Defense Guidance* of the secretary of defense requires the Air Force as well as the other three services to prepare for combat across the entire spectrum of conflict. However, political factors and fiscal realities force the Air Force to prepare for the upper end of the conflict spectrum. Strategic nuclear war constitutes the greatest threat to our national survival. The American public understands the Soviet threat to Europe and its consequences for US national interests. Because we have prepared to fight and win World War III, a case can be made that we have effectively deterred it. World War III has since become the least likely scenario, and our near-total preoccupation with the upper end of the conflict spectrum has driven Air Force doctrine, training, and organization away from the very arena of conflict and combat that our military would most likely face (see fig. 3).[5]

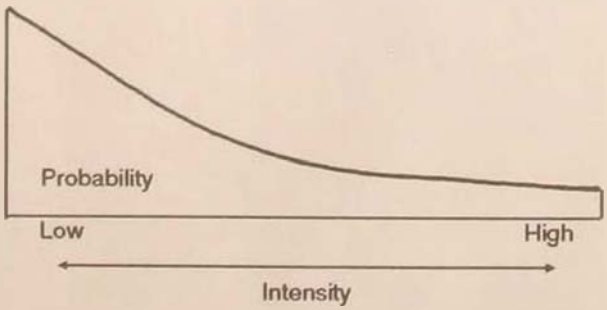


Figure 3. Spectrum of Conflict: Probability of Occurrence

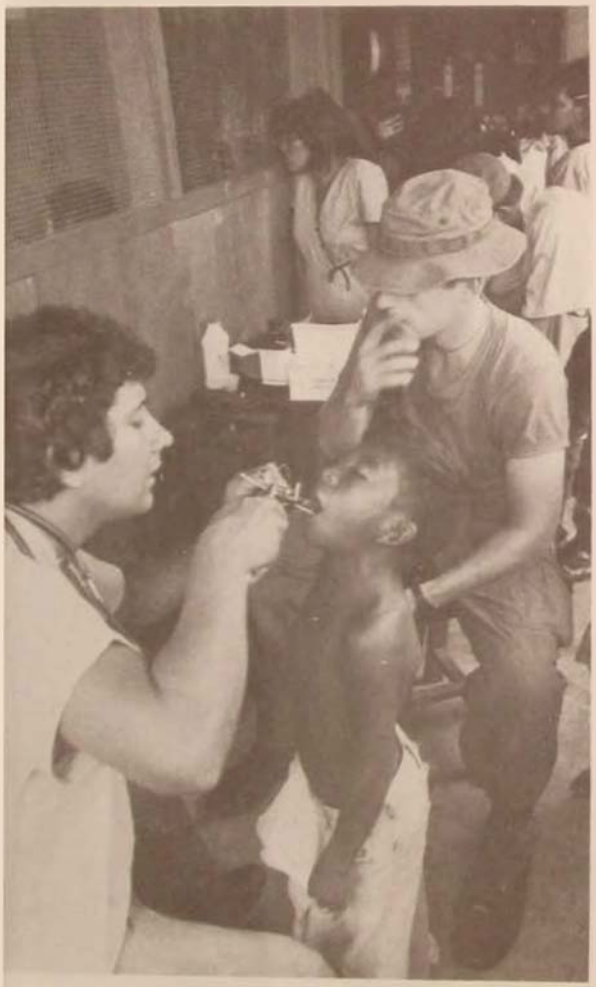
In fact, the Department of Defense (DOD) expenditures for special operations forces (SOF) have averaged between one-tenth and one-half of 1 percent of its budget.[6] The Air Force—because it has optimized its doctrine, training, and equipment for the upper end of the conflict spectrum—has effectively excluded itself from assisting or integrating with those allies facing conflict below midintensity conventional warfare, particularly insurgency. In short, our limited capacity to fight protracted conflicts at the low end of the spectrum together with constraints on our ability to provide the proper equipment and training to countries fighting a revolutionary conflict has restricted the Air Force's flexibility. Our present situation is analogous to the one during the late 1950s when we were faced with the option of massive retaliation.

Current Air Force Capability

Historian Richard P. Hallion noted that "because the Air Force as a service is wedded to technology, there is always the danger that technology will make one's doctrine obsolete and will replace doctrine as the determinant of the future course of the Air Force."[7] Although maintaining our place on the leading edge of technology is critically important, we should not ignore

The US Army has prepared itself for low-intensity conflict by sending mobile training teams to third world countries to teach foreign internal defense (below) and to assist with local civic activities—the mission of this Special Forces medical team in Honduras (opposite page).

an appropriate mix of older and leading-edge technology for the insurgency environment. The sophisticated, high-tech, expensive weapon systems used by the Air Force make its equipment, management practices, and training incompatible with the needs of nations most likely to be involved in a protracted, revolutionary conflict. Developing nations tell us they require simple, inexpensive, easily operated and maintained systems.[8] Currently, however, the Air Force does not advocate weapon systems unique to COIN and lacks the ability to train and educate our allies to employ such systems. The increased risk and frequency of warfare in and among developing nations, and those same nations' increasing significance to US national interests warrant greater Air Force emphasis on support to COIN.



The prevalent attitude among Air Force leaders and planners seems to be that preparations for and successful deterrence of World War III mean we will have no trouble "stepping down" to combat at the low end of the spectrum. Apparently they feel that an F-16 can be just as effective in El Salvador as in the Fulda Gap (West Germany). This article does not deny that the Air Force can fight and win a limited (not necessarily low-intensity) conflict. Indeed, our interventions in Grenada and Libya demonstrated that we can successfully conduct short-duration operations with conventional or special operations forces.

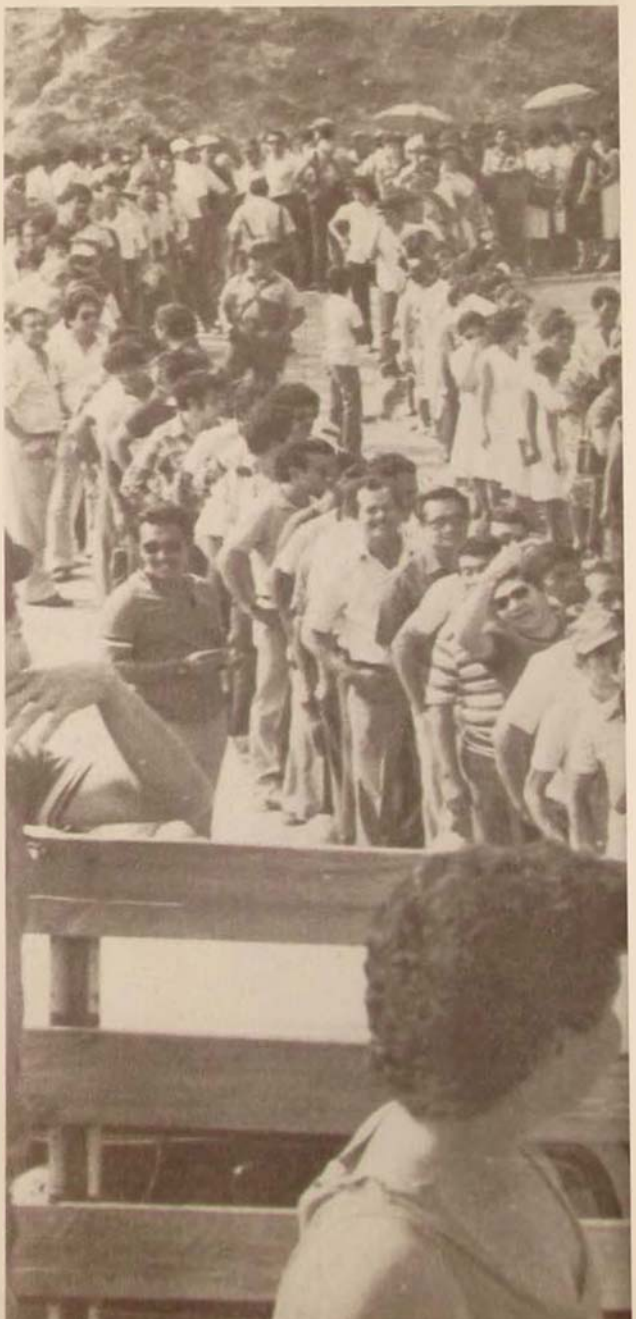
The problem is that shifting to FID/COIN is not a matter of "stepping down"; it is a matter of sidestepping to a new environment. But our current doctrine, training, and equipment are not suited to our allies' COIN efforts or their capabilities. The message the Air Force seems to be sending is that *it* can fight and win at any level of conflict. It would be better, as previously noted, for us to help others to fight and win their own counterinsurgencies.

