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THE UNITED STATES AIR FORCE
IN SOUTHEAST ASIA

FROM ROLLING THUNDER TO LINEBACKER

THE AIR WAR OVER NORTH VIETNAM
1966-1973

WAYNE THOMPSON

(Draft - March 1995)

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PREFACE

This draft is a sequel to Jacob Van Staaveren's "The Onset of Rolling Thunder: The Air War Over North Vietnam, 1965-66." He is now revising "Onset," which was written in the 1970s.

"From Rolling Thunder to Linebacker" does not pretend to be the last word on the subject or even my last word on it. I have depended mostly on Air Force records. Although I have made considerable use of records at the Johnson Library, I have not yet used the Nixon, Laird and Kissinger papers. My view of the JCS, CINCPAC and MACV comes primarily from older official histories; I have yet to see Mark Jacobsen's work on CINCPAC and the Navy or that of Graham Cosmas on MACV.

For my next book--a history of guided bombing--I hope to take a much closer look at one aspect of operations in 1968-72. I want to delve into the Nixon and Laird papers, for example, to see how much was known above the Air Force about laser-guided bombs.

My third book in this series will be a one-volume treatment of the Air Force in Southeast Asia. Consequently, I seek not only suggestions for improving "From Rolling Thunder to Linebacker" but also advice on research for my subsequent volumes.

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CHAPTER 1

PUZZLE

At the end of the twentieth century, after communism collapsed in Europe and lost momentum in Asia, Americans still could not agree what course their country should have taken in Vietnam. Without American intervention, communists were poised to wrest control of all of Vietnam, Laos, and Cambodia from the French in the decade following the Second World War. The postponement of communist victory until 1975 came at a high price for those Southeast Asian countries and for the United States. But on the periphery of carnage grew a prosperous, noncommunist Southeast Asia. In the long rivalry between Vietnam and Thailand, the Vietnam War helped Thailand move ahead economically with an infusion of dollars from U.S. Air Force wings based there. Thailand's communist insurgency sputtered, while Vietnamese communism struggled first against American firepower; later against Chinese communist invaders and their Cambodian communist allies (who had exterminated hundreds of thousands of Cambodians); and finally against the

inertia of an aging leadership more adept at fighting a war than building an economy.

Whatever the merits of waging the Vietnam War, the Air Force and its sister services could not avoid the puzzle of how best to fight the war within constraints imposed by technical capabilities, by the physical geography of Southeast Asia, and by the changing complexity of the world's political geography--as it was filtered through the perceptions of Presidents Lyndon Johnson and Richard Nixon. Johnson's rejection of the Air Force's original proposal to send the big Boeing B-52 Stratofortress bombers against targets throughout communist North Vietnam left Air Force and Navy fighter aircraft to nibble at targets gradually doled out by the President. During the long Rolling Thunder air campaign over North Vietnam from March 1965 to November 1968, Johnson confined B-52 targets in North Vietnam to supply depots and transportation routes near the border with South Vietnam and Laos. Even these marginal B-52 raids on the North did not begin until April 1966. Meanwhile B-52s had already been pounding the jungles of South Vietnam in hope of hitting communist insurgents and regular North Vietnamese units trying to overthrow a government closely tied to the United States.[1]

After failing to give the French enough support to suppress the communist rebellion led by Ho Chi Minh in the 1940s and 1950s, the U.S. government wanted to contain communism in North Vietnam--the half of the

country which lay north of the seventeenth parallel. In the south the United States tried to establish a new country under Ngo Dinh Diem, a nationalist who had buried a brother killed by the communists. Unfortunately, Diem was a Roman Catholic in a predominantly Buddhist country. Unrest among the Buddhist majority led in 1963 to a military coup which cost Diem his life and left Vietnamese veterans of the former French colonial army in charge. Eventually General Nguyen Van Thieu pushed ahead of the more flamboyant Air Marshal Nguyen Cao Ky.

The association of Thieu and Ky with French colonialism tarred their administration from the outset. Their claims to national leadership were also undercut by an increasing American presence in South Vietnam and by the public American guarantee that the existence of communist North Vietnam would not be threatened. Thieu and Ky were unable to offer the prospect of a reunified Vietnam--only the communist regime of North Vietnam offered that. While the United States proved all too willing to Americanize the war in South Vietnam with half a million American troops as well as planes, those troops were forbidden to invade North Vietnam. President Johnson did not want to risk a massive communist Chinese intervention of the kind that had pushed U.S. forces out of North Korea in 1950. But North Vietnam could with little warning move beyond supporting insurgency to full-scale invasion of South Vietnam. Although such invasions did not occur until 1972 and 1975, the South Vietnamese government and its American ally necessarily acted

under the assumption that an invasion might come much sooner. In the meantime fifty thousand North Vietnamese regulars were operating inside South Vietnam by 1967. It was a great strength of the communist position that its opponents could never afford to focus on the insurgency in South Vietnam at the expense of preparing to meet the conventional threat from North Vietnam (and vice versa).

In contrast to communist exploitation of their opponents' weaknesses, the Johnson administration even felt constrained to forbid an American invasion of the Laotian panhandle, down which the North Vietnamese were sending troops and supplies into South Vietnam. The "Ho Chi Minh Trail" became an increasingly elaborate network of dirt roads carrying trucks at night through a gauntlet of American bombing punctuated by gunfire from converted air transports called "gunships."[2] North of the panhandle American air power helped Laotian government forces defend themselves from communist attack. The Geneva Agreement of 1962 had supposedly guaranteed Laotian neutrality, and the country's beleaguered government preferred to maintain the fiction that it was not being used as a conduit for communist supplies. Hence the Laotian government did not want the unavoidably overt introduction of large American ground forces to cut the Trail--but did agree to air operations for the same purpose. U.S. air forces (like North Vietnamese ground forces) pretended in public that they were not operating in Laos. This was one of the Vietnam

War's open secrets helping to persuade many Americans that their government was dishonest.

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The government of Thailand tried to keep its own role in the war as quiet as possible. U.S. Air Force planes taking off from bases in Thailand were not permitted to bomb in South Vietnam, and the Air Force was required to pretend that missions into North Vietnam and Laos had actually launched from bases in South Vietnam. Not until 1967, long after air operations from Thailand became common knowledge, would the Thai government relinquish this fiction and even permit B-52 missions from Thailand against targets in South Vietnam. Until then, Air Force pilots in Thailand got no publicity except on those rare occasions when they were sent to give a press briefing in Saigon under the pretense that their missions over North Vietnam had been launched from South Vietnam. Some pilots relished this publicity, but others considered it a jinx after the commander of the 67th Tactical Fighter Squadron, Lt. Col. Robinson Risner, followed his appearance on the cover of *Time* magazine with a long stay in North Vietnam's prison system; he was shot down on September 16, 1965.

The Air Force was not entirely unhappy with Thailand's reluctance to have planes based there bomb in South Vietnam, since that policy had the effect of fencing off substantial air power which could be used only against North Vietnam and Laos. Not until 1968 would Thailand permit fighter

aircraft based there to strike targets in South Vietnam and then only the northern area called I Corps. Except for the F-4 fighters of the 366th Tactical Fighter Wing at Danang Air Base in I Corps, Air Force fighters based in South Vietnam rarely ventured deep into North Vietnam. Army and Marine demands for air power in South Vietnam surpassed anything ever seen. Of the eight million tons of ordnance which which would fall from the sky on Southeast Asia, nearly five million would fall on South Vietnam; less than a million tons would fall on North Vietnam and less than two million on Laos. Although these figures were impressive when compared with the less than four million tons dropped by the United States and the United Kingdom in all theaters during World War II, most of the bombs in World War II fell in and around cities--unlike most of the bombs in Southeast Asia, which fell in the jungle along with the bulk of the eight million tons of rounds fired by American artillery.

The American air war over North Vietnam and Laos was waged mostly from Air Force bases in Thailand and Navy carriers in the Gulf of Tonkin. Where Thailand's Korat plateau bulged north of Cambodia to the Mekong River and the Laotian panhandle, as little as seventy miles separated Thailand and Vietnam. The Air Force used three Thai bases near the Mekong, and four nearer the capital at Bangkok about three hundred miles west on the Gulf of Siam.

At the beginning of the war, there were only three bases in Thailand with runways long enough to handle fully-loaded jet fighters comfortably: Don Muang, just north of the capital, Bangkok; Takhli, a hundred miles north up the Chao Phraya River from Bangkok; Korat, on the southwestern edge of the Korat Plateau, about a hundred miles northeast of Bangkok. Although facilities were best at Don Muang, the fact that it also served as the Bangkok airport made the Thai government reluctant to permit obvious Air Force operations there. Except for a few air defense interceptors, transports, and refueling tankers, the Thais reserved Don Muang's military ramp for their own air force of old American F-86 fighters.

At Takhli and Korat, however, the Thais were soon submerged by American aircraft and airmen. There the Air Force sent about ten thousand men and more than a hundred Republic F-105 Thunderchief fighters. This force had to be constantly replenished, because the F-105 was the Air Force's principal fighter-bomber used in the Rolling Thunder campaign. More than three hundred F-105s were shot down over North Vietnam and Laos.* Attrition would have been even worse had it not been for the protection provided by supporting aircraft. Two dozen EB-66 electronic warfare aircraft, for example, shared the Takhli facilities with the F-105s and attempted to jam enemy radars from a distance; the EB-66s were too slow to survive over the most well defended areas in North Vietnam.

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* For aircraft loss figures, see the appendix.

During the 1950s, the Air Force had concentrated on building its capability to wage nuclear war. The Strategic Air Command then absorbed most of the service's resources, and Tactical Air Command spent much of the remainder developing its own capacity to drop nuclear bombs. The F-105 was designed for that; now instead of carrying a nuclear bomb in its bomb bay, the F-105 carried conventional bombs on its wings. Those relatively small wings had been intended to help the F-105 penetrate at high speed close to the ground; at higher altitude they limited the F-105's maneuverability. Pilots gave the F-105 unflattering nicknames like "Lead Sled" or more commonly "Thud"--a nickname that in Southeast Asia would become more affectionate than derogatory. The Air Force's awkward attempt in 1964 to use Thuds for its air-show demonstration team, the Thunderbirds, came to a quick and inglorious end. But combat forged a proud bond between pilots and their Thuds. While it could not maneuver agilely in a dogfight, the Thud could carry more bombs further than any other Air Force fighter in 1966 and outrun enemy fighters at low altitude.

The only Air Force fighter which could better handle North Vietnamese air defenses was the newer, more maneuverable McDonnell F-4 Phantom II (a descendant of the Navy's first carrier jet fighter, the McDonnell FH-1 Phantom of the late 1940s). "Phantom" was a most unsuitable name for this big fighter known for leaving a highly visible trail of black smoke. Only by using its afterburners could the F-4 avoid the smoke which which in daylight

continually gave the plane's position away. Nevertheless, "Phantom" was one of the few official names which aircrews actually used. The Phantom did get most of the night bombing missions, for which its two-man crew was better suited than a lone Thud pilot. Someone caught the humor in the name "Phantom" by drawing a cartoon of a funny little man (with the delta shape of the fighter) wearing a cape, broad-brimmed hat, and tennis shoes. In their daytime air-to-air combat with enemy fighters, Phantom aircrews had to resign themselves to the fact that there was nothing stealthy about their plane.

Although nearly as heavy as the single-engine Thud, the Phantom's two engines and bigger wings permitted it to climb faster--a virtue which came at the price of higher fuel consumption and shorter range. In one respect the Phantom was less well prepared for air-to-air combat than the Thud, for early in the war the Phantom had no gun. The Navy had developed the Phantom to protect the fleet with radar-guided Sparrow missiles which could down attacking aircraft at long range. Over North Vietnam, however, ground clutter could interfere with the radar guidance system; in any case, the presence of so many Navy and Air Force planes meant that aircrews were usually required to identify an enemy aircraft visually before attacking--often putting the Phantom too close to use a Sparrow. Despite the fact that the Phantom's heat-seeking missiles could find an enemy plane's tailpipe at closer range, Phantom crews often found themselves too close for anything but the gun they did not have. Not until 1967 would Air Force F-4s begin to use a gun mounted in a

pod under the fuselage, and only after Rolling Thunder ended would new F-4s with a built-in gun deploy to Southeast Asia.[3]

While most Thuds had only one seat, each Phantom had two on the theory that a second crew member was required to operate the plane's radar; he would try to lock his radar on an enemy fighter so that the Phantom's pilot could fire a Sparrow missile. The Navy gave this backseat job to a navigator called a "radar intercept operator." During Rolling Thunder, the Air Force gave the radar job to a second pilot, but no pilot liked to ride in the back seat and the Air Force ultimately followed the Navy's example. The Air Force's backseat navigator would be called officially a "weapon system operator" (WSO, pronounced "wizzo"), because he often handled not only air-to-air missile radar but also the new precision bombing systems which were developed late in the war. Unofficially, he would assume the nicknames of the backseat pilot who preceded him: "guy in back (GIB)" or simply "backseater."

The fact that the Air Force's Phantom backseaters were originally pilots may have made other fighter pilots somewhat less hostile to giving backseaters equal credit with the frontseat pilot for any enemy aircraft shot down. Shooting down at least five enemy aircraft had long been a milestone in a fighter pilot's career, for then he was called an "ace." When the war finally produced its first American aces in 1972, all Phantom backseaters were navigators and three of them (two Air Force, one Navy) became aces.[4]

At the beginning of Rolling Thunder, the Air Force had about 600 Thuds and 600 Phantoms. The production line for the single-seat Thud had closed, but the Air Force was getting more than 200 new two-seat Phantoms every year. While a portion of the growing Phantom force was used for less risky bombing in South Vietnam, Thuds were reserved for the more dangerous missions in North Vietnam and Laos. Not only were most Thuds older than most Phantoms, but the loss of a single-seat Thud cost at most one crew member rather than two. Air Force Phantoms operating in North Vietnam were expected to protect Thuds from MiGs; this less expensive mission absorbed much of the Phantom effort there during Rolling Thunder. When Rolling Thunder ended in 1968 more than half the Thuds were gone, and most of the remainder were soon replaced by Phantoms.

When the Air Force Phantoms were first deployed to Southeast Asia in 1965, runways had to be lengthened at two bases in northeast Thailand near the Mekong. At first the Phantom's reconnaissance version (the RF-4) shared Udorn with RF-101s and F-104s, but these older aircraft were entirely replaced by more RF-4s and F-4s in 1967. Two hundred miles down the Mekong from Udorn, Ubon became the principal Phantom base in Thailand. Another two hundred miles east of Ubon across the Laotian panhandle in South Vietnam, Danang's Phantoms could be used in North Vietnam and Laos as well as South Vietnam. Altogether, the three bases had about 150 F-4s and 40 RF-4s in 1966; in subsequent years the Phantom presence in Thailand would grow. Of

the more than 500 Air Force F-4s and RF-4s lost in Southeast Asia, two-thirds were shot down over North Vietnam and Laos.

Many of the Phantom and Thud losses could be attributed to two poor design features they shared. At the beginning of Rolling Thunder, neither type of fighter had self-sealing fuel tanks and both had hydraulic control systems with backup lines close enough together that a single hit could render the aircraft uncontrollable or cause the fuel tank to explode. Self-sealing fuel tanks were heavier and aircraft designers tried to save weight in these already heavy aircraft by using lighter tanks. While some Thuds eventually got self-sealing fuel tanks and a more survivable arrangement of their control systems, the Phantoms remained vulnerable on that score to avoid sacrificing speed and maneuverability.

Men shot down had a better than even chance of surviving. About a third were rescued in North Vietnam, and almost as many survived years of captivity there. More were rescued in Laos, where there were lighter air defenses (to inhibit rescue aircraft) and friendly as well as enemy forces on the ground. But during the prisoner exchange in 1973, only seven Americans captured in Laos would come home. Of the more than four hundred Air Force men shot down there, many may have been killed by Laotian communist troops for whom prisoners were too much trouble or by North Vietnamese communist troops who were pretending not to be in Laos.

Before rescue helicopters at Udorn would venture into Laos or North Vietnam, downed aircrew would be located and protected by small propeller-driven Douglas A-1 Skyraiders (or "Spads" as pilots dubbed them after the famous French fighters flown by Americans in World War I). In addition to the squadron of A-1s at Udorn, a squadron at Nakhon Phanom lay just across the Mekong from the Ho Chi Minh Trail in the Laotian panhandle. The Air Force opened "NKP" (as Americans called the new base) with a runway made of pierced steel planking, which corrosion soon necessitated replacing with aluminum matting. Only light propeller aircraft like the Spads could use NKP regularly, but heavier aircraft could land there in an emergency and many fighters shot up over North Vietnam were able to make it back to NKP to land or at least permit their crews to bail out where they could be easily rescued.[5]

When F-105s and F-4s made their longer three-hour raids six hundred miles into North Vietnam, they required refueling in the air from Boeing KC-135 tankers soon after takeoff and again after leaving North Vietnam. Routine use of air refueling for combat missions was an innovation. Before the Vietnam War, air refueling had usually facilitated the deployment of aircraft rather than their employment. By the end of 1966 there were about thirty KC-135s in Thailand: ten at Takhli and twenty at U-Tapao, a new base seventy miles south of Bangkok on the Gulf of Siam. Fuel could be brought in by ship to U-Tapao, an arrangement much preferable to trucking fuel to bases further north.

Each KC-135 could transfer about fifty thousand pounds of fuel per sortie, enough to top off four fighters in less than half an hour and have plenty left; after a morning mission, a KC-135 could land, reload, and come up again for an afternoon mission. Getting the most out of the tanker force drove mission scheduling. Every morning and afternoon the tankers flew over northern Thailand in oblong orbits called "tracks," topping off fighters on their way north and later meeting them over Laos with enough fuel to get them home.[6]

Other KC-135s took off from the Japanese island of Okinawa to refuel B-52s on ten-hour missions from Guam island, two thousand miles east of Vietnam and Laos; each of the big bombers soaked up an entire tanker load. Even with aerial refueling, a B-52 could not carry its maximum thirty tons of bombs so long a distance, and bomb loads were cut to twenty tons or less. This was still ten times the load carried by an F-105 or F-4 on missions to North Vietnam. The Air Force hoped to persuade the Thais to permit B-52 operations from the new base at U-Tapao, since from there the big bombers would be able to reach targets without air refueling with full bomb loads.

B-52s and KC-135s belonged to the Strategic Air Command, which tried to keep conventional warfare from crippling the command's ability to perform its nuclear bombing mission. Since B-52s flew sorties above thirty thousand feet in Southeast Asia, Strategic Air Command feared that its crews would lose their skill at flying low-level missions of the kind envisioned for a nuclear war

with the Soviet Union. Consequently, B-52 crews rotated back to the United States after six-month tours of temporary duty in the Pacific. Although this policy made less sense for KC-135 crews, they too came to the Vietnam War on temporary duty. While fighter squadrons also began the war on temporary duty, their pilots like the ground personnel at all the bases including U-Tapao eventually found themselves "permanently" assigned--but in Southeast Asia, "permanently" turned out to mean twelve months or less.

Through most of 1965, fighter squadrons arrived for four months of temporary duty in Thailand from Japan and the United States. Toward the end of that year, squadrons began to settle for the duration of the war. Each of the fighter bases in Thailand had a single fighter wing with up to four fighter squadrons (more than seventy fighters sharing a crowded field with an assortment of other aircraft). By late 1966 the fighter wings had acquired the numerical designations which they would keep through the end of Rolling Thunder: 355th Tactical Fighter Wing at Takhli (F-105s), 388th Tactical Fighter Wing at Korat (F-105s), the 8th Tactical Fighter Wing at Ubon (F-4s), and the 366th Tactical Fighter Wing at Danang, South Vietnam (F-4s). Eventually the RF-4 reconnaissance aircraft of Udorn's 432d Tactical Reconnaissance Wing would also be joined by F-4s.

Most non-flying personnel cycled through on one-year tours. Every year on the anniversary of a squadron's arrival, many of its people would leave to be replaced by new people usually without any experience in Southeast Asia.

Aircrew were on a different schedule, since they could go home after completing one hundred missions over North Vietnam--just as F-86 pilots in the Korean War had gone home after a hundred missions over North Korea in "MiG Alley." Commonly, meeting this standard took seven or eight months, but that depended on how the tour meshed with seasonal and political variations in the intensity of the American effort over North Vietnam. When not flying there, aircrew operated in Laos where they might get shot at but would not receive mission credit toward the necessary one hundred "counters."

While some aircrew volunteered to come back for a second or even a third tour, most did not want to push their luck flying against North Vietnamese air defenses. The Air Force did not require anyone who had completed a "permanent" tour in Southeast Asia to serve there again. This policy spread the risks as well as the career advantages of combat service through the force, but all the good it did for morale came at a considerable cost in the depth of Southeast Asian experience available in the theater. Nor did the policy strike everyone as entirely fair.

For non-flying personnel, a year in Southeast Asia could be spent far more pleasantly in Thailand than in South Vietnam. The South Vietnamese bases were subject to frequent rocket, mortar and sapper attacks. The Thai bases were attacked only five times (all by sappers) and the first attack did not come until 1968. Indeed Bangkok was a favorite choice for the rest and recuperation week available to those serving in South Vietnam. Yet it was a

grievance among ground personnel in Thailand that they could not participate in the rest and recuperation program; nor did they get an income tax break available to all personnel in South Vietnam. Aircrew in Thailand eventually did get these benefits, but then of course for aircrew Thailand was a more dangerous assignment than South Vietnam.[7]

The practice of assigning Air Force ground personnel for one year tours in Thailand made less and less sense as the years passed. When the Thai bases were undergoing expansion in 1965 and 1966, living conditions could be primitive in comparison with the relative luxury of later years. Some early expedients did not work out. Inflatable shelters collapsed when the glue in the seams melted in the tropical heat. The herd of goats acquired to keep the grass short at Takhli became a smelly nuisance until replaced by lawnmowers. In 1967 a visitor from the Pentagon to Takhli and other Thailand bases could report that "wing commanders are focusing their attention and diverting energy to base development and upkeep (green grass etc.) to a much greater extent than one would reasonably expect in a combat zone."[8]

Swimming pools made a successful early appearance at the Thailand bases--all the more popular in the tropical heat because getting air conditioners for sleeping quarters even for aircrew proved difficult. Club bars provided ready release from the tension of combat or the boredom of desk duty. Just off base, Thai prostitutes did not want for customers, and the dispensary at each base was handling about a thousand venereal disease cases a year. American

men and Thai women also developed more enduring relationships. There was something intoxicating about the gracious culture of Thailand. Even for the men who had to fly north where survivors were bound to lose friends, Thailand would provide fond memories.[9]

However much their country might seem like a paradise for young American men, Thailand's leaders managed to exploit their relationship with the United States without being swallowed by it. During the nineteenth century, the kings of Siam (as Thailand was then known) had succeeded in maintaining their country's independence as a buffer between British Burma and French Indochina. A tilt toward the British in those years was more than counterbalanced by collaboration with the Japanese in World War II, when Thailand declared war on the United Kingdom and the United States. Together with land reform, Thailand's independence of the western colonial powers had innoculated the country against the appeal of communism. Even after losing authority to military dictators in the 1930s, the Buddhist king remained a potent symbol of Thai nationalism.

The poorest and most vulnerable part of Thailand was the Korat plateau, where American air bases began to inject some much needed money. On the other hand, communists naturally scented opportunity in the conjunction of American bases with a population not only poor but closely tied to Laos. More Lao (a Thai people) lived in Thailand than in Laos, and the communist movement seemed to have excellent prospects for spreading across

the Mekong. But this insurgency never made much progress except among Vietnamese refugees. Sappers caught in the handful of attacks on American bases in Thailand turned out to be Vietnamese.[10]

Since Thailand was a bulwark against communism, the United States was not inclined to be very critical of its dictatorial form of government. Indeed the military aid supplied by the United States since the 1950s had strengthened the hold of the Thai army on the government. When Field Marshal Sarit Thanarat died in 1963 (leaving a wife and more than fifty mistresses), he was succeeded as prime minister by his less colorful deputy, General Thanom Kittikachorn. Thanom continued Sarit's policy of working with the U.S. Army to prepare ground defenses against Chinese invasion. The small Thai air force lacked influence and did not much figure in Thanom's plans.[11]

The U.S. Air Force presence in Thailand grew up largely outside the former American military apparatus for doing business there. Of the thirty-four thousand American military personnel in Thailand by the end of 1966, twenty-six thousand were Air Force. Yet the commander of the U.S. Military Assistance Command, Thailand, was still an Army officer: Maj. Gen. Richard G. Stilwell (who was not as many thought a son or nephew of Gen. Joseph W. Stilwell, commander of American forces in the China-Burma-India theater during World War II). While the U.S. Air Force sought to bring more men and planes into Thailand, Stilwell tried to be the Air Force's sole channel to the

American ambassador, Graham A. Martin, who was supposed to conduct all negotiations with General Thanom and his government. But Martin had served in the Army Air Forces during World War II, and the Air Force had ready access to him through the air attache, Col. Roland K. McCoskrie.[12]

Despite Colonel McCoskrie's best efforts with Ambassador Martin, the Army-managed approval process in Thailand often proved frustrating for the Air Force. In January 1966, the Air Force sought to strengthen its position by sending a major general to Udorn to oversee Air Force assets in Thailand. The new commander, Maj. Gen. Charles R. Bond, Jr., had been one of General Claire Chennault's Flying Tigers in China during World War II, when he shot down nine Japanese aircraft. Bond would take his orders on operations over North Vietnam from the Air Force commander in South Vietnam, Lt. Gen. Joseph H. Moore. Moore's command was called Second Air Division until the spring of 1966, when it became Seventh Air Force. To make this arrangement more palatable to the Thai government (which wanted to disguise Thailand's connection with the war in Vietnam), the Air Force made Bond subordinate to Thirteenth Air Force in the Philippines for all non-operational matters. Therefore, Bond was said to be deputy commander of Seventh/Thirteenth Air Force.[13]

Since the Seventh Air Force commander and his staff dealt directly with the wings at each base in Thailand, Bond could not be said to command anything. He had one of the oddest jobs in the history of the Air Force. When

he tried to mediate between his two Air Force bosses, the ambassadors in Thailand and Laos, and General Stilwell, Bond often encountered more discord than harmony. Stilwell took a very dim view of Bond's role and complained that neither Stilwell himself nor the ambassador nor General Thanom had been consulted about Bond's assignment. In fact, the Chief of Staff of the Air Force, General John P. McConnell, had obtained Ambassador Martin's approval during a visit to Washington. When confronted by Stilwell, Martin could only slap the Air Force's wrist for not providing a formal request through channels.[14]

* * *

A few months after sending General Bond to Thailand, the Air Force Chief of Staff sent Lt. Gen. William W. Momyer from Air Training Command to replace General Moore as commander of Seventh Air Force in South Vietnam. General McConnell decided to make this change on the advice of a retired Air Force general, Elwood R. "Pete" Quesada, a famous fighter commander in World War II and the first commander of Tactical Air Command after the war. In retirement Quesada had continued to be an influential defender of fighter aircraft during an era when the Air Force was dominated by Strategic Air Command's bombers and missiles. Senator Stuart Symington (Democrat, Missouri), who had been the first Secretary of the Air Force, asked Quesada to visit Southeast Asia and determine whether anything could be done to improve the Air Force's performance there. Quesada concluded that

Moore was too subservient to the Army commander in South Vietnam, Gen. William C. Westmoreland. Moore and Westmoreland grew up together in Spartanburg, South Carolina, and had remained close over the years--too close, as far as Quesada was concerned.[15]

Moore had come to South Vietnam with Westmoreland and had been at Tan Son Nhut Air Base on the edge of the capital, Saigon, for more than two years. Quesada wanted to replace Moore with a far less agreeable general well known for his convictions about the best way to employ fighter aircraft. "Spike" Momyer was already a fighter group commander in North Africa during World War II, when the Army Air Forces developed enduring doctrine under fire. No Army commander was apt to get the best of an argument with Momyer over air power. He had a disciplined and practical intellect befitting the son of a lawyer who had once taught at the University of Chicago.

The death of his father when Momyer was fourteen both liberated the boy from becoming a lawyer and forced an early end to playing sports. He had to take a job after school. By then he had already seen Charles A. Lindbergh and his *Spirit of St. Louis* land at an Army Air Corps base near the Momyer home in Muskogee, Oklahoma. After his mother moved the family to Seattle, Momyer worked his way through the University of Washington and straight into the Army Air Corps. He never stopped working hard. Five years out of college he was commanding a fighter group in combat. The weight of early responsibility made him far less fun-loving than most other fighter pilots.[16]

The staff at Seventh Air Force headquarters soon found that their new commander was all business and that he made their business his business. His quick mind and appetite for work permitted him to avoid delegating much of his authority. He acted as virtually his own deputy for operations. Some were intimidated by his intellect and by his unusual austerity, symbolized by a smoking ban during staff meetings. He did not like the laid-back style common in a combat theater. He expected proper uniforms and clean quarters and even flower beds--this last idiosyncracy was a subject of humor.[17]

By the time Momyer took command of Seventh Air Force, many airmen suspected that the U.S. was in for a much longer war and possible defeat in Southeast Asia. He bent his efforts to helping the Air Force come through the experience in the best shape possible, and for him that meant an Air Force with the most versatile technology available. He was at most lukewarm about the extensive use of old propeller aircraft in South Vietnam and Laos; no matter how well-suited they were to fighting insurgents, propeller aircraft could not survive in Europe against Russian air defenses. On the other hand, he opposed the development of technology designed to meet too specific a threat. Since the U.S. could never predict exactly what situation its armed forces would encounter, he favored multirole jet aircraft. Of the aircraft already in the inventory, the F-4 was his clear favorite, since it could be used against enemy fighters in the air or targets on the ground.[18]

Momyer was an especially able exponent of the need for unity in the command of air power. But unity of command was not to be found in Southeast Asia anywhere above a wing commander. His efforts to change that were unavailing. He doubted that Thai sensitivities were really behind denying him command of the wings in Thailand and giving him only operational control. His repeated interrogations of Ambassador Martin on this point gave Momyer the impression that the admiral who ran the Pacific theater from Hawaii (Adm. Ulysses S. Grant Sharp, Commander in Chief of Pacific Command) and his Air Force component commander (Gen. Hunter Harris, Commander in Chief of Pacific Air Forces) wanted to deny Momyer command of the Thailand wings because he was Westmoreland's air deputy--by denying Momyer command, they were really denying Westmoreland and keeping air operations against North Vietnam under their control.[19]

From Momyer's point of view, there should have been a separate Southeast Asia theater with Westmoreland in charge and with all air operations (including those of the Navy and Marine Corps) under Momyer. As it was, Momyer's authority did not even extend to the Strategic Air Command B-52s which were dropping more than a third of the bombs in South Vietnam. Since the same aircraft also had a nuclear mission in case of a wider war, Strategic Air Command refused to give them to Momyer. General Westmoreland's Army staff decided what they wanted the B-52s to hit and passed the list to Strategic Air Command. Momyer was appalled by the

enormous tonnage of bombs the B-52s were dropping on the South Vietnamese jungle with little evidence of much physical effect on the enemy, however psychologically upsetting to enemy troops in the vicinity. Strategic Air Command's ownership of tankers was less onerous for Momyer, since Westmoreland did not get involved. Momyer's main gripe about tankers was Strategic Air Command's unwillingness to let them fly far enough north in Laos to save returning fighters especially low on fuel. In practice, tanker pilots often broke Strategic Air Command rules to save fighters.

The fact that Seventh Air Force worked for General Westmoreland in Saigon on operations in South Vietnam and for General Harris in Hawaii on operations in North Vietnam contributed to handling those operations separately by breaking the Seventh Air Force staff into "in-country " and "out-country" teams. This way of dividing the work preceded Momyer and might well have occurred even if Westmoreland had controlled the whole war, since the two regions made different demands. The in-country team's tactical air control center answered ground unit requests for air support. This tactical air control center included South Vietnamese personnel and (only to maintain political appearances) its director was a South Vietnamese colonel; the real director was an American brigadier general who reported to Momyer's deputy for operations.*

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* Momyer's tactical air control center also coordinated all Strategic Air Command operations out-country as well as in-country. From August 1967 to April 1968, this tactical air control center handled out-country fighter operations in the

The out-country team's U.S.-only command center (with the radio call sign "Blue Chip") developed daily orders to send a few large formations against major targets in North Vietnam and many two-plane patrols on armed reconnaissance of transportation routes there and in Laos. These daily orders were called fragmentary orders or "frags", because each wing received only the fragment of the order that applied to it and because information which did not change on a daily basis (like rules of engagement) was not sent on a daily basis. Fragmentary orders permitted Seventh Air Force to send the necessary information in electronic messages without overwhelming the telecommunications network. The out-country team worked on a three-day cycle; while part of the team planned operations for the day after next, another part drafted the next day's order, and the rest monitored the current day's operations.

Momyer's headquarters was near Westmoreland's at Tan Son Nhut Air Base on the outskirts of the South Vietnamese capital, Saigon. South of the city lay the fertile rice paddies of the Mekong delta. North for seven hundred miles stretched a narrow coastal plain pressed against the sea by rugged hills most of the way to China until the Red River provided another delta, smaller and less fertile. There lay the North Vietnamese capital of Hanoi, the principal North Vietnamese port of Haiphong, and many of the targets of

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panhandles of North Vietnam and Laos; those operations then reverted to Seventh Air Force's U.S.-only command center.

greatest interest to Momyer. When he sent planes to the Red River, they were too far from his command center at Tan Son Nhut to communicate easily. In the summer of 1966 a control center for operations over North Vietnam began functioning (with radio call sign "Motel") on Monkey Mountain, which dominated a peninsula jutting into the South China Sea at Danang, about half way between Saigon and Hanoi.

The progress of strike forces over North Vietnam was also monitored by the control center at Udorn Air Base, Thailand. If Monkey Mountain went off the air, Udorn was in control. Both sites had long-range radar, but they could not see the Red River delta. That far north only a Navy radar ship and Air Force Lockheed EC-121 radar planes could offer some radar coverage while keeping their distance from enemy fighters and missiles. Unlike the Boeing E-3 Airborne Warning and Control System (AWACS) planes produced after the Vietnam War, the EC-121's radar could not "look down" successfully and aircraft would be lost in ground clutter on the EC-121's radar screens. In truth, neither the EC-121s nor the ground stations at Monkey Mountain and Udorn could do much to control air operations over the Red River.

Further south over the less well defended Laotian panhandle, other even more vulnerable converted transports could survive. Lockheed EC-130s each carried an Airborne Battlefield Command and Control Center (ABCCC) without radar but with the communications equipment and battle staff necessary to control interdiction strikes against trucks in the Laotian and

North Vietnamese panhandles. An ABCCC aircraft often coordinated interdiction strikes through forward air controllers (FACs) surveying the panhandles in either light propeller planes or subsequently jet fighters (beginning in 1967 over North Vietnam where enemy air defenses made the slower propeller planes too vulnerable.) Each FAC patrolled the same stretch of road and jungle every day so that in daylight he had the best chance of seeing elusive enemy trucks and directing strike aircraft sent his way by ABCCC.

While ABCCC and Motel were closer to the bombing, Blue Chip was closer to the boss. On his out-country team as well as his in-country team, Momyer found somewhat more harmony among operations planners and intelligence analysts than had once been the case. The very fact of creating the operations-intelligence teams had broken down some of the bureaucratic walls. There remained a barrier between photographic intelligence and electronic signals intelligence, especially radio communications intercepts. Security procedures meant to protect signals intelligence also made it very difficult to integrate with other intelligence sources. Photographic intelligence could not in any case always meet demands for up-to-date imagery of targets. Weather often interfered with photographic reconnaissance, and among the hundreds of targets, many were new or altered. Even when good imagery was acquired, getting it reproduced and filed in the target folders at each wing was another matter. Like air commanders before and after him, Momyer could rarely be

completely satisfied with the speed or comprehensiveness of bomb damage assessment. Like other air commanders, he wanted to avoid unnecessarily repeating strikes on a target since the enemy usually responded by increasing air defenses.[20]

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As the new commander of Seventh Air Force, General Momyer's ability to shape the Rolling Thunder air campaign against North Vietnam was sharply limited by men in the complex chain of command above him, from Saigon to Hawaii to Washington. At Pacific Command headquarters in Hawaii, Admiral Sharp simplified the problem of allocating targets by dividing North Vietnam into seven geographical areas or "route packages." The Pacific Fleet conducted most of the bombing in four route packages along the coast (from south to north, Route Packages Two, Three, Four, and Six B) which aircraft launched from carriers in the Gulf of Tonkin could reach without air refueling. Pacific Air Forces was responsible for bombing in northwestern Vietnam (Route Packages Five and Six A), while General Westmoreland gained responsibility for Route Package One just across the Demilitarized Zone from South Vietnam. General Momyer took his orders from Westmoreland for Route Package One and from General Harris at Pacific Air Forces headquarters in Hawaii for Route Packages Five and Six A.

