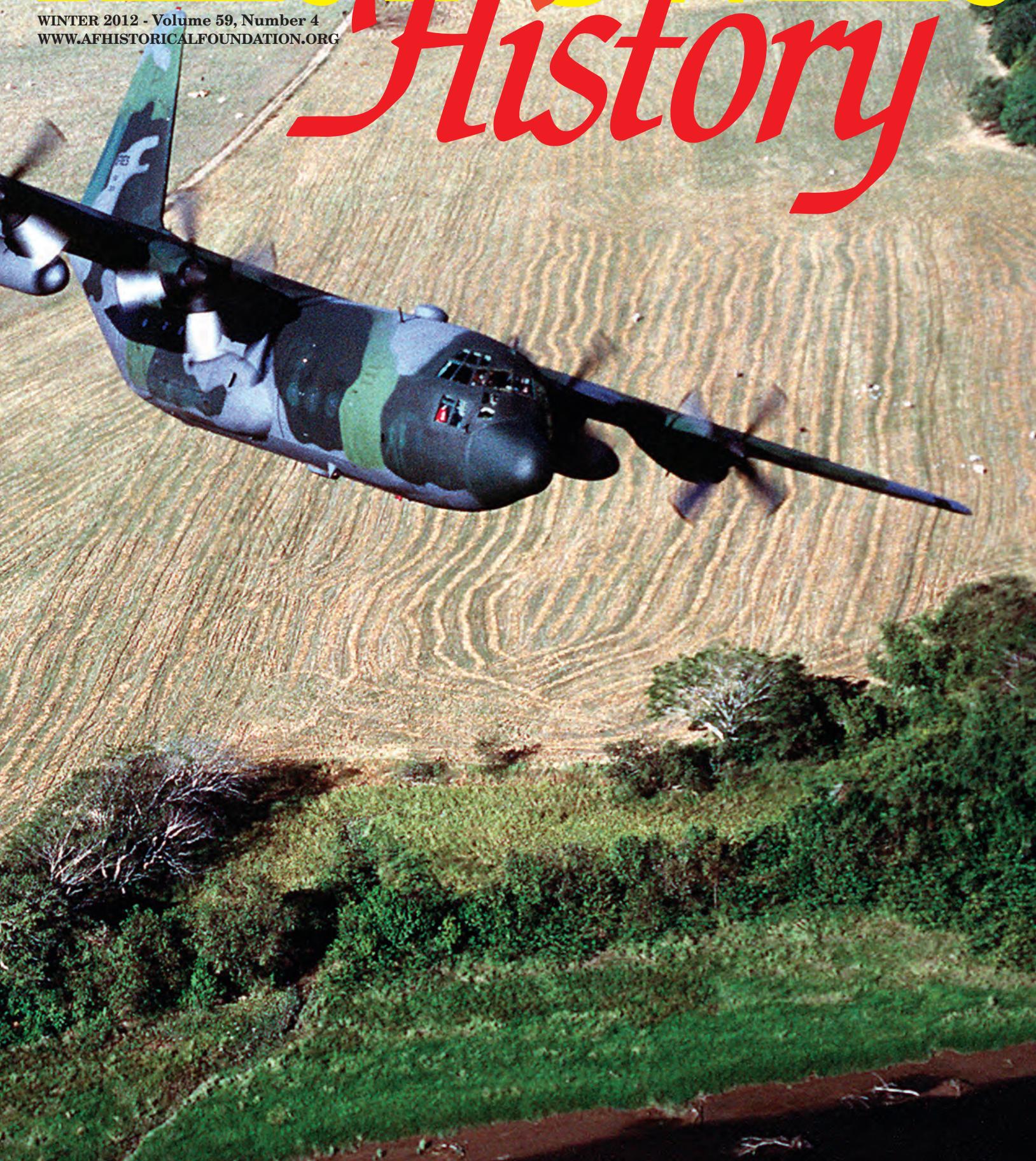


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The Journal of the
Air Force Historical Foundation
Winter 2012 Volume 59 Number 4

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Air Power History (ISSN 1044-016X) is produced for Spring, Summer, Fall, and Winter by the Air Force Historical Foundation.

Prospective contributors should consult the **GUIDELINES FOR CONTRIBUTORS** at the back of this journal. Unsolicited manuscripts will be returned only on specific request. The Editor cannot accept responsibility for any damage to or loss of the manuscript. The Editor reserves the right to edit manuscripts and letters.

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Clinton, MD 20735-0790
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Periodicals postage paid at Clinton, MD 20735 and additional mailing offices.

Postmaster: Please send change of address to the Circulation Office.

From the Editor

In this winter 2012 issue of *Air Power History* we begin with part 2 of Doug Dildy's "The Korean People's Air Force in the Fatherland Liberation War." Here Dildy details how the U.S. escalated the war in June 1950, by attacking NKPAF planes at their home bases. The Americans first attacked Kimpo and then Heijo airfields, destroying nineteen enemy planes. In July, U.S. Navy F9F Panthers and F4U Corsairs from the carrier *USS Valley Forge* joined SAC B-29s in attacking Yonpo airfield. After the smoke had cleared, the NKPAF had lost thirty-six more planes. Nevertheless, the North Koreans persisted and remained an important consideration for FEAF's combat operations.

The second featured article, by Darrel Dvorak, is a biography of Col. Clifford Heflin, the senior Army Air Forces commander of the Manhattan Project. But hold on, wasn't that Col. Paul Tibbits? Using Colonel Heflin's personal papers as well as other official documents, Dvorak corrects history. Indeed, he demonstrates how Heflin was left out despite being awarded a Distinguished Service Medal for his accomplishments.

In the third featured article, Forrest Marion recounts the story of the USAF Special Tactics Group during the 1989 invasion of Panama. Operation Just Cause aimed at safeguarding American lives; defending democracy; and combating drug trafficking. President George H.W. Bush added the mission to apprehend Manuel Noriega, Panama's dictator and to extradite him to the U.S. to face drug charges. In this article, Marion highlights the role of the Air Force's combat controllers and pararescue troops.

Dan Haulman's article, "The 'Other' Red Tails," an elaborate story of the 31st Fighter Group is meant to demonstrate that even one of the most successful units of World War II could not claim a perfect record. He cites historical evidence to refute the mistaken claim that the Tuskegee Airmen "never lost an escorted bomber."

There are eighteen book reviews and, of course, a new History Mystery. Be sure to read the President's message on page 58. We note with sadness the death of Colonel Woody Crockett.

Finally, be sure to note the Upcoming symposia (page 57) and reunions (page 62).

A handwritten signature in black ink, appearing to read "J. Neufeld". The signature is fluid and cursive, with a large, stylized initial "J".

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THE KOREAN PEOPLE'S AIR FORCE IN THE FATHERLAND LIBERATION WAR: PART II





Douglas C. Dildy

(Overleaf) NKPAF Il-10 #44 was one of approximately a half dozen deployed to Kimpo AB and used against U.S. troops attempting to stop the relentlessly advancing North Korean army during the dark days of June-July 1950. This aircraft was also captured intact at Kimpo and was shipped to Cornell Aero Labs, then to Wright-Patterson AFB. (Photo courtesy of the Robert F. Dorr Collection.)

After capturing Kimpo AB, the North Koreans stationed seven Yak-9Ps there, extending their reach deeper into South Korea. When Kimpo was recaptured following the Inchon landings in September, this airworthy example was discovered, and was shipped to Cornell University Aeronautical Laboratory, NY, then to Wright-Patterson AFB, Ohio, for technical evaluation. (Photo courtesy of the Robert F. Dorr Collection.)

The NKPAF Moves South

During the first five days of Kim Il-Sung's offensive into South Korea, the North Korean People's Air Force (NKPAF) supported the North Korean People's Army's (NKPA) drive towards Seoul with ground attack missions by Il-10s, fighter sweeps with Yak-9Ps, and airfield attacks using both types of Soviet-supplied warplanes. These attacks wiped out the tiny Republic of Korea (ROK) air arm and destroyed three USAF transports, occasionally disrupting the Far East Air Forces' (FEAF) resupply and evacuation airlift. After personally witnessing NKPAF warplanes battling USAF Mustangs over Suwon, Gen. Douglas MacArthur directed FEAF commander Lt. Gen. George E. Stratemeyer to begin bombing the NKPAF at their bases—something "The Great Leader of the Korean People" had not anticipated, and an escalation that would result in the virtual destruction of his air force.¹

Meanwhile to continue supporting the NKPA, as its tanks and infantry pushed across the Han River south of Seoul, driving towards Suwon, the NKPAF's 55th Combined Aviation Division deployed seven short-ranged Yak-9P fighters and a similar number of Il-10 assault aircraft to the just-captured Kimpo AB, dispersing and camouflaging them to try and prevent discovery and destruction by FEAF bombers.²

Intent on making Kimpo his advanced operating base for the rest of the campaign, NKPAF commander Maj. Gen. Wang Yong moved his command's operational headquarters forward as well. He

brought with him two companies of aircraft maintenance technicians (called *engineers*, these were divided between Yak-9 and Il-10 mechanics) as well as finance and supply companies from the newly-formed 3d Technical Battalion. Totalling some 500 men, the Kimpo detachment was designated the 877th Air Force Unit (AFU). To defend his new base he was provided the newly-formed 107th Security Regiment, numbering 1,000 partially-trained troops.³

To deny Kimpo's use to the enemy, General Stratemeyer countered with the war's first airfield attack launching nine B-29As (19th BG) on the morning of June 29 to bomb the airfield from 3,000 ft. Three Yak-9Ps scrambled and intercepted the four-engine bombers, but failed to disrupt the attacks, the results of which, from such low altitude, were reported to be "excellent." One Yak was claimed shot down, and a second one damaged, by B-29 gunners.⁴

The Americans Strike North

At the end of the day—just as the sun was setting in the west and the NKPAF was "putting their planes to bed" at Pyongyang's Heijo airfield—eighteen Douglas B-26 Invaders [3d BG(L)] came roaring in at low altitude, dropping fragmentation bombs on the ramp, hangars, and revetments, and strafing all parked warplanes wherever they were found. Five Yak fighters scrambled out to the runway; but only two took off—the other three were straddled by fragmentation bombs and shredded by shrapnel. Climbing rapidly, the remaining pair attacked the right wing of the invaders' formation and was driven off by defensive fire. (One was claimed shot down by a B-26 gunner). The Americans got away without damage. Soviet sources report nineteen NKPAF warplanes were destroyed⁵ in this, the first USAF attack north of the 38th Parallel—the border between North and South Korea.⁶

The 56th Fighter Aviation Regiment's (FAR) forward-deployed squadron of Yak-9Ps was unaffected by this devastating attack and when the NKPA resumed its offensive, pushing across the Han River on June 30th, they flew a number of close air support and protective air cover missions. Along the river, USAF F-80Cs were flying combat air patrols (CAP) at low altitude, defending Republic of Korea Army (ROKA) units, when two of them were bounced by a pair of Yak-9Ps. The Shooting Stars (36th FBS/8th FBG) quickly accelerated out of range, wheeled around in a fast wide circle and



Col. Douglas C. Dildy retired from the U.S. Air Force after twenty-six years, during which he commanded the 32d Fighter Squadron and was the vice commander of the 33d Fighter Wing. Graduating from the USAF Academy as a history major, Dildy earned his master's degree in International Affairs from Oklahoma State University, and attended Armed Forces Staff College and the Air War College. He is the co-author of F-15 Eagle Engaged! and F-16 Units in Operation Iraqi Freedom, and the author of Dambuster Raid, 1943, as well as two joint campaign analyses for Osprey Publishing Ltd., Oxford, UK. He is a feature writer for Aviation Classics, Logbook, and Small Air Forces Observer magazines. This article is a compilation of a series researched for, and first published by, the last mentioned journal.



The first counter-strike against the NKPAF was flown by eighteen Douglas B-26B/C Invaders of the 3d Bombardment Group (Light), which destroyed nineteen aircraft at Pyongyang's Heijo airfield. This raid signalled a tectonic shift in the nature of the air war over Korea.

came up behind the Yaks, 1st Lts. Charles Wurster and John Thomas shot them down. Both NKPAF pilots bailed out, but one parachute failed to open. This small victory had no effect on the ground situation and that evening the Americans were forced to abandon Suwon AB, destroying the damaged B-26B and F-82G that had to be left behind.⁷

The next defensive line centered on Chonan, but the badly beaten ROKA's ability to halt the NKPA now depended upon the introduction of American combat troops. U.S. President Harry Truman approved the American escalation and, on July 1st, FEAF's C-54 and C-47 transports (374th TCW)⁸ began ferrying the lead elements of the U.S. Army's 24th Division—the headquarters and the

21st Infantry Regiment's two battalions—to Pusan. One of the latter formed the basis of a battalion combat team, called *Task Force Smith*, which was hastily sent forward to engage the NKPA at Osan, six miles south of Suwon.⁹

As quickly as shipping permitted, the rest of the division arrived at Pusan by sea, to be followed by the 25th Infantry and 1st Cavalry Divisions. In putting soldiers on the ground to face the advancing North Koreans the Americans made the single most significant investment—and the strongest political statement—possible in the defense of South Korea.¹⁰

The next day, NKPAF's Yonpo airfield near Hungnam on Korea's east coast was raided by FEAF's Superfortresses (19th BG). Ten B-29s attacked, the bomber crews counting sixteen aircraft on the field, but their 500-pound bombs fell wide and caused no damage. To increase FEAF's bomber forces, the following day, USAF's mighty Strategic Air Command (SAC) dispatched two additional B-29 groups (22d and 92d BGs) and assigned the commander¹¹ of SAC's Fifteenth Air Force to take charge of FEAF's newly established Bomber Command (Provisional).¹²

Simultaneously, the U.S. Navy's Task Force 77 (TF 77) arrived in the Yellow Sea. It consisted of a flotilla centered on the aircraft carrier USS *Valley Forge* (CV-45) and a Royal Navy flotilla built around the HMS *Triumph* (R16). Aboard the *Valley Forge* was Carrier Air Group 5—two squadrons of Grumman F9F Panther jets (VF-51 and -52) and three squadrons of propeller-driven Vought F4U Corsairs (VF-53 and -54) and Douglas AD Skyraiders (VF-55)—while the *Triumph*'s 13th CAG operated Supermarine Seafire fighters (NAS 800) and Fairey Firefly patrol and strike aircraft (NAS 827).¹³

Table 1
USAF and ROKAF Aircraft Lost to Actions of the Korean People's Air Force in 1950

Date	Service	Type	Serial No.	Unit	Location	Remarks
25 June	ROKAF	Seven L-4 and T-6 Trainers		Training Unit	Kimpo AB	Strafing by Yak-9Ps
25 June	USAF	C-54D	Unknown	MATS	Suwon AB	Strafing by Yak-9Ps
28 June	USAF	B-26B	44-34379	13th BS(L)/ 3rd BG	Suwon AB	Strafing by Yak-9Ps Destroyed during evac.
28 June	USAF	F-82G	46-364	68th F(AW)S	Suwon AB	Strafing by Yak-9Ps Destroyed during evac.
28 June	USAF	C-54D	42-72648	22nd TCS/ 374th TCW	Suwon AB	Strafing by Yak-9Ps
29 June	USAF	C-54D	Unknown	6th TCS/ 374th TCW	Suwon AB	Bombed by Il-10s
12 July	USAF	B-29	44-69866	28th BS/ 19th BW	near Seoul	Shot down by Yak-9Ps
12 July	USA	L-4	Unknown	US Army	near Taejon	Shot down by Yak-9Ps
13 July	USA	L-5	Unknown	US Army	near Taejon	Shot down by Yak-9Ps
14 July	USAF	B-26B	44-34263	13th BS(L)/ 3rd BG	near Taejon	Damaged by Yak-9Ps; Landed at Taejon airfield; Destroyed during evac.
19 July	USAF	F-80C	49-698	36th FBS/ 8th FBG	near Taejon	Damaged by Yak-9Ps; Crashed during landing attempt at Taejon airfield; pilot killed

**TO DENY
KIMPO'S USE
TO THE
ENEMY,
GENERAL
STRATE -
MEYER
COUNTERED
WITH THE
WAR'S FIRST
AIRFIELD
ATTACK**



(Above) The NKPA's relentless drive south forced FEAF's Bomber Command into the interdiction role, its B-29s sometimes conducting single ship – and even single bomb – attacks on railways, bridges, tunnels, trains, and vehicle columns. When the critical demands of the exigency permitted, the Superforts from 19th Bombardment Group (Medium) also conducted counter-air strikes against several NKPA air-fields.

AS THE NORTH KOREANS PUSHED FURTHER SOUTH, THE NEXT ELEMENTS OF THE 24TH DIVISION (21ST AND 34TH INFANTRY REGIMENTS) TRIED TO MAKE A STAND AT CHONAN

Early on July 3, the naval strike fighters hit two NKPAF air bases. Nine rocket-armed Fireflies, escorted by a dozen Seafires, were launched from the *Triumph* to attack Haeju airfield on the coast.¹⁴ No NKPAF aircraft were seen, but several buildings, including hangars were hit. Pyongyang's Heijo air base was attacked by twelve Skyraiders and sixteen Corsairs, with eight F9Fs (VF-51) sweeping in ahead of the strike force. A number of Yak-9Ps were caught scrambling to get airborne, some of them taking off towards each other! One of these was quickly shot down, as was another that attempted to intervene. The rest scattered as the Panthers' strafing destroyed another three—and damaged ten more—aircraft on the ground.¹⁵

Finally, the F4Us and ADs arrived, bombing four hangars, other buildings and a nearby railroad yard. Soviet sources state that by this time the NKPAF had lost thirty-six aircraft to the enemy bombing attacks and in aerial combat.¹⁶

The Communist Offensive Continues

Once again, the 56th FAR's forward-deployed Yak-9P fighters—and the Il-10s of the 57th Assault Aviation Regiment—were unaffected by American air strikes in the north. On July 6, four Yaks winged south and attacked a communications center at Osan, where the NKPA's armor was destroying Task Force Smith.¹⁷

As the North Koreans pushed further south, the next elements of the 24th Division (21st and 34th Infantry Regiments) tried to make a stand at Chonan. To support the beleaguered troops on the frontlines, the Fifth Air Force established a forward operating base and its advance headquarters at Taegu, about halfway between Taejon and Pusan. A short, 3,800-foot clay-and-gravel airstrip with only a few, rudimentary former IJAAF facilities, Taegu became home for an *ad hoc* USAF unit, the 51st Fighter Squadron (Provisional)¹⁸ and what would become the ROKAF 1st Fighter Squadron, each flying ten F-51Ds. Taegu was also a staging base for



the Royal Australian Air Force (RAAF) 77 Squadron, flying twenty-six F-51D Mustangs out of Iwakuni AB, Japan.¹⁹

While the locally-launched and long-loitering American, South Korean, and Australian Mustangs—armed with bombs, rockets and machine guns—provided close air support to the heavily engaged 24th Division, four-ship formations of the less-effective F-80Cs flew in twenty-minute relays from Japan, their attacks largely limited to strafing *targets of opportunity* on the roadways between Chonan and Suwon. Also flying from Japan, B-26s conducted low altitude interdiction raids along the roads from Pyongtaek to Seoul with bombs, rockets, and their formidable batteries of .50cal machine guns. In three days (from July 7 to 9) the 3d BG(L) was credited with destroying forty-four NKPA tanks and 197 trucks. Finally operating thirty-sixty miles behind the lines, FEAF B-29s bombed fifty-eight road and railway bridges along the NKPA's route of advance—as well as a number of railroad marshaling yards and roadway intersections—attempting to disrupt the flow of enemy troops, equipment, and supplies headed for the front.²⁰

In spite of the FEAF's best efforts, the NKPA's 105th Tank Division and its 4th Infantry Division ousted the U.S. 24th Division from its defensive positions on July 8, the battered Americans regrouping along the Kum River from Chongju to Chochiwon. In the only example of Soviet-style *combined arms* offensive, Russian advisors reported that the Kimpo-based Il-10s flew a number of ground attack missions supporting "North Korean tankers attempting to penetrate the defenses of the American 24th Infantry Division."²¹ These were augmented by the Yak-9Ps, four of them bombing and strafing the U.S. 19th Infantry Regiment at Chongju on July 10.²²

The "Guards of Taejong"

However, the heavy American air attacks against the advancing NKPA columns soon forced

(Left) The first Anglo-American counter-strike against the NKPAF was flown by naval carrier aircraft from the USS Valley Forge and HMS Triumph. Attacking Heijo airfield, Grumman F9F Panthers shot down two defending Yak-9Ps, allowing F4U Corsairs and AD Skyrailers to bomb the airfield's hangars and other buildings, and later the Pyongyang rail yards, without interference.

Table 2
USAF and USN Aerial Victory Claims against Korean People's Air Force Aircraft in 1950

1950 Date	Type	Claimed as	US Unit	Type A/c	Pilot Name	Remarks
27 June	Yak-11	Yak-7U	68th F(AW)S	F-82G	1Lt William G. Hudson	
27 June	Yak-9P	La-7	68th F(AW)S	F-82G	1Lt Charles B. Moran	
27 June	Yak-9P	La-7	339th F(AW)S	F-82G	Maj James W. Little	
27 June	2 x Il-10	2x Il-10	35th FBS/8th FBW	F-80C	1Lt Robert E. Wayne	
27 June	Il-10	Il-10	35th FBS/8th FBW	F-80C	Capt Raymond E. Schillereff	
27 June	Il-10	Il-10	35th FBS/8th FBW	F-80C	1Lt Robert H. Dewald	
29 June	Il-10	La-7	9th FBS/49th FBW	F-80C	1Lt William T. Norris	Not credited; Note 1
29 June	Il-10	Il-10	80th FBS/8th FBW	F-80C	1Lt Roy W. Marsh	
29 June	2 x Il-10	2 x Il-10	80th FBS/8th FBW	F-51D	2Lt Orrin R. Fox	Note 2
29 June	Il-10	La-7	80th FBS/8th FBW	F-51D	1Lt Harry T. Sandlin	Note 2
29 June	Il-10	Il-10	35th FBS/8th FBW	F-51D	1Lt Richard J. Burns	Note 2
30 June	Yak-9P	Yak-9	36th FBS/8th FBW	F-80C	1Lt Charles A. Wurster	
30 June	Yak-9P	Yak-9	36th FBS/8th FBW	F-80C	1Lt John B. Thomas	
3 July	Yak-9P	Yak-9	VF-51/CAG 5	F9F-2	Lt (jg) Leonard H. Plog	
3 July	Yak-9P	Yak-9	VF-51/CAG 5	F9F-2	Ens Eldon W. Brown, Jr.	
15 July	Yak-9P	Yak-9	39th FIS/51st FIW	F-80C	1Lt Robert A. Coffin	
17 July	Yak-9P	Yak-9	35th FBS/8th FBW	F-80C	Capt Francis B. Clark	
19 July	Yak-9P	Yak-9	36th FBS/8th FBW	F-80C	1Lt Robert D. McKee	
19 July	Yak-9P	Yak-9	36th FBS/8th FBW	F-80C	1Lt Charles A. Wurster	
19 July	Yak-9P	Yak-9	36th FBS/8th FBW	F-80C	2Lt Elwood A. Kees	
20 July	Yak-9P	Yak-9	35th FBS/8th FBW	F-80C	Capt Robert L. Lee	
20 July	Yak-9P	Yak-9	35th FBS/8th FBW	F-80C	1Lt David H. Goodenough	
1 Nov.	Yak-9P	Yak-3	67th FBS/18th FBW	F-51D	Capt Alma R. Flake	
1 Nov.	Yak-9P	Yak-3	67th FBS/18th FBW	F-51D	Capt Robert D. Thresher	
2 Nov.	Yak-9P	Yak-9	67th FBS/18th FBW	F-51D	Capt Alma R. Flake	
2 Nov.	Yak-9P	Yak-9	12th FBS/18th FBW	F-51D	1Lt James J. Glessner, Jr.	
6 Nov.	Yak-9P	Yak-9	67th FBS/18th FBW	F-51D	Capt Howard I. Price	
6 Nov.	Yak-9P	Yak-9	67th FBS/18th FBW	F-51D	1Lt Henry S. Reynolds	

Notes:

1. This victory credit was not awarded because Lt Norris was one of four pilots scoring hits on the target and FEAF policy precluded "dividing credit among more than two persons". Additionally there were no La-7s in the KPAF inventory, so this was either a Yak-9P or an Il-10. Since another member of this formation shot down was an Il-10, this aircraft was most probably of the same type.
2. While described in Fuller (pg 31) as "Yaks", the USAF Korean War Aerial Victory Credits has always listed the victims as three Il-10s and one La-7. Since there were no La-7s in the KPAF inventory, this was either a Yak-9P or an Il-10. Because other members of this formation shot down were Il-10s, this aircraft was most probably that same type.

AVOIDING THE REPEATED UN AIR ATTACKS BY MOVING AND MASSING AT NIGHT, THE NKPA RESUMED THEIR ASSAULTS ON JULY 14

the 56th FAR to fly defensive missions to cover their own forces, and five Yak-9Ps deployed forward to Suwon to do so. On July 11th, three of them attacked a flight of four F-80Cs strafing NKPA troops near Chongju but failed to get any hits before the faster jets vacated the scene. The following day a pair jumped another formation of Shooting Stars strafing enemy frontlines, this time near Chochiwon, and again the jets got away undamaged. Not so lucky was an L-4 Grasshopper shot down by a pair of Yak-9Ps, followed by a U.S. Army L-5 Sentinel the next day.²³

More significant was the first combat loss of a Boeing B-29. On July 12th FEAF's Superforts were dispatched to roam the NKPA's lines of communications" dropping their thirty-five 500-pound bombs individually on bridges, tunnel entrances, and road junctions—as well as any observed troop concentrations, supply dumps, truck convoys, and even individual tanks. Three Yak-9Ps—probably scrambling from Suwon—intercepted one of these B-29s (28th

BS/19th BG) near Seoul, NKPAF pilot Kim Gi-Ok (or less likely, Lee Dopn-Gyu—both claimed B-29 kills that day) shooting out the number three engine with his cannon.²⁴ Ablaze, the B-29 escaped out to sea where the crew bailed out; two of the crew were captured by the North Koreans, but the remaining eleven men were rescued by the British frigate HMS *Alacrity*.²⁵

One week later, three Yak-9Ps intercepted one of ten B-29s (30th BS/19th BG) dispatched to bomb bridges spanning the Han River. Catching the bomber near Seoul, the Yaks riddled it with more than 100 shell holes, causing severe damage and wounding the pilot.²⁶

Avoiding the repeated UN air attacks by moving and massing at night, the NKPA resumed their assaults on July 14, forcing the U.S. 24th Division from the Kum River line; the Americans fell back to Taejon. By this time the severely mauled, under-strength unit could not stop two NKPA divisions, each led by a regiment of tanks, from swinging



With aerial supremacy achieved, and the NKPA offensive finally halted at the Pusan Perimeter, FEAF Bomber Command began a concerted campaign to destroy the North Korean air force. Here an intact Il-10 lies amid the rubble of the main hangar at Kimpo AB.

around their left flank, threatening to encircle them. FEAF called for a “maximum effort” to save them. The 56th FAR fighters sporadically attempted to intervene, the most successful mission occurred on July 14, when two Yak-9Ps attacked a flight of four B-26s [13th BS/3d BG(L)].²⁷ NKPAF pilot Kim Gi-Ok damaged one so badly—shooting out one engine—it force-landed at Taejon’s small dirt airfield.²⁸

The next day fighters from both sides began clashing in a far more decisive fashion. On July 15 and July 17 chance encounters between NKPAF Yaks and USAF jets (39th FIS/35th FIW and 35th FBS/8th FBG) resulted in two Yak-9Ps being claimed destroyed by 1st Lt. Robert A. Coffin and Capt. Francis B. Clark, respectively.²⁹

Two days later, the 56th FAR sent four Yak-9Ps to raid Taejon airfield. As they egressed northwards at 6,000 feet a ground Forward Air Controller informed a flight of four F-80Cs (36th FBS/8th FBG) about the fleeing enemy fighters. The speedy Shooting Stars jettisoned their air-to-ground rockets and tip tanks, accelerated and quickly caught the Yaks. One pair broke left and down, the other right and up and a real four-versus-four “furball” ensued. The Shooting Stars split as well, 1st Lts. Robert D. McKee and Charles A. Wurster quickly destroying one from each pair, and as the dogfight continued 2d Lt. Elwood A. Kees shot down a third Yak. Two of the NKPAF pilots bailed out and survived the engagement. However, the slower, lighter Yaks could turn tighter and one of them severely damaged the lead F-80C. This Shooting Star crashed and its pilot perished attempting a forced landing at Taejon.³⁰

The next day about eight miles north of Taejon, another pair of Yak-9Ps tried to *bounce* a flight of Shooting Stars (35th FBS/8th FBG). The Americans spotted the attacking Yaks and quickly split. As one of the Yaks followed one of the accelerating jets, Capt. Robert L. Lee, flying the lead F-80C, pulled in

THE SLOWER, LIGHTER YAKS COULD TURN TIGHTER AND ONE OF THEM SEVERELY DAMAGED THE LEAD F-80C

behind him and opened fire: “The Yak started to fall apart, turned over on its back and went straight in.”³¹ Meanwhile the second NKPAF fighter tried to flee to the east, but the other pair of American jets quickly closed and 1st Lt. David H. Goodenough ridled it. When it burst into flames the North Korean pilot bailed out.³²

In six days the 56th FAR lost seven aircraft and four pilots, virtually wiping out the regiment’s only operational squadron, and from that day on NKPAF fighters no longer engaged in frontline combat.

That same day, despite valiant efforts by UN air forces, NKPAF troops and tanks finally overwhelmed the U.S. 24th Division at Taejon. In the four-day battle the Americans suffered 3,602 killed and wounded and another 2,962 men captured, including the commander, Maj. Gen. William F. Dean. Because the 56th FAR was considered instrumental in this victory the unit was awarded the honorific³³ of *Guards Taejon*, becoming the only Guards Regiment in the NKPAF order of battle. Additionally, Kim Gi-Ok became the only Yak-9 pilot to be awarded the Hero of the DPRK reportedly having claimed six of his eventual seventeen victories during this period.³⁴

Real Air Power Makes the Difference

Meanwhile, as Fifth Air Force jet fighters were wiping out the single operational squadron of the 56th “Guards Taejon” FAR in dogfights, FEAF Bomber Command was aggressively targeting NKPAF airfields, three Superfortresses striking Kimpo AB on July 15th, effectively cratering the runway while F-80 (35th FBS/8th FBG) strafers destroyed two dispersed Yak-9Ps.³⁵

Calling upon TF 77 to repeat their earlier success, on July 18 two carrier strikes were flown against the Pyongyang airfields, reportedly destroying another fourteen enemy warplanes and damaging thirteen more that were dispersed and camouflaged around the bases. The next day, TF 77 air groups attacked Yonpo airfield, reporting fifteen NKPAF aircraft destroyed there and another three at the nearby Sondok auxiliary field.³⁶

The most dramatic counter-air strike was also flown that day when seven Shooting Stars (8th were launched after a FEAF RF-80A (8th TRS) discovered the small dirt airfield at Pyonggang, just north of the 38th Parallel. Parked along the western edge of the airstrip were some two dozen NKPAF aircraft—most likely Il-10s—camouflaged with tree branches. The Shooting Stars arrived in mid-afternoon, making repeated strafing runs on the undefended airfield. Fourteen enemy warplanes—along with one twin-engine aircraft fancifully reported as a bomber probably a Yak-6 light transport)—burst into flames and were destroyed; another seven were hit but did not burn and were listed as damaged.³⁷

This attack virtually eliminated the Il-10 as a threat to American and South Korean ground forces. At this stage, according to Russian archives, the 57th AAR had only two dozen *Shturmovik* operational and, for survival, these were dispersed in



(Above) Two NKPAF Il-10s were captured intact at Kimpo AB in September 1950. One was used as the parts donor for this example to be evaluated by the USAF Air Technical Intelligence Center (later the Foreign Technology Division) at Wright-Patterson AFB, Ohio. It was flown 14.4 hours before a landing gear collapse terminated the USAF's first experience exploiting Soviet-built aircraft. (Photo courtesy of the Robert F. Dorr Collection.)