Since the end of the Vietnam War, there has been a reluctance to commit US forces to combat. This attitude causes the American public and the Congress to fear and resist any involvements that may draw into another foreign conflict.[9] In fact, former Secretary of Defense Caspar Weinberger went so far as to propose strict guidelines—prerequisites for committing our military to combat. Thus, a commitment to combat—made only as a last resort—would require the sustained support of the American people and Congress, clearly defined political and military goals, and the intent to win.[10] COIN does not lend itself to enthusiastic support by the Congress or the American people. With its propensity for protractedness and unclear political goals, COIN is extremely difficult to justify to an American public that tends to think in terms of nuclear confrontation with the Soviet Union. Furthermore, the unique morality

and ethics of insurgency and revolutionary warfare are foreign to traditional American norms.[11]

Because of America's reluctance to commit forces to direct action (intervention) or even to integrate with an ally's forces, security assistance has become our primary military alternative in the third world.[12] This option is usually (but not always) politically more palatable to a wary public. The Army, through its First Special Operations Command, has developed an enviable capability to assist others with FID support to COIN efforts. It sends mobile training teams (MTT) to teach basic health and sanitation, to improve standards of living, as well as to teach small-unit infantry skills needed to fight insurgents. However, the Air Force lost its ability to train allied personnel for the insurgency environment with the demise of the USAF Special Air Warfare Center (USAFSAWC). The best we seem to be able to do is minimally integrate our forces with those of our allies. For example, tactical and strategic intelligence systems have successfully supplied some of our allies' information needs. By and large, though, integration is tantamount to intervention in the eyes of the American public and is carefully avoided or disguised.

Traditionally, special operations forces have assumed primary responsibility for COIN-related foreign internal defense, especially in the Army and Air Force. Since the 1980 disaster at Desert One, these forces have received a great deal of attention. Though much work remains to be done, Air Force special operations forces have come a long way since that April night in the desert of Iran. The resounding success of Air Force SOF (MC-130 Combat Talon and AC-130 Spectre forces) during the Grenada operation attests to their remarkable resurgence. But, as Col Kenneth Alnwick pointed out in 1986, there has been a "major shift in emphasis . . . moving the Air Force SOF community away from traditional SOF missions in counterinsurgency, nation-building, and psychological warfare toward special operations behind enemy lines—more reminiscent of the World War II experience than the experiences of the last two decades."[13] Special operations forces are neither familiar with



Counterinsurgency is not simply a military concern. Any military action must mesh with social, economic, and political reforms, reflected by this turnout of voters during the free election of representatives in El Salvador.

nor proficient in concepts or systems unique to revolutionary warfare in developing nations.

By and large, when the Air Force says it does well in LIC, it means that it excels in executing a one-time raid (like the Libyan action), in conducting limited joint operations (like the one in Grenada), or in supporting the theater commanders' unconventional warfare (UW) requirements. "Capabilities for the broader missions of low-intensity conflict—assisting third world air forces, integrating with them, or directly intervening in a situation that requires activity *beyond* [emphasis added] a single mission," says Colonel Dean, "are not currently within the means of the Air Force Special Operations Forces."[14]

In 1961 the Air Force activated the 4400th Combat Crew Training Squadron (CCTS) at Eglin AFB, Florida. Using the older, surplus aircraft the United States was

exporting to allied nations, this squadron trained foreign aircrews and ground crews to fly and maintain attack, reconnaissance, and airlift aircraft. The squadron also devised doctrine and tactics for employing air power in an insurgency environment.[15] In 1962, responding to pressure from President John F. Kennedy to create forces to fight "Communist-sponsored wars of national liberation," the 4400th CCTS was absorbed into the newly created Special Air Warfare Center, also at Eglin AFB.

The responsibility for training allied crews in COIN and counterguerrilla techniques fell to the center's 1st Air Commando Group.[16] As the war in Southeast Asia continued and the requirement for COIN air strikes and airlift increased, the role of the center changed from training allied crews to training US crews for direct intervention. Reflecting the increasingly conventional response of the Air Force to hostilities and the spiralling numbers of US troops committed to the war, by late 1966 the air commandos were flying mostly in support of our own activities.[17] In 1974, with the US withdrawal from Southeast Asia, the Special Air Warfare Center (since renamed the USAF Special Operations Force) was inactivated. With it went the Air Force's former capability to train friendly nations to fight their own counterinsurgencies with doctrine and equipment appropriate to the unique situations in those countries.

Currently, the four major Air Force SOF acquisition programs concentrate on the high-technology aircraft necessary for unconventional warfare and special operations. These aircraft include the MC-130H Combat Talon II, AC-130U gunship, MH-53J Pave Low III, and MCV-22A Osprey.[18] While all these programs are vitally important and long overdue, none are designed for export to developing allied nations or to fight alongside indigenous forces in those environments where the Air Force signature might be less than desirable. Those MC-130s and AC-130s, or even "vanilla" C-130s in meaningful numbers, are too expensive for the developing nations of the world. Procurement of these systems reinforces Colonel Alnwick's assertion that the Air Force special operations forces tend to concentrate on their own operations to the exclusion of FID support to COIN.

A Proposed Solution

A master plan for Air Force SOF calls for four special operations wings: three operational wings oriented to geographical areas of responsibility and one training wing.[19] The operational wings are designed to support the theater commanders' conventional, high-intensity war plans. They are not organized, trained, or equipped to assist other countries needing to develop various forms of air power for revolutionary warfare environments. That is a different mission, requiring a uniquely integrated organization; however, it is a mission that still belongs in the SOF arena.

I suggest a fifth special operations wing within Twenty-Third Air Force, the air component of the US Special Operations Command. Modeled on the Special Air Warfare Center of the 1960s, this fifth wing would be dedicated to training and educating third world air forces in COIN air power employment, as well as to developing and testing the doctrine, tactics, and techniques necessary for COIN operations. Army crew members should be included in the cadre since the wing should manifest joint operations and since Army flyers are the experts in certain missions (for example, heliborne insertions and extractions). This *special air warfare wing* could consist of a technical training squadron (TTS), a flying training squadron (FTS), and a combat development squadron (CDS). The wing should also sponsor mobile training teams that are tailored to fit the needs of a host country and able to instruct indigenous air forces in the required employment doctrines and tactics. Aircraft assigned to the wing ought to represent technologies most nearly approaching those found in the developing nations

that the wing would service—but available in the United States.

The intent is to build experience in developing and flying the missions needed by the host nations, rather than to build experience in the actual types of aircraft those countries might own. The issue is one of training and education assistance instead of equipment advocacy. The days of T-6s, T-28s, B-26s, and C-47s donated through foreign assistance programs are gone. There are not many of those aircraft left in the boneyard, and that older technology is not suited to today's version of COIN. The commercial marketplace is full of aircraft that are better suited to developing nations' needs, cheaper to buy, and easier to maintain and operate. The goal should be to develop an experienced US cadre that is knowledgeable about working in a low-technology aeronautical environment. The aircrew and support personnel could transition to and apply their Air Force operational background to the aircraft and support environment peculiar to the requesting nation. For example, experienced Air Force C-130 pilots who fly short takeoff and landing (STOL) airlifters in the special air warfare wing might serve on a mobile training team in such aircraft as the Shorts Sherpa, CASA 212, or the Broman BR2000. Their credibility would be based on their background in COIN airlift employment rather than on the number of flying hours they have in general transport. The same basis of credibility would apply to attack pilots and so on.

The technical training squadron of the special air warfare wing could function in much the same way as similar units in our transition training units (TTU) and replacement training units (RTU) do now. That is, it could offer an array of classroom instruction geared to specific weapon systems, if appropriate, and to the operating conditions peculiar to COIN. All classroom instruction required prior to flying training and for support training offered by the wing should be the responsibility of the TTS. In addition, it should perform the registrar function for students attending operations and support training at the wing, and it should maintain a central Air Force technical library for equipment common to third world nations as well as Air Force equipment assigned to the wing.

The flying training squadron might consist of three flights: a C-23, a UH-1, and an A-10. These aircraft may not be optimum for the job at hand nor do many developing countries possess all or even some of them, but they are simply suggested starting points for a discussion of proper types. All are similar in performance and capability to those aircraft available at a reasonable price to developing nations; they represent a source of experienced crew members from the Air Force community; and all are presently in the Air Force inventory and supported by our logistics system. The FTS would provide flying instructors for the mobile training team or could provide flying instruction at the wing in the equipment types available, for those countries wishing it.

The combat development squadron should be organized into an attack-/fire-support flight, an airlift flight, and a reconnaissance flight. The flights should not be weapon-system specific but should concentrate on integrating weapon systems and mission requirements. A key obligation of the CDS should be to develop innovative uses for common equipment (for example, intelligence gathering from helicopters). Crew members assigned to the CDS ought to be graduates of the various Air Force advanced weapons and tactics courses. With information gleaned from mobile training teams, the CDS should reevaluate and refine doctrine and tactics or develop new concepts as required. Additionally, the CDS should have a function much like that of the current USAF Special Operations School. Supported by the generic flights within the squadron, the school should teach employment doctrine and concepts for the COIN environment at both the tactical and operational levels. Lessons learned from experience and research

could be applied to the development and refinement of doctrine, tactics, techniques, and procedures appropriate to portions of the low-intensity spectrum and could be disseminated among ourselves and our allies for application.

Conclusion

The Air Force, in both its conventional and unconventional roles, is preparing to fight the war most threatening to our national survival—World War III. However, it has sacrificed its ability to assist our allies who are combatting protracted revolutionary warfare. During the early 1960s, the Special Air Warfare Center helped counter Communist-sponsored wars of national liberation. The need for that capability is still valid, but the Air Force is no longer able to assist without directly intervening. Doctrine, along with fiscal and political realities, has dictated an Air Force force structure and organization unsuited for COIN support.