The rigidity and fragmentation built into the route package arrangement grated on both Momyer and Harris, who had tried to talk Sharp

out of it. But neither Harris nor the Chief of Staff of the Air Force, General McConnell, could persuade the Navy to integrate air operations over North Vietnam under the Air Force. Sharp did permit the Seventh Air Force commander to chair a coordinating committee with representatives from Seventh Fleet's Task Force 77, whose carriers bombed North Vietnam. But any disagreement had to be referred to Sharp, and for the most part the two services conducted separate operations in their own route packages.[21]

Sharp's position on route packages did not surprise Harris, nor did it embitter him. The two men got on well and shared a belief that air power had been used far too timidly over North Vietnam. Like Momyer, Harris was deeply concerned about what the Vietnam War was doing to the reputation of air power. Limited strikes against North Vietnam had been portrayed in the press as an all-out effort. "It troubles me and many others, of course," Harris wrote McConnell in March 1966, " that for all our military superiority we have been out-maneuvered by a third-class power. I can't help but believe that a defeat . . . will tend to relegate the military instrument to an essentially defensive role aimed primarily at forestalling a direct attack on the U.S. with all that this means for our future military capability vis-a-vis our world interests."[22]

Given Admiral Sharp's decision to allocate targets by route package and Washington's domination of target selection, the principal role of Pacific Command headquarters in Rolling Thunder became one of lobbying for better

targets. Sharp did not take "no" for a final answer and repeatedly requested targets that had been denied time and time again. This persistence paved the way for a longer target list, but did not endear him to his civilian bosses.

No President had ever taken the interest in target selection that Lyndon Johnson did. Through the long years of Rolling Thunder, he personally scrutinized lists of proposed targets and weighed their potential for civilian casualties, bad press, or Soviet and Chinese involvement. During his first term in the Senate, China had intervened powerfully in the Korean War when American troops had moved into North Korea. Johnson had supported President Harry Truman's firing of Gen. Douglas MacArthur, who underestimated the danger of Chinese intervention and then publicly challenged Truman's decision not to bomb China. In Vietnam, President Johnson was taking no chances with his generals. Not only did he forbid an invasion of North Vietnam, he would not even permit the kind of urban bombing there which Truman had permitted in North Korea from the early weeks of the Korean War. Johnson's fears of massive Chinese intervention were clothed in the all too sophisticated "signalling" analysis proffered by advisers. According to this line of thought, threatening destruction was a more influential signal of American determination than destruction itself--it was better to hold important targets "hostage" by bombing trivial targets.[23]

On August 4, 1964, after North Vietnamese gunboats attacked an American destroyer in the Gulf of Tonkin on one occasion if not twice, Johnson

authorized the first air raid into North Vietnam; Navy planes hit gunboats, their bases and a fuel depot.* This "tit for tat" raid seemed appropriate to the Congress, which passed a resolution authorizing Johnson to "take all necessary measures" to prevent further communist aggression in Southeast Asia. Rather than make immediate use of this broad charter, Johnson won a landslide election in November by assuring the American public that American boys would not fight a war for Asian boys. He sought successfully to contrast his views with the hawkish reputation of his Republican opponent, Senator Barry Goldwater (Arizona), who was a major general in the Air Force Reserve. Johnson made no military response when a few days before the election, communist forces attacked Bien Hoa Air Base near Saigon, killing five Americans and destroying six American B-57s.

Even after the election, Johnson did not retaliate when on Christmas eve a car bomb killed two American officers and wounded more than fifty in Saigon's Brinks Hotel. By then, however, he had already told his advisers that if he did decide to bomb North Vietnam, he would not follow the Air Force's

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* There has been much controversy about whether North Vietnamese gunboats made a second attack on two U.S. destroyers at night in bad weather. For evidence supporting the reality of a second attack, see Edward Marolda and Oscar P. Fitzgerald, *The United States Navy and the Vietnam Conflict, Vol II: From Military Assistance to Combat, 1959-1965* (Washington, 1986). For a contrary view by a carrier pilot who could not find the enemy that night, see Jim and Sybil Stockdale, *In Love and War* (New York, 1984). Long before this affair, the U.S. response to the communist insurgency in South Vietnam had included sending South Vietnamese sapper teams into North Vietnam to blow up targets, and at the end of July 1964, gunboats (supplied by the U.S. but with South Vietnamese crews) began to fire on North Vietnamese installations.

recommendation to send intensive air raids including B-52s against ninety-four targets throughout North Vietnam. His gradual Rolling Thunder campaign was finally triggered in early February 1965, when more than thirty American military personnel died in communist attacks on installations at Pleiku and Qui Nhon, South Vietnam.[24]

The weak bombing operations of Rolling Thunder did not dissuade the North Vietnamese regime from continuing intervention in South Vietnam, but they did serve as a prelude to sending American ground combat units to fight there. No longer would the American presence be limited to twenty thousand military "advisors" (including Air Force "advisors" who flew combat missions in South Vietnam). Beginning with two battalions of Marines to protect the American air base at Danang, Johnson increased American military strength in South Vietnam to seventy-five thousand by July 1965, when he announced that he would send another fifty thousand and decided on fifty thousand more. In three years he would have half a million troops in Vietnam, where they joined a South Vietnamese army which grew to more than half a million.

A few days before the beginning of Rolling Thunder, the most ardent advocate of a more forceful air campaign retired from the Air Force. Although Gen. Curtis E. LeMay had served as a four-star general for a record thirteen years and worn stars for more than twenty, he was still a vigorous fifty-eight. Already a major figure in the Second World War, when he led B-17 bombers over Germany and commanded the B-29 fire-bombing of Japanese cities,

LeMay became best known for building the Strategic Air Command after the war. He was far less successful as Air Force chief of staff in Washington, where his views seemed simple-minded to the youthful professors surrounding President John F. Kennedy.[25]

Ten years younger than LeMay, Secretary of Defense Robert S. McNamara brought to the Pentagon a team of still younger "whiz kids"--a term once applied to McNamara himself when after World War II he and a few other statisticians got out of the Army Air Forces and sold their services to the Ford Motor Company. During his wartime tour in the China-Burma-India theater and in the Pacific, Lt. Col. McNamara had admired General LeMay's tactical brilliance. But as Secretary of Defense, McNamara treated LeMay with the same disdain most generals received from the new secretary and his whiz kids. After Kennedy's assassination in November 1963, LeMay's hope for better treatment from the Johnson administration evaporated when President Johnson chose to keep McNamara and other Kennedy advisers.[26]

LeMay's prestige with influential legislators like Senator Symington made both Presidents Kennedy and Johnson fearful of replacing this forceful chief of staff. But when LeMay's first two-year term expired in June 1963, Kennedy extended him only for a single year. Johnson chose to extend him again rather than deal with the wrath of LeMay's friends during an election year. Instead of granting him a full fourth year, Johnson prescribed that LeMay would retire February 1, 1965, upon completing thirty-five years of

service. He did not go quietly. When a reporter asked him what he thought of Washington, LeMay growled that it made him sick.[27] He went on to elaborate in a memoir which included a memorable passage about North Vietnam: "My solution to the problem would be to tell them frankly that they've got to draw in their horns and stop their aggression, or we're going to bomb them back into the Stone Age."[28] His critics would never let him forget a phrase which he himself would come to regret: "That sort of gave me the reputation of being somebody whose solution to every problem was bombing hell out of them. That's not my idea of the solution to every problem."[29]

LeMay was a man of few words. The stories of his intimidating taciturnity were legion, but when he did remove his cigar to speak he often nailed down the essence of a situation from his point of view. He admonished Washington to quit just "swatting flies" in South Vietnam and go after the "manure pile" in North Vietnam.[30] While it was possible that the insurgency in South Vietnam might simmer on without much North Vietnamese support, a great strength of the communist position was its ability to supplement or replace insurgency in the south with invasion from the north. Since invasion (or at least operations with the big units already infiltrated) might come at any time, South Vietnam could never afford to focus all its efforts on combatting insurgency.

The general who had fire-bombed Tokyo did not yet propose to level the North Vietnamese capital at Hanoi. He was ready to try using B-52s against

ninety-four targets which had garnered the approval of the Joint Chiefs. Area bombing with B-52s in populated areas would mean civilian casualties. If bombing the initial targets proved inadequate, more should be added. LeMay opposed publicly ruling out the use of nuclear weapons against North Vietnam. It was a principle with him that the nuclear threat was too valuable to discard even if the United States had no intention of actually using nuclear weapons. As early as 1954, when American support was proving insufficient to keep the French from losing their empire in Indo-China to communist take-over, LeMay had suggested to a group of American officers: "In those 'poker games' such as Korea and Indo-China, we have never raised the ante--we have always just called the bet. We ought to try raising the ante sometime."[31] But he also told the same group that he opposed going to war in Indo-China.[32]

In the 1950s, LeMay's anti-communism was focussed on the Soviet Union. He was not much concerned about Chinese communism, let alone Vietnamese communism. During the Second World War, when he was commanding B-29s in China, LeMay had persuaded Mao Tse-tung and his Chinese communists to supply weather data and help with rescuing downed American pilots. Further south the American fighter commander in China, Maj. Gen. Claire L. Chennault, got the same kind of cooperation from the Vietnamese communist leader, Ho Chi Minh. Only in the 1960s would LeMay come to favor a bigger American role in Vietnam (and then only in the air and

only if the United States was willing to do what was necessary to end the war quickly).

LeMay argued that a vigorous prosecution of the war could save friendly and enemy lives by ending the war sooner--that gradualism might lose the war while costing more lives. But President Johnson feared that LeMay's way of going to war might mean a wider war with China or perhaps even the Soviet Union, not to mention a very bad press for Lyndon Johnson. The President hoped to keep the war in Southeast Asia as much out of the press as possible. His years as Senate majority leader had equipped him to pass the biggest domestic spending program since the "New Deal" of Franklin Roosevelt, and Johnson was determined to keep the Vietnam War from derailing his "Great Society." On the other hand, he did not want to be charged with losing Vietnam to communism as President Truman had been blamed for losing China. In this frame of mind, Johnson replaced LeMay with a general much more to his liking.[33]

Seven years before selecting "J. P." McConnell to be Air Force Chief of Staff, Johnson had invited the general to stay at the senator's LBJ Ranch in the Texas hill country west of Austin. McConnell was then LeMay's director of plans at Strategic Air Command and had testified before Johnson several times. The majority leader spent the weekend showing McConnell his ranch, introducing him to neighboring ranchers, even personally serving him breakfast in bed--all the while learning about Strategic Air Command. It was

a quintessential Johnson performance, which would give McConnell the impression that they had a personal relationship, even though they would not have another private meeting until 1964 when McConnell was commanding the U.S. Air Forces in Europe and the President wanted him to replace LeMay. That summer McConnell became Vice Chief of Staff with the understanding that he would become Chief of Staff in six months.[34]

Born the same year as the President (1908) in a small town in Arkansas, McConnell had no trouble getting along with Johnson. Both men combined southern earthiness with quick, practical minds. Graduating magna cum laude from a little college in Arkadelphia, Arkansas, when he was only ninteen, McConnell then attended the U.S. Military Academy at West Point and joined the Army Air Corps. After serving on the staff of South East Asia Command under Adm. Louis Mountbatten (Royal Navy) during the Second World War, McConnell went to China where he was Chiang Kai-shek's American air adviser after the war. Throughout his career he was an agreeable staff officer with a persuasive smile.

Although not LeMay's choice for Chief of Staff, McConnell did advocate LeMay's plan to use B-52s based on Guam against North Vietnam. But McConnell did not put up much of a fuss when he was over-ruled, and in any case he was hardly consulted. President Johnson received his military advice mostly from Secretary of Defense McNamara, who relied more on his assistant for international security affairs, John T. McNaughton (formerly a law

professor at Harvard), than on the Joint Chiefs of Staff (JCS). Even the Chairman of the Joint Chiefs, Army Gen. Earle G. Wheeler, was often excluded from important meetings. Wheeler did form a committee in the Joint Staff to recommend bombing targets, and two months after the beginning of the Rolling Thunder campaign McConnell was finally able to get Col. Henry H. Edelen from his target intelligence staff on the committee.[35]

Johnson liked to have a weekly Tuesday luncheon meeting with McNamara and Secretary of State Dean Rusk to pick targets. McNamara would provide estimates of possible civilian casualties and any other risks associated with the prospective targets. Johnson would approve perhaps a dozen targets, usually fewer, and these would have to be hit within the week or Johnson's approval would have to be sought again. Since only fighter aircraft were used and they lacked much capability to bomb in bad weather, the clouds prevalent in March over North Vietnam assured that some or all of the few targets authorized might not be attacked in the assigned week. Rolling Thunder got off to a very slow start. Not until September were some targets approved indefinitely. In 1966, weekly bombing programs were replaced by five multi-week programs (Rolling Thunder Forty-eight, Forty-nine, Fifty, Fifty-one, and Fifty-two) each lasting from one to four months. By the end of 1966, the President had personally approved more than two hundred targets, but he had also steadfastly disapproved many on the original list of ninety-four.[36]

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The Joint Chiefs of Staff target list for North Vietnam included at the outset a dozen route segments. For example, the railroad and highway running south about one hundred fifty miles from the capital at Hanoi to Vinh were each divided into two segments by the major bridge at Thanh Hoa. Although the Thanh Hoa bridge was a separate target, smaller bridges were part of a route segment which could be approved as a whole for "armed reconnaissance"--that is, fighter aircraft patrolling the route could attack targets of opportunity like trucks or trains as well fixed targets like bridges whose destruction would interfere with the movement of supplies. As President Johnson approved targets gradually from the southern panhandle northward, route segments were abandoned in favor of a bomb line south of which armed reconnaissance was permitted unless a particular target was specifically exempted or unless the President's rules of engagement prohibited a strike (e.g., in a heavily populated area).[37]

The armed reconnaissance line crept north through the spring and summer of 1965. After reaching 20 degrees north at the beginning of April, the armed reconnaissance line did not reach 20 degrees 30 minutes until September. By then this east-west bomb line had been joined by a north-south line at 105 degrees 20 minutes east, which permitted armed reconnaissance in northwestern North Vietnam so long as the bombs stayed at least thirty nautical miles south of the Chinese border. The two lines fenced off Route

Package Six (the "northeast quadrant" containing the major cities of Hanoi and Haiphong) from armed reconnaissance until the spring of 1966, when rail and road segments were targeted there. Finally in July 1966, all of North Vietnam was opened to armed reconnaissance except three restricted areas: (1) along the Chinese border, a buffer zone thirty nautical miles deep west of 106 degrees and twenty-five nautical miles deep east of there; (2) around the port of Haiphong, a circle with a radius of ten nautical miles; (3) around the capital at Hanoi, a circle with a radius of thirty nautical miles. Armed reconnaissance was permitted on some route segments within the Hanoi circle, including one segment only twelve miles from the city center.[38]

In fact, air defenses around Hanoi were so formidable that armed reconnaissance patrols were deemed too risky. Consequently, armed reconnaissance in Route Package Six was really just a matter of hitting fixed targets and any associated targets of opportunity that might appear. Although a lot of air patrolling was done along transportation routes in the panhandle of North Vietnam, even there armed reconnaissance sorties went after a rapidly growing lists of fixed targets.

Through separate target lists, the Joint Chiefs of Staff, the Pacific commander in chief, and the Seventh Air Force commander each tried to gain control over what was being bombed and what was not being bombed. At the beginning of the war the Defense Intelligence Agency had a list of about five thousand possible targets in North Vietnam. Very little was known about most

of these facilities, and the Joint Chiefs of Staff selected only eighty-two of them together with a dozen route segments for their original North Vietnam target list. As the joint list grew to more than double its original length, it was as much a "no-fire" list as a target list. These were the targets President Johnson was most reluctant to approve for fear of Chinese and Soviet reaction or a bad press at home.[39]

Meanwhile Pacific Command and Seventh Air Force developed their own lists of targets with their own numbering systems. The Joint Chiefs of Staff had also departed from Defense Intelligence Agency target identification numbers, which were deemed too long and cumbersome for wartime use. The problem with this proliferation of simplified numbering systems was the confusion caused by each target having as many as four identification numbers--more when area targets were divided into smaller precision targets (each of which might have four numbers). Eventually, Seventh Air Force's list of targets would include over six thousand in North Vietnam and Laos.[40]

The Seventh Air Force commander, General Momyer, believed that the most important of those targets were in the Red River delta, homeland of the Vietnamese for perhaps four thousand years. Here the Vietnamese had built a network of dikes and canals to produce the rice which sustained their economy. Here they persistently sought to free themselves from Chinese domination. From here some moved south, settling along the banks of the next river and the next until their descendants took control of the Mekong's much

bigger delta from the Cambodians. The southern Vietnamese grew powerful enough to break away from the north for the two hundred years before 1802, when a southern emperor reunited the country with its capital at Hue on the central coast. The stature of the old northern capital at Hanoi was revived by the French, who made it the capital of French Indochina (including Laos and Cambodia as well as Vietnam).[41]

When Ho Chi Minh's communist forces took control of North Vietnam after the Second World War, they inherited an economic infrastructure built under French auspices. In addition to administrative buildings, residences and churches, the French had directed the contruction of harbor facilities at Haiphong and a railroad which not only linked the port with Hanoi, but also ran south to Saigon and its French rubber plantations as well as north to China. While the southern line ran along the coast and competed with ships, the French hoped that the route from Haiphong west through Hanoi and splitting there into northeast and northwest lines to China might make Haiphong the principal port for all of southern China--might even make France the dominant power in southern China.[42]

The result of disappointed French ambitions was the curious fact that North Vietnam's railroad became an essential link between China's interior Yunnan Province and coastal Kwangsi Province. Copper, tin, and lead from Yunnan rode North Vietnamese rails to coastal China, while equipment, food and consumer goods made the return trip. Early in Rolling Thunder, tens of

thousands of Chinese laborers and air defense artillery troops came south to maintain and defend North Vietnam's railroads. Meanwhile the Chinese hastened to lay an east-west rail link in southern China. Completion of this effort in the summer of 1966 freed North Vietnamese rails of Chinese domestic traffic, making way for more supplies to move into North Vietnam. The longer northwest railroad link between Yunnan and Hanoi became much less important than the seventy-five mile northeastern rail link between Hanoi and Kwangsi.[43]

About a third of North Vietnam's imports came down the northeast railroad from China, and most of the rest came by sea through Haiphong. Since North Vietnam imported almost all its military supplies, including gasoline, General Momyer deemed it essential to close the port of Haiphong and the rail connection with China. But Russian ships at Haiphong caused President Johnson to worry that an international incident might lead to a wider war. The President refused to approve Navy bombing or mining of Haiphong harbor, and the Air Force was left to bomb the northeast railroad without much hope of making a critical difference. In any case, bridges along the route were hard to hit with unguided bombs in the teeth of heavy enemy air defenses. Johnson had not even approved striking the biggest bridges across the Red River at Hanoi and across the parallel Canal des Rapides for fear of civilian casualties. Nor were rail yards promising targets without the heavy bomb loads only forbidden B-52s could carry. Trains could make a quick

run from the Chinese border to Hanoi at night skipping the intervening yards, and the downtown yard was of course off limits.[44]

Not only did the North Vietnamese struggle to keep their railroad open under Rolling Thunder, they even built new track. The Chinese helped them complete a line from the northwest railroad through Thai Nguyen and its iron works to the Gulf of Tonkin at Hon Gai, a smaller port north of Haiphong near the country's major coal deposits. The new line crossed the northeast line at Kep. When the Kep-Thai Nguyen section opened in the fall of 1966, the North Vietnamese could bypass the southern portion of the northeast line. Meanwhile far to the south in the panhandle, the North Vietnamese pushed the railhead past Vinh toward Dong Hoi and South Vietnam. They had destroyed much of this line during their war with the French and had not completed rebuilding the portion south of Vinh when Rolling Thunder began. North of Vinh at Thanh Hoa they had rebuilt over the Song Ma a bridge that they had destroyed by arranging a collision between two locomotives filled with explosives. The North Vietnamese took seven years to rebuild it so that it would be very hard to destroy again. They called it Ham Rong or "The Dragon's Jaw," and wedged powerfully between two hills it withstood repeated air attacks by the Air Force and the Navy throughout Rolling Thunder.[45]

Navy air did manage to keep the lighter bridges on the route south of Thanh Hoa in sufficiently bad shape that the North Vietnamese rarely used normal trains, but resorted to trucks with rail wheels pulling small two-axle

cars. Below Vinh it was necessary to shuttle freight with trucks between interdicted sections of track until the railroad gave out altogether fifty miles north of South Vietnam. Supplies could be trucked through the mountain passes to Laos, or carried on backs and bicycles directly across the "Demilitarized Zone," or stored for a future invasion force in caves, tunnels and bunkers just north of the zone. B-52s pounded the Demilitarized Zone and the portion of Route Package One adjacent to it. Yet in the tunnels beneath this pounding, North Vietnamese men, women, and children continued to live and manage the flow of supplies to communist forces in South Vietnam.[46]

While fighter aircraft could hit trucks and trains moving south in daylight, the night gave good protection. Truck drivers each learned a short segment of the route so that they could drive without headlights. Fighter pilots tried to dispel the darkness with flares and managed to destroy trucks that way, but too many other trucks ran the gauntlet successfully. A bridge might be out or a road badly cratered, but there was usually a ferry or a pontoon bridge or another route which could be used until repair teams could complete their work. American radar sites in South Vietnam and Thailand did permit ground controllers to give fairly precise bomb release instructions to B-52s and fighter aircraft for fixed targets in the panhandle of North Vietnam--such targets could be hit at any hour in any weather. Moving targets, however, proved too difficult a problem at night and in bad weather. Across the mountains in Laos, the roads could be patrolled with propeller-driven

attack aircraft or even lumbering cargo planes fitted with guns and night sensors. But only B-52s and jet fighter aircraft proved survivable strike vehicles in North Vietnam, and they were not well suited to finding trucks or destroying them.

The Annamite Mountains separated not only countries but also weather systems. While the clouds of the northeast monsoon masked much of North Vietnam from November to April, the sky was often clear over the Laotian panhandle. As dirt roads dried, thousands of imported trucks rolled down the "Ho Chi Minh Trail" road network in Laos toward South Vietnam. During the peak of the northeast monsoon, more than half the monthly total of about twenty thousand fighter sorties attacking North Vietnam and Laos would strike the Laotian panhandle. The share hitting targets in the Red River delta would drop to much less than a twentieth. This share would not exceed a fifth even during the southwest monsoon from May to October. Indeed the delta got most of its heavy rainfall during the southwest monsoon, but at least the storms were interspersed with periods of clear weather. During the dry northeast monsoon, in contrast, the pervasive cloud cover over the delta rarely broke. Consequently sorties were often diverted to the North Vietnamese and Laotian panhandles, which were much more heavily bombed than the Red River delta.[47]

Superimposed on the natural division between delta and panhandle were Admiral Sharp's route packages. The Air Force sent many more sorties

against Route Package One than scheduled, because the service usually had nowhere else in the panhandle to send them when bad weather forced diversions from the Red River delta; the other panhandle route packages were under Navy control. During the southwest monsoon, the Air Force diverted as many as a thousand sorties a month to Route Package One. Even after Sharp's decision in August 1966 to permit Air Force sorties in the western portion of the Navy's panhandle route packages, General Momyer in South Vietnam and the Air Staff in Washington continued to push for more. Except for the roads leading to Laos, most of targets in the North Vietnamese panhandle were near the coast, and Momyer wanted his forces to be authorized to attack them.[48]

The squabble over panhandle route packages came to a head in early November 1966. The Air Staff in Washington prepared a script which General Moore, vice commander of Pacific Air Forces and former commander of Seventh Air Force, used to brief Sharp. The Air Staff's rationale for Air Force bombing in the coastal area of Navy route packages was built upon the old concept of interdiction belts. Employed in the Italian campaign of 1944, this concept emphasized the importance of blocking parallel lines of communication at choke points so that a blocked route could not be bypassed easily. The concept had already been resurrected by Moore a few months earlier under the name "Gate Guard" for use in Route Package One and Laos, but so far as Sharp could see, North Vietnamese repair efforts had been able to stay ahead of the

bombing. Indeed Sharp had developed such an aversion to the words "Gate Guard" that Moore deleted them from the briefing. He did argue for establishing interdiction belts in Navy route packages with Air Force planes.[49]

As Moore informed the Air Staff afterward, his session with Admiral Sharp grew "rather tense."[50] Adm. Roy L. Johnson, commander of the Pacific Fleet, accused the Air Force of trying to take control of Navy route packages. Sharp rebuked both sides, declared that he was fed up with excuses, and emphasized his expectation that the route package system would be made to work. The Air Force would not be permitted to control Navy route packages, but Sharp expected his Air Force and Navy subordinates to negotiate arrangements for sending sorties into all parts of each other's areas.[51]

The resulting arrangements did not permit Air Force interdiction belts in the Navy portion of the North Vietnamese panhandle, and the Air Force ceased to push that idea. General Momyer in Saigon was more interested in bombing the Red River delta, as was Admiral Sharp. Momyer tended to express his preference for bombing the delta in terms of the greater concentration of enemy supplies there. Nor did Sharp argue in terms of cutting off the flow of supplies to South Vietnam (he did not believe this was possible), but in terms of hurting the North Vietnamese economy as a whole. Both men thought that bombing in the delta was apt to have more impact on the enemy leadership located there than bombing in the panhandle.[52]

In any case, interdiction belts in the panhandle became tainted by their similarity to Secretary of Defense McNamara's barrier concept, which sought to replace the bombing of North Vietnam with a physical barrier to infiltration along the northern edge of South Vietnam and across the Ho Chi Minh Trail in Laos. The South Vietnamese portion of this McNamara Line was to consist of fortifications manned by American troops, but President Johnson's refusal to send regular ground forces into Laos meant that there the McNamara Line would have to depend upon air power, albeit air power aided by electronic sensors and a few ground reconnaissance teams.[53]

Secretary McNamara's disillusionment with the bombing of North Vietnam moved in a direction opposite from that of most of his military subordinates. They had strongly disapproved of Rolling Thunder's gradualism from the outset, but continued to argue for gradually increasing the campaign's intensity as the best approach they could get from the President. McNamara had begun by arguing for gradualism and now wanted to end Rolling Thunder, but he was not yet ready to propose its elimination to a President who was likely to feel betrayed by this about-face.[54]

The Secretary of Defense was confirmed in his pessimism by the failure of Rolling Thunder's operations against North Vietnamese oil storage facilities in the summer of 1966. The Air Force and the Navy had sought permission to go after oil from the beginning of the war. Without gasoline, North Vietnamese trucks would be useless. But the big tank farms were in the cities

of Haiphong and Hanoi, where President Johnson hesitated to do any bombing. By the time he gave the go-ahead, the enemy had dispersed gasoline around the country in drums and small underground tanks. When bombing caused the tank farms to go up in billowing flames and smoke, their significance had already been reduced to a minimum. Planes spent the rest of the summer chasing gasoline drums, while the trucks kept moving.

The chief civilian proponent of bombing oil was a man of sufficiently optimistic temperament that these less than encouraging results did not dissuade him from recommending more bombing. Walt Whitman Rostow had been a close student of bombing since the Second World War, when as a young major in the Office of Strategic Services he belonged to a targeting team in London. He was an economic historian, and economics seemed fundamental to targeting. In the 1960s as in the 1940s, he was partial to bombing oil and bridges; he had argued in 1944 against the insistence of the British analyst Solly Zuckerman that allied bombing focus on rail yards rather than oil and bridges in the months before the invasion of France. Since then Rostow's academic career at the Massachussetts Institute of Technology had been cut short when President Kennedy brought him to Washington. In the spring of 1966, he replaced McGeorge Bundy as President Johnson's national security adviser. Like Bundy, Rostow had an older brother in the State Department; all four had attended Yale in the 1930s and all four had a hand in the bombing

of North Vietnam, but the Rostow brothers maintained their enthusiasm for it longer.[55]

Walt Rostow provided a warmer welcome for men in uniform than had his predecessor. Although much military analysis seemed a little crude to Rostow, he had found an officer with whom he could work closely. Col. Robert N. Ginsburgh's doctorate from Harvard, his lack of flying experience, and his Second World War service in Army artillery set him apart from most Air Force generals, but thanks to Rostow he would join their ranks. He first worked with Rostow on the State Department's policy planning staff, and Rostow arranged for him to come to the White House as the Joint Chiefs of Staff liaison in Rostow's office. Ginsburgh was eventually successful in gaining General Wheeler admission to the Tuesday lunches where President Johnson, Secretary of Defense McNamara, Secretary of State Rusk, and Rostow discussed target selection.[56]

Ginsburgh's compatibility with Rostow did not mean that the two men saw eye to eye on the bombing of North Vietnam. Like most Air Force officers, Ginsburgh believed in at least ratcheting up the bombing dramatically if not bombing massively from the outset. Rostow, on the other hand, wanted a very gradual increase in pressure under which he hoped the enemy would break at some point. As a student of economic development, Rostow did favor bombing North Vietnam's power plants and its few examples of modern industry in the Red River delta, but he did not favor focussing the air effort on the delta.

Rather, the national security adviser wanted just enough bombing in the delta to keep North Vietnamese air defenses and repair capabilities concentrated there as a way of assisting interdiction bombing further south.[57]

Ginsburgh was more interested in the Red River delta. It seemed to him that the best way to hurt North Vietnam's rice economy was to bomb the dike system. He was influenced by Robert F. Futrell's history of the Air Force in the Korean War; Futrell indicated that the bombing of irrigation dams near the end of the war had helped to bring a cease-fire. Neither Rostow nor President Johnson would countenance so controversial a move, and even General McConnell, the Air Force Chief of Staff, doubted the feasibility of breaching the big earthen dikes.[58]

* * *

In Rolling Thunder the Johnson administration devised an air campaign which did a lot of bombing in a way calculated *not* to threaten the enemy regime's survival. President Johnson repeatedly assured the communist rulers of North Vietnam that his forces would not hurt them, and he clearly meant it. Government buildings in downtown Hanoi were never targeted. Even the government's ability to communicate was left almost untouched. The location of the principal telephone switches next to the Soviet Embassy and the Hanoi offices of the International Control Commission guaranteed the switches' immunity to bombing. Created by the Geneva Accords of 1954 ending the Vietnamese communist war of independence from the French, the

International Control Commission was composed of representatives from India, Canada, and Poland; their peace-monitoring mission had long been superfluous.

The North Vietnamese leaders were too formidable a group not to make the most of the advantages Johnson gave them. Ho Chi Minh was looking more frail than ever in his seventies, but he was still at least the symbolic "Uncle Ho" around whom the Vietnamese communist party coalesced. His assumed name meant "Bringer Of Light" and was the last of a series of aliases used for propaganda or disguise. His real name was Nguyen, the most common family name in Vietnam. Like most of his younger colleagues, he had been raised on the central coast of Vietnam. His father was an educated man with just enough money to send his son to the National Academy at Hue, where Ngo Dinh Diem and many other Vietnamese nationalists also got their start. After working as a cook on ship and in London, he helped to found the French communist party. Ho spent most of the 1920s and 1930s in Russia, China and Thailand as an agent of the Communist International.[59]

In 1966 it was not obvious which of the men in Ho's inner circle wielded the most power. When Ho died three years later, Le Duan would emerge as the dominant leader and he was already very influential before that. Since much of his career as a communist organizer had been spent in the Mekong delta, he could be expected to insist on pursuing victory there. Truong Chinh was thought to be less dedicated to the struggle in South Vietnam, and he had

taken the blame for the severity of North Vietnamese land reform--a bloody process which may have killed fifty thousand of the former owners. He was also thought to be much too enthralled with the Chinese; even his name was an alias meaning "Long March" in honor of Mao. Pham Van Dong, the prime minister who appeared to mediate between Le Duan and Truong Chinh, had enjoyed a comfortable childhood and suffered a long imprisonment under the French.

Since Pham Van Dong was one of the Vietnamese communists who had attended Chiang Kai-Shek's Whampoa Military Academy, he might have been Ho's general. But Ho chose a history teacher, Vo Nguyen Giap, to lead the troops. It was an inspired choice. General Giap's victory in 1954 at Dien Bien Phu, a heavily defended French outpost near the Laotian border two hundred miles west of Hanoi, made him more famous than any of the American generals opposing him a dozen years later. Still in his fifties, he was the youngest of the men in Ho's inner circle.[60]

During Rolling Thunder, Giap commanded a large army. In a North Vietnam of eighteen million, he had half a million under arms, including a quarter of a million regulars. Fifty thousand of those regulars were in South Vietnam, where they supported four times that many armed insurgents in a population of about sixteen million. Outnumbered in South Vietnam, Giap relied upon the jungle and the villages to give him the initiative; his forces could hide until they were ready to fight. In the north, however, American air

power presented him with some new problems. His old enemy the French had controlled the cities, and Giap's forces had been able to hide in the jungle. But now Giap had his own cities, his own railroads, and his own harbors to protect.

When this new war's bombs first fell on North Vietnam in August 1964, Giap was not well prepared. His air force was little more than a few old French transports. At Phuc Yen, fifteen miles northwest of Hanoi, Giap did have an airfield capable of handling jet fighters, and the Chinese promptly sent Mikoyan-Guryevich MiG-17s--faster offspring of the Russian MiG-15s the Chinese had used against Americans in the Korean War. Communism for a time overcame some of the ancient hostility between China and Vietnam. Indeed for several years the Chinese had been far more helpful than the Russians, but that changed with the ouster of Nikita Khrushchev as Russian leader in the fall of 1964. The new Russian leaders, Leonid Brezhnev and Aleksei Kosygin, competed with the Chinese for influence in Vietnam. While only the Chinese provided much manpower, the Russians could offer more in the way of technology. Hanoi was eager to embrace Russian technology in preference to too many Chinese troops. When bombs again fell on the panhandle of North Vietnam in February 1965, Kosygin was in Hanoi with the Soviet minister of aviation and the commander of the Soviet air force.

The North Vietnamese proved adept at exploiting Sino-Soviet rivalry, though it made delivery of Soviet equipment somewhat challenging. While the Chinese agreed to let the Russians transport goods across China by train, each

cargo plane overflight had to be approved. Rail transport became risky during Mao's "Cultural Revolution" of 1966-68, when student mobs attacked Mao's critics (including Russians). Americans, on the other hand, eased Giap's problem by leaving North Vietnam's principal port of Haiphong wide open to Russian and other ships. The fact that the Chinese were keeping larger forces on the Russian border than on the Vietnamese border did little to ease President Johnson's concern that China might wage full-scale war in Southeast Asia. Nor was the Johnson administration willing to risk making much use of North Vietnam's fear of dependence on massive Chinese intervention. Had the United States forced the North Vietnamese to rely more heavily on China by threatening the survival of their regime, it was at least conceivable that the North Vietnamese might have looked for ways to avoid bringing in an overwhelming Chinese presence--even if avoidance meant postponing their take-over of South Vietnam.[61]

By the fall of 1966, Giap had more than forty MiGs at Phuc Yen, plus ten at Hanoi's Gia Lam airport and five at Kep airfield thirty miles northeast of Hanoi. He also had two useable airfields at Haiphong, and he was building new airfields at Yen Bai (fifty miles northwest of Hanoi) and Hoa Loc (only ten miles west of Hanoi). So far the Americans had ignored their own doctrine, which called for striking airfields at the beginning of a campaign, and left all the major airfields in the Red River delta untouched; the Johnson administration feared not only that Russian and Chinese advisers might get

killed in airfield attacks, but that the North Vietnamese air force would move to China and generate pressure from the U.S. Air Force and its friends to bomb the Chinese bases. Further south, the old airfields at Vinh and Dong Hoi as well as the one under construction at Bai Thuong near Thanh Hoa were bombed out of commission so that North Vietnamese aircraft could not attack South Vietnam or interfere with American planes bombing the North Vietnamese and Laotian panhandles.