(Right) Flying from bases in Japan, the relatively short-ranged Lockheed F-80C Shooting Stars had difficulty maintaining sufficient presence over the front lines until the development of the enlarged "Misawa" wingtip drop tanks. From that point on, the first generation American jet fighters absolutely dominated the NKPAF propeller-driven fighters.



groups of four to six aircraft to various auxiliary airfields. From this point on, Soviet advisors reported that NKPAF assault aviation could "only carry out reconnaissance missions on behalf of the ground forces." Most importantly, after this attack the Il-10s were no longer seen over the battlefield.³⁸

A week later, fourteen Superfortresses made another major attack against Pyongyang's Heijo and Onjung-ni airfields. Two Yaks rose to defend their bases, but were able to only inflict minor damage on one B-29. The Boeings badly cratered the runway and dispersal areas, knocking out the NKPAF's main base for some time.³⁹

Despite the nearly complete absence of NKPAF aerial activity, their bases continued to be the targets of FEAF offensive counter-air strikes anytime aircraft were observed. On August 4, Fifth Air Force F-51Ds (67th FBS/18th FBG) raided Kimpo after a formation of B-29s (19th BG) bombing Seoul's railway yards reported seeing enemy fighters taking off. The marauding Mustangs strafed and bombed, claiming nine aircraft destroyed and another nine damaged. Two days later, Pyongyang was raided by the same unit, its pilots reporting another nine destroyed, plus three more damaged at Kimpo when they attacked it on the way home.⁴⁰

Badly beaten, the North Korean air force made only a few sporadic, desultory appearances in August, most notably when a fighter (reported as an "La-5") attempted to attack a B-29 (307th BG) on August 15th and was driven off by two bursts from the bomber's tail guns. Additionally, on the 23d two Il-10s attacked and damaged the Royal Navy destroyer HMS *Comus*, eighty-five miles west of Kunsan, South Korea, killing one sailor and wounding another.⁴¹

By the end of August FEAF Intelligence assessed that the repeated USAF, USN, and RN/FAA airfield attacks had destroyed 110 NKPAF aircraft—thirty-four of them⁴² confirmed destroyed by strafing—and damaged forty-two more (undoubtedly there is considerable overlap within these two groups). Additionally, Fifth Air Force and

USN pilots were credited with destroying twenty-four NKPAF aircraft in aerial combat, plus two *kills* claimed by bomber gunners.⁴³

Soviet archive sources confirm that by August 10, the NKPAF was "Practically not flying, and were virtually wiped out on 22 August after a successful strike by naval aircraft." The NKPAF had been systematically destroyed by the combined might of UN air power.⁴⁴

The End of the Beginning

While the NKPAF's role in the initial success of the North Korean invasion was not significant, it demonstrated a persistent presence and until late July it remained an important consideration in FEAF's combat operations. With its Il-10s, the 57th AAR flew forty-four ground attack sorties during the last week of June and forty-six more in the first few days of July before the Americans' devastating airfield attacks eliminated them.⁴⁵

From June 25 through August, the 56th FAR flew 222 Yak-9P sorties and claimed to have shot down eighteen USAF fighters and twenty-nine bombers. Actually, only one F-80C, one B-29 and two liaison aircraft are known to have been lost to Yak-9Ps in the air, with three USAF transports and seven ROKAF trainers destroyed on the ground by their strafing. Additionally, one F-82G and two B-26s damaged by Yak-9Ps were eventually lost, having been destroyed to prevent capture by advancing NKPAF forces.⁴⁶

His air force nearly completely destroyed during the last week in August, Gen. Wang "threw in the towel," withdrawing almost all of his surviving warplanes—reported by Soviet sources as twenty Il-10s and a single Yak-9P—to the small primitive airfield near Yanji, China, approximately twenty miles beyond the northeast corner of North Korea.⁴⁷

More critical to the NKPAF was the fact that only six fighter pilots and seventeen assault aircraft pilots survived their initial combat experience. The air arm had begun the campaign with ten combat-

qualified Yak-9P and twenty-two Il-10 pilots. During the summer, thirty new pilots graduated from the NKPAF's flying training program to fill these depleted ranks. To continue training its remaining 120 student pilots, the North Koreans also withdrew some thirty Yak-11s, eighteen trainers, and fifteen Polikarpov Po-2 biplanes to Yanji.⁴⁸

While the NKPAF was "down," it was not "out," not as long as it had the support of the Soviet Union. On August 28, Joseph Stalin informed Kim Il-Sung that he was willing to "throw in additional assault aircraft and fighter aircraft for the Korean air force."⁴⁹

With the Russians' support, the 56th GFAR would be reconstituted as a two-squadron Yak-9P unit while the 57th AR was rebuilt with fresh

Il-10s, the two units returning to combat at Sinuiju airfield (on the south bank of the Yalu River) in November 1950 and January 1951, respectively. Additionally, the first seventy graduates of the renewed NKPAF pilot training program at Yanji, seasoned with a few surviving Yak-9P pilots, were trained by the Soviets to man North Korea's first two MiG-15 air divisions, the first of which would join the air battles in "MiG Alley" in November 1951.

Meanwhile, General Wang—along with his 877th AFU and a handful of Il-10s and Yak-9Ps—remained at Kimpo AB⁵⁰ attempting to defend the Inchon-Seoul area from the Americans and UN forces. As subsequent history relates, he was singularly unsuccessful in that attempt. ■

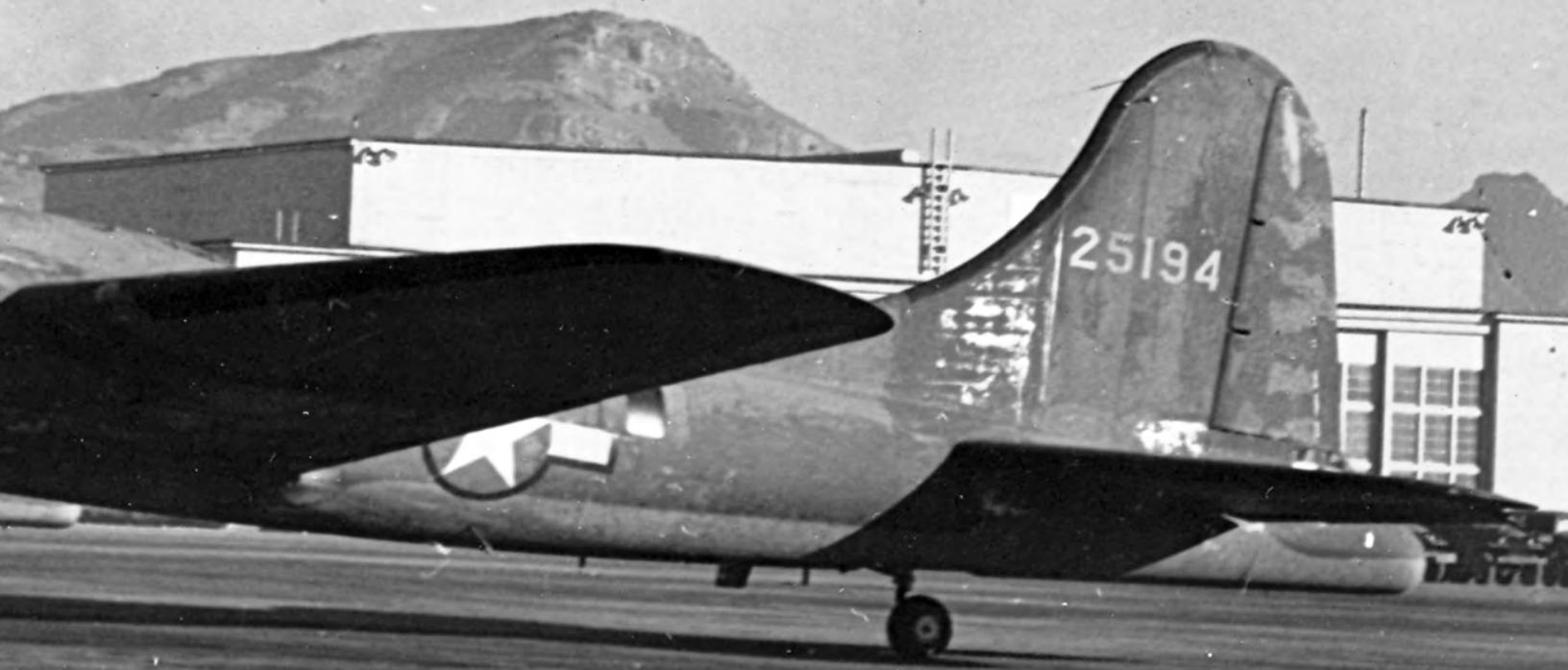
NOTES

1. Washington's approval for this escalation was received the following morning, the Joint Chiefs of Staff authorizing MacArthur's air force component to attack "air bases, depots, tank farms, troop columns and other purely military targets" throughout the Korean Peninsula. Robert Frank Futrell, *The United States Air Force in Korea, 1950-1953*, (Washington, D.C.: Office of Air Force History, 1981), pp. 32, 36;
2. Futrell, *The United States Air Force in Korea*, pp. 84, 99; O. V. Rastrenin, "Il-10 Ground Attack Aircraft (Part 2)", Aviakollektsiya No. 1-2005, *Modelist-Konstruktor Magazine*, Moscow, 2005, translated by Stephen L. Sewell, p. 29; and N. L. Volkovskiy, ed., *The War in Korea*, trans. Stephen L. Sewell (St. Petersburg: Izdatel'stvo Poligon, 2000), p. 66.
3. Gordon L. Rottman, *Inch'on 1950: The last great amphibious assault* (Oxford, UK: Osprey Publishing, 2006), p. 38.
4. Futrell, *The United States Air Force in Korea*, p. 29; and Robert Jackson, *Air War over Korea*, (New York: Charles Scribner's Sons, 1973), p. 18.
5. FEAF Intell's "battle damage assessment" (BDA) estimated 25 NKPAF warplanes destroyed in this raid. Futrell, *United States Air Force in Korea*, p. 32.
6. Brian Cull and Dennis Newton, *With the Yanks in Korea, Volume One* (London: Grub Street, 2000), p. 14; Futrell, *United States Air Force in Korea*, p. 32; John E. Horne, "Douglas B-26s in Korea," *Air Enthusiast*, No. 24, April-July 1984, p. 51; Jackson, *Air War over Korea*, p. 19; Volkovskiy, *The War in Korea*, p. 61.
7. Robert F. Dorr, Jon Lake, and Warren Thompson, *Korean War Aces*, (Oxford, UK: Osprey Publishing, 1995), p. 11; Futrell, *United States Air Force in Korea*, pp. 33, 34; Warren E. Thompson, "Fighter Combat over Korea, Part 1: First Kills", *Wings of Fame*, Vol. 1, 1995, p. 13; Warren Thompson, "Shooting Stars over Korea", *Air Power*, March 1985, Vol. 15, No. 23, 55; Warren Thompson, *F-80 Shooting Star Units Over Korea*, (Oxford, UK: Osprey Publishing, 2001), pp. 36-38, 40; Volkovskiy, *The War in Korea*, 64; Charles Wurster, "1Lt Charles A. Wurster, Pilot, 36th Tactical Fighter Bomber Squadron, Combat Operations in Korea, 1950", unpublished manuscript provided by Warren E. Thompson, pp. 2, 3.
8. By this time the two-squadron wing of C-54s had been reinforced with a squadron (21st TCS) of venerable Douglas C-47 Skytrains because the unimproved condition of ROK airfields required the slower, lighter transport aircraft. Futrell, *United States Air Force in Korea*, p. 70.
9. Futrell, *United States Air Force in Korea*, pp. 37, 77, 84.
10. *Ibid.*
11. This was Maj. Gen. Emmett "Rosie" O'Donnell, Jr. *Ibid.*, p. 47.
12. *Ibid.*, pp. 46, 47 and Robert F. Dorr, *B-29 Superfortress Units of the Korean War Aces*, (Oxford, UK: Osprey Publishing, 2003), p. 12.
13. *Ibid.*, p. 49; Cull and Newton, *With the Yanks in Korea*, p. 259; Richard P. Hallion, *The Naval Air War in Korea*, (Baltimore: The Nautical & Aviation Publishing Company of America, Inc., 1986) pp. 30, 32; and Jackson, *Air War over Korea*, p. 26.
14. These numbers are from the HMS *Triumph*'s log-book. Unaccountably these numbers have been reversed in all American accounts of this operation. James Paul and Martin Spirit, "HMS Triumph: Tour 25/6/1950—29/9/1950", 2008, posted on website: <http://www.britains-smallwars.com/carriers/Triumph.html#tour>.
15. Cull and Newton, *With the Yanks in Korea*, pp. 259, 260; Hallion, *Naval Air War in Korea*, pp. 34, 35; Jackson, *Air War over Korea*, p. 26; James Paul and Martin Spirit, "HMS Triumph: Tour 25/6/1950—29/9/1950", 1; Thompson, "Fighter Combat over Korea, Part 1: First Kills," pp. 14, 15.
16. Anatoliy Demin, "In the Skies of Korea: The 'Eagles' of Mao Zedong Against the 'Hawks' of Uncle Sam," a series of articles published in *Mir Aviatsii* magazine, 2004, translated by Stephen L. Sewell, 2010, 2.
17. Futrell, *United States Air Force in Korea*, pp. 84, 99; Volkovskiy, *The War in Korea*, p. 66.
18. Organized on July 10th, the 51st Fighter Squadron (Provisional) married the "most apt personnel" (meaning available F-80C pilots with recent/extensive F-51D flying time) from the Philippines-based 18th FBG with 30 former 8th FBG F-51Ds withdrawn from FEAF storage at Itazuki AB. After five days of training at Johnson AB they flew to Taegu to begin combat operations. The 51st FS(P) was redesignated the 12th FBS on August 4th. Futrell, *United States Air Force in Korea*, pp. 68, 94, 95; Warren Thompson, "Mustangs in Korea," *Air Enthusiast*, No. 15, April-July 1981, pp. 50, 51; Warren Thompson, *F-51 Mustang Units Over Korea*, (Oxford, UK: Osprey Publishing, 1999), pp. 10, 12, 18, 19, 42, 111, 112.
19. Cull and Newton, *With the Yanks in Korea*, p. 13; Futrell, *United States Air Force in Korea*, pp. 51, 65, 68, 89, pp. 90, 91, 95, 99; Jackson, *Air War over Korea*, p. 26;

- Warren Thompson, "Mustangs in Korea", p. 50; Volkovskiy, *The War in Korea*, p. 67.
20. Futrell, *United States Air Force in Korea*, pp. 85-88, 90, 91, 99; Jackson, *Air War over Korea*, p. 28; Warren Thompson, *F-80 Shooting Star Units Over Korea*, p. 18; Warren Thompson, "The (Shooting) Stars of Korea", *Air Enthusiast*, No. 21, April-July 1983. 22; Volkovskiy, *The War in Korea*, p. 68.
21. Rastrenin, "Il-10 Ground Attack Aircraft", p. 29.
22. Futrell, *United States Air Force in Korea*, pp. 90, 91, 99; Volkovskiy, *The War in Korea*, p. 68.
23. Futrell, *United States Air Force in Korea*, pp. 81, 99; "Korean War Aircraft Loss Database (KORWALD): Date of Aircraft Loss Report," (Washington, D.C.: Defense Prisoner of War/Missing Personnel Office) as posted on Department of Defense, Defense Technical Information Center website: www.dtic.mil/dpmo/korea/reports/air/korw ald_date.htm, 1.
24. DPRK propaganda maintains that pilot Kim Gi-Ok destroyed a second B-29 by ramming. ACIG Team, "Far East Air-to-Air Victories during the Korean War, 1950-1953", p. 1.
25. Air Combat Information Group (ACIG) Korean War Team (Diego Fernando Zampini, Saso Knez, and Joe L. Brennan), "Chinese Air-to-Air Victories during the Korean War, 1950-1953", as posted on http://www.acig.org/art man/publish/article_311.shtml, updated 28 April 2004, 1; ACIG Team, "Far East Air-to-Air Victories during the Korean War, 1950-1953", 1; Cull and Newton, *With the Yanks in Korea*, pp. 20, 21; Dorr, *B-29 Superfortress Units of the Korean War*, pp. 13-15; and Futrell, *United States Air Force in Korea*, pp. 81, 83, 90, 91.
26. Dorr, *B-29 Superfortress Units of the Korean War*, p. 15; and Futrell, *United States Air Force in Korea*, p. 99.
27. This B-26B [S/N 44-34263 from the 13th BSL] was destroyed by U.S. forces when they were forced to evacuate Taejon on July 20. ACIG Team, "Far East Air-to-Air Victories during the Korean War, 1950-1953", p. 2; "KORWALD Date of Aircraft Loss Report", p. 2; and Futrell, *United States Air Force in Korea*, p. 99.
28. Futrell, *United States Air Force in Korea*, pp. 91, 92, 97 and Volkovskiy, *The War in Korea*, pp. 68, 69. Additionally, according to DPRK propaganda, an unnamed NKPAF pilot is said to have shot down an F-80C on July 15, however, USAF records show that no F-80Cs were lost that day, or even during this week. ACIG Team, "Far East Air-to-Air Victories during the Korean War, 1950-1953", 1; "KORWALD Date of Aircraft Loss Report", p. 2.
29. Futrell, *United States Air Force in Korea*, pp. 91, 92, 97 and "USAF Korean War Victories by Date," (Maxwell AFB, Ala.: Air Force Historical Research Agency) as posted on National Museum of the U.S. Air Force website: <http://www.nationalmuseum.af.mil/shared/media/document/AFD-051209-004.pdf>, 1.
30. The two surviving NKPAF pilots were Kim Hi-Gyung and Tae Guk-Sung. The F-80C pilot was Capt. Howard E. Odell. ACIG Team, "Far East Air-to-Air Victories during the Korean War, 1950-1953", 1; "KORWALD Date of Aircraft Loss Report", p. 2. Also see Dorr, Lake, and Thompson, *Korean War Aces*, p. 12; Futrell, *The United States Air Force in Korea*, pp. 33, 34; Futrell, *United States Air Force in Korea*, p. 101; Thompson, "Fighter Combat over Korea: First Kills," pp. 15, 16, 18 and "Shooting Stars over Korea", pp. 24, 55; Wurster, "Combat Operations in Korea, 1950", p. 5; and "USAF Korean War Victories by Date," p. 1.
31. Thompson, "The (Shooting) Stars of Korea", p. 22.
32. Dorr, Lake, and Thompson, *Korean War Aces*, p. 12; Futrell, *United States Air Force in Korea*, p. 101; Thompson, "Fighter Combat over Korea: First Kills," p. 18, "The (Shooting) Stars of Korea", p. 22, and "Shooting Stars over Korea", p. 25; "USAF Korean War Victories by Date," p. 2.
33. After this politically significant victory over the Americans, Kim Il-Sung awarded the prestigious "Guards" title to the 105th Tank Division, four infantry brigades, four artillery regiments and two AAA regiments. Morozov and Uskov, "On Guard for Peace and Labor", p. 31.
34. Demin, "In the Skies of Korea," p. 3; Futrell, *United States Air Force in Korea*, p. 97; Morozov and Uskov, "On Guard for Peace and Labor", pp. 31, 32.
35. Futrell, *United States Air Force in Korea*, p. 99.
36. Cull and Newton, *With the Yanks in Korea*, pp. 21, 261.
37. Futrell, *United States Air Force in Korea*, pp. 99, 100; Thompson, "The (Shooting) Stars of Korea", p. 24; and Wurster, "Combat Operations in Korea, 1950," pp. 5, 6.
38. Rastrenin, "Il-10 Ground Attack Aircraft," p. 30.
39. Dorr, *B-29 Superfortress Units of the Korean War*, p. 15; Futrell, *United States Air Force in Korea*, p. 101.
40. Dorr, *B-29 Superfortress Units of the Korean War*, p. 17; Futrell, *United States Air Force in Korea*, p. 102. It is not known of course how many of the NNKPAF aircraft claimed as destroyed in these attacks had already been damaged or destroyed during previous raids. The USAF 1963 tabulation awarded three pilots credit for destroying five Yak fighters during this period. See "USAF Historical Study No. 81: USAF Credits for the Destruction of Enemy Aircraft Korean War," (Maxwell AFB, Ala.: USAF Historical Division Aerospace Studies Institute, June 1963), pp. 7-36.
41. Cull and Newton, *With the Yanks in Korea*, p. 265; Futrell, *United States Air Force in Korea*, p. 102; Paul and Spirit, "HMS Triumph: Tour 25/6/1950—29/9/1950," p. 5; and Jackson, *Air War over Korea*, p. 28. The attack on HMS *Comus* was led by An Hon-Zun, who was considered the NKPAF's most successful Il-10 pilot having been credited with destroying two enemy aircraft and sinking the destroyer. Rastrenin, "Il-10 Ground Attack Aircraft," p. 30.
42. Futrell, *United States Air Force in Korea*, p. 102. Claims by strafing fighters included one "Il-2" (Il-10), 10 Yak fighters and 23 unidentified propeller-driven aircraft. "USAF Historical Study No. 81," pp. 7-36.
43. One Yak-11, 13 Yak-9Ps and ten Il-10s. "USAF Korean War Victories by Date," (Maxwell AFB, Ala.: Air Force Historical Research Agency), p. 1.
44. Demin, "In the Skies of Korea," p. 3.
45. Volkovskiy, *The War in Korea*, p. 80.
46. *Ibid.*, and Demin, "In the Skies of Korea," p. 3.
47. Morozov and Uskov, "On Guard for Peace and Labor," pp. 31, 32, 38 and No Kum-Sok, *A MiG-15 to Freedom: Memoir of the Wartime North Korean Defector Who First Delivered the Secret Fighter Jet to the Americans in 1953* (Jefferson, N.C.: McFarland & Company, Inc., Publishers, 1996), pp. 70, 71.
48. *Ibid.*
49. Weathersby, "New Russian Documents on the Korean War," p. 45.
50. This very small detachment consisted of a two to four operational Il-10s and one or two serviceable Yak-9Ps. During the American counter-invasion at Inchon in mid-September, the Il-10s flew four sorties attacking ships and the Yak-9(s) flew two missions against ground troops. Edwin P. Hoyt, *On to the Yalu*, NY: Stein and Day, Inc., 1984), pp. 67, 68, 70 and Rottman *Inch'on 1950*, p. 38.
51. In USAF records there is listed the loss of an F-51D (44-73255 from 39th FBS/18th FBW) on September 28, 1950, attributed by the unit's monthly history report to a Yak fighter. However, examination of the actual combat report shows that the loss – and the death of 1st Lt Donald L. Pitchford – was probably due to ground fire and that no enemy fighters were in the vicinity. Apparently between the mission report and the unit history "flak" mutated into "Yak". Supporting this contention is the fact that unlike virtually all other instances of a KPAF-caused UN aircraft loss – and many claimed that were not lost – there was no DPRK propaganda addressing this event. Daniel Nole, "KPAFAC Victories in Korea," posted on website: <http://forum.12oclockhigh.net/showthread.php?t=22361>, Sep. 16, 2010, p. ??. Gi-Ok became the only Yak-9 pilot to be awarded the pilot 2.

The Other Atomic Bomb Commander: Colonel Cliff Heflin and his “Special” 216th AAF Base Unit





Darrell F. Dvorak

The Distinguished Service Medal is earned for “exceptionally meritorious service to the government in a duty of great responsibility, in combat or otherwise.” The U.S. Air Force’s third-most prestigious award, it is rarely given to airmen lower than major general, but it was awarded to Col. Clifford J. Heflin upon his retirement in 1968 after thirty-one years of service. Heflin was recommended for the DSM primarily because he had commanded two vital, top secret and highly successful projects in World War II. Few people—military or civilian—knew about those commands at the time, and even fewer knew about them when Heflin died in 1980. The story of his first command began to emerge in 1985 but remains little known, and the story of his second command is remembered only by his immediate family. Both deserve to be universally known because together they change the prevailing narrative of the Army Air Forces (AAF) role in the atomic bombing of Japan. This paper is based on Heflin’s private records, overlooked primary sources, and prior scholarship. It addresses three key questions: Why was Heflin chosen for a top command in the atomic bomb project; what were his specific contributions to that project; and why has his story been overlooked?

After almost seventy years, “The Manhattan Project” is widely recognized as the codename for the massive, top secret U.S. effort to develop and use atomic bombs in World War II.¹ Less well known is the unprecedented authority wielded by one man, Army Maj. Gen. Leslie Groves, who was Manhattan’s Commanding General from June, 1942 to August, 1945. He later remarked, “No officer I ever dreamed of had the free hand I had in this project; no theatre commander ever had it and I know of no one [else] in history who has had such a free hand.”² As biographer Robert Norris described it, Groves used his authority to build a “juggernaut” and drove “it forward, ever faster, racing toward the finish.”³ The juggernaut Groves drove was centered on the AAF.

Over several months in mid-1944, Groves and AAF Commanding General Henry H. (“Hap”) Arnold met to define the AAF’s responsibilities. In March, they agreed that:

The AAF would organize and train the requisite tactical bomb unit, which, for reasons of security, must be as self-sustaining as possible and exercise full control over delivery of bombs on the targets selected. Manhattan would receive from the AAF whatever assistance it needed in ballistic testing of bombs and air transportation of materials and equipment.⁴

HEFLIN WAS RECOMMENDED FOR THE DSM PRIMARILY BECAUSE HE HAD COMMANDED TWO VITAL, TOP SECRET AND HIGHLY SUCCESSFUL PROJECTS IN WORLD WAR II

The author, Darrell F. Dvorak, is indebted to Dr. Daniel F. Harrington, historian with the U.S. Strategic Command, and Dr. Robert Standish Norris, Senior Fellow for Nuclear Policy with the Federation of American Scientists and author of the definitive biography of General Leslie R. Groves, Commanding General of the Manhattan Project, for their professional critiques of, and many suggestions for, this paper, as well as to members of Heflin’s family who provided his original records and relevant memories.

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Further sessions between Groves and Arnold in July and August conceptually defined two key organizations, a “tactical bomb unit,” designated the 509th Composite Group, and a “section” of Manhattan, codenamed Project Alberta, whose mission was:

... the completion of design, procurement and preliminary assembly of [bomb] units which would be complete in every way for use with active [nuclear] material; continuation of a test program to confirm in so far as possible without using active material the adequacy in flight of the components and assembled [bomb] units; and preparation for overseas operations against the enemy.⁵

In short, Alberta (also known as Project A) was to ensure that U.S. nuclear science was weaponized into functional bombs that could be accurately dropped by bomber aircraft specially configured for them, and that the bomb crews were successfully trained, deployed and provisioned for their missions. Alberta was the culmination of Manhattan, integrating years of work that by mid-1945 became focused at three primary venues:

Los Alamos Laboratory in New Mexico (code-named Site Y and also referred to as Project Y

(Right) Col. Clifford J. Heflin(left) and Col. Paul W. Tibbets at Wendover AAFB.

(Left) Maj. Gen. Leslie R. Groves.

GROVES RELENT- LESSLY SOUGHT THE BEST PEO- PLE FOR MANHATTAN, REGARDLESS OF MILITARY NORMS



and Project), where the scientific work of designing, igniting, controlling and packaging the nuclear devices was carried out under Manhattan's scientific director, Dr. J. Robert Oppenheimer. About 6,000 personnel, most of them scientists or engineers, were stationed there.

Wendover AAF base in Utah (codenamed Kingman and also referred to as Site K and W-47), the home of the AAF units that would undertake the ballistics work, train for the bombing missions, provide dedicated air transportation for Alberta, and implement overseas operations. More than 2,500 airmen were stationed there.

Tinian AAF base, on one of the Marianas islands in the South Pacific (codenamed Destination), where the aircraft, crews, support personnel, atomic bombs and supplies were marshaled, and from which the bombing missions to Japan were launched. About 1,400 men from the 509th and Alberta were stationed there.

Groves relentlessly sought the best people for Manhattan, regardless of military norms. In mid-1943, he selected Navy Captain William S. "Deak" Parsons to lead the Los Alamos Ordnance and Engineering Division under Oppenheimer, because he believed Parsons was the best ordnance officer in the U.S. military. Later, in March, 1945, Parsons became Officer-in-Charge of Project Alberta, a measure of Groves's high confidence in him.⁶ Parsons's

deputy was another naval ordnance expert, Commander Frederick L. Ashworth, who spent most of his time at Wendover. Together they integrated the work at Los Alamos and Wendover to produce the bombs.⁷ Groves, Parsons and Ashworth became as important to Heflin as his AAF chain of command.

In early September, 1944, twenty-nine year old Lt. Col. Paul W. Tibbets was selected by Arnold to be commanding officer of the 509th, primarily because Tibbets was an excellent bomber pilot, had combat experience, and for more than a year had been test-piloting and training crews to fly the new B-29 bomber. But the choice troubled Groves, largely because Tibbets's command experience was relatively limited.⁸ In a 1970 oral history interview, Groves bluntly expressed his opinion of Tibbets:

[Tibbets] was superb [as a pilot], but he had no officer capabilities, at all... I don't think that you could call him a field commander...Yes, at the time, I wanted [a more mature officer to head the 509th] but I wasn't going to interfere with what Arnold wanted ... it was a mistake to have somebody who was quite that young to be the head of [a Group] that was going to develop...⁹

The 509th would quickly "develop" into a free-standing organization of 1,800 airmen in eight units, a larger and more operationally diverse group than anything Tibbets had ever commanded. Groves undoubtedly would have done something to



Col. Heflin as Carpetbagger commanding officer in 1944. (Photo courtesy of the 801st/492nd Organization.)

at least offset Tibbets's weakness, but no *explicit* records have been located detailing how he tackled the problem. However, several immediate developments appear to have addressed Groves's concerns.

The earliest may have been cryptically recorded in Groves's "diary" for September-October 1944.¹⁰ On September 18, 1944, Groves asked to meet Arnold in connection with a disturbing report he had received from one of his science advisors, and in quick succession, Groves saw Arnold; talked with Parsons regarding Tibbets's "administrative difficulties;" talked with and then met Tibbets; and on October 19, again met with Tibbets along with Parsons, two science advisors, and the head of Manhattan security. For the remainder of 1944, Groves's diary does not record more about the subject which, suggests that Tibbets's "administrative difficulties" were solved or in the process of being solved.

Also in October, two of the first specially-configured B-29s ("Silverplate" models) were assigned to Wendover's 216th AAF Base Unit (Special) for use in drop testing Los Alamos atomic bomb designs.¹¹ This was an unusual role for a base unit, which typically would only manage base-related functions, and may be the reason that the 216th was designated "Special," but it is possible that the assignment decision pre-dated Tibbets's selection. The last

development was that, sometime in the eight days between October 26 and November 2, a new base commander for Wendover was selected. This officer, a full colonel since May, 1944, was fully qualified to take on a broad range of operational duties that otherwise would have been handled by Tibbets's 509th or another operational unit.¹²

Three days after Groves's seemingly pivotal October 19 meeting, Col. Clifford Heflin ended a 12-month assignment as the first commander of the 801st/492nd Bombardment Group, nicknamed the Carpetbaggers. Based in England, this unique, top secret unit had worked in concert with the U.S. Office of Strategic Services (OSS), led by legendary Gen. William "Wild Bill" Donovan, to help build disparate French resistance groups into an effective sabotage and guerrilla force. The Carpetbagger/OSS objective was to help the French resistance to "harass, disrupt and divert" the German army's defense against the Allies' D-Day invasion.¹³ Following Carpetbagger successes early in 1944, Gen. Dwight D. Eisenhower, Supreme Commander of the Allied Expeditionary Force, ordered Lt. Gen. Carl Spaatz, Commanding General of U.S. Strategic Air Forces in Europe, to increase the size of Heflin's unit, which quickly grew to a force of 3,000 airmen, sixty-four B-24 bombers and several C-47s.¹⁴ The Carpetbaggers' hazardous, low-level, moon-lit night missions across the English Channel steadily expanded from dropping supplies, to also dropping agents and saboteurs, and then landing behind German lines to rescue downed Allied airmen. Each new mission required bomber modifications and innovative flying tactics; each was first piloted by Heflin.¹⁵ By mid-September, 1944, the unit had completed 1,800 missions in support of 13,500 resistance fighters, while suffering the loss of twenty-five aircraft and more than 200 crew members.¹⁶ The Carpetbaggers were later awarded a Presidential Unit Citation for "extraordinary heroism in action against an armed enemy," and Heflin was personally honored with several prestigious awards from the AAF and from General Charles DeGaulle's Free French Forces.¹⁷ Moreover, recognition of Heflin and the Carpetbaggers went well beyond their medals. In April, 1944, Heflin had "received full authority to accept or reject missions for the Carpetbaggers. No other group officer in the Eighth Air Force had such full control over his operations."¹⁸ Heflin's AAF Officer Efficiency Report for the period rated him "Superior," the highest possible rating, and described him as a "strong and able leader [who] inspires loyalty and commands respect of superiors. Forceful, discerning, keen, self-reliant and efficient, he is, also, courageous and possessed of sound judgment."¹⁹ After the war, it was recognized that the Carpetbaggers had inaugurated a strategic change in air warfare: "Airpower not only brought the air war to the enemy in his heretofore secure rear areas, it now brought the ground war into his own backyard as well;"²⁰ and Carpetbagger operations marked "the origin of special operations as a role of American airpower."²¹ Members of the British 7th Special Operations Squadron "trace their lineage as

An aerial view of Wendover in 1945 (Photo courtesy of the 457th Bomb Group Association.)



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Air Force special operators back to the Carpetbaggers" and a painting entitled "Carpetbaggers" hangs in tribute at their Royal Air Force base.²² Regrettably, although several accounts of the Carpetbaggers are now available, Heflin never contributed to them because only one (see note 18) was written while he was alive.²³

Returning to the U.S. on October 23, 1944, Heflin expected to begin a well-earned leave. Instead, he was called to Second Air Force headquarters in Colorado Springs, Colorado, and told to report immediately to Wendover.²⁴ His flight records show that he was transferred to the 216th and, on October 26-27 and 30-31, flew a P-47 for fifteen hours and eight landings. This activity is consistent with Heflin traveling to meet, and pass muster with, senior AAF and Manhattan officials in Washington, D.C. and Los Alamos. Perhaps tellingly, Groves's diary for November 2, 1944, records: "Capt. Parsons called [Groves]... advised that he has met the new CO [commanding officer] and approves."²⁵ Then, for most of November and December, Heflin took his overdue leave (and relocated his wife and two infant daughters to Wendover) before taking command of the 216th on January 19, 1945.²⁶ He was twenty-nine years old.

How and when Heflin was brought to the attention of Arnold and/or Groves is not certain, but he had come to the attention of Generals Spaatz and Doolittle several times and Arnold may have solicited their recommendations. In any event, Heflin's qualifications were a remarkably tight fit with the needs of the atomic bomb project. He had served twelve months as CO of a brand new, very large, highly secret, and operationally diverse AAF bomber unit. He had organized, trained and led that unit to accomplish an air combat mission never

before attempted, a mission that required close coordination with a separate, top secret, non-military organization and also required innovative flying tactics and aircraft modifications. He was regarded by his superiors and subordinates as an exceptional officer, one who became available at the precise time he was needed.