We must resurrect the concept represented by the Special Air Warfare Center in order to successfully influence those conflicts important to our national interests—and we must do so within the constraints imposed by the political and social facts of life. With creativity and minimal investment, we could shift assets and restore our capability. Our present doctrine addresses unconventional and limited warfare in certain areas but passes over counterinsurgency. This article has proposed a way for the Air Force to assist our allies as they fight in the environment of revolutionary warfare, while minimizing the impact on Air Force programs that are necessary to fight and win World War III. □

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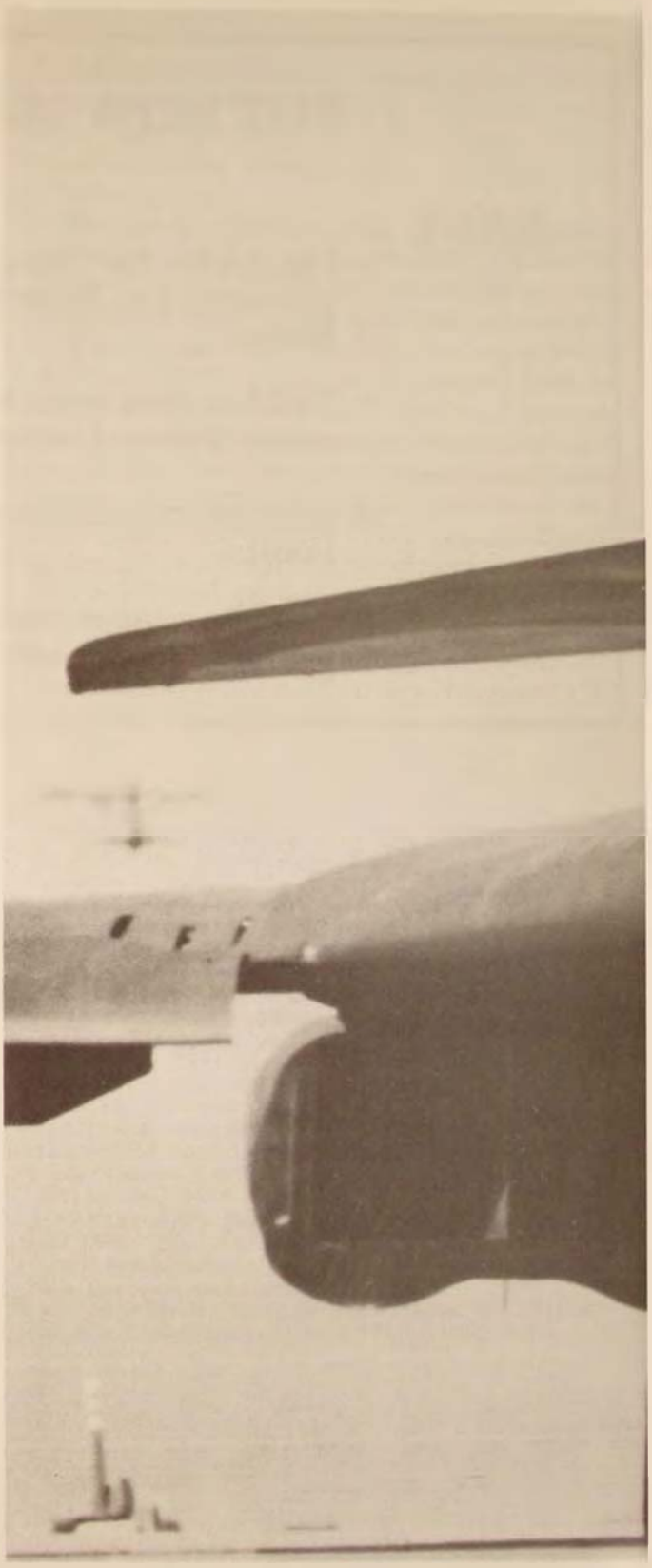
Solving the

WARTIME

COMBAT-SUPPORT MANPOWER EQUATION

G. F. Matecko
Maj Clifford R. Borofsky, USAF



IN most military operations, the essential key to success is getting the right people to the right place at the right time. Unfortunately, a commander will probably not have the proper numbers and types of airmen available for battle without effective advance planning. The US Air Force management engineering program (MEP) has been established to determine the skills and numbers of personnel needed to perform specific tasks for both peacetime and wartime. However, there are serious problems in the portion of the system that forecasts wartime manpower requirements for Air Force support functions.

The development of wartime manpower standards to forecast contingency personnel requirements is of importance to every leader and decisionmaker in the Air Force because wartime manpower demands are an essential element in developing plans to

fight the next war and in programming the next budget. There is no argument over the need for sound wartime manpower forecasts for support functions, but such forecasting is very difficult to develop. It is hampered by a peacetime operational perspective and by an aversion to planning for known limiting factors in the conduct of realistic combat-support exercises. Additionally, functional managers tend to plan for their own version of "the war" without a sufficient overarching discipline to mold a cohesive fighting force that can be accurately forecasted and measured.

The Need for Wartime Standards

They aim at fixed values, but in war everything is uncertain.

—Clausewitz

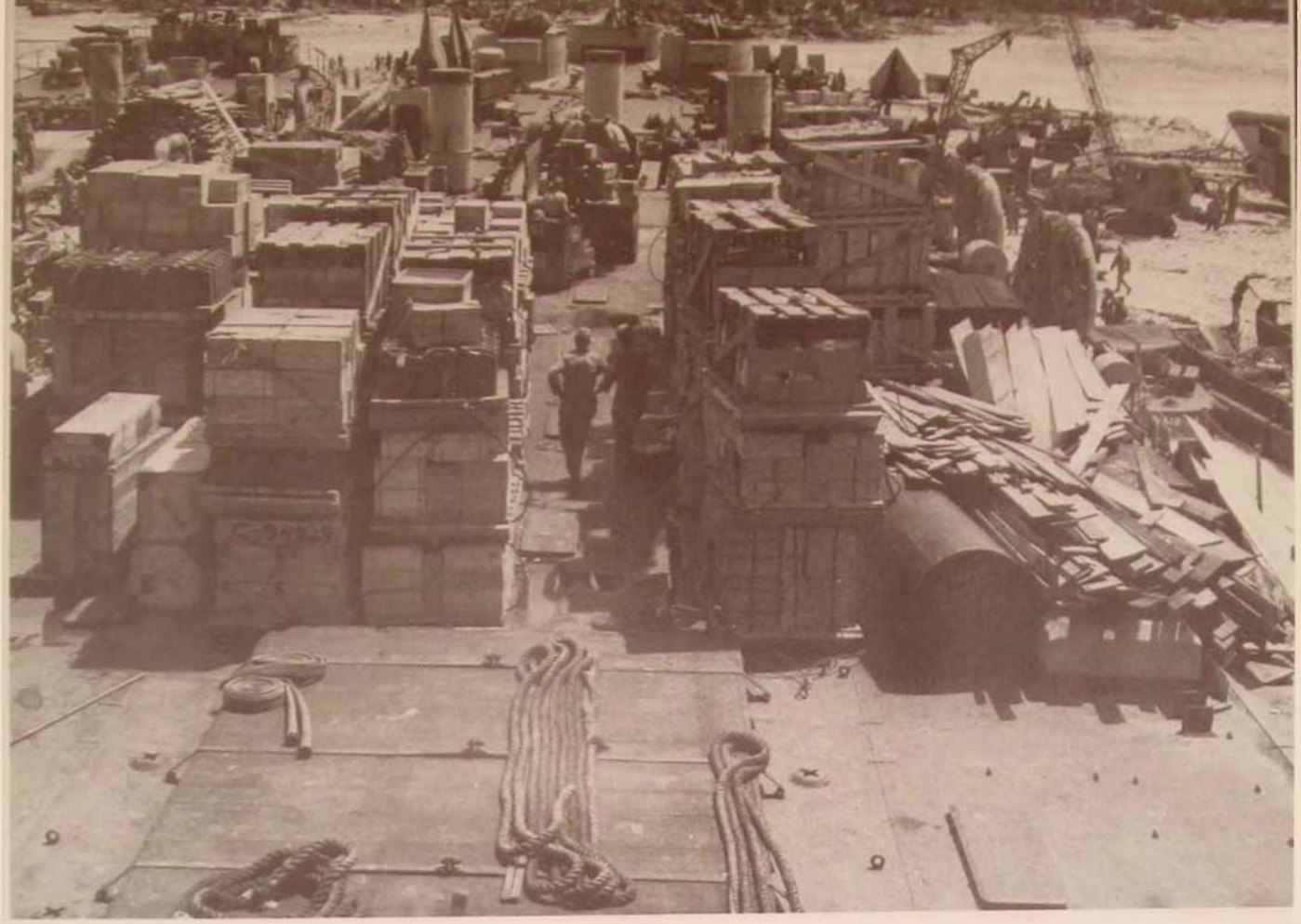
Historically, the wartime Air Force has had difficulty determining needed combat-support manpower. During World War II, Gen George C. Marshall found the 1942 deployments of B-17s to Java "stunning," but he was less than elated when they were all grounded or destroyed within 14 days due primarily to the lack of combat-support personnel.[1] At the same time that the Army Air Forces were attempting to project air power against the enemy, they were also coping with a force expansion in the continental United States (CONUS) and finding that the number of needed combat-support personnel had been severely underestimated. The US Navy found that it, too, had a problem because it had underestimated by 26 times the number of combat-support vessels required.[2] In general, commanders in World War II never ceased their demands. But because of their exaggerated requirements, senior leaders made arbitrary decisions without analytical support and were unable to accurately predict campaign needs.