Giap's air force included fourteen MiG-21s, which were newer and faster than MiG-17s. He also had six old Russian light jet bombers, Ilyushin Il-28s. Getting the planes was easier than training the pilots. Most flight training had to be done in China and Russia. By the spring of 1965, MiG-17s were engaging American aircraft, and less than a year later MiG-21s joined the fray. In the Russian tradition, MiG activity was kept on a tight rein by the air defense control center at Bac Mai airfield on the southern edge of Hanoi. There Senior Col. Dang Tinh used a radar network to command both the air force and the hundreds of anti-aircraft guns which ringed the city. He also had a newer weapon at his disposal, if not under his command. In the spring of 1965, the Russians began to construct SA-2 surface-to-air missile (SAM) sites and on July 24 a Russian missile crew shot down an Air Force F-4.[62]

The U.S. response to SAMs was almost as inadequate as its failure to attack North Vietnamese airfields. In April 1965 when American reconnaissance began to observe the construction of SAM launch sites within

twenty miles of Hanoi, Secretary of Defense McNamara took Assistant Secretary McNaughton's advice and forbade attacks on the sites. In May when President Johnson raised the possibility of taking them out, McNamara argued that the SAM sites could not be attacked until B-52s had bombed the airfields--a suggestion which of course promptly diminished Johnson's interest in attacking the SAM sites.[63] Thanks to the gradualism of American bombing, Hanoi was not under attack and consequently a ring of launching sites there seemed to pose little immediate threat to American aircraft. For a while it was even possible for some to speculate that the sites were intended only as a signal not to bomb Hanoi. But the F-4 shot down forty miles west of Hanoi in July alerted the Johnson administration that the North Vietnamese had built at least two launch sites further from the city than the orignal five. Sites six and seven were thirty miles west of Hanoi.

The first SAM shoot-down caught the Johnson administration in the middle of deliberations over whether to Americanize the ground war in South Vietnam. General McConnell and the other chiefs had already been called to the White House, where the President had polled them on this major change of policy for South Vietnam. McConnell supplied the expected affirmative, but he would promise only that American forces in the south plus more bombing in the north would permit the United States to "do better than we're doing."[64] Harold Brown, the young physicist recently chosen by McNamara to be the new Secretary of the Air Force, was no more enthusiastic: "It seems that all

of our alternatives are dark."[65] Neither man had much real say in Johnson's ground force decision. Nor were they called back to advise Johnson on what to do about the SAMs.

At least the Chairman of the Joint Chiefs, General Wheeler, was present for the White House SAM discussions on July 26. He presented the recommendation of the chiefs that all SAM sites be attacked at once--failing that, at least sites six and seven. None of the civilians present favored going after the sites closer to Hanoi, but even Under Secretary of State George Ball (a World War II Strategic Bombing Survey veteran who opposed his country's deepening involvement in Vietnam) agreed that if sites six and seven were the beginning of an outer SAM perimeter they would have to be eliminated. Secretary of State Rusk noted that while killing Russians at the sites would be risky, it would also be a useful warning. Secretary of Defense McNamara told the President that bombing targets within range of the SAM sites would no longer be wise unless the sites were attacked first. McNamara recommended bombing sites six and seven using fighters at low level where they would not be vulnerable to SAMs.[66]

President Johnson decided to take out SAM sites six and seven, but this proved easier said than done. On July 28, 1965, the Air Force sent fifty-four F-105s against the two sites and nearby barracks where SAM personnel were thought to be living. Per Washington's instructions the F-105s went in low at about a hundred feet. The North Vietnamese were ready. The two sites were

now empty except for a dummy missile at one of them, but surrounding both were enough guns to shoot down four F-105s. Two more were lost in a collision on the way home when one attempted to inspect the other's flak damage. Two reconnaissance aircraft were also lost on the mission, and it was by far the most expensive of the war so far.[67]

Subsequently the Air Force and the Navy tried to avoid turning SAM sites into flak traps and limited the force attacking a site to four planes or less. The number of sites rapidly increased, much more rapidly than the number of SAM launch battalions--each of which could move up to six launchers from one site to another in a few hours. Instead of waiting for the SAMs to kill and move before sending a retaliatory strike, the Air Force sent "Iron Hand" hunter-killer flights ahead of the big strike packages to threaten the SAM launch teams. For several months each F-105 Iron Hand flight was led by a two-seat F-100F "Wild Weasel" hunter which had detection equipment to find a site's radar; the F-100F could then use its rockets to mark the site for the F-105s to bomb. By the summer of 1966 two improvements had been made to Iron Hand. The slower F-100Fs were replaced by two-seat F-105F Wild Weasels (like the two-seat F-100Fs, originally trainer aircraft with the space necessary for detection equipment plus an electronic warfare officer to use it), and the target-marking rockets were replaced by the Navy's radar-seeking Shrike missiles. The Shrike warhead's thousands of small steel cubes did not appear to have much success destroying revetted radar equipment but did

threaten launch personnel sufficiently for them to shut down radar operations temporarily. After the addition of white phosphorus to the Shrike warhead, detonation could at least reveal a SAM site's location so that it could be bombed.[68]

Although Wild Weasel crews could rarely be certain a Shrike had hit enemy radar, they could detect the radar going off the air--often in response to the mere presence of Wild Weasels. As much as possible the SAM crews (increasingly North Vietnamese rather than Russian) began to use off-site surveillance radar for tracking and turned on the site tracking radar only at the last minute. Meanwhile aircraft had considerable success outmaneuvering the lumbering SAMs, which were often likened to flying telephone poles. Their biggest contribution was to drive aircraft down within reach of the guns. Although the Wild Weasels also attacked radar controlling the biggest anti-aircraft guns and tried to stay above the effective range of the smaller guns most of the time, North Vietnamese air defenses continued to make Iron Hand an especially dangerous mission. Of the eleven F-105F Wild Weasels which deployed to Thailand in the spring of 1966, only four were left by mid-August. Replacements soon arrived, but it was not always possible to send a pair in each Iron Hand flight of four; sometimes the older practice of one Wild Weasel per mission was all that could be managed.

Since SAMs proved too mobile and anti-aircraft artillery too numerous, while most of the MiG fields were off limits, all three arms of North Vietnam's

air defense remained deadly. They worked increasingly well together through practice and through a growing radar-communications network. By putting SAMs and guns on or near dikes, hospitals and schools, the North Vietnamese found they could put American pilots in a no-win situation--either permit these units to fire unhampered or give the North Vietnamese the kind of publicity which could win friends in the United States and threaten a pilot's career. There was plenty of time to move some of the machinery in Hanoi to underground locations outside Hanoi in case the Americans eventually did decide to bomb the city. The citizenry could be engaged in digging bomb shelters, including tens of thousands of relatively small holes (each big enough to hold one person) as well as larger shelters. In areas already subject to bombing, some of the more trustworthy citizens were issued rifles; instead of diving into shelters, they fired at American aircraft with an enthusiasm that seemed at least psychologically beneficial.[69]

In such ways did North Vietnam's rulers seek to persuade their own people as well as Americans that American high technology could be beaten. The U.S. government cooperated to a remarkable degree by giving Rolling Thunder a gradual, even tentative character of self-imposed sanctuaries and bombing pauses. Since the North Vietnamese took the position that they would not negotiate while they were being bombed, the Johnson administration found itself under pressure to stop bombing to prove its interest in a negotiated peace. As early as April 1965, Senator Robert F. Kennedy of New York visited

Johnson to argue for a bombing pause. The slain President's brother was Johnson's principal rival in the Democratic Party, and Johnson sought to keep his own grip on President Kennedy's political legacy.[70]

Johnson's first bombing pause in May 1965 lasted six days. He had intended a five-day pause, but before it was over Secretary of Defense McNamara argued that the *New York Times* expected a full week of seven days and Johnson split the difference.[71] Any hope Johnson had that the pause would quiet his critics was disappointed. They protested that the pause was too brief for North Vietnam and its communist allies to make a positive response. McNamara became the principal voice within the administration for a longer pause. In July 1965 he began to talk about a pause lasting six to eight weeks beginning in December. Secretary of State Rusk could see little point in stopping the bombing when there was no indication that the North Vietnamese were ready to talk, but Johnson agreed to a five-week pause from December 24, 1965 to January 31, 1966. The North Vietnamese could only have been encouraged by the spectacle of dozens of their enemy's emissaries scrambling around the world in a "peace offensive."[72]

Secretary McNamara and Assistant Secretary McNaughton prepared for the long pause's failure by presenting it as only a step toward another long pause proposed for the end of 1966. But President Johnson lost patience with long pauses, and although he would agree to short pauses and revived sanctuaries from time to time, not until after the communist Tet offensive of

1968 would he agree to another major cutback. Meanwhile he tried to fine tune the bombing so that it complemented more than forty "peace initiatives" or "peace feelers" as these worse than futile exercises in diplomacy were called. Not privy to the "peace feelers," the Air Force became all the more puzzled by the President's bombing policy.[73]

Notes

Chapter 1

Puzzle

1. For a more extensive discussion of the early bombing of North Vietnam, see two other volumes in the Air Force's official history of the Vietnam War: Jacob Van Staaveren's *The Onset of Rolling Thunder, 1965-66* and Robert F. Futrell's *The Advisory Years to 1965*. Futrell deals mostly with South Vietnam as does another volume in the series, John Schlight's *The War in South Vietnam: The Years of the Offensive, 1965-68*. A fourth volume in the series covers Laos: Jacob Van Staavern's *Interdiction in Southern Laos, 1960-1968*. See also the unpublished draft by William E. Greenhalgh, Jr, "The U.S. Air Force in Southeast Asia, February 1965 - November 1968," Office of Air Force History, 1973, CAFH K168.01-67. On the development of bombing policy see especially Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York, 1989). See also David M. Barrett, *Uncertain Warriors: Lyndon Johnson and his Vietnam Advisers* (Lawrence, Kansas, 1993); Robert L. Gallucci, *Neither Peace Nor Honor: The Politics of American Military Policy in Viet-Nam* (Baltimore, 1975); Leslie H. Gelb and Richard K. Betts, *The Irony of Vietnam: The System Worked* (Washington, 1979); David Halberstam, *The Best and the Brightest* (New York, 1972); George Herring, *LBJ and Vietnam: A Different Kind of War* (Austin, Texas, 1994); Robert A. Pape, Jr., "Coercive Air Power in the Vietnam War," *International Security*, Fall 1990, pp 103-46; Wallace J. Thies, *When Governments Collide: Coercion and Diplomacy in the Vietnam Conflict, 1964-1969* (Berkeley, Cal, 1981); James Clay Thompson, *Rolling Thunder: Understanding Policy and Program Failure* (Chapel Hill, NC, 1980); Earl H. Tilford, Jr., *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, Alabama, 1991); Brian VanDeMark, *Into the Quagmire: Lyndon Johnson and the Escalation of the Vietnam War* (New York, 1991). The bibliographic essay at the end of this volume gives a wider view of published work.

2. Jack S. Ballard, *Development and Employment of Fixed-Wing Gunships, 1962-1972* (Washington, 1982).

3. For more data on the F-4 and the F-105, see especially Marcelle Size Knaack, *Encyclopedia of US Air Force Aircraft and Missile Systems, Vol I, Post-World War II Fighters 1945-1973* (Washington, 1978); PACAF Corona Harvest rpt, "In-Country and Out-Country Strike Operations in Southeast Asia, 1 Jan 65 - 31 Dec 69, Vol II, Hardware, Strike Aircraft," CAFH K717103-13A.

4. R. Frank Futrell et al, *Aces and Aerial Victories* (Washington, 1976).

5. Earl H. Tilford, Jr, *Search and Rescue in Southeast Asia* (Washington, 1980).

6. Charles K. Hopkins, *SAC Tanker Operations in the Southeast Asia War* (HQ SAC, 1979).

7. PACAF Corona Harvest Input, In-Country and Out-Country Strike Operations in Southeast Asia, 1965-68, Vol III, People, CAFH 717.03-14; Capt E. Vallentiny and TSgt D. G. Francis, "Attack on Udorn," CHECO rpt, 1968, CAFH K717.0413-86; Capt James R. Barrow and Maj Benjamin H. Barnette, Jr, "Base Defense in Thailand," CHECO rpt, 1973, CAFH K717.0413-200.

8. Trip rpt, Col George G. Loving, Jr, HQ USAF/XOX, 21 Nov 67, WNRC Acc 341-71A-6048, Box 9, RL(67) 38-9, Policy-Asia.

9. Carl O. Clever, "The U.S. Air Force Build-up in Thailand--1966," Thirteenth Air Force, CAFH K750.04-9; Warren A. Trest, TSgt Charles E. Garland and SSgt Dale E. Hammons, "USAF Posture in Thailand--1966," CHECO rpt, 1967, CAFH K717.0413-41; PACAF Corona Harvest input, In-Country and Out-Country Strike Operations, 1965-68, Vol IV, Support Facilities, CAFH K717.03-15J.

10. Capt James R. Barrow and Maj Benjamin H. Barnette Jr., "Base Defense in Thailand," CHECO rpt, 1973, CAFH K717.0413-200; Maj Edward B. Hanrahan, "An Overview of Insurgency and Counterinsurgency in Thailand," CHECO rpt, 1975, CAFH K717.0413-212.

11. Lt Col Monty D. Coffin and Maj Ronald D. Merrell, "The Royal Thai Air Force," CHECO rpt, 1971, CAFH K717.0413-173; David K. Wyatt, *Thailand: A Short History*, (New Haven, Conn., 1984); Nigel J. Brailey, *Thailand and the Fall of Singapore: A Frustrated Asian Revolution* (Boulder, Col., 1986); John L.S. Girling, *Thailand: Society and Politics* (Ithaca, NY, 1981); Robert M. Blackburn, *Mercenaries and Lyndon Johnson's "More Flags": The Hiring of Korean, Filipino and Thai Soldiers in the Vietnam War* (Jefferson, NC, 1994); Robert J. Muscat, *The Fifth Tiger: A Study of Thai Development Policy* (New York, 1994).

12. Intvw, Lt Col Robert G. Zimmerman, Corona Harvest, with Col Roland K. McCoskrie, Washington, Jul 14, 1975; hist, CINCPAC, Annex B, USMACTHAI, 1966.

13. Intvw, Terry Anderson, Texas A&M University, with Maj Gen Charles R. Bond, Jr., USAF Ret, Jul 21, 1981.

14. Clever, pp 272-75.

15. Richard H. Kohn and Joseph P. Harahan, eds, *Air Superiority in World War II and Korea: An Interview with Gen. James Ferguson, Gen. Robert M. Lee, Gen. William Momyer, and Lt. Gen. Elwood R. Quesada* (Washington, 1983), pp 69-72. On Moore's relationship with Westmoreland, see intvw, Capt Mark Cleary, Air Force historian, with Lt Gen Joseph H. Moore, San Antonio, Sep 24-27, 1984.

16. Intvw, Lt Col John Dick, Corona Ace, with Gen William W. Momyer, Pentagon, Jan 31, 1977.

17. Intvw, Lt Col John N. Dick, Jr, Air Force historian, with Brig Gen Cleo M. Bishop, Ft Walton Beach, Florida, Jul 7-8, 1976; intvw, Lt Col Arthur W. McCants, Air Forc historian, with Gen Louis T. Seith, Oct 27-28, 1980; Bond intvw; Jack Broughton, *Going Downtown: The War Against Hanoi and Washington* (New York, 1988), pp 105-06; Chuck Yeager, *Yeager: An Autobiography* (New York,

1985), pp 380-91; Schlight, pp 139-40, 174.

18. Memo, Momyer, subj: Multi-purpose Fighter, May 7, 1968, CHECO microfilm, CH-23-3-6; memo of conversation with Momyer, Oct 5, 1971, Brig Gen Robert N. Ginsburgh, Chief, Office of Air Force History, Ginsburgh Papers, CAFH; Momyer' reports on Corona Harvest, 1974-75, CAFH K239.034-2; Momyer, *Air Power in Three Wars* (Washington, 1978); Momyer, *The Vietnamese Air Force, 1951-1975* (Washington, 1977).

19. Memo, Momyer, "Command and Control in SEA, 1966-1968," Nov 1970, AFHRA K740.131.

20. PACAF Corona Harvest input, Intelligence Production 1962-68, Out-Country Targeting, pp 45-49, 106-12.

21. Intvw, Col John E. Van Duyn and Maj Richard B. Clement, Corona harvest, with Gen Hunter Harris, Apr 21, 1971; Adm U.S. Grant Sharp, *Strategy for Defeat* (San Raphael, Calif, 1978); intvw, Etta-Belle Kitchen, U.S. Naval Institute, with Adm Sharp, Sep 1969 - Jun 1970, San Diego.

22. Ltr, Gen Hunter Harris to Gen John P. McConnell, Mar 12, 1966, Corona Harvest 0222694.

23. A good introduction to the influence of thinking about "limited war" is Stephen Peter Rosen, "Vietnam and the American Theory of Limited War," *International Security*, Fall 1982, pp 83-113. On Johnson and MacArthur, see Robert Dallek, *Lone Star Rising: Lyndon Johnson and His Times, 1908-1960* (New York, 1991), pp 397-401.

24. Gallucci, *Neither Peace Nor Honor*, argues that Johnson and his advisers did not expect Rolling Thunder to do much more than provide the politically necessary prelude for massive intervention on the ground in South Vietnam. See especially p 53.

25. Thomas M. Coffey, *Iron Eagle: The Turbulent Life of General Curtis LeMay* (New York, 1986).

26. Intvw, author with Gen LeMay, Pentagon, Sep 14, 1985; Deborah Shapley, *Promise and Power: The Life and Times of Robert McNamara* (Boston, 1993), esp p 620, fn 23; Henry L. Trewhitt, *McNamara: His Ordeal in the Pentagon* (New York, 1971), esp p 37.

27. Col Reade F. Tilley (USAF, Ret), remarks at dedication of LeMay exhibit, National Air and Space Museum's Silver Hill facility, May 17, 1993.

28. LeMay with MacKinlay Kantor, *Mission with LeMay* (New York, 1965), p 565. See also LeMay with Maj Gen Dale O. Smith, *America Is in Danger* (New York, 1968).

29. LeMay, remarks at Bolling Air Force Base, Apr 13, 1984, transcript in Wayne Thompson, ed., *Air Leadership* (Washington, 1986), p 40.

30. LeMay, quoted in Futrell, *Advisory Years*, p 201.

31. LeMay, Offutt AFB, Nebraska, Mar 15, 1954, quoted in memo of that date by Capt William B. Moore (USN), *International Security*, Winter 1981/82, p 27.

32. *Ibid.*

33. Lyndon Baines Johnson, *The Vantage Point* (New York, 1971); Brian VanDeMark, *Into the Quagmire: Lyndon Johnson and the Escalation of the Vietnam War* (New York, 1991).

34. Intvw, Dorothy Pierce McSweeny, Johnson Library, with Gen McConnell, Pentagon, Aug 1969.

35. Intvw, Lt Col Bissell and Maj Riddlebarger, Corona Harvest, with Col Henry H. Edelen, Jr, Jan 27, 1970; hist, JCS, Vietnam 1960-68, esp Chapter 25.

36. JCS Bombing Chronology, LBJ Library, National Security File, Agency Reports, Box 33, # 2.

37. The JCS 94-target list was incorporated in CINCPAC Operations Plan 37-64, Dec 17, 1964, as Appendix VII to Annex R. See PACAF Corona Harvest input, Out-Country Strike Operations, 1965-68, Vol V, Part I: Plans, Concepts and Doctrine, CAFH K717,03-22, pp A-2-1 through A-2-6.

38. JCS Bombing Chronology.

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44. Momyer, *Air Power in Three Wars*, pp 174-88.

45. Col Delbert Corum et. al., *The Tale of Two Bridges* (Washington, 1976).

46. When veterans and other Americans began to visit Vietnam in the 1980s, the Vietnamese made a tourist attraction of the tunnels at Vinh Moc near the coast a few miles north of the former Demilitarized Zone. See Daniel Robinson and Joe Cummings, *Vietnam, Laos and Cambodia: A Travel Survival Kit* (Berkeley, Calif., 1991), pp 309-10; Susan Brownmiller, *Seeing Vietnam* (New York, 1994), pp 173-78.

47. PACAF, Summary Air Operations SEA, monthly reports Oct 1966 - Oct 1967.

48. Memo, Maj R. N. Smedes, HQ USAF Plans, to CSAF, subj: CINCPAC Meeting with JCS, Sep 15, 1966.

49. Msg, Lt Gen Moore to Lt Gen Compton, HQ USAF DCS/Plans and Ops, 080520Z Nov 1966.

50. *Ibid.*

51. *Ibid.*

52. Momyer, *Air Power in Three Wars*, pp 174-75; Sharp intvw (1969-70).

53. Van Staaveren, *Interdiction in Southern Laos*, pp 255-83.

54. Shapley, *Promise and Power*, pp 362-67.

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56. Intvw, Col John E. Van Duyn and Maj Richard B. Clement, Corona Harvest, with Maj Gen Robert N. Ginsburgh, May 26, 1971.

57. Intvw, Maj Samuel E. Riddlebarger and Capt R.G. Swenston, Corona Harvest, with Walt Rostow, Oct 17, 1970.

58. Memo, Ginsburgh for Gen Wheeler, subj: Flooding the Red River, Mar 8, 1968, JCS Chron File, Ginsburgh papers, CAFH; Ginsburgh intvw, May 26, 1971; intvw, Robert Pape with Ginsburgh, Apr 5, 1990; intvw, James C. Hasdorff, USAF historian, with Brig Gen Noel F. Parrish, Jun 10-14, 1974; intvw, Dorothy P. McSweeney, Lyndon Baines Johnson Library (LBJ Lib), with Gen McConnell, Aug 28, 1969; Robert F. Futrell, *The United States Air Force in Korea* (New York, 1961), pp 623-29.

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62. Maj A. Dokuchayev, "'We Too Defended Vietnam': Participants in Combat Operations Tell Their Story," *Krasnaya Zvezda*, Moscow, Apr 13, 1989, JPRS-UMA-89-015, pp 54-56; Lt Col A. Dokuchayev, article in *Krasnaya Zvezda*, Dec 29, 1990, JPRS-UMA-91-005, pp 133-36. On Dang Tinh, see William S. Turley, "Origins and Development of Communist Military Leadership in Vietnam," *Armed Forces and Society*, Feb 1977, pp 237-38.

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64. Notes of meeting in Cabinet Room, Jul 22, 1965, noon, LBJ Lib, Meeting Notes File.

65. *Ibid.*

66. Notes of meetings in Cabinet Room, Jul 26, 1965, 12:30 pm and 6:10 pm, LBJ Lib, Meeting Notes File.

67. CHECO rpt, Capt Melvin F. Porter, "Air Tactics Against NVN Air/Ground Defenses," PACAF, Feb 27, 1967. See also John Morrocco, *Thunder from Above* (Boston, 1984), pp 106-10.

68. Bernard Nalty, "Tactics and Techniques of Electronic Warfare: Electronic Countermeasures in the Air War Against North Vietnam, 1965-73," Office of Air Force History, 1977, pp 31-52.

69. See Jon M. Van Dyke, *North Vietnam's Strategy for Survival* (Palo Alto, Calif, 1972), a study based on the North Vietnamese press and accounts by foreign visitors.

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72. *Pentagon Papers* (Gravel), IV, pp 32-53.

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CHAPTER 2

NEW TACTICS, OLD STRATEGY

The northeast monsoon arrived a little early in 1966. By the middle of October it hid Hanoi and Haiphong under dense clouds often reaching below a thousand feet. Although violent storms were common from May to September, the October overcast rarely broke into a downpour. For six months the low ceiling would cover the Red River delta. This fact of nature exerted a greater influence on American bombing operations in late 1966 than it had a year earlier. At that time, the gradually escalating campaign had rarely touched the heart of North Vietnam. Not until June 1966, sixteen months after the campaign had begun, did Rolling Thunder's bombs begin to explode frequently near Hanoi and Haiphong. Pressure on the Red River delta could not be sustained through the northeast monsoon, however, without using B-52s or without a better all-weather fighter bombing capability than the United States possessed. The clouds of October guaranteed respite for the delta unless the United States conducted area bombing and multiplied civilian casualties. This the United States would not do.

Even during the northeast monsoon, some raids struck the delta. Cracks in the weather permitted strikes on a rail yard just north of Hanoi, on a truck depot just south of the city, and on an ironworks thirty-five miles away. None of these targets had been hit before, and the strikes foreshadowed heavier bombing. The Air Force emerged from the northeast monsoon more able to cope with North Vietnam's air defenses. By May 1967, Air Force fighter-bombers carried electronic countermeasures pods to jam radars guiding surface-to-air missiles and antiaircraft guns. By May, jamming pods permitted fighter-bombers to fly over the delta at a higher altitude where SAMs had formerly held sway; no longer were F-105s and F-4s exposed to low altitude flak before diving toward a target; no longer did they have to pop up before diving. By May, fighter-bombers pulled out of their dives above the worst flak. By May, most formations over the delta included a flak suppression flight whose cluster bombs could kill or intimidate gun crews. By May, MiGs had suffered a beating from F-4s in the first big air-to-air melee of the war, and most F-105s bound for the delta were escorted by F-4s.

Despite important changes, bombing tactics remained routine and predictable. On a day when the weather looked at all promising, as many as two hundred combat aircraft flew to the delta from Thailand and the Gulf of Tonkin. The Air Force scheduled up to four formations a day--two in the morning and two in the afternoon, each with from eight to twenty-four strike aircraft surrounded by escorts and sometimes outnumbered by them. The need

to refuel fighter-bombers en route to the delta from Thailand tied them to the tanker schedule. There were not enough tankers to refuel large formations both morning and afternoon without giving the tankers several hours at midday to land for more fuel. Since carriers were closer than Thailand bases to North Vietnam, Navy aircraft were less dependent on refueling. The Navy's somewhat greater flexibility in the timing of strikes also stemmed from Task Force 77's preference for smaller formations. In any case, North Vietnamese radar picked up attackers more than a hundred miles out, leaving very little possibility of surprise. The most that electronic countermeasures could do was to hide the exact location of individual aircraft; they made the strike force's presence as a whole even more obvious.[1]

Gradual escalation had given the North Vietnamese time to protect the Red River delta with air defenses very difficult to destroy. An estimated twenty-five SAM battalions (with six missile launchers each) rotated among approximately one hundred fifty sites. The practice of sending strike teams to kill SAMs was falling into disuse, because SAM sites recently active often turned out to be nothing more than flak traps. The North Vietnamese were at least as quick to move their antiaircraft guns as to move their SAMs; not requiring elaborate site preparation or good roads, the guns could be moved more easily. Their movement and the display of dummies created an exaggerated impression of the scope of North Vietnamese air defenses. As American intelligence agencies saw through this illusion, they reduced their

estimate of the number of North Vietnamese antiaircraft guns with a caliber of at least thirty-seven millimeters (ranging up to a hundred millimeters) from more than seven thousand in early 1967 to less than a thousand in 1972. However many guns there were, they were most numerous in the Red River delta, where they were coordinated with about one hundred fifty SAM launchers and over a hundred MiGs. The most important components of the air defense system were more than two hundred radar facilities, which provided warning and guidance for MiGs, SAMs, and guns.[2]

Since the attacks could not achieve surprise, sustained pressure was all the more desirable. But limited capability to make accurate strikes at night and in bad weather robbed Rolling Thunder of sustained pressure and frustrated attempts to take advantage of poor visibility by flying under enemy radar coverage. In the densely populated, strongly defended Red River delta, American aircraft had great difficulty striking at night or in bad weather while avoiding civilian casualties. The Johnson administration's caution did not deter North Vietnamese propagandists from making the most of relatively light casualties during the northeast monsoon of 1966-1967. Notwithstanding attempts to achieve accuracy necessary for extending the delta campaign into darkness and bad weather, American bombing there usually occurred in daylight and fair weather.

* * *

On November 10, 1966, President Johnson approved a bombing program that featured several new targets in the Red River delta. They included the Thai Nguyen ironwork; the cement plant and two power plants in Haiphong; the Yen Vien rail yard and the Van Dien truck depot, both near Hanoi; and fuel dumps at Ha Gia and Can Thon. Though he had taken three months to approve this target list, Johnson soon deferred four of its major targets: the ironworks, the cement plant, and the two power plants. Three more months would pass before the President would begin to release these targets. Meanwhile, he waited for another peace initiative to run its course.[3]

The target list approved and partly deferred in November was the product of several proposals made in August. At that time the campaign to destroy North Vietnam's oil supplies had passed from dramatic destruction of tank farms to the frustrating search for gasoline drums buried underground, hidden in the jungle, or stored along village streets outside bounds set for the campaign by the Johnson administration. Pacific Air Forces had recommended progressing to more substantial targets like the Thai Nguyen ironworks, the Yen Vien rail yard, and the Van Dien truck depot. Although Sharp advocated these targets by November, in early August he had still favored pursuing the oil campaign. At the top of his list had been the Ha Gia and Can Thon tank farms, which had not been authorized earlier because of their nearness to airfields at Phuc Yen and Kep. The Johnson administration feared that attacking MiG bases might provoke a Soviet or Chinese reaction. When the two

target lists from Hawaii reached Washington, the joint staff combined them and added Haiphong's power plants and cement plant.[4]

The Haiphong cement plant was North Vietnam's only one. Its importance had been affirmed by the Central Intelligence Agency in March 1966, when the agency counted itself among those calling for an oil campaign coupled with closing the port of Haiphong and bombing the northeast railroad to China; even if the railroad could not be severed for an extended period, the agency had hoped to overload it with fuel and cement as well as other goods that had been entering by sea. The CIA recommendation had been implemented only partially. In addition to oil strikes, the northeast railroad had been bombed regularly enough to became a leading flak trap, but the trains continued to roll. Haiphong's cement plant, like it's port, remained unstruck and busy.[5]

The target recommendations of all military organizations from the Joint Chiefs of Staff down sometimes hinged as much on their judgment of what the President might approve as on what was most needed. Though closure of the port of Haiphong was widely considered to be a key objective, General Wheeler avoided tiresome repetition of that recommendation. Sharp and others down the line were less restrained, but even they did not push for Haiphong every time. Despite Wheeler's restraint, the Johnson administration frequently balked at JCS recommendations. The President was slow to approve the August 1966 target list, which in November at last became the fifty-second

bombing program ordered since the beginning of Rolling Thunder. Early in the campaign, bombing programs had lasted a week, but the fifty-first had lasted four months. Now that gradualism had brought bombing to the outskirts of Hanoi and Haiphong, the administration hesitated to go farther.[6]

When on November 11 President Johnson deferred four targets he had just approved, his military advisers believed that the deferment would be short lived. Wheeler explained to Sharp that the targets would be deferred only until after the Moscow visit of George Brown, British foreign secretary. Brown was scheduled to leave Moscow on November 25, and Wheeler had been assured that the deferred targets could then be struck. As it turned out, the deferment held through Tet in February 1967. While Sharp and Momyer could only stew about this delay in ignorance of its cause, the Johnson administration was once again exploring the doubtful possibility that Hanoi's leaders might be willing to talk seriously about a settlement acceptable to the United States. This round of diplomacy began with Brown's visit to Moscow in November and ended with a visit to London in February by a Soviet leader, Alexei Kosygin. The centerpiece was an aborted Polish attempt to arrange a meeting between North Vietnamese and American officials in Warsaw.[7]

The State Department, which named each peace feeler after a flower, called Poland's initiative "Marigold." Since the summer of 1966, the Polish representative on the International Control Commission in Vietnam had tried to find common ground in the American and North Vietnamese positions. On

November 30, he gave Ambassador Lodge in Saigon a list of ten points which the North Vietnamese government was said to have approved as a basis for conversation with American officials in Warsaw. Despite State Department reservations, the American ambassador in Warsaw was told early in December to inquire whether conversations with the North Vietnamese could be arranged through the Polish foreign minister. At this point Marigold died. According to the Polish foreign minister, American bombing near Hanoi killed North Vietnamese interest in making contact.[8]

So it was that the care taken in November to defer targets which might endanger negotiations did not save the Johnson administration from incurring accusations of doing just that. Two of the targets not deferred were close to Hanoi: the Yen Vien rail yard (five miles northeast of Hanoi's center) and the Van Dien truck depot (four miles southeast of Hanoi's center). Not since the Air Force strike against the Hanoi tank farm dump on June 29 had bombs fallen that close to downtown Hanoi. For three weeks after Johnson's approval of these targets, weather prevented an attack. On December 2 the clouds cleared enough for the Navy to strike the truck depot. Two days later the Air Force hit the rail yard. When told that the timing of the raids was the result of weather and not of Marigold, the Polish foreign minister objected that policy was more important than weather. The State Department nevertheless informed its ambassador in Warsaw that no change would be made in the current bombing program. On the other hand, the President gave an equally

negative response to General Wheeler's request that the deferred targets be attacked. Wheeler let Sharp know that the delay was due to "certain political problems."[9]

When weather over the delta improved again on December 13 and 14, Air Force and Navy aircraft returned to the same targets they had hit two weeks earlier. After these strikes, the Polish foreign minister told the American ambassador that the North Vietnamese were no longer interested in talking to the American government. President Johnson attempted to salvage the Warsaw connection by offering to prohibit strikes within ten miles of the center of Hanoi, if the North Vietnamese and Viet Cong would refrain from attacking within ten miles of the center of Saigon. In the absence of any North Vietnamese response, Johnson unilaterally established the ten-mile prohibited zone for Hanoi. This prohibition would be withdrawn and reimposed several times during the next year.[10]

The prohibited zone added one more limitation to those already confining American pilots. Around the prohibited zone, the thirty-mile restricted zone remained in place. There pilots had gradually gained some freedom of operation: SAM sites and fuel storage could be struck as well as any previously authorized target which had not been specifically withdrawn; in addition, armed reconnaissance was permitted along railroads. Haiphong was also protected by a restricted zone (ten miles from the center) and would later be given a prohibited zone (four miles from the center). The buffer zone along

the Chinese border remained off-limits as did all targets on the JCS list which had not been authorized.[11]

* * *

President Johnson's prohibition on bombing near Hanoi came at the beginning of the most important North Vietnamese propaganda initiative before the Tet Offensive of 1968. TASS, the Soviet news agency, issued reports that the December 1966 bombing attacks had killed civilians in downtown Hanoi. This story captured headlines in the United States and Europe. That was only the beginning. For the first time under Rolling Thunder, North Vietnam permitted a visit by an American reporter. From the many who had requested a visa, North Vietnam chose Harrison Salisbury, an assistant managing editor of the *New York Times*.[12]

After Salisbury's articles began to appear, the British government called for immediate talks on a cessation of hostilities. The chairman of the Senate foreign relations committee, J. William Fulbright (Democrat, Arkansas), held hearings. Senator Vance Hartke (Democrat, Indiana) called for an end to bombing and an independent evaluation of the entire war effort by former Under Secretary of State George Ball and former Ambassador to India John Kenneth Galbraith. On the other side of the question, the chairman of the House armed services committee, L. Mendel Rivers (Democrat, South Carolina), suggested that the United States "annihilate" Hanoi if necessary: "Give them two weeks to get out and then level the city."[13] While Defense

Department public affairs specialists tried to calm public controversy, their boss contributed to it. Arthur Sylvester, Assistant Secretary of Defense for Public Affairs, openly attacked "Harrison Appallsbury" of the "New Hanoi Times."[14] Years later, author Tom Wolfe would skewer Salisbury as the "ocarina" which the North Vietnamese had used "as if they were blowing smoke up the pipe and the finger work was just right and the song was coming forth better than they could have played it themselves."[15]

The North Vietnamese had done a good job of choosing a reporter. Salisbury represented America's most prestigious newspaper, and he opposed bombing North Vietnam. For months he had been trying to get North Vietnam's permission to enter that country. In June he had talked to the North Vietnamese consul in Phnom Penh, Cambodia, and had filed his visa application there. A letter to Hanoi was written in his behalf by Anne Morrison, a Quaker whose husband was said to have become a hero in North Vietnam after burning himself to death in front of the Pentagon. On December 15 the North Vietnamese government cabled Salisbury that his visa was waiting in Paris. He arrived in Hanoi on December 23 and remained for two weeks. His front-page articles began appearing on Christmas day.[16]

Salisbury stayed in Hanoi's old Metropole Hotel, which had been renamed the Thongnhat (Reunification), illustrating North Vietnam's plans for South Vietnam. While he was there, the hotel hosted the deputy director of TASS; four American women on a visit arranged by David Dellinger, a

prominent pacifist; and a seven-member delegation seeking evidence for British philosopher Bertrand Russell, who was preparing a mock trial of President Johnson and other American "war criminals." Each of the groups and Salisbury were taken on separate but similar tours of North Vietnamese bomb damage.[17]