By itself, being CO of Wendover was a large responsibility. The base covered 1.8 million acres and was understood to be the world's largest gunnery and bombing range, so Heflin's task was akin to being responsible for all the government, municipal and business activities of a small city.²⁷ Heflin's work probably was complicated in that he may have had to replace 800 airmen who had been transferred from the 216th to the 509th upon its December 17 activation.²⁸ But even more challenging, Heflin immediately became responsible for the first of several operational assignments in support of Project Alberta, beginning with ballistics testing of the atom bombs.

The emerging atom bomb designs presented unique problems to ensure that they would follow predictable flight paths and detonate at predetermined heights.²⁹ The only practical ballistics program at the time was to produce and test inert, cement-weighted, dummy bomb designs, in a recurring cycle of *technology development—bomb design—B-29 modification—dummy production—dummy drop testing—technology development* shared between Los Alamos, Wendover and B-29 vendors.³⁰ Alberta historian, Norman Ramsey, wrote:

In these tests, [dummy bomb] units approaching more and more closely to the final model were tested for ballistics information, for electrical fusing infor-



Loading drop test units before the advent of hydraulic lifts. (Photo courtesy of Historic Wendover Airfield.)

mation, for flight tests of electrical detonators, for test of the aircraft release mechanism, for vibration information, for assembly experience, for temperature tests, etc.³¹

HEFLIN'S OTHER BAL-LISTICS PROGRAM WAS TO ORGANIZE A NEW ORDNANCE UNIT WITHIN THE 216TH TO WORK WITH LOS ALAMOS IN PRODUCING THE TEST BOMBS FOR FTS TO DROP

In early February, 1945, Heflin began organizing a Flight Test Section (FTS) led by Major Clyde "Stan" Shields, who twelve months earlier had piloted the first Silverplate prototype in the initial drop tests at Muroc Army Air Base (now Edwards AFB). For the seven months of FTS drop testing, Shields kept a candid "Daily Diary" of activities. As shown in the timeline below, the diary reveals that drop testing got off to a slow start due to personnel shortages and various other problems. Heflin worked each of these matters until, beginning in May, 1945, and aided by an expanded fleet of nine B-29s, test drops ramped up to a hectic pace in June and July.

1945 Drop Testing Timeline³²

- Feb 3** Tibbets and Heflin lead meeting re: forming a test unit of the 216th composed of 5 B-29s, 3 flight crews, 5 maintenance crews, 2 loading crews and staff.
- Feb 4** Heflin and Shields pilot drop tests for 8 hours over 2,000 miles.
- Feb 24** Tibbets and Shields agree that four B-29s and "flying personnel" of the 509th's 393rd Bombardment Squadron will be available for drop tests.
- Mar 9** Heflin and Shields visit Inyokern (California) bombing range to assess parallel FTS operations; Heflin "did not seem favorably impressed."
- Mar 14** Tibbets, Heflin and Shields discuss various FTS matters; regarding new crews, Heflin says "If they can't produce, back they go to 2nd AF."
- Mar 25** Shields is notified that FTS will get the first five of the latest model B-29s, which can readily operate above 30,000 feet.
- Apr 24** Tibbets, Heflin, Shields, Parsons and Ashworth meet and decide that a separate bombing practice program ("pumpkins") will

"eliminate the necessity of trying to work [the 393rd] into the test program."

May 2 "The [393rd's] bombing [at Inyokern] was not satisfactory, their records were not tabulated correctly, and the data gained was not reliable."

May 17 Due to expanded testing, it "is impossible to operate with present [crews]."

May 24 Ashworth reports to Parsons that drop testing is going well.³³

Jun 10 FTS "is receiving additional... five (5) test crews..."

Jul 3 Tibbets, Heflin and Shields depart for Los Alamos "to discuss certain problems with Project people there."

Jun-Jul FTS conducts 24 drop tests in June and 30 in July;³⁴ the last of these confirm that all Fat Man components are working.

Aug 2 "...we can get [Fat Man] inside of 300 feet from 32,000 [ft.] 90% of the time;" for Little Boy "we should be able to promise inside of 200 feet."

Shields's final diary entry seems intended to document that he and FTS successfully carried out their important assignment, which combat use of the bombs soon confirmed.

Heflin's other ballistics program assignment was to organize a new ordnance unit within the 216th to work with Los Alamos in producing the test bombs for FTS to drop. It was designated the Special Ordnance Attachment (SOD) and commanded by Capt. Henry Roerkohl. However, although it had been decided in mid-January, 1945, to establish the unit, it took until May to become fully manned (about 200 airmen), so in the interim, two other units briefly worked with Los Alamos. The first, dating back to September, 1944, was identified as a "security unit of the 216th,"³⁵ but the author has not located any details. The other unit, the First Ordnance Squadron (FOS) of the 509th, was activated on March 6, 1945, and its work overlapped with SOD until early May, when FOS began departing for Tinian (where it would assemble the live bombs). Due to the bombs' evolving designs, unique shapes and massive weights, producing the test bombs required creation of new tools, assembly procedures, and material handling equipment, all configured to efficiently load the test bombs into the evolving Silverplate B-29 designs. As would be expected, SOD's ability to produce the dummy bombs mirrored that of FTS drop tests by ramping up to peak productivity in June and July. The following timeline has been constructed from several sources.

Ordnance Timeline³⁶

- Sep 1944** Ordnance operations at Wendover begin with personnel from Los Alamos and "the security organization" of the 216th. (Auditor, 10)
- Jan 17, 1945** Meeting of "representatives from the 509th," FOS, Parsons and Ashworth; decision to establish "a separate ordnance detachment"

Observer caravan to drop test target area. (Photo courtesy of Historic Wendover Airfield.)

THE RECOMMENDATION FOR HEFLIN TO RECEIVE HIS DSM WOULD CITE AS ONE REASON HIS "HIGHLY SUCCESSFUL FLIGHT TESTING OF THE ATOMIC BOMB"



stationed at Wendover to supply drop test units and "train replacements for overseas functions of the First Ordnance Squadron." (Auditor, 12)

Mar 1945 "The manning of the 216th's Special Ordnance Detachment... appears to have begun when Capt. Harley D. Kuster was assigned... as Supply Officer." (Auditor, 14)

Mar-Apr 1945 "It is probable that [FOS] was intended to handle its shipments of overseas kit and organizational equipment, and that [SOD] was intended to handle all other supply, warehousing and property... [but] the division of responsibilities between the [FOS] and [SOD] at [Wendover] was not well defined." (Auditor 14, 19)

Apr 21, 1945 Ashworth reports to Parsons that Roerkohl is "catching on," and "there's no question" that Roerkohl and Kuster "will be perfect."

May 2, 1945 Capt. James Rowe is appointed Project Officer reporting to Roerkohl. SOD assumes full control of ordnance work at Wendover. (Rowe, 27)

May 10, 1945 Last FOS personnel depart from Wendover's ordnance facility; FOS has no further drop test responsibilities. (Rowe, 52)

May 12, 1945 Ashworth tells Parsons that the manning of both SOD and FOS ordnance units is still "not good."

May-Jul 1945 In three months, SOD assembles 71 drop test bombs. (Rowe, 175-176)

Four weeks after Little Boy was dropped and four days after Japan's September 2 surrender, Oppenheimer sent Heflin a memo that expressed his personal appreciation for the contributions of Heflin and his men to the ballistics program. And sixty years after the war ended, Ashworth said:

My job at Los Alamos was to supervise and coordinate the work of the engineers in the testing at Wendover of bomb components then being developed at Los Alamos... I was able to run interference for

them with the Base Commander, Colonel Heflin, and I think in useful ways. That wasn't difficult either because Colonel Heflin was one fine Air Force Officer.³⁷

The recommendation for Heflin to receive his DSM would cite as one reason his "highly successful flight testing of the atomic bomb."³⁸ Yet today, Heflin, Shields and Roerkohl remain unknown to history, and one official USAF source credits Tibbets with the ballistics testing.³⁹

Heflin's third unusual assignment was to improve the performance of a unit key to serving Alberta's immense logistics needs.⁴⁰ In December, 1944, an air transportation unit was organized within the 509th "designed to fulfill one important need: the rapid transportation of project personnel and supplies from point to point within the states and from the states to the overseas base."⁴¹ Flying cargo planes, it was designated the 320th Troop Carrier Squadron (TCS), but commonly called "the Green Hornet Line" or "the airline." Initially under the command of Major Charles Sweeney (who later piloted the Nagasaki mission), the 320th had a rocky start due to crew and equipment shortages; provisioning Tinian to host 1400 men; and operating relatively ad hoc, without regular schedules or cargo priorities. As shown in the timeline below, by April, 1945, Heflin and the 509th's then-deputy CO worked on the 320th's problems. Less than a month later, the unit came under Heflin's command, reporting to Shields, as the major movement of hundreds of men to Tinian was underway.⁴²

320th TCS Timeline⁴³

Dec 17 44 320th TCS activated, operating three C-54s and four C-47s.

Jan 6 45 Sweeney assumes command of the 320th.

FOR A COMBAT VET-ERAN LIKE HEFLIN, HIS DIVERSE “REAR ECHELON” DUTIES DISCUSSED ABOVE MAY HAVE BEEN A WELCOME RESPITE, BUT HIS SIXTH TASK RAISED THE ANTE

Apr 21 45 Ashworth tells Parsons that “Ludke (sic) and Col. Heflin worked up a schedule [for the 320th] to start immediately.”⁴⁴

May 8 45 “No decision reached on when [FTS] can take over the transports.”

May 14 45 “[FTS] took over transport operations... The necessary crews were procured through 2nd Air Force. It is hoped that the abuses prevalent in the past will be eliminated... Scheduled runs will be used when possible.”

Jun 10 45 “...receiving additional... six transport crews... Our payload is not large enough to handle all the freight and passengers it is necessary to move.”

Jun 14-25, 45 Shields meets with 320th crews “to amplify the policies, schedules, security, etc. concerning transport operations... and put it on a paying basis.”

Jul 26-28 45 Nuclear components for Little Boy and Fat Man depart from Kirtland Army Air Field for Tinian on five of the 320th’s C-54s and three Silverplate B-29s.

Aug 45 Personnel and supplies begin to return from Tinian

The change of command to Heflin and Shields presumably worked, because the 509th’s official history praises the 320th for transporting more than 500 airmen to Tinian “quickly and efficiently,”⁴⁵ and Alberta’s official history says the unit “contributed greatly to the ability of Project A to beat its schedules in combat use of the Atomic Bomb.”⁴⁶

It is significant that each of the four units discussed above (the 216th’s Base Unit, Flight Test Section, and Special Ordnance Detachment, and the 509th’s 320th Troop Carrier Squadron), were undermanned when Heflin assumed command. This required that Heflin spend considerable time working with 2nd Air Force to acquire qualified airmen. But in addition, it appears that Heflin also had a major role in manning some of the 509th’s other seven units. For most of Heflin’s post-WWII career, he commanded various bases, groups and wings, requiring that he have available an up-to-date biography suitable for public release. Those biographies from 1953, 1962 and his 1968 retirement survive, and each notes his role in “organizing” the 509th. His final biography, included in a program provided to guests at his May, 1968 retirement ceremony, says that he “took command of the air base at Wendover, Utah, and the overall responsibility for organizing the 509th Composite Group and the ballistics testing of the atomic bombs [emphasis added].” In military parlance, “organizing” typically means assembling personnel for a unit, not necessarily commanding it, and there are several reasons to believe the claim is accurate, beginning with the fact that it was an official Air Force document.⁴⁷

For a combat veteran like Heflin, his diverse “rear echelon” duties discussed above may have been a welcome respite, but his sixth task raised the ante. On July 16, 1945, only three weeks before the first atomic bomb would be dropped on Hiroshima, Oppenheimer supervised Project Trinity, the world’s

first explosive test of a nuclear device, at a remote site in New Mexico about 260 miles from Los Alamos. Much has been written about Trinity and its urgent objectives,⁴⁸ including that a failed test might have postponed dropping Little Boy until Fat Man finally worked. Among several methods to organize and measure the test results, two B-29s were to simulate a bombing run over Ground Zero, observe the explosion and resulting “cloud,” and drop pressure gauges and other sensors attached to small parachutes.⁴⁹ Two B-29s from Shields’s fleet were dispatched to Kirtland on July 10, and six days later he⁵⁰ and Heflin⁵¹ each piloted one. In addition to the flight crews, the planes carried several important Alberta passengers, including Parsons. But because of great uncertainties about the bomb’s destructive power, these flights were considered potentially so dangerous that Oppenheimer tried to dissuade one of his physicists, future Nobel laureate Luis Alvarez, from going as an observer. In a memo to Secretary of War Henry L. Stimson, Groves described what happened to the B-29s:

*Because of bad weather, our two B-29 observation airplanes were unable to take off as scheduled from Kirtland... and when they finally did get off, they found it impossible to get over the target because of the heavy clouds and the thunder storms. Certain desired observations could not be made and while the people in the airplanes saw the explosion from a distance, they were not as close as they will be in action. We still have no reason to anticipate the loss of our plane in an actual operation although we cannot guarantee safety [emphasis added].*⁵²

Heflin and the others were fortunate that the storm precluded flying over the explosion because they would have been in the middle of the unexpectedly huge blast: “A red ball of fire burst through the undercast, mushrooming into an enormous multi-colored cloud. It raced past the bombers’ altitude of 25,000 feet until it reached more than 40,000 feet, eight miles up into the sky.”⁵³ The successful Trinity test gave a green light to complete ballistics testing and then send to Tinian Fat Man casings and nuclear inserts for arming the bombs. Heflin would have the central role directing their transport.

The 6,000-plus mile trip from Los Alamos to Tinian involved several legs, beginning with truck transport from Los Alamos to Kirtland, where the cargo was loaded into aircraft from Wendover and flown to one of several military air fields near San Francisco, and then hopped through several intermediate Pacific bases before arriving at Tinian. The following timeline lists major air transport events to Tinian following the Trinity test until the end of the war.

1945 Bomb Transports to Tinian

Jul 26 Three Green Hornet C-54s carrying Little Boy components and two carrying Fat Man components depart Kirtland for Tinian.

Jul 28 Three Fat Man pre-assembly units

TIBBETS DIS-CUSSSED HEFLIN AT LEAST TWICE, BUT ONLY WHEN SPECIFICALLY ASKED ABOUT HEFLIN AND WHEN HIS REPLY WAS LIKELY TO REMAIN RELATIVELY PRIVATE FOR SOME TIME

depart Kirtland for Tinian on two B-29s from the 509th and one from the 216th's FTS.

Aug 3-4 Heflin convinces Parsons's deputy, Navy Capt. Ralph Larkin, that an experienced B-29 crew from Tinian is necessary to transport nuclear components for additional Fat Man bombs that are expected to be ready beginning August 14.⁵⁴ Groves separately expresses agreement.⁵⁵

Aug 6 Little Boy dropped on Hiroshima.

Aug 7 Arnold's office cables Generals Spaatz and Nathan Twining on Tinian that "neither Heflin nor I believe replacement airplanes should be used" to transport additional Fat Man nuclear components, "Because of greenness of crews, readiness dates of items, and completion of training dates of [new] crews... request you return two Project B-29's to [Heflin] to meet his delivery date. Advise immediately you (sic) concurrence with this plan or alternate suggestion."⁵⁶

Aug 9 Fat Man dropped on Nagasaki.

Aug 10 Groves advises Marshall that nuclear components for the second Fat Man bomb are expected to "ship from New Mexico 12 or 13 August." Marshall responds that another bomb "is not to be released on Japan without express authority" [from President Truman].

Aug 11 Tibbets later recalls that "...we had another weapon at Wendover, Utah. I sent word to Cliff [Heflin]... because I had already talked to Cliff and we had a thing between us. I was to invite him to come on out and visit and take a look. If he was to come and visit and take a look, he was supposed to bring that weapon in that airplane."⁵⁷

Aug 14 Japan accepts Allies' terms of surrender.

Aug 17 Via teletype, Parsons and Ramsey advise Oppenheimer and Larkin that, "although they are completely ready" three more Fat Man bombs "will not be dropped due to surrender agreement. An active sphere for [pre-assembly unit F-32], it is also assumed, will not be sent."

Sep 2 Japan signs Instrument of Surrender aboard the *USS Missouri*.

The belated public admission that there was a third atomic bomb generated several theories about where the B-29 shipment of the "active sphere" was stopped: before leaving Los Alamos; before being loaded at Kirtland; before departing Wendover for San Francisco; or at a base near San Francisco preparing to depart for Tinian. But to Heflin's family, there is a more important open issue: whether Heflin would not only fly the sphere to Tinian (as Tibbets said), but also pilot the possible third bombing mission.

The story of the third bomb may have first appeared publicly in March, 1968 in an eleven-part series in the *Chicago Tribune* about Tibbets and the atomic bomb project. Appearing fourteen years before publication of the first of Tibbets's several autobiographies, the series was described as Tibbets's "exclusive... uncensored... personal..."

behind-scenes" story.⁵⁸ Near the end of the series, a brief paragraph says "Heflin... had been chosen to fly [bomb] No. 3 and he was stopped at Hamilton, Cal. (near San Francisco), in his B-29, which he was flying to Tinian August 14... carrying in his plane the plutonium required to complete the assembly of Fat Man No. 2, which would have been the third nuclear bomb." This might have been the first public mention of a third bomb, but it undoubtedly was the first public mention of Heflin and his connection to Manhattan. The entire series, including Heflin's role, arguably depended on Tibbets as the primary, if not exclusive, source. (Although Tibbets had retired from the Air Force two years before the series was published, Heflin did not retire until two months afterwards, and likely was not at liberty to talk to the journalist. Also the Heflin paragraph contained several glaring errors unlikely to have come from Heflin.)

Heflin's flight records show that, on August 10, he piloted a B-25 for 3:30 hours with two landings, and then on August 11, piloted a B-25 for 3:20 hours, again with two landings. At the time, for reasons of security, flights between Kirtland and Wendover always included a stop at an intermediate airfield so that flight plans never showed a connection to Los Alamos. Thus, Heflin's records are consistent with him flying to Kirtland, then returning the next day to Wendover to await Tibbets's call (as Tibbets said). But the dates appear to be a few days early and Heflin never piloted a B-29 anywhere in August.

Regarding a third bombing mission, years later, Tibbets several times said that he would pilot it because General Curtis E. LeMay, Chief of Staff to Spaatz, ordered him to do so. Yet, in Tibbets's 1985 oral history interview quoted above, he claimed that Heflin would carry the plutonium over 6,000 miles to Tinian but, implausibly, only because Heflin wanted to "take a look" at thirty-nine square miles of desolate real estate. Heflin told his immediate family that he would have piloted a third mission, but in light of LeMay's order, perhaps Heflin would have been Tibbets's co-pilot.⁵⁹

The Tibbets-Heflin relationship is worth further comment. In the fifty-one years from the surrender of Japan until his death in 2007, Tibbets was interviewed for publication many times and authored four autobiographies (1982-1998), but he never mentioned Heflin, never commented on a Wendover base commander, and never acknowledged that someone not part of the 509th led several important AAF tasks in Project Alberta. However, beginning about 40 years after the Japanese surrender, Tibbets discussed Heflin at least twice, but only when specifically asked about Heflin and when his reply was likely to remain relatively private for some time. In the first (the 1985 interview cited above), Tibbets said:

Cliff Heflin... was an upperclassman of mine at the flying school. He was a class ahead of me. I had to have a base commander at Wendover, Utah, that knew how to run things and run things right. There

HEFLIN HAD FOR SEVERAL YEARS BEEN ON THE "GENERAL'S LIST"... BUT LEMAY BLOCKED HIS PROMOTION



is a tough SOB and one of the finest guys you have ever met. Cliff was a non-nonsense individual. He was a terrific person. Even though he was considerably senior to me, he told [2d AF CO Maj. Gen. Uzal G.] Ent he'd be happy to come up and be subordinate to me to run the air base. It didn't bother him a bit.⁶⁰

And thirteen years later, in a 1998 exchange of letters with an admirer who asked about Heflin, Tibbets replied: “[Heflin] was a close personal friend who I requested to be my base commander at Wendover.”⁶¹ For several reasons, both of Tibbets’s claims are highly doubtful.⁶² And, provocatively and perhaps mischievously, Heflin in his only public interview is quoted as saying that Tibbets commanded the 509th “under me.”⁶³

However, available evidence suggests their relationship was akin to “separate and equal,” with neither one reporting to the other. Neither Shields’s Daily Diary nor the Heflin-Larkin transcript referenced above reveal one deferring to the other. And the Parsons-Ashworth transcript dated April 21, 1945, records that, when discussing the need for an alternate liaison officer when Ashworth was not available, Parsons described the role as “spokesman [to] that gang up there [at Wendover] that you’re working with now, to Tibbets and his crowd and Heflin and his crowd,” someone who would be “spending time on political things and refereeing” issues between them.⁶⁴ Whatever the reality, Tibbets and Heflin remained connected for another twenty-one months after the war ended.

Heflin continued as Wendover CO until he was relieved on October 22, 1945, and eleven days later became CO of the Roswell, New Mexico, AAF base (designations: 238th AAF Base Unit and 427th AAF Base Unit). A few days later, on November 6, the 509th began departing Tinian for their new base at Roswell, so Heflin and Tibbets briefly reprised their Wendover relationship. On January 22, 1946, Tibbets was assigned as technical advisor to the Bikini Bomb Project testing atomic bombs in the South Pacific, leaving Heflin as the remaining

THE REASON DATED BACK TO 1953, WHEN HEFLIN COMMANDED A WING...AND DISCIPLINED AN OFFICER IN A MORE SEVERE MANNER THAN LEMAY...HAD "SUGGESTED"

senior officer with reasonably first-hand knowledge about the 509th, so he may have helped integrate the unit into the newly formed Strategic Air Command. Then, in August, 1946, he and Tibbets were sent to attend the Air Command and Staff School at Maxwell field in Alabama, where they remained until June, 1947. It was the last time they were assigned together.

Heflin served more than 30 years as a USAAF/USAF officer. In the post-war period, he held a variety of operational, base and headquarters staff positions in the U.S. and overseas, and continued to forge a record as an outstanding pilot, officer and commander. Heflin’s regular six-month ERs reveal the following:

He was consistently graded “Superior”, the highest possible rating.

Beginning January, 1952, his assignments were authorized for general officers, and his evaluators were exclusively general officers.

In his ER dated December, 1952, he for the first time was deemed “qualified” for promotion to Brigadier General.

Six years later, in his ER dated August, 1958, he was recommended for “early promotion” to Brigadier General.

Four years later, after repeated recommendations for promotion to BG, Lt. General James E. Briggs wrote in Heflin’s July, 1962 ER that Heflin’s promotion was “past due” and he should be promoted “for the good of the Air Force”.

Heflin’s June, 1964 ER was the last to recommend his promotion to BG. What happened? Heflin son-in-law and USAF Colonel Donald Elliott (Retired), whose career briefly overlapped with Heflin’s, today confirms what Heflin told his family: Heflin had for several years been on the “General’s List” (composed of colonels whom a board of general officers had screened and confirmed as qualified for promotion to brigadier general) but LeMay blocked his promotion and later removed him from the list. The reason dated back to 1953, when Heflin commanded a wing based at Stead Air Force Base, Nevada, and disciplined an officer in a more severe manner than LeMay (on whose staffs the officer had twice served) had “suggested.”⁶⁵ Thereafter, for almost another decade, the disgraced officer badgered LeMay,⁶⁶ who blamed Heflin.

In 1968, Heflin retired, after 31 years of exemplary service, still a colonel. If he had been promoted to general, perhaps his story would have emerged much sooner. But in any event, he was honored by a retirement ceremony equivalent to that of a general officer and awarded his last and most significant honor, the DSM. The recommendation for the award read in part:

Colonel Heflin organized and commanded the first American OSS unit to work with the British effort in underground warfare in World War II. He commanded the 801st Bomb Group and later the 492nd Bomb Group to support the underground activities.

On his return to the United States from the [European Theatre of Operations], he was assigned as Commander of Wendover AFB...In addition to the highly successful flight testing of the bomb, other activities he directed with distinction in support of the Manhattan Project included the development of the "Green Hornet" Air Transport Detachment...⁶⁷

LeMay had retired three years earlier.

The stories of Heflin's World War II commands, although still incomplete, suggest that he was among the most consequential AAF officers of that period, and his contributions to the atomic bomb project, while not as glamorous as dropping the bombs, arguably were as important to the project's success. In 1980, twelve years after retiring, Heflin died, having belatedly received recognition from the Air Force but, as yet, little from history. ■

NOTES

1. Manhattan was a five year, \$25+ billion (2011 dollars) project involving more than 160,000 workers at dozens of scientific, industrial and military locations. Yet the project was so secret that Harry Truman did not know about it until he became President – only four months before the bombs were dropped. Perversely, blanket secrecy didn't prevent spies from quickly stealing atomic technology, but it arguably diminished the scope, depth and accuracy of subsequent accounts of the project's history.
2. Robert S. Norris, *Racing For The Bomb: General Leslie R. Groves, The Manhattan Project's Indispensable Man* (South Royalton VT: Stereorth Press, 2002.) p. 614.
3. Norris, p. 183.
4. Norris, p. 521.
5. Norman Ramsey and Raymond L. Brin, eds., "Atomic Energy Act of 1946: Nuclear Weapons Engineering and Delivery, Vol. 23: History of Project A." National Nuclear Security Administration: NNSA Service Center. (1946), p.16, www.doeal.gov/FOIADocs/RR00119.pdf (accessed Jan. 5, 2011)
6. Parsons was also mostly overlooked by history until the publication of *Target Hiroshima: Deak Parsons and the Creation of the Atomic Bomb* by Albert B. Christman (Annapolis: US Naval Institute Press, 1998).
7. Ashworth and Parsons talked regularly by telephone, resulting in a cache of historically important transcripts: Parsons-Ashworth Transcripts, Ashworth, "Cdr. Frederick L. Ashworth (USN) Collection." *Manhattan Project Heritage Preservation Association*. 1945-1947. www.mphpa.org/classic/COLLECTIONS/CG-FASH/Pages/FASH_Gallery_01.htm (accessed Jan. 15, 2011). These transcripts reveal that discussions between the two officers were typically open and frank. Parsons and Ashworth each flew one of the atomic bombing missions as "weaponeers" who armed the bombs immediately before dropping. Later, Parsons was awarded a Distinguished Service Medal and other high honors, and Ashworth a Legion of Merit, and both achieved Admiral rank.
8. Tibbets had led individual bomber squadrons, served as Operations Officer of the 97th Bombardment Group, and served on the staff of Twelfth Air Force's Assistant Chief of Staff for (bomber) Operations. F.J. Bradley, *No Strategic Targets Left*. (Paducah, KY: Turner Publishing Company, 1999). p. 94. Tibbets mentions the last two assignments in his several autobiographies but doesn't specify his command titles; for example: Paul W. Tibbets, *Flight of the Enola Gay*. (Columbus, Ohio: Mid Coast Marketing, 1997). pp. 69-70, 121.
9. General Leslie R. Groves, Oral History Transcript, April 3, 1970, Murray Green Collection, Box 66, Folder 3, USAF Academy, pp. 12, 46-7. Groves may not have shared his opinion with Arnold, and he did not include it in his book about the Manhattan Project, *Now It Can Be Told* (New York: Harper & Row, 1962).
10. General Leslie R. Groves, Papers of Leslie R. Groves: Diaries, (College Park, National Archives Gift Collection), RG 200, Box 5, Files 1-4. A note from Groves dated August 23, 1960, accompanies the diaries, and explains that they were intended to keep him informed regarding telephone calls received in his absence from his office; are incomplete as to persons he saw in his office and very incomplete as to persons he saw outside of his office; and are also incomplete because of "our general practice to minimize written records...for reasons of security." The diaries were usually kept by one of Groves's assistants, Jean O'Leary, recorded in abbreviated form and often used codenames or otherwise oblique references for topics, people and places.
11. Richard H. Campbell, *The Silverplate Bombers: A History and Registry of the Enola Gay and Other B-29s Configured to Carry Atomic Bombs*. (Jefferson, NC: McFarland & Company, Inc., 2005). p. 12.
12. Admiral Frederick L. Ashworth, *Frederick L. Ashworth: United States Navy: An Autobiography*. (Walla Walla, WA: Northwest Library Bindery, 2001.) pp. 157, 171. As related by Ashworth, another factor may have been at work: Groves seemed to always have a backup for key personnel. "[Groves] always insisted on having a spare for everything... I became the spare for Parsons." See also: Norman Ramsey, #9531 Smithsonian Videohistory Program: Manhattan Project: Session Seventeen: Project Alberta: Collection Division Five; Stanley Goldberg, Interviewer; June 5, 1990. (Washington, D.C.: The Smithsonian Institution, 1990.) p. 12.
13. Major Bernard V. Moore II, "The Secret Air War Over France: USAAF Special Operations Units in the French Campaign of 1944." *School of Advanced Airpower Studies: Air University* (May 1992): 5.< <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA425597>> (accessed 18 January 2011). pp. 1-5.
14. Moore, pp. 13-25. The political background to Eisenhower's decision to support OSS/Carpetbagger operations is described by Arthur L. Funk, "Churchill, Eisenhower and the French Resistance," *Military Affairs*, (February, 1981): pp. 29-33.
15. Lt. Col. Dik Alan Daso, *The Air Force Historical Association, U.S. Air Force: A Complete History* (Washington, D.C.: Universe Publishing, 2006), p. 196.
16. Wesley F. Craven and James L. Cate, eds., "Supporting Operations: Chapter 14: Air Support for the Underground." *The Army Air Forces in World War II: Vol. 3: Europe: January 1944 to May 1945* (Washington D.C.: Office of Air Force History, 1983), pp. 498-502.
17. Among Heflin's AAF awards were the Legion of Merit with one Oak Leaf Cluster; the Distinguished Flying Cross with one Oak Leaf Cluster (from Lt. General Carl Spaatz, then Commander of the Strategic Air Forces in Europe); and the Air Medal with one Oak Leaf Cluster (from Lt. General James "Jimmy" Doolittle, then Commander of the Eighth Air Force). At a ceremony in Paris on Sep. 7, 1945, Heflin received the French *Ordre National de la Légion d'honneur* ("National Order of the

- Legion of Honor"), France's highest award, and the *Croix de Guerre* ("Cross of War") from General Marie Pierre Joseph Francois Koenig, DeGaulle's head of the resistance, and later military governor of Paris. Sources include Heflin's personal papers and copies of brief articles in two French newspapers published Sep. 10, 1944.
18. Major Harris G. Warren, "Special Operations: AAF Aid to European Resistance Movements, 1943-1945." *Combined Arms Research Library: Digital Library* (June 1947): pp. 32-50. <<http://cgsc.contentdm.oclc.org/cgibin/showfile.exe?CISOROOT=p4013coll8&CISOPTR=3298&filename\=3308.pdf>> (accessed Feb. 2, 2011). p. 172.
19. Officer Efficiency Report: Heflin, Clifford J. (Cheddington, England: U.S. Army Air Force, Jan-Jun 1944), prepared by Edmund Hill, commanding general of the 8th Air Force Composite Command, and concurred with by the 8th Air Force's Commanding General, James ("Jimmy") Doolittle. Heflin's papers contain no ER for the Jul-Dec, 1944 period, likely because he was between assignments and commanding officers.
20. Moore, p. 41.
21. Moore, p. 2. Also see Col. Michael E. Haas, "Apollo's Warriors: US Air Force Special Operations During the Cold War." (Maxwell Air Force Base, Alabama: Air University Press, 1997). pp. 1-9. <http://ebooks.gutenberg.us/AU_Press_Collection/Books/Haas/Haas.pdf> (17 January 2011), and the U.S. Special Forces Role of Honor website, which has a picture gallery of Carpetbaggers personnel, including Heflin: <http://www.specialforcesroh.com/gallery.php?action=viewcat&srt=n&id=63>. The Carpetbaggers are further honored with two plaques in the cemetery at the U.S. Air Force Academy; a small museum in Harrington, England; and several small monuments in France.
22. Major Justin R. Hoffman, "To Hell With The Paperwork: Deciphering the Culture of the Air Commandos" (Monterey, CA: Naval Postgraduate School, 2008), 59. <http://edocs.nps.edu/npspubs/scholarly/theses/2008/Dec/08Dec_Hoffman.pdf> (accessed Jan. 16, 2011).
23. The most thorough accounts are *Spies, Supplies and Moonlit Skies, Vols. I and II* by Thomas L. Ensminger, (Bloomington, IN: Xlibris Corporation, 2004 and 2009) and *Carpetbaggers: America's Secret War in Europe*, by Ben Parnell (Austin: Eakin Press, 1987).
24. Tom McGuire, "Reno Man Recalls His Role in Helping to End WWII," *Reno Evening Gazette*, Aug. 6, 1976, pp. 1-2. An original of this interview is among Heflin's personal records and copies are available from the author.
25. Wendover's CO position apparently had been vacant since the end of May, 1944, when Lt. Col Arthur W. Kellond was relieved. "History, Headquarters, 216 Army Air Forces Base Unit," IRISNUM 00179513, United States Air Force Historical Research Agency, Maxwell AFB, Alabama.
26. According to Heflin's two ERs for 1945 (wherein he was again rated Superior), while at Wendover he was under the command of Col. Claude E. Duncan, 2nd Air Force Chief of Staff, and when later assigned to Roswell he under the command of Brigadier General J.K. Lacey, then 2nd Air Force Commander.
27. Barbara J. G. Johnson, "Department of the Interior National Park Service: Historic American Building Survey: Wendover Air Force Base." *The Library of Congress: American Memory*, (1992). 15-16. <<http://memory.loc.gov/pnp/habshaer/ut/ut0200/ut0288/data/ut0288.pdf>> (accessed Jan. 16, 2011). Wendover had 668 buildings, including public works such as power, sewage, communications, etc., as well as "barracks, officers quarters, an administration building, a signal office, two ordnance warehouses, a dispensary, three ammunition storehouses...a 300-bed hospital, gymnasium, swimming pool, library, post exchange, chapel, cafeteria, bowling alley, two theatres, guard house, consolidated mess hall, and 361 housing units for married officers and civilians."
28. Unit Historian, 509th Composite Group, "History of the 509th Composite Group" (1945) p.9. Air Force Historical Research Agency. <<http://www.afhra.af.mil/shared/media/document/AFD-080128-037.pdf>> (accessed Jan. 15, 2011).
29. Unlike those of conventional bombs, the ballistics characteristics of atom bombs could not be fully tested because the technology was evolving; their very existence had to remain secret until use in combat; their large size, massive weight and, in the case of Fat Man, highly unusual shape had few parallels with traditional ballistics. Because of their explosive force, they would be dropped from 30,000 feet and targeted by visual sighting, not radar.
30. Ashworth, p. 158. As Ashworth described it, "Each weekend, a program of 'component testing' to be carried out the next week at Wendover would be worked up at Los Alamos. The scientists and engineers who would conduct these tests would fly from Albuquerque to Wendover on Monday morning, spend the week running the tests and return to Albuquerque and the laboratory on Friday afternoon to prepare for the next week's tests. I would go with them to assist by 'supervising and coordinating' their work."
31. Ramsey and Brin, p. 13.
32. Except where noted, the timeline is taken from Major Clyde S. Shields, "Daily Diary For Flight Test Section." 216th Army Air Forces Base Unit, Headquarters Wendover Field, Wendover, Utah. February 2, 1945 – August 2, 1945. The diary is organized by dates, not page numbers. The author's copy, now part of Heflin's papers, came courtesy of Carl Posey, who in turn received a copy from author Richard H. Campbell (see endnote 11).
33. Parsons-Ashworth Transcript dated April 24, 1945.
34. Shields's Diary records that drop tests were conducted at six military sites. For the June-July period, 31 were at Wendover, 16 at Sandy Beach, CA (Salton Sea), three at Inyokern, and two each at unknown locations coded as Llama and T.
35. Manhattan Project: Fiscal and Audit Files, Auditor's Working Papers, Audit MDE-228-46, (College Park, National Archives and Records Administration, Records of the Army Staff), RG 319, Box 8, Folder "Dropping the Bomb." Because the report pages are not numbered, citations refer to the paper's numbered paragraphs.
36. Citations are from: Manhattan Project Audit report's numbered paragraphs; Parsons-Ashworth Transcripts on the dates shown; and page numbers from James Les Rowe, *Project W-47* (Livermore, CA: JA A RO Publishing, 1978).
37. Robert and Emilia Krauss, eds., *The 509th Remembered: A History of the 509th Composite Group as Told by the Veterans Themselves, 509th Anniversary Reunion, Wichita, Kansas, October 7-10, 2004* (Buchanan, MI: 509th Press, 2005.). p. 16.
38. Wayne Thomis, "First Atom Raid Leader to Tell His Story For Tribune Readers." Chicago Tribune Archives. (1968) p. 1. <<http://pqasb.pqarchiver.com/chicagotribune/advancedsearch.html>> (accessed 4 March 2011).
39. The Official Site of the U.S. Air Force: Information: Biographies: Brigadier General Paul W. Tibbets Jr. <<http://www.af.mil/information/bios/bio.asp?bioID=7387>> (accessed Jan. 20, 2011)
40. Personnel based at one of the three primary venues and Washington, D.C. frequently had to meet in person; materiel of various types and sometimes massive amounts had to be transported between venues; and movements to Tinian accelerated as August approached. Adding difficulty, the remote locations of the three primary venues offered no convenient public transportation; long-distance communications were limited to telephony, telegraphy and radio technologies; and all movements and communications were constricted by top secret protocols.