More recently, after deployment into Phan Rang, South Vietnam, in June 1966, the 612th Tactical Fighter Squadron's munitions section found that it had arrived with an inadequate number of personnel. Despite the fact that personnel worked 12-hour on/off shifts with no relief days for over a month, they were still unable to perform needed aircraft gun checks.[3] The turnaround times for aircraft engaged in critical missions were markedly affected. Three years later, the lack of proper manpower planning was still being highlighted by the commander of the 14th Special Operations Wing (SOW), who lamented that "Manpower doesn't talk to Personnel, Ops doesn't talk to Maintenance, and Plans doesn't talk to anybody."[4]

The problem of estimating combat-support requirements continues to this day. In 1986, 41 years after the end of World War II, the General Accounting Office (GAO) reported that military leaders still lack the necessary tools to assess wartime force structure and trade-offs.[5] With the improved lethality and effectiveness of today's weaponry, military leaders need that capability more than ever.

In the early 1970s, the Warsaw Pact's ability to strike North Atlantic Treaty Organization (NATO) air bases in Europe was limited. Its forces can now strike NATO airfields in all types of weather. Those large, relatively secure Air Force installations of the past are now prime targets for tactical ballistic missiles (TBMs) such as the SS-21 and the SS-23. NATO has only limited defense against these weapons, some of which are accurate to within 100 meters. Their reported deployment in such third world nations as Syria (SS-21s) provides even "poor" owners the ability to temporarily alter the balance of air power. These weapons, in the hands of the Soviets or their clients, are the very instruments that could enable the execution of Soviet doctrine calling for the surprise and neutralization of the high-priority NATO air bases.

Former Secretary of the Air Force Edward C. Aldridge reported that the evolution of these standoff and precision-guided



Commanders discovered early in World War II that they had badly underestimated their need for both supplies and combat-support personnel. Although the situation improved over time, available manpower never caught up with requirements. Unfortunately, this same lack of manpower planning still exists today.

conventional munitions will have a revolutionary impact on the way the Air Force employs its forces.[6] More explicitly, the Rand Corporation stated that in future combat each base must be able to absorb major attacks and then quickly produce sorties.[7]

According to the editor in chief of *Jane's All the World's Aircraft*, the reliance on the existing airfield structure is unlikely to change in the near future. He writes that even as the Air Force debates stealth-versus-agility trade-offs, it still plans to use runways built 40 years ago during a time of relative invulnerability.[8] While the ties between an airframe and the now-vulnerable air base continue to be unbreakable, advances in technology have fundamentally changed the way the Air Force will have to fight. Rigorous wartime manpower modeling is necessary to determine how many people are required to operate in today's AirLand Battles.

Answering that call for standards, only two Air Force support functions—civil engineering (CE) and explosive ordnance disposal (EOD)—have published manpower models that consider the potential effects of current offensive weapons directed at air bases. The absence of other vitally needed wartime models leaves the Air Force with an undesirable void in planning for war. Other functions must soon develop and publish wartime manpower models.

A shrinking defense budget, the decline of the dollar, and the political difficulty of

The combat environment places on all units many demands that do not exist in peacetime, including unit security, extended working hours, and deployment of units. Few Air Force functional areas have devoted the effort needed to project those combat manpower requirements.

maintaining foreign bases demand an immediate definition of manpower standards because these factors will force more reliance on *deploying*, vice *deployed*, US forces. Although many planners begin to conceptualize the air battle at 20,000 feet and Mach 1, the Air Force must first be able to deploy, launch, recover, and relaunch in order to fly and fight. Accurate manpower standards for composing deploying support forces are a must for ensuring the ability to launch and fight as required.

Preparing the manpower budget to provide the numbers of combat-support personnel needed in wartime is akin to Clausewitz's comparison of resource planning to actual battle. It's like comparing the making of cutlery to the skill of fencing.[9] Nevertheless, swordsmen must have blades to be effective, and we must develop the dollar and manpower budgets to provide them. The latter can be done well only if objective wartime manpower models exist. If the Air Force is to reduce end strength in the present environment of force reductions without a marked decrease in combat capability, adequate models are vital.

Without wartime manpower models to guide the development of Operation Plans (OPlans), there is an increased risk of inadequate planning. Key support functions such as intelligence or communications cannot forecast the manpower needs for our contingency OPlans without manpower models. Many OPlan deployment annexes are being built randomly without regard to missions, work loads, or the effects these missions or work loads have on other functions. It is also important to realistically estimate how many people should remain behind in the CONUS for the supporting operations, but often this information is also lacking. While manpower standards for wartime operations are not panaceas, they can add discipline and consistency to OPlans. In addition, the wartime model can assist in determining what force structure the Air Force should maintain.

Other manpower programs that can affect

wartime manpower planning often seem to exist in a vacuum. In 1983, for example, the Air Force civilianized or contracted out the supply function at four bases—Kirtland AFB, New Mexico; Vandenberg AFB, California; Peterson AFB, Colorado; and Sheppard AFB, Texas—without the benefit of a wartime manpower model. Only after conducting a thorough wartime manpower study will the Air Force know whether the contracting effort was appropriate to all the mission taskings of those units.

In a 1987 study, the GAO reported that the lack of a credible manpower model for medical functions was causing congressional skepticism of wartime medical manpower needs.[10] Dr William Mayer, former assistant secretary of defense for health affairs, responded that the medical community had been working on a wartime manpower model for the last 10 years but progress had been "slow."[11] The problems of the medical community are neither unique nor inconsequential. Similar concern is appropriate for most other combat support functions.

Difficulties in Setting Wartime Standards

Without an accurate perception of danger, we cannot understand war.

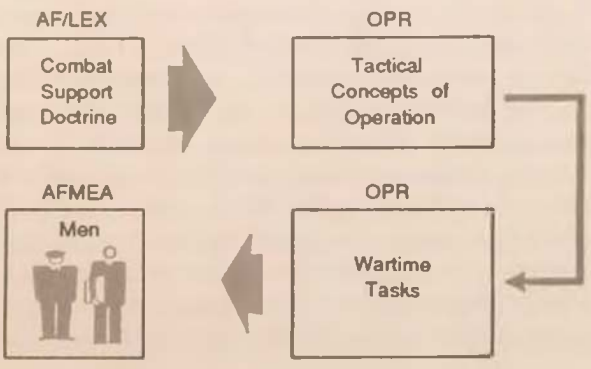
—Clausewitz

It should be clear that we need tools (models) to estimate how many combat-support personnel are required to execute Air Force OPlans. Barriers preventing the development of these models may be of an institutional, environmental, or organizational nature.

Industrial engineering procedures stress that manpower standards should be verified by multiple means prior to their use, and field-training exercises should provide excellent opportunities to gather data on wartime tasks. However, the reality of the situation is that most exercises, particularly for combat-support personnel, are conducted using set, theoretical scenarios that prevent identifying or solving real tactical problems. As long as the predetermined objectives of an exercise are accomplished, supporting functions are "assumed" to have done their jobs. Combat-support functions such as intelligence, services, aircraft battle-damage repair, and communications—which are unable to benefit from free-play exercise realism—are shielded from accurate measurement efforts. Salty Demo, an exercise that simulated a moderate attack on an overseas air base, vividly demonstrated that the combat-support functions were not prepared to work together to support sortie generation in a realistic combat environment.

CONUS exercises also have additional limitations that impair their utility for measurement activities and data collection. CONUS commanders often do not have money to spend on civilian overtime in the conduct of exercises. This drawback can be a two-edged sword. While the absence of the civilian work force during nonduty hours provides a skewed measurement of a CONUS-based unit's ability to conduct its wartime CONUS mission, the presence of the civilian work force during normal duty hours can also skew measurement of the uniformed force's ability to accomplish its deployed mission. Furthermore, exercise scenarios rarely call for both the deploy-

The Air Force wartime manpower model. It needs to be used by more organizations and monitored at the major command and Headquarters USAF level.



Identified functional limitations or shortfalls are not always considered in the light of their impact outside of their immediate organizations. The known, significant shortfall of explosive ordnance disposal technicians—currently manned at less than 50 percent of wartime requirements—should be driving changes in operating concepts of other functions. However, civil engineering, fire protection, and munitions maintenance functions—all of which heavily rely on EOD performance—have not published operating doctrine to compensate for the shortages.

The problem of inadequate wartime concepts of operation could be partially attributed to the Air Force management engineering community's desire for "efficiency." For instance, in May 1989 the disaster preparedness community formally asked for temporary relief from a peacetime "efficient" manning standard based on wartime considerations; this relief was denied by the Air Staff manpower community. The fact that the US Air Force, after 42 years, does not have manpower doctrine that identifies functions to be manned at wartime levels (and, conversely, those to be manned at peacetime support levels) leads to the acceptance of many "efficiencies" without a real view of the "effectiveness" from a warfighting perspective. Since wartime concepts of operation are not considered vital to manning combat-support functions, rarely does much effort go into their development.[18]

Environmental Barriers: Integrating Functions in Wartime

Differing assessments of the wartime environment significantly affect functional operations and erode the accuracy of wartime manpower models. That is, it is almost impossible to get separate functions to agree on their assumptions or on an integrated strategy to meet future threats. There is little doubt that the environment has a significant impact on manpower needs, but one need only read the poignant Salty Demo 1985 after-action reports to see that integrated planning for a commonly understood threat is lacking.