Salisbury first saw sites in Hanoi, where about three hundred homes were said to have been destroyed and ten people killed. This downtown destruction was about five miles from either the Yen Vien rail yard or the Van Dien truck depot. He described the truck depot (North Vietnam's largest truck repair facility with 180 buildings) as a "large, open area with light buildings and compounds that may or may not have been a truck park."[18] Salisbury was more interested in the destruction of the Vietnam-Polish Friendship high school "probably three-quarters of a mile from the presumed United States target."[19] He made no mention of casualties in this case. As to the Yen Vien rail yard, he was told that buildings destroyed and damaged near the tracks were apartments. Air Force bomb damage reports described extensive damage to a warehouse complex associated with the country's largest rail yard. Salisbury's account made no mention of warehouses.[20]

On Christmas day Salisbury was driven sixty miles southeast to Nam Dinh. Here was the principal exhibit in North Vietnam's case against American bombing. According to Salisbury's guides, the city had been struck fifty-two times in a year, eighty-nine people had been killed, and thirteen percent of the

city's housing had been destroyed. Salisbury concluded that U.S. aircraft were "dropping an enormous weight of explosives on purely civilian targets."[21]

Johnson administration attempts to refute Salisbury's articles seemed awkward, mostly because it was Salisbury's interpretation that was objectionable rather than his data. True, his statistics were supplied by the North Vietnamese government, but for the most part they did not conflict with American estimates. Indeed, Secretary McNamara was upset to learn from the CIA that bombing deaths in North Vietnam might already total as many as twenty-nine thousand, including more than two thousand civilians who were not war workers. It did not follow, however, that civilians were being targeted. Had they been, the number of casualties would have been radically higher.[22]

The Johnson administration had taken extraordinary measures to minimize the number of civilian casualties, yet had difficulty countering Salisbury's charge that it had done the opposite. The problem was that the administration had not educated the public about the limitations of bombing. Even if a pilot correctly identified a target, most of his bombs were apt to miss. When bombing through heavy flak, only about half the bombs dropped by F-105's (which usually carried six 750-pound bombs apiece) were likely to hit within five hundred feet of the aiming point. Americans who did not know that bombing precision was unlikely in the face of a determined defense could hardly be blamed for accepting Salisbury's conclusions.[23]

Salisbury saw little of North Vietnam's formidable air defenses. Nam Dinh was well known to Navy pilots for its concentration of antiaircraft artillery and SAMs, which greeted them when they entered the Red River delta by the most direct route from the south. According to the Defense Intelligence Agency, Nam Dinh's normal complement was about a hundred guns with a caliber of at least eighty-five millimeters and about fifty smaller caliber guns of at least thirty-seven millimeters, not to mention a battalion of six SAM launchers. Yet Salisbury did not report seeing any antiaircraft weapons in Nam Dinh. Since he visited during the Christmas cease-fire, no attacks occurred to provoke shooting. Nam Dinh ran three alerts anyway, presumably in response to reconnaissance aircraft.[24]

Salisbury misled his countrymen by telling them that the only targets in Nam Dinh other than people were dikes and a cotton textile mill. Though the largest in North Vietnam, the textile mill had not been targeted. An adjacent power plant had been bombed several times, and stray bombs had damaged the mill; its 20,000 workers had dispersed to smaller factories. Throughout the war, the North Vietnamese claimed that the United States was bombing the dike system essential to rice cultivation. If bombed after heavy rain, during the southwest monsoon, breached dikes might cause extensive flooding. While antiaircraft guns firing from dikes were sometimes attacked, pilots were never authorized to attack the dikes. In the case of Nam Dinh, the Navy had bombed a river transshipment facility with dikes nearby. Be that as

it may, no extensive flooding was caused by bombing anywhere in North Vietnam. Because Nam Dinh was only twenty miles from the coast, most strikes there were flown by the Navy. Major targets were the tank farm, the power plant, the rail yard, the transshipment facility, and the air defense sites. None of these were described in Salisbury's articles.[25]

Though Salisbury reported much greater damage for Nam Dinh than for Hanoi, the latter was harder to explain, since the nearest authorized targets were about five miles away. Part of the mystery was solved when a reconnaissance photo indicated that some Air Force pilots had mistaken the Gia Lam rail yard for the Yen Vien railyard. Gia Lam was half way between Yen Vien and downtown Hanoi. The two yards were easy to confuse through scattered clouds because Yen Vien was northeast of the Canal Des Rapides Bridge and Gia Lam was northeast of the Paul Doumer Bridge over the Red River. South of the latter bridge lay the heart of Hanoi. The exact nature of the mistake was not made public, however. The administration would only say that some kind of accident may have occurred.[26]

Nor did the Johnson administration comment publicly on speculation about damage caused by aircraft jettisoning bombs, air-to-ground missiles, or fuel tanks when jumped by MiGs. Though bombs could be jettisoned without arming them, the danger of explosion was sufficient to discourage pilots from landing with bombs on board. For this reason and to conserve fuel, unexpended bombs normally were dropped at sea or in mountainous free-fire zones on the

way home. A 750-pound bomb jettisoned from several thousand feet could cause considerable damage even without exploding. The failure of the administration to talk freely about the obvious question of jettisoning reduced the credibility of explanations that were made. The administration stressed that one consequence of heavy antiaircraft fire was damage caused when disintegrating projectiles fell back to earth. This was a plausible explanation for light damage of the kind Salisbury reported for the Chinese and Rumanian embassies. American pilots had seen SAMs go haywire and detonate on the ground; this could explain more extensive destruction.[27]

North Vietnam sent a fairly complex message to the American people through Harrison Salisbury. The message was not simply one of American transgression, but also one of North Vietnamese resistance. North Vietnamese officials were careful not to exaggerate bomb damage in a way that might suggest any potential for bombing to reduce their effort in South Vietnam. They told Salisbury that they expected Hanoi to be destroyed and that they had prepared blueprints for a complete new capital city. He was told that much of the urban population and their work had already been moved to the countryside. In Nam Dinh only twenty thousand were said to remain of the ninety thousand which had made that city the third largest in North Vietnam. With this information, low casualty figures could be reconciled with extensive damage, and perhaps Americans could be persuaded that any attempt to bomb industry or population would be futile. Salisbury could see for himself that

many who stayed in the cities could hide in shelters. Though he did not witness an attack, numerous air raid alerts featured civilians with rifles ready to fire at American aircraft. North Vietnamese officials bragged that South Vietnam would not dare arm its civilians. But the grim determination evident in Hanoi was not the whole story. Since bombing attacks were confined largely to daylight, shops and streets bustled during the evening.[28]

Salisbury saw thousands of fifty-five gallon fuel drums lining village streets and scattered through rice paddies. Bombing had destroyed the large tank farms, but it could not combat dispersion. Similarly, repair materials were piled along railroads and highways. Damage could be quickly repaired by road crews, and a steady stream of traffic flowed through the night. In a book published three months after his return, Salisbury expanded on this theme. Why, he asked, were so many trivial targets bombed while obviously important targets like the Doumer Bridge and the Hanoi Power Plant were left unscathed? It was the very question Admiral Sharp and General Momyer had been asking. Within four months of the book's publication, both targets would be bombed.[29]

Escalation of the air war followed a February 1967 opinion survey conducted by Lou Harris, who found that sixty-seven percent of Americans favored bombing North Vietnam. An equally interesting finding was that eighty-five percent of Americans agreed that the bombing was killing innocent

civilians. Henceforth the debate over bombing veered from humanitarian considerations and centered on its cost and effectiveness.[30]

* * *

The cost of Rolling Thunder received a great deal of official attention in late 1966 and early 1967. The onset of frequent raids into the Red River delta had sharply raised the price Americans were paying. From the beginning of July 1966 to the end of September, fifty-one American aircraft fell in Route Package Six, which encompassed most of the delta; forty-four of them belonged to the Air Force, which suffered a loss rate there exceeding twenty-five attack aircraft per thousand attack sorties. Before the delta raids, American losses had rarely exceeded three per thousand anywhere in Southeast Asia and averaged less than one per thousand. An especially painful aspect of losses in the delta was the near impossibility of rescuing downed airmen in a region so densely populated and well defended.[31]

The Air Force's heavy losses in Route Package Six contrasted vividly with the comparatively light losses of the Navy--seven Navy aircraft lost from July through September (compared with the Air Force's forty-four) for a loss rate of less than three attack aircraft per thousand attack sorties. During this period, the Navy had sent more attack sorties into Route Package Six than had the Air Force (1695 compared with the Air Force's 1557). Before the delta raids of mid-1966, the loss rates over North Vietnam of the two services had been about the same, with the Navy's only a little lighter. The extreme variation

experienced during the mid-1966 campaign did not persist into the next year, though the Navy's loss record remained slightly better throughout. One explanation sometimes offered for the overall superiority of the Navy's loss record was the nearness of Navy targets to the coast, which meant shorter routes over defended territory; Route Package Six remained divided into a Navy B section along the coast and an Air Force A section inland. But since most losses occurred near targets, the location of Navy targets could not alone explain the pronounced variation in losses which occurred in 1966. The Navy's major technical advantage was that most of its attack aircraft carried electronic countermeasures devices which transmitted false positions when triggered by North Vietnamese radar.[32]

During 1967, Air Force losses in Route Package Six declined to less than ten attack aircraft per thousand attack sorties. This improvement owed primarily to three changes: increasing altitude of bomb release, growing use of cluster bombs to suppress flak, and introduction of electronic jamming pods.[33]

The higher a dive bomber released its bombs and pulled off the target, the higher was the probability of its surviving and the lower the probability of its bombs hitting the target. As the Air Force undertook heavier bombing of the Red River delta in 1966 and 1967, the concentration of antiaircraft guns there forced the wings to raise recommended bomb release altitude from less than six thousand feet to as much as nine thousand feet, which raised pullout

altitude from less than four thousand feet to as much as seven thousand feet. Unfortunately, the increase in bomb release altitude also increased probable circular error (the radius within which half the bombs were apt to fall) from less than three hundred feet to more than five hundred feet.[34]

Although both Air Force and Navy bomb release altitudes were rising over the Red River delta in 1966 and 1967, Navy pilots reported release and pullout altitudes about a thousand feet lower than those reported by Air Force pilots. This surprising fact did not seem to fit with the Navy's comparatively low loss rate--not only for Route Package Six in general, but for dive and pullout in particular. Some pilots may have reported releasing bombs at recommended altitude when in fact they had released them at a higher or lower altitude. But it can not be shown that inaccurate reporting was more common in one service than the other. Part of the explanation may have been the Navy practice of tailoring recommended release altitude for each target rather than making a blanket recommendation for Route Package Six. In dealing with more heavily defended targets, Navy pilots were told to release their bombs at higher altitude.[35]

Higher bomb release altitude seemed to be responsible for a significant reduction in aircraft losses over Route Package Six. During August 1966, six F-105s had been lost to ground fire while diving toward or pulling off targets in Route Package Six. During May 1967 (when the Air Force flew about a thousand sorties there or more than twice as many as in August 1966) only

three F-105s were lost in that way. Four of the F-105s lost in August 1966 were reportedly hit below four thousand feet. Only one of the F-105s lost in May 1967 was reported to have been hit that low. Although antiaircraft gunners raised their sights, they were foiled not only by altitude, but also by cluster bombs bursting around them.[36]

The cluster bomb, a modern version of shrapnel, was a canister designed to release hundreds of spinning bomblets whose detonation sent thousands of steel pellets flying in all directions. Though a cluster bomb had little effect on guns, it could force gun crews to take cover or suffer severe wounds. Early models of cluster bomb could not be used in the strongly defended Red River delta, because they required delivery at about three hundred feet. In 1966 the Air Force introduced a cluster bomb that could be dropped in a dive above three thousand feet. With increasing availability of the new model, a flight of four aircraft could use cluster bombs to suppress flak while the rest of a formation struck a target. To discourage gun crews from promptly resuming their posts, later models were modified so that bomblets would detonate randomly for two hours; eventually the period of detonation was reduced to twenty minutes--few attacks lasted longer. A big shortcoming of dive cluster bombs when first introduced was their scarcity. Not until early 1967 was the production rate adequate to make a significant difference. Even then the monthly rate of about five hundred was only an eighth of Seventh Air Force's stated requirement, and the Navy also wanted them.[37]

The cluster bomb reduced losses during dive bombing runs, but it did less for a strike force en route. Before fighter-bombers rolled in toward their target, they had most to fear from SAMs, which had a range of about twenty miles. The dispersing of launch sites meant that pilots had to begin watching for missiles at least sixty miles from Hanoi. Until December 2, 1966, American response to SAMs had seemed adequate. Only thirty-four aircraft had been lost to the approximately eleven hundred missiles which had been launched. On December 2, however, a record eight American aircraft went down, including five hit by SAMs. None of these was part of the Navy's strike that day against the Van Dien truck depot on the outskirts of Hanoi. All but one went down attempting to attack oil tank farms, with the Air Force losing four (including three to SAMs) during a strike on the Ha Gia tank farm near Phuc Yen airfield (twenty-five miles northwest of Hanoi). SAMs would have few days as successful as that. Their success rate would continue to decline from an already dismal one kill for thirty launches to less than one kill for sixty launches.[38]

The major new factor in combating SAMs after December 2, 1966 was the growing number of jamming pods. None of the aircraft shot down by SAMs on December 2 was carrying a jamming pod. A few weeks later enough pods had arrived so that most F-105s on missions in the delta were carrying one. By mid-1967, F-105s and F-4s would be carrying two pods apiece.[39]

Pod jamming supplemented jamming already provided by EB-66 electronic warfare aircraft. Two EB-66s had been shot down by SAMs in 1966, and a third would fall in February 1967. When out of SAM range, EB-66 jamming was not powerful enough to hide F-105s and F-4s as they neared Hanoi. With jamming pods, F-105s and F-4s supplied their own electronic fog. The location of an aircraft with one or two pods, however, was not disguised adequately unless that aircraft flew in formation with other pod-equipped aircraft. This weakness was the result of the relatively small transmitters which could be carried in pods on the wings of a fighter. The EB-66, in contrast, was a converted bomber with room in its bomb bay to carry large transmitters. A bonus accruing from the fighters' adjustment to space limitations was an ability to move pods easily from aircraft to aircraft.[40]

In late 1966 and early 1967, the F-105 wings in Thailand experimented with various formations to see which offered better electronic protection. Eventually they chose formations which put each flight of four aircraft within a box about a mile wide and a thousand feet deep, so that their jamming created as large an area of uncertainty as possible for North Vietnamese radar; if a flight spread much farther, each aircraft appeared separately on enemy radar scopes. Flight boxes drew together in a larger box so that the whole formation gave the illusion of a single undifferentiated mass on radar screens. Before pods, there had been wide separations within a long string of loosely formed flights--giving aircraft room for jinking thought necessary to evade

SAMs. The Navy was able to avoid the rigidity of Air Force pod formations, because the electronic countermeasures device on board Navy aircraft gave a false location for each aircraft rather than attempting to cloud radar screens with jamming produced by many aircraft. The Navy had adjusted its formations to make the best use of the deception device and kept them loose enough to facilitate evasive maneuvers.[41]

Air Force formations and ingress tactics were not uniform. F-105 wings in Thailand differed markedly in their tactical employment of jamming pods. The 388th at Korat was quicker to develop a new approach. The 355th at Takhli was far more distrustful of the pods and held longer to old tactics. The 355th continued to enter the delta at about five thousand feet and pop up above twelve thousand before diving on a target.

The 355th's old ingress procedure offered some terrain protection from radar, especially northwest of Hanoi. Here a small range of mountains rising about four thousand feet reached to within thirty miles of the city. F-105 pilots transferred the ironic nickname of their aircraft to "Thud Ridge" in rueful acknowledgement that as much as the ridge helped them, it was also a grave stone for many friends. The ridge was not the only reality that kept the 355th at five thousand feet. At that altitude an aircraft was apt to be under the clouds where its pilot could see SAMs launch and dodge them before they gained full speed. Since pod jamming interfered with the F-105's SAM radar warning device, 355th pilots often turned off their pods.[42]

Despite such justifications for conservatism, the 388th embraced pods and the freedom offered by them to use higher altitude. Instead of approaching a target at five thousand feet and popping up above twelve thousand, the 388th came in above twelve thousand and avoided the necessity to pop up. This technique gave pilots more time to look for targets and lessened the effectiveness of antiaircraft fire during ingress before diving. Replacing a loose string of flights with a tighter box formation brought the entire formation over the target much more quickly, so that gunners had to choose among them. But there was then the problem of bunching if each flight did not roll in fast enough. Rolling toward the target from a pod formation proved less than satisfactory with respect to accuracy also, because only the lead aircraft in each flight could easily attain the preferred forty-five degree dive; the other three were likely to have a more shallow dive (and thus both less accurate and more dangerous) since they started farther from the target.[43]

For reasons just discussed, the 355th persisted in dissolving pod formation before a dive. But at the end of March 1967, the 355th began ingressing above twelve thousand feet in good weather and climbing out of pod formation to fifteen thousand before diving. The 355th retained a preference for ingressing under a low ceiling so as not to be surprised by SAMs breaking through clouds.[44]

Differences in wing attitudes toward ECM pods grew out of differences in combat experience. Since Korat was close enough to the North Vietnamese

panhandle for unrefueled missions, the 388th had drawn more sorties in the "easy packs" than had the 355th at Takhli a hundred miles farther west. Economical use of tankers meant that Takhli F-105s, which required refueling anyway, had been sent more often to the Red River delta. Takhli's losses had been much greater, but its leadership believed that the wing had learned to take care of itself the hard way. Though the 355th had been the first wing to receive jamming pods, it was the least impressed with them. Most impressed was the 8th Tactical Fighter Wing, the F-4 wing at Ubon. Pod protection from SAMs permitted F-4s to fly at higher altitudes from which MiGs could be spotted more easily. Higher altitude also increased the F-105's need for F-4 protection. At low altitude, F-105s could outrun MiGs, but at higher altitude an F-105's small wing made it less maneuverable than a MiG or an F-4.[45]

* * *

When F-105 use of jamming pods increased in December 1966, North Vietnamese MiGs became more aggressive as if they were attempting to substitute for SAMs. There may not have been a direct relationship between pods and MiGs, since the MiGs may simply have been reacting to attacks unusually close to Hanoi, Haiphong, and Phuc Yen. Another possible explanation was the training cycle of MiG pilots, whose confidence had appeared to be growing for several months. Whatever its cause, MiG activity worried officers in Southeast Asia and Washington. In December, MiGs shot down two F-105s at a cost of one MiG. On the three days of heaviest activity,

MiGs persuaded nineteen out of seventy-four strike aircraft to jettison bombs and in several cases jamming pods.[46]

The MiG problem came under discussion at a mid-December commanders conference held in the Philippines by Pacific Air Forces. General Momyer and Col. Robin Olds, new commander of the F-4 wing at Ubon, exchanged views over cocktails. This conversation led to an imaginative operation codenamed Bolo (a Philippine knife), which cost the North Vietnamese 7 of their 115 MiGs. Because the Air Force and Navy were not permitted to attack MiG bases, the MiGs could be destroyed only by drawing them into air-to-air combat. Colonel Olds succeeded in doing so by persuading the North Vietnamese that F-4s trimmed for air-to-air engagement were F-105s loaded with bombs, and that these "F-105s" intended to bomb the country's major MiG base at Phuc Yen.[47]

Jamming pods played an important part in the ruse, because thus far they had been used only by F-105s. The pods would help to disguise F-4s as F-105s, and if the North Vietnamese chose to send up SAMs rather than MiGs, F-4s would benefit from pod protection. The number of available pods determined the size of the MiG sweep: at one pod per aircraft, fifty-seven pods permitted twelve flights of four F-4s with plenty of backup. Olds planned to use seven flights from his 8th Tactical Fighter Wing and five from the 366th at Danang. These would be supplemented by an EC-121 Big Eye radar plane; an EB-66 electronic intelligence and jamming plane; eight F-104s to guard the

EB-66 and assist the F-4s if necessary; twenty-four F-105F Wild Weasels to threaten SAMs; and twenty-five KC-135 tankers to refuel aircraft on the way to North Vietnam and again on the way home. The force was designed to look like an unusually big strike, with formations heading for the MiG bases from west and east simultaneously. The Navy and Air Force sometimes achieved this pincer effect through parallel operations. In this case the Navy agreed to stand down while the Air Force sent Ubon F-4s in from the west and Danang F-4s in from the east.[48]

Olds picked January 2, 1967, for Bolo, since the New Year's cease-fire would allow enough time to transfer pods from F-105s to F-4s without causing a suspicious change in F-105 bombing routine. C-130s carried the pods from Takhli and Korat to Ubon and Danang--much to the displeasure of F-105 pilots, who could not be told what was afoot. Throughout New Year's night, maintenance crews worked to attach pods to F-4 wing pylons. Adapter kits had been rushed from the United States, but the kits had to be supplemented with parts welded in Thailand.[49]

Most of the men who took off in the early afternoon of January 2 had never even seen an enemy aircraft, let alone fired at one. Olds had shot down twelve German aircraft during the Second World War and his second in command, Col. Daniel "Chappie" James Jr. (later the Air Force's first black four-star general) had seen action during the Korean War, but even they had

yet to encounter North Vietnamese MiGs. Though F-4s often patrolled a target area looking for MiGs, they had been jumping F-105s and avoiding F-4s.[50]

Bolo's execution varied considerably from its plan. The Danang force judged the weather inadequate and did not penetrate the delta. Olds decided to risk taking his force over solid cloud cover. He had planned to make a traditional run down Thud Ridge at five thousand feet, partly so that he could see any SAMs. But with cloud tops at seventy-five hundred, he guessed that he might not get under the ceiling, and so proceeded at twelve thousand. A high ingress would soon be standard, but his reliance on pods was then considered daring. Four SAMs came up and missed the attackers by a wide margin. Olds had expected MiGs to challenge him as soon as he started his run down Thud Ridge. When his lead flight made its first pass over Phuc Yen at about three in the afternoon, the MiGs had still not taken off. Then perhaps a dozen MiG-21s came up; according to American intelligence, there were only thirteen MiG-21s in North Vietnam. Some of North Vietnam's nearly one hundred MiG-17s and MiG-15s took off from airfields east of Hanoi. These older, slower, more maneuverable fighters did not enter the battle northwest of Hanoi, but they probably would have been encountered by the Danang force had it penetrated the delta airspace.[51]

The battle above Phuc Yen lasted less than fifteen minutes, only time enough for Olds' first wave of three flights to enter at five minute intervals. Without a loss, the F-4s downed at least seven MiGs. When Olds' second wave

arrived ten minutes later, the surviving MiGs had already ducked below the clouds and landed. If all had gone according to plan, the spacing between F-4 flights would have made it difficult for MiGs to land, forcing them to engage or run out of fuel. A MiG could fight over its own field for about an hour; F-4s, even with refueling during ingress and egress, could stay over Phuc Yen for at most twenty minutes and only five minutes using afterburner--hence the five-minute intervals between flights. But the clouds, which had helped to disguise the F-4s as F-105s until the last minute, also permitted surviving MiGs to escape.[52]

On this occasion, North Vietnam's radar proved a mixed blessing at best. It encouraged an inflexible dependence on ground control, and the controllers failed to distinguish between F-4s and F-105s. Then too, American missiles had a far better day than the enemy's guns and rockets. If the MiGs were carrying any missiles, they were not fired. On the other hand, F-4s had no guns at this time. The Americans had taken extra care to make sure their missiles were properly adjusted. Four kills were attributed to Sparrow radar-guided missiles and three to heat-seeking Sidewinders. Olds and his backseat radar officer, First Lt. Charles C. Clifton, downed one MiG with a Sidewinder. Three more victories in May would make Olds the leading MiG killer of the war until 1972, when the Air Force and Navy would finally produce five aces (with at least five kills each).[53]

Less than a week after Bolo, two F-4s pretended to be a single reconnaissance aircraft by flying so close together that they gave a single radar return. This ruse also worked, and two more MiG-21s went down without loss of an F-4. But the MiGs did not cooperate with an attempt to repeat Bolo on January 23. Olds argued against repeating Bolo, and he did not lead the mission. The MiGs stayed on the ground and SAMs came up; one F-4 did not make it back.[54]

MiG pilots would not again be so badly fooled. As their self-confidence returned, MiGs would once more become a dangerous nuisance. For a time F-4s would accompany F-105 formations. When a formation was jumped by MiGs, F-4s would jettison bombs and go after the MiGs. Later, F-4s would be stripped of bombs and left to the more free-wheeling combat patrol duty they had performed since the first year of the war. The most effective response to MiGs would come when the Johnson administration at last permitted the bombing of MiG bases.[55]

* * *

Early in 1967 the Johnson administration had yet even to release targets deferred in November, let alone authorize bombing MiG bases. On February 22, the President approved one of the deferred targets, the Thai Nguyen ironworks. General Wheeler thought he saw a major change in Johnson's attitude which promised release of more targets in the Red River delta when the weather improved.[56]

Wheeler told Admiral Sharp that this "new sense of urgency" was due in part to the heavy flow of supplies from the Red River delta southward during the recent Tet cease-fire (February 8-13).[57] Intelligence estimates exceeded twenty thousand tons. Since the cease-fire did not apply to Laos, little of the supply surge moved down the Ho Chi Minh Trail. Most came by boat along the coast toward the Demilitarized Zone, north of which the North Vietnamese had two divisions, with a third on the way. According to the Defense Intelligence Agency, twenty thousand tons of supplies could support at least one North Vietnamese division for six months. Seventh Air Force estimated that twenty thousand tons could support eight North Vietnamese divisions or thirty Viet Cong divisions for a year, if each division experienced only one day of combat per month. In any case, the Tet supply surge was a substantial contribution to the North Vietnamese troop buildup along the Demilitarized Zone.[58]

Despite intelligence reports about the North Vietnamese supply effort, the Tet pause in bombing North Vietnam had been extended from four days to six days while Harold Wilson, British prime minister, discussed peace prospects with Alexei Kosygin, chairman of the Soviet council of ministers. Midway through the talks, Wilson learned about a hardened American negotiating position prompted by fears that the North Vietnamese would send three divisions across the Demilitarized Zone if bombing stopped. President Johnson now demanded that North Vietnam's infiltration into South Vietnam

stop before a bombing halt; the American position had been that bombing would stop if the North Vietnamese gave private assurance that infiltration would then stop (perhaps days or weeks later). Johnson sweetened his proposal with an offer to quit augmenting American forces in South Vietnam in addition to halting the bombing of North Vietnam after infiltration stopped. He sent his proposal by letter to Ho Chi Minh as well as through Wilson and Kosygin.[59]

During the night before Kosygin's departure from London, Johnson agreed to extend the bombing pause if North Vietnam would give assurance that it would immediately cease sending soldiers and supplies into South Vietnam. Otherwise bombing would resume soon after Kosygin left London. Though time for getting North Vietnamese agreement was extremely short, Kosygin supported the proposal. According to an intelligence translation of his telephone conversation with Communist Party leader Leonid Brezhnev, Kosygin said that there was "a great possibility of achieving the aim, if the Vietnamese will understand the present situation. All they need to do is give a confidential declaration."[60]

Before bombing began again that day, February 13, Hanoi radio broadcast a letter to Pope Paul VI from Ho Chi Minh, who demanded an unconditional halt to bombing. Two days later, Ho sent a rejection to Johnson. The fruitless Wilson-Kosygin talks in London closed an especially intense period of diplomatic maneuvering which had begun with British Foreign Secretary Brown's visit to Moscow in November.[61]

At long last the Air Force could proceed with bombing the Thai Nguyen ironworks. This showpiece of North Vietnamese industrialization was located thirty-five miles due north of Hanoi and about three miles south of the small city of Thai Nguyen. The Chinese began construction of the plant in 1958 to take advantage of iron ore deposits on the northern edge of the delta. Pig iron production began in 1963, and by 1967 the plant made barges and fuel drums out of imported steel. The plant's own steel mill was nearly ready to begin operation. There were only two other ironworks in the country, both of them much smaller. While they produced perhaps fifteen thousand metric tons a year, the Thai Nguyen works were designed to produce three hundred thousand of pig iron and two hundred thousand of steel. The complex, including its power plant, occupied two square miles along the railroad which connected it with Hanoi. About ten thousand people worked at this the largest industrial facility in North Vietnam.[62]

By March when the Air Force began to strike the ironworks, Thai Nguyen bristled with exceptionally strong antiaircraft defenses. On eight days in January and February, the Air Force had struck the city's rail yard and supply depot with about a hundred attack sorties. While only one aircraft was lost on these early missions, the defenders took a heavy toll when the Air Force returned to attack the ironworks.[63]

More than two weeks after President Johnson approved that target, the weather cleared enough for a strike on March 10. Korat F-105s led the way

over the target without loss, but the Takhli formation behind them ran into trouble. A flight of four Iron Hand F-105s (including two Wild Weasel F-105Fs) preceded the rest of the Takhli formation. Antiaircraft artillery knocked down the lead aircraft and damaged the second as they dove toward a SAM site. While the Takhli strike force dropped its bombs on the ironworks, the other two Iron Hand aircraft attacked the SAM site. Capt. Merlyn H. Dethlefsen, pilot of the third aircraft (an F-105F), was later awarded the Medal of Honor for making five runs on the site. Despite opposition from MiG-21s and flak damage to his aircraft, he ran the gauntlet repeatedly--first expending his Shrikes and cluster bombs, then strafing. His backseat electronic warfare operator, Capt. Kevin A. Gilroy, won the Air Force Cross.*[64]

A flight of bomb-laden F-4s from Ubon followed the Takhli F-105s. Twenty-five miles from the target, one of the F-4s was hit by antiaircraft fire and began to leak fuel. While diving on the target, a second F-4 was hit. Unable to get all the way back to the tankers, both crews bailed out over Laos and were rescued.#[65]

When fighter-bombers returned to Thai Nguyen on the following day, March 11, the wings switched places so that the 355th from Takhli hit the

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* A month later another Takhli Wild Weasel team earned the same pair of medals. Like Dethlefsen and Gilroy, Maj. Leo K. Thorsness and Cpt. Harold E. Johnson returned safely from their award-winning performance, but Thorsness was shot down eleven days afterward and spent the rest of the war in North Vietnamese prisons.

For the remarkable story of how the two damaged aircraft made it to Laos, see the last chapter.

target first. Korat's 388th once again bombed without loss, while three F-105s from Takhli went down--two hit by flak and one by a SAM. The Takhli wing persisted with its low-level ingress, but all its losses occurred over the target, while either diving or pulling up. Six American aircraft having been lost attempting to destroy it, the ironworks still operated. It remained the Air Force's primary target for the next month and a half. But thanks to effective flak suppression, the Air Force lost no more aircraft there during that time. In addition to continuing use of cluster bombs, an effort was made to destroy guns with general purpose bombs. Aircraft losses on the first day caused the second day's strike force to make gun sites principal targets. At least one gun (eighty-five millimeters) was thought to be destroyed. A discouraging development was the appearance for the first time of hardened sites whose crews could function while protected from cluster bombs by concrete revetments.[66]

The necessity of returning again and again for a total of nearly three hundred attack sorties (or about seven hundred fifty tons of bombs) was the result of both target size and bombing inaccuracy. To obtain greater accuracy, three F-105s from Korat made a bold, low-level run against the complex's power plant. The success of this mission on March 16 led to a similar mission on March 30, when three F-4s from Ubon attempted to hit the blast furnaces; subsequent intelligence estimates were skeptical of claims that the strike had done significant damage. Nevertheless, by the end of April the ironworks no longer functioned, and occasional raids would keep it shut down.[67]

* * *

The new commander of Pacific Air Forces, Gen. John D. Ryan, was unhappy about taking more than two months to close the Thai Nguyen ironworks. Bad weather caused his wings to cancel or divert more than sixty strikes against that facility. "The largest problem we faced there in the air war was weather," Ryan would say later, "and we didn't have an all-weather capability."[68]

When he took command from General Harris in Hawaii at the beginning of February 1967, Ryan had just stepped down from the top position in Strategic Air Command. The unusual measure of sending the SAC commander to PACAF sparked gossip about an Air Force plot to take Pacific Command away from the Navy. But his move to Washington in 1968 as vice chief of staff of the Air Force would indicate that he was being groomed for chief of staff. Throughout his stay in Hawaii, Ryan was a strong voice for developing a capability to bomb in bad weather and at night.[69]

Ryan had been in Hawaii less than a month when he asked the Air Staff in Washington for comparative data on the radar bombing capability of available aircraft. After the Air Force conducted an extensive series of tests on the F-105, the F-4, and the new General Dynamics F-111, the Air Staff concluded that the F-111 was the best hope for sufficient accuracy in times of low visibility. The accuracy of the F-105 and F-4 was inadequate for effective

use against point targets. But no F-111s could be sent to Southeast Asia before 1968.[70]

Meanwhile, Ryan tried to use the F-105 for night bombing. The original impetus for putting the F-105 in this role had come from the 388th Tactical Fighter Wing at Korat. As early as September 1966, the 388th had depended on aircraft radar to bomb the Mugia Pass at the top of the Ho Chi Minh Trail; the steep slopes offered a good return for aircraft radar, and accuracy could be checked using ground radar in Thailand. Encouraged by results in the pass, the 388th asked Seventh Air Force for permission to try radar bombing in the Red River delta. When Ryan took command of Pacific Air Forces, the Korat proposal was waiting for him.[71]

Ryan's decision to move ahead quickly may have been influenced by the Navy's success with their Grumman A-6 Intruder. The A-6, however, boasted far greater accuracy than the F-105 could possibly achieve at night or in bad weather. Ryan was sensitive about Navy help with night raids against Thai Nguyen and other Air Force targets. "The Navy could have made us look very immature and not very capable at that time if they had taken advantage of it," he would recall,"because they had the A-6 and the A-6 is a damned fine all-weather bomber."[72] Like Ryan, Admiral Sharp thought that Task Force 77 ought to send more A-6s against the delta and fewer against the panhandle. Sharp was able to alleviate this situation somewhat by persuading General Westmoreland to permit the twenty-four Marine A-6s based in South Vietnam

to fly raids into the panhandle, freeing the eighteen carrier A-6s to make more raids in the delta. But the aircraft's complex electronic systems were plagued by maintenance problems, and there was little likelihood of increasing the number of A-6s in Southeast Asia before late 1967.[73]

For his night bomber, Ryan chose the F-105F Wild Weasel. Like the A-6, the F-105F carried a crew of two and had a terrain mapping radar (though one not nearly as good as the A-6's). During March and April, twelve crews trained for the new mission in Japan, where their aircraft were undergoing modification. In addition to making improvements in the radar presentation, maintenance technicians at Yokota Air Base put a bomb release switch in the rear cockpit. Though the Korat wing had been planning penetration and bombing runs at about twelve thousand feet, Ryan insisted on gaining surprise with as low an altitude as possible, preferably below a thousand feet. This was the technique used by the A-6, and the F-105 had itself been designed for low-level bombing. But the inadequacy of the F-105F radar's terrain avoidance mode made one thousand feet a minimum rather than a maximum altitude.[74]

Ryan's emphasis on low-level bombing was an expression of established doctrine in the tactical air commands as well as the Strategic Air Command. During the Korean War, the Air Force had developed a toss bomb computer enabling a fighter-bomber to make a low-level nuclear bombing run.* Before

* The inventor of the Low Altitude Bombing System was Maj. John A. Ryan, Jr., no relation to General John D. Ryan.

release, the aircraft would begin to climb rapidly. After tossing the bomb, the aircraft would reverse direction with an Immelman flip. Since the bomb had been tossed upward, the aircraft had time to move away before detonation. Designed for delivering a nuclear bomb, the F-105 had a toss bomb computer. There was no need to toss 750-pound conventional bombs, but the computer could be used to improve the accuracy of a night drop. Once the target appeared on the radar screen, the aircraft held a steady course and the computer released the bombs automatically. Achieving significant damage with conventional bombs, however, required much greater accuracy than with a nuclear bomb. Even if an aircraft radar operator could correctly identify a target, the computer was unlikely to provide the accuracy necessary.[75]