41. Unit Historian, History of the 509th Composite Group, p. 2.
42. Despite some accounts, the 320th did not officially deploy to Tinian but remained stationed at Wendover, undoubtedly in part because of greater transport needs in the U.S. See 509th Composite Group: 509th Pictorial Album – 1945: 320th Troop Carrier Squadron. pp. 24, 31, 45. <<http://www.mphpa.org/classic/CG/509th-Yearbook/Pages-2/CGP-509YB-184.htm>> (accessed Jan. 20, 2011)
43. Unless otherwise noted, quotations are from Shields's Diary of each respective date.
44. Parsons-Ashworth, p. 3 of Apr 21, 1945 transcript. Transcripts of May 12 and 24 also discuss Heflin's role with the Green Hornets. At the time, the 509th's deputy CO was Lt. Col. Carl Luetcke, who later was reassigned due to a security violation, and his name apparently expunged from most Project Alberta records.
45. Unit Historian, History of the 509th Composite Group, p. 22.
46. Ramsey and Brin, p. 18.
47. Heflin's retirement ceremony was presided over by his chain of command, making it unlikely that Heflin would have falsified the official program. Regarding his Carpetbagger service, the bio modestly only says that Heflin "formed another group which delivered supplies and agents for the OSS," suggesting his biographies did not inflate his responsibilities. Tibbets and Sweeney were still on active duty when Heflin's bios were available but apparently never challenged them. Given all of Wendover's manpower needs, it simply would have been most efficient to have one officer controlling the requests piling up at 2nd Air Force.
48. Major objectives of Trinity included determining whether Fat Man's fissile material and triggering "package" would actually work; measuring Fat Man's actual destructive capability (pre-Trinity, predictions of the bomb's explosive power varied widely and were significantly underestimated); measuring Fat Man's performance and power as a guide to remaining development and design work for the bomb and the Silverplate B-29s; making last minute adjustments for training the crews who would fly the bombing missions; and assessing the impact on the crews and B-29s from the explosion and resulting nuclear "cloud," especially with respect cloud's size, shape, direction and gamma ray (radiation) intensity.
49. Richard B. Frank, *Downfall: The End of the Imperial Japanese Empire* (New York: Random House, Inc., 1999), pp. 253-54.
50. Stephen Walker, *Shockwave: Countdown to Hiroshima*. (New York: HarperCollins Publishers, 2005), p. 325.
51. McGuire, p. 1. As well, Heflin's flight record for July 16, 1945 shows that he piloted a B-29 for three hours, two of which were at night, which is consistent with all accounts of Trinity's delayed timing. On a related note, Heflin flew 20 of 31 days in July, totaling 60 hours and 34 landings, the most of any of his 10 months at Wendover; and during those 10 months he piloted 12 aircraft, including the B-29 and the Green Hornet's C-46, C-47, and C-54 as well as the B-17, B-24, B-25, A-26, P-47, P-51, C-43 and C-45.
52. General Leslie R. Groves. "Gen Groves' Memorandum Describing First Nuclear Test in New Mexico." *Public Broadcasting Service: American Experience: Truman: July 18, 1945.* <http://www.pbs.org/wgbh/amex/truman/psources/ps_memorandum.html> (accessed Jan. 15, 2011)
53. Walker, p. 68.
54. Robert S. Norris Papers, Hoover Institution Archives, Stanford, CA. Transcript: "Captain Larkin to Colonel Heflin, 3 August 1945." In the transcript, Heflin insists that only an experienced B-29 crew, all of whom are on Tinian, should fly the mission, with new crews at Wendover used only as backup. Heflin wants to use Shields's crew and plane, but Tibbets wants to keep them at Tinian, to which Heflin replies "no soap because it would cause us more trouble than it would be worth." Larkin says he will cable Parsons to ask that Shields's crew "be returned without delay." Heflin will try to have a backup crew from Wendover with an "experienced pilot."
55. Groves Diary, August 4, 1945, Groves to Col. William P. Fisher.
56. Norris papers, labeled RG 77, Entry 3, Folder: Incoming Telecoms Kirkpatrick. On July 1, 1945, Arnold activated a new command structure with Spaatz as Commanding General, U. S. Army Air Forces in the Pacific, and on August 2, Lt. Gen. Nathan F. Twining assumed command of the 20th Air Force, replacing LeMay, who became Spaatz's Chief of Staff.
57. Paul W. Tibbets, Jr., "U.S. Air Force Oral History Interview." #K239.0512-1634. United States Air Force Historical Research Agency, Maxwell AFB, Alabama, Feb. 7, 1985, p. 30.
58. Wayne Thomis, "First Atom Raid Leader to Tell His Story For Tribune Readers." Chicago Tribune Archives. (1968) 2. <<http://pqasb.pqarchiver.com/chicagotribune/advancedsearch.html>> (accessed Mar. 4, 2011).
59. In Heflin's only interview (McGuire), he does not mention a third atomic bomb, which could be explained by the fact that public knowledge of more than two bombs did not become widespread until after 1980, so Heflin may not have felt free to comment.
60. Paul W. Tibbets, Jr. "U.S. Air Force Oral History Interview." #K239.0512-1634. p. 14.
61. Paul Tibbets and Paul Filipkowski. "The Paul Filipkowski Collection: Photo MPP-PFIL-077. *The Manhattan Project Preservation Association, Inc.* (1988). p. 1. <<http://www.mphpa.org/ classic/COLLECTIONS/MPP-PFIL/Pages/MPP-PFIL-077.htm>> (accessed Mar. 5, 2011).
62. There is no evidence that, from their brief training overlap in 1937 until late in 1944, the two officers had any contact likely to foster a "close personal" friendship. In order to request Heflin, Tibbets would have to have known that Heflin was available, which seems unlikely because the Carpetbaggers were a secret operation and Tibbets had no "need to know" about either the unit or Heflin. At the time Heflin became Wendover CO in January, he had been a full Colonel for eight months whereas Tibbets had just been promoted, so their military differential was a matter of rank, not merely seniority. If Heflin had agreed to be subordinate to Tibbets, it would not only have been extraordinarily unusual but presumably also worth at least a footnote in one of Tibbets's several books. It is most likely that Heflin was interviewed by General Williams, not General Ent, because Ent had been seriously injured in an aircraft accident in Texas on October 11, and Williams, who would assume command of 2nd AF on October 28, was in D.C. October 26 and probably met with Groves the next day. Unfortunately, Tibbets only made his claims long after the deaths of principals who might corroborate them: Ent died in 1948, Arnold in 1950, Parsons in 1953, Groves in 1970, and Heflin in 1980.
63. McGuire, pp. 1-2.
64. Parsons-Ashworth, 1-3 of the Apr. 21, 1945 transcript.
65. A September 18, 1953, front page article in the *Nevada State Journal* announced that Colonel D.G. Stampados, deputy commander of Heflin's Wing, had been relieved of duty by Heflin pending an investigation into Stampados's stealing \$4,000 (more than \$33,000 in today's dollars) in funds donated by the Reno, Nevada Chamber of Commerce to sponsor a local road race. According to Col. Elliott, instead of a court martial, LeMay wanted Heflin to allow Stampados to retire quietly, but Heflin relieved Stampados of duty, publicly describing it as for "the good of the service."
66. The Papers of Curtis LeMay, Box A4, Stampados file. Manuscript Division, Library of Congress, Washington, D.C.
67. McGuire, pp. 1-2.



FIRST FIGHT: THE U.S. AIR FORCE'S SPECIAL TACTICS GROUP IN PANAMA, DECEMBER 1989



Forrest L. Marion

(Overleaf) Troops on patrol in Old Panama during Operation Just Cause, 1989.

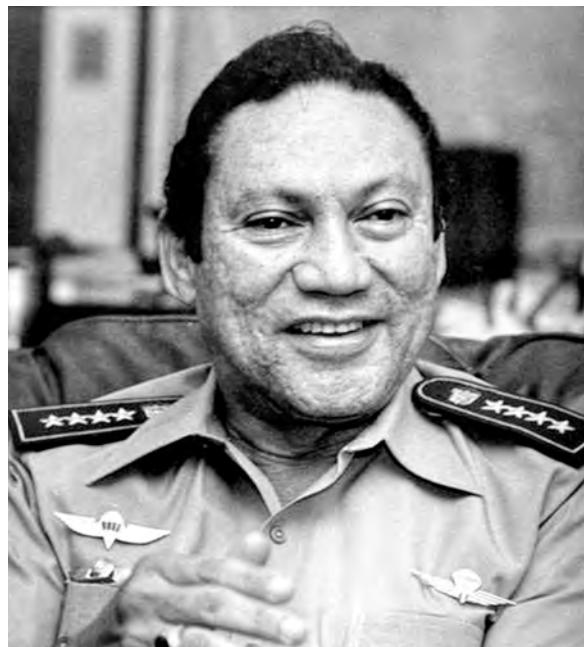
U.S. POLITICAL SENTIMENT TURNED AGAINST NORIEGA

ON
DECEMBER
15, NORIEGA
ARBITRARILY
DECLARED
“A STATE OF
WAR” TO
EXIST
BETWEEN
PANAMA AND
THE UNITED
STATES

In 1903, a treaty between the United States and Panama gave the U.S. the right to build a long-sought canal and to control a ten-mile wide swath of land along the canal's fifty-mile length. An engineering marvel, the Panama Canal opened in 1914. In 1981, Panama's leader, Omar Torrijos, died, and in his place, Manuel Noriega, an intelligence chief with ties to the United States, emerged as the new military dictator in Panama. Four years later, the murder of a political opponent of Noriega's chilled U.S.-Panamanian relations. An anti-Noriega political movement was spawned in Panama, and U.S. political sentiment turned against Noriega. In 1988, two U.S. federal grand juries indicted Noriega on charges of drug trafficking, and the United States initiated economic sanctions against his regime. A month later, a coup attempt to oust Noriega failed. Meanwhile, his Panama Defense Forces (PDF) stepped up their arbitrary harassment against U.S. military members and their dependents. Following the May 1989 presidential election in Panama in which Noriega's handpicked candidate lost in a landslide, Noriega invalidated the election and encouraged the PDF's brutality against anti-Noriega protesters. In response to the fraud and violence and another incident in which a U.S. sailor was beaten and robbed, U.S. President George H.W. Bush ordered an additional 1,900 military personnel to Panama as a means to increase security at U.S. installations.¹

Thus began Operation Nimrod Dancer, a show-of-force measure that the Bush administration also intended to bolster security for U.S. personnel and facilities in Panama. Over the next several months, units deployed to Panama for training and exercises in accordance with agreements between the two countries. By December 1989 most of the forces that eventually participated in Operation Just Cause actually had entered Panama under the auspices of Nimrod Dancer, and many personnel had already familiarized themselves with the travel routes, objectives, and PDF forces they would oppose during the operation. The U.S. also managed to deploy to Panama, either under Nimrod Dancer or surreptitiously, a number of aircraft that later conducted operations during Just Cause. Those included AH-64, MH-6/AH-6, MH-53J, and MH-60 helicopters and AC-130 gunships.²

At the end of September, U.S. Army Gen. Maxwell Thurman took command of U.S. Southern Command. Days later, after another attempted coup against Noriega failed, a U.S. military operation seemed the only recourse remaining. On December



15, Noriega arbitrarily declared “a state of war” to exist between Panama and the United States. The following evening a U.S. Marine Corps lieutenant was killed by PDF guards at a roadblock in Panama City. On the afternoon of December 17, President Bush met with his national security team. Judging that the discipline and control of the PDF seemed to be disintegrating, thereby threatening American lives, the President ordered the execution of a military operation in Panama to accomplish four objectives: “to safeguard the lives of Americans, to defend democracy in Panama, to combat drug trafficking, and to protect the integrity of the Panama Canal treaty.” Later, he added one more directive: Manuel Noriega’s apprehension and extradition to the United States to face federal drug trafficking charges. The overall operation was “Just Cause.”³

In the period September–October 1989, operational planning transitioned from U.S. Army South, U.S. Southern Command’s Army component, to the XVIII Airborne Corps; and the lead assault element shifted from the 7th Infantry Division (Light) to the 82d Airborne Division. As of fall 1989, the concept for Panama was that any military incursion would have to be swift enough to prevent insurgents from dispersing into the jungles to organize a meaningful opposition; hence, the 82d’s lead role. At the same time, planners boosted the role of special operations elements for Panama. Their numbers included Air Force Special Tactics teams of combat controllers

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DISCLAIMER: The conclusions and opinions expressed in this article are those of the author. They do not reflect the official position of the U.S. Government, Department of Defense, or the United States Air Force.”

(Left) Manuel Noriega.
(Right) Gen. Maxwell R. Thurman.

THE U.S. PLAN CALLED FOR TWENTY-SEVEN KEY TARGETS TO BE STRUCK OR SECURED ON THE OPENING NIGHT, ABOUT ONE-HALF OF THEM SIMULTANEOUSLY

(CCTs) and pararescuemen (PJs). While the CCTs belonged to the 1724th Special Tactics Squadron (1724 STS) and 1723d Combat Control Squadron (1723 CCS), the Special Tactics PJs belonged to the 1724th squadron or 1730th Pararescue Squadron (1730 PRS). All three squadrons were subordinate to the 1720th Special Tactics Group based at Hurlburt Field, Florida, the U.S. Air Force's only special tactics group.⁴

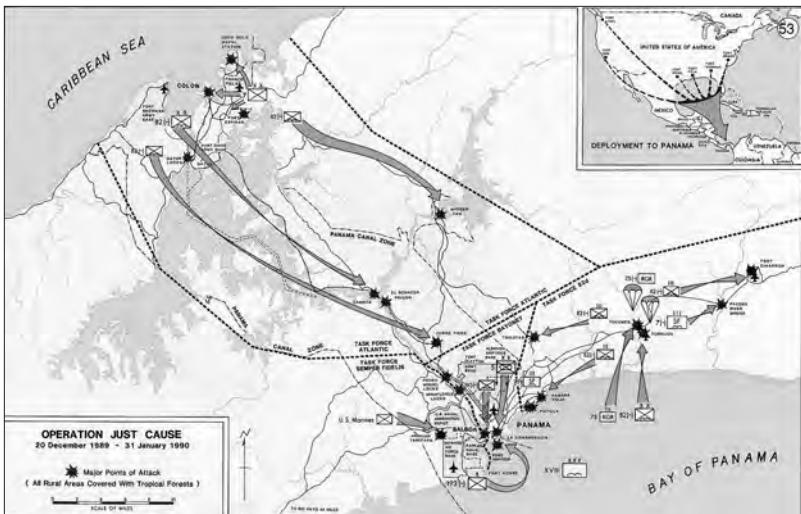
Military planners had devised a "Joint Task Force South" (JTF South) for the operation to be conducted under the auspices of General Thurman's U.S. Southern Command. Thurman selected the XVIII Airborne Corps Commander, Lt. Gen. Carl Stiner, to command the JTF. The 1st, 2d, and 3d battalions of the 75th Ranger Regiment and the 82d Airborne Division comprised the core of Stiner's ground forces. Under JTF South, initial phase operations were to be conducted by six maneuver task forces (TF), one of which was TF Red. The three Ranger battalions comprised the bulk of Red's initial forces, whose mission was to fly from their bases in the United States and jump into the Torrijos-Tocumen and Rio Hato airfields. Torrijos-Tocumen was both an international civil airport and a military airfield, located just east of Panama City. The PDF's 1st Infantry Company was based there. Rio Hato was a strictly military airfield situated some fifty miles west of the city and was home to the PDF's 6th and 7th rifle companies. At Torrijos-Tocumen, the 1st Ranger Battalion and one company of 3rd Rangers would jump into the airfield at H-hour, set for 0100 local, December 20. At Rio Hato, the remainder of 3d Ranger Battalion and the 2d Rangers expected to 'hit the silk' at 0104 hours. About fifty-five minutes after H-hour, "Task Force Pacific" consisting mainly of 82d Airborne troopers plus heavy equipment including Sheridan light tanks, would be dropped at Torrijos-Tocumen. Because the Panamanians could not challenge U.S. control of the air except for a limited ground-based anti-aircraft capability, planners assigned slow-moving U.S. Army helicopters and USAF AC-130 gunships with the primary ground attack role from the air.⁵

The U.S. plan called for twenty-seven key targets to be struck or secured on the opening night, about one-half of them simultaneously, the rest within hours. The top priority, charged to TF Black, was Manuel Noriega himself. As the 1724 STS Commander, Maj. (later, Col.) Craig F. Brotchie, expressed, the "one criteri[on] for success in the Panama mission" was getting Noriega." Expecting that special operators would 'bag' him on the first night, military planners envisioned the PDF would acknowledge the *fait accompli* and quickly surrender. Aside from several fratricide incidents, Noriega's eluding capture for several days was the most disconcerting aspect of the entire operation. The second most critical objective for TF Black was the rescue of a U.S. citizen, Kurt Muse, who had been imprisoned for running an anti-Noriega radio station. Muse's daring rescue from Panama City by Delta operators constituted the first successful hostage rescue by the Army's counterterrorist/hostage-rescue force.⁶



One little known but significant incident on the opening night concerned the marking of the Torrijos-Tocumen Airport by Special Tactics members to ensure the air assault's success in the event of bad weather. As retired Colonel Brotchie recalled, his view on the eve of the operation was that one of the few ways "this thing can fail is to not have the [Torrijos]-Tocumen Airport." But what if fog or low clouds, common in Panama, made it impossible for the lead transport aircraft to identify the drop zone? Brotchie's combat controllers devised a plan for placing an electronic marker at the drop zone (DZ) prior to the arrival of the first aircraft carrying the Rangers. Their plan called for two MH-6 "Little Birds" to airlift relatively large all-weather navigational beacons to be emplaced at the DZ fifteen minutes prior to H-hour. Based on a successful rehearsal, Brotchie received approval for the DZ markers to be emplaced by Little Birds flying out of nearby Howard AFB. At H-hour minus twelve minutes, a four-man team led by TSgt. Robert Kinder and including SSgt. Bradley Baxter, TSgt. Robert Martens, and a pararescueman, SSgt. Ishmael A. (last initial only), placed two TPN-27 zone markers at the approach end of the intended runway. The Ranger-laden C-141s were able to enter the markers' exact location into their computers, and had the weather been marginal they could have relied on the backup measure. At nearly the same time that Delta operators rescued Muse, just one block away special operations AC-130 gunships opened fire on the Comandancia, the PDF's headquarters building.⁷

On December 19, as deploying troops gathered at several stateside installations, severe weather conditions threatened to delay the operation. In California, ground fog and heavy Christmas-shopping traffic slowed the 7th Infantry Division's travel from Fort Ord to its primary departure airfield at Travis AFB. More serious, however, was a sudden drop in temperature in North Carolina, turning rain into a dangerous ice storm at Pope AFB. Of



twenty C-141s that flew into Pope, half experienced a takeoff delay of three hours due to the ice. Pope's de-icing equipment could handle no more than six aircraft at a time. The Rangers and 82d Airborne paratroopers loaded their aircraft on schedule but then, wet and cold, had to sit until the de-icing process was completed.⁸

A small number of Air Force combat controllers and pararescuemen were among those shivering on the flightline at Pope as part of TF Red's forces. Capt. (later, Maj.) John A. Koren served as liaison officer between the 1st Rangers and two dozen Special Tactics members under his command that would jump into Torrijos-Tocumen with the Rangers and control the airfield for the follow-on forces arriving an hour later. But when the scheduled C-130 somehow departed Pope AFB without his team, Koren and his men had to drive hurriedly to Savannah, Georgia, through the ice storm to catch up with their aircraft. The Special Tactics team at Torrijos-Tocumen, consisting of fourteen combat controllers and nine pararescuemen, plus two support personnel, was divided among the first three or four C-141s. Upon finally arriving over Panama, they jumped into the airfield from five hundred feet.⁹

Within about forty-five minutes the Rangers secured the airfield. Later that night, the Special Tactics team controlled the C-141s that dropped the 82d Airborne troopers. Despite the drop being made "right on the zone," Col. John T. Carney, the 1720th Commander, later wrote that a number of Army "vehicles, howitzers, and ammunition pallets landed in deep mud" near the runway. Some were unrecoverable. Ultimately, the de-icing delay at Pope contributed to the paratroopers' aircraft arriving at Torrijos-Tocumen in several cells of between two and sixteen C-141s, over a period of more than three hours that morning (December 20).¹⁰

Master Sergeant (later, CMSgt.) Timothy C. Brown was one of the combat controllers who coordinated with Koren, and he served as the special tactics team leader on the "Torrijos" side of Torrijos-Tocumen. A Michigan native who after high school had worked in a central market in Detroit, Brown entered the Air Force in 1977 and initially served as

WHEN THE SCHEDULED C-130 SOMEHOW DEPARTED POPE AFB WITHOUT HIS TEAM, KOREN AND HIS MEN HAD TO DRIVE HURRIEDLY ...THROUGH THE ICE STORM TO CATCH UP WITH THEIR AIRCRAFT

an air traffic controller. He retrained into combat control in 1979. Since 1983 he had served with the elite Pope CCT unit that by 1989 was known as the 1724th Special Tactics Squadron. At the time of the Panama operation, Brown served as the squadron's "Silver Team Lead." He described the preparations for Panama and the initial phase of the operation thusly:

We had been rotating into and out of Panama for a year. Some of us had been in Panama over the years numerous times working surveys and with [Special Operations Command]. So . . . we knew the target very well. The special ops folks were all dropped where we were supposed to be. When we got to Torrijos-Tocumen, we established internal communications immediately. We . . . [set] up the runway and our equipment, navigational aids, and lights. We . . . helped the reconnaissance element set up that [had come] in on [MH-6] Little Birds.¹¹

Next to Brown on the lead aircraft was a 1724th pararescueman, MSgt. Scott C. Fales. Although Fales was a PJ, he held a dual role as did many special operators. Initially upon landing at Torrijos-Tocumen, he emplaced a strobe and a radar transponder on the airfield before reverting to his primary job of providing medical assistance for combat casualties. In addition to providing immediate aid, pararescuemen controlled the helicopter landing zone (HLZ) at the joint casualty collection point (JCCP) using night vision goggles (NVGs), infrared chemical-lights, and communications with the tower. Fales personally treated several casualties from chemical burns and at least one soldier wounded by enemy fire, but the heat and humidity were responsible for most of the casualties he treated on the 20th of December. The morning sun was bright, the air humid, and temperatures pushed ninety degrees. Describing the scene that morning, Fales remarked, "Everyone was just passing out right and left from heat exhaustion. We had them stacked up . . . and [fellow PJ] Ray Cooper and I were just giving 'TVs' like they were going out of style." A separate report mentioned up to ten "serious heat injury victims."¹²

Tim Brown and the rest of Silver Team, both CCTs and PJs, remained at Torrijos-Tocumen for about three days, handling the "string of airplanes" that arrived there. On December 22, they relocated to nearby Howard AFB after being relieved by follow-on CCTs. Until redeploying around January 6, 1990, Silver Team's combat controllers and PJs conducted a number of "small missions" including counter-drug work, rescue missions, and securing another airfield for the U.S. Army's use. Another 1724th squadron combat controller and future chief, TSgt. James A. Lyons, participated in several missions in the mountainous northwestern part of the country looking for possible insurgents, arms caches, and encouraging locals to turn in weapons for cash.¹³

For Air Force Special Tactics personnel, one of the biggest challenges was the simultaneous planned takedown by airborne forces, with CCT/PJ augmentation, of both the Torrijos-Tocumen Airport



Tocumen Airport, Panama. Barracks and parked aircraft, viewed from the south. (Photo courtesy of the XVIII Airborne Corps History Office.)

THE NEARBY LOCATION OF ONE OF NORIEGA'S SEVERAL RESIDENCES WAS ONE REASON FOR THE... AIRFIELD'S IMPORTANCE

and the Rio Hato Military Base airfield. The nearby location of one of Noriega's several residences was one reason for the latter airfield's importance. Although Panama's weak military could not hope to stop the U.S. incursion, a 'worst-case scenario' for the United States would have been for Noriega to have escaped from Panama—perhaps flying from Rio Hato's airfield—to inspire a Panamanian insurgency from abroad. At Rio Hato, the Special Tactics mission was to assist in clearing the airfield of any obstacles, light the field "for follow-on airland sorties," and provide air traffic control, satellite communications, and medical support as long as required or until relieved.¹⁴

The Rangers' 2d battalion and most of the 3d had been assigned to "take down" Rio Hato. Chief Master Sergeant Wayne G. Norrad served as combat control advisor to the 3d battalion's Commanding Officer, Lt. Col. Joseph H. (last initial only). Minutes after 0100 on December 20, nearly 1,000 Rangers would parachute to the objective. Their opposition would be an estimated 500 Panamanian soldiers belonging to the PDF's 6th and 7th rifle companies. Once matters were sorted out on the ground, Norrad would work out of the primary Tactical Operations Center (TOC), with Colonel H. (last initial only). Accordingly, Norrad was to fly on the second aircraft into Rio Hato. He described the hours at Fort Benning on a rainy and cold afternoon leading up to the flight to Panama:

We made our initial manifest call at noon, the final manifest was 1315 [hours], parachute issue 1330. Colonel [William F.] Kernan . . . the regimental commander, delivered some inspiring words out on the flight line, and he and the chaplain led us in prayer. . . . We began rigging at 1415, had our jumpmaster inspection, and waited for movement to the aircraft.¹⁵ Given the expected heat and humidity in Panama, a number of the men had dressed lightly.

Yet in Georgia, it was cold and miserable out on the flightline. Prudently, someone decided to issue the paratroopers the old, green Army blankets affectionately known as "horse blankets," which they wrapped around themselves while wearing their

parachutes and waiting for some three hours to board the aircraft.¹⁶

Finally, at 1802 hours, December 19, 1989, fifteen C-130s departed Fort Benning's Lawson Army Airfield for the seven-hour flight to Panama. Trained in Special Operations, Low Level, the pilots flew what one veteran expressed as a "miserable low level," mostly over water. With a parachute on, and more than sixty men rigged for combat, Norrad remembered it was anything but comfortable, especially after hydrating oneself prior to the flight and without an adequate means of relief.¹⁷

As Norrad's aircraft neared the Panamanian coast about thirty minutes from the drop, his thoughts turned to the "young troops" and their mission. For most of them, "this was their first taste of combat." One of those untested in combat, SSgt. Chet Ebeling, recalled the final minutes before the jump:

The aircrew opened the door at three minutes out; all I could see was water. I had the job of getting the bike bundle in the door so that I could push it out and follow it on the green light. The aircrew called 1 minute warning; I could see the beach, some houses along the beach, and fishing boats out in the water. Just as I positioned the bike bundle in the door the aircrew passed back [the 10 second] warning. The green light came on, I pushed the bundle out the door and followed it out.¹⁸

On the Rio Hato airfield seizure, twenty-six Special Tactics men jumped with the Rangers: seventeen combat controllers and nine PJs. All but one CCT member was in the 1723d Combat Control Squadron. Six of the pararescuemen were assigned to the 1730th Pararescue Squadron, the remaining three to the 1724th Special Tactics Squadron.¹⁹

Ninety seconds after H-hour, an AC-130H gunship appeared over Rio Hato. Captain Mark T's (last initial only) crew was allowed just two-and-a-half minutes to prepare the drop zone before the sky would be filled with Rangers. Having been alerted, Noriega's PDF was waiting. They had obstructed the airfield with vehicles and had manned Soviet-made ZPU-4 anti-aircraft guns. The captain's crew destroyed one ZPU-4 with a direct hit from the plane's 105-mm howitzer, but other anti-aircraft fire continued. At 0104, the Rangers hit the silk, the Hercules crews delivering them "exactly" on target, according to General Stiner. As parachutes descended, the AC-130 again employed its howitzer, destroying two Panamanian armored vehicles that had appeared. Small-arms fire continued in the vicinity, however.²⁰

Well before H-hour, Maj. (later, Brig. Gen.) Michael A. Longoria and others wanted nothing more than to get out of their airplane to escape the heat, filth, and odor. Get out they did, but while "shuffling to the door," at least one trooper fell inside the cabin. Weighted down with equipment, he couldn't get up even with assistance. Chief Norrad, behind him in the "stick" of jumpers, climbed around the soldier as best he could in order to make the jump himself. Late in exiting the aircraft into



Refueling an MH-60 during Just Cause.