Each of our Air Force functions seems to take great latitude in developing its view of the threat to sustained operations. For instance, the Air Force morale, welfare, and recreation (MWR) function plans to deploy into combat zones with portable Pac-Man games and to work 60-hour weeks, while the EOD function plans to deploy in armored vehicles and work 84-hour weeks. Appropriate wartime manpower models in each case reflect that function's peacetime orientation toward wartime operating concepts—concepts that may or may not be mutually supportive of each other's mission or the overall mission in a given environment. As another example, Air Force Communications Command's (AFCC) communications-repair function was planning on Security Police (SP) convoy protection during deployment, a task that the SPs were not planning to perform. On further investigation, AFCC discovered that United States Air Forces in Europe (USAFE) and Pacific Air Forces (PACAF) expected all CONUS units tasked for deployment in OPlans to purchase and deploy with their own weapons. Thus, a manpower model that accurately portrays a deployed communications work center should include manpower for accomplishing both primary and security weapons control tasks, and perhaps other tasks as well.

A lack of task discipline can also be seen in functions that intend to transfer work loads to others in combat. Although the Army has assigned medics to most platoons, the Air Force surgeon general has declared that Buddy Care (the care and transfer of wounded fellow airmen) is everyone's task.[19] Recently, the mortuary affairs community decided that Buddy Care is also the optimum solution for moving dead airmen to mass graves, effectively transferring that work load out of its function.[20]

Accurate manpower forecasting models must be based on as precise a definition as

ment of active forces and the mobilization of reserve forces as might be expected during wartime.

Institutional Barriers

The lack of an effective wartime combat-support force structure is a problem throughout the Department of Defense (DOD). One of the primary barriers to the successful manpower study of wartime operational doctrine is the peacetime orientation of the military establishment, particularly in combat-support work centers. According to Congress, it stems from "ineffective planning, not inadequate funding."[12]

In the *Air Force Journal of Logistics*, one contributor identified the problem at several organizational levels: Headquarters USAF is involved with the Planning, Programming and Budgeting System (PPBS); the major commands (MAJCOMs) are focused on peacetime management; and few programming functions at any level are concerned with wartime operations.[13] In 1986 the GAO noted that DOD had no focal point for coordinating wartime forecasting models for resources such as manpower.[14] That criticism reinforces what an Air University researcher found. In a study of Air Training Command's (ATC) role in wartime, Col Richard G. Thompson found that the official ATC point of contact for *all* Air Force wartime training guidance was a lieutenant and, further, that no one in ATC had a job dedicated solely to wartime readiness.[15]

The lack of an institutional emphasis on a community of combat-oriented planners and programmers makes it difficult to develop wartime-oriented accommodations to combat shortfalls, even when they are recognized. That is, there is little or no continuing capability to "bird-dog" identified shortfalls until they are resolved through equipment procurement, adjusted wartime manpower requirements, or modified OPlans more in consonance with limiting factors. Part of the shortfall problem may be explained by the difficulty of coming to grips with rising peacetime costs for training; personnel; support programs; and research, development, and production of weapon systems. Additionally, the military establishment has not embraced the concept that potential force multipliers, when unavailable, become force reducers. For example, without an envisioned vehicle to clear debris and—more important—unexploded munitions and bomblets from critical runways, a score of unprogrammed augmentees may be required to clear runways for launching sorties. Two people manning an armored vehicle with a blade on the front could do the work of 20 people—and more quickly and safely at that. If such a vehicle is unavailable, people will have to be drawn from other key missions to do the work.

In a similar vein, Tidal W. McCoy, former assistant secretary of the Air Force for readiness support, requested that the advanced tactical fighter (ATF) be initially designed with thrust reversers so it could land on partially repaired runways, offsetting NATO's limited capability for runway restoration. However, this short-landing requirement was recently dropped and, despite the known runway-repair liability, we have yet to address the increases in manpower and equipment for repair that are now called for.[16]

The Air Force Audit Agency recently found that many Air Force functions are planning to deploy with microcomputers to save manpower. However, since no capability exists to repair (or sometimes even to power) these computers, they may prove to be a false economy.[17] Additionally, peacetime-proven microcomputers have displayed limited capabilities under field conditions in both exercise Silver Flag and Operation Urgent Fury. These examples illustrate how an incorrectly oriented institution can encourage or allow wartime planning based on peacetime capabilities—planning that is not compatible with manpower modeling for field or combat conditions.

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possible of the tasks that must be performed. This has been a problem. In 1966 Maj Cyril L. Sponaugle, the SP commander at Da Nang Air Base (AB), South Vietnam, believed that inadequate manpower was his biggest problem. He reported that since the vehicle maintenance section was not manned to support his fleet of M-151 jeeps, his security policemen were forced to do it, thereby detracting from other missions.[21] A few years later, Col Clyde S. Cherry at Phan Rang AB stated that each function unilaterally decided which activities it would perform; neither Headquarters PACAF nor Headquarters USAF was viewing problems in their entirety, and all the staffs were in functional tunnels.[22]

While some tasks are transferred to other functions without prior coordination, others simply remain in limbo. One example is the need to establish a runner network in the likely event of communications outages. The Holloway Report on the 1980 Desert One debacle stated that a contributing cause of the on-site confusion was the lack of a runner network to relay commands from the Air Force site commander to the refueling aircraft.[23] Remarkably similar problems were encountered in Salty Demo. Without specified tasking, the manhours for performing this task will not be factored into any functional manpower model.

The lack of task definition and a poor conception of how to develop integrated functional wartime models have been harmful to combat units. In fact, current organizational concepts have an added negative impact on developing wartime manpower models.

Organizational Barriers

The existence of a complex organizational hierarchy for wartime, coupled with an increasing trend toward decentralization, has clouded the need for wartime manpower forecasting tools. In World War II Gen Erwin Rommel said the only way a commander could be sure of adequate combat support planning was by surveying the whole organization himself and not relying on other people.[24] Commanders who have the responsibility for executing the war plans cannot do everything by themselves. Nonetheless, they do become the primary customers of wartime manpower models and should provide an input to and overall assessment of the models' realism and utility. However, finding those commanders in the peacetime organizational structure is difficult.

Maj Gen George E. Ellis, the former Air Force chief civil engineer, observed that the existing situation in which the combat-support group elements do not work or deploy with the wartime combat-support commander (CSC) reflects a totally unstructured approach to warfighting.[25] Not surprisingly, the Air Force concept of "pickup units," where several different bases send small teams to one location to form a provisional unit, caused chaotic command and control problems in Grenada in 1983.

One bright spot in this situation is the civil engineering community. Beginning in 1988, CE squadrons are to deploy as cohesive entities. The same personnel who work together in peace will fight together in war. Most important, the same commander will determine if there are enough people to do the job. This CE initiative highlights the concept of peacetime commanders obtaining more authority over their resources.

Taking the lead from the civil engineers, a special task force was convened at the Air Staff in April 1989 to review the options for improving combat-support deployments. This group is now struggling to determine how the Air Force can meld a cohesive fighting unit from multiple CONUS locations. Simple answers are elusive, since the Air Force does not provide each wing commander with the wartime combat support required (for instance, a Tactical Air Command (TAC) base may have a contract-operated dining hall and may rely on three ATC bases to provide it with food-service personnel in contingencies).

Decentralization programs are gaining credence, and the DOD model installation program (MIP) has proven to be a popular way to cut through local red tape. However, the lack of strong centralized planning control over organizations and procedures can affect wartime operations. Early on in Vietnam, our logisticians found that they had a significant problem with the supply function. Multiple MAJCOM-specific procedures and equipment hampered standardized work load efforts in the war zone. Logisticians are still working to improve centralized planning control in the Air Force.

Centralized planning-control issues are also a problem in other functional areas. For example, in 1987 the Air Force had identified a significant shortfall of deployable Security Police air base ground-defense forces, and was programming 4,900 more positions to meet this critical requirement.[26] At the same time, however, the lack of centralized planning control allowed Lackland AFB, Texas—with coordination from Headquarters ATC but without prior coordination with the affected wartime commanders—to disband critical SP deployment teams for more efficient peacetime use of manpower at Lackland. In this case, planning decentralization could have weakened security in a combat environment. Wartime manpower standards are useful only if resources can be controlled to some extent by the potential wartime user. As a minimum, the user must be allowed to coordinate on any proposed changes to resources he anticipates receiving in wartime.

Though the concept of decentralization is gaining support in the Air Force, there is also a clear need for centralized planning control, which is necessary to ensure success on the battlefield. The base CSC will surely need strong control of all deployed combat-support functions during combat; just as surely, this commander needs some peacetime control—through programmed wartime manpower models—to identify the right number of people for each task. This concept is now being championed in a study by the Tactical Air Warfare Center (TAWC). The TAWC paper on manpower management stresses that all personnel should be pooled under the CSC, who must decide how many personnel to allocate for each task and which tasks are non-essential.[27] Thus, TAWC identifies the CSC as the true customer for wartime combat-support manpower forecasting tools. Unfortunately, with no CSC functional staff at either the MAJCOM or Air Staff level, the individual CSC has no access to the management engineering program system. The user becomes the last one to know what manpower resources the various functional managers have planned for the wartime mission.

Recommendations

While we may be left with a somewhat pessimistic view of the current state of wartime manpower planning, there are possible actions that can alleviate or correct the situation.

The Air Force must establish a solid foundation to accurately forecast combat-support wartime manpower demands as currently required in existing doctrine and operation plans. It should develop common scenarios, create realistic wartime operating concepts, and link authority and responsibility to assure planning control of deploying support forces.