Four crews of Ryan's Raiders, as they liked to call themselves, reached Korat on April 24, 1967. All eight men were pilots. Ideally, a navigator would have operated the radar, but navigators were in short supply. After the first twelve crews, electronic warfare operators would be trained to use the radar. In that way, the same crews could fly F-105Fs either as Wild Weasels or as Ryan's Raiders. The raiders flew their first missions on the night of April 24. One aircraft was sent against the ferry at Ron in the panhandle and another against the rail yard at Yen Bai on the Red River about seventy-five miles northwest of Hanoi. The tracks provided a good radar return, but darkness inhibited bomb damage assessment, as did craters left by earlier bombing. Impressive results were not produced by these raids or those that followed

against Thai Nguyen and other targets in the delta. Then on the night of May 12, an F-105 was lost on a raid against the Ron ferry. The cause of the loss was unknown, and it was feared that the aircraft had flown into a hill. Three days later another F-105F was downed by gunfire on a night raid into the delta. The North Vietnamese hit the raiders with searchlights and barrage fire, forcing the F-105Fs to quit flying missions in the delta.[76]

While F-105F night activity was restricted to Route Package Five and the panhandle, some F-4D night missions were flown in the delta. The F-4D, whose bombing computer made better use of radar returns, began replacing F-4Cs in Southeast Asia before the end of May. Unlike F-105Fs, F-4Ds bombing at night in the delta penetrated and dropped their bombs at about twelve thousand feet. Using jamming pods, the F-4Ds flew in flights of four. As with F-105s, however, radar bombing was not very accurate. Bombs dropped at night with radar by either F-4Ds or F-105Fs landed an average of three thousand feet from the aiming point, or twice the distance normal for the A-6. The Air Force hoped that the F-111 would be able to drop most of its bombs within two hundred feet of the aiming point. Meanwhile, F-4Ds and F-105Fs harassed the enemy as best they could. General Ryan readily admitted the limitations of his raiders. "But that," he asserted, "was a hell of a lot better than just sitting on our duffs waiting for the weather to clear."[77]

* * *

In mid-April 1967, a week before Ryan's Raiders flew their first mission, the weather over the Red River delta began to clear. The monsoonal shift in wind pattern from northeast to southwest broke up the cloud cover. Clearing skies gave the Navy an opportunity to bomb the Haiphong power plants, targets which had been deferred in November and authorized again by President Johnson toward the end of March. Weather had combined with a second deferment (while Johnson visited Latin America) to protect the power plants for another month. On April 20, the Navy sent fifty-three attack sorties against the power plants. Another forty-two would finish the job before the end of May.[78]

One of the power plants was little more than a mile from the center of Haiphong. The oil tank farm hit the previous summer was two miles from the center. At a Pentagon press conference, the new Assistant Secretary of Defense for Public Affairs, Phil Goulding, dodged a question as to whether bombing the power plants was escalatory: "We do not characterize it in any fashion whatsoever."[79] Others were less cautious. Senator Richard Russell (Democrat, Georgia), chairman of the armed services committee, said he hoped the strikes were the first step toward closing the port of Haiphong.[80] Even that step would not be escalatory, Secretary of State Rusk told a group of Illinois Republicans, since the communists had already mined Saigon harbor.[81]

On April 22, in the wake of the power plant strikes, President Johnson approved a new target list. The Haiphong cement plant, the only target yet to

be struck of those deferred the previous November, could now be bombed. Since It was the primary customer of one of the bombed power plants, the cement plant was already in trouble. Navy aircraft promptly put it out of operation, and North Vietnam had to begin importing cement. The prohibition imposed in December on striking within ten miles of the center of Hanoi was lifted enough to permit attacks on three targets: an electrical switching station, a rail yard, and a bridge.[82]

The central link in North Vietnam's major electrical power system was the switching station and transformer at Dong Anh, seven miles northwest of downtown Hanoi. This switch could transfer power from an area with an operational power plant to one with a plant closed down by bombing. The switch connected Hanoi's 32,500-kilowatt coal-burning power plant to smaller coal-burning plants at Viet Tri (on the Red River thirty miles northwest of Hanoi), Thai Nguyen, Bac Giang (twenty-five miles northeast of Hanoi), Haiphong, Uong Bi (ten miles north of Haiphong), and Hon Gai (on the coast twenty miles east of Uong Bi). The network also reached south through the Hanoi plant to Nam Dinh.[83]

By April 22, all power plants in the delta network had been bombed except the largest one at Hanoi. Outside the network, there were several other fixed plants and a growing number of mobile generators. The largest of the latter were three 1,500-kilowatt coal-burning plants from Czechoslovakia; these could be joined into an installation as large as the smaller fixed plants. The

Soviet Union furnished hundreds of 200-kilowatt diesel generators. The North Vietnamese also were thought to have about seventy-five small hydroelectric generators, most of them less than 50-kilowatts. As the North Vietnamese decentralized electrical power in deference to American bombing, construction was stopped on the 112,500-kilowatt Lang Chi hydroelectric project sixty miles up the Red River from Hanoi. Thanks to the gradualism of the campaign against electrical power, the North Vietnamese had been able to adjust through decentralization just as they had in the case of motor fuel. Though the Dong Anh switch should logically have been struck early, it was not authorized until after most of the fixed power plants had been hit. The Dong Anh switch proved a difficult target, and not until November 1967 would Seventh Air Force succeed in knocking it out.[84]

Seventh Air Force had better luck with other Hanoi targets. F-105s could now bomb legitimately the Gia Lam rail yard, which had been bombed accidentally in December. The yard was less than two miles northeast of the center of Hanoi. Seventh Air Force was also told to bomb the rail and highway bridge which crossed the Canal des Rapides a mile northeast of Gia Lam. On April 29, sixteen F-105s each attempted to hit the bridge with a 3,000-pound bomb and three 750-pound bombs; two of the six spans collapsed, cutting Hanoi's link with both railroads to China. The railroad to Haiphong, however, lay south of the canal; it could best be separated from Hanoi and routes south at the Doumer Bridge over the Red River southwest of Gia Lam.

Because destroying the Doumer Bridge would also cut the railroads to China, from a military point of view the attack on the canal bridge might better have been directed at the Doumer Bridge. But the Johnson administration was not quite ready to make a strike so close to the center of the city. Meanwhile, the North Vietnamese began to repair the canal bridge and build a bypass bridge.[85]

President Johnson's target selections of April 22 not only sent the fighter-bombers back to Hanoi, but for the first time permitted them to strike MiGs on the ground. The key jet airfields at Phuc Yen and Gia Lam remained out of bounds, together with two others near Haiphong. But Johnson authorized limited attacks on Kep (thirty-seven miles northeast of Hanoi) and Hoa Loc (nineteen miles west of Hanoi). The runways at both fields had recently been lengthened, and Hoa Loc was able to take jets for the first time. Admiral Sharp had recommended light strikes on two of the five MiG bases in the hope of overcoming administration fears that airfield strikes would cause the North Vietnamese to move all their MiGs to China. Perhaps a fourth of about 120 North Vietnamese MiGs could already be found near Mengtzu, fifty miles north of the border. Forcing the North Vietnamese MiGs to operate out of China put them at a disadvantage, since fuel limitations would permit them much less time over the delta. But the Johnson administration was nervous about increasing China's involvement in the war.[86]

Ever since May 1966 when an F-105 had shot down a MiG

inside China, the administration had gone to great lengths to keep combat aircraft from invading Chinese airspace. Fighters coming close to the Chinese border were warned by Air Force EC-121s, comparable Navy radar aircraft, or radar ships. With limited ability to pick out aircraft from ground clutter, EC-121 radar tracked friendly aircraft primarily by sending a signal which triggered their transponders. When escaping or chasing MiGs near the border, pilots had been known to turn off their transponders. The Air Force consequently found it difficult to refute China's repeated claims that American fighters had violated its airspace.[87]

The adversary relationship between EC-121 crews and fighter crews had come to a head in February, when Ubon's F-4 wing was forced to share its facilities with EC-121s. They had been moved out of the Seventh Air Force headquarters base at Tan Son Nhut to make room for other functions. Ubon's 8th Tactical Fighter Wing commander, Colonel Olds, was at first unhappy about his new neighbors, but worked to change their emphasis from border monitoring to MiG warning. In early 1967, the best the EC-121s could do was announce that there was a MiG within a sector thirty miles by thirty miles. Olds found this information to be less than helpful: "Forty-five thousand cubic miles of sky, and you tell me there's a bloody MiG in there."[88] Before the end of 1967, the EC-121s would be interrogating MiG transponders and providing fairly precise information on MiG locations.[89]

Meanwhile, Seventh Air Force directed Olds to hit MiGs on the ground at Hoa Loc. On April 24, he led eight F-4s against the new target. Their cluster bombs caught about a dozen MiGs on the ground. The attackers lost an aircraft, but Maj. Thomas M. Hirsch, pilot of the first F-4 to bomb the MiGs, claimed destruction of five; his comrades claimed at least two more. These were the first of fifty aircraft reportedly destroyed on the ground before the end of May. None of these claims could be verified. MiGs which suffered numerous hits from cluster bomb pellets could be repaired. Nevertheless, Air Force raids on Hoa Loc and Navy raids on Kep may well have helped to spur unusually aggressive MiG behavior which permitted destruction of many in air battles.[90]

Air Force F-4s and F-105s shot down twenty-one MiGs in May at a cost of two F-4s, while Navy fighters got three MiGs without a loss. A third of the Air Force's victories were attributed to gunfire, including the first three won by F-4 guns. While F-4s did not yet have built-in guns, a twenty-millimeter gun could be carried in a pod mounted under the fuselage. But the gun's rate of fire had been thought too slow for success in air-to-air engagements. The new operations officer at Danang's 366th Tactical Fighter Wing, Col. Frederick C. "Boots" Blesse, persuaded General Momyer to permit the wing to experiment with gun pods. Blesse was a Korean War fighter ace well known in the Air Force as the author of "No Guts--No Glory," a vivid guide to air-to-air tactics first published in the *Fighter Weapons Newsletter* of January 1954. He took a dim view of the F-4's lack of a built-in gun. MiGs could get too close

for an F-4 to fire its missiles successfully, and ground clutter could interfere with missile guidance systems below a couple thousand feet. Blesse's analysis was reinforced by the success F-105 pilots had with their guns under those circumstances.[91]

The gun pods helped the 366th to get one more victory than Ubon's 8th Tactical Fighter Wing in May 1967 (the month with the most air-to-air engagements during Rolling Thunder). This was especially noteworthy because the 366th had not participated in the air-to-air mission for several months and could never give it as much attention as the 8th. Despite the 366th's success, however, the 8th got more publicity. Colonel Blesse blamed the disparity not only on the glamour surrounding the 8th's commander, Colonel Olds, but also on the 8th's nickname: "The Wolfpack." The press naturally preferred to write about "the Wolfpack" rather than "the 366th Tactical Fighter Wing." Blesse's men soon came up with their own sobriquet--"The Gunfighters"--and painted what they claimed was the biggest wing insignia in the world on the roof of a hangar. From miles away pilots could see the huge comic phantom carrying his gun and proclaiming not only new unit pride but also an old confidence that no enemy aircraft could ever get near Danang. Indeed after the spring airfield raids and air-to-air victories in North Vietnam, the North Vietnamese air force would make few appearances anywhere for the next two months.

American political reaction to the airfield raids followed familiar patterns. Congressman Rivers said that they were "one of the most gratifying

developments of the war."[92] Former Vice President Richard Nixon assured the press that there was no danger of a war with China, which would "not dare have a confrontation with the United States."[93] Senator Fulbright thought it "very likely" that the war would expand to "include the Chinese and probably the Russians."[94] Senator George McGovern (Democrat, South Dakota) agreed with Fulbright about the risk the administration was taking: "They are really going for broke."[95] Senator Robert Kennedy (Democrat, New York) praised the courage of McGovern's speech calling for a total bombing halt throughout Vietnam.[96]

The Joint Chiefs of Staff cautioned Admiral Sharp that the airfield attacks had been too vigorous. A few days later, however, President Johnson demonstrated his readiness to increase pressure on North Vietnam by adding another MiG base (Kien An, near Haiphong) to the approved target list, as well as several targets near Hanoi. Returning to the list were the Yen Vien rail yard and the Van Dien truck depot--targets which had aroused so much controversy in December.[97]

At last on May 16, Johnson authorized bombing Hanoi's power plant. He had been very reluctant to approve a target in downtown Hanoi. The power plant was less than a mile from the Ministry of National Defense and not much farther from the President's Palace. But Johnson was persuaded that the Navy's new Walleye television-guided bomb was so accurate that there would be little chance of civilian casualties except for workers at the plant.[98]

The Walleye was the first of a family of guided bombs which would provide the accuracy needed to strike urban targets with minimal civilian casualties. Most of that family would not be ready before the United States stopped bombing the Red River delta in 1968. An Air Force project to develop laser-guided bombs was over a year away from production when Navy Walleyes reached the Gulf of Tonkin in early 1967. By May the Navy had dropped several Walleyes with great accuracy. Aircraft survivability also improved, because a pilot could drop a Walleye more than three miles from a target and leave immediately--before the bomb had hit its target. Once the bomb's television guidance system had locked on to a picture with sharp contrast (part of the outline of a building, for instance) the bomb was supposed to proceed straight to the origin of the image. In time, pilots would learn that the bomb could be fooled. For instance, the television camera's focus might jump from one bridge support to the next (their outlines were so similar) until the bomb hit a river bank. The major disappointment so far had been the inability of direct hits by the 1,100-pound bomb to bring down the steel bridge at Thanh Hoa (seventy miles south of Hanoi), but that bridge had long since proved itself the most durable target in North Vietnam. The Hanoi power plant was much more vulnerable.[99]

After scrutinizing detailed maps and photographs, the President approved a strike on the plant by two aircraft each carrying one Walleye. If possible, the raid was to be accomplished before May 22, Buddha's birthday

and the beginning of a visit by British Foreign Secretary Brown to Moscow. Since the television guidance system required clear weather, a long wait would probably have been necessary during the northeast monsoon. But the southwest monsoon had brought reasonably good bombing weather, permitting the Navy to strike the power plant on May 19. Though two escort fighters were shot down, a Walleye hit the target. The Navy struck again two days later, losing an escort fighter but hitting the target. The Hanoi plant appeared to be out of commission, leaving only one small plant fifty miles south of Hanoi to supply power for the network.[100]

The power plant raids made headlines as the first against downtown Hanoi. Since Walleye's existence was classified, the special accuracy of this new weapon could not be disclosed and the Johnson administration could not take public credit for its careful restraint. In a more visible exercise of restraint, the President called a halt to bombing near Hanoi. On May 22, only a month into the southwest monsoon with its relatively favorable bombing weather, Johnson put his foot on the brake. Bombing within ten miles of Hanoi's center again required his approval for each strike. Johnson withheld approval for several weeks while his divided administration reconsidered the future of Rolling Thunder.[101]

Notes

Chapter 2

New Tactics, Old Strategy

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CHAPTER 3

GRADUALISM ON TRIAL

The gradual intensification of the American air war against North Vietnam paralleled a gradual buildup of American ground forces in South Vietnam. While these two forms of gradualism were related, they were shaped by different constraints. The buildup in South Vietnam pressed against the weakness of the local economy, the capacity of America's logistical apparatus, and the unwillingness of the Johnson administration to call up reserves. From the outset, however, B-52 bombers could have been used to strike targets throughout North Vietnam in any weather at any hour. Instead President Johnson doled out targets one at a time to fighter bombers poorly equipped for striking in bad weather or at night. Fears of a wider war restrained the air war, while hopes for a war on the cheap restrained the buildup.

Little by little the list of authorized targets in North Vietnam grew, as did the number of American soldiers in South Vietnam--until a decision for a major addition could require fairly dramatic action, such as a reserve callup or mining North Vietnam's ports. In this context a little more bombing with

fighter aircraft could seem the safest form of escalation, the last chance for gradualism. When in March 1967 General Westmoreland asked that his troop ceiling of 470,000 be increased by at least 80,000 and as much as 200,000, he began a long debate that would first cool the air war in May and then heat it up in August.[1]

General McConnell, the Air Force Chief of Staff, injected the bombing issue. He doubted that sending more troops would be enough to achieve victory, but he agreed to 100,000 if the Joint Chiefs of Staff would also recommend expanding the air and naval campaign against North Vietnam. The other chiefs agreed and once more linked troops in South Vietnam and bombs in North Vietnam. In a memorandum to Secretary of Defense McNamara, they supported sending 100,000 more troops to South Vietnam, calling up the reserves, and expanding the air and naval campaign to include mining North Vietnam's ports.[2]

In late April 1967, President Johnson had Westmoreland come home to make a speech in New York and another to Congress. Westmoreland also joined the Chairman of the Joint Chiefs, General Wheeler, in meetings at the White House, where they argued that the recommended buildup would permit shallow invasions into Laos, Cambodia, and North Vietnam. Only the President's National Security Adviser, Walt Rostow, showed any interest in sending ground forces across South Vietnam's borders. Dramatic ground action of that kind could make the air war look tame by comparison, and Wheeler

raised the possibility of mining North Vietnam's ports. While this proposal made no more headway than did the invasion plans, his remark that the bombing campaign was running out of targets provided grist for those who were seeking to cut back the bombing.[3]

Secretary of Defense McNamara and his assistant for international security affairs, John McNaughton, used Wheeler's remark in a draft presidential memorandum arguing for a bombing cutback. They quoted Wheeler as saying that "the bombing campaign is reaching the point when we will have struck all worthwhile fixed targets except the ports."[4] The memorandum concluded that all bombing should be concentrated south of the twentieth parallel--i.e. south of the Red River delta. McNamara had first raised this possibility in the fall of 1966, when it became obvious that North Vietnam had dispersed oil storage to cope with American bombing. He seemed to prefer an unconditional bombing halt as more likely to lead to negotiations, but he knew that even a cutback to the twentieth parallel would face strong opposition from men in uniform and their allies in Congress.[5]

During the winter of 1967 McNamara had been quietly gaining adherents to his view within the administration. His effort was facilitated by a small discussion group that met every Thursday afternoon in the office of Under Secretary of State Nicholas Katzenbach. These meetings had grown out of President Johnson's uncertainty about whether to increase or cut back the bombing. He told Walt Rostow in January to look into setting up a committee

for studying the effects of the bombing. Rostow took the matter up with Clark Clifford, an influential Washington lawyer who had served in the Truman administration and had known Johnson for many years. Clifford urged a small, secret group whose existence the President could deny by saying there was "no committee," that the President talks to "a great many people on a great many subjects."[6]

Rostow recommended that while the President might later want to call upon Clifford and other outsiders to undertake a study of the bombing, the time was not yet ripe. So Rostow, Undersecretary of Defense Cyrus Vance, McNaughton, and William Bundy (Assistant Secretary of State for Far Eastern Affairs) began their weekly meetings on Vietnam in Katzenbach's office. McNamara often came, as did Richard Helms, Director of Central Intelligence; Rusk sometimes joined them. They called themselves the "No Committee" or the "Non Group." For nearly two months, General Wheeler was not even told about their meetings.[7]

By May the No Committee was leaning toward a bombing cutback. Walt Rostow informed the President that the group unanimously rejected both mining Haiphong and systematically bombing the rail lines to China. Rusk's worries about possible Chinese and Soviet reactions bolstered McNamara's arguments against the cost-effectiveness of bombing the Red River delta. Even Rostow doubted air power's ability to close the "top of the funnel" by mining Haiphong and striking the railroads. Since his days as a target planner in

England during World War II, Rostow had believed oil and electricity to be vital targets, but he had always been skeptical about bombing railroads. He was especially impressed by an estimate that North Vietnam's import capacity of 17,000 tons per day exceeded actual imports by more than 11,000 tons. Rostow and the No Committee were ready to cut back bombing north of the twentieth parallel as soon as the Hanoi power plant had been destroyed.[8]

McNamara hoped that hitting the Hanoi power plant would also make the Joint Chiefs amenable to a bombing cutback. But that hope only illustrated how far he and the No Committee had moved from the military point of view. Walt Rostow grew fearful of a public breach. "The question," he told President Johnson, "is what kind of scenario can hold our family together in ways that look after the nation's interests and make military sense."[9] Rostow suggested withdrawing approval to bomb targets in Hanoi and Haiphong until after McNamara and Wheeler could visit South Vietnam. Then the manpower and bombing recommendations could be considered together. Johnson took Rostow's advice and when the Navy had made its second strike against the Hanoi power plant on May 21, 1967, the President reinstated the prohibition against attacks within ten nautical miles of the center of the city.

For the next month much of the administration's energies were absorbed by the Six Day War between Israel and its Arab neighbors. In the wake of the Arab defeat, Alexei Kosygin, Chairman of the Soviet Council of Ministers, met with President Johnson at Glassboro, New Jersey. Kosygin

brought a message from Hanoi that the North Vietnamese were ready to begin talks a day or two after the bombing stopped. Johnson agreed to stop bombing North Vietnam if he was assured that talks would begin immediately and that the five army divisions in North Vietnam near the Demilitarized Zone would not attack South Vietnam. There was no response from Hanoi.[10]

Meanwhile, opposition had begun to build against ending the bombing of North Vietnam's Red River delta. Director Helms of Central Intelligence supported further concentration of strikes in the southern route packages, but warned Johnson that a total cessation of bombing in the Hanoi-Haiphong region would be seen as a victory in Hanoi. Secretary Brown of the Air Force argued for the status quo; he considered mining Haiphong too risky, but did not want to reduce bombing in the Red River delta without getting something in return.[11]

Since becoming Secretary of the Air Force in 1965, Brown had been confronted with an increasing divergence between Chief of Staff McConnell and Secretary of Defense McNamara. By the end of 1966, the crux of Brown's problem was McNamara's plan to build an infiltration barrier near the demilitarized zone: ground forces, minefields, and fences would reach across the northern edge of South Vietnam, while air forces would attempt to interdict the Ho Chi Minh Trail area of Laos with the help of electronic sensors. McNamara brought together a group of academic scientists in the summer of 1966 to study the feasibility of a barrier, and as soon as they had

recommended it, he ordered a joint task force under Army Lt. Gen. Alfred D. Starbird to have the barrier ready by September 15, 1967.[12]

It was obvious to the Joint Chiefs that the barrier could profoundly change the character of the war in ways that they believed would reduce the chance for a satisfactory outcome. General Westmoreland would have to transfer ground forces from search and destroy missions to defending McNamara's wall; McNamara talked in terms of 20,000, but the Chiefs feared that the number of soldiers required would be many times higher. Westmoreland's own preferred method of interdicting the Ho Chi Minh Trail was to send his ground forces into Laos. Instead the Air Force and Navy would be expected to focus their efforts there, while McNamara might succeed in persuading the President to end the bombing of North Vietnam.[13]

Secretary Brown labored to convince Chief of Staff McConnell and the Air Force that the barrier was a good idea which would supplement rather than replace bombing North Vietnam. Indeed the Air Force ultimately invested more heavily in the barrier than did the other services. Most of the ground portion was never built, but the effort to use electronic sensors for air interdiction in Laos would become a major preoccupation of the Air Force for the next four years. In the short run, Brown also helped to keep the bombing campaign alive over North Vietnam. More influential advocacy of bombing, however, would come from senators on the Armed Services Committee and airmen in Southeast Asia.[14]

* * *

South of the twentieth parallel in North Vietnam's panhandle, where Secretary of Defense McNamara proposed to concentrate bombing, Air Force and Navy aircrew were already flying 8000 attack sorties a month--more than two-thirds the total sent against North Vietnam. The railroad south of Vinh had long since ceased to function and few trucks moved on the roads in daylight. Even at night the Air Force was sending more than 1500 sorties a month, usually F-4s armed with flares as well as bombs. Whatever gains in effectiveness were to be had by increasing the already abundant air power directed at the panhandle seemed slight in comparison with opportunities thereby lost in the Red River delta.[15]

Much of North Vietnam's military and economic strength was concentrated in the delta. Here were gathered the essential supplies provided by the Soviet Union and China. Through the port of Haiphong came 4300 tons of imports a day, and another 1500 came down the northeast railroad from China. Most weapons arrived by rail, while trucks and oil came through Haiphong. According to one American estimate, communist forces in South Vietnam required only 15 tons of supplies a day from North Vietnam. While this estimate may have been too low, it underlined the difficulty of destroying North Vietnam's military supplies once they moved away from the docks and warehouses of the delta. Trucks destroyed in the North Vietnamese panhandle or on the Ho Chi Minh Trail in Laos could have a more immediate effect on the

communist supply situation in South Vietnam than could the destruction of rail yards and warehouses in the Red River delta, but strikes on those delta targets could have far greater impact on North Vietnam's military and economic strength as a whole.[16]

While the Air Force and the Navy continued to seek wider authority to mine the ports and bomb the railroads in the Red River delta, McNamara's proposal to quit bombing there put a premium on showing some progress within the authority already granted. Since mining Haiphong was prohibited, the Navy went to work on the ground transportation routes radiating from the port--especially Haiphong's only rail line, which as it passed west through Hanoi intersected with the only line running south. Armed reconnaissance was prohibited within either Haiphong or Hanoi. So the Navy paid special attention to Hai Duong, where the railroad crossed a bridge about midway on the sixty mile journey to Hanoi. At the end of June, Walt Rostow informed the President that the Navy had found a bottleneck. A week later Rostow could report that the raid of July 2, 1967, on Hai Duong caused a serious disruption in the rail traffic headed for Hanoi.[17]

The Air Force had strengthened meanwhile its effort to interdict the northeast railroad from Hanoi to China. More than a third of the ninety-mile route lay within zones which President Johnson had forbidden American aircraft to attack. A buffer zone twenty-five nautical miles deep along the Chinese border was intended to ensure that American aircraft would not cross

into China. Here Russian and Chinese arms arriving on standard gauge railroad cars could be stored or loaded onto meter gauge cars for the night run to the Hanoi sanctuary.

Several thousand Chinese laborers were adding a third rail to the northeast line so that by the end of 1967 it would no longer be necessary to transfer supplies from China's standard gauge cars to North Vietnam's meter gauge cars. Chinese rail construction in China as well as in Vietnam had already made the North Vietnamese rail system more valuable to North Vietnam and less vulnerable to American bombing. Before the summer of 1966 the Chinese had depended on North Vietnam's northeast and northwest railways as coastal China's only rail connection with the mineral-rich interior of southwest China. The completion of a direct Chinese rail line to Kunming freed North Vietnam's rails to carry more supplies required by its war effort. At the same time Chinese workers in North Vietnam completed a dual gauge line from Hanoi running north to the iron works at Thai Nguyen and then east to join the old northeast line at Kep on the edge of the delta. American aircrews became very familiar with the rail triangle thus formed; they called it the Iron Triangle.[18]

The targets which could contribute most to backing up traffic on the northeast line (together with its Thai Nguyen branch) lay within the ten-mile prohibited zone which President Johnson had reinstated around Hanoi on May 21, 1967. Before that, he had permitted some attacks on the rail system within

the zone. Unfortunately the timing and sequence of these attacks limited their impact. North Vietnam's largest rail yard, the one at Yen Vien five miles northeast of downtown Hanoi, was struck in December 1966. Thanks to the subsequent outcry in the American press, this yard had not been struck again. Three miles closer to downtown Hanoi, the Gia Lam yard, with North Vietnam's principal railroad car repair shops, had also been struck in December--by accident.[19] Johnson authorized another strike on it in April. At the same time he authorized a strike on the railroad and highway bridge over the Canal Des Rapides (Song Duong). Since the canal bridge was north of Gia Lam and south of Yen Vien, closure of the bridge stalled rail traffic from China in Yen Vien (which also remained off limits to bombing) rather than in Gia Lam.[20]

While the North Vietnamese repaired the canal bridge and built alternates, enough rail traffic backed up on the northeast railroad and its Thai Nguyen branch to give the F-105s and F-4s more rolling stock to bomb than usual. Seventh Air Force tried to prolong this state of affairs by repeatedly striking the bridges and rail yards which lay between the Hanoi prohibited zone and the China buffer zone. Though many of these bridges and yards had been struck during the past year, the pounding reached a crescendo in the summer of 1967.

The principal bridges on the main line crossed the Song Cau at Dap Cau near Bac Ninh, about fifteen miles from Hanoi, and the Song Thuong at

Bac Giang, another ten miles north. Even when the main line could be broken, there was the alternate which ran from Yen Vien through Thai Nguyen and rejoined the main line at Kep a little less than halfway to China. None of the bridges on the alternate line were nearly as long as those at Dap Cau or Bac Giang. Even with the longer bridges, the North Vietnamese and their Chinese allies had become adept at making repairs and providing parallel bridges or ferries. A bridge that appeared down might require only a prefabricated span that lay in wait nearby.[21]

Since nearly all bombing of the northeast railroad occurred in daylight and most trains ran between sanctuaries at night, it was remarkable that any rolling stock was ever caught by the fighter bombers. Yet aircrews reported seeing more than 2500 cars on the northeast railroad and its Thai Nguyen branch from the middle of May to the end of June. Of these they claimed to have destroyed or damaged about 1000. The number destroyed was probably far smaller, and the Chinese apparently replaced many of the losses. At any rate, U.S. intelligence estimates would place the North Vietnamese rolling stock inventory at about 2000 at the end of the summer--only 600 less than at the beginning of the year.[22]

In the short run, however, it was possible to be more optimistic about the progress being made. This was especially true in Washington. At the end of June, the Air Force's vice chief of staff, Gen. B. K. Holloway, wrote the Pacific Air Forces commander, General Ryan, that it was time to focus on

North Vietnamese locomotives. Holloway believed that North Vietnamese rolling stock had been reduced from 2600 to 600, while the locomotive count had come down only 15 from 120 to 105. However exaggerated Holloway's picture of the rolling stock situation, it was certainly true that the North Vietnamese rarely left their locomotives in the open during daylight. A locomotive campaign would have to be a night campaign, and General Ryan's attempts to increase night sorties in the Hanoi region had met with little success so far.[23]

Ryan's Raiders* at Korat, with their two-seat F-105Fs, ceased to fly night missions into the delta in mid May less than a month after they began them. Their last mission in the delta was as before only a single sortie which penetrated at low level, perhaps a thousand feet. It was shot down over the target, the Kep rail yard. The F-4Cs of the 497th Tactical Fighter Squadron at Ubon then tried their hand at low level missions in the delta. The aircrews of the 497th were known as the Night Owls, thanks to their nightly visits to Laos and the panhandle of North Vietnam. In less well defended areas they could use flares, but they did not much care to do this even in the panhandle. Certainly in the delta they would not use flares, and their luck proved little better than that of Ryan's Raiders.[24]

On the evening of 22 May, 1967, the Night Owls sent four F-4Cs to attack rail yards near Kep. They penetrated at an altitude of 500 feet or less,

* See above, Chapter 2.

and two of the aircraft were hit by anti-aircraft fire near the railroad. One crashed immediately, killing both crew members. The other aircraft almost made it to the coast north of Haiphong before the crew had to bail out. Maj. Richard D. Vogel, the pilot, injured his back during ejection and was captured. The backseater, First Lt. David L. Baldwin, was rescued by a Navy helicopter. So ended the last Night Owl attempt to penetrate the delta at low level. A few days later F-4D aircraft arrived at Ubon from Florida, and the Night Owls used their improved radar for occasional night raids at more than 10,000 feet above the delta. But the accuracy of the night missions had always been questionable, and the increase in altitude did nothing to enhance it. In any case, such meager night raids could be no more than harrassment at best.[25]

If most of the air assault on the northeast railroad was limited to daylight, at least the weather in June 1967 cooperated with a string of unusually clear days. Of the 6000 attack sorties Seventh Air Force sent into North Vietnam that month, about 1500 went into Route Package Six with more than 3000 tons of bombs; as usual the bulk of Air Force sorties struck Route Package One in the panhandle just north of the Demilitarized Zone. Nevertheless the effort against the delta was among the strongest of the war and was concentrated on the railroad. Only two aircraft fell to enemy air defenses. On June 2 an F-105 was hit by ground fire at 16000 feet just before diving on a rail yard near Kep. The North Vietnamese or Chinese gunners scored another victory on June 14 when they downed an F-4 which was

attempting to penetrate the delta below 8000 feet. Usually ingressing aircraft tried to stay well above that altitude even if it meant a cloud layer might block their view of surface-to-air missiles. Using jamming pods to deceive the missiles, pilots were able to stay above accurate flak.[26]

As for MiGs, they were rarely seen in June. On only a couple of occasions did fighter-bomber pilots jettison bombs to deal with attacking MiGs; in September 1966 this had occurred more than sixty times. The spring 1967 strikes on airfields and consequent air-to-air battles had nearly eliminated the MiG problem for the time being. On June 11, however, two F-4s collided while guarding an F-105 strike force against the possiblity of MiG attack. Aside from this accident, escort fighters had an easy month.[27]

The success with which fighter-bombers were now penetrating the Red River delta, as well as the destruction of more box cars than usual, encouraged airmen to believe that they might be able not only to head off Secretary of Defense McNamara's proposed cutback in bombing north of the twentieth parallel, but even to increase the bombing there. They hoped to eliminate (or at least reduce) the sanctuaries established by President Johnson along the Chinese border and around Hanoi and Haiphong. Johnson did permit the Navy to return to Hanoi in June to hit the power plant again and to hit the Van Dien supply depot with its support facility for surface-to-air missiles. But all other targets within the sanctuaries remained off limits, and authority to

attack in the Haiphong area was reduced further after two Russian ships were strafed in North Vietnamese harbors.[28]

The first incident involving a Russian ship took place on June 2, 1967, in the port of Cam Pha, forty miles up the coast from Haiphong. A flight of four F-105s were leaving North Vietnam, when the pilot of the third aircraft decided to pay a visit to a well known anti-aircraft site on the coast; his wingman followed. As the element leader dove on the site, he thought he saw a ship in the roadstead firing at him, and he strafed it. When the pair returned to Takhli Air Base that evening, the element leader tried to retrieve his gun camera film, but the young airman unloading the camera would not break the rules. Before long the problem was put into the hands of the acting wing commander, Col. Jacksel M. Broughton, who exposed the film.[29]

Unfortunately for Colonel Broughton, this incident was not to be closed so easily. The Soviet Union immediately complained that its ship *Turkestan* had been fired upon by an American aircraft, killing one of the crew. The Commander in Chief Pacific, Admiral Sharp, assured Washington that there was little to the Soviet claim; possibly the ship had been hit by debris from anti-aircraft fire. Walt Rostow told President Johnson that Secretary McNamara and General Wheeler were convinced that the United States bore no responsibility. The State Department informed the Russians that aircraft attacking targets in the area had been investigated and that none had attacked a ship.[30]

Two weeks later Soviet Ambassador Dobrynin told Secretary of State Rusk that the *Turkestan* had docked at Vladivostok with an unexploded round from an F-105; Foreign Secretary Gromyko was considering bringing it to the United Nations when he and Kosygin visited in a few days. That was more than enough to reopen the investigation, and within a week the United States had to apologize. From Colonel Broughton's perspective, his court martial for destroying evidence was just the final frustration of many, which he subsequently described in his books *Thud Ridge* and *Going Downtown*.* From the perspective of more cautious men in Washington, the *Turkestan* incident was proof that enemy sanctuaries needed more emphasis from the President.[31]

Washington was still very sensitive about the incident when on June 29, the Soviet ship *Mikhail Frunze* was apparently strafed in Haiphong Harbor by two Navy fighters. This led immediately to the declaration of a prohibited zone with a four nautical mile radius from the center of Haiphong. Like the ten-mile Hanoi prohibited zone which had been declared in December 1966, no strike was to be made within the new zone without special authorization from the President. In the prohibited zones U.S. aircraft were not even to react to antiaircraft fire. Such reaction was permitted in the restricted zones, which ran out to thirty nautical miles from the center of Hanoi and ten nautical miles from the center of Haiphong.[32]

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* Colonel Broughton's court martial conviction was set aside by the Office of the Secretary of the Air Force. Instead Broughton was fined $600 and retired.