THE PDF HAD PLOTTED THE TRANSPORT FORMATION AND ADJUSTED THEIR FIRE ACCORDINGLY

the darkness from an altitude no higher than 500 feet, Norrad was still struggling with one of the two equipment quick-releases when he hit the ground hard.²¹

Once on the ground, Norrad "chambered a round," got out of his parachute, and moved out. With the delay exiting the aircraft, he was several hundred yards away from the intended location. Meeting up with a group of Rangers along the way, and then encountering Major Longoria, they somehow became separated into several smaller groups. "Movement was slow due to some small arms fire and an occasional mortar round," Norrad noted. Adding to the combat scene, an AC-130 blasted away at nearby PDF positions.²²

Joining Norrad was CMSgt. Michael I. Lampe who served as the 1724 STS liaison with the 3d Battalion, 75th Rangers. Rather than follow the normal procedure of augmenting the 1724th with CCTs from Hurlburt's 1723th Combat Control Squadron, Lampe's squadron commander, Major Brotchie, delegated the Rio Hato Special Tactics mission to the Hurlburt unit. Since Brotchie maintained overall responsibility for the CCT mission in Panama, he assigned Lampe to be his "eyes and ears" at Rio Hato. Furthermore, because the 1723d lacked pararescuemen at the time, Brotchie also assigned three of his squadron's PJs to accompany Lampe at Rio Hato. The PJs provided a combat casualty collection point in the immediate vicinity of the drop zone.²³

In addition to his liaison role, Lampe doubled as an assistant jumpmaster on his C-130 aircraft and was one of the last to jump onto the Rio Hato drop zone. By the time his aircraft approached the DZ, the PDF had plotted the transport formation and adjusted their fire accordingly. The chief recalled his aircraft taking numerous small arms hits as it arrived over the zone.²⁴

As the Rangers secured the airfield, Captain Mark T. (last initial only) repositioned his aircraft to fly a wider orbit in case of approaching threats. Shortly thereafter, the Spectre destroyed a truck carrying PDF soldiers toward the fight and another

ZPU-4 the Panamanians had moved into firing position near their barracks. Although intermittent firing in the area continued for another day, an Air Force historian noted that the AC-130's display of firepower "marked the end of organized resistance at Rio Hato."²⁵

Although casualties were light, they would have been worse without the presence of a small number of Special Tactics pararescuemen. One of several PJs who performed outstanding work in the early hours of the operation was SSgt. Frank Medeiros. Assigned to the 1730th Pararescue Squadron, Medeiros was aboard the first aircraft to air-land at Rio Hato less than two hours after the Rangers jumped in. Upon his arrival, Medeiros' teammates contacted him via the intra-team radio asking him to look for two injured soldiers on the northeast side of the runway. He located a Ranger with a compound tibia-fibula fracture and another with a fractured femur who had already lost a significant amount of blood. Medeiros began treatment of the second Ranger, the more serious of the two, and requested air transport. Next, Medeiros was directed to the area of the runway north of the highway, where he and another paramedic discovered five civilian casualties with multiple bullet wounds. Again calling for transport, they loaded the plane with the wounded as quickly as possible. Next came an urgent call to help a sucking chest wound victim. While under fire sporadically, Medeiros hydrated the patient and assisted a doctor with a chest tube procedure, then he and three other PJs moved on and found four seriously injured Rangers. While treating the wounded they again came under enemy fire, which killed one Ranger. Medeiros, wrote Colonel Carney, marshaled "helicopters into a landing site near the joint casualty collection point (JCCP), and his team loaded two litter patients and two ambulatory ones on an MH-60 while other critical casualties were put into a waiting C-130 and quickly flown out of Rio Hato."²⁶

Exhausted, the PJs hydrated themselves with an intravenous saline solution for some quick energy. Resting for a bit, an hour later the four used a motorcycle and a recovery all-terrain vehicle (RATV) to reach yet another soldier suffering from a sucking chest wound. The PJs loaded the Ranger on their RATV and drove him and several other casualties to the JCCP where they were flown out.²⁷

The RATV that pararescuemen used to advantage represented a significant, and creative, improvement over the handling of battlefield trauma in previous conflicts. Much credit for its development belonged to a physician and Air Force reservist, Dr. Craig D. Silverton. The son of an anesthesiologist, and reared in Flint, Michigan, Silverton loved sports and was intrigued by the Air Force. Finishing medical school in 1978, he began considering how to combine a medical practice with his military interests. He discovered the Air Force's pararescue field, but there was one problem: that specialty was enlisted only. With the support of the rescue wing at Selfridge Air National Guard Base, Michigan, Silverton joined as the "pararescue med-

LONGORIA AND SPECIAL TACTICS MEMBERS AT RIO HATO REMAINED THERE, PROVIDING RELIABLE COMMUNICATIONS FOR THE RANGERS

BY DECEMBER 23, SPECIAL TACTICS PERSONNEL HAD RELOCATED TO HOWARD AFB WHERE THEY LINKED UP WITH LOCALLY-BASED COMBAT CONTROLLERS

ical officer," filling a reserve billet the commander created for him. In 1980, he entered the pararescue training pipeline, the first officer to do so. His unique status added to the already extremely challenging environment. In 2008, Silverton recalled the difficulties both for the PJ instructors and for himself twenty-eight years earlier. One instructor, about six-five, 240 pounds, and solid muscle, liked to hold students' heads under the water in the pool during the "buddy-breathing" portion of snorkel training. Silverton felt certain he "held me down longer than anybody else just to see if I was going to give in."²⁸

In 1987, Silverton reported to Pope AFB and the 1724th squadron. There he had two roles: first, he was assigned to the 1724th as the sole officer-PJ among the ten or so pararescuemen; and, second, he worked as an orthopedic surgeon at Fort Bragg's Womack Army Hospital. The dual role provided Silverton a synergistic opportunity that he put to good use. He recalled,

When I went to Womack I said this is going to be a good opportunity to train our people. We are right here on base and we are at a hospital and they [PJs] can learn intubation, they can work in the Emergency Room, they can come to the operating room with me. . . . We would put fractures back together, we were driving pins in, they were putting plates on, they were in the operating room intubating patients, they were stopping bleeding. It was an incredible experience for them for training. They had never seen anybody bleeding.²⁹

Another major initiative evolved into the RATV. Unit pararescuemen had looked for a vehicle to move stretcher-casualties following an airfield seizure off the airfield and to the casualty collection area. The PJs experimented with motorcycles and other vehicles, but none proved satisfactory. Silverton and several other PJs took on the project and decided to build their own vehicle, which turned out to be a version of the M151, the U.S. Army "jeep." The RATV featured litter extensions and on-board oxygen, both major improvements in handling battlefield casualties. Ironically, in early December 1989, Silverton broke his ankle on a low-altitude training jump. Although he chafed at missing the deployment to Panama on account of his injury, Silverton's efforts with the 1724th's pararescuemen paid huge dividends there.³⁰

Military observers in Panama recognized that the RATV "filled a major gap" in the medical coverage of past conflicts. An after-action report stated the RATV "provided rapid transportation of large numbers of casualties" from casualty collection points to the JCCP and medevac aircraft. The report continued,

The RATV's communications link with the Rangers through the control point and off-road capabilities provided a constant flow of medical coverage during the entire operation. This produced continuous medevac airflow, prior notification of type and number of casualties, and rapid resupply of medical gear. The RATV's capability to deliver three PJs as pri-

mary care providers to casualties in combat areas is as important as the transportation abilities.³¹

As affirmed above, in its first operational test the RATV proved its worth delivering PJs to casualty collection points, providing continuous medical communications, and transporting casualties to the JCCP. In the twenty years since Panama, the RATV or a related vehicle has become a standard feature in U.S. contingency operations.³²

By daylight on December 20, the Rangers at Rio Hato had repositioned both the primary and alternate TOCs, the former to several buildings situated a short distance from the runway. For the next two days, Longoria and Special Tactics members at Rio Hato remained there, providing reliable communications for the Rangers. Others conducted various missions beginning with the top priority of locating Noriega. Noriega remained at-large until the 24th when he sought refuge at the Papal Nunciature in Panama City. On January 3, 1990, he surrendered to U.S. forces and was extradited to Homestead AFB, Florida. Meanwhile, all twenty-seven initial targets in Panama had been secured sometime after midnight on the night of December 19/20.³³

By December 23, Special Tactics personnel had relocated to Howard AFB where they linked up with locally-based combat controllers. Although organized resistance had all but ceased on the 20th, one attack occurred on the 23rd when Noriega loyalists attacked a Panamanian police facility near the U.S. Southern Command headquarters at Quarry Heights.³⁴

The Special Tactics men remained in Panama over Christmas. Chief Norrad went to the commissary and bought a twenty-four-pound turkey, ham, potatoes, and all the fixings. One pararescueman, SSgt. Robert H. (last initial only), had been a general's aide and knew how to cook. Under the PJ's direction, he, Norrad, and a combat controller, Sgt. James H. (last initial only), cooked dinner for the men, both CCTs and PJs, which they enjoyed in the relative plush surroundings of one of Howard AFB's recently-vacated base houses. The day after Christmas, Norrad joined a number of other passengers that returned stateside on a Military Airlift Command (MAC) C-141 Starlifter. Arriving at Pope AFB, the 1723d members transferred to a waiting C-130 which flew them to Hurlburt. There they were met and welcomed home by the Twenty-Third Air Force Commander, Maj. Gen. Thomas E. Eggers.³⁵

An Air Force historian, the late Eduard Mark, summarized the Panama operation thusly:

On the whole, the U.S. Air Force and the other armed services carried out their responsibilities during Operation JUST CAUSE efficiently and according to plan. It detracts nothing from the accomplishment to observe that conditions . . . were uniquely favorable—American forces were present in the country to be occupied, and . . . there was little about Panama that the United States did not know. Rarely indeed

can an invasion be practiced on the very ground where it is to be executed. The local population generally favored the intervention, and the Panamanian armed forces had little stomach for hard fighting in Noriega's dubious cause. The PDF was in any case a small and largely unprofessional force.³⁶

In contrast to their Panamanian adversaries, the small community of 1720th Special Tactics Group members—combat controllers and pararescuemen—demonstrated superb professionalism in their first fight since the joining together of the two career fields after the 1983 Grenada operation. A number of them jumped on the first night, when Panama became the objective of the largest airborne operation in roughly forty years. Of about three thousand seven hundred U.S. troops that jumped into Panama on the first night, almost fifty were combat controllers or PJs assigned to units belonging to the 1720th. Summarizing the role of

the 1720th in Panama, Colonel Carney stated:

During Operation Just Cause, special tactics personnel were attached and employed with all . . . maneuvering task forces. Their responsibilities ranged from beacon insertions to participating in parachute assaults where they provided air traffic control, established command and control communications, assisted gunship operations, directed marshalling, and FARP [forward air refueling point] operations. In addition, pararescue personnel established forward casualty collection points while providing emergency medical treatment on the airfields.³⁷

Carney, the first-ever qualified combat controller to be promoted to full colonel, viewed Panama as “the high water mark” for Air Force Special Tactics up to 1989. It had been a long road, with significant improvements achieved since 1980 and particularly in the six years since Grenada.³⁸ ■

NOTES

1. Bruce W. Watson and Peter G. Tsouras, eds, *Operation Just Cause: The U.S. Intervention in Panama* (Boulder, San Francisco, and Oxford: Westview Press, 1991), pp. 3-8, 11-13, 18-25, 51; Clarence E. Briggs III, *Operation Just Cause: Panama, December 1989, A Soldier's Eyewitness Account* (Harrisburg, Penn.: Stackpole Books, 1990), pp. 13-14; Lawrence A. Yates, *The U.S. Military Intervention in Panama: Origins, Planning, and Crisis Management, June 1987-December 1989* (Washington: Center of Military History, 2008), pp. 2-3; *Operation Just Cause: The Incursion into Panama* (N.p.: Center of Military History, n.d.), pp. 5, 8. Noriega had reorganized and renamed the National Guard as the Panama Defense Forces (PDF) to help ensure his personal control.
2. *Incursion into Panama*, pp. 8-9; John T. Carney Jr. and Benjamin F. Schemmer, *No Room for Error: The Covert Operations of America's Special Tactics Units from Iran to Afghanistan* (New York: Ballantine Books, 2002), pp. 211-12.
3. *Incursion into Panama*, p. 9; Eduard Mark, *Just Cause: The United States Air Force in Panama* (Washington: Center for Air Force History, 1993), pp. 36-37 (information used is Unclassified); Yates, *U.S. Military Intervention in Panama*, p. 276. By 1988-89, among the several reasons Washington sought to rid Panama of Noriega was the embarrassment his presence created for the Reagan Administration's national counterdrug effort focused on Latin America, including, by 1989, President Bush's “Andean Initiative” vis-à-vis Peru, Bolivia, and Colombia.
4. *Incursion into Panama*, pp. 10-11; quote in Yates, *U.S. Military Intervention in Panama*, p. 146 [emphasis added]; Watson and Tsouras, *U.S. Intervention in Panama*, p. 72. The 1723 CCS lacked PJs at that time. Although the majority of PJ's in the USAF served in non-SOF (i.e., “Air Rescue”) units, only SOF- or Special Tactics-assigned PJs deployed for the Panama incursion; email, MSgt Ray Cooper (USAF Ret) to Marion, Oct 2, 2009.
5. Watson and Tsouras, *U.S. Intervention in Panama*, pp. 70-79; Dennis Steele, “Operation Just Cause,” *Army* 40, no. 2 (Feb 1990), pp. 37-41. On December 19, Gen Stiner moved up H-hour by fifteen minutes, making it 0045 on December 20 (p. 83). Ground troops for the initial phase of operations were divided into six maneuver task forces: Black, Red, Bayonet, Semper Fi, Pacific, and Atlantic (Watson/Tsouras, pp. 71, 74). Task Force Pacific was to jump into Torrijos-Tocumen one hour after H-hour by which time TF Red's Rangers should have secured the airport.
6. Watson and Tsouras, *U.S. Intervention in Panama*, pp. 72, 84. Muse's story is told in his own words in Kurt Muse and John Gilstrap, *Six Minutes To Freedom* (N.p.: Citadel Press, 2006); Intvw, F. L. Marion, oral historian, AFHRA, with Col Craig F. Brotchie (USAF, Ret.), Jul 21, 2007 (information used is Unclassified).
7. Brotchie intvw (information used is Unclassified); Intvw, F. L. Marion, oral historian, AFHRA, with CMSgt James A. Lyons (USAF), Mar 9, 2007 (information used is Unclassified); Carney, *No Room for Error*, pp. 204-206, 212-14; Hist, 1720 Special Tactics Group, Dec 18, 1989 - Jan 16, 1990, p. 32 (information used is Unclassified), AFHRA call no. K-GP-CMDO-1720-HI, 18 Dec 89-16 Jan 90.
8. Watson and Tsouras, *U.S. Intervention in Panama*, p. 91 ; Camey, *No Room for Error*, pp. 207, 209. The MAC fleet for Panama included eighty-six aircraft: sixty-three C-141s, twenty-one C-130s, and two C-5s; see Mark, *Just Cause*, p. 40 (information used is Unclassified).
9. Carney, *No Room for Error*, pp. 205-206; Intvw, F. L. Marion, oral historian, AFHRA, with Maj John A. Koren (USAF, Ret), Oct 5, 2006 (information used is Unclassified); Citation, Joint Service Commendation Medal, to John A. Koren, copy in AFHRA/OH files; 1720 Special Tactics Group history, 1989 - 1990, p. 41 (information used is Unclassified).
10. Koren intvw (information used is Unclassified); Carney, *No Room for Error*, pp. 206-207; Watson and Tsouras, *U.S. Intervention in Panama*, pp. 72-73; 1720 Special Tactics Group history, 1989 - 1990, pp. 17-18, 34 (information used is Unclassified); Briggs, *Operation Just Cause*, p. 66. The 1724 STS report dated Jan 4, 1990, stated, “Map studies, aerial imagery and intelligence summaries all concluded the area east of the main runway could have been too swampy to support heavy equipment airdrop operations.” An official Army publication, however, stated, “maps and aerial photographs did not reveal that this area was a marsh covered by tall elephant grass;” see *Incursion into Panama*, p. 22. At least two possibilities

- present themselves: either the wetland information was not transmitted from the Air Force to the appropriate authorities who decided on the combat spread formation, or there were integrity issues involved after the fact on the part of personnel involved in the decision to jump from a combat spread. I will not hazard a guess as to which was the case. Note that because of the (icing) weather delay to some C-141s, the last paradrops at Torrijos-Tocumen took place at about 0515 local; see Steele, "Operation Just Cause," p. 40.
11. 1720 Special Tactics Group history, 1989 - 1990, pp. 41 (information used is Unclassified); Koren intvw (information used is Unclassified); Intvw, F. L. Marion, oral historian, AFHRA, with CMSgt. Timothy C. Brown (USAF, Ret), Nov 11, 2006 (information used is Unclassified).
12. Intvw, F. L. Marion, oral historian, AFHRA, with MSgt Scott C. Fales (USAF, Ret), Jul 13, 2007 (information used is Unclassified); 1720 Special Tactics Group history, 1989 - 1990, pp. 35, 73-74, 85 (information used is Unclassified).
13. Brown intvw (information used is Unclassified); Intvw, F. L. Marion, oral historian, AFHRA, with CMSgt James A. Lyons (USAF), Mar 9, 2007 (information used is Unclassified).
14. *Incursion into Panama*, p. 19; 1720 Special Tactics Group history, 1989 - 1990, p. 25 (information used is Unclassified); Watson and Tsouras, *U.S. Intervention in Panama*, p. 79. The assault at Torrijos-Tocumen began just under one hour after H-hour; see above 1720th history (p. 33).
15. *Incursion into Panama*, p. 32; Watson and Tsouras, *U.S. Intervention in Panama*, pp. 76, 90, 117; Intvw, F. L. Marion, oral historian, AFHRA, with CMSgt Wayne G. Norrad (USAF, Ret), Nov 14, 2006, and Feb 6, 2007 (information used is Unclassified); Email, CMSgt Wayne G. Norrad (USAF, Ret) to Marion, Oct 20, 2009; Intvw, F. L. Marion, oral historian, AFHRA, with Brig Gen Michael A. Longoria (USAF), Jul 18, 2007 (information used is Unclassified). Watson and Tsouras reported a total of 1,700 Rangers dropped at both Torrijos-Tocumen and Rio Hato at H-hour. Of that number, 700 jumped at Torrijos-Tocumen; about 1,000 at Rio Hato. One hour later, some 2,000 mostly 82d Airborne troopers dropped at Torrijos-Tocumen.
16. 1720 Special Tactics Group history, 1989 - 1990, pp. 25-26, 93 (information used is Unclassified); Norrad intvw (information used is Unclassified); Carney, *No Room for Error*, p. 220.
17. Mark, *Just Cause*, p. 43 (information used is Unclassified); Norrad intvw (information used is Unclassified); 1720 Special Tactics Group history, 1989 - 1990, p. 26 (information used is Unclassified).
18. Norrad intvw (information used is Unclassified); 1720 Special Tactics Group history, 1989 - 1990, p. 94 (information used is Unclassified); Carney, *No Room for Error*, p. 220.
19. Norrad intvw (information used is Unclassified); 1720 Special Tactics Group history, 1989 - 1990, pp. 27, 41, 57 (information used is Unclassified).
20. Mark, *Just Cause*, pp. 52-53 (information used is Unclassified).
21. Norrad intvw (information used is Unclassified); Longoria intvw (information used is Unclassified).
22. Norrad intvw (information used is Unclassified).
23. Intvw, F. L. Marion, oral historian, AFHRA, with CMSgt. Michael I. Lampe (USAF, Ret), Sep 16, 2009 (information used is Unclassified); Mark, *Just Cause*, pp. 66, 69 (information used is Unclassified); 1720 Special Tactics Group history, 1989 - 1990, pp. 55-56 (information used is Unclassified).
24. Lampe intvw (information used is Unclassified).
25. Mark, *Just Cause*, pp. 53-54 (information used is Unclassified).
26. Carney, *No Room for Error*, pp. 217-18; 1720 Special Tactics Group history, 1989 - 1990, pp. 103-104 (information used is Unclassified). Medeiros was assigned to Detachment 2, 1730 PRS.
27. Carney, *No Room for Error*, pp. 218-19; Email, MSgt Ray Cooper (USAF, Ret) to Marion, Oct 2, 2009.
28. Walter Rath, "Physician undergoes training," *Talespinner*, Dec 19, 1980, p. 22; Intvw, F. L. Marion, oral historian, AFHRA, with Col (Dr) Craig D. Silverton (USAFR), May 1, 2008 (information used is Unclassified).
29. Silverton intvw (information used is Unclassified); Intvw, F. L. Marion, oral historian, AFHRA, with SMSgt John L. Pighini (USAF, Ret). Jul 25, 2008 (information used is Unclassified). The designation "NAFCOS" was translated "Numbered Air Force Combat Operations Staff;" see Carney, *No Room for Error*, p. 171. By 1990, Silverton estimated the unit had roughly twenty PJs.
30. Silverton intvw (information used is Unclassified); Intvw, F. L. Marion, oral historian, AFHRA, with MSgt Timothy A. Wilkinson (USAF, Ret), Mar 6, 2007 (information used is Unclassified); email, Col (Dr) Craig D. Silverton (USAFR) to Marion, Oct 5, 2009.
31. 1720 Special Tactics Group history, 1989 - 1990, pp. 20-21 (information used is Unclassified).
32. *Ibid.*
33. Carney, *No Room for Error*, p. 222; Mark, *Just Cause*, pp. 66-67 (information used is Unclassified); *Incursion into Panama*, p. 35.
34. Longoria intvw (information used is Unclassified); Norrad intvw (information used is Unclassified); Watson and Tsouras, *U.S. Intervention in Panama*, p. 93. Howard AFB was adjacent to Panama City.
35. 1720 Special Tactics Group history, 1989 - 1990, p. 31 (information used is Unclassified); Norrad intvw (information used is Unclassified).
36. Mark, *Just Cause*, p. 69 (information used is Unclassified).
37. 1720 Special Tactics Group history, 1989 - 1990, pp. 4, 11-12, 41 (information used is Unclassified); Watson and Tsouras, *U.S. Intervention in Panama*, p. 76, 117; Carney, *No Room for Error*, p. 208; Koren intvw (information used is Unclassified). While Carney's after-action report stated 104 personnel deployed for the operation, *No Room for Error* (p. 208) referred to forty combat controllers and pararescuemen that deployed. The official 1720th history, however, documents a total of at least forty-nine combat controllers and pararescuemen that jumped into Torrijos-Tocumen or Rio Hato on the initial assault; twenty-six of those jumped at Rio Hato. Note that Watson and Tsouras' work refers in one passage to 1,700 Rangers jumping at H-hour (at Rio Hato and Torrijos-Tocumen) followed by 2,000 Airborne troopers in the second jump at Torrijos-Tocumen; another section, however, refers to a total of 4,000 that "parachuted in." Although the actual number of paratroopers that jumped into Panama may have been as high as 3,800 to 4,000, I have elected to follow the more conservative estimate of a total of 3,700 that jumped that night (see note 15). A total of about 4,000 U.S. paratroopers jumped at Sukchon, Korea, in October 1950, but the jumps apparently took place on more than one day. Thus it may be that Panama represented the largest number of combat jumps on a single day since World War II. Of course, in Panama the jumps actually took place at night; see Roy E. Appleman, *South to the Naktong, North to the Yalu (June-November 1950)* (Department of the Army: Washington, 1961), pp. 655-57; email, Donald A. Carter, U.S. Army Center of Military History (CMH), to Joel D. Meyerson, CMH, "RE: Query – Panama, Dec. 1989 (UNCLASSIFIED)," 13 Jun. 2012, copy at Air Force Historical Research Agency, Maxwell AFB, Ala.
38. Intvw, F. L. Marion, oral historian, AFHRA, with Col John T. Carney, Jr (USAF, Ret), Nov 7, 2006 (information used is Unclassified).



'THE "OTHER" RED TAILS



Daniel L. Haulman

(Overleaf) A group of Tuskegee Airmen pose in front of one of their P-51s.

THE 332D FIGHTER GROUP DID NOT BEGIN FLYING MISSIONS TO ESCORT HEAVY BOMBERS OF THE FIFTEENTH AIR FORCE UNTIL EARLY JUNE 1944

World War II B-24 bomber pilot John Sonneborn remembered gratefully that his aircraft was saved by a red-tailed P-51 pilot when he was flying a mission to Ploesti, Rumania, on May 5, 1944. He assumed that he had been saved by a Tuskegee Airman, since the Tuskegee Airmen's 332d Fighter Group flew red-tailed P-51s to escort Fifteenth Air Force bombers on missions during World War II. Each of the P-51 fighter escort groups of the Fifteenth Air Force during World War II had its own distinctive tail markings. The color and pattern of the tail markings distinguished one group from another, and also helped the escorted bomber crews determine if the fighters they saw on missions were friend or foe.¹

What Mr. Sonneborn did not realize was that the 332d Fighter Group did not begin flying missions to escort heavy bombers of the Fifteenth Air Force until early June 1944, a month later, and the 332d Fighter Group did not begin flying P-51s in place of P-47s on those bomber escort missions until July 1944, more than two months later. If Sonneborn was saved by a pilot in a red-tailed P-51 on May 5, 1944, that fighter pilot must have belonged to the 31st Fighter Group, because the 31st Fighter Group was the only red-tailed P-51 fighter group escorting B-24s to Ploesti that day. The tails of the 31st Fighter Group were painted a

striped red, whereas the tails of the Tuskegee Airmen were painted a solid red.² On the May 5, 1944 mission to Ploesti, nine pilots of the 31st Fighter Group earned aerial victories. Any one of them could have been the pilot who rescued John Sonneborn that day (Table I).³

Like the Tuskegee Airmen of the 332d Fighter Group, with whom they served in the Fifteenth Air Force, the members of the 31st Fighter Group should be remembered and celebrated for their service during World War II. The record of the 31st Fighter Group was not only honorable, it was exemplary. The 31st Fighter Group was unquestionably one of the best of the seven U. S. Army Air Forces fighter escort groups in the Mediterranean Theater of Operations.(Table II)

The 31st Fighter Group of World War II was established on December 22, 1939, as the 31st Pursuit Group. It was activated on February 1, 1940 at Selfridge Field, Michigan, with assignment to the 2d Wing. At first, the 39th, 40th, and 41st Pursuit Squadrons were assigned to it. The group took part in Army maneuvers and trained for possible combat. On December 18, 1940, the 31st Pursuit Group was assigned to the 6th Pursuit Wing. It was reassigned to the I Interceptor Command on October 1, 1941. On December 6, 1941, the group moved to Baer Field, Indiana. The Japanese attacked Pearl Harbor, Hawaii, the next

Table I: 31st Fighter Group Aerial Victories on Mission to Ploesti, May 5, 1944

Pilot	Sqdn	Number of Aerial Victories
1 Lt. John A. Frazier	307	1.00
Maj. Alvan C. Gillem II	307	1.00
2 Lt. George D. McElroy	307	1.00
2 Lt. Ernest Shipman	307	1.00
1 Lt. Leonard H. Emery	308	1.00
1 Lt. John M. Ainlay	309	1.00
1 Lt. Raymond F. Harmeyer	309	1.00
1 Lt. Murray D. McLaughlin	309	1.00
1 Lt. David C. Wilhelm	309	1.00

Source: USAF Historical Study 85: USAF Credits for the Destruction of Enemy Aircraft, World War II (Washington, DC: Office of Air Force History, 1978), 435.

Table II: Fighter Groups of the Fifteenth Air Force in World War II

Fighter Group	Aircraft	Tail Color & Marking
1st FG	P-38 Lightning	natural metal
14th FG	P-38 Lightning	not known
31st FG	P-51 Mustang	Striped red
52d FG	P-51 Mustang	Yellow
82d FG	P-38 Lightning	natural metal
325th FG	P-51 Mustang	Yellow and black checkered
332d FG	P-51 Mustang	solid red

Source: Maurer Maurer, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983); E. A. Munday, *Fifteenth Air Force Combat Markings, 1943-1945* (London. UK: Beaumont Publications), 15-18

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Ground crews contribute to the month's effective sortie record.

IN LATE MAY AND EARLY JUNE, 1943, THE 31ST FIGHTER GROUP ESCORTED BOMBERS AND ATTACK AIRCRAFT IN RAIDS

day. The threat to the United States persuaded the Army Air Forces to send the three squadrons of the 31st Pursuit Group to defend the west coast on January 15. From then until the end of the month, the group had no flying squadrons assigned.⁴

On January 30, 1942, the 31st Pursuit Group gained three new pursuit squadrons, the 307th, 308th, and 309th. The group moved to New Orleans, Louisiana, on February 6, 1942. On April 18, the group was reassigned to the III Interceptor Command. It was redesignated as the 31st Fighter Group on May 15, 1942. At the same time, its three pursuit squadrons were redesignated fighter squadrons. The group and its squadrons trained with P-39 Airacobra aircraft expecting to be deployed to England for combat.⁵

In June, the group was assigned to the VIII Fighter Command of the Eighth Air Force and moved from Louisiana to England. The ground echelon sailed on the ocean liner *Queen Elizabeth* on June 4. The air echelon moved to Grenier Field, New Hampshire, where it left its P-39s before boarding a ship convoy heading to England on June 12. The group reunited at Atcham, England, and began training with British Spitfire fighter aircraft. It moved again to Westhampnett, England, on August 1, and that month became the first operationally-ready Army Air Forces fighter group in England, and the first American fighter group in the European Theater of Operations (ETO). It entered combat on August 19, 1942, supporting an Allied raid on Dieppe, France. During a fighter sweep across the English channel that day, one of the 31st Fighter Group pilots, Lt. Samuel F. Junkin of the 309th Fighter Squadron, shot down a German Focke-Wulf 190 fighter. He was the first Army Air Forces pilot to shoot down a German aircraft in operations from Britain. The group continued to fly combat missions from England the rest of August and early September, 1942, escorting bombers and flying patrol and diversionary missions.⁶

The 31st Fighter Group was reassigned from the VIII Fighter Command of the Eighth Air Force to the Twelfth Air Force on September 14, 1942, and by the end of the month, it was assigned to the XII Fighter Command. The group's air echelon moved to Gibraltar, where it acquired a new set of desert-equipped Spitfires, while the ground echelon sailed to Algeria. The group's Spitfires landed in the midst of shelling by French artillery at Tafaraoui on November 8, 1942, taking part in the Allied invasion of North Africa. The 31st Fighter Group was the first fighter unit into Oran. On the same day, group pilots shot down three of four opposing French Dewoitine aircraft, while losing one Spitfire. The next day, November 9, 31st Fighter Group fighters found the advancing French Foreign Legion and strafed it for five hours, eventually forcing it to turn back. Group fighter pilots also attacked coastal guns threatening Allied landings and supported ground forces on the beachheads.⁷

A few days later, the group moved from Tafaraoui to La Senia, Algeria. Later that month, it was reassigned to the XII Air Support Command. The 31st Fighter Group remained in North Africa until the summer of 1943, moving from base to base. After the German victory at Kasserine Pass, the group was forced to abandon its airfield, but eventually the Germans retreated and the group advanced to new airfields in Tunisia. One of the favorite targets of the 31st Fighter Group, as it served the Twelfth Air Force in Tunisia, were enemy airfields. Fighters of the group also attacked enemy vehicles, gun positions, and troop concentrations, provided air support for advancing Allied ground troops, and covering medium bombers and other fighter aircraft. During the Tunisian campaign, between February and May, 1943, the 31st Fighter Group flew 804 missions and 5,301 sorties, destroying fifty-one enemy aircraft on the ground or in the air. The group lost twenty-nine of its own aircraft during the campaign.⁸

In late May and early June, 1943, the 31st Fighter Group escorted bombers and attack aircraft in raids on the island of Pantelleria, in the Mediterranean Sea between North Africa and Sicily. The island surrendered on June 11 because of the air attacks. The group escorted Allied naval convoys in the Mediterranean Sea as they moved toward Sicily and covered and supported the landings there on July 10 and 11. From late June to mid-July, 1943, the group's air echelon operated from Gozo Island near Malta.⁹

In July, 1943, the 31st Fighter Group itself moved to Sicily and was reassigned to the 64th Fighter Wing. While serving in Sicily, the group continued to fly Spitfire aircraft on tactical missions for the Twelfth Air Force. It flew fighter cover for the Allied invasion of the mainland of Italy at Salerno in September, and moved there that same month, first serving at Montecorvino and then moving to Pomigliano in mid-October. From that base it provided close air support for Allied ground forces as they struggled to advance. In January

**EARLY IN
APRIL, 1944,
THE GROUP
WAS TRANS-
FERRED
FROM THE
TWELFTH TO
THE
FIFTEENTH
AIR FORCE**

Captain George T. Buck, 25, of Tchula, Miss., on October 16, destroyed three Me-109's, bringing his personal score to six enemy aircraft destroyed. Capt. Buck is the commanding officer of the 309th Fighter Squadron, replacing Lt. Col. Warford, who was MIA on October 11.

Date	Name	FGrp	Sqdn	Credit	Authority
Dec 22, 1944	1 Lt. Eugene P. McGlaughlin	31	308	0.5	15 AF GO# 327 (22 Jan 1945)
Dec 22, 1944	2d Lt. Roy L. Scales	31	308	0.5	15 AF GO# 327 (22 Jan 1945)
Mar 22, 1944	Capt. William J. Dillard	31	308	0.5	15 AF GO# 2591 (21 Apr 1945)
Mar 24, 1945	Col. William A. Daniel	31	308	1	15 AF GO# 2525 (19 Apr 1945)
Mar 24, 1945	1 Lt. Forrest M. Keene	31	308	1	15 AF GO# 2709 (24 Apr 1945)
Mar 24, 1945	1 Lt. Raymond D. Leonard	31	308	1	15 AF GO# 2709 (24 Apr 1945)
Mar 24, 1945	Capt. Kenneth T. Smith	31	308	1	15 AF GO# 2709 (24 Apr 1945)
Mar 24, 1945	2d Lt. William M. Wilder	31	308	1	15 AF GO# 2709 (24 Apr 1945)
Mar 24, 1945	2d Lt. Charles V. Brantley	332	100	1	15 AF GO# 2293 (12 Apr 1945)
Mar 24, 1945	1 Lt. Roscoe C. Brown	332	100	1	15 AF GO# 2293 (12 Apr 1945)
Mar 24, 1945	1 Lt. Earl R. Lane	332	100	1	15 AF GO# 2293 (12 Apr 1945)

1944, the 31st Fighter Group moved again, this time to Castel Volturno, Italy, and supported the Allied landings at Anzio. While it served in Italy, the 31st Fighter Group provided close air support for Allied ground forces and flew patrol and escort missions.¹⁰

Early in April, 1944, the group was transferred from the Twelfth to the Fifteenth Air Force, in order to provide fighter escort for heavy bombers on strategic missions into southern and central Europe. It traded its Spitfires for the speedier and longer-range P-51 Mustangs. The 31st Fighter Group was reassigned to the 306th Wing on April 1, and moved to San Severo, Italy. Eventually, the 306th Fighter Wing of the Fifteenth Air Force included seven fighter groups. They provided escort for twenty-one bombardment groups of the Fifteenth Air Force, which flew B-24 and B-17 bombers. The 31st Fighter Group escorted various wings and groups of Fifteenth Air Force bombers to, over, and from targets in Italy, France, Germany, Poland, Czechoslovakia, Austria, Hungary, Bulgaria, Rumania, Yugoslavia, and Greece. On April 21, 1944, the 31st Fighter Group earned its first Distinguished Unit Citation by covering an important raid on production cen-

ters in Rumania. From its base at San Severo, the group also strafed enemy airdromes and communication targets.¹¹

On July 18, 1944, the 31st Fighter Group was assigned to escort B-24s to Finschafen, in southern Germany, but the bombers did not show up. While the 31st Fighter Group pilots were waiting for them, they spotted B-17s in the distance, on the way to another target at Memmingen, Germany. The Flying Fortresses were under attack by more than fifty German fighters, including Fw-190s and Me-109s. The 31st Fighter Group P-51s intervened, helping three other fighter escort groups, the 332d, 52d, and 1st, defended the B-17s against their attackers.¹² In the course of that air battle, the 31st Fighter Group's squadrons shot down twelve enemy airplanes.¹³ It was a day of triumph and tragedy. Fifteen of the B-17s fell to enemy aircraft fire that day, most of them before the 31st arrived.¹⁴

On July 22, 1944, the 31st Fighter Group served as part of a Fifteenth Air Force task force that attacked targets in Rumania on the way to Piryatin, Russia, on a shuttle bombing mission. From there it escorted P-38s on a strafing mission against an enemy airfield in Poland. On July 25, the group earned its second Distinguished Unit Citation by attacking a German fighter-bomber force in the air, claiming twenty-seven enemy airplanes destroyed. It returned to Italy the next day. Afterwards, it resumed its predominant mission of escorting Fifteenth Air Force heavy bombers from Italy to, over, or from their targets in central and southern Europe. By the time the 31st Fighter Group finished two years in combat, it had claimed destroying 451 enemy aircraft in the air or on the ground, with a loss of 155 of its own.¹⁵

In the mid-August 1944, the group supported the Allied invasion of southern France. Before the landings, the group escorted reconnaissance missions and bombers striking gun positions. On the first two days of the invasion, the group's P-51s escorted C-47s towing troop-laden gliders.¹⁶

At the end of 1944, the 31st Fighter Group began to encounter German jet aircraft as it continued to escort Fifteenth Air Force bombers on raids into central Europe. In fact, on December 22, two of the group's pilots, 1st Lt. Eugene P.