Detailed combat-support planning scenarios should be published annually in the *USAF War and Mobilization Plan*, volume 1 (WMP–1). These scenarios should not only cover the threat in quantitative terms but also must assess the threat's impact on utilities, transportation, communications, and other support functions.

The combat-support planning scenario should be used as a yardstick for evaluating functional operating doctrine. Scenario evaluations should be conducted annually by a panel chaired by Headquarters USAF's director of logistics plans and programs

(the office of primary responsibility [OPR] for AFM 1–10, *Combat Support Doctrine*). The panel should permit only threat- and capability-sensitive wartime planning guidance to be published in the WMP–1. By including all combat-support functional OPRs (including the CSC) as panel members, the group should be able to resolve interfunctional support issues without waiting for either inspections or actual operations to discover flaws in logic or coordination.

In order to realistically exercise combat-support functions, the Air Force inspector general should change current evaluation criteria to those based on the environment described in the proposed WMP–1 scenarios. The wartime CSC should have Air Staff representation, preferably in the logistics community. This staff office would serve as a coordinating agent between the peacetime organizational commanders and wartime CSCs. These steps would ensure that no programmatic changes, such as contracting or MIP "efficiency" actions by peacetime organization commanders, would reduce the combat effectiveness of the deployable wartime organization. Such an Air Staff office would also provide a link between its constituency and the Air Force Management Engineering Agency, allowing the management engineering program to target the measurement of activities and work loads of concern to the wartime commanders.

Finally, Air University (AU) should infuse all professional military education (PME) with coverage of wartime support operations. AU should request that each combat-support function provide an assessment of its wartime roles and taskings and an account of how it will accomplish them.

With implementation of the above corrective actions, the MEP will be in a position to genuinely assist Air Force combat leaders in getting the right people to the right place at the right time for the successful employment of air power. □

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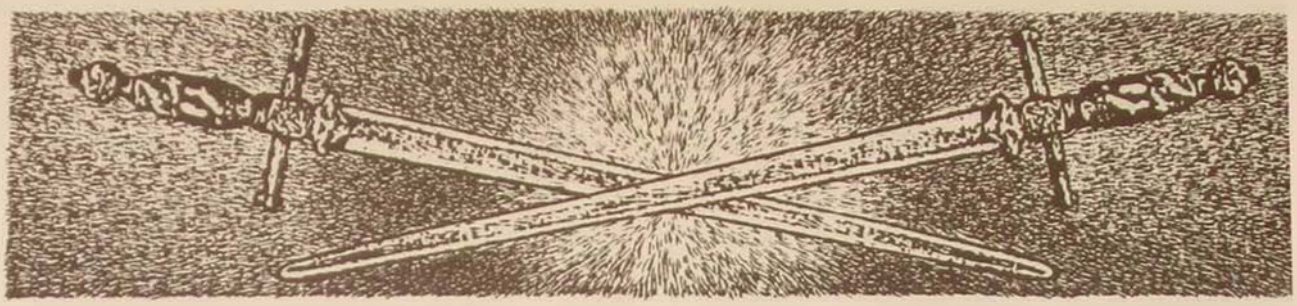

FIRE/COUNTERFIRE!

AIR INTERDICTION
Some Doubts Concerning Colonel Krieger's Proposal

Lt Col Price T. Bingham, USAF

CALLING air interdiction a classic air mission that is little studied and understood, Col Clifford R. Krieger worries that in the future the potential of air interdiction "will be ignored, or worse, lost by mismanagement" ("Air Interdiction," *Airpower Journal*, Spring 1989). To prevent this from happening, he argues for giving the air component commander (ACC) the mission, tools, and authority to conduct an air-interdiction campaign. Although I share his concern regarding our ability to realize the potential of air interdiction, I have serious doubts as to whether the approach he recommends would prove effective.

My doubts begin with Colonel Krieger's assertion that the ACC should be responsible for conducting an air-interdiction campaign. For one thing, I am not sure I know what he means by the term *air interdiction campaign* or, for that matter, *land campaign*. Since he recognizes that air interdiction should complement the efforts of friendly surface forces rather than be employed in isolation, it is puzzling that he does not consider air interdiction and ground maneuver as key parts of the *same* campaign. Of course, if he thought air interdiction and ground maneuver should be part of the same campaign, then it would be illogical for him to believe a component commander, not the theater commander, should be in charge of conducting the campaign.

Colonel Krieger opposes the theater commander directing air interdiction because he believes a theater commander does not have the required expertise. This raises an interesting question. What expertise does Colonel Krieger think a theater commander needs to be qualified to assign tasks and forces to his subordinates?

I find Colonel Krieger's lack of confidence in the theater commander's air interdiction expertise especially surprising given his admission that the Air Force has yet to develop the education needed to give the ACC and his officers in the tactical air control center (TACC) a comprehensive understanding of air power (note 9). Moreover, although Colonel Krieger does not address it directly, a commander directing air interdiction also needs a comprehensive

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Rebuttal from Colonel Krieger

Waiting to read a copy of Lt Col Price T. Bingham's comments on my article on air interdiction, I wondered about what he would say. I had recently read his article on air interdiction in *Parameters*, the professional journal of the US Army War College, and believed that we were close on many aspects of the topic. I had forgotten the many discussions Colonel Bingham and I have had together and with other people on the proper command and control arrangements for both air and land forces.

Having read Colonel Bingham's comments, I was reminded of an Army Strategic Studies Institute half-day meeting on the question of echelons above corps. This meeting took place at Carlisle Barracks, Pennsylvania, in either late 1982 or early 1983. At this time the then-new doctrine of AirLand Battle emphasized the corps as the key formation for fighting and winning in a theater. The idea was that the advance across France and Germany in 1944 and 1945 was fought by the corps commanders, such as Gen Joseph Lawton "Lightning Joe" Collins. The Army commanders, such as General Patton, were, presumably, logistics arrangers for the warfighters. The concept of land and air component commanders under the theater commander, General Eisenhower, was not even mentioned. The discussion at this colloquium proceeded for quite some time, with all the Army participants assuring themselves that the Army did not need and did not use echelons above corps. However, after some discussion I raised my hand and asked about Central Army Group (CENTAG, the NATO Army formation in southern Germany), which was then, as now, commanded by a US Army general. Mentioning CENTAG opened the door for Northern Army Group (NORTHAG) and, in Korea, Combined Forces Command.

I fully agree with Colonel Bingham that the concept of a tactical air control center (TACC) and lines running directly to the wings represents a very short and interruption-prone chain of command. When the issue is support to one corps, this arrangement is likely a satisfactory chain of command, assuming that an alternate TACC is equipped and manned. However, I agree that when one is in a theater with multiple corps and with Army groups or their like, one needs additional air headquarters. As in the discussion at Carlisle Barracks, the model is Allied Command Europe (ACE). Within ACE, Allied Forces Central Region (AFCENT) has two Army groups (although no overall land component commander, a deficit that poses its own problems). Working for the theater commander is an air component commander, who in turn has two subordinates—Second Allied Tactical Air Force (TWOATAF) and FOURATAF. Under command of a Luftwaffe lieutenant general, FOURATAF—whose area contains most of the peacetime US Air Force forces in West Germany—is collocated with CENTAG, just as the *Condensed Analysis of the Ninth Air Force* recommends. Further, each ATAF has two offensive subordinate headquarters—allied tactical operations centers (ATOCs)—and the organization is building to two defensive subordinate headquarters—sector operations centers (SOCs)—for each ATAF. The interesting feature, which is an improvement over the World War II experience, is that each of the four ATOCs is capable—by doctrine and communications—of supporting either ATAF. This capability was not possible in Ninth Air Force's World War II experience, after the rapid elimination of General Eisenhower's air component commander soon after the Normandy invasion.

This NATO command arrangement is not unique to the Central Region. In wartime quite a few US Air Force squadrons could deploy to the Allied Forces Southern Europe (AFSOUTH). AFSOUTH, which suffers from many problems due to geography,

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Bingham
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understanding of surface forces so he will know how to ensure that air interdiction complements ground maneuver. (Similarly, a ground component commander needs the same understanding of air power so he can ensure that ground maneuver complements air interdiction.) This means current Air Force professional military education is even more deficient than he admits.

Colonel Krieger's treatment of the problem caused by span-of-control limitations adds to my doubts regarding his proposal. While he asserts that a theater commander is not qualified to direct air interdiction because of these limitations, Colonel Krieger does not address the fact that these same limitations also apply to the ACC, especially if he is fighting a war characterized by significant ground maneuver. These limitations result from the fact that the tactical air control system, the Air Force's organization for controlling the employment of air power, is more a product of our experiences in Korea and Southeast Asia, where enemy ground forces consisted mainly of light infantry, than in Europe in World War II, where enemy ground forces were mechanized.