The establishment of the Haiphong prohibited zone seemed less foreboding to airmen than it might have, because only a day earlier the Preparedness Investigating Subcommittee of the Senate Armed Services Committee had announced that it was going to hold hearings on the conduct of the air war over North Vietnam. Since most subcommittee members were known to be sympathetic to a more decisive use of air power, air leaders in the Pacific had reason to feel more confident about Secretary of Defense McNamara's forthcoming visit to Vietnam and chances for defeating his proposal to eliminate bombing north of the twentieth parallel.[33]

McNamara came to Saigon in early July with the troop issue largely resolved. He announced that there would be no reserve call-up, so that the biggest troop increase Westmoreland could get would be 42,000, or a total force of 525,000. But the Secretary was clearly in no position to announce a bombing cutback, and he was subjected to a series of briefings carefully prepared to talk him out of pursuing one. A couple weeks before McNamara's arrival, Admiral Sharp had sent the text of his own briefing to General Westmoreland, General Momyer, and Vice Adm. John J. Hyland, the Seventh Fleet commander; then Sharp had watched Momyer and Hyland rehearse their briefings. But it turned out to be Sharp's briefing which rubbed the Secretary of Defense the wrong way. After hearing Sharp's call for mining Haiphong and lifting most restrictions on bombing, McNamara showed his irritation by thanking Westmoreland for the briefings while ignoring the theater commander.[34]

Momyer's presentation, however, was more persuasive. He emphasized Seventh Air Force's recent success attacking the northeast railroad with relatively few aircraft losses. Though suggesting that it was time to "broaden and increase our effort," he left specific recommendations to Sharp.[35] Momyer's cerebral style and his impressive marshalling of data found favor with his audience. After McNamara's return to Washington, there was speculation in the press that he had been converted to bombing in the delta. But in fact McNamara told Johnson that the air leaders were much too optimistic about bombing results.[36] General Wheeler was able to dilute McNamara's influence by giving Momyer's briefing transcript to the President, who was so impressed with it that he read passages to the cabinet.[37] Johnson also sent it to former President Eisenhower, who liked Momyer's argument that the reduction in antiaircraft fire, including surface-to-air missiles, might be a result of railroad interdiction.[38]

While Momyer's briefing may have contributed to Johnson's willingness to continue bombing in the Red River delta, the President was not yet ready to authorize a major expansion of the bombing. When on July 20, 1967, Johnson approved a list of fifteen new targets, none of these lay within the ten-mile Hanoi prohibited zone, the four-mile Haiphong prohibited zone, or the China buffer zone. Indeed, Johnson specifically disapproved any attack on Hanoi's Doumer Bridge across the Red River. He also vetoed three Hanoi targets which had been struck at least once during the preceding year: the

power plant, the Yen Vien rail yard, and the Van Dien truck depot. Nor would the President approve hitting the major MiG base at Phuc Yen, about fifteen miles northwest of Hanoi.[39]

The most significant increase in bombing authority granted by President Johnson on July 20 opened to armed reconnaissance all major transportation routes (road, rail, and water) radiating from the Hanoi prohibited zone. Between the circumference of the prohibited zone (with a radius of ten nautical miles) and the circumference of the restricted zone (with a radius of thirty nautical miles) lay a region whose shape inspired airmen to call it the Hanoi "donut." Hanoi's entire restricted zone had often been called a donut before creation of the prohibited zone. Henceforth the term "donut" sometimes included the prohibited zone and sometimes excluded it as merely the donut hole. The new expansion of bombing authority concerned lines of communication in the donut ring. When fighter aircraft began to bomb north of the twentieth parallel in the summer of 1965, Johnson had established the restricted zone to keep them away from Hanoi. Subsequently he had permitted some armed reconnaissance on certain routes within the zone. In the case of the northeast railroad, for example, the thirty-mile circle crossed just north of Bac Giang, but armed reconnaissance was permitted from there to Bac Ninh, less than twenty nautical miles from the center of Hanoi. The new rule permitted armed reconnaissance all the way to the ten-mile circle not only on the northeast railroad, but for other routes coming into Hanoi.[40]

Since June 30, the Haiphong donut had also been given a hole. On that day President Johnson had declared a prohibited zone (with a radius of four nautical miles) inside Haiphong's previously established restricted zone (with a radius of ten nautical miles). The Haiphong donut ring differed from its Hanoi counterpart in that no armed reconnaissance was authorized. Hence the Navy might be permitted to bomb a bridge in the donut ring, but traffic which backed up between the bridge and the port could not be struck. Although Haiphong was principally a Navy responsibility, the Air Force was very concerned about it. Interdicting the northeast railroad could not have a major impact so long as imports could flow freely through Haiphong. General McConnell proposed that the Haiphong donut ring become the focus of an intensive interdiction campaign, with armed reconnaissance permitted on all the major routes carrying traffic inland from the port. In addition, McConnell wanted to shrink the donut hole, the prohibited zone, from a radius of four miles to a radius of one and a half miles.[41]

When in the fall of 1966, the Air Force had proposed to establish interdiction belts across Navy route packages in the panhandle of North Vietnam, Admiral Sharp had rejected the proposal on the ground that it was an Air Force attempt to control part of Navy territory. This time the Air Force did not make the mistake of trying to launch a campaign of its own against the Haiphong donut. By lobbying for the Navy, the Air Force irritated Sharp only slightly. He pointed out that Navy airmen had been attempting to isolate

Haiphong for some time, but he welcomed any increase in their authority to do that job.[42]

McConnell's Haiphong donut plan also met a favorable reception from Walt Rostow, who saw that it offered a way around President Johnson's usual objections. But Johnson was firmly opposed to mining the port or bombing the docks. Nor did he like General Wheeler's proposal in the spring of 1967 to "shoulder out" shipping from the harbor by bombing targets which were progressively closer to the docks. McConnell's plan promised to reduce the flow of imports through Haiphong without risking further incidents involving Soviet ships. On the last day of July, Rostow sent the plan into Johnson with the advice that this was a "quite serious and interesting proposal."[43]

A little more than a week later, President Johnson authorized armed reconnaissance in the Haiphong donut. At the same time he approved several railroad targets within the Hanoi prohibited zone and within the China buffer zone. To some extent this expansion in bombing authority reflected the growing optimism of some of Johnson's advisers. Rostow told him that the No Committee now believed they were on the "winning track" and favored more bombing of transportation and electric power targets in the Hanoi-Haiphong region. Support inside the administration probably had far less to do with Johnson's decision, however, than political pressure from outside. The morning after Johnson expanded Air Force and Navy bombing authority, the

Preparedness Investigating Subcommittee of the Senate Armed Services Committee opened its investigation into the bombing of North Vietnam.[44]

* * *

During his years in the Senate, Lyndon Johnson had chaired the Preparedness Investigating Subcommittee of the Armed Services Committee. The current chairman, John Stennis (Democrat, Mississippi), had often acted in that capacity even when Johnson was in the Senate, since Johnson was absorbed by his more important duties as majority leader. Though Johnson's increasingly liberal stance on civil rights had disturbed Stennis, he had supported Johnson for the presidency in 1960. Even after Johnson entered the White House and pushed for civil rights legislation, Stennis had continued his support on most other matters, including the war in Vietnam. But he was becoming very uncomfortable with Johnson's preference for increasing pressure on North Vietnam only gradually.[45]

Fearful that Americans might continue to die in South Vietnam for years to come, some of the military's strongest supporters in the Senate began to think that a pullout would be preferable to gradualism. On August 1, 1967, Senator Ernest F. Hollings (Democrat, South Carolina) warned Walt Rostow that the President's policies were troubling some of his key backers, like Stennis and Senator Richard Russell (Democrat, Georgia), the chairman of the Armed Services Committee. During his Senate years, Johnson had been considered a Russell protege. Now, according to Hollings, Russell was so fed

up with gradualism that he wanted to declare war or get out of Vietnam. Stennis too felt that the U.S. was overcommitted and that it had surrendered the initiative to the enemy.[46]

On matters relating to air power, the most influential and outspoken member of the Stennis subcommittee was Senator Stuart Symington (Democrat, Missouri). Since serving as the first Secretary of the Air Force in the late 1940s, he had been a persistent advocate for the service during more than a dozen years in the Senate. He had been appointed to the Armed Services Committee by Lyndon Johnson, then majority leader. Their friendship had cooled in the period before the 1960 presidential campaign, when they both sought the nomination of their party. Since then they had continued to be political allies, but Symington had grown increasingly disenchanted with the war in Vietnam.[47]

Symington visited Southeast Asia several times in an attempt to understand the war. As he talked to pilots and generals about the restrictions under which they were operating, he grew especially hostile toward the President's ban against striking North Vietnam's airfields. Even after some of these were at last added to the authorized target list in the spring of 1967, he continued to push for attacking the others, including the principal MiG base at Phuc Yen. When he learned that Secretary of Defense McNamara was attempting to cut back bombing, Symington called for an investigation.[48]

Symington's colleagues on the Stennis subcommittee shared his dissatisfaction with the way the war was going. In addition to Stennis, the other Democrats were Henry M. Jackson of Washington, Howard W. Cannon of Nevada, and Robert C. Byrd of West Virginia; the Republicans were Margaret Chase Smith of Maine, Strom Thurmond of South Carolina, and Jack Miller of Iowa. In closed session August 9-29, 1967, the subcommittee questioned seven generals, three admirals, and the Secretary of Defense. From the subcommittee's point of view, the score was ten to one, with McNamara alone on the losing side.[49]

The first to testify was the Pacific commander, Admiral Sharp, who was accompanied by his two principal subordinates in Hawaii, the commanders of the Pacific Fleet (Adm. Roy Johnson) and Pacific Air Forces (General Ryan). They and their questioners could congratulate themselves that their hearings had already produced an expanded target list even before their proceedings had begun. On the morning of the opening session, President Johnson had approved railroad targets within ten miles of Hanoi (including the Red River bridge) and within twenty-five miles of the Chinese border, not to mention permitting armed reconnaissance within ten miles of Haiphong. Sharp stressed at the outset, however, that he would be asking for more targets: "It is important that we continue to take these good targets and get in there and strike where it hurts."[50]

President Johnson's attempt to take the wind out of the senators' sails served chiefly to redirect their energies away from investigating moves toward a bombing cutback. Only Senator Smith showed much interest in the origins of McNamara's barrier concept and any connection it might have with cutback proposals. Sharp assured her that the barrier could never be "a substitute for the bombing."[51] Since the possibility of a cutback appeared to have faded, the subcommittee focused on the need to mine Haiphong harbor and bomb Phuc Yen airfield.

Senator Symington explained that he had called for the hearings because he feared that "the way our air power over North Vietnam has been handled, it was being denigrated before the people to a point where one of the great arms of both our services, Navy and Air Force, would eventually be eliminated."[52] The tactical air forces had been made to look weak. Pilots in Southeast Asia had pleaded with him to be allowed to hit Phuc Yen airfield. Why had Sharp been refused authorization to hit Phuc Yen? "I have not been given a reason," the admiral replied.[53]

Walt Rostow thought at first that Symington wanted to bomb Fukien Province in China. The National Security Adviser solemnly warned the President that such an attack would mean war with China. But one point Symington was trying to make was that Phuc Yen airfield should not have been an especially sensitive target. It was a military installation more than ten miles from Hanoi. If the Pacific commander had not even been told why Phuc

Yen should not be bombed, a reasonable inference was that the military leadership was not fully involved in the target selection process.[54]

On the question of military consultation, the President could be put in a bad light since he rarely included admirals or generals in meetings with his principal advisers. Even the Chairman of the Joint Chiefs of Staff, General Wheeler, had not been present during most of the critical discussions in 1965, and he had participated only occasionally since then. With Wheeler's testimony scheduled to follow Sharp's, Rostow suggested to Johnson a "roundup session" for Wheeler which would enable him to say that he had been consulted on all targets.[55] But when Wheeler testified, he took a somewhat more open approach. He claimed only to have been "frequently" present, particularly for "major" bombing programs. Senator Thurmond wanted to know if targets had ever been turned down in Wheeler's absence. Wheeler answered in the affirmative, while noting that targets were also turned down when he was present.[56]

Though Wheeler tried to mute his criticism of the administration as much as possible, he could not duck direct questions about his views on Haiphong. He favored mining Haiphong; the other chiefs favored it; the President and the Secretary of Defense opposed it. Symington asked Wheeler whether he thought it was fair to criticize generals for the alleged failure of a gradual bombing policy which they had not recommended. Wheeler agreed that such criticism was unfair. On the matter of Phuc Yen airfield, however, he

confined himself to saying that the Joint Chiefs had for two years recommended bombing it, but that they had not been permitted to because of its nearness to Hanoi, the probable cost in terms of American pilots and aircraft, and the weakness of the MiG threat.[57]

Symington's advocacy of bombing Phuc Yen was then quietly undermined by the Seventh Air force commander, General Momyer. As in his briefing for McNamara in Saigon, Momyer argued persuasively for the increasing effectiveness of American aircraft against North Vietnam's air defenses, especially MiGs. The airfield attacks and air-to-air battles of the spring had broken MiG resistance. "We have driven the MiGs out of the sky for all practical purposes."[58] MiG pilots would soon give Momyer reason to regret that sentence, but for the moment it took the steam out of Symington's criticism.

When President Johnson met with his principal advisers, Secretary of Defense McNamara was full of praise for Wheeler and Momyer. Wheeler was present on this occasion and noted that while Symington had been the roughest questioner, he was "on Phuc Yen like a broken record."[59] McNamara predicted that the subcommittee would fail in its attempt to find a chasm between himself and Wheeler or between them and the President: "sure there are small differences but these are worked out."[60]

Wheeler's testimony had tried to paint a picture of growing harmony between the civilian and military leadership. After all, many targets once

forbidden had since been approved, and he was confident that more approvals lay just ahead. Indeed during the hearings, President Johnson approved thirteen targets (in addition to the sixteen he approved just before the opening session). When Senator Smith asked the Air Force Chief of Staff about this, General McConnell offered the opinion that McNamara's recent trip to Vietnam may have caused him to appreciate for the first time the value of the air war in the north. But, McConnell added, "I haven't talked to him about it at all."[61]

Whatever success the Joint Chiefs had in portraying McNamara's conversion to their point of view evaporated when McNamara testified. The Secretary of Defense dismissed enthusiasm about the release of so many new targets. The new targets were of no great importance, and he had not changed his mind about the air war. In McNamara's view there never had been a significant disagreement between himself and the Joint Chiefs over bombing--just a difference of opinion about the allocation of only 5 percent of the sorties sent against North Vietnam. Symington interjected that attacking an octopus in the head seemed "pretty fundamental" even though the head was only 5 percent of the octopus. "But if you were attacking 95 percent of the octopus simultaneously," McNamara replied, "the analogy doesn't hold . . . ."[62]

The subcommittee did not accept McNamara's contention that attacking new targets would make little difference. They sided with the witnesses in uniform, who had stressed the critical importance of closing North Vietnam's ports, especially Haiphong. McNamara attempted to disparage the

value of Haiphong by emphasizing the small quantity of supplies needed for communist operations in South Vietnam: if less than one percent of North Vietnam's imports were required by communist forces in South Vietnam, surely enough supplies could be brought ashore in lighters at countless points along hundreds of miles of North Vietnamese coastline or carried overland from China. During the year since American bombers had destroyed oil off-loading facilities, North Vietnamese lighters had been delivering fuel in barrels.[63]

The subcommittee's frustration with McNamara's testimony was evident. Senator Howard W. Cannon (Democrat, Nevada), a major general in the Air Force Reserve, noted that imports coming through Haiphong supported the communist war effort whether or not those supplies crossed the border into South Vietnam. As to McNamara's argument that the North Vietnamese would simply find other ways to import necessary supplies, Cannon protested that if Americans were going to throw their hands in the air over such difficulties, they might just as well say, "Let us get out then because we cannot handle this problem." Symington seconded this view.[64]

At the end of August 1967, the Stennis subcommittee published its report. "What is needed now," the subcommittee stated, "is the hard decision to do whatever is necessary, take the risks that have to be taken, and apply the force that is required to see the job through."[65] But the substance of the subcommittee's recommendation was somewhat less bold than this rhetorical flourish. According to the subcommittee, it was necessary to close the port of

Haiphong, but it was not necessary to subject North Vietnam's cities to area bombing or even to use B-52s against targets near those cities.

None of the witnesses had called for using B-52s against the densely populated Red River delta. Admiral Sharp expressed concern about the possibility that a surface-to-air missile might bring down a B-52.[66] General McConnell noted that North Vietnam's air defenses were much stronger in 1967 than in 1965, when he had supported using the B-52s against targets in the delta.[67] General Wheeler declared that "no responsible military commander that I know of has ever yet advocated the attack of population as a target."[68] Wheeler left little doubt that his category of responsible military commanders did not include General LeMay, whose famous proposal to bomb the North Vietnamese back to the Stone Age was interpreted by Wheeler to mean attacking the population. While Wheeler was anxious to demonstrate that the bombing he favored would spare most civilians, McNamara used this claim as an argument against new targets. "There is no basis to believe," McNamara asserted, "that any bombing campaign, short of one which had population as its target, would by itself force Ho Chi Minh's regime into submission."[69] But no one at the hearings suggested that bombing in North Vietnam should be anything more than a partner of the ground war in South Vietnam.

After more than two years of gradualism, there seemed little room for dramatic action. Generals and senators might regret the failure to use B-52s against the Red River delta in 1965, but the North Vietnamese had been

permitted to grow accustomed to bombing gradually and build their defenses against it. In any case, no one at the 1967 hearings quarreled with the Johnson administration's decision not to threaten the existence of the communist government of North Vietnam. As much as the senators on the subcommittee disliked gradualism, following most of their recommendations could yield little more than another gradual escalation in the bombing campaign. Only their call for closing the port of Haiphong promised action of a relatively dramatic character.

The Stennis subcommittee report revealed the chasm between Secretary of Defense McNamara and the Joint Chiefs. At a press conference on the following day, President Johnson insisted that while there might be differences of opinion, there was "no deep division."[70] In any case the Joint Chiefs could come directly to him anytime they chose. Differences of opinion were natural in the American system of government, and Johnson recalled that in the late 1940s Secretary of the Air Force Symington had asked a congressional committee for an opportunity to testify on behalf of a bigger Air Force than the Truman administration thought feasible. As to McNamara, Johnson insisted that there was no truth to the rumor that the Secretary of Defense had threatened to resign if the bombing program expanded: "He doesn't go around threatening anything or anyone."[71]

Only three months later, Johnson would announce McNamara's departure from the Defense Department to become president of the World

Bank. McNamara's defense of administration policy at the Stennis hearings had not endeared him to the President. Although Johnson continued to oppose mining Haiphong, he was ready to conciliate proponents of bombing by authorizing less risky targets. McNamara's bleak assessment of the bombing's effectiveness at the hearings and his backstage search for a way out of Vietnam both served to weaken his influence. His testimony was frequently praised by critics of the bombing, including the North Vietnamese representative in Paris.[72]

In late November when he raised the possibility of McNamara's departure at a National Security Council meeting, President Johnson felt obliged to emphasize that no member of the Joint Chiefs of Staff had talked to him about resignation. General Wheeler immediately affirmed that no member of the Joint Chiefs had threatened to resign: "As far as I am conerned any report like that is a lie."[73] Nevertheless gossip about resignation threats continued to circulate. According to one version, some or all of the Chiefs had threatened to resign in May. According to another version, Wheeler had called a meeting of the Chiefs on the evening after McNamara's testimony to the Stennis Committee in late August; all had agreed to resign, but by the next morning Wheeler had changed his mind and they all kept quiet. When the latter version was published in 1989, the only surviving Chiefs from 1967, Admiral Thomas Moorer (Chief of Naval Operations) and General Wallace M.

Greene, Jr. (Commandant of the Marine Corps), both flatly denied that the Joint Chiefs had ever agreed to resign.[74]

While withdrawing support from McNamara, President Johnson developed a warm relationship with Wheeler. The President's top general was a consummate staff man without combat experience. Less than a week after the Stennis hearings, a heart ailment sent Wheeler to the hospital. Having had a heart attack of his own, Johnson was inclined to be sympathetic. When Wheeler offered to resign as Chairman of the Joint Chiefs, Johnson put his arm around him and told him that the President could not afford to lose him. Wheeler would remember proudly that on this occasion Johnson also praised him for never giving a bad piece of advice. Henceforth Wheeler would be a regular participant at Tuesday lunch sessions when Johnson chose targets for aircraft attacking North Vietnam.[75]

* * *

As a result of the Stennis hearings, the list of targets authorized by President Johnson grew somewhat longer. A few hours before the hearings began on August 9, 1967, the President approved new targets on the northeast railroad. For the first time, American aircraft would be permitted to strike rail yards and bridges in the buffer zone along the Chinese border--i.e. within twenty-five nautical miles of China. At the other end of the northeast railroad in Hanoi, the Doumer Bridge over the Red River at last became a target.

In communist Hanoi, the Red River bridge was called the Longbien Bridge. Its French name, the Paul Doumer Bridge, was still used by American airmen, though few knew who Doumer was. More than four decades had passed since the assassination of President Doumer of France, and the bridge was a product of his service in Vietnam at the turn of the century. As governor general of French Indochina, Doumer had tried to centralize the administration of French colonies in the region and make them profitable for France. He pushed for the construction of railroads which would link northern Vietnam with southern Vietnam and with China. Though the railroads were built, they did not spur the rapid economic development Doumer had expected. But when the communists began to develop North Vietnam in the 1950s, Doumer's railroad system played an important role in their plans.[76]

The linchpin of Doumer's railroad system was his Red River bridge at Hanoi. Rail traffic carrying goods from China or from the port of Haiphong had to pass over the Doumer Bridge to reach Hanoi and points south all the way to Saigon. This bridge was one of the most obvious targets in North Vietnam, and it had been spared so long only because its southern end projected into downtown Hanoi. Though well defended by anti-aircraft artillery and surface-to-air missiles, the bridge's great length made it vulnerable. This the longest bridge in Vietnam stretched for more than a mile, ten times the length of the hard-to-hit bridge at Thanh Hoa.[77]

The long, frustrating, and still unsuccessful campaign to destroy the Thanh Hoa bridge weighed heavily on planning for the Doumer strike. While the precision television guidance system of the new Walleye bombs would have been very desirable for hitting the Doumer Bridge and avoiding the population, the 1100-pound Walleye with its 825-pound warhead had proved too weak for the Thanh Hoa despite direct hits. Therefore the Air Force decided to use 3000-pound unguided bombs. On August 9th, President Johnson directed that the Hanoi power plant be struck again with Walleyes and that only after a week had passed could the Doumer Bridge be attacked. The next day, however, the President agreed to reverse the order of attack in deference to a temporary problem with the Walleyes.[78]

On the morning of August 11, 1967, Seventh Air Force told the F-105 wings at Takhli and Korat, together with the F-4 wing at Ubon, to bomb the Doumer Bridge that very afternoon. Aircraft already loaded with 750-pound bombs had to be reconfigured with a pair of 3000-pound bombs. The strike force of thirty-six fighters penetrated North Vietnam at 10,000 feet and flew down Thud Ridge before popping up to 13,000 and diving on the target. Though the unguided bombs were released more than a mile above the bridge, it was hit several times--destroying one of the nineteen rail spans and portions of the highway that ran along both sides of the track. As Walt Rostow commented to President Johnson, "dropping a span of that bridge the first time around was a quite extraordinary feat."[79] Not everyone was so

impressed, however. Two weeks after the raid, Secretary of Defense McNamara told the Stennis subcommittee that the target had been just another bridge: "We have struck tens if not hundreds of bridges of a similar kind."[80]

Since the North Vietnamese could no longer send trains across the Doumer Bridge, they had to transfer cargo to trucks and ferry them across the river. This delayed cargo moving west from Haiphong as well as south from China. Southbound traffic soon experienced additional delay after the Air Force bombed two bridges over the Canal des Rapides about four miles northeast of the Doumer Bridge. In response to the first strike on the original Canal bridge in May, the North Vietnamese had built a bypass bridge and repaired the old one; in August both ceased to function. The efficiency of the northeast railroad was further reduced by attacks on rail yards and bridges in the buffer zone along the Chinese border.[81]

So much interference with traffic on the northeast railroad had the desired consequence of increasing the number of box cars stalled in rail yards. The largest yard in North Vietnam at Yen Vien just north of the Canal des Rapides had been struck in December 1966, but since then it had been off limits along with most other targets within ten nautical miles of Hanoi. On August 21, 1967, about 150 box cars sat open to attack in the Yen Vien yard. Twenty F-105s and eight F-4s damaged more than half the box cars and trapped the remainder in the yard, where they were struck

again two days later. These strikes, however, cost the Air Force men and planes. On the 21st, two F-105s were lost to anti-aircraft artillery, as was an F-4 on the 23rd. But more surprising and dismaying was the loss of a pair of F-4s to MiG-21s on the 23rd.[82]

After suffering heavy losses in the air-to-air battles of May 1967, the MiGs had stood down. When they attacked on August 23rd, they employed new hit-and-run tactics. Having passed low under a strike force on its way down Thud Ridge, two MiG-21s climbed quickly and fell upon the force from the rear--a single pass and two heat-seeking Atoll missiles destroyed two F-4s. The most remarkable aspect of this incident was that nothing like it had occurred before over North Vietnam. American airmen on their way to strike a target had grown used to looking for a MiG ahead, though they had all been taught to "check six"--i.e., watch their "six o'clock" (or rear). The old admonition at once seemed more relevant. North Vietnam's ground radar control system had demonstrated that it could guide MiGs into the deadly six o'clock position.[83]

F-4 and F-105 strike aircraft on the Yen Vien raid that day were escorted by a flight of F-4s armed only for air-to-air combat and led by the commander of the 8th Tactical Fighter Wing, Colonel Robin Olds. A World War II ace, Olds' four victories in North Vietnam made him the top MiG-killer of the war so far. His flight was just behind the F-105s and just ahead of the strike F-4s. "I heard them scream," he would recall, "I turned,

and all I saw were two burning objects . . . ."[84] His compassion turned to anger when he learned that Seventh Air Force intelligence officers had known for several days that the MiGs were practicing this new tactic. He declared that had he been told, he would have split his escort flight of four into two elements and sent both elements ahead of the strike force--one element low and the other high, with the latter swooping back over the strike force as they came down Thud Ridge. Olds thought that this maneuver would have caused the North Vietnamese ground controller to call off the attack.[85]

Unfortunately, the MiG-21s on August 23rd took their toll and were only part of the Air Force's problems that day. Another F-4 was shot down by anti-aircraft artillery at the Yen Vien rail yard; a fourth ran out of fuel and flamed out over Thailand. Adding an F-105 hit by ground fire in Route Package Six and an F-4 in Route Package One, losses totalled six for the 23rd and caused pilots to call it "Black Wednesday." It was the worst day in the air over North Vietnam since "Black Friday," December 2, 1966, when five aircraft were lost, including three F-4s hit by surface-to-air missiles.[86]

Black Wednesday made relatively little impression in Washington, where American aircraft losses usually received less attention than enemy civilian casualties. A major exception to this general rule, however, had occurred only two days earlier, when two Navy A-6s strayed into China and were shot down by Chinese MiG-19s. That got Washington's attention, but

in the end disappointed those who expected this incident to bolster their argument against bombing targets near the Chinese border. The A-6s had bombed a rail yard near Hanoi far from the border and were trying to return to the carrier Constellation when a thunderstorm caused them to fly north of their intended route. The carrier and its radar aircraft attempted to warn the A-6s of their impending border violation, but the warnings were apparently not received. The Chinese limited their response to shooting down the A-6s and blaming the border violation on a conspiracy between President Johnson and Soviet Premier Kosygin. Far from discouraging strikes near the border, this relatively restrained Chinese reaction raised administration confidence that the Chinese would not increase their involvement in the war.[87]

While continuing to permit bombing near the Chinese border, President Johnson renewed his prohibition on bombing within ten nautical miles of the center of Hanoi--beginning August 24th, only two weeks after he had authorized targets there. No one in the Pacific was told the reason for this about-face, which had to do with the activities of Henry A. Kissinger, then director of the defense studies program at Harvard. Kissinger was acquainted with a microbiologist in Paris, Herbert Marcovich, whose friend Raymond Aubrac had been close to Ho Chi Minh. During Ho's negotiations with the French at Versailles in 1946, he had stayed in Aubrac's villa. Now Aubrac was working for the United Nations in Rome

and offered his services as an intermediary. With the encouragement of the State Department (conveyed informally through Kissinger), Aubrac and Marcovich visited Hanoi in July 1967. They proposed a variation on the two-phase formula which had become the American negotiating position.[88]

Since late 1966, the Johnson administration had expressed a willingness to stop bombing (phase A) before North Vietnam reciprocated by ceasing to infiltrate troops and supplies into South Vietnam (phase B). Since the two phases would not be connected overtly, North Vietnam would be able to claim that the United States had stopped bombing unconditionally. After consulting with Kissinger, Aubrac and Marcovich altered phase B, so that the North Vietnamese would only commit themselves not to increase their infiltration; the question of reducing that infiltration would be considered during negotiations which would promptly follow a bombing halt. Hence the United States would trade a bombing halt merely for negotiations. After the North Vietnamese expressed interest, President Johnson approved the new two-phase formula on August 18th; the next day he agreed to suspend bombing near Hanoi from August 24th to September 4th so that Aubrach and Marcovich would have plenty of time for a bomb-free second visit there.[89]

North Vietnam used the mid-August air strikes in the Hanoi area to justify not granting Aubrac and Marcovich permission for a second visit. They had to conduct their business through the North Vietnamese

representative in Paris, Mai Van Bo. For two months the North Vietnamese let the new two-phase proposal dangle, while President Johnson extended the prohibition on bombing within ten nautical miles of the center of Hanoi. Johnson made the American offer public in a speech at San Antonio, Texas, on September 29, 1967, and henceforth this proposal was called the San Antonio formula. But on October 20th, Mai Van Bo refused to see Aubrach and Marcovich; on the same day Wilfred Burchett, an Australian communist journalist, reported from Hanoi that the North Vietnamese were "in no mood for concessions or bargaining."[90]

The coincidence of the Kissinger initiative and the Stennis hearings was very awkward for President Johnson. As usual he tried to balance the conflicting demands of those who sought negotiations and those who wanted to increase the pressure on North Vietnam. After giving airmen two weeks to destroy the bridges over the Red River and the Canal des Rapides, he gave the North Vietnamese two months to rebuild them. As a sop to the Stennis committee he authorized new targets further from Hanoi, including one opposed during the hearings by Secretary McNamara--the coal exporting port of Cam Pha, but only when no ships were present. Since there were always ships at Haiphong and usually Russian ones, Johnson rejected the Stennis committee demand that North Vietnam's major port be closed by mining or bombing.[91]

As the Kissinger initiative dragged on, the President grew impatient. At a Tuesday lunch meeting with his advisers on September 12th, he wanted to know whether Kissinger was a dove. Secretary of State Rusk assured him that Kissinger was basically on the administration's side, though Rusk doubted productive talks would really follow a bombing halt; in Rusk's view, a bombing halt would thus prove to be only temporary. Walt Rostow worried that Kissinger might go soft in a crunch. But Rostow was himself becoming more amenable to a bombing halt, because he believed that the communists were losing the war in South Vietnam and therefore that bombing North Vietnam was no longer essential. So Rostow's optimism, Rusk's skepticism, and McNamara's pessimism all pointed toward a bombing cutback. In the fall of 1967, however, President Johnson paid more heed to calls for harsher bombing from the Joint Chiefs of Staff and their allies in the Senate.[92]

* * *

While waiting for the Kissinger initiative to die and thus release targets near Hanoi, the Joint Chiefs sought Johnson's approval for striking North Vietnam's major MiG base at Phuc Yen--more than ten miles from the center of Hanoi. During the Stennis hearings, Senator Symington's repeated demands that Phuc Yen be hit were undercut by General Momyer's claim that the MiGs had been driven from the sky in May. Even before the hearings were over, however, the MiGs began to display new

aggressiveness and effectiveness. In September bad bombing weather and the prohibition against bombing near Hanoi cooled the air-to-air battle and the MiGs got only one kill, but forty-eight American aircraft jettisoned bombs while fending off the MiGs.[93]

In mid-September, Richard Helms at the Central Intelligence Agency called Walt Rostow to report that Senator Symington was in a very black mood as he prepared to leave Washington for another trip to Southeast Asia. Symington was worried about the economic burden imposed by America's gradual escalation of the war. Rostow cabled Ambassador Ellsworth Bunker in Saigon that he would need to do a lot of missionary work on Symington. But no amount of missionary work could dissuade the senator from his growing conviction that the United States must hit North Vietnam hard or quit.[94]

Upon returning to Washington, Symington proposed that the United States cease all military action in both North Vietnam and South Vietnam--but that if productive negotiations did not follow, American airmen should be free to conduct a much harsher bombing campaign. This proposal immediately ran into opposition at the Defense Department and the State Department. Under Secretary of State Katzenbach protested that the "only purpose of formulating cessation of military actions in this way would be to justify major escalation."[95] General Wheeler, on the other hand, deemed it "improbable that any feasible post-pause increase in the scope

and intensity of our combat operations could offset rapidly the advantages which the enemy would acquire during the proposed cessation of hostilities."[96]

Before Symington circulated his new cease-fire proposal, President Johnson had already moved to satisfy the senator's longstanding demand that the Air Force be permitted to bomb the MiG base at Phuc Yen. But Johnson had no more than approved the target on September 26, 1967, when he was persuaded to withdraw it the very next day. The White House belatedly discovered that the Rumanian Prime Minister, Ion Gheorghe Maurer, was due to land at Phuc Yen within hours of the planned strike. The State Department was grooming Maurer as the vehicle for its latest peace initiative and had promised him a bomb-free visit to Hanoi. The Central Intelligence Agency took this opportunity further to delay a strike on Phuc Yen by pointing out that there were perhaps two hundred Soviet advisers there.[97]

The Central Intelligence Agency got support from a surprising ally when Colonel Robin Olds visited the White House on October 2d. Olds had given up command of the F-4 wing at Ubon to become commandant of cadets at the Air Force Academy. He confirmed that the change in MiG tactics was causing problems, but he was opposed to striking Phuc Yen: "I'd rather knock them out of the skies. . . . I would rather have them coming from Phuc Yen, because I know where they are."[98]

The Air Force Chief of Staff, General McConnell, would have been appalled to hear Olds' advice to the President on Phuc Yen. After the postponement of the Phuc Yen strike, North Vietnamese MiGs knocked down three more American aircraft. When McConnell stood in for Wheeler at a meeting with Johnson and his principal advisers on October 11, McConnell pushed for an attack on Phuc Yen. He hoped to destroy at least eight of the sixteen MiGs there even if it cost as many as three American aircraft. Secretary of Defense McNamara dismissed Phuc Yen as militarily marginal, and Secretary of State Rusk agreed. But Rusk also said that he was not too concerned that any unfortunate consequences would result from bombing Phuc Yen--he only wanted the strike postponed for a few more days. With the collapse of the Kissinger peace initiative a week later, President Johnson approved a strike on Phuc Yen together with restrikes against the Hanoi bridges and power plant.[99]

Phuc Yen airfield was located in Route Package Six's western half, where the Air Force usually did any bombing that was permitted. But other services wanted a share in attacking the principal MiG base. Both of the Navy's carriers then serving in the Gulf of Tonkin participated in the Phuc Yen strikes of October 24th and 25th, as did a Marine A-6 from South Vietnam. The Air Force, of course, was also well represented. In addition to providing F-4 escorts for the F-105s from Takhli and Korat, Ubon sent F-4s loaded with bombs.

Although the target was ringed with especially heavy defenses, this was a mission that many aircrew were eager to fly. When three out of four aircraft in one Ubon flight were not loaded in time for the first strike on the 24th, the flight leader borrowed an F-4 from another squadron for his wingman and they took off as an element of two--deprived of the mutual protection (especially in terms of electronic jamming) provided by a flight of four. Yet no losses were suffered either by this foolhardy flight or by any of the other Air Force flights attacking Phuc Yen on October 24th. The Navy was not so fortunate, losing two F-4s on the 24th and an A-4 on the 25th--when the Air Force also lost a plane, an F-105 diving to bomb the guns that hit it.[100]

These initial attacks cratered Phuc Yen's runway and damaged its tower, thanks to a direct hit on the latter by a Navy Walleye guided bomb. Most of the eighteen MiGs then based at Phuc Yen were caught on the ground; reconnaissance photography indicated that perhaps a dozen of them suffered severe damage. On October 24th, two MiG-21s had taken off against the first wave of attackers--Air Force F-105s and F-4s from Thailand. As the MiGs were attempting to get behind the attacking force, an F-4 escort used a twenty-millimeter cannon to shoot down a MiG.[101]

The F-4 was not designed originally to carry a gun, because the aircraft's missiles were supposed to down an enemy before he could get within range of gunfire. But over North Vietnam, American airmen were

usually required to identify an enemy aircraft with their own eyes before firing missiles or guns; otherwise, Americans might have been more likely to hit each other than the enemy. Having got close enough to a MiG to see it, an F-4 pilot often found himself too close to fire a missile. He needed a gun. This need was first filled in the spring of 1967 by attaching a gun pod, which occasionally proved adequate--as it did enroute to Phuc Yen on October 24, 1967. Not for another year would F-4s reach Southeast Asia with a gun built into the nose.[102]

The F-4's most effective air-to-air weapon during the first two and a half years of the war was the heat-seeking Sidewinder missile. When chasing an enemy aircraft, the Sidewinder could be fired several hundred feet closer than the F-4's other missile in those years, the radar-guided Sparrow. Beginning in the fall of 1967, nevertheless, the Sparrow supplanted the Sidewinder as the F-4's preeminent air-to-air weapon in Southeast Asia. This turnabout was a consequence of the introduction of a new aircraft model, the F-4D, which did not carry the Sidewinder. Instead the F-4D's Sparrows were paired with a heat-seeking version of the Falcon, which had been developed as a radar-guided missile. Unfortunately, the heat-seeking Falcon proved less effective than the Sidewinder in Southeast Asia.