TABLE V: Leading Fighter Aces of the Fifteenth Air Force in World War II

Pilot Name	Grp	Sdn	Victories between June 1944 & April 1945	Total Aerial Victories
Capt. John J. Voll	31	308	21	21
Maj. Herschel H. Green	325	317	5	18
Capt. James S. Varnell, Jr.	52	2	13	17
Maj. Samuel J. Brown	31	307	7	15.5
Maj. Robert C. Curtis	52	2	12	14
Capt. Harry A. Parker	325	318	13	13
Capt. James L. Brooks	31	307	10	13

Sources: USAF Historical Study No. 85, "USAF Credits for the Destruction of Enemy Aircraft, World War II" (Washington, DC: Office of Air Force History, 1978); Maurer Maurer, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983).

McGlaughlin and 2nd Lt. Roy L. Scales of the 308th Fighter Squadron, became the first Fifteenth Air Force pilots to shoot down a German jet Me-262. They shared the aerial victory. The second German jet shot down by the Fifteenth Air Force was also a 31st Fighter Group victory. On March 22, 1945, Capt. William J. Dillard, also of the 308th Fighter Squadron, shot down an Me-262.¹⁷

The 31st Fighter Group moved from San Severo to another base at Mondolfo, Italy, on March 3, 1945. On March 24, 1945, the Fifteenth Air Force launched its longest raid, sending B-17s escorted by P-51s of more than one fighter group to attack the Daimler-Benz Tank Works in Berlin, the German capital. On that day, Fifteenth Air Force fighters shot down eight German jets. The 31st Fighter Group downed five of the eight. The 332d Fighter Group (the Tuskegee Airmen) got the other three(table III).¹⁸

By April 1945, there was very little German air resistance left, and the 31st Fighter Group shifted to support ground operations in northern Italy by

Capt. Robert E. Riddle, with eleven victories in aerial combat with the enemy, and 1st Lt. John J. Voll, with sixteen victories, each received the Silver Star for gallantry in action.



Table IV: Aerial Victory Credits of the Fifteenth Air Force Fighter Groups in World War II

Fighter Group	Fighter Squadrons	Total Number of Aerial Victories between June 1944 & April 1945
1	27, 71, 94	72
14	37, 48, 49	85
31	307, 308, 309	278
52	2, 4, 5	225.5
82	95, 96, 97	106
325	317, 318, 319	252
332*	99, 100, 301, 302	91

Sources: USAF Historical Study No. 85, "USAF Credits for the Destruction of Enemy Aircraft, World War II" (Washington, DC: Office of Air Force History, 1978); Maurer Maurer, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983).

*The 99th Fighter Squadron scored aerial victories before it was reassigned to the 332d Fighter Group and the Fifteenth Air Force.

strafing enemy road and rail traffic, although it continued to escort bombers on carpet-bombing missions against enemy troop concentrations. Early in May, the war in Europe ended.¹⁹

On July 15, the 31st Fighter Group moved from Mondolfo to Triolo, Italy, where it remained until redeployment to the United States in August. On November 7, 1945, the group inactivated at Drew Field, Florida, its World War II service at an end.²⁰ During the period October 1942 through May 1945, the group destroyed 570 enemy aircraft, earning the distinction of top-scoring fighter unit in the Mediterranean Theater of Operations.²¹

One measure of the success of a fighter escort group is how many aerial victories it scored. On escort missions, enemy fighters would rise to shoot down the bombers, and the escort fighters intercepted the interceptors and often shot them down before they could damage or destroy the bombers. Between early June 1944 and the end of April 1945, when all seven of the fighter groups of the Fifteenth Air Force were generally flying the same kinds of missions on a rotational basis, the 31st Fighter Group accumulated 278 aerial victories. That was higher than any of the other fighter groups of the Fifteenth Air Force(table IV).²²

Another measure of the success of a fighter escort group is how many aces it produced. Seven Fifteenth Air Force pilots shot down at least five enemy airplanes between early June 1944 and late April 1945. The pilot with the most aerial victories during this time period, when all seven fighter groups were flying the same kinds of missions during the same months, was Capt. John J. Voll of the 31st Fighter Group. He shot down twenty-one aircraft in those months, and became the leading fighter ace of the Fifteenth Air Force in World War II(Table V).²³

It is probable that all the seven fighter groups

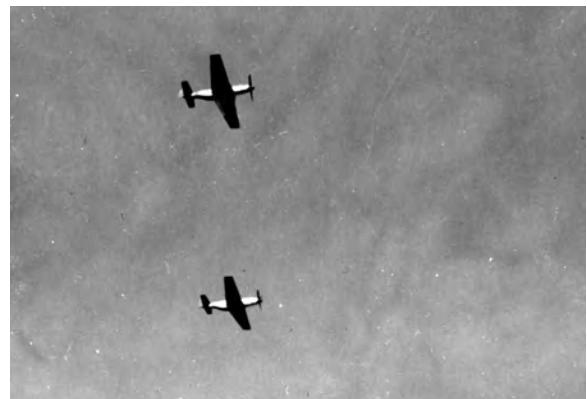


(Above) Maintenance on the Mustangs takes skillful workers.

(Right) Mustangs over Mondolfo.

ALTHOUGH THE CLAIM THAT THE 332D FIGHTER GROUP NEVER LOST AN ESCORTED BOMBER TO ENEMY AIR-CRAFT CIRCULATED FOR YEARS, IT IS NOT HISTORICALLY ACCURATE

of the Fifteenth Air Force escorted bombers that were sometimes shot down by enemy aircraft. Although the claim that the 332d Fighter Group never lost an escorted bomber to enemy aircraft circulated for years, it is not historically accurate. Neither can such a “never lost a bomber” claim be made for the 31st Fighter Group. The group’s narrative mission reports indicate which bombardment wings the group escorted on any given day, and where and when the escort took place. Researchers can determine which groups were in those wings, and, from checking the index of missing air crew reports, see if those groups lost any bombers on any of the days they were escorted by the 31st Fighter Group. Checking the individual missing air crew reports for those groups on those days reveals which of the bombers was shot down by enemy aircraft, and where and when the loss occurred. Major Julie Shively performed that research for the 31st Fighter Group, as I had done for the 332d Fighter Group, and found the following information on bombers escorted by the 31st Fighter Group that were shot down by enemy aircraft. (Table VI)



The 31st Fighter Group earned an enviable reputation from its service in World War II. It was the first operationally-ready Army Air Forces fighter group in England, and one of its pilots scored the first Army Air Forces aerial victory while operating from Britain. It supported and took part in the invasions of North Africa, Pantelleria, Sicily, and the mainland of Italy. It earned two Distinguished Unit Citations, one for a mission to Rumania and another during a shuttle mission to Russia and back. Pilots of the 31st Fighter Group were the first of the Fifteenth Air Force to destroy German jets, and they claimed the majority of the German jets shot down during the famous March 24, 1945, raid of the Fifteenth Air Force on Berlin. Of the ten German jets shot down by the Fifteenth Air Force, seven were scored by members of the 31st Fighter Group’s 308th Fighter Squadron. Of the seven fighter groups of the Fifteenth Air Force, the 31st earned the most aerial victory credits. Of the seven leading aces of the Fifteenth Air Force, three belonged to the 31st Fighter Group, including Captain John J. Voll, the top American ace in the theater. The 31st Fighter Group earned a reputation as one of the best of the American fighter groups of World War II, and perhaps the best in the Mediterranean Theater. ■

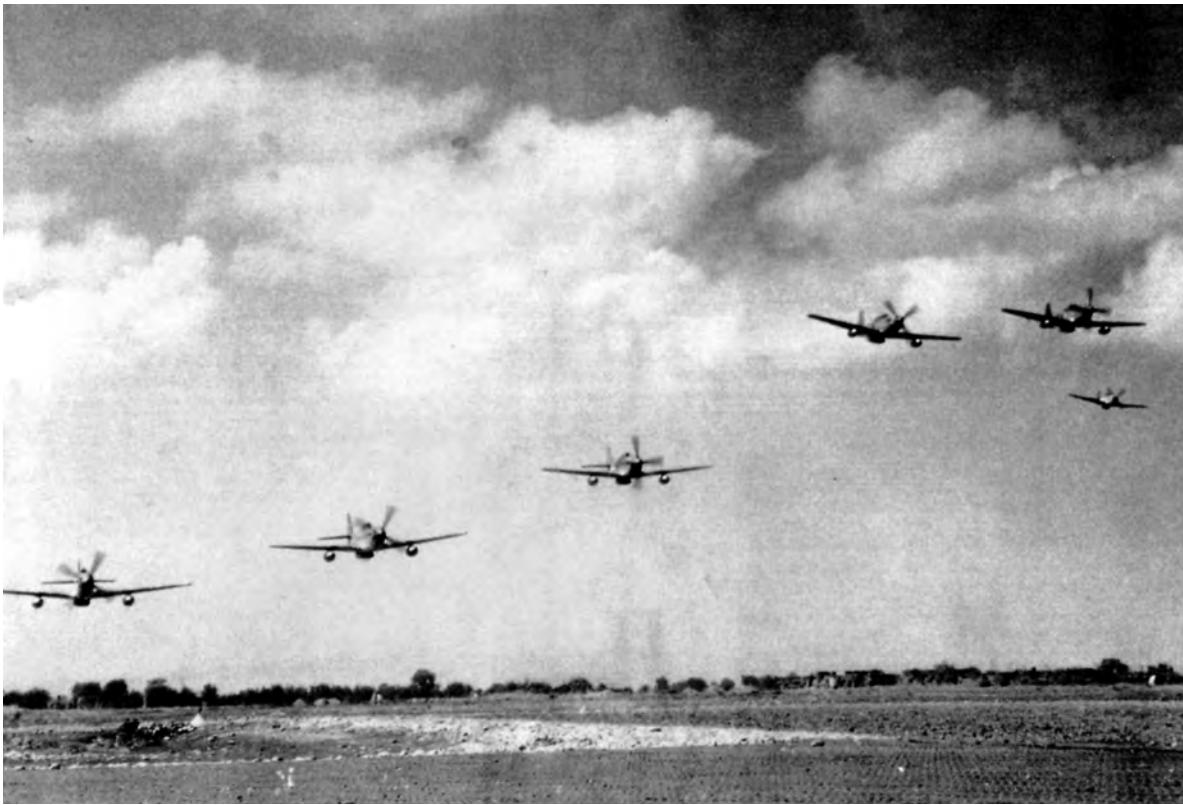
Table VI: Bombers Escorted by the 31st Fighter Group That Were Lost to Enemy Aircraft

Date	Wings Escorted	Groups in Wing	Missing Air Crew Report Numbers	Additional Comments
Jul. 16, 1944	55 and others	460, 464, 465	6898, 6903, 6905, 7196, 7111	5 B-24s lost
Jul. 18, 1944	5 *	483, 301	6856, 6953, 6954, 6975, 6976, 6977, 6978, 6979, 6980, 6981, 7097, 7098, 7099, 7153, 7310	15 B-17s lost, 14 from the 483d BG 1 from the 301st BG
Aug. 7, 1944	55 and others	460	7294	1 B-24 lost
Aug. 22, 1944	304, 5	454, 2	8004, 11270	1 B-24 & 1 B-17 lost
Dec. 17, 1944	49 and others	461, 484	10636, 10650, 10677, 10651, 10742, 10492, 10652, 10680	8 B-24s lost
Mar. 22, 1945	5	2, 483, 97	13249, 13244, 13254, 13253, 13265	5 B-17s lost
Mar. 24, 1945	5	463, 483	13274, 13278, 13375	3 B-17s lost

Sources: Narrative mission reports of the 31st Fighter Group; Maurer’s *Air Force Combat Units of World War II* (Washington, D.C.: Office of Air Force History, 1983); Index of Missing Air Crew Reports; Missing Air Crew Reports (numbers given in the table).

* 31st Fighter Group was not assigned to escort this wing.

Tuskegee Airmen in their P-51s buzz their home field.



NOTES

1. Ryan Orr, "Veteran's Life Saved by Tuskegee Airman," *Victorville Daily Press*, Nov. 10, 2008; 332d Fighter Group histories for May, June, and July 1944, filed under call number GP-332-HI at the Air Force Historical Research Agency;
2. 332d Fighter Group histories for May, June, and July 1944, filed under call number GP-332-HI at the Air Force Historical Research Agency; 31st Fighter Group history for May 1944, filed under call number GP-31-HI at the Air Force Historical Research Agency; Fifteenth Air Force Daily Mission Folder for May 5, 1955, filed under call number 670.332 at the Air Force Historical Research Agency; E. A. Munday, *Fifteenth Air Force Combat Markings, 1943-1945* (London, UK: Beaumont Publications), pp. 15-18.
3. USAF Historical Study 85, USAF Credits for the Destruction of Enemy Aircraft, World War II (Washington, D.C.: Office of Air Force History, 1978), p. 435.
4. Lineage and honors history of the 31st Fighter Group, contained in Maurer Maurer, editor, *Air Force Combat Units of World War II* (Washington, D.C.: Office of Air Force History, 1983), pp. 83-85.
5. Lineage and honors history of the 31st Fighter Group, contained in Maurer Maurer, editor, *Air Force Combat Units of World War II* (Washington, D.C.: Office of Air Force History, 1983), pp. 83-85; "Brief History of the 31st Fighter-Escort Group, 1939-1952," prepared by the USAF Historical Division of the Research Studies Institute, April 1956.
6. *Ibid.*
7. *Ibid.*
8. *Ibid.*
9. *Ibid.*
10. *Ibid.*
11. *Ibid.*
12. Fifteenth Air Force mission folder for July 18, 1944, including 31st Fighter Group mission report for that day, call number 670.332 at the Air Force Historical Research Agency
13. USAF Historical Study no. 85, USAF Credits for the Destruction of Enemy Aircraft, World War II (Maxwell Air Force Base, Ala.: Albert F. Simpson Historical Research Institute, 1978).
14. Missing Air Crew Reports 6856, 6953-6954, 6975-6981, 7034, 7097-7099, 7153.
15. Lineage and honors history of the 31st Fighter Group, contained in Maurer Maurer, editor, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983), pp. 83-85; "Brief History of the 31st Fighter-Escort Group, 1939-1952," prepared by the USAF Historical Division of the Research Studies Institute, April 1956.
16. *Ibid.*
17. "Brief History of the 31st Fighter-Escort Group, 1939-1952," prepared by the USAF Historical Division of the Research Studies Institute, April 1956; Fifteenth Air Force General Order 327 dated Jan. 22, 1945 and Fifteenth Air Force General Order 2591 dated Apr. 21, 1945.
18. *Ibid.*
19. Lineage and honors history of the 31st Fighter Group, contained in Maurer Maurer, editor, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983), pp. 83-85; "Brief History of the 31st Fighter-Escort Group, 1939-1952," prepared by the USAF Historical Division of the Research Studies Institute, April 1956.
20. *Ibid.*
21. Chronology of the 31st Tactical Fighter Wing, 1 Feb 1940-31 Dec. 1980, by the Office of History, Homestead Air Force Base, Fla., Apr. 1981.
22. USAF Historical Study No. 85, "USAF Credits for the Destruction of Enemy Aircraft, World War II" (Washington, D.C.: Office of Air Force History, 1978); Maurer Maurer, *Air Force Combat Units of World War II* (Washington, D.C.: Office of Air Force History, 1983).
23. *Ibid.*

Book Reviews

NASA's First 50 Years: Historical Perspectives. By Steven J. Dick, ed. Washington, D.C.: USGPO, 2010. [NASASP-2010-4704] Notes. Photographs. Illustrations. Appendices. Index. Pp. xvi, 759. \$79.00 ISBN: 978-0160849657; ebook available online at http://www.nasa.gov/connect/ebooks/hist_nasa50_detail.html

Near the end of October 2008, the NASA History Division hosted a two-day conference in Washington, D.C., where historians and other space scholars examined NASA's first half-century from various perspectives. Former NASA chief historian Steven Dick compiled and edited the twenty-three conference papers, making them available to a wider audience in this book. Subdivided into seven parts, this substantial tome charts the evolution of NASA's roles in aeronautics, human spaceflight, exploration, science (space, life, and Earth), and in "crosscutting themes" ranging from space access to international relations and public interaction. Opening with then NASA Administrator Michael Griffin's rather philosophical assessment of "NASA at 50," the editor closes with his own thought-provoking essay on NASA's place in the ongoing, centuries-old story of human exploration and discovery.

Although the substantive and stylistic qualities of the chapters vary, due in large measure to the numerous contributors, the compilation as a whole amounts to a sophisticated tour de force. Howard McCurdy critiques the nature and effects of NASA's organizational culture, while Robert MacGregor compares NASA and the Atomic Energy Commission (AEC) as technocracies. After W. Henry Lambright summarizes how the first eleven Administrators left their respective marks on NASA, J. D. Hunley recounts its contribution to developing core launch-vehicle technologies. John Krige emphasizes Arnold Frutkin's key role in directing NASA's international programs for almost two decades, and Linda Billings draws from archival resources and her own experience as a participant-observer to explain how NASA has attempted to influence public opinion and cultivate public support.

Recounting NASA's aeronautical heritage and ongoing contributions to winged flight, Anthony Springer remembers its absorption of National Advisory Committee for Aeronautics (NACA) expertise and how NASA continued to advance both the technology and its operational use across a broad range. Robert Ferguson focuses on the wind tunnel as a "bundled sociotechnical package with strong institutional momentum," and Richard Hallion delivers a masterful treatise on how the NACA and

its successor pushed research frontiers sequentially into the transonic, supersonic, and hypersonic realms.

A quartet of scholarly heavyweights delves into NASA history from the perspective of human spaceflight and the life sciences. John Logsdon ponders why NASA support for human spaceflight remains controversial after fifty years, and Stephen Johnson studies how NASA's use or abuse of systems engineering and project management led to successes and failures. Michael Neufeld substantiates the strong influence of the "Von Braun Paradigm" on NASA's long-term planning for human spaceflight, while Maura Phillips Mackowski lauds NASA's mighty contribution to the life sciences.

Fully one-third of the authors explicate aspects of NASA's role in advancing space and Earth sciences. In the former arena, Laurence Bergreen discusses the enduring fascination with Mars. David DeVorkin examines how the Space Age changed astronomy as a discipline, and Andrew Butrica ponders the synergistic relationship of deep space navigation, planetary science, and astronomy during three broad, overlapping eras. While Joseph Tatarewicz reviews NASA's exploration of the inner solar system, Michael Meltzer focuses on the outer solar system. Following chapters by Edward Goldstein and James Fleming on NASA's advancement of Earth science.

Beyond the wealth of historical information about NASA's first fifty years and some educated speculation about its future, these authors and their editor have given readers a glimpse into the extensive, first-rate body of literature produced by other Space Age scholars. Practically every chapter in *NASA's First 50 Years* displays a wealth of footnotes directing diligent readers to dozens, even hundreds, of excellent books and articles containing more about NASA's rich history. Anyone still doubting the value of this hefty volume should access it, free of charge, on the internet.

Dr. Rick W. Sturdevant, Deputy Director of History, HQ Air Force Space Command.



Hell to Pay: Operation DOWNFALL and the Invasion of Japan, 1945-1947. By D. M. Giangreco. Annapolis, Md.: Naval Institute Press, 2009. Maps. Tables. Photographs. Notes. Appendices. Index. Pp. xxiii, 363. \$36.95. ISBN: 1-59114-316-1

This book is an important addition to World War II history. An appropriate subtitle would be, "Why President Truman

Decided to Drop Atomic Bombs on Japan." It attempts to make clear that Truman, after intensive and agonizing review of alternates, decided this was the most rational way to end the war rapidly and with minimum loss of both American and Japanese lives.

Giangreco states that "this book will allow Americans to get a glimpse of what these men would have confronted in Operation DOWNFALL." He researched important elements of this book for fifteen years, filling it with details from many archives and other sources. It addresses the controversial subject of estimated casualties if DOWNFALL had been carried out. It covers both U.S. invasion plans and Japanese defensive strategy and plans. Giangreco's objective is to justify use of the two atomic bombs with a comprehensive compilation of quantitative historical data. He achieves this.

The seventeen chapters open with Truman on his way home from the epic Potsdam conference, having already authorized dropping the bombs. Giangreco examines the war and Army casualties to date. He next looks at redeployment of Japanese forces to deal with the expected invasion, followed by a chapter on the planned buildup of U.S. forces to execute the invasion.

The book then focuses on the plans for DOWNFALL's two phases: OLYMPIC, the invasion of southern Kyushu by the U.S. Sixth Army (ten Army and three Marine divisions), and CORONET, the invasion of the main island of Honshu in the area of Tokyo by the First and Eighth Armies (twenty-five Army plus three Marine divisions).

At this point, Giangreco goes back to June 18, 1945, when Truman conducted his most important meeting on the planned invasion. After an intense review of all pertinent data, he approved proceeding with the buildup for OLYMPIC. The atomic bomb had yet to be tested. He then presents detailed aspects of the planned invasion and Japanese plans and actions to defeat it.

In the decades-long debate over whether Truman's decision to drop the bombs was justified or not, one fact remains indisputable: two atomic bombs resulted in the immediate end of the horrendous human tragedy of World War II. Giangreco's book convincingly supports the conclusion that Truman's decision was justified.

Most World War II histories do not cover the enormous size, complexity, and probable casualties of the planned invasion. This book does and includes many little-known specifics. At Truman's request, former President Hoover made an independent assessment of probable casual-

ties: five hundred thousand to one million. It looks at the additional people who would be drafted into the Army throughout 1945, and possibly into 1946. The troops who would be moved from Europe to the Pacific. The Japanese troops who would defend and die for the mother country. The U.S. troops who would be killed and wounded in the invasion and a long series of battles in Japan. It is about General Marshall, who had lived with the reality of casualties for years and wanted the war ended at the earliest possible time. It is about Secretary of War Stimson, who agreed with George Marshall, but gave more agonizing thought to the implications of using the atomic bombs against Japan than anyone else. Finally, it's very much about Harry Truman, who had to make the decision: invade and fight until unconditional surrender was achieved or drop atomic bombs, hoping to achieve unconditional surrender without invading.

Despite Giangreco's stated objective, this book is definitely not written for the general reader. It is more a reference book full of data than an integrated history. It assumes a working knowledge of the last year of the war and is loaded with specialized military detail. Further, the book includes several lengthy distractions from its objective. For example, there is a long description of the written debate between Generals Marshall and MacArthur as to selection of corps and division commanders for the planned invasion. Not relevant, but a good display of MacArthur's ego and arrogance. Giangreco also includes two appendices that occupy sixty-five pages: *U.S. Sixth Army G-2 Estimate of Enemy Situation on Kyushu, August 1, 1945*; and *G-2 Analysis of Japanese Plans for the Defense of Kyushu, December 31, 1945* (derived from Japanese sources after the surrender).

I found this book difficult to review. I bought it thinking it was the missing masterpiece on this subject, but I don't think it is. However, for those wanting a lot of detail about what might have been and why Truman made the decisions he did, it is worth wading through.

Sherman N. Mullin, retired President, Lockheed Skunk Works.



Last Days of the Luftwaffe: German Luftwaffe Combat Units, 1944-1945. By Manfred Griehl. Barnsley, South Yorkshire, U.K.: Frontline Books, 2009. Photographs. Illustrations. Index. Pp. ix, 262. \$50.00 ISBN: 978-1-84832-511-1

In this book, Manfred Griehl chronicles the collapse of the *Luftwaffe* in the

last year of World War II. His primary focus is not on *Luftwaffe* units, as the title claims, but on the aircraft, weapons, logistical, and organizational failures that led to the rapid collapse of what was once a superior air force. An expert on the *Luftwaffe*, Griehl has written *Luftwaffe X-Planes: German Experimental Aircraft of World War II* and *Luftwaffe over America: The Secret Plans to Bomb the United States in World War II*. Recently declassified documents contributed to his research.

This is a technical history and is written accordingly. Those looking for an easy read won't find it here, but readers looking for information on the different models of *Luftwaffe* aircraft and weapons used or under development in the last year of World War II will find the book very useful. It also reveals why the Germans could not turn the tide of the air war despite having advanced aircraft and weapons such as the Me 262 jet, remote-controlled bombs, remote-controlled air-to-air rockets, and similar technologies available in late 1944 and early 1945. In the end, poor decisions by senior Nazi leaders, lack of raw materials and fuel caused by Allied bombing raids, internal fights between the SS and the *Luftwaffe* over control of aircraft and weapons production, inadequate pilot training, the rapid advance of enemy troops who would overrun factories producing critical components for advanced weapons, and an ever-smaller area from which the *Luftwaffe* could operate (which allowed Allied bombers and fighters to concentrate their force against the remaining *Luftwaffe* units) prevented any "miracle" weapon from becoming a game changer.

Griehl points out that while senior Nazi leaders had delusions that many advanced aircraft and weapons could be produced in a short time and in large numbers, most generals, designers, and manufacturers knew otherwise. They continued to allow development of projects they knew could never reach production because it kept valuable engineers and craftsman from being shipped to the front. They also felt that World War II would end as World War I had ended: Germany and the *Luftwaffe* would suffer for many years, but then all would be right again. Hitler and his henchmen would pay for prosecuting the war—not *Luftwaffe* generals and the men who made their aircraft and weapons. If Germany and the *Luftwaffe* were to rise from the ashes, then she would need these men. As Germany collapsed, the Allies captured early models and plans for these aircraft, rockets, and weapons and later take advantage of them.

Unfortunately, Griehl chose not to include footnotes. This is a serious fault because, in many cases, he should have followed up with additional information on a comment. Inclusion of informational footnotes would have added much value to the book.

Griehl well illustrated his book—practically every page has a useful photograph from either his own collection or from a government archive. An informational read, it makes a good addition to the library of World War II aviation and aerial weapon enthusiasts. The rare photographs more than justify the book's price.

David F. Crosby, former history writer for the U.S. Air Force and doctrine developer for the U.S. Army Air Defense Artillery School.



The German Invasion of Norway, April 1940. By Geirr H. Haarr. Annapolis, Md.: Naval Institute Press, 2006. Maps. Photographs. Notes. Appendices. Glossary. Index. Pp. 474. \$49.95. ISBN: 1-59114-310-9

It is great to see the story of this early Second World War operation told from the opposite side of the hill. The Allied version has been well covered, but this book rounds out the tale. The cover states that Operation Weserübung was shrouded in mystery. This is a bit hyperbolic, but it also has an element of truth, as much about the operation has not been revealed before.

The author is a Norwegian environmentalist living in Stavanger who provides us with a different perspective. Geirr Haarr has diligently explored Norwegian, German, and English sources and archives and has woven his findings into a fascinating saga.

Weserübung was the first airborne and first amphibious operation of the European war and occupied the center of the World War II stage until displaced later in 1940 by events on the Western Front. However, Norway did remain an area of interest, as Churchill was obsessed by a desire to return there to redeem his second big failure as First Sea Lord (after Gallipoli). The Germans were aware of this possibility, and the Allied deception plan for Overlord three years later included it.

The account, however, starts with British violation of Norway's neutrality during the Altmark incident. The first part of the book covers the Allied plans for their invasion of Norway (and possibly Sweden). The story continues with the invasion by

both paratroops and landing craft on April 9, and subsequent land and naval engagements which finally ended with the Allied evacuation of Narvik in early June. In the end, one has to admire the audacity of the modest-sized *Kriegsmarine* in attacking the mighty Royal Navy, although it resulted in the nearly complete loss of effectiveness of the German surface fleet.

The amount of detail about conditions and events in Norway may be more than many non-Norwegians want to hear. In fact, the really important points of the campaign tend to be obscured because of the overabundance of details, much of which is not really needed for an understanding of the overall campaign. There are a number of useful gems of knowledge not generally known that are buried among the detail in the book. What one can take away from the story is that it is a pretty close contest between Great Britain and Germany as to which side bears the burden of having been the actual aggressor.

As a soldier, I feel the ground war warranted more attention in the book, although the naval operations deserve—and receive—the coverage they got. I would have appreciated more maps to fully understand the fighting on shore. However, this lack is partially offset by the excellent pictorial display. While *The Invasion of Norway* is a very well researched and written work, I am unsure of its wide appeal.

Brig. Gen. Curtis H. O'Sullivan, NG (Ret.), Salida, California.



A Century of Carrier Aviation: The Evolution of Ships and Shipborne Aircraft. By David Hobbs. Annapolis Md.: Naval Institute Press, 2009. Diagrams. Illustrations. Photographs. Notes. Glossary. Bibliography. Index. Pp. xi, 304. \$69.95 ISBN: 978-1-59114-023-8

In this book, David Hobbs tells the history of naval air power from the beginning of flying at sea until the present. He concentrates on advances in technology, techniques, tactics, and inventions that advanced naval aviation—most of them British.

Hobbs flew with the Royal Navy for thirty-three years, amassing 2,300 hours of flight time and more than 800 carrier landings. He developed STOVL operating techniques for the *Invincible* class of carriers, introduced the Deck Approach Projector Sight—a vital aid in landing Sea Harriers aboard carriers at night and in bad weather, and worked closely with the U.S. Navy in AV-8B sea trials. After

retirement, he was the curator for the Fleet Arm Museum, has lectured worldwide, and wrote six books on naval aviation.

The book's first four chapters cover the early history of shipborne aviation including the development of take-off decks and early catapults. Hobbs then devotes the next three chapters to the early carriers that proved that carriers had a place in sea warfare. *HMS Furious*, *HMS Argus*, and *USS Langley* each get a chapter. While the British excelled at inventing new carrier technology, the U.S. Navy excelled at expanding and enlarging these concepts into something more useful and robust. In following chapters, Hobbs shows improvements in carriers and how different navies developed different techniques. While the Royal Navy and U.S. Navy have the most coverage, Hobbs writes about French and Japanese carrier operations as well.

Naval aviation did not just launch and recover from carriers, and Hobbs spends a considerable amount of space detailing naval flight from battleships and cruisers via catapult launch and crane recovery. He also covers aircraft launched from submarines.

Hobbs notes throughout the book that British naval aircraft were not as robust as U.S. aircraft and often had higher crash rates aboard Royal Navy carriers. The U.S. Navy also designed aircraft, decks, hangers, refueling, rearming, and tug equipment around the concept of maximizing aircraft parked on deck to facilitate launch of large strike groups. But, he notes that the British usually conceived and fielded new concepts: the steam catapult, STOVL Sea Harrier, and ski-jump deck are several examples.

Helicopters play an important role aboard carriers, and Hobbs devotes a chapter to their history at sea beginning with the World War II-era R-4. While it did see some service in convoy escort duty, it was not until the Korean War that helicopters made their name flying plane-guard and search-and-rescue missions. As early as 1946, helicopters were regularly operating from ships as small as frigates, and Hobbs covers these helicopter operations in depth as well.

Deck design plays an important role in carrier operations, and Hobbs covers straight decks, angled decks, and even an innovative rubber deck the British took all the way to the testing stage. It consisted of rubber hoses filled with air and covered with a heavy rubber drape. The jets that used the deck had no undercarriages, which allowed for higher performance. It worked fine except that it took too long to clear an aircraft from the deck; the idea was scrapped.

This is a coffee-table sized book: its price reflects its size and large number of pictures. But historians, military professionals, and naval enthusiasts will find it informative, entertaining, and worth the price.

David F Crosby, former history writer for the U.S. Air Force and doctrine developer for the U.S. Army Air Defense Artillery School.



King of Air Fighters: The Biography of Major "Mick" Mannock, VC, DSO, MC. By Squadron-Leader Ira Jones, DSO, MC, DFC, MM. Philadelphia and Newbury U.K.: Casemate, 2009. Photographs. Notes. Pp. 340. \$29.95 ISBN: 978-1-932033-99-1.