To see how the ACC's span-of-control problem could be reduced, we need to look at Ninth Air Force's World War II organization. Colonel Krieger quite properly holds up Ninth Air Force as a model for how to enhance cooperation with the Army by noting that its headquarters was collocated with Twelfth Army Group. What he does not mention was that Ninth Air Force also had a subordinate echelon consisting of three tactical air commands (TACs). By collocating a TAC with each of Twelfth Army Group's three field armies (a World War II field army was roughly equivalent to today's corps), Ninth Air Force further enhanced cooperation with the Army. At the same time, Ninth Air Force greatly reduced its span-of-control problem because it made each TAC responsible for closely coordinating the operations of a variable number of fighter-bomber groups (normally four to eight, each of which was roughly equivalent to today's wing) with its associated field army. A TAC would then apportion its assigned groups to counterair, air interdiction, or close-air-support missions as the situation demanded. This organization did not prevent Ninth Air Force from continuing to exercise centralized control over its TACs because, according to the *Condensed Analysis of the Ninth Air Force*, it retained "full prerogative to shift forces from one TAC to another or to combine and employ the forces of all TACs on any one of several fronts when necessary to implement air force-army group plans or to meet critical situations at any point in the army group area."

Besides reducing its span-of-control problem, TACs provided Ninth Air Force with still another advantage: a more survivable system of control. Colonel Krieger does briefly address survivability, noting that "subordinate air commanders . . . can continue the [air] campaign despite interruptions in communications with higher headquarters." What he does not say is that under current Air Force doctrine the wing is the only air echelon subordinate to the TACC with air-interdiction responsibilities.

The absence of an echelon like the World War II TAC increases the TACC's planning, coordinating, and control responsibilities. This makes the TACC an extremely critical command facility and therefore a lucrative target. Adding to the problem, the TACC's responsibilities make it a large facility that is difficult to move or conceal, increasing the likelihood that an enemy will make the effort to cause "intermittent communication." Should this happen, effective air interdiction would soon be impossible because wings possess neither the staff nor the communications needed to plan and control air interdiction in a way that ensures responsiveness to the dynamics of ground maneuver. Even if they did, there would be no way for the efforts of various

vings to be effectively integrated with each other.

In short, I believe that there are plenty of easons for doubting the effectiveness of Colonel Krieger's proposal should we fight in enemy as powerful as the Soviets. Instead of adopting his proposal, we will have the best chance of success if we make he theater commander responsible for directing a campaign that integrates air interdiction and ground maneuver. But this is not enough; his theater components need to e organized in a way similar to Twelfth Army Group and Ninth Air Force in World War II so as to enhance cooperation, reduce pan-of-control limitations, and decrease he risk of paralysis from enemy attacks gainst our headquarters. Finally, success will depend on whether we are as thorough n preparing the theater commander and is subordinates (including component commanders and their staffs) to fight campaigns as we now are in preparing our orces to fight battles.

Krieger

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as an air component (AIRSOUTH), with ubordinate ATAFs. Further, the ATAFs ave intermediate offensive organizations elow them: the regional operations centers ROCs) in FIVEATAF and the tactical air orces (TAFs) in SIXATAF as well as the lefensive SOCs. Even with the unfortunate plit in the Southern Region, between Greece and Turkey, there is still a 28 TAF in Greece and 1 and 2 TAF in Turkey. In the vent of war with the Warsaw Treaty Organization—if the rift could be quickly ewn up—centralized command with decentralized execution could be made to vork.

The situation in the Northern Region is ot similar in that the geography, climate, nd lack of forces result in the fight being andled by geographic commanders, with eparate geographic air organizations. lowever, the situation in Korea is marked by a lack of intermediate air headquarters and the dangers inherent therein.

During the application of air power in a combat environment that encompasses large numbers of forces, the intermediate headquarters between the air component commander and the wings is vital. This structure grew out of the World War II experiences in North Africa and France. Given the peacetime constraints of dollars and manpower—the latter perhaps the most constraining—there is little likelihood for such an intermediate organization in Tactical Air Command between the numbered air forces and the wings. If the headquarters did exist, exercises such as the recent headquarters manpower evaluation by Derek Vandershaft, Department of Defense (DOD) assistant inspector general, would quickly eliminate them. Even if we could keep them, they would be valuable only if we used them, not for administrative matters, but as training schools for air power experts at the operational level. Likewise, they do not make sense in United States Air Forces in Europe (USAFE), which is organized to support rather than fight. However, where we need them—where we are face to face with our potential enemies—we and our allies have thought through this process and come up with workable solutions. Only in Korea, where our own doctrine has probably been dominant, has the concept of intermediate headquarters been dropped.

This still does not answer Colonel Bingham's first charge—that the concept of an air interdiction campaign run by the air component commander does not meet the test of common sense. He asks what is meant by *campaign*, a term that is much abused. The closest we come to a definition is the *DOD Dictionary* definition of *campaign plan*: "a plan for a series of related military operations aimed to accomplish a common objective, normally within a given time and space." Some people talk of the unified commander, such as the commander of US European Command (USEUCOM)—more properly, Supreme Al-

lied Commander Europe (SACEUR)—having a single campaign plan for his theater. In fact, there are several theaters within Allied Command Europe, and each needs a strategy and a number of campaign plans. The number of campaign ribbons on the Army or Air Force flag suggests that there are many campaigns in a war, and in a theater such as the Central Region, several campaigns may be conducted simultaneously. The series of related military operations with a common objective conducted by the CENTAG commander (COMCENTAG) within a given time and space may be different from those of COMNORTHAG. Both, however, support the theater strategy laid down by the commander in chief, Allied Forces Central Region (CINCENT). The air component commander, Allied Air Forces Central Europe (COMAAFCE), will have a counterair campaign that will support CINCENT's theater strategy and provide both direct and indirect support to the Army group commanders. At the same time, he will be providing offensive air support to meet the immediate tactical needs of the Army group commanders, thereby preventing defeat at the front. Even while the first shots of a war are being fired, we need to be thinking about the longer-term issues of the war; that is where air interdiction comes into play.

An air interdiction campaign is air power at the operational level, not the tactical, and while there will be key inputs from the land commanders, air interdiction must be based upon the theater commander in chief's strategy. Although CINCENT can develop the strategy and then ensure its proper execution by involving himself in its day-to-day conduct, such a course would be a misuse of his staff and his subordinate commanders. If Headquarters Allied Forces Central Region became the executing headquarters, its proper concentration on issues at the theater strategic level would fall by the wayside. Currently in the Central Region, the duties of the land component commander have been absorbed by Headquarters AFCENT. It is neither efficient nor effective for a headquarters that is working one level of a problem to involve itself in the details of another level. While doing so might shorten the chain of command, it makes for poorer staff work and increases the danger of obscure but important issues falling through the crack.

Yes, any commander at any level can train his headquarters to conduct an air interdiction campaign. Although the logical choice is the headquarters of the air component commander, control of air interdiction can and will be done at other levels. In some cases it will be successful, and in some it will not. However, in war, when victory may depend on making fewer mistakes than the enemy, it is smart to do the work of the day on the day and at the place it is best done. □

Ricochets
Continued from page 3

sioned officers are capable of flying airplanes. Yes, indeed, gentlemen; the paradox of a headless horseman is still galloping.

Are the authors looking a gift horse in the mouth? A rudimentary solution lies in their reference to glamorous weapon systems and to armored bulldozers. I say, equip EOD senior NCOs with armored bulldozers. They can use them to remove the unexploded ordnance which is preventing them from implementing vision and doctrine. Leave the bureaucracy to the commissioned officer.

In summary, isn't it pretty frustrating when a thoroughbred is chomping away at the bit only to be reined in by the timid horseman?

TSgt Raymond A. Gill, USAF
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CHANGE OF COMMAND FOR POWS?

When I was a B-52 crewmember in the 1970s, I observed that it was common for navigators who were majors to report to aircraft commanders who were captains. Today as an Air National Guard (ANG) combat communicator, I see squadron commanders who are junior to their chiefs of maintenance or operations. Are these normal reporting relationships to be reversed in the POW situation?

Maj Frederick D. Dunn, CANG
Agoura, California

net assessment

The Doolittle Raid by Duane Schultz. New York 10010: St. Martin's Press, 1988, 325 pages, $18.95.

On 18 April 1942, exactly 167 years after Paul Revere's famous ride, an even more daring episode of American history took place. This was the famous aircraft-carrier-launched B-25 attack on military targets in Tokyo and four other Japanese cities. Duane Schultz's history of the raid is quite engaging and comprehensive, including many contextual details, judgments, and anecdotes not found in other sources. His approach is on a slightly higher level of abstraction than Carroll V. Glines's *The Doolittle Raid: America's Daring First Strike against Japan* (1988), employing fewer quotes and more text.

Schultz masterfully integrates into a coherent unity the numerous aspects of the mission, gleaned from documents at the Office of Air Force History and the Air Force Historical Research Center, personal interviews, and 57 books. In a fluid but logical manner he adeptly describes developments in the Pentagon; the White House; Eglin Field, Florida; McClellan Field, California; aboard the *Hornet*; in Japan; in China; and in Russia.

I must forewarn the reader that Schultz does in one instance interpret the early background of the raid as would a revisionist historian. Specifically, his reading concerns the desire Franklin D. Roosevelt expressed five months before the attack on Pearl Harbor to ship to the Chinese twin-engine bomber aircraft, which would be capable of striking Japan. Support of the Chinese defense effort was deemed to be in US interests, although all that could be scraped together for China were 100 P-40 fighters previously designated for Great Britain. Schultz concludes from these facts that "Roosevelt had wanted to attack the Japanese Empire even before Pearl Harbor . . . [but] Japan won the race for executing a surprise attack." Such mitigation of Japan's infamous attack serves well to intimidate and thus wake up sleepy students in early morning history lectures but seems out of place in an account of stirring national heroism designed for a general readership. There is a considerable difference between supplying military equipment to an aggressor nation's victim and directly executing a surprise attack on another nation.