The dismal record of the Falcon was especially disappointing to the Air Force, because this missile had been developed under Air Force

auspices. The Sidewinder and Sparrow, on the other hand, were (like the F-4 itself) products of Navy development. All three missiles shared the drawback of having been designed for defense against relatively slow-moving bombers. On paper at least, the supersonic Falcon appeared to have an advantage over subsonic Sidewinders and Sparrows. With a capability for hitting a target being chased at a range of less than 2000 feet, the Falcon might have been expected to be more useful in a dogfight than either the Sidewinder or the Sparrow. But the Falcon was fatally handicapped by a very small warhead which lacked a proximity fuse. Unlike the Sidewinder and the Sparrow, the Falcon had to make a direct hit to destroy an aircraft.[103]

Despite their Air Force origin, Falcon missiles could not count on a warm welcome at Ubon Air Base, Thailand. Colonel Robin Olds was finishing his tour as commander of the 8th Tactical Fighter Wing in the summer of 1967, when F-4Ds began to replace his wing's F-4Cs. Even before the first F-4Ds left Florida for Ubon, their crew members heard that Olds took a dim view of the Falcon and would be none too happy to see the bearers of bad weapons. Although Olds put on a welcome parade followed by a party at the officers club, he never found any reason to change his mind about the Falcon. Indeed he blamed the Falcon for robbing him of a fifth kill in Vietnam.[104]

An F-4D did not down a MiG with a Falcon missile until October 26, 1967, after the departure of Olds and all F-4Cs from Ubon. In the wake of the initial strikes on the MiG base at Phuc Yen, a flight of four F-4Ds returned as escorts for a reconnaissance mission. During ingress they were warned by an EC-121 radar surveillance aircraft that MiGs were heading in their direction. As the F-4s headed southeast down Thud Ridge at 18,000 feet, they spotted six MiG-17s at 10,000 feet. Instead of waiting for the F-4s to come down where the slower, more maneuverable MiG-17s could fight to best advantage, the MiG pilots made the fatal mistake of climbing to 16,000 feet. Here they went into a wagon wheel formation, which could be effective in a dogfight since the MiGs were well positioned to cover each other's tail. But the F-4s sped through the wheel repeatedly with their own version of hit and run. While one element of two F-4s was breaking through the MiGs, the other element was gaining distance to fire its missiles. Two of six Sparrows launched found their mark as did one of three Falcons, while the F-4s all emerged unscathed. More than four years would pass before the Air Force could boast another day with three air-to-air victories. During the remaining months of Rolling Thunder, MiG pilots would be more careful to engage only when the odds were heavily in their favor.[105]

North Vietnamese MiGs continued to harass American aircraft despite repeated attacks on most airfields in North Vietnam--most but not all. Hanoi's Gia Lam airport remained out of bounds, and MiGs could

always be assured of sanctuary there as well as across the border in China. The Bac Mai airfield on the southern edge of Hanoi did not have a runway long enough to handle MiGs, but a bunker here housed an air defense command post. President Johnson would not countenance an attack on Gia Lam, which was used regularly by diplomats (including those working for the International Control Commission established by the Geneva Accords of 1954). In the case of Bac Mai, however, he proved amenable, despite the presence of American prisoners at a camp adjacent to the airfield.[106]

Bac Mai played an important role in controlling not only MiGs, but also surface-to-air missiles and anti-aircraft artillery. As they had throughout the war, artillery and missiles continued to down more American aircraft than did the MiGs. On October 27th there occurred an especially severe reminder of this fact during a strike on the bridges over the Canal Des Rapides. Two F-105s crashed after being hit by surface-to-air missiles, while artillery took a third. Later in the day another F-105 was downed by artillery fire while attacking a missile site. Missiles, artillery, and MiGs worked together in a close coordination that the Air Force hoped to disrupt by striking Bac Mai. The raid of November 17th, however, failed to make a noticeable difference in North Vietnam's air defense network, even though one bomb exploded on a mound believed to cover the command bunker.[107]

The impact of an air raid like that on Bac Mai can be measured in many ways, some of them very personal. For Capt. Gene I. Basel, Bac Mai was the raid that took his close friend and element leader, Maj. Charles E. "Cappy" Cappelli, whose F-105 encountered a surface-to-air missile. Basel would remember that before the raid "Cappy" had breached an unwritten rule by promising to do some paperwork when he got back: "It's not done. You don't talk about coming back."[108] The death that caught the eye of the press, however, was that of an Indian staff sergeant at the International Control Commission office in downtown Hanoi, more than two miles from Bac Mai. Whether he died from stray munitions of the attackers or the defenders, his death underlined once more the political cost of bombing near cities.[109]

* * *

In November 1967 the northeast monsoon ended Rolling Thunder's last stretch of good bombing weather over the Red River delta. At that time the drizzle appeared to represent no more than a repetition of the five-month hiatus experienced during each of the previous two years. Few expected that before another five months had passed, President Johnson would call off bombing in the delta. The Stennis hearings had shaken down targets long withheld: the Doumer Bridge in Hanoi, the rail targets close to China, the principal MiG base at Phuc Yen, and the air defense control center at Bac Mai. But President Johnson had few major targets left to

grant without authorizing those he considered so sensitive that they might break the bounds of gradualism and threaten a wider war. He continued to draw the line on escalation at Haiphong harbor, and not even the Joint Chiefs were recommending strikes against the Red River flood control dikes, the population of North Vietnam, or Chinese airfields.

The concept of gradualism had lost most of its adherents. Secretary of Defense McNamara and other early advocates now wanted a bombing cutback. Those like Generals LeMay and McConnell who had favored a more vigorous bombing campaign in 1965 found that much of their original target list had been gradually bombed or mined--with the major exception of Haiphong harbor. Having once lost the opportunity for a surprisingly sharp blow, there seemed little chance of retrieving it. Even had President Johnson authorized mining Haiphong harbor, that action could no longer have quite the impact it might have had at the outset as part of a rapid campaign against most major targets. All that the proponents of a sharp blow had been able to achieve was an occasional quickening in the pace of gradualism.

Despite its faults, gradualism finally reached after two years an intensity which seemed to cause the North Vietnamese real difficulty. In September 1967, when John Colvin left his post as British consul general in Hanoi, he judged North Vietnam "no longer capable of maintaining itself as an economic unit nor of mounting aggressive war against its neighbor."[110]

He attributed the subsequent communist offensive to forces and supplies already gathered before the summer bombing, which he believed capable of causing a collapse of the North Vietnamese government--if the bombing had continued and if the North Vietnamese ports had been closed. In Colvin's view, such a state of affairs could have been achieved in 1965 with a more serious air campaign.

Whatever might have been, American intelligence was far less sanguine about the progress of Rolling Thunder. While finding that North Vietnam's rail system was in the worst shape ever, the Central Intelligence Agency and the Defense Intelligence Agency reported that essential military and economic traffic continued to move on highways and waterways; communist allies supplied necessities no longer available from North Vietnam's devastated industries. As to the impact of Rolling Thunder on the ground war in South Vietnam, the intelligence agencies repeated their old view that the North Vietnamese retained their ability to support operations in South Vietnam and Laos "at present or increased combat levels." The intelligence agencies did concede that the air strikes had "degraded" North Vietnam's capability to sustain large-scale conventional operations.[111]

American airmen in Southeast Asia paid a high price for gradualism. It gave North Vietnam ample opportunity to build formidable defenses against them. As with all attrition campaigns, the question seemed to be which side would wear down first. But that question was not to be answered

in the air over North Vietnam, for the communists were to end bombing there by attacking cities in South Vietnam. In the two months remaining before the Tet offensive, Rolling Thunder once again failed to maintain its power through the persistent clouds of the northeast monsoon.

Notes

Chapter 3

Gradualism on Trial

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CHAPTER 4

SEASON OF DISCONTENT

The fourth and last northeast monsoon of Rolling Thunder brought all the usual frustrations in greater measure. From November 1967 to March 1968, American airmen had to deal with the worst bombing weather over North Vietnam that they had encountered. Their attempts to bomb accurately through clouds achieved few demonstrable successes; nor did seeding transportation routes with mines that were too easy to sweep in water and too easy to see on land. The previous northeast monsoon had at least offered the compensation of major progress in coping with North Vietnam's air defenses. This time the MiGs were fewer, but they were flown with greater skill. Despite radar jammers now carried in a pair of wing pods on each American fighter, North Vietnamese guns and surface-to-air missiles could still be deadly--especially when an aircraft left a formation and the protection of jamming pods carried by other aircraft, or when the North Vietnamese fired a barrage at a large formation, or when they used optical tracking instead of radar tracking.

After a year of considerable progress in the air war, a nearly total loss of momentum weighed heavily on airmen. General Momyer, the Seventh Air Force commander in Saigon, and General Ryan, the Pacific Air Forces commander in Hawaii, began to get on each other's nerves. They had different views of what Seventh Air Force should be doing during the bad weather months. Ryan's years in the Strategic Air Command predisposed him to place special emphasis on the all-weather bombing problem. During his first winter in Hawaii, he had sponsored an attempt to use two-seat F-105Fs for low-level raids in bad weather. Despite the inability of Ryan's Raiders to overcome inadequate radar (inadequate both for flying at low level and for dropping bombs accurately), he continued to support their ineffective high-level strikes. Momyer, on the other hand, saw little merit in Ryan's preference for using F-105Fs as bombers rather than as Wild Weasels combatting enemy SAMs.[1]

Momyer had spent his career in the tactical air forces. Gen. Gabriel P. Disosway, then in charge of the Tactical Air Command (TAC), would later say that "Spike knew more about TAC, I guess, than anybody" except perhaps Gen. Otto P. Weyland, who had commanded Far East Air Forces during the Korean War. According to Disosway, Momyer was a hard man to deal with because he was "so much smarter than most people" that he was very impatient--he already knew the answer before other people had even started to think about the question.[2] In the case of all-weather bombing, Momyer was convinced that

given the available equipment and the prohibitions on area bombing of urban targets, little could be done.[3]

During bad weather, Momyer preferred to concentrate on enemy air defenses--especially MiGs. Although airfield attacks and air-to-air battles had reduced the number of MiGs based in North Vietnam from more than a hundred at the beginning of 1967 to fewer than twenty at the end of the year, the pilots of the remaining MiGs demonstrated increasing ability and aggressiveness. In December they forced more than ten percent of the sorties bombing Route Package Six to jettison bombs before reaching the target. Having reduced the jettison rate to less than one percent earlier, Momyer did what he could to regain control of the situation. He increased the ratio of escort and patrol sorties to strike sorties from less than one-to-five to more than two-to-one. That brought the jettison rate down to about three percent but did not increase the rate of MiG shoot-downs, which continued to limp along at four or five a month.[4]

While MiGs destroyed in North Vietnam could always be replaced by those stationed in China, air-to-air victories might take a toll on North Vietnam's best pilots. Momyer had reason to be proud of his role in planning Operation Bolo, which had destroyed at least seven MiGs in the air on January 2, 1967. But when he tried a similar sweep on January 6, 1968, fewer MiGs came up and none were destroyed. Instead of F-4s pretending to be F-105s as in Bolo, Momyer's new sweep featured thirty-four F-105s stripped of their

bombs and ready to dogfight. Most of them crossed Thud Ridge at 14,000 feet and turned east as if intending to strike Kep airfield or the railroad bridge at Mo Trang, fifteen miles west of Kep on the line to Thai Nguyen. Not surprisingly, their ruse was soon discovered, when two pairs of MiG-21s attacked from the rear. Typical of North Vietnamese tactics since August, it was a hit-and-run attack out of the late afternoon sun. The MiGs and the strike force traded heat-seeking missiles without doing any damage, and the MiG pilots escaped to tell their controllers that the F-105s were not carrying bombs. The best opportunity for destroying an enemy aircraft that afternoon came a few minutes later, when an F-105 pilot noticed an Il-14 Crate transport several thousand feet below, headed for Hanoi. While the F-105 pilot was getting his force commander's permission to attack this gray cargo plane with a red star, it dove into the nearest cloud; the F-105 got off one burst of gunfire and missed.[5]

"In my opinion," Ryan informed Momyer, "this type of operation is not very productive. . . . The firing on the Crate . . . appears to be in violation of rules of engagement."[6] Momyer had to agree that there was a rule prohibiting attacks on enemy transports, but he protested that it was a "strange rule" in view of repeated enemy gunfire against American civilian airliners in South Vietnam (not to mention military transports). As to the fighter sweep as a whole, Momyer insisted that while he had no illusions about another Bolo, there was nothing better to do with his aircraft during the northeast monsoon.[7]

Ryan had combined his short sermon on MiG sweeps with a proposal to make more use of Walleye television-guided bombs. Momyer was less than enthusiastic. Since their introduction in Southeast Asia during 1967, the Walleyes had been in short supply. But their accumulation in storage at Ubon Air Base, Thailand, did not convince Momyer that they should be used while the weather was so unfavorable. Rarely could he count upon the clear sky necessary for F-4s to release Walleyes on a target. Furthermore, the Air Force Walleye was not yet as good as the Navy original. Momyer complained that the Air Force version had been "pushed into combat" despite limitations which constrained him to use it only under optimal conditions at high noon. "Nevertheless," he told Ryan, "we will use the Walleye wherever it appears worthwhile."[8]

Momyer also indicated that he had resorted to a fighter sweep only after trying other means for defeating the MiGs. He had sent F-4 escorts ahead of the strike force by as much as a quarter of an hour; he had added a flight of them at 40,000 feet, far above the strike force; he had sent two flights below enemy radar to pop up and surprise the MiGs; he had combined a close escort with a roving flight. But the fundamental problem remained that Seventh Air Force was "operating with less than real time information, while the enemy has this information available to him."[9]

One of Momyer's major objectives had been to improve Seventh Air Force's warning and control system while impairing North Vietnam's. MiG

effectiveness depended upon ground control, which could be reduced by jamming early warning and intercept radars. The relatively small transmitters carried in pods by American fighters were used to jam SAM and artillery control radars, leaving early warning and MiG intercept radars to more powerful but more distant jammers carried by Douglas EB-66s (subsonic jets originally designed as light bombers but converted to electronic warfare). In 1965, EB-66s had accompanied strike forces to within a few miles of targets in the Red River delta, but MiGs and SAMs had forced the EB-66s farther and farther away. By the summer of 1967, two or three EB-66s were orbiting near the intersection of the twentieth parallel and the Laotian border, seventy-five miles southwest of Hanoi, while a like number orbited over the Gulf of Tonkin.[10]

On November 15, 1967, Seventh Air Force sent two EB-66s north of Thud Ridge for the first time since 1966. This boldness was encouraged partly by the movement of SAM launchers away from the ridge southeast into Hanoi and the panhandle. EB-66s had also been vulnerable to MiG attack, especially because their jamming transmitters interfered with communications from fighter escorts and the EC-121 radar warning aircraft. A new radio remedied that problem, and permitted the experiment of November 15th. Two EB-66s flew long-abandoned orbits without difficulty on that day.[11]

Five days later, however, an EB-66 orbiting north of Thud Ridge was attacked from the rear by a pair of MiG-21s, one diving and one climbing. Two

F-4 escorts weaving behind the EB-66 saw the MiGs and warned the EB-66 to break into a downward spiral--just in time to evade a heat-seeking Atoll air-to-air missile fired by the climbing MiG. Although the EB-66 and its escorts escaped unharmed, the F-4 aircrews from Ubon Air Base, Thailand, were unhappy with their performance. Weaving behind an EB-66 seemed an unsatisfactory way to accommodate its slower speed, and they were confident that they could work out better tactics through discussion with the EB-66 aircrews at Takhli Air Base, Thailand. No such planning had yet taken place, nor would it. Seventh Air Force decided that one close call was enough and required EB-66s to stay far south of Hanoi.[12]

During the next month, Seventh Air Force tried to improve jamming by increasing the number of EB-66s operating during a strike to as many as fourteen. This augmented force began to drop chaff timed to confuse North Vietnamese radar coverage of an ingressing strike force as well as of the EB-66s themselves. On January 14, 1968, however, only five EB-66s were orbiting in support of late afternoon strikes on targets in Route Package Five. A pair of MiG-21s took off from Phuc Yen and flew south toward Thanh Hoa. Before reaching the twentieth parallel, they turned west and attacked an unescorted EB-66 orbiting near the Laotian border. An Atoll air-to-air missile struck the EB-66 in the right wing. All seven crew members managed to get out of the crippled plane. The pilot, instructor navigator, and an electronic warfare officer were rescued two days later, together with five members of a

helicopter crew who had crashed while trying to pick up the EB-66 crew in bad weather. The EB-66's remaining three electronic warfare officers and navigator spent the rest of the war in captivity. Theirs was the last EB-66 permitted to fly over North Vietnam. Henceforth EB-66 orbits were limited to Laos, the Gulf of Tonkin, and South Vietnam; a barrier patrol of fighters began to protect the EB-66s in Laos, just as Navy fighters had long provided protection for Air Force EB-66s operating over the gulf.[13]

The EB-66's failure to provide effective jamming of MiG ground control radars was partially offset by an improvement in Seventh Air Force's ability to guide its own fighters. Since much of the airspace over North Vietnam could not be surveyed by American ship radar, let alone more distant ground radar, Seventh Air Force used airborne radar carried by the propeller-driven Lockheed EC-121. The "Connie" was a variant of the Super Constellation commercial transport. Its radar had been designed to detect bombers approaching North America over water; looking down over land the Connie's radar screens were filled with clutter. A Connie skimming fifty feet above the Gulf of Tonkin could only survey the sky over Hanoi above ten thousand feet.[14]

Far more valuable than its radar was the Connie's ability to interrogate Identification Friend or Foe (IFF) transponders carried by American and North Vietnamese aircraft. The first Connies which came to Southeast Asia in 1965 had the equipment necessary to interrogate both friendly and enemy transponders, but the Air Force had not wanted the North Vietnamese and

their allies to know that the United States had the latter capability. Connie controllers were not permitted to interrogate enemy transponders until the fall of 1967; before then, Connie controllers could only wait for North Vietnamese controllers on the ground to trigger MiG transponders. Because of this limitation, Connie controllers rarely could do more than issue a warning that MiGs were airborne.[15]

Fuller use of the Connie's capabilities was stimulated by the arrival in Thailand of "Rivet Top," an experimental Connie sponsored by the Tactical Air Command. Air Defense Command Connies had become unpopular with fighter pilots not only for the vagueness of their MiG warnings, but also for an ability to track American pilots who flew into China. While a Connie border warning could save an American pilot from being surprised by Chinese MiGs, some pilots turned their transponders off to gain airspace without leaving a record which could damage their careers. Some also feared that the North Vietnamese had the ability to interrogate American transponders. Rivet Top could not stop pilots from turning off their transponders, but it did persuade General Momyer that Connies could contribute to shooting down MiGs.[16]

The impact of Rivet Top could be attributed partly to its improved capabilities and partly to its sponsorship. General Disosway at Tactical Air Command was in a better position to influence Momyer (an obvious choice to succeed Disosway) than was Lt. Gen. Arthur C. Agan, Jr. at Air Defense Command. The Seventh Air Force Commander and his fighter pilots warmed

to Rivet Top in a way they never had to Air Defense Command Connies, which had been moved from crowded base to crowded base and berated for the slovenly appearance of aircraft and crews. Rivet Top was embraced as a help against MiGs rather than as a border policeman restraining F-4s and F-105s. Although this fighter-pilot discrimination aroused resentment among Air Defense Command controllers, Rivet Top broke down barriers which had been preventing the other Connies from playing a more significant role.[17]

Even when Air Defense Command Connies were at last permitted to interrogate enemy transponders, however, they were not quite as well equipped as Rivet Top to track MiGs. While Air Defense Command Connies could interrogate most of North Vietnam's Soviet-made transponders, Rivet Top could interrogate a few more. Rivet Top could also compare SAM radar emissions with a computer data base on launch sites; unfortunately this missile detection system could only deal with three sites at a time and was often overloaded. A more useful innovation was the inclusion of Air Force Security Service equipment and personnel, so that Rivet Top could bring together radar and communications intelligence on MiG activity.[18]

Faced with competition from Rivet Top, Air Defense Command moved to upgrade its version of the plane. By the summer of 1968, Air Defense Command Connies were also carrying Air Force Security Service personnel. This reinforced General Momyer's decision of October 1967 to permit direct communication between Connies and fighters. Other intelligence gatherers

continued to break rules against talking directly to aircrews. Anonymous warnings were often repeated by pilots again and again, contributing to a nervous babble.[19]

Since 1966, Seventh Air Force had been trying to insert its Monkey Mountain control center (near Danang, South Vietnam) between intelligence sources and users. Monkey Mountain was intended to be a "fusion center" where the intelligence picture was put together and made available to aircrews flying over North Vietnam. Using equipment developed to help Air Defense Command to defend North America, Seventh Air Force was building a command post at Monkey Mountain to provide direction for fighter pilots engaged with MiGs. Control centers at Udorn Air Base, Thailand, and Tan Son Nhut Air Base near Saigon were to be similarly equipped, but in late 1967 only Monkey Mountain was beginning to use an automated processing and display system. Seventh Air Force was far behind Seventh Fleet in automating air control. Monkey Mountain computers at last permitted Seventh Air Force to tie into the Navy and Marine tactical data systems in March 1968.[20]

Meanwhile MiGs continued to surprise American strike forces. Although Connie warnings were often more precise and communicated directly to the appropriate aircrews, sometimes communications were inadequate or MiGs simply were not detected in time. Even a force designed specifically to destroy MiGs in the air, like Momyer's big sweep of January 6, 1968, could be hit by MiG-21s without warning from a Connie or from Monkey Mountain, let alone

guidance necessary to intercept MiGs. "We are still behind the enemy," Momyer explained ruefully to Ryan.[21]

* * *

While General Momyer was especially disheartened by failure to make much progress in overcoming North Vietnam's air defenses, General Ryan's principal frustration was a lack of success in bombing during the cloudy weather extending from November to April. The Navy's Grumman A-6 Intruder, a subsonic jet with terrain-following radar, was the most effective bad-weather bomber available in Southeast Asia. Ryan succeeded in getting some Marine A-6 sorties allocated to Air Force targets in the Red River delta, but there were not enough Marine and Navy A-6s to do much more than harass the North Vietnamese. He was eager to deploy the Air Force's new tactical bomber, the General Dynamics F-111, which promised to be still more accurate than the A-6.[22]

Soon after six F-111s reached Takhli in March 1968, however, three of them crashed. The wreckage of one of these together with that of another crash in Nevada indicated a weak weld in a tail control rod. This was but one in a series of problems which had plagued the F-111 development program ever since Secretary of Defense McNamara had attempted to marry Air Force plans for a tactical bomber with Navy plans for an air superiority fighter; a novel ability to change configuration in flight using variable sweep wings did not bridge the gap between these two functions, and while Air Force F-111s were

crashing in Southeast Asia, the Navy was pulling out of the program altogether.[23]

Few of the Takhli F-111 missions went according to plan--a lone aircraft weaving through mountains at night and skimming across the coastal plain of the North Vietnamese panhandle to drop bombs on truck parks and storage depots. Returning F-111 pilots and weapon systems operators reported little hostile fire, but they had difficulty identifying their target in time to make a satisfactory bomb run. Of seventy-one sorties sent against North Vietnam, only eighteen had good runs with measurable results. Half their bombs fell within 500 feet of the target--equal to daylight dive bombing in clear weather and superior to the A-6 in bad weather, but disappointing in a program which hoped to put half its bombs within 200 feet of the target.[24]

The Air Force received considerable criticism for sending a new weapon system into battle before it was ready. Chief of Staff McConnell shrugged off this criticism with the observation that there was much to be gained from testing equipment in combat and that F-111s were also lost in the United States during testing.[25] Secretary Brown doubted that the Soviets would learn a great deal from F-111 debris in North Vietnam.[26] But General Ryan regretted having lobbied hard for the F-111's early deployment.[27] It was not ready yet, and in any case did not reach Southeast Asia in time to make a real difference. Only a few days after the F-111's arrival in Thailand, the United States ceased to bomb targets in the Red River delta. Not until 1972 would the F-111 have

an opportunity to display its capabilities against the most heavily defended targets in North Vietnam. During the northeast monsoon of 1967-68, the Air Force had to make do with older aircraft.

A year earlier, General Ryan had sent two-seat F-105Fs on low-level raids in bad weather. But the plane's terrain-following radar and bombing computer had proved inadequate. So Ryan's Raiders had climbed to altitudes above 10,000 feet, where their bombing was even less accurate. There they were joined by F-4Ds whose newer equipment proved no more effective--strikes with average bombing errors of 3000 feet were common for both types of aircraft. Part of the problem was a shortage of targets with good radar signatures. Usually it was necessary to relate the target to a landmark in the area and offset the bomb drop accordingly. As aircrews gained experience and the radar film library grew, bombing accuracy improved.[28]

Meanwhile in South Vietnam, the Air Force had less difficulty bombing through clouds. There ground controllers used "Skyspot" bomb-scoring equipment to track B-52s and other aircraft; when the bomber reached the correct position, the controller signaled the bomber to drop bombs. Control stations near the demilitarized zone and at Nakhon Phanom, Thailand, enabled the Air Force to employ this system in the panhandle of North Vietnam. But the Red River delta remained out of range until a control station could be established about 125 miles west of Hanoi in Laos.[29]

As with all other Air Force activity in Laos, the control station at Phou Pha Thi had to be approved by the American Ambassador, William H. Sullivan. He at first opposed it, because he suspected that the Prime Minister, Prince Souvanna Phouma, would not want Laos involved in directing offensive operations against North Vietnam--despite the fact that North Vietnamese troops were engaged in offensive operations in Laos. Indeed a problem with the proposed location at Phou Pha Thi was its vulnerability to North Vietnamese attack. Nevertheless, Souvanna Phouma did permit establishment of the new control station, provided that it was not manned by American military personnel. The Air Force worked around this prohibition by having its controllers wear civilian clothes and sign paperwork temporarily releasing them from the service; fresh teams of controllers arrived by helicopter from Thailand. In a further effort to disguise Phou Pha Thi's role, the controllers there communicated with attacking fighter-bombers via an EC-135 radio relay aircraft.[30]

The mountain of Phou Pha Thi guarded a major route from Hanoi to central Laos. The Meo forces of General Vang Pao defended it for its own sake, and the Central Intelligence Agency had established an airstrip at the foot of the mountain to resupply them. Before putting controllers on top the mountain, the Air Force had already set up a radio navigation beacon for fighter-bombers on their way to North Vietnam. The controllers had only been on Phou Pha Thi two months, when the North Vietnamese made it the target of their only air

attack on ground forces. Two old Russian Antonov AN-2 biplanes dropped crude bombs converted from mortar rounds before being shot down; ground defenders claimed both, but according to Central Intelligence Agency personnel, an Air America helicopter should have been credited with one of the kills.[31]

Despite a substantial investment in Phou Pha Thi, the Air Force doubted that Vang Pao could hold it; explosives were attached to all the equipment on the mountain in preparation for a quick getaway. But when the communists overran Phou Pha Thi in March 1968, General Momyer and Ambassador Sullivan had waited too long to order evacuation. Twelve of nineteen Americans at the site were dead or missing, and their equipment was not destroyed.* The Air Force had to bomb the control station, while Momyer and Sullivan entered into a heated debate about responsibility for the failure either to defend the site or evacuate in time.[32]

From November 1967 to March 1968, controllers at Phou Pha Thi directed nearly a hundred "Commando Club" strikes against the Red River delta. But ground controlled bombing proved disappointing in this part of Vietnam. The control site was too far from its targets for anything more accurate than area bombing. Hence to do much damage, the Air Force needed to send a big force against a big target. When such a raid was attempted against Phuc Yen airfield, its heavy defenses destroyed four F-105s and caused

* One of the twelve was killed on board a helicopter after extraction.

the rest of the strike force to jettison bombs. The 388th Tactical Fighter Wing at Korat Air Base, Thailand, lost its commander, Col. Edward B. Burdett, only three weeks after its vice commander, Col. John P. Flynn, was shot down over Hanoi. Unlike Colonel Flynn, Colonel Burdett and three men downed with him would not come home at the end of the war.[33]

The unfortunate ground-controlled raid against Phuc Yen occurred on the morning of November 18th. A dozen F-105s carrying bombs were protected from MiGs by four F-4s and from SAMs by eight more F-105s. Half the latter constituted the normal Iron Hand flight with Shrike radar-seeking missiles, whose presence encouraged the North Vietnamese to keep their SAM guidance radar turned off as much as possible; the remaining flight of four F-105s carried radar jamming pods to supplement those carried by strike aircraft. Five EB-66s nearly a hundred miles south of the target added their jamming power, while three EC-121 radar surveillance aircraft watched for MiGs.[34]

The strike force's troubles began forty miles west of Phuc Yen when the Iron Hand flight was attacked by two MiG-21s making a single pass from the rear. Heat-seeking Atoll missiles destroyed a two-seat F-105F and crippled a single-seat F-105D; the rest of the flight escorted the crippled aircraft back to Laos, where the pilot ejected and was rescued. They had been warned by an EC-121 three times about MiGs, but those warnings were garbled by competing communications between the strike force and the ground controller at Phou Pha Thi.[35]

Deprived of its weapon for attacking SAM sites, the strike force now had to depend entirely on electronic jamming. A single aircraft's pair of jamming pods could not give it much protection, so each flight flew a formation tight enough for the pods of all four aircraft to work together--but loose enough to create for enemy radar operators as large an area of uncertainty as possible. This pod formation could not be used over the target. Ground-controlled bombing required that aircraft move closer together for a tighter bombing pattern, since they would all drop their bombs simultaneously with the lead aircraft. Ninety seconds before reaching the bomb release point, the aircraft in each flight reduced horizontal spacing from 1500 feet to 500 feet.[36]

Straight and level flying in tight formation at 18,000 feet provided a tempting target for SAMs. The North Vietnamese fired a barrage of about twelve, and destroyed two more F-105s (including Colonel Burdett's). This unusually high kill ratio led to speculation that enemy radar operators had been able to distinguish each flight, because flights had not closed as tightly together as had aircraft within flights. Hence missiles could be aimed at the relatively small jamming pattern produced by the pods of each compressed flight. Despite the possibility that altering the shape of a large formation might produce better results, Seventh Air Force ceased experimenting with ground controlled bombing over the Red River delta by formations larger than one flight. Although SAMs did not destroy any aircraft on these smaller Commando Club raids (as the Air Force had labeled all ground-controlled missions over the

Red River delta), aircrews remembered the big raid on Phuc Yen and called the smaller raids Commando Kaze.[37]

Experimentation with ground control of big formations might have continued if losses on the big Phuc Yen raid had not been perceived as part of a larger crisis. In just four days, North Vietnamese SAMs brought down ten American aircraft. Nothing like this had occurred since December 2, 1966, when SAMs took five Air Force fighter-bombers. But those "Black Friday" missiles had destroyed aircraft not yet equipped with electronic jamming pods. Such pods had reduced the SAM average kill ratio from about three aircraft destroyed for every one hundred missiles launched to less than two. Since most of the aircraft hit by SAMs in November 1967 were not engaged in ground-controlled bombing, Seventh Air Force might have concluded that once other problems were solved, large ground-controlled strikes could resume. A sense of crisis, however, was encouraged by the arrival of a team of analysts from the Air Staff and the Air Force Systems Command. They made several recommendations and Seventh Air Force tried to implement all of them, including ones calling for the elimination of large ground-controlled strikes in the Hanoi area.[38]

While ground-controlled bombing formations may have been part of the SAM problem, the Air Staff team could see that the problem had other dimensions. Losses to SAMs over Phuc Yen on November 18, 1967, may have been the result of a departure from jamming pod formation, as F-105s closed

to get a tighter bombing pattern. Similarly, in clear weather a flight usually drew closer together just before rolling into a dive--a departure from jamming pod formation which may have contributed to two more SAM kills that week. But at least one aircraft lost on November 19th was thought to be part of a full flight of four in correct jamming pod formation. Since the North Vietnamese were now firing barrages of six to thirty missiles, they may simply have been lucky.[39]

There were other possible explanations, however, and all of them troubled the Air Staff team. North Vietnam may have been using radar at frequencies lower than those being jammed. While jammers could be adjusted accordingly, there was the more dangerous possibility that the North Vietnamese were interrogating radio transponders carried by American aircraft. Those identification transponders were intended to permit Air Force controllers on board EC-121 radar surveillance aircraft to track friendly aircraft and distinguish them from MiGs. By November 1967 the EC-121s could also interrogate MiG identification transponders, and the Air Staff team worried that the North Vietnamese had acquired a comparable capability; certainly they had shot down enough American aircraft to obtain American transponders.[40]

In addition to possible improvements in North Vietnam's ability to track American aircraft electronically, SAM controllers seemed to be using an optical tracking system on clear days. Turning off a fighter-bomber's identification

transponder or jamming North Vietnamese radar could not deceive optical tracking. But a missile's communications with its ground controller were always vulnerable to jamming. In December 1967, Air Force fighter-bombers began to jam the frequency used by the radio beacon in each missile. North Vietnamese controllers might be able to track an American aircraft, but henceforth they encountered greater difficulty in tracking their own missiles. Of all the measures taken to reduce the SAM threat in late 1967, this was probably the most effective.[41]

Efforts to thwart SAMs electronically grew out of an inability to destroy them. About 150 launchers were clustered in groups of up to 6 at about 30 of more than 200 prepared sites. The North Vietnamese and their Soviet advisers moved the launchers frequently, so that an American attack on a site recently occupied might encounter only heavy flak. The Air Force's F-105F Wild Weasels rarely tried to do more than suppress SAM activity for the duration of a bombing raid by firing or threatening to fire radar-seeking Shrike missiles at SAM radars. While the Air Force had no evidence that a Shrike ever hit its target, the North Vietnamese at least turned off their radar transmitters when threatened. Since the North Vietnamese quickly turned on their radar again as soon as the Wild Weasels were gone, most major strike forces had both a vanguard and a rear guard of Wild Weasels; each of these guard positions was held normally by an Iron Hand flight consisting of two Wild Weasel F-105Fs leading two F-105Ds.[42]

During 1967 Seventh Air Force expended 1322 Shrikes, and by the end of the year the F-105 wing at Takhli was complaining about a shortage. In early 1968 a new radar-seeking missile (AGM-78) arrived. It flew faster and farther than the Shrike at ten times the cost--$200,000 apiece. It did not have time to prove itself in the delta, however, and the Air Force made little use of it in the panhandle for fear that its long range might permit a misguided missile to hit one of the Navy's ships or an Army radar site just south of the Demilitarized Zone.[43]

The radar at a SAM site could stay off the air until just before launch if the site was connected to radars at other locations. In addition to more than 100 missile and antiaircraft artillery radars, the North Vietnamese had more than 150 early warning and MiG control radars. American airmen faced a radar network which could easily compensate for a few losses scattered through the system. Admiral Sharp, the Pacific commander in Hawaii, once again began to think about the possibility of attacking North Vietnam's entire air defense system within a few days. Proposals to do this had always run aground on the failure of reconnaissance to produce photographs of active missile sites in time to bomb them before their launchers moved. The addition of a new photoreconnaissance capability in the spring of 1967, however, caused Admiral Sharp to wonder whether this old hurdle could now be surmounted.[44]

Admiral Sharp was excited about photographs of North Vietnam sent to him by the National Photographic Interpretation Center in Washington.