Casemate has recently reprinted several classic biographies including "Taffy" Jones' 1934 treatment of British World War I ace Edward "Mick" Mannock, who, according to some sources, downed seventy-three German aircraft before his death from ground fire in July 1918. Others argue that combat records indicate Mannock totaled sixty-one kills. Regardless, he was one of the war's most aggressive and tactically sound fighter pilots. Jones, who served with Mannock in No. 74 Squadron, based this work on interviews, letters, and journal entries. From these conversations, documents and his own personal observations, he attempted to portray Mannock's complex personality and explain his almost pathological hatred of the Germans.

Mannock survived an impoverished childhood after his father abandoned the family. He started working at age twelve. By age twenty-seven in 1914, he moved to Constantinople (Istanbul), Turkey, where a British telephone company hired him. After the outbreak of World War I in August, Turkey eventually allied itself with Germany. On November 5, Britain declared war on Turkey, which shortly thereafter imprisoned British nationals. Jones suggests that during captivity Mannock blamed the Germans for disrupting his promising career and forcing Britain to fight. In April 1915, Turkish officials agreed to repatriate Mannock because of age, poor health, and limited vision in his left eye. Back in England, Mannock eventually made his way to the Royal Flying Corps (RFC). Somehow he deceived medical examiners and passed his eye exam.

Almost twenty-nine, Mannock completed flight training by the end of March 1917 and joined No. 40 Squadron with its Nieuport 17s. Mannock's superiors, according to Jones, initially considered him timid. Jones argues, however, that Mannock was

a thinker and on his way to becoming the greatest aerial tactician of the war. The squadron transitioned to the S.E.5a in November. In January 1918, Mannock returned to England and eventually became an instructor for No. 74 Squadron as it prepared for combat. He stressed tactics with his motto, "always above, seldom on the same level, never underneath." Once in France, he taught his young pilots the techniques of ambush and decoy. One of his most aggressive ploys was to position his flight between the German aircraft and their home fields so they were unable to avoid combat. With No. 74 Squadron from April to June, Mannock achieved legendary status as a flight leader and marksman. During his final month of combat, he commanded No. 85 Squadron. He died after following one of his prey to within easy range of ground fire.

Jones offers some insight into World War I air-to-air combat (e.g., the "pop-up" attacks on observation balloons). However, he repeatedly admonishes the Germans for their conservative approach and insists the British pilots were superior because the leadership of Mannock enabled them to fly with greater purpose, wearing down the enemy's morale. Ultimately, Jones dismisses the accomplishments of the war's leading ace, Germany's Manfred von Richthofen, to strengthen his argument that his hero was king of the air fighters.

Lt. Col. Steve Ellis, USAFR (Ret.); docent, The Museum of Flight, Seattle.



Eagles of the Third Reich: Men of the Luftwaffe in World War II. By Samuel W. Mitcham, Jr. Mechanicsburg Pa.: Stackpole Books, 2007. Maps. Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. vii, 346. \$19.95 Paperback ISBN: 0-8117-3405-9 (originally published as *Men of the Luftwaffe* in 1988)

Why did Nazi Germany have such quick successes in taking over Europe, only to fail later in the Soviet Union and then lose all the territory they had gained? Prolific author Samuel Mitcham answers this question by analyzing the leaders of the Luftwaffe.

Mitcham's book focuses on these leaders and discusses their backgrounds, battle experiences, knowledge, personal working relationships, and personal assets and liabilities. He details the relationships and communications that worked in the Luftwaffe to help create the success of the German Blitzkrieg. Unfortunately, they also doomed Germany's war efforts to

eventual failure.

The book tells the story of the Luftwaffe in chronological order, from the days of the secret air force after World War I, through the testing of new tactics in Spain, through Germany's Blitzkrieg in Europe, and ending with the eventual failures in Russia and overall defeat. As he relates the story, Mitcham interweaves historical events with the characteristics of the Luftwaffe leaders.

As the history unfolds, readers can see that the German focus is on tactical aircraft to quickly win battles and rapidly take territory. However, Germany's success in Blitzkrieg operations contained the seeds of their defeat. While the Luftwaffe's leaders focused on the weapons and tactics that would lead to lightning-fast military victories over their small-to-medium sized neighboring nations, they did not develop the long-range bombers and the tactics required for a long strategic war against a large nation such as the Soviet Union.

While Nazi Germany enjoyed many military victories early in the war, their military hierarchy could be, and often was, illogical, inefficient, and corrupt. For many years, Germany had consistently poor intelligence on their enemies. Hitler was surrounded by "yes men" who would always agree with him and were afraid to tell him the truth. Many leaders trusted Hitler blindly. Although some Luftwaffe leaders made incredible errors, they were often retained if they were close to Hitler. As Germany started to lose the war, their leaders did not see or would not acknowledge their defeats or their failed strategies.

It takes people to make war. People decide when, where, and how to attack or defend. People plan for offensive attacks or for the defense of their nation. To understand the history of a war, one needs to understand the personalities of the men who made the decisions. *Eagles of the Third Reich* does a good job of discussing these men and their relationships. I recommend this book, but make sure you don't already have *Men of the Luftwaffe* in your library, as this is merely a reprint.

Maj. Herman Reinholt, USAF(Ret.), Athens, New York.



In a Time of War: The Proud and Perilous Journey of West Point's Class of 2002. By Bill Murphy Jr. New York: Henry Holt and Company, 2008. Illustrations. Maps. Notes. \$20.00 ISBN: 080508679X

Bill Murphy's book is a look at the West Point Class of 2002. They entered

West Point as freshman during a time of peace; but, soon after the start of their senior year, their military careers, and lives, were transformed by the events of September 11, 2001. During their commencement the following June, President George W. Bush spoke and declared that America would "take the battle to the enemy," with many of the graduating seniors realizing what that really meant. *In A Time of War* examines these men's and women's experiences firsthand—from the ups and downs of leading soldiers in the War on Terror from front-row seats in Southwest Asia to back home in the States dealing with loved ones.

Murphy focuses on a number of individuals from the class such as Todd Bryant, Tim Moshier, Will Tucker, and Drew Sloan. He follows these individuals briefly through their Army training after West Point and into the training schools of the various branches—e.g., infantry, armor, cavalry—and then to their first duty assignments and, ultimately, deployments to Southwest Asia. Most touching was the story of California-born Lt Bryant who was from a military family and who saw military service as a family tradition. While serving with Task Force 1-34 Armor, he was killed near Fallujah, Iraq, while conducting his primary mission of driving up and down the highways until engaged by anti-coalition militia. Married just prior to his deployment, Bryant sent extremely detailed letters of his experiences to his wife Jen back in Kansas. A year after his death, these letters were published in the *New York Times* and *New York Times Magazine* during a study on his unit's deployment. What are even more touching are letters sent back and forth between the newly married couple as they dealt with his deployment. Also covered are the pain and suffering his new bride went through during the first year after his death along with her attempted suicides. However, the Bryant's story is just one of many within Murphy's work.

Murphy's book is an excellent work that will touch even the most combat-hardened veteran. His in-depth writing style brings readers into the lives of the men and women within the pages. You will feel as if you are there with them through the ups and downs with their struggles in the War on Terror. *In A Time of War* is a must-read for anyone wondering why men and women continue to deploy and redeploy and the thoughts of young officers as they head off to war. The story reaffirms that America's freedoms come from the ultimate sacrifice of those who serve our great country.

R. Ray Ortensie, Staff Curator, HQ Air Force Materiel Command.



The Science of War: Defense Budgeting, Military Technology, Logistics, and Combat Outcomes. By Michael E. O'Hanlon. Princeton NJ: Princeton University Press, 2009. Appendix. Index. Pp. 266. \$35.00 ISBN: 0-691-13702-5

This thoughtful, timely, and detailed book is not meant as a light read for a casual observer of national security. Rather, it is designed to offer insights into the means and methodology in which U.S. military force is budgeted for and organized. Michael O'Hanlon is well equipped to write on this topic. He is a senior fellow at Brookings Institution and has been a prolific writer across a wide range of national security issues. He clearly states in the introduction that there is a "science of war – that is, a structured, analytical, often quantitative, often technical side for preparing for combat." O'Hanlon then delves into and describes that subject matter in sufficient detail to educate even an informed reader to an even finer level of appreciation of the topics discussed. It is basically a textbook—a reference document to support college-level discussions on the nuances of military force sizing and budgeting and the implications of technology insertion into America's military arsenal.

Through O'Hanlon's efforts, the reader is better able to grapple with the decisions that are routinely made at the Pentagon concerning the issues of weapons-system procurement and military-strategy development. Also, embedded in the book is a deep appreciation for force enablers such as logistics, sustainment, and space-based intelligence gathering systems. O'Hanlon is able to inform the debate that defense budget analysis remains an imprecise practice. He clearly portrays the military budget analysis process as a "decision making" process that is filled with conflicting motivations for defense spending. Also clearly articulated is the fact that America is the largest single spender on military equipment in the world.

While O'Hanlon alludes to military works such as Clausewitz's *On War* and Sun Tzu's *The Art of War*, this work is focused on a different set of military issues. His theme is to offer the reader a new perspective on how the military establishment may choose to arm its future forces for battle. O'Hanlon states that it is Defense Department civilians who determine defense strategy and military general officers who need to determine the "logistics" in which that strategy may succeed. He writes in sufficient detail to adequately support his assertions concerning the decisions made during the

defense budget process. He clearly appreciates the evolution of our national military strategy and the weapons that enabled that strategy, noting that the 1930s and 1940s brought the blitzkrieg, carrier war, amphibious assault, and modern radars; while the 1950s saw the coming of the age of the helicopters and jet aircraft; the 1960s witnessed the use of satellites and ballistics missiles; the 1970's brought huge leaps in cruise missile, stealth, and night-vision technologies; the 1980's and 1990s saw the use of precision strike weapons and rapid battlefield communications; while the 2000s focused on weaponizing unmanned aerial vehicles and other robotic technologies. O'Hanlon clearly reflects on these changes in the military arsenal and presents insights on how and why those acquisition decisions were made.

The Science of War is a book on a decision-making process that attempts to make budget and force-sizing decisions backed by rational, analytical, and quantifiable means. However, O'Hanlon points out that this dependence on number crunching may not be totally successful if it is the only means used for deciding force structure issues. The ultimate value of the work, I believe, is that O'Hanlon explains in sufficient detail why quantification can only assist the decision maker and not provide ultimate answers to defense-spending questions.

This is not a casual read. It will make the reader think about these issues and ponder the ramifications of defense spending. The book requires time and effort in order to fully digest the information. Even then, many readers may want to delve into its suggested readings for further study on this topic.

Col. Joe McCue, USAF (Ret.), Leesburg Virginia.



A Bearskin's Crimea: Colonel Henry Percy VC & His Brother Officers. By Algernon Percy. UK: Leo Cooper, 2007 [an imprint of Pen & Sword]. Maps. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xxix, 238 £12.99 paperback ISBN: 1-844156-43-6

The author is a member of the well-known Percy family and has drawn on previously untapped primary source material. We are lucky that participants in such wars wrote lengthy and informed letters and that the recipients often saved them. The author has also drawn on other letters of the period, official reports, and news accounts. This was the first time that journalists gave good coverage of a major conflict and did so in a

knowledgeable fashion. The principal character, the Honorable Henry Hugh Manvers Percy, was no ordinary commentator. In addition to valor that won him the Victoria Cross, he was an exceptional leader who ended as a full general.

Crimea fell between and combined medieval and modern forms of warfare. There was close combat with sword, pistol, and bayonet, and valiant but vain charges of Light and Heavy Brigades. But it also marked the first significant use of the railroad in battle and the electric telegraph to keep in touch with the home headquarters. Its trench and attrition warfare gave a preview to the Great War of 1914-18. Having been wounded twice, Percy had close experience with the primitive medical system of the era. His comments about Florence Nightingale suggest that not all thought her the Angel of the Lamp.

The U.S. Army sent three observers to the Crimea (including Bvt Capt George McClellan), and it is probable that lessons observed and reported were later applied in our Civil War—though the use of the telegraph and railroad can't be attributed entirely to that. The more prosaic improvement in medical care may have had a greater impact.

Something else that helped prepare for the Great War is that Britain's centuries-long foe, France, became a principal ally. Both gained experience in coalition warfare. Turkey was an ally this time, as was Sardinia—a kingdom that incorporated not only the island of that name but also Piedmont, Savoy, and Nice. In 1855, after being promoted to Bvt Col, Percy was given command of the British Italian Legion with the local grade of brigadier. This was not his forte, as he was a straightforward man of action. Having myself gone through the birth pangs of four outfits of comparable size (twice as commander and twice as chief of staff), I know this imposes non-standard demands.

As the senior officer receiving one, Percy was in charge of the investiture of the first Victoria Crosses. As might be expected of tough fighting men, some had to be propped up or prevented from kissing the Queen—having celebrated in advance. Our establishment of the Medal of Honor in 1862, copied the VC, less the strict requirements. The survivors of the Light Brigade were turned down for the VC, while the entire Maine Regiment was given the MOH when they briefly extended their enlistment to protect Washington against a particular threat.

There is a fair amount about the then-standard system of purchasing commissions, which accounts, in part, for the reappearance of familiar names such as Amherst, Burgoyne, and Pakenham. It

was a close-knit society, and many mentioned were connected in some way.

The four maps (of increasing scale) of the area of operations are excellent. The considerable number of pictures give both an idea of the terrain involved and a cross-section of the individuals who served there.

The book makes no pretense of providing lessons for current grand strategy, but is well worth reading by anyone with an interest in military history and soldiering.

Brig. Gen. Curtis H. O'Sullivan, NG (Ret.), Salida, California.



The United States and the Second World War: New Perspectives on Diplomacy, War, and the Home Front

By G. Kurt Piehler and Sidney Pash, eds. New York: Fordham University Press, 2010. Notes. Index. Pp. xii, 402. \$46.00 ISBN: 978-0-8232-3120-1

This book is dedicated to John Whiteclay Chambers II, longtime professor of history at Rutgers University, peace advocate, and dedicated student of war and the military. Chambers is a pacifist who says he understands the military mind, something of a unique combination. While a collection of essays by former students and colleagues of Chambers might lead one to expect a pacifist bent, that isn't the case. The essays cover a broad range of topics; and, though the book isn't as comprehensive as the title suggests, the essays are interesting both for their perspective and the light they shed on some less familiar topics.

The selected essays run the gamut from discussions naval gunfire support during amphibious operations, to the role of the Coast Guard flotilla on D-day, to domestic issues such as wayward wives and pacifism on the home front. My one major criticism concerns the chapter on the U.S. approach to containing Japanese expansionism prior to World War II. The author is not a conspiracy theorist who contends Roosevelt and his advisors engineered Pearl Harbor to get the U.S. into the war. Instead, he makes a solid argument that opinions and perceptions among American leaders and diplomats led them to favor an approach that closed any real diplomatic options before they were ever seriously considered. To me, his argument fails in contending that Japanese offers of withdrawal from forward areas and willingness to accommodate American interests at their own expense were genuine. He provides no doc-

umentation to support this statement and ignores the fact that during the last six months of negotiations—when he says the Japanese still genuinely wanted peace—the Japanese Navy was aggressively training for the Pearl Harbor strike.

This sort of thing was not characteristic of other chapters. My favorite was on General Patton and the myth of the war winning Sherman tank. I never thought the Sherman measured up well to its German adversaries but had no idea Patton took a hand in squelching criticism back home to maintain the morale of his tank crews. The most interesting discussion was on American pacifism. The author presents the thought provoking contention these folks should be considered part of the Greatest Generation as popularized by Tom Brokaw and others. I would not have considered this idea before, and the chapter frequently read more like a polemic than history. But the topic and perspective are examples of what makes this book interesting.

The only real unifying theme is the writers' connections to Chambers, but the editors make no effort to tie these disparate topics together. Chapters are left to stand on their own; based on the scholarship and writing, they do this quite well. Any of these topics could warrant an entire book of its own. Several of the chapters are either excerpts from existing works or preliminary efforts of future books. All chapters are well documented with often extensive endnotes. I was not left with any lingering questions concerning the author's perspective or why a particular viewpoint was presented. There is a short biographical sketch of each contributor at the end so the reader gets some appreciation for backgrounds and areas of expertise.

This is not a book for those looking for a concise discussion of the major issues and debates of World War II. It is a book for those looking for thought provoking discussions on some of the less frequently discussed aspects of that conflict.

Lt. Col. Golda Eldridge, USAF(Ret.), EdD, Roanoke, Texas.



The Sky My Kingdom: Memoirs of the Famous German World War II Test Pilot

By Hanna Reitsch. Translated by Lawrence Wilson. Philadelphia: Case - mate, 2009. Photographs. Pp 265. \$29.95 ISBN: 978-1-85367-802-8

The Sky My Kingdom is the new translation of the memoirs of World War II German pioneering aviatrix and test pilot Hanna Reitsch. The book focuses on her

life and flying exploits up to the end of the war. The daughter of an ophthalmologist, Hanna Reitsch originally set out to be a doctor, only to leave after one year to pursue a passion for flying. What unfolds is Reitsch's humbly described maturation from a novice glider student to an experienced test pilot for the Third Reich.

Along the way, Reitsch set countless flying records and accomplished numerous firsts. Among her accomplishments: she flew the first controllable helicopter, the Focke-Achgelis Fa 61, indoors during the Berlin Motor Show; tested the Junkers Ju-87 and Ju-88 bombers; and tested *Luftwaffe* jets such as the Messerschmitt Me 163. Her considerable flying skills, coupled with her photogenic nature, helped propel her into the spotlight as a willing propaganda tool for Germany. This is evident by the numerous propaganda photos included in the photo section.

Reitsch focused her autobiography on her pre-war experiences which cover well over half the book. To tell her own story, she used personalized "there I was" descriptions of her flying experiences. Her stories are both detailed and fascinating. American readers may feel a bit disadvantaged by a lack of knowledge of German geography and thus miss the significance of some of the flight details. Regardless of that point, the stories are engrossing as the reader is brought into the cockpit during Reitsch's most harrowing flights, many of which often nearly resulted in her death. In thrilling detail, Reitsch recounts how she flew into Berlin in the final days before the Russian Army completely overran the city. After spending three days in the Chancellery bunker with Hitler, she flew the last German airplane out of Berlin.

Originally published in 1951—just six years after the end of the war—Reitsch's pro-Nazi views are muted. Her well documented adoration of Adolf Hitler received very little attention, though the reader can surmise such by her fond description of her receiving the Iron Cross from *Der Führer*. To counter this lack of detail, the publisher listed a Reitsch biography readers can consult to gain a fuller understand of this fascinating woman. Also, as an addition to earlier editions, this one includes a 1979 postscript from the German edition: *Fliegen-mein Leben*.

In conclusion, *The Sky My Kingdom* is a fascinating tale of a pioneering glider pilot and aviatrix. For readers looking for a book about "Hitler's Favorite Test Pilot" (caption on the back dust cover), the discussions in this area are very light and don't support the hype. While the claim may be true, Reitsch doesn't support it in her book. What remains is an interesting story of flying in prewar Germany and the

thrilling stories of a courageous and skilled test pilot. While *The Sky My Kingdom* should not be the only book you read about Hanna Reitsch, it is definitely an enjoyable read.

Lt. Col. Dan Simonsen, USAF (Ret.), Ruston, Louisiana.



Aircraft Markings of the Strategic Air Command 1946-1953. By Rick Rodrigues. Jefferson NC: McFarland & Co., 2006. Diagrams. Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. ix, 269. \$85.00 ISBN: 0-7864-2496-6

Aircraft Markings is Rick Rodrigues' examination of the history of aircraft markings and marking policy in the Strategic Air Command (SAC) from 1946 to 1953—the early years of the command's history (SAC was formed on 26 March 1946). A secretive organization, SAC rarely allowed its early aircraft to be photographed. When they did, they often cropped out unit markings and other identifying markings before releasing the photographs for publication.

SAC's records and documentation remain classified, in many cases, or were deemed unworthy of archiving and destroyed before release to the public. As a result, compiling a book on markings of early SAC aircraft proved difficult. Rodrigues spent 15 years researching and writing the book. A retired U.S. Army lieutenant colonel, he sought to write a reference book that would be of use to the many people who need accurate marking information, such as modelers, historians, aircraft restorers, museum personnel, and artists. In that respect, the book is a notable addition to the historical literature documenting aviation history.

The book covers the history of Strategic Air Command during its formative years, basic definitions of USAF markings, the development of SAC marking policy, bombardment and reconnaissance groups and wings, SAC fighter wings, and separate squadrons. Pictures well support the text with one exception. All the photographs are black and white and the colors are described in the text. While this is understandable with photographs—most pictures in the period were black and white—the drawings of tail markings are also black and white. Color drawings would improve the book—and with a purchase price of \$85 should have been included.

An excellent 14-page appendix section includes a SAC Wing Insignia and Squadron Marking Reference Table and

the SAC Order of Battle with Tail Markings. The SAC Wing Insignia and Squadron Marking Reference Table lists the group/wing, squadron ID colors, squadron insignia, wing insignia, and whether the information has been verified. The SAC Order of Battle with Tail Markings comprises tail marking drawings grouped by year.

Rodrigues conducted most of his research using official USAF unit histories housed at the Air Force Historical Research Agency at Maxwell AFB, Alabama, and SAC organizational records stored at the National Personnel Records Center in Saint Louis, Missouri. Excellent chapter notes and a well-done bibliography help readers conduct their own research if needed. In addition, all good reference books need a useable index. This book has one.

Readers who need early SAC aircraft marking information for their hobbies and jobs will find this book of great value; it is now the standard for its subject matter. Those who just enjoy reading aviation history will also find it a good read but will find its price prohibitive.

David F. Crosby, former USAF history writer and doctrine developer for the Army Air Defense Artillery School.



Project Seven Alpha. By Leland Shanle. Barnsley, South Yorkshire, UK: Pen & Sword, 2008. Photographs. Pp. 244. \$39.99 ISBN: 978-1-8441-5826-3

Project Seven Alpha is a work of fiction that is as informative as the best historical novel. The book enchants the reader with the joys, perils, and flying adventures from World War I, World War II, and a short taste of commercial flying.

Leland Shanle was a naval aviator and member of the Society of Experimental Test Pilots. He retired from the Navy and joined American Airlines in 1999. His interest in writing stems from his work as an aviation and military technical advisor on five major motion pictures (including *Pearl Harbor* and *Behind Enemy Lines*). Through these experiences, Shanle is able to successfully convey the sense of flying propeller-driven, cargo-hauling aircraft over some of the most hazardous flying terrain on the planet—the Himalaya Mountains—during the early days of World War II. While this is his first book, it clearly demonstrates that Shanle is a knowledgeable and skillful writer, able to carry the reader into the fray and fabric of war fighting.

The story begins as a commercial air-

line pilot considers the expanse of his flying career as he sits in the cockpit during his last flight as an American Airlines D.C.-10 pilot. He reminisces about an earlier time in which a select few daring and highly capable pilots flew American Airlines D.C.-3s over the "Hump" to supply Chinese fighters in their efforts to defend their country from the attacking Japanese.

The novel enumerates the pseudo experiences of several fictitious individuals in support of the operation labeled "Project Seven Alpha," a classified Department of War project to quickly use commercial American Airlines pilots and planes to resupply our Chinese ally. These men and their aircraft were given scant instruction or preparation time to fly into the hostile airspace of Japanese-controlled South East Asia. These men volunteered to establish a military squadron and quickly deploy to Burma and conducted their trans-Pacific sortie just ahead of the invading Japanese fleet. Their flying incidents made for a good read, as the reader can almost hear the bullets fly and feel the weather deteriorate.

When established at their wartime deployment base, the men and machines were portrayed to live the life of danger. Through their exploits, China was re-supplied during this short but highly vulnerable period of time while calamities were faced by our British ally with their loss of Singapore. Through the daring exploits of these ex-commercial aviators and maintenance personnel, the United States was able to assist the allies halt the advances of the seemingly unstoppable Japanese forces as they pressed to link their South East Asia holdings through India and then join their Nazi partner in the Middle East.

At the end of the novel, we again find our American Airlines pilot closing his commercial log book in the cockpit of the D.C.-10 after his last flight. Thus, with this man's retirement comes an end to an era of flying that shall not be repeated. Gone are the days of flying across the Pacific Ocean using dead reckoning navigation without GPS, INS, or stellar navigation updates. Today, we are fortunate to have new heroes with more technically advanced aircraft. If you are looking for a short fiction work that will capture your propeller-flying interests and allow you want to mix with World War II aviators, then *Project Seven Alpha* will be a rewarding read.

Col. Joe McCue, USAF(Ret.), Leesburg, Virginia.



Avia: A Poem of International Air Combat, 1939-1945. By Nathaniel Tarn.

Exeter: Shearsman Books, 2008. Notes. Appendices. Glossary. Pp. 304. \$25 paperback. ISBN: 978-1-84861-002-6

As an aficionado of flying history as well as literature that pushes the boundaries of words and meaning, I can't recollect a work that morphs aviation and poetry to such a degree as this. Then again, it would be difficult to find a poet uniquely qualified to write such an epic; Tarn, as pilot, anthropologist, editor, critic, language professor, and aviation historian is more than up to the task. Born in Paris with much of his childhood spent in World War II London, he eventually made his way to the U.S. and retired to write in Santa Fe, New Mexico. In *Avia*, his recent masterwork 15 years in the making, Tarn bridges the gaps between the realism and imagination of pilots who pursue both the science and art of their calling. Transitioning fluidly between the technical and poetic aspects of flying, *Avia* can be explored in small or large pieces but to receive its best impact, the poem should be read linearly.

Within a few chapters, it is apparent that Tarn has achieved a truly unique literary feat. First, *Avia* is an epic poem connecting various air battles with enough description and historical accuracy to satisfy both serious and amateur historians. Second, Tarn constructs many literary passages that stand alone as superb poetry—whether his words are meditations on the world as viewed from a pilot's eye or poignant and timeless reflections on violent and exhausting aerial combat, Tarn earns his way both as an artist and as a craftsman who understands fliers and machines. Third, Tarn's threadwork could easily turn disjointed if it wasn't for his method of propelling the story forward via a narrator. To provide a voice, Tarn transforms the historical figure of Charles Lindberg from the media's image of the famed flier to a more introspective observer of intellectual, emotional, spiritual, and philosophical issues. This serves a coherent purpose: to channel the heroic virtues and experiences of people who fly.

The majority of his poetry is not dense or frustrating to decipher. When he ventures deeper into the experience of air combat, as he does in the dual metaphor of a massive chessboard (the air war across the globe) and its pieces (brave combatants), Tarn uses Lindberg in multiple roles such as "flier-philosopher," "flier-technician," "flier-historian," "flier-moralist," and "flier-warrior." Tarn transmits through his poetry that fliers are *bon vivants* at their core—risk takers who live life to the fullest. The passages blend various literary styles that shift frequently. This keeps

the reader less concerned about the mechanics of poetic style and more absorbed in the amazing visuals of the narrator's journey through flight both harnessed and uncontrolled.

Lindberg's narrative is told in a dream-state, with lyrical passages describing a return flight that never was: westbound in the *Spirit of St. Louis*. On a night flight that begins in Paris, crosses the Seine, and coasts out over the Orkneys, Tarn channels Lindberg to voice impressions of points on his flight plan. Over Reykjavik, where he reflects on what is visible to him at altitude and contrasts it with what he knows is below but can't see, Lindberg's character observes "towering geysers, seething lava fields" and "the vast plain Thingvellir where the old parliament was born between volcanic folds." Over Greenland ("Nothing but ice! Thule perhaps, Ultima Thule!"), Tarn via Lindberg looks north to the Pole then devotes two pages of poetic license to explore the origin of primeval man, the age of ice, and human migration patterns.

There are compelling passages that capture the breathtaking nature of flying airplanes: "the sky an atmospheric sea, planet at bottom" and "all is empty, vain, all's vanity, delusion, but not those interminable skies." Tarn's gift to the reader is that he ties such broad sweeps of history and the state of mankind to ordinary minutiae familiar to every aviator such as the mechanics of flying, navigating from charts, the feel of the engine, stick, and rudder. He captures the vividness of gunfire, dropped ordinances, weather in all its variations, atmosphere, space, birds, and natural beauty. With scholarly research woven throughout, he also uses the poem to honor aviation's unique qualities and place in history.

Knowing the extent of his undertaking and taking pains to make sure his poem is not too daunting an experience for a casual reader, Tarn includes appendices full of additional material for those interested in his methodology and intent. Defying categorization, *Avia* is a literary achievement that glorifies flying. It is also a contemplative look on how victorious and humbled man appears before nature and technology in the first century of flight.

Col. Sam Vandiver, USAF, Beale AFB, California.



Ship Killers: A History of the American Torpedo. By Thomas Wilden - berg and Norman Polmar. Annapolis Md.: Naval Institute Press, 2010. Tables.

Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. 268. \$52.95 ISBN: 978-1-59114-688-9

The word "torpedo" first entered the lexicon of naval warfare in 1805 when American engineer and inventor Robert Fulton tested an experimental underwater weapon he named for the Cramp fish (*torpedo electricus*) that kills its prey by electric shock. Although Fulton's "torpedo" was a far cry from the modern self-propelled weapon normally associated with the term, the name stuck and soon came to be synonymous with any underwater explosive device. Wildenberg and Polmar explore the history of this fascinating weapon beginning with primitive and ineffective underwater devices developed during the American Revolution (some thirty years before Fulton's experiments), masterfully combining technical, operational, and logistical details into lively history. They are particularly adept at detailing in layman's terms the various technical advances in torpedo design. Primarily focusing on U.S. Navy use of the torpedo, the book also provides a good general history of the weapon and its development in other countries.

Following the Civil War, the USN lagged significantly behind European navies in deploying self-propelled torpedoes aboard ships. Paltry appropriations meant that by 1891 the Navy possessed not a single torpedo. By comparison, the British had outfitted several of their warships with torpedoes in the 1870s (and had fired them in combat in 1877). In 1889, the Navy produced thirty torpedoes designed by U.S. naval weapons expert Captain John A. Howell. The Howell torpedo was a technological marvel for its time, but production difficulties let the USN to turn to the experienced English torpedo maker Robert Whitehead for an interim replacement. The resulting Whitehead torpedoes were of a proven design but were much larger than the Howell torpedoes. All Howell and Whitehead Mark I torpedoes were operational by 1895.

As the authors note, research and development at the USN's Newport Torpedo Station led to a steady stream of improvements: gyroscopic steering, magnetic influence exploders, and "wet" heater turbines all greatly improved range, accuracy, and lethality. The torpedo was thus converted from a "weapon of coastal defense to an offensive threat that would greatly influence future naval tactics." Later improvements would include wire and acoustic guidance systems, high-speed propulsion systems, and nuclear warheads.

By the start of 1914, torpedoes had been removed from most capital ships, having found their niche on smaller vessels such as motor torpedo boats, torpedo boat destroyers, and subs. The USN fired no torpedoes in combat in World War I, but the torpedo proved its value as a weapon through successful use by other navies. The Germans, in particular, perfected use of the torpedo as a submarine-launched weapon and also had considerable success employing them from destroyers at the Battle of Jutland.

World War II may be considered the heyday of the American torpedo. Initially, the Navy encountered serious problems with their "state-of-the-art" Mark 14s that often "ran too deep, exploded too soon, did not explode at all, or did not have enough explosive power to sink a ship when they did strike and detonate." It was not until late 1943, that the Navy finally solved most of the problems; torpedoes fired from American submarines, surface ships, and aircraft began taking a steep toll on Japanese naval and merchant shipping.

Of particular interest to *Airpower History* readers will be the chapter on aerial torpedoes. The authors examine the first successful air launch in 1919, development of techniques and technology in the interwar period, and their first operational use on naval aircraft during World War II. After overcoming significant technical problems with Mark 13 guidance systems, the USN achieved some remarkable successes with air-launched torpedoes, most notably in sinking the carrier *Shoho* and super battleships *Musashi* and *Yamato*. Airborne torpedoes continued to be deployed on USN aircraft throughout the Cold War. In 1951 they were used for the first time against a land target when Navy Skyraiders attacked North Korea's Hwachon Dam with Mark 13s. The strike "remains the world's only aerial torpedo attack since 1945, and the only U.S. Navy use of torpedoes in combat since the end of World War II."

Ship Killers is thoroughly researched with copious end notes and several appendices. One particularly useful appendix contains a complete description of technical specifications of all USN torpedoes from the Mark I to the today's highly advanced Mark 54. Another appendix provides a very detailed discussion of torpedo fire-control methods. The book is a fascinating piece of narrative history, a comprehensive reference work, and an important contribution to naval history. It should be included in the library of every serious student of the field.

Lt Col Rick Spyker, USAF, Air Command and Staff College.



The Great Crusade: A New Complete History of the Second World War, Revised Edition. By H.P. Willmott. Dulles VA: Potomac Books, 2008. Maps. Notes. Photographs. Appendices. Bibliography. Index. Pp. xiv, 505. \$22.00. ISBN: 1-59797-191-1

Willmott gave himself a daunting goal to cover World War II in just over 500 pages. Despite the subtitle, this is not a "complete" history. In fact, it is not all inclusive but, rather, quite selective. Willmott, a retired professor at the Royal Military Academy, Sandhurst, attempts to give a balanced account of significant events. This work should be used as a guide rather than as an encyclopedia. For more detailed information, a reader can look at the recommended bibliography which, conveniently, is divided into fourteen categories.

That being said, the book does, however, stand alone as overall coverage. It deals with the higher levels of how nations make war and how their armed forces plan and execute campaigns. Therefore, this is not a book that covers the movement of units on the battlefield or the exploits of individuals. Willmott shows that the outcome of war is determined by several factors. By definition, the military is probably the most decisive; but other factors such as economic, political, and geographic, and the interrelationships of these are not ignored.

World War II was made up of partially concurrent conflicts in an amazing variety of locations that bring it under the rubric "World." However, there is inconsistency in any interconnection among these parts.