Schultz does an admirable job of explaining the role that the Doolittle raid played in provok-

ing (to prevent further attacks on Japan) the ill-advised Japanese attack on Midway Island, which ended in the loss of four aircraft carriers—the backbone of Japanese sea power. However, Schultz might have added one more conclusion, pointed out by Fletcher Pratt in *The Battles That Changed History*, to complete his discussion of the ramifications of this mission. Because Japan lost so many good and experienced fliers *and future air combat teachers* in the Battle of Midway, its air arm never recovered. As Pratt states, "Their seed corn was eaten up." Consequently, two years after Midway, though many aspiring pilots had in the interval been taught to fly after a fashion, 404 Japanese fliers were shot down in a morning over the Philippine Sea. This decimation of Japanese air power was the decisive "dividend" of the Battle of Midway that the Doolittle raid helped bring about.

Maj Thomas C. Blow II, USAF
Beale AFB, California

The Air Campaign: Planning for Combat by John A. Warden III. National Defense University, Washington, D.C. 20402: Government Printing Office, 1988, 193 pages, $6.00.

Although the title suggests a heavy textbook, guaranteed to cure the severest cases of insomnia, nothing could be further from the truth. This book should have carried a catchy moniker to seduce a sleepy-eyed or jaded reader into sneaking a peek. Something on the order of *Kick Ass with Air Power* or *Air Superiority: Love It or Shove It* would have done the job. This is no ordinary book, bowing politely to the accepted conventions and allowing us to rest comfortably with our platitudes. In the span of 193 pages, Colonel Warden elucidates the most effective uses of theater air power and the wartime choices facing an air commander, tying them snugly together with tough lessons from the past. In doing so, he boldly labels the ingredients for success in an air campaign, without regard for any dogmatic toes that might be underfoot. Colonel Warden's most salient point is that air superiority is the key to success in modern warfare and "clearly all operations must be subordinated—to the extent required—to its attainment." Granted, this idea is not so startlingly new as to make one wet one's pants with the joy of it, but the concept—as dissected and explained by the author—forms an all-encompassing focus for any future wars. Colonel Warden stresses the indirect approach and argues convincingly that the most difficult place to obtain air superiority is in the sky over the battlefield. The alternatives he offers are killing aircraft on the ground, in the factories where they are made, or even where the aluminum ore is mined. His constant instruction is to look for the center of gravity and put the major efforts there. Subordination of interdiction and close air support to air superiority, even in times of dire peril to ground forces, may turn a few Army heads and could conceivably change the face of US Air Force doctrine.

Two other concepts introduced here concern air reserves and key force. Air reserves were used very effectively in the Battle of Britain and could be again, even when the enemy possesses a theaterwide superiority of numbers. The phrase *key force* refers to using the most appropriate branch of service to spearhead a conflict, with the other services in support as required. For example, in an island campaign, the Navy would be the key force. The suggestion is lovely, but it remains to be seen if this relatively simple concept can overcome half a century of jockeying for the lead.

Throughout the book, Colonel Warden hammers home lessons from history, the most outstanding of which are (1) do not be predictable and (2) do not accept the defensive role easily. These seem patently obvious, yet predictability is a habit well learned in air operations in Vietnam and in countless "canned" exercises since then, to the point that thinking along unconventional lines can quickly garner the "not-a-team-player" award.

Most books on strategy are written by people outside the military. Part of the explanation for this situation lies in the task saturation of our daily jobs. The result is that too often Air Force leadership, from wing commander on up, does not consider the employment of forces in detail. Pieces of the puzzle—such as sortie rates, training accomplishments, and success on an operational readiness inspection (ORI)—are all looked at and carefully scrubbed, of course. Even tactics is mulled over, discussed, and changed, but strategy always falls into the "too-hard" or "not-my-job" pile. Those thinkers who do dive into the deep water generally swim back into the shallows of Monday-morning quarterbacking. In contrast, Colonel Warden has examined air warfare in the broad scope, culled out

prescriptions for success and failure, and—most important—courageously set forth some guidelines for planning future wars. He is a theorist linked directly to those famous names of the past.

This is a blockbuster of a book, clearly written and intensely interesting. I recommend it to a cross spectrum of followers and leaders, military and civilian. *The Air Campaign: Planning for Combat* is the essence of what the profession of arms is all about.

Lt Col William P. Stroud III, USAF
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The Soviet Union and Revolutionary Warfare: Principles, Practices and Comparisons by Richard H. Shultz, Jr. Stanford, California 94305: Hoover Institution Press, 1988, 283 pages, $25.95.

Superpower relations will wax and wane, but low-intensity conflict will always be with us. That statement is particularly true in light of Soviet policies and doctrine in support of revolutionary warfare at points of opportunity throughout the world. Dr Richard Shultz, a professor in the Fletcher School of Law and Diplomacy of Tufts University, is well qualified to examine Soviet views and practices in the low-intensity conflict arena. He is a recognized writer on subjects of military strategy, low-intensity conflict, and political-psychological warfare with the publication of such previous books as *Dezinformatsia: Active Measures in Soviet Strategy* and *Lessons from an Unconventional War*.

The Soviet Union and Revolutionary Warfare is not an abstract, theoretical examination of low-intensity conflict and the Soviet Union's practice of it. The author begins with an excellent discussion of what revolutionary warfare is and has been, particularly since World War II. He points out that Soviet support for revolutionary warfare, or what the Soviets term *wars of national liberation in the third world*, has become especially prevalent since the late 1960s through the present day.

The second chapter provides a long-term perspective of the Soviet Union's involvement in what was referred to at the time of the 1917 revolution as "the colonial world." It was in 1915, in fact, that Lenin used the phrase *national liberation movements* for the first time. The remainder of the section traces the development of Soviet thought and writings on revolutionary warfare leading up to the expansion of third world conflicts in the 1970s. The author wraps up by discussing the political measures and means used to prosecute revolutionary warfare through political and paramilitary measures as well as the surrogate assets of countries such as Cuba and East Germany.

Four chapters deal with Soviet involvement in key world areas and groups such as Vietnam; the Middle East and the Palestine Liberation Organization; southern Africa and the South West Africa People's Organization (SWAPO); and involvement, along with the Cubans, in Central America. Although the Soviet involvement and collusion with the North Vietnamese during the Southeast Asian conflict is well known, the author includes extensive coverage of the political, economic, and psychological support provided. Throughout all four chapters, the author discusses not only the relations with allies in each region but also the ways in which international front organizations, foreign propaganda, arms transfers, and advisory support are used to abet and achieve Soviet objectives.

Dr Shultz closes by looking at how the Soviet pursuit of revolutionary warfare fits into its strategy and the implications for US foreign policy. As a result, he concludes that low-intensity conflict is part of the US-Soviet equation, an important factor that the United States must cope with in the years ahead.

Maj Don W. Rightmyer, USAF
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Notices of upcoming conferences, seminars, and other professional notices of a noncommercial nature should be sent to: Editor, Airpower Journal, Walker Hall, Bldg 1400, Maxwell AFB AL 36112-5532. We reserve the right to edit material for length and editorial content.

Naval History Symposium

The Ninth Naval History Symposium will be held on 18-20 October 1989 at the US Naval Academy. Topics include such items as the US Marine Corps' small-war heritage, naval operations between the wars, naval doctrine and technology, and the role of the Navy in the postwar world. For details, contact the History Department, US Naval Academy, Annapolis MD 21402-5044.

Command and Control Workshop

The Joint Services Working Group on Command and Control Decision Aiding will host a workshop at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio, on 3-5 April 1990. Attendees must possess a Secret clearance to attend. For information, contact Lt Col J. R. Valusek, AFIT/ENS, Wright-Patterson AFB OH 45433-6583, or AUTOVON 785-3362.

Historical Research Center Grants

The United States Air Force Historical Research Center (USAFHRC) has announced the availability of research grants to encourage scholars to study the history of air power through the use of the Air Force historical document collection at the USAF Historical Research Center, located at Maxwell AFB, Alabama. Grants up to $2,500 are available for qualified applicants who will visit the center for research during fiscal year 1990. Applicants must have a graduate degree in history or related fields, or equivalent scholarly accomplishments. Their specialty should be in aeronautics, astronautics, or other military-related areas. A wide variety of military-related topics may be covered in the proposed research. Preference will be given to those proposals that involve the use of primary sources held at the center. Applicants may request an application from the Commander, USAF Historical Research Center, Maxwell AFB AL 36112-6678. The deadline for submission of applications is 31 December 1989.

Medical Career Opportunities in the Military

The Uniformed Services University of the Health Sciences in Bethesda, Maryland, is seeking qualified applicants to attend the medical school and graduate programs in health sciences. Medical students are commissioned as second lieutenants on active duty reserve status while in school and receive full pay and benefits. There are no fees or tuition for the school. Upon graduation students are promoted to the rank of captain and serve a seven-year commitment for the training they receive. Anyone, civilian or military, with a bachelor's degree may apply for the program. The graduate programs lead to both master's degrees and PhDs in basic sciences. Civilian applicants serve as teaching and research assistants to the faculty in exchange for their tuition-free education. For more information, contact the Office of Admissions, Attn.: PAC, Uniformed Services University, 4301 Jones Bridge Road, Bethesda MD 20814-4799, or call (202) 295-3103.

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