These had been taken by a Lockheed A-12, an older brother of the SR-71 Blackbird. High altitude photoreconnaissance of North Vietnam had been provided by Lockheed U-2s, but they were now considered too vulnerable to risk over the Red River delta; the MiGs and the SAMs would have too good a shot at them. The A-12 could fly a little higher (over 80,000 feet) and much faster (more than Mach 3). In clear weather it could photograph all of the Red River delta on a single mission. When President Johnson authorized the use of A-12s over North Vietnam, he hoped that the new planes would be able to give the earliest possible warning of the presence of surface-to-surface missiles--which would threaten ships in the Gulf of Tonkin. The same photographs would also track changes in missile deployment.[45]

The great defect of the A-12's first mission over North Vietnam was that the film was sent all the way to Washington for processing. This was soon improved by sending film to the Strategic Air Command's U-2 processing center at Saigon's Tan Son Nhut Air Base, headquarters for both the Military Assistance Command Vietnam and for Seventh Air Force. Tan Son Nhut was a convenient location for U-2 photo-processing, not only because the principal consumers were there--but especially because U-2s flew from nearby Bien Hoa Air Base. But the A-12s flew from Kadena Air Base, Okinawa. Consequently, in September 1967 responsibility for processing A-12 photographs was transferred to Fifth Air Force's 67th Reconnaissance Technical Squadron at Yokota Air Base, Japan. This unit could supply Seventh Air Force with the

location of SAM sites one day after an A-12 mission; photographs would follow in another day.[46]

General Momyer underlined for Admiral Sharp the fact that A-12 photographs indicated eight active SAM sites within ten nautical miles of the center of Hanoi--that is, within the prohibited circle which President Johnson had drawn around Hanoi. There American airmen could attack launch sites only when fired upon in the course of bombing authorized targets. Unless this rule was changed, a campaign against missiles was out of the question.[47] A change in the rules, however, could take advantage of a greater concentration of missiles close to Hanoi than in the past; their sites were revetted and launchers rarely moved. Elsewhere in the Red River delta, the number of launchers had decreased, some moving to the Hanoi sites and others south where they could threaten B-52s striking North Vietnamese supplies and forces just north of the Demilitarized Zone. The southward migration of launchers had reduced the number of active sites in Route Package Six from thirty to twenty-one.[48]

Admiral Sharp wanted a plan to destroy North Vietnam's SAMs, MiG-control radar, early warning radar, and air defense control centers. He told General Ryan to develop such a plan with Admiral Johnson, Commander in Chief of the Pacific Fleet. Admiral Johnson complained that A-12 photographs did not provide aircrews the perspective they would need to attack missile and radar sites successfully, let alone control centers whose locations

could not be ascertained using any aerial photograph. The vertical perspective of high altitude photography made a different impression than the oblique perspective of the camera or pilot at lower altitude. Admiral Johnson asked for plenty of up-to-date low altitude photography.[49]

While low altitude drones could photograph some missile sites in cloudy weather, too much good weather and time would usually be required to meet Admiral Johnson's requirements. Nevertheless, General Ryan's plan incorporated Admiral Johnson's specifications and added that even more good weather was necessary, since there was no point in going after air defenses unless there would be ample opportunity to exploit air supremacy by bombing targets whose defenses had been eliminated. Ryan's plan assured that there would be no major campaign against the SAMs at least until better weather returned the following summer--and probably not then.[50]

* * *

Although he could sometimes limit the number of aircraft which Momyer used to combat enemy air defenses, Ryan was less successful in finding enough productive missions during the northeast monsoon for Air Force aircraft based in Thailand. As in past years, many sorties were shifted from North Vietnam to Laos, where good weather prevailed over panhandle roads heavily used at night by North Vietnamese trucks heading south. Meanwhile in North Vietnam itself most roads could be used in daylight as well, for they were commonly protected from air strikes by overcast. Radar bombing strikes

and those under the direction of ground controllers did not have sufficient accuracy to destroy bridges, let alone hit trucks and boxcars.

Between rare breaks in the weather when bridges could be bombed, Air Force F-4Ds and Navy A-6s tried to discourage ferrying and bridge repair by dropping Mk-36 Destructor mines. For the first time the Johnson administration permitted river mining north of the twentieth parallel. The weather inhibited accurate placement and intelligence about the effectiveness of mining. Results appeared to be at best modest. Three boxcars were believed to have been destroyed while being ferried across the Red River at Hanoi; a tug and two barges sank in the Cam River at Haiphong.[51]

The technological weaknesses of the newly developed Mk-36 limited its usefulness. It was a 500-pound Mk-82 bomb with a magnetic trigger which would respond to an iron hull or the metal in an engine. Unfortunately the trigger was too sensitive, so that the mine often exploded while the target was too far away. A wire fishing net or empty oil barrels could be used to detonate the mines. Later versions of the Mk-36 would provide a less sensitive trigger that shut off periodically so that a sweeper could never be sure he had completed his job. Whatever the deficiencies of the original Mk-36 mines, however, they could lay in wait for North Vietnamese traffic during long spells of cloudy weather when bombing was difficult. The mines were also dropped on land with even less probability of success, for they were easier to find there.[52]

While mines frequently landed far from their intended destination, on two occasions seeding errors were unusually obvious. A few hours before the end of 1967, the 8th Tactical Fighter Wing at Ubon Air Base, Thailand, reported that a flight of F-4s had dropped forty-eight Mk-36s into international waters about five miles off the North Vietnamese coast and about forty miles north of the Demilitarized Zone. Less than a week later, on January 4th, an A-6 from the Kitty Hawk dropped mines directly on a Soviet transport ship, the Pereslavl-Zalesskiy, anchored in Haiphong's Cua Cam River. The aircrews flying this A-6 and two others had been trying to place Mk-36s near a bridge upriver, but an error in a map's margin scale had led to plotting errors. In addition to mines hitting the ship and detonating, others lay armed in the water nearby. This situation caused concern in Washington, where Secretary of State Rusk gave Soviet Ambassador Dobrynin a map showing the approximate location of the mines as well as their planned target area.[53]

As he had so often in the past, President Johnson responded to the latest incident by establishing a zone where bombing and mining were prohibited. When Navy fighters had been accused of strafing the Mikhail Frunze in June 1967, Johnson had announced a prohibited zone with a radius of four nautical miles from the center of Haiphong. This time he extended the radius to five nautical miles. Only a few days earlier, on January 3rd, he had established a prohibited zone reaching five nautical miles from the center of Hanoi. While Hanoi's new prohibited zone was much smaller than the old

ten-mile zone proclaimed a year earlier, that one had made way during the summer for strikes on several targets including the Doumer Bridge over the Red River.[54]

President Johnson's rationale for the new prohibited zone around Haiphong seemed obvious enough, but why prohibit further strikes on Hanoi's Doumer Bridge--not to mention an end to mining the river there? Airmen had become accustomed to not being told why these decisions were made. Once again Hanoi had secured a restriction on bombing by dangling the prospect of negotiations.

In late November 1967, several weeks after Rumanian Prime Minister Ion Gheorghe Maurer returned from a visit to Hanoi, President Johnson sent his roving ambassador W. Averell Harriman to Bucharest. Since Maurer had been in Hanoi when Johnson delivered his September 29th speech at San Antonio, Harriman wanted to know why the North Vietnamese leadership had turned down Johnson's offer to stop bombing North Vietnam in exchange for talks--so long as the North Vietnamese did not take advantage of the halt to increase the southward flow of soldiers and supplies. Maurer said that he did not know, because the text of Johnson's speech had not reached Pham Van Dong before the conclusion of their discussions. But Harriman knew that the same offer had been sent privately to Hanoi as early as August.[55]

Nevertheless, one of Maurer's recollections did give some slight cause for hope. Pham Van Dong indicated that if the bombing ceased, Hanoi "would"

enter into discussions with the United States. "I questioned his use of 'would,'" Harriman cabled Secretary of State Rusk. Hanoi usually used "could," but Maurer was uncertain which word had been used; he said that it did not matter, because Pham Van Dong's French was too poor for such nuances.[56] So barren had been the record of Hanoi's interest in negotiations that Washington was ready to grasp at straws. The State Department's executive secretary, Benjamin Read, thought that the Rumanian channel might prove to be a "winner" and dubbed it "Packers" after the championship Green Bay Packers football team.[57]

In mid-December 1967, Rumania's First Deputy Foreign Minister, Gheorghe Macovescu, visited Hanoi. There the North Vietnamese Foreign Minister, Nguyen Duy Trinh, read to Macovescu a new statement of his government's position: after "unconditional cessation" of the bombing, North Vietnam "will enter into serious discussions" with the United States.[58] Not only did Trinh use "will," but he dropped the word "final" from the usual "final and unconditional cessation." Macovescu later told Harriman that when asked about this omission, Trinh said firmly that the shortened phrase was his government's position. On December 29th, a week after Macovescu's departure, Trinh made the same statement public at a Mongolian reception. The addition of the word "will" and the deletion of the word "final" were enough to stop all bombing and mining within five nautical miles of the center of Hanoi.[59]

The Chairman of the Joint Chiefs of Staff, General Wheeler, was sufficiently impressed by Washington's reaction to the Trinh statement that he alerted Admiral Sharp and General Westmoreland to prepare for a bombing halt. Wheeler professed to see some merit in this development, since he thought it might mean that the North Vietnamese would reduce their activity near the Demilitarized Zone and enable Westmoreland to divert forces from there to the rest of South Vietnam.[60] Westmoreland and Ambassador Bunker had already cautioned Secretary of State Rusk to be wary of North Vietnamese peace initiatives in light of a buildup in North Vietnamese forces just north of the Demilitarized Zone.[61] Sharp immediately fired off a reply to Wheeler: "In summary, I perceive no advantage and see greatest disadvantage from cessation of bombing . . . ."[62]

From the airman's point of view, North Vietnamese concessions could only be gained by military pressure. Even had airmen been privy to all the diplomatic niceties, it is doubtful that they would have been in sympathy with President Johnson's logic. The Trinh-Macovescu meetings had occurred during a break in the weather lasting five days, the longest period of good bombing conditions during the northeast monsoon stretching from November 1967 through March 1968. Whether or not Trinh's word changes were really significant, they came together with bombs falling on the Doumer Bridge less than a mile away.

* * *

The raids of December 14 and 18, 1967, once again crippled Hanoi's Doumer Bridge over the Red River. About fifty F-105 sorties attacked the bridge with two 3000-pound bombs apiece. These unguided bombs proved even more accurate and destructive than their predecessors in August and October. Seven of nineteen spans fell into the water. The October raid had kept the bridge closed for only a month, but after the December raids it would not begin to carry traffic again for six months. Indeed the North Vietnamese made no attempt to repair the bridge until bombing ceased in the Hanoi area at the end of March; nor did they install a bypass pontoon bridge until then. Meanwhile they used ferries to link Hanoi with Haiphong and China.[63]

No aircraft were lost attacking the Doumer Bridge during December's one week of good weather, but two F-105s and two F-4s went down during raids on other targets in the Hanoi area. In one respect the six Air Force officers on board these aircraft would turn out to be an unusually fortunate group, for all would come home at the end of the war.[64] All but one were victims of the most active MiG defense since the spring of 1967. As many as twenty MiGs came up on December 17th and perhaps fourteen two days later. In addition to MiG-21s with their usual hit-and-run attacks, MiG-17s tried to draw the Americans into low-altitude dogfights. The resulting melees continued over the target area, where SAM inactivity made room for MiG activity. While MiG-21s came away from the American good-weather campaign

of December 14-19 with another two victories and no losses, the MiG-17s did not fare so well. Their lone victory was won at the price of four losses.[65]

Although the commander of Pacific Air Forces, General Ryan, objected to independent fighter sweeps, he of course had no objection to air-to-air combat arising out of escort duty. Indeed he had reason to be especially proud of an F-4 victory over a MiG-17 on December 17th, because his eldest son (1st Lt. John D. Ryan, Jr.) was in the back seat of the F-4. This victory was also exceptional in two other respects: the pilot, Capt. Doyle D. Baker, was a Marine on exchange duty, and the weapon was a heat-seeking Falcon missile. The Falcon's lack of a proximity fuse would keep its total of kills to a mere five, but on this occasion it went up the MiG's tailpipe.[66]

Under the rules then in effect, Lieutenant Ryan received half a credit for his part in downing a MiG, and Captain Doyle got the other half. Four years later (two years after young Ryan's death in an aircraft accident) when General Ryan was Chief of Staff and the Air Force was once again bombing North Vietnam, he would get the rule changed so that a pilot and his backseater each got full credit for a victory; the revised rule was retroactive to 1965. Meanwhile Colonel Olds' four victories in F-4s gave him only two credits and tied him for top honors with the pilot of a single-seat F-105, Capt. Max C. Brestel, who had shot down two MiG-17s on March 10, 1967. Lt. Col. Robert F. Titus and his backseater, 1st Lt. Milan Zimer, shared the credit for three victories.[67]

Moving into fifth position on December 19th was 1st Lt. George H. McKinney, Jr., an F-4 backseater from Bessemer, Alabama. Like Lieutenant Ryan and Lieutenant Zimer, Lieutenant McKinney had been trained as a pilot, and may well have been less than enthusiastic about having to serve in the back seat as a radar operator. Later this job would be turned over to men with navigator training. So long as men with pilot wings sat in the back seat, they were officially designated "pilots" and the actual pilots in the front seat were "aircraft commanders." No matter what titles were used, a backseater sometimes found his situation a little demoralizing--especially when he was a veteran of many sorties over North Vietnam and a newly assigned pilot sat in the front seat. Prospects for backseaters improved in November 1967, when they were at last permitted to move into the front seat without first completing their tour and returning to the United States for training.[68]

The equal sharing of victory credits was another attempt to raise the morale of backseaters. Moreover their role was often essential in air-to-air combat; when they did not pick up a MiG on radar, they might be the first to see it attacking from the rear. Their most important job was to "lock" the radar onto a MiG within parameters which would permit a missile kill. Whatever the backseater's contribution to a particular victory, however, he was awarded as much credit as the pilot. Lieutenant McKinney had won a full credit on November 6th, when Capt. Darrell D. Simmonds in the front seat shot down two MiG-17s with the twenty-millimeter gun carried in a pod on their F-4.[69]

While only two airmen had been granted a pair of victory credits in Southeast Asia, several had one credit. McKinney got ahead of the latter group by winning a quarter of a credit on December 19th. This time the man in the front seat was Maj. Joseph D. Moore, son of Lt. Gen. Joseph H. Moore (Westmoreland's boyhood friend, Momyer's predecessor as commander of Seventh Air Force, and Ryan's second in command at Pacific Air Forces before becoming Inspector General of the Air Force in August 1967). Once again the pod gun was used, but it was not working well and its slow rate of fire was not enough to bring the MiG-17 down. After a two-seat F-105F Wild Weasel finished the job, the victory credit was split four ways.[70]

Despite losing two MiGs without downing an American aircraft, the MiG effort could be counted a success on this last afternoon of a rare week of good weather. Of forty strike aircraft, twenty-four jettisoned their bombs. "I tried to find where the MiG-17 had impacted," Major Moore recalled, "but I couldn't tell an airplane crash from all the bomb detonations."[71] Whatever they blew up, it was not part of the rail yards targeted. So ended a brief renewal of the previous summer's campaign against rail lines between Hanoi and the Chinese border.[72]

Five days was simply too short a time to attack a large proportion of the rail targets. The Doumer Bridge was by far the longest in North Vietnam, but many others also carried the rails reaching down from China. The old Canal Des Rapides Bridge (three miles northeast of the Doumer Bridge) was struck

on December 15th, but it was necessary to strike the canal's two bypass bridges as well. All three were short and easily repaired, so the effect was at best temporary. In any case the weather closed in again before much could be done to attack rolling stock backed up in rail yards and on rail spurs. The big rail yard at Yen Vien was hit, as was the rail car repair shop at Gia Lam, but the North Vietnamese put over a hundred cars on spurs that had not been authorized for attack. On the last day of clear weather, Seventh Air Force's request to hit these rail spurs was making its way too late through channels to Washington; approval did not reach Saigon until early the next morning.[73]

* * *

Although no one knew it then, the Doumer Bridge strike of December 18, 1967, was to be the last major bombing success in Hanoi for more than four years. Most of the damage was done by F-105s from the 388th Tactical Fighter Wing, Korat Air Base, Thailand. Three days later the wing commander, Col. Neil J. Graham, learned that President Johnson was about to visit Korat. In the month since Graham had taken command after Colonel Burdett was shot down over Phuc Yen, Graham had been visited by the Chief of Staff of the Air Force (General McConnell), the Commander in Chief of Pacific Air Forces (General Ryan), and Congressman Joseph Y. Resnick (Democrat of New York), among others. It was not, of course, the wing's final triumph over the Doumer that drew Johnson across the Pacific. On December 21st, he attended the funeral of Prime Minister Harold Holt of Australia--one of the few countries

which had sent any troops to Vietnam. Johnson turned this trip into an around-the-world Christmas ritual, with visits to American soldiers in Southeast Asia and the Pope in Rome.[74]

Johnson had first visited Vietnam as Vice President, and he had slipped away from the Manila conference in 1966 to shake hands with Army soldiers at Cam Ranh Bay. Before returning to Cam Ranh Bay on December 23, 1967, he spent a night at Korat Air Base. There a new and as yet unoccupied dormitory helped to house the presidential entourage of about three hundred, including some seventy-five reporters. George Christian, the President's press secretary, told reporters that for security reasons they could not file stories until after the President left early in the morning. But the Thai press broke the story, and reporters spent all night using telephones and typewriters at wing headquarters.[75]

The press was barred from Johnson's evening session at the officers club with General Momyer and pilots representing wings throughout Thailand. They described the Doumer Bridge strikes and the air war generally. One of the briefers was Lieutenant McKinney, who talked about air-to-air combat. No backseater had ever been given so much limelight. Before dawn the next morning at a flightline ceremony attended by about five thousand, the President presented Distinguished Flying Crosses to McKinney and five frontseat pilots. McKinney's medal-winning performance had occurred on September 19th with Maj. Lloyd W. Boothby in the front seat; Boothby was

also on hand to receive a Distinguished Flying Cross. Their F-4 had been hit by ground fire while attempting to bomb a rail siding north of Hanoi; despite a damaged control system, they had managed to get back to Thailand before bailing out.[76]

President Johnson had heard a great deal from Senator Symington and others about pilot frustration with trivial targets and overly restrictive rules of engagement. In recent months Johnson had given these pilots better targets, including the Doumer Bridge which they had just struck again. Now he gave them a pep talk. "Guerrilla combat provides no easy targets," he explained. But a few airmen were "pinning down" more than half a million North Vietnamese trying to keep transportation routes open. He praised the discipline, restraint, and steadfastness of Americans in uniform. At times he seemed to be giving himself a pep talk too. "The spirit of America is not to be read on the placards or posters," he declared. "No man can come here for even a short period and shake your hand or look you in the eye and have the slightest bit of a doubt for a moment that America is going to hold firm and that America is going to stay faithful throughout the course until an honorable peace is secured." [77]

Although the base collected a bigger crowd for comedian Bob Hope a few days later, President Johnson seemed very pleased with his visit to Korat. Back at the White House, Walt Rostow told his Joint Chiefs liaison officer that "Momyer made a hell of a good impression at Korat."[78] This praise was passed on to the Air Force Chief of Staff, General McConnell, who was also told that

the Air Force should get "maximum mileage" out of the President's speech there.[79] McConnell liked the speech so much that more than a year later (after Johnson and he had both retired), he would raise it with an interviewer as a "very well thought-out" statement of Johnson's appreciation for airmen who fought under restrictions deemed necessary by the President.[80]

Indeed the Korat speech marked the apex of good feeling between President Johnson and the military. Since the Stennis Hearings in August, he had approved some long sought targets and shown Secretary of Defense McNamara the door. Long before McNamara sought to reduce the bombing of North Vietnam, many senior officers had been uncomfortable with his cerebral style and his focus on quantitative measures of progress. Few generals or admirals were displeased by Johnson's announcement in late November that before long McNamara would leave the Defense Department to head the World Bank.[81]

Johnson's efforts to mollify those who wanted to prosecute the war more vigorously could only infuriate those protesting American involvement in the war. Whatever the reservations of the military about his policies, Johnson was always assured a friendly reception when he visited the young Americans who were risking their lives to carry out those policies. But elsewhere less friendly young Americans booed his speeches and paraded outside the White House daily. On October 23, more than 30,000 protesters marched from the Mall to the Pentagon for an all-night vigil.[82]

Protesters were a nuisance, but they may have worked to the administration's advantage; obscene slogans, communist flags, and long-haired young men grated on the sensibilities of most Americans. Their dislike of demonstrations, however, could not insure their continued support for a long and distant war. With presidential elections only a year away, Johnson learned in the fall of 1967 that according to a Gallup poll only thirty-eight percent of his countrymen approved of the way he handled his job.[83]

Gallup trial heats for the presidency showed Johnson trailing several political rivals: in his own party, Senator Robert Kennedy of New York; in the Republican Party, Governor Nelson Rockefeller of New York, former Vice President Richard Nixon, and Governor George Romney of Michigan.[84] Rockefeller's silence on Vietnam may have helped make him the most popular. After a spring 1967 visit to Vietnam, Nixon had urged a harsher bombing campaign against North Vietnam to include the mining of Haiphong harbor. Subsequently Romney had tried to move away from his earlier support of the war by complaining that the generals and diplomats had "brainwashed" him--now he wanted a reduction in the bombing.[85]

Before the summer of 1967, nearly all prominent Republicans had been supportive of the war effort; their criticism was limited to calls for more decisive prosecution of the war. The Senate minority leader, Everett Dirksen of Illinois, was one of Johnson's closest friends and one of his warmest supporters in debates on the war. But Romney's was not the only Republican

defection. In addition to Senator George Aiken of Vermont (an early critic of the war), Senator Mark Hatfield of Oregon and the junior senator from Illinois, Charles Percy, began to attack the extent of American involvement--as did Congressmen Paul Findley, also of Illinois, and F. Bradford Morse of Massachusetts. They used arguments already made familiar by the war's more numerous Democratic opponents (including Senator Kennedy), who took their lead from the outspoken Chairman of the Senate Foreign Relations Committee, William Fulbright of Arkansas. The most influential of the war's newly hatched Republican "doves" was Senator Thruston Morton of Kentucky, a former national chairman of the party.[86]

Like most other vocal opponents of the American role in Vietnam, Senator Morton wanted to begin reducing that role by stopping the bombing of North Vietnam. Although Johnson would eventually attempt to appease his critics by granting their first wish, he had ample reason in the fall of 1967 to think that the bombing was one of his most popular programs. The same polls which registered growing dissatisfaction with his presidency and with the war also registered continued support for bombing North Vietnam. While Americans were getting tired of the war, they were impatient for at least a semblance of victory. In October a Gallup poll found that sixty-five percent opposed stopping the bombing of North Vietnam without a promise of something in return; fifty-five percent favored continuing to bomb at the current level; and forty-two percent were even willing to use atomic bombs.

This poll, however, also found that sixty percent favored abiding by a United Nations decision on South Vietnam's future, and seventy-one percent wanted to turn the fighting over gradually to South Vietnamese soldiers.[87]

President Johnson had become seriously concerned about popular support for the war in August 1967, when his Gallup approval rating dropped steeply from forty-seven percent of American voters to forty percent. The Stennis Hearings of that month aired some of Secretary of Defense McNamara's differences with the Joint Chiefs of Staff over the bombing of North Vietnam. More damaging to the President's popularity, however, was the proposal he sent to Congress on August 3rd for a ten percent income tax surcharge. The cost of the war added to the cost of Johnson's social programs had enlarged the federal debt and more than doubled the inflation rate (which in the early 1960s had held steady at about one percent a year). To prevent inflation from worsening, Johnson believed that he had to ask for higher taxes. This was bound to be unpopular and to increase pressure on him for measurable progress, so that he could justify the war's cost in dollars as well as in lives.[88]

Ever since he had first sent fighter-bombers against North Vietnam, President Johnson had tried to avoid arousing the passions of the American people. He was afraid that they might push him toward a wider war. But as opposition to his policies swelled in the summer of 1967, he began to talk about changing the character of his war effort on the home front. At a meeting with

his closest advisers on August 18th, he complained that the United States could not win without parades, songs, and bond drives. He proposed that a colorful general like Douglas MacArthur be sent to talk to the press in Saigon.[89] Apparently no one more colorful than General Westmoreland could be found. In October when the President asked for the Air Force general best able to defend the bombing of North Vietnam, he received a list headed by Lt. Gen. George Brown, assistant to the Chairman of the Joint Chiefs. While Brown's reputation for competence and cordiality was taking him to the top of his profession, the adjective colorful was rarely if ever attached to his name.[90]

It appeared to many officers that President Johnson had fired the most colorful general of the 1960s, General LeMay. In the case of President Truman and General MacArthur, there had been no doubt. Colorful generals were inclined to disagree with their President--an inclination which had contributed to their scarcity. Johnson himself was a vivid personality in private, but this rarely came across in his public speeches. When he thought that the American people needed a pep talk, he turned for help to the blander men he had retained or placed in charge of his military and civilian agencies.[91]

On October 5th, Johnson lectured the Cabinet about their responsibility to speak on the war. He recalled the vigor with which Franklin Roosevelt had been defended by Secretary of the Interior Harold L. Ickes and Secretary of the Treasury Henry Morgenthau, Jr. "You have got to come out of your caves and stop being so modest," Johnson urged. "Dirksen is the only one standing up for

us now." After Vice President Humphrey noted that a "massive effort" would be needed to turn the "tide of discouragement," the President suggested that perhaps "we should close up our Public Affairs offices and get all new people."[92]

President Johnson's efforts to build a more favorable public image seemed to work for awhile. His Gallup poll approval rating crept upward from a low of thirty-eight percent at the beginning of November to forty-eight percent by late January. Bad weather over the Red River delta of North Vietnam assisted his public relations efforts by keeping fighter-bomber raids off the front pages of American newspapers. Johnson had some of the advantages of a bombing pause without having to incur the wrath of the "hawks." Meanwhile he assured the American public that the war in South Vietnam was being won. To convince them, he brought General Westmoreland and Ambassador Bunker back to the United States for a week of upbeat speechmaking. But whatever the short-term benefit of this exercise, it made Hanoi's subsequent Tet offensive all the more shocking.

Notes

Chapter 4

Season of Discontent

1. Momyer, *Airpower in Three Wars*, pp 177-81; msg, PACAF to Deputy Cmdr 7/13 AF, 230232Z Sep 67, PACAF DO Read File, AFHRC 717.312. For Ryan's Raiders, see Chapter XIII above.

2. Intvw, Lt Col John N. Dick, Jr., USAF historical program, with Gen Gabriel P. Disosway, Dallas, Tex., Oct 4-6, 1977.

3. Momyer, pp 177-78.

4. Rpt, AF Systems Command, Have Dart Task Force, Mar 1968.

5. Rpt, USAF Tactical Fighter Weapons Center, Nellis AFB, 1973, Project Red Baron II, Vol IV, Part 2, Event 87, pp 381-92.

6. Msg, Ryan to Momyer, 062202Z Jan 68, AFHRC CHECO microfilm roll TS31.

7. Msg, Momyer to Ryan, 080730Z Jan 68, PACAF DO Read File, AFHRC K717.312.

8. Ibid.

9. Ibid.

10. Maj William E. Reder, "EB-66 Operations in SEA, 1967," CHECO draft rprt, Nov 26, 1968, AFHRC K717.0413-63.

11. Ibid.

12. Red Baron II, Vol IV, Part 2, pp 81-89; Corona Harvest Final Rpt, "Out Country Operations 1965-68," 63.

13. Red Baron II, Vol IV, Part 3, pp 14-24; PACAF SEA Air Operations Summary, Jan 1968; computer printout, "SEA Casualties by Date of Incident," USAF Military Personnel Center, Oct 22, 1982.

14. Nalty, *Electronic Warfare*, pp 116-46; Cpt Carl W. Reddel, *College Eye* (CHECO, 1968); Cpt Richard M. Williams, *A History of Big Eye/College Eye* (552d AEW&C Wg, 1969); Grover C. Jarrett, *History of College Eye, Apr 1965 - Jun 1969* (ADC, 1969).

15. See note above.

16. OT&E Final Rprt, TAC Test 66-183, USAF Tactical Warfare Center, Eglin AFB, Rivet Top Evaluation Team, Mar 1968, AFHRC CHECO microfilm roll S192; 7th AF OpOrd 510-68, Aug 67, AFHRC CHECO microfilm roll TS16; Maj John C. Pratt, *Air Tactics Against NVN Air Ground Defenses, Dec 1966 - Nov 1968* (CHECO, 1969).

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18. See notes 16 and 17.

19. See note above.

20. Wheeler to McNamara, JCS CM-1798-66, subj: Review of Operating Procedures in Order to Avoid Violating Red Chinese Airspace, Sep 29, 1966; intvw, Col John E. Van Duyn and Maj Richard B. Clement, Corona Harvest, with Gen John D. Ryan, Washington, May 20, 1971.

21. Msg, Momyer to Ryan, 080730Z Jan 68, PACAF DO Read File, AFHRC K717.312.

22. Msg, 7th AF to CSAF, subj: A-6A Operations, 201200Z Dec 67, PACAF DO Read File, AFHRC K717.312; Vice Adm Malcom W. Cagle, USN, "Task Force 77 in Action off Vietnam," U.S. Naval Institute Proceedings, Naval Review Issue, 1972, pp 100-01.

23. See above Chapter XIII; hist, Det 1, 428 Tac Fighter Sq, Mar 15 - May 31, 1968; Michael H. Gorn, *The TFX: Conceptual Phase to F-111B Termination (1958-1968)* (Air Force Systems Command, 1985); Herman S. Wolk, *R&D for Southeast Asia, 1968* [USAF Plans and Policies] (Washington, 1970), pp 27-29; Bill Gunston, *F-111* (New York, 1978); Robert F. Coulam, *Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform* (Princeton, 1977).

24. 7th AF OpOrd 523-68, Jan 1968, AFHRC CHECO microfilm roll TS66; Maj Victor B. Anthony, *Tactics and Techniques of Night Operations, 1961-1970* [The Air Force in Southeast Asia] (Washington, 1973), pp 206-07.

25. Intvw, Maj Richard Clement and Charles Hildreth, AF hist program, with Gen McConnell, Washington, Nov 4, 1970.

26. Intvw, Tom Belden, Jacob VanStaaveren, Hugh Ahmann, AF hist program, with Harold Brown, Pasadena, Aug 29-30, 1972.

27. Intvw, James C. Hasdorff, AF hist program, with Gen Ryan, San Antonio, May 15-17, 1979.

28. See Chapter 2 above.

29. Maj Richard A. Durkee, *Combat Skyspot* (CHECO, 1967).

30. Msg, Col Pettigrew (US Air Attache Laos) to Gen Momyer, subj: MSQ-77 at Lima Site 85 Laos, 070445Z Jul 67, AFHRC CHECO microfilm roll TS15; msg, Ambassador Sullivan to Secretary of State Rusk, 130930Z Mar 67.

31. Victor B. Anthony and Richard R. Sexton, "The War in Northern Laos, 1954-1973," Center for Air Force History, 1993, pp 251-58; Capt Edward Vallentiny, "The Fall of Site 85," Project CHECO, Aug 1968; Red Baron II, Vol IV, Part 2, pp 398-99; Richard Secord with Jay Wurts, *Honored and Betrayed* (New York, 1992), pp 74-92; Christopher Robbins, *The Ravens* (New York, 1987), pp 41-85.

32. Msg, Ambassador Sullivan to Gen Momyer, 141248Z Mar 68; intvw, author with Col Gerald H. Clayton (USAF, Ret), Pentagon, Mar 31, 1988; Chamlong Looks Back at Past," excerpts from the autobiography of Maj Gen Chamlong Simuang, JPRS-SEA-015, 18 May 1990. See also David Corn, *Blond Ghost: Ted Shackley and the CIA Crusades* (New York, 1994) and Jane Hamilton-Merritt, *Tragic Mountains: The Hmong, the Americans, and the Secret Wars for Laos, 1942-1992* (Bloomington, Ind, 1993).

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35. Red Baron II, Vol IV, Part 2, pp 67-72.

36. See note 33.

37. C.V. Sturdevant, "Effect of Strike Force Formation Size and Spacing on Vulnerability to SAMs and Suggested Delivery Tactics for Commando Club Missions," PACAF Operations Analysis Note 68-1, Feb 15, 1968, AFHRC K717.310468-1.

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40. See note 37; Nalty, *Electronic Warfare*, pp 116-46; James E. Pierson, *A Special Historical Study of Electronic Warfare in SEA, 1964-68* (Kelly AFB, Tex, 1973), pp 120-21.

41. See note above.

42. DIA/JCS, *Southeast Asia Military Fact Book*, Jan 1968, pp 13-19; Col Gordon E. Danforth, "Iron Hand / Wild Weasel," Corona Harvest Special Report, Air University, 1970; Maj Richard B. Clement, "The SAM Story," Corona Harvest Special Report, Air University, 1970.

43. Msg, 355th TFWg to 7th AF, 190835Z Dec 67, PACAF DO Read File, AFHRC 717.312; Nalty, *Electronic Warfare*, pp 41-49; PACAF Activity Input, Corona Harvest, *In-Country and Out-Country Strike Operations, Jan 1965 - Dec 1969*, II, *Hardware: Munitions*, pp 72-80.

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48. Msg, CINCPACAF to CINCPAC, 210351Z Nov 67, PACAF DO Read File, AFHRC K717.312.

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62. Msg, Sharp to Wheeler, 062331Z Jan 68, Westmoreland's Backchannel File, Army Center of Military History.

63. Msg, 355th TFWg to NMCC, 140920Z Dec 67; msg, 388th TFW to NMCC, 141115Z Dec 76; msg, 460th RTSq to PACAF, 182035Z Dec 67; msg, 388th TFWg to NMCC, 180925Z Dec 67; all in PACAF DO Read File, AFHRC 717.312. See also CIA/DIA, *Appraisal* (through Dec 1967); PACAF, *Effects*, vol I, ch 4, 15, and vol II, pp 122-25; Col Delbert Corum *et al*, *The Tale of Two Bridges* [USAF Southeast Asia Monograph Series], Vol I, Monograph 1 (Washington, 1976), pp 75-77.

64. The six Americans shot down near Hanoi 14-17 December 1967 and returned in 1973 were Cpt James E. Sehorn, Maj James F. Low, 1Lt Howard J. Hill, Maj Kenneth R. Fleenor, 1Lt Terry L. Boyer, Cpt Jeffrey T. Ellis.

65. Red Baron II, vol IV, part 2, events 70-79; *Aces and Aerial Victories*, pp 72-74.

66. Red Baron II, vol IV, part 2, event 75D.

67. *Aces and Aerial Victories*, pp vi and 44-64.

68. Hist, 8th TFWg, Oct-Dec 1967, pp 10-12.

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72. For the summer 1967 railroad campaign , see Chapter XIV above.

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76. PACAF, *Summary*, Sep 1967, 5-A-8.

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78. Memo, Col Robert N. Ginsburgh to Gen McConnell, Dec 27, 1967, McConnell's Personal Notebook, vol II, item 507, Office of Air Force History.

79. Ibid.

80. Intvw, Dorothy Pierce McSweeny with Gen McConnell, Aug 28, 1969, LBJ Library. Years later when McNamara was asked when he decided to resign, he replied: "I'm not sure I decided. It would have been the President who decided." See McNamara's deposition in Westmoreland vs CBS, Mar 26, 1984, p 2.

81. *Public Papers of the Presidents*, Johnson, 1967, Book II, pp 1077-78.

82. Goulding, *Confirm or Deny*, pp ix-x.

83. Gallup Poll, Nov 5, 1967.

84. For Johnson versus R. Kennedy, see Gallup Poll of Oct 1, 1967; for Johnson versus Republicans, see Gallup Poll of Oct 22, 1967.

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86. Ibid.

87. Gallup Poll, Oct 29, 1967.

88. *Public Papers of the Presidents*, Johnson, 1967, Book II, pp 733-46; Johnson, *Vantage Point*, pp 445-49; Gallup Polls, Aug 13 and Sep 6, 1967. On the Stennis Hearings, see Chapter XIV above.

89. Notes on meeting of Aug 18, 1967, LBJ Library, Meeting Notes File, #118.

90. Memo, W. Rostow for President, Oct 20, 1967, LBJ Library, National Security File, Vietnam Country File, Box 83, 3F, #45 and 45a.

91. For LeMay's departure, see above Chapter 1.

92. Minutes of Cabinet Meeting, Oct 4, 1967, LBJ Library, National Security File, Vietnam Country File, Cabinet Papers.