My Oxford Dictionary gives one definition of "history" as a systematic account of past events. Willmott states that his emphasis is not so much on what happened but on why events unfolded as they did. He is good at the "why." In a postscript he makes the interesting suggestion that rather than accepting the conventional timespan of 1939-1945 for World War II, we should perhaps examine the larger era from 1931 (Manchuria) to 1975 (fall of Saigon) as the break between two world orders. Unfortunately, space doesn't allow him to expand on this. We more often think of World War II as a continuation of the Great War of 1914-1918.

Perhaps because of a sense of ownership, I've read a great deal during and since the second war about its history. There's enough new to me in this book to pique my interest and broaden my background. The material is brought together in a readable style, although the length is not for a first-time or casual reader. The small number of notes will disappoint any scholar wanting sources. The few notes are

conveniently placed but could have been incorporated into the narrative. The maps are generally helpful, but some key spots named in the text aren't shown—a frustrating cardinal sin. Overall, however, I can recommend the book to fellow buffs as well as those who have more than a passing curiosity.

Brig. Gen. Curtis H. O'Sullivan, NG (Ret.), Salida, California.



The Narrow Margin: The Battle of Britain & the Rise of Air Power, 1930-1940. By Derek Wood and Derek Dempster. South Yorkshire, UK: Pen & Sword Books, 2010. Photographs. Maps. Appendix. Bibliography. Index. Pp 376. \$24.95 ISBN: 978-1-8488-4314-1

Pen and Sword's book is the most recent reprinting of a 1961 study of the battle of Britain that was revised in 1969 to include photographs. Wood and Dempster put forward a thesis that "the Battle was not, however, won in the period from July to October 1940 alone. The outcome was the culmination of the preparation, good judgment and error made in the preceding seven years." To prove their thesis and to discuss the Battle of Britain, they break their narrative into three distinct sections: both sides prepare, battle begins, and the battle.

In their discussion of events leading up to the battle, Wood and Dempster begin with the end of World War I, addressing both the British and German build of their respective air forces. They discuss both doctrinal and technological advances. It is during their analysis of this period, that they put forward a major thesis: the British won the Battle of Britain because of technological advances beginning in the early 1930s, including the development of radar. As an example, the authors cite the 1939 German attempt to use the *Graf Zeppelin* to detect British radar and their subsequent discounting of its importance. They clearly argue that British pre-battle efforts directly led to their subsequent victory.

Wood and Dempster use their "battle begins" section as a scenesetter to discuss the beginning of World War II, the fall of France, and the events immediately leading up to the Battle of Britain. They highlight the significance of the RAF's decision not to send additional forces to France. The heart of the book is the day-by-day description of the Battle. The authors begin each day with a list of the *Luftwaffe's* day and night targets as well as the weather and then follow up with a detailed factual account of the day's air

MODERN WAR STUDIES

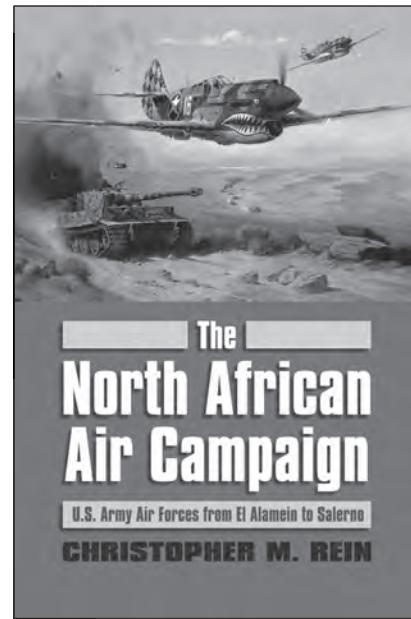
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"A thorough, comprehensive, judicious, and utterly riveting account of how the USAAF adapted pre-war airpower theory to the tactical realities of WWII's Mediterranean battlefield. Despite the adaptive successes of this important period, Christopher Rein argues that the USAF made some critical strategic and organizational decisions and drew some theoretical conclusions that had adverse consequences throughout the Cold War and beyond."—Douglas Porch, author of *The Path to Victory: The Mediterranean Theater in World War II*

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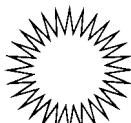
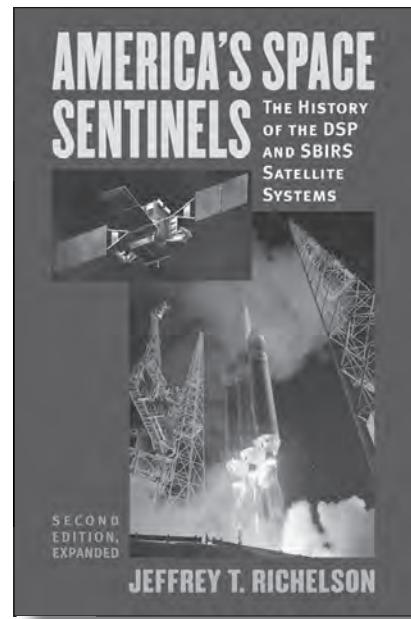
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—*Journal of Military History*

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Books Received

Brister, Bernard J. *The Same Yet Different: Continuity and Change in the Canada-United States Post-9/11 Security Relationship*. Ontario, Kingston: Canadian Defence Academy Press, 2012. Notes. Bibliography. Appendix. Index. Pp. ii, 234. \$ Paperback ISBN: 978-1-100-19744-9

Dunbar, Carl A. and ed. By Peter M. Dunbar. *Before They Were the Black Sheep: Marine Fighting Squadron VMF-214 and the Battle for the Solomon Islands*. Gainsville: University Press of Florida, 2011. Maps. Photographs. Bibliography. Index. Pp. 305. \$32.00.

Fahrenwald, Ted. *Bailout over Normandy: A Flyboy's Adventures with the French resistance and Other Escapades in Occupied France*. Philadelphia and Oxford: Casemate Publishers, 2012. Map. Photographs. Pp. 286. \$29.95 ISBN: 978-1-61200-157-9

Harward, Don. *Distant Thunder: A Helicopter Pilot's Letters from the War in Iraq and Afghanistan*. London: Grubb Street, 2012. Photographs. Index. Pp. 189. \$35.00 ISBN: 978-1-908117-26-1

Higham, Robin. *Unflinching Zeal: The Air Battles over France and Britain, May-October 1940*. Annapolis, Md.: Naval Institute Press, 2012. Maps. Illustrations. Tables. Pp. xix, 317. \$39.95 ISBN: 978-1-61251-111-5.

History of Rocketry and Astronautics: Proceedings of the 40th History Symposium and International Academy of Valencia, Spain, 2006[ol. 37 of the AAS

History Series and Vol 26 of the IAA, History Symposium Univelt Inc., 2012. PhotographsNotes.. index. \$75.00 Paperback. ISBN: 978-0-877-03580-0

Niklas, Brian D. *The Complete Smithsonian Field Guide: American Missiles—1962 to the Present Day*. Barnsley, So. Yorkshire, UK: Frontline Books, 2012. Photographs. Bibliography. Pp. xvi, 176. \$60.00 ISBN: 978-1-848325-17-3

Oberstrom, Dennis R. *The Final Mission of Bottoms Up: A World War II Pilot's Story*. Columbia: University of Missouri Press, 2011. Mps. Notes. Biblography. Index. Pp. x, 254. \$29.95 ISBN: 978-0-826-21948-0

Rigby, David. *Allied Master Strategists: The Combined Chiefs of Staff in World War II*. Annapolis, Md.: Naval Institute Press, 2012. Notes. Bibliography. Index. Pp. xiv, 268. [Uncorrected Page Proofs.]

Stout, Jay A. Fighter Group:: The 352nd "Bluenosed" Bastards in World War II. Mechanicsburg, Pa.: Stackpole Books, Notes. Phoos. Bibliography. Index. Pp. Xiiii, 418 \$28.95 ISBN: 978-0-8117-0577-6

Wolk, Herman S. *Cataclysm: General Hap Arnold and the Defeat of Japan*. Denton: North Texas Press, 2012. Paperback \$14.95 ISBN: 978-0-9224-4175-0

Workman, Robert B. Jr. *Float Planes and Flying Boats: The U.S. Coast Guard and Early Naval Aviation*. Annapolis, Md.: Naval Institute Press, 2012. Notes. Photos. Appendices. Index Pp, xx, 322 \$41.95 978-1-61251-107-8

PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the following new books is invited to apply for a gratis copy of the book. The prospective reviewer should contact:

Col. Scott A. Willey, USAF (Ret.)
3704 Brices Ford Ct.
Fairfax, VA 22033
Tel. (703) 620-4139
e-mail: scottlin.willey@gmail.com

battle. The authors sum up their work with a solid conclusion by reinforcing their thesis that technology and leadership played a pivotal role in deciding the outcome of the battle.

This is not a there-I-was history; it is an historical analysis of a battle where both armies and navies "watched a few thousand combatants meet in the air above." Throughout the book, Wood and Dempster included significant passages from both British and German period documents to include parts of air plans as well as mission reports. Photographs are numerous throughout the book and aver-

age about one per page. Wood and Dempster were initially worried about being able to find unpublished photographs for the 1969 edition. They succeeded, as the significant majority of the photos were new to me.

Despite its age, Wood and Dempster's book holds its own against more recent texts. Obviously absent from the text is any mention of Ultra (the British breaking of German Enigma Codes), which was not declassified until the 1970s. The appendices provide an amazing breath of information to include such things as both the German and British orders of battle, descriptions of

aircraft involved, aircraft losses, and a detailed list of RAF fighter pilots who participated. It is good to see such a thorough text in print again. *The Narrow Margin* is a must read for all airpower historians, especially those looking for a better understanding of how prewar preparations can have a critical impact during subsequent warfare. Well researched and captivating, *The Narrow Margin* fits soundly into any air historian's must read list.

Lt. Col. Daniel J. Simonsen, USAF (Ret), Ruston Louisiana.



Coming Up



January 3-6, 2013

The American Historical Association will hold its 127th annual meeting in New Orleans, Louisiana. The theme of the meeting will be "Lives, Places, Stories," emphasizing the impact of environment and geography upon human history, but other topic proposals will also be entertained. To propose panels or papers, or to request additional information, contact the AHA's meeting program committee via the AHA website: www.historians.org/perspectives/issues/2011/1109/1109ann4.cfm.

January 7-10, 2013

The American Institute of Aeronautics and Astronautics will host its 51st annual Aerospace Sciences Meeting, to include the New Horizons Forum and Aerospace Exhibition at the Gaylord Texan Resort and Convention Center in Grapevine (Dallas/Ft. Worth Region), Texas. For details, see the Institute's website at www.aia.org.

January 9-11, 2013

The Association of the United States Army's Institute of Land Warfare will present an unclassified Army Aviation symposium for members of industry and the military community at the **Gaylord National Hotel and Convention Center at National Harbor, MD**. The theme for this year's event will be "The Future of Army Aviation." For more information, see the AUSA website at www.ausa.org.

January 29-31, 2013

The Association of Old Crews will present its 43rd Annual Collaborative Electronic Warfare Symposium in conjunction with the Naval Warfare Center at Pt. Mugu, California. The symposium's theme is entitled "Enabling Collaborative Electronic Warfare through Innovation & Invention." For more details, see the Association's website: www.crows.org/

January 29-31, 2013

The U.S. Naval Institute and AFCEA International will co-host WEST 2013, billed as "the largest event on the U.S. West Coast for communications, electronics, intelligence, information systems, imaging, military weapon systems, aviation, and shipbuilding," at the San Diego Convention Center in San Diego,

California. For more details, see USNI's website at www.usni.org/.

February 12-14, 2013

The Association for Unmanned Vehicles International will present its annual Unmanned Systems Program Review at the Ritz-Carlton Tysons Corner Hotel in McLean, Virginia. For additional information, see the Association's website at www.auvsi.org.

February 21-22, 2013

The Air Force Association will present its annual Air Warfare Symposium and Technology Exhibition at the Rosen Single Creek hotel and convention center in Orlando, Florida. For more information, see the Association's website at www.afa.org.

March 14-15, 2013

The Air Force Association will present its annual Cyber Futures Conference and CyberPatriot Championships competition at the Gaylord Convention Center on the Potomac River, directly across from Alexandria, Virginia. For more information, see the Association's website at www.afa.org.

March 14-16, 2013

The Society for Military History will hold its annual meeting at the National WWII Museum in New Orleans, Louisiana. This year's theme is "War, Society and Remembrance." For more information, visit www.smh-hq.org/index.html or e-mail Kurt.Hackemer@usd.edu.

March 19-21, 2013

The American Astronautical Society will present the 51st annual Robert H. Goddard Memorial Symposium in Greenbelt, Maryland. Check the Society's website at <http://astronautical.org/goddard>

April 8-11, 2013

The Space Foundation will host its 29th annual National Space Symposium at the Broadmoor Hotel in Colorado Springs, Colorado. Information and registration details can be found on the Foundation's website at www.spacefoundation.org.

April 11-14, 2013

The Organization of American Historians will hold its annual confer-

ence at the San Francisco Hilton in San Francisco, California. This year's theme is "Untangled Histories: Connections, Crossings, and Constraints in U.S. History." For further information, visit the OAH website at www.oah.org or contact them via e-mail at help@oah.org.

April 17-20, 2013

The National Council on Public History will hold its annual meeting at the Delta Ottawa City Centre in Ottawa, Canada. The theme of this year's meeting is "The Significance of Audiences in Public History." Visit the Council's website at www.ncph.org for details.

May 21-23, 2013

The American Helicopter Society will host its 69th annual forum and technology display at the Phoenix Convention Center in Phoenix, Arizona. The theme of the forum will be "Advancing Vertical Flight Technology in Demanding Environments." For more information, visit the Society's website at www.vtol.org/index.cfm or e-mail them at staff@vtol.org.

June 23-29, 2013

The American Society of Aviation Artists will present its annual forum and international aerospace art exhibition at the BWI Thurgood Marshall International Airport in Baltimore, Maryland. The exhibition will remain on display through September 23. For more information, see the Society's website at www.asaa-avart.org

July 10-13, 2013

The Ninety-Nines, the International Association of Women Pilots, will hold its annual meeting in Bozeman, Montana. For more details, see the Association's website at www.ninety-nines.org.

Readers are invited to submit listings of upcoming events. Please include the name of the organization, title of the event, dates and location of where it will be held, as well as contact information. Send listings to:

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Clark-Yudkin Research Fellowships at the Air Force Academy

Applications are being accepted for 2013 Clark-Yudkin Research Fellowships at the U.S. Air Force Academy. These fellowships were established by The Friends of the Air Force Academy Library to promote awareness and use of the scholarly holdings available in the library's Clark Special Collections Branch. Grants range from \$1,000 to \$15,000 and are intended to assist visiting researchers with travel and living expenses while in residence at the Academy. Applications are invited from senior and early career scholars, recent PhDs, and advanced graduate students. Recipients are expected to complete their research within one year from the date of the award.

For detailed descriptions of the holdings in the Clark Special Collections branch, go to the Air Force Academy Library home page: www.usafa.edu/df/dflib and then open the link to "Special Collections."

Additional information and an application are available at The Friends' home page: www.friends.usafalibrary.com and then open the link to "Research Fellowship." Applications and related materials are due no later than March 1, 2013. Applicants will be notified of The Friends' decision in early April.

Questions concerning Clark-Yudkin fellowships may be submitted via email to friends@usafalibrary.com

The Friends of the Air Force Academy Library are pleased to announce the names of the 2012 Clark-Yudkin research fellows:

Dr. Samuel Zebulon Baker
Georgia Southern University
Project title: "Forward Progress: Desegregating College Football, 1945-1975"

Ms. Amelia Underwood
James Madison University
Project title: "Living on the Outside: An Analysis of the Integration Process of Women
at the United States Air Force Academy"

Douhet, Trenchard, Mitchell:
Airpower Prophets
or
Snake Oil Salesmen?
Read:

The Effectiveness of Airpower in the 20th Century
a trilogy
by

Capt. John F. O'Connell, USN (Ret.)

Part One (1914-1939) (Airpower theory development), ISBN 0-595-43082-1

Part Two (1939-1945) (Test of war), ISBN 0-595-45724-3

Part Three (1945-2000) (Post WWII), ISBN 0-595-40353-0

Parts One and Two were reviewed in Air Power History magazine, Fall 2008

Part Three was reviewed in Air Power History magazine, Fall 2007

All available at Amazon.com

Recent Changes in Leadership of the Office of Air Force History

This fall has witnessed a tremendous change in the senior leadership of the Air Force History and Museums Program. Clarence R. "Dick" Anderegg, Col, USAF (Ret.), the Director of the Air Force History and Museums Program has announced his retirement effective January 4, 2013. Mr. Anderegg was selected as Director in August 2003, and during his nearly nine and one-half year tenure has managed to preserve history program functions as it reduced in size to match USAF reductions. Mr. Walter Grudzinskas, the Deputy for Field Programs will serve as acting director until a successor to Mr. Anderegg is chosen.

Like the rest of the United States Air Force, the History and Museums Program has sustained substantial manpower cuts, dropping from more than forty personnel at the combined headquarters and Historical Studies Office at Joint Base Anacostia-Bolling in the early 1990s, to about twenty positions at present. Despite the cuts, Mr. Anderegg managed to fulfill his vision for the program. His multi-volume "Airmen at War" series became a reality in classified format. During his tenure



in this endeavor, Mr. Anderegg (above) succeeded in coordinating the cooperative efforts of the Air Force field historians with the Headquarters writing staff.

Other changes for the Headquarters office is the retirement of Ms. Cheryl A. Gumm, Deputy for Museums who will be

retiring in December 2012. Her successor will be Mr. James A. Frank, formerly Chief Historian at Air Combat Command. Also, Dr. Timothy Keck, the Senior Historian at the Headquarters office and former Chief Historian at the USAF's Pacific Air Forces has announced that he will retire in December. He will be succeeded by Dr. John Q. Smith, the Director of the Air Force Historical Studies Office. Dr. Smith's position will be advertised and filled at a later date.

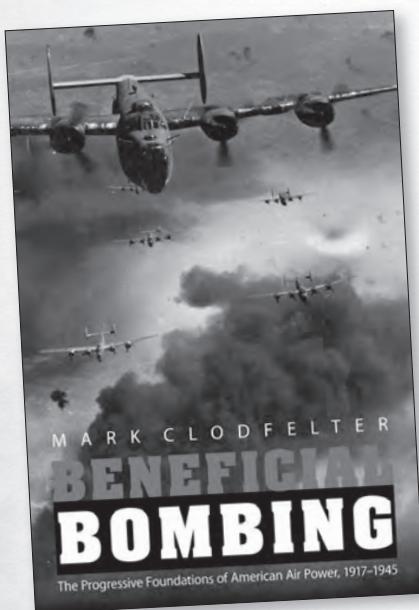
In addition to these changes, two long-time writing historians from the Anacostia Historical Studies Office will also be leaving. Dr. George M. Watson, Jr., retired on August 31, and Dr. Roger Miller will retire in December 2012.

Since 1969, when the Office of Air Force History was created and tasked with publishing longer works in Air Force history, the program delivered books, monographs, special studies, and oral interviews while also answering myriad questions from the Air Force, other services, government offices, and the public. We can only hope that this function will continue in the future.

Dr. George M. Watson, Jr., Senior Historian , retired

"A thoughtful and well written account of a central thread in the thinking of American airpower advocates and the way its implementation in two world wars took place at the time, was seen afterwards, and has come to be enormously influential in the decision process of our country's leaders into the twenty-first century."

—GERHARD L. WEINBERG, professor emeritus at the University of North Carolina at Chapel Hill and winner of the Pritzker Military Library Literature Award



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The Progressive Era, marked by a desire for economic, political, and social reform, ended for most Americans with the ugly reality and devastation of World War I. Yet for Army Air Service officers, the carnage and waste witnessed on the western front only served to spark a new progressive movement—to reform war by relying on destructive technology as the instrument of change. In *Beneficial Bombing* Mark Clodfelter describes how American airmen, horrified by World War I's trench warfare, turned to the progressive ideas of efficiency and economy in an effort to reform war itself, with the heavy bomber as their solution to limiting the bloodshed.

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Woodrow W. "Woody" Crockett (1919-2012)



Lt. Col. Woodrow W. "Woody" Crockett, a Tuskegee Airman fighter pilot in the all-black 332d Fighter Group, died at ninety-three on August 17, 2012.

The 332d was unique—the only black combat unit in World War II with no whites in command or in any supervisory position. When other black combat units succeeded, bigots would often attribute success to white commanders or supervisors. However, even bigots, could not so diminish the Tuskegee Airmen's accomplishments. The fighting achievements of the 99th and 332d were the basic reason for U.S. Air Force racial integration, a reform of monumental significance because it led to armed forces racial integration, which preceded and advanced the cause of integration in the United States.

Woody flew 149 combat missions in World War II. If he had been white, fifty fighter missions would have constituted a normal tour of duty, but a Tuskegee Airmen could not return to safety in the United States until replaced by another pilot. After the 332d deployed overseas from Tuskegee Army Air Field, all black pilots were shunted into

the 477th Medium Bombardment Group—essentially there were no replacement pilots for the 332d. White fighter pilots, after their duty tours, were sent back to the U. S. to train novice pilots, but not black pilots because of segregation. He remained in combat from January 1944 until May 1945, and was often decorated for heroism, including two Soldier's Medals for rescuing pilots who were trapped in burning aircraft.

After World War II, Woody became a member of a B-17 crew that was airborne during each atomic bomb test in the South Pacific. In 1952 and 1953, during the Korean War, he flew forty-five combat missions. He also held a Mach 2 card, having flown the F-106 Delta Dart at twice the speed of sound. In September 1967, he flew Mach 2 in a West German-built F-104 Starfighter, while assigned to the North Atlantic Treaty Organization in Oslo, Norway.

After retirement from active military duty, Woody worked for six years as Deputy Chief, and then as Special Assistant in the Equal Employment Opportunity office of the National Guard Bureau in the Pentagon. During the 1994 D-Day anniversary ceremonies, he escorted President Bill Clinton and British Prime Minister John Major to the Aviator's Wall at Madingley Cemetery, near Cambridge, England.

Woody Crockett's career spanned the civil rights era. As a youth he attended a black elementary school in a ramshackle dirt-floored building, and so did several of his children in 1952. That year he was stationed at Eglin Air Force Base, near Destin, Florida. There was an elementary school on the base, but it was open only to white kids. Though the Air Force had been racially integrated for three years, the public schools in Florida were not, and the Air Force did nothing to help Woody's children achieve a decent education. We live in a much better America today, partly because of the heroism of Woody Crockett and his fellow Tuskegee Airmen.

Col. Alan L. Gropman, USAF (Ret.)

Reunions

4th Fighter Interceptor Sq. Apr. 10-14, 2013. Fairborn, OH. Contact:

Col. Bob Ettinger (Ret.)
2122 Via Pacheco
Palos Verdes Estates, CA 90274
(310)541-8625
rcettinger@aol.com

388th Fighter-Bomber Wg. May 30, - June 2, 2013. Fairborn, OH. Contact:

Don Rahn
5902 Lynnaway Drive
Dayton, OH 45415
(937) 278-4390

B-52 DFCS Assn. June 13-16, 2013.

Fairborn, OH. Contact:

Sharon Lemanek
1326 Town Hall Road
Beavercreek, OH 45432
(937) 426-8557
kenamel.s.j@fuse.net

510th Fighter Sq. Sept. 4-8, 2013.

Mason, OH. Contact:

Guy Wright
1701 Mall Road Apt. 14
Monroe, MI 48162
(734) 740-3164
guywright@chartermi.net

8th Tactical Fighter Sq. (1972 Takhli). Sept. 5-8, 2013. Fairborn, OH. Contact:

Ron Hunt
1328 Meadow Moor Drive
Beavercreek, OH 45434.
(937) 426-0867
ron.hunt.oh@gmail.com

379th Bomb Gp. Assn. Sept. 5-8, 2013. Fairborn, OH. Contact:

Larry Loveless
140 Newton Road
Fredericksburg, VA 22405
(540) 373-1596
ginlotfarms@verizon.net

Tuy Hoa AFB. Sept. 5-8, 2013. Fairborn OH. Contact:

Dale Brown
1747 East Townsend Road
St Johns MI 48879
(517) 927-7859
dvicbrown@charter.net

57th Bomb Wing Association. Sept. 26-29, 2013. Fairborn, OH. Contact:

Robert Marino
116 Juniper Way
Basking Ridge NJ 07920
(908) 766-7316
rbmarino@verizon.net

57th Alumni Association (57th TCS, 57th MAS, 57th AS, 57th WS). Sept. 26-29, 2013. Fairborn, OH. Contact:

Woodie Hall
5305 Forest Breeze Court
St Cloud FL 34771-7743
(407) 301-5133
alumni57th@gmail.com

MacDill Flyers. Oct. 4-6, 2013. Fairborn, OH. Contact:

Gene Stevens
3380 Greenburn Road
Beavercreek, OH 45434
(937) 429-1552
genestevens@sbcglobal.net

Ranch Hands Vietnam Assn. Oct. 10-13, 2013. Fairborn, OH. Contact:

Jack Spey
4245 South Rome Way
Hurricane, UT 84737
(435) 877-1166
maresfwb@aol.com

List provided by:

Rob Bardua
National Museum of the U.S. Air Force
Public Affairs Division
1100 Spaatz Street
WPAFB, OH 45433-7102
(937) 255-1386

Guidelines for Contributors

We seek quality articles—based on sound scholarship, perceptive analysis, and/or firsthand experience—which are well-written and attractively illustrated. The primary criterion is that the manuscript contributes to knowledge. Articles submitted to *Air Power History* must be original contributions and not be under consideration by any other publication at the same time. If a manuscript is under consideration by another publication, the author should clearly indicate this at the time of submission. Each submission must include an abstract—a statement of the article's theme, its historical context, major subsidiary issues, and research sources. Abstracts should not be longer than one page.

Manuscripts should be submitted in triplicate, double-spaced throughout, and prepared according to the *Chicago Manual of Style* (University of Chicago Press). Use civilian dates and endnotes. Because submissions are evaluated anonymously, the author's name should appear only on the title page. Authors should provide on a separate page brief biographical details, to include institutional or professional affiliation and recent publications, for inclusion in the printed article. Pages, including those containing illustrations, diagrams or tables, should be numbered consecutively. Any figures and tables must be clearly produced ready for photographic reproduction. The source should be given below the table. Endnotes should be numbered consecutively through the article with a raised numeral corresponding to the list of notes placed at the end.

If an article is typed on a computer, the disk should be in IBM-PC compatible format and should accompany the manuscript. Preferred disk size is a 3 1/2-inch floppy, but any disk size can be utilized. Disks should be labelled with the name of the author, title of the article, and the software used. Most Word processors can be accommodated including WordPerfect and Microsoft Word. As a last resort, an ASCII text file can be used.

There is no standard length for articles, but 4,500-5,500 words is a general guide.

Manuscripts and editorial correspondence should be sent to Jacob Neufeld, Editor, c/o *Air Power History*, 11908 Gainsborough Rd., Potomac, MD 20854, e-mail: editor@afhistoricalfoundation.org.

MISSION TO TOKYO

The American Airmen Who Took the War to the Heart of Japan · By Robert F. Dorr

ABOUT THE BOOK

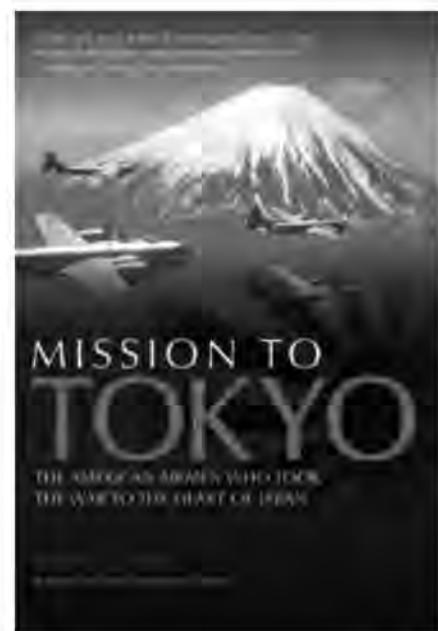
From *Hell Hawks!* author Bob Dorr, *Mission to Tokyo* takes the reader on a World War II strategic bombing mission from an airfield on the western Pacific island of Tinian to Tokyo and back. Told in the veterans' words, *Mission to Tokyo* is a narrative of every aspect of long range bombing, including pilots and other aircrew, groundcrew, and escort fighters that accompanied the heavy bombers on their perilous mission.

Several thousand men on the small Mariana Islands of Guam, Saipan, and Tinian were trying to take the war to the Empire—Imperial Japan—in B-29 Superfortresses flying at 28,000 feet, but the high-altitude bombing wasn't very accurate. The decision was made to take the planes down to around 8,000 feet, even as low as 5,000 feet. Eliminating the long climb up would save fuel, and allow the aircraft to take heavier bomb loads. The lower altitude would also increase accuracy substantially. The trade-off was the increased danger of anti-aircraft fire. This was deemed worth the risk, and the devastation brought to the industry and population of the capital city was catastrophic. Unfortunately for all involved, the bombing did not bring on the quick surrender some had hoped for. That would take six more months of bombing, culminating in the atomic bombs dropped on Hiroshima and Nagasaki.

As with *Mission to Berlin* (Spring 2011), *Mission to Tokyo* focuses on a specific mission from spring 1945 and provides a history of the strategic air war against Japan in alternating chapters.

ABOUT THE AUTHOR

Robert F. Dorr (Oakton, VA) is an Air Force veteran (Korea, 1957–1960), a retired senior American diplomat (1964–1989), and the author of seventy books and thousands of magazine articles and newspaper columns about the Air Force and air warfare. Bob has written for *Air and Space Smithsonian*, *Flight Journal*, *Air Forces Monthly*, *Air Power History*, and many other publications. He is a columnist for *Air Force Times* newspaper and writes the Washington Watch feature for *Aerospace America* magazine. *Mission to Tokyo* is a follow-up to his previous book, *Mission to Berlin*.



Author: Robert F. Dorr
Format: Hardcover, 336 Pages
Item: 193454
ISBN: 9780760341223
Publisher: Zenith Press
Illustrations: 34 b/w photos & 1 map
Size: 6.25 x 9.25
Edition: First
Price: \$30.00
Available 08/15/2012

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The Hawker Beechcraft AT-6 Texan II was last issue's "mystery plane." It has also been identified in plane-maker literature as the AT-6B and AT-6C but is currently being marketed without a letter suffix. The "A" signifies an "attack" mission; it's the armed version of a trainer that's widely used in U.S. forces and around the world. Our hope was that the angle of the photo in our last issue might challenge some of *Air Power History*'s most sharply focused airplane spotters.

The AT-6 is a candidate for the Air Force's Light Air Support (LAS) program aimed at providing about 20 armed trainers to be operated by the Afghan Air Force. The LAS program has moved in fits and starts. Its future now depends on what will happen if and when Congress decides to fund fiscal year 2013, which began on October 1. The AT-6 will be competing with the Embraer EMB-314 Super Tucano, also called the A-29B, which won the LAS competition in 2011 only to have the results set aside last March and the program rebooted. Even if Capitol Hill doesn't provide funding to revive the LAS effort, a worldwide market exists for a small warplane capable of operating from austere airfields and employing precision ordnance.

The trainer on which the AT-6 is based, the T-6A Texan II, was selected as the winner of the Joint

Primary Aircraft Training System (JPATS) on June 22, 1995. The A model is powered by a 1,100 shaft horsepower PT6A-68A. The author flew a company-owned prototype (Beech/Pilatus PC-9 Mk. II N8284M c/n PT-2, with test pilot Jim DeGarmo) at Wichita on November 24, 1997 and an operational example (T-6A 04-3734, 558th Flying Training Squadron, with instructor Lt. Col. Carey McKinney) at Randolph Air Force Base, Texas, on January 4, 2006. Both times, the PT6A-68A-powered Texan II felt as if it had plenty of power under the hood, but that was without extra fuel tanks, bombs, or guns hanging under the wings.

The two examples of the AT-6 armed version are powered by a next-generation 1,600-shaft horsepower Pratt & Whitney Canada PT6A-68D engine—the same version that propels the Super Tucano. The two planes have shown their ability to use most items of ordnance in current U.S. inventory, thanks to a series of demonstrations funded by earmarks from the Kansas congressional delegation. The T-6 series is manufactured in Wichita.

Given the administration's "pivot" toward China and the Pacific, with counter-insurgency now enjoying a lower priority than it once did, it's unclear whether LAS will continue or whether we'll see any more AT-6s in U.S. markings. Hawker Beechcraft has been in and out of bankruptcy and recently had to abort a planned purchase of its non-military assets by Chinese investors.

Because of a minor technical glitch related to our last issue being on-line only, we're postponing our usual announcement about the number of entrants to the "History Mystery" contest and the name of the winner. Watch this space for more details. Our "History Mystery" continues—now approaching the quarter century mark, and we hope readers will let us know if they can identify our new puzzler aircraft.

Our new aircraft is seen here in our photo by John Gourley. Can you name the plane? Heed the "History Mystery" rules, below.

See if you can identify our latest mystery aircraft. Remember, we also want to hear from you as to whether you think this long-running contest is too easy or too difficult. Remember the "Mystery" rules:

1. Submit your entry via e-mail to robert.f.dorr@cox.net. Entries may also be submitted on a postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124.

2. Write a sentence about the aircraft shown here. Include your address and telephone number. Remember to include a phone number.

3. A winner will be chosen from among correct entries and will receive an aviation book.

And let's get serious about those historical treasures in your attic or basement. Some readers say they just don't remember where their color slides are. That's not a good way to assure the

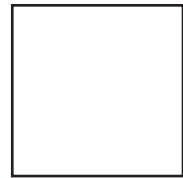
preservation of history. Dig out your slide or snapshot of a rare aircraft and lend it to *Air Power History* for this contest.



This Issue's Mystery Plane



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