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COVER: F–105s of the 34th TFS, 388th TFW refuel over Southeast Asia, December, 1968.

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From the Editor

Leading off this issue, Howard Plunkett completes his account of the Rolling Thunder campaign begun in the Spring 2006 issue. Set in the period from 1965 to 1968, Part II: Combat Lancer and Commando Club, tells how U.S. Air Force airmen employed ground and airborne radar to attack North Vietnamese targets at night and in bad weather. It begins on page 4.

"The Tuskegee (Weather) Airmen," by Gerald White, introduces a little-known subject to our readers, namely the operations and training of Black airmen as meteorologists during World War II. For the fascinating details of this story turn to page 20.

In the third article, "Polish Special Duties Flight 1586," Michael A. Peszke, recounts the heroic efforts of the Polish Air Force airmen, flying from the United Kingdom, who undertook risky missions to relieve their countrymen's fight for Warsaw in 1944. See page 32.

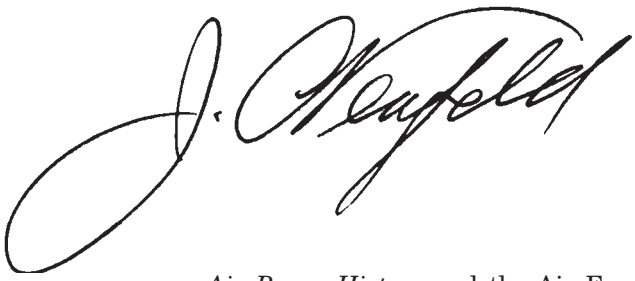
Thanks to Brig. Gen. Brian Gunderson, we "revisit" once more the quaint slang language spoken between British and American airmen during World War II. The general continued collecting terms for his "Slanguage" until he died in 2004. See page 38.

Yet another piece is Ron Cole's outstanding review essay of two official Air Force histories of the Gulf War. Dr. Cole, a member of the Joint History Office, assesses Richard Davis's *On Target* and Perry Jamieson's *Lucrative Targets*. See page 42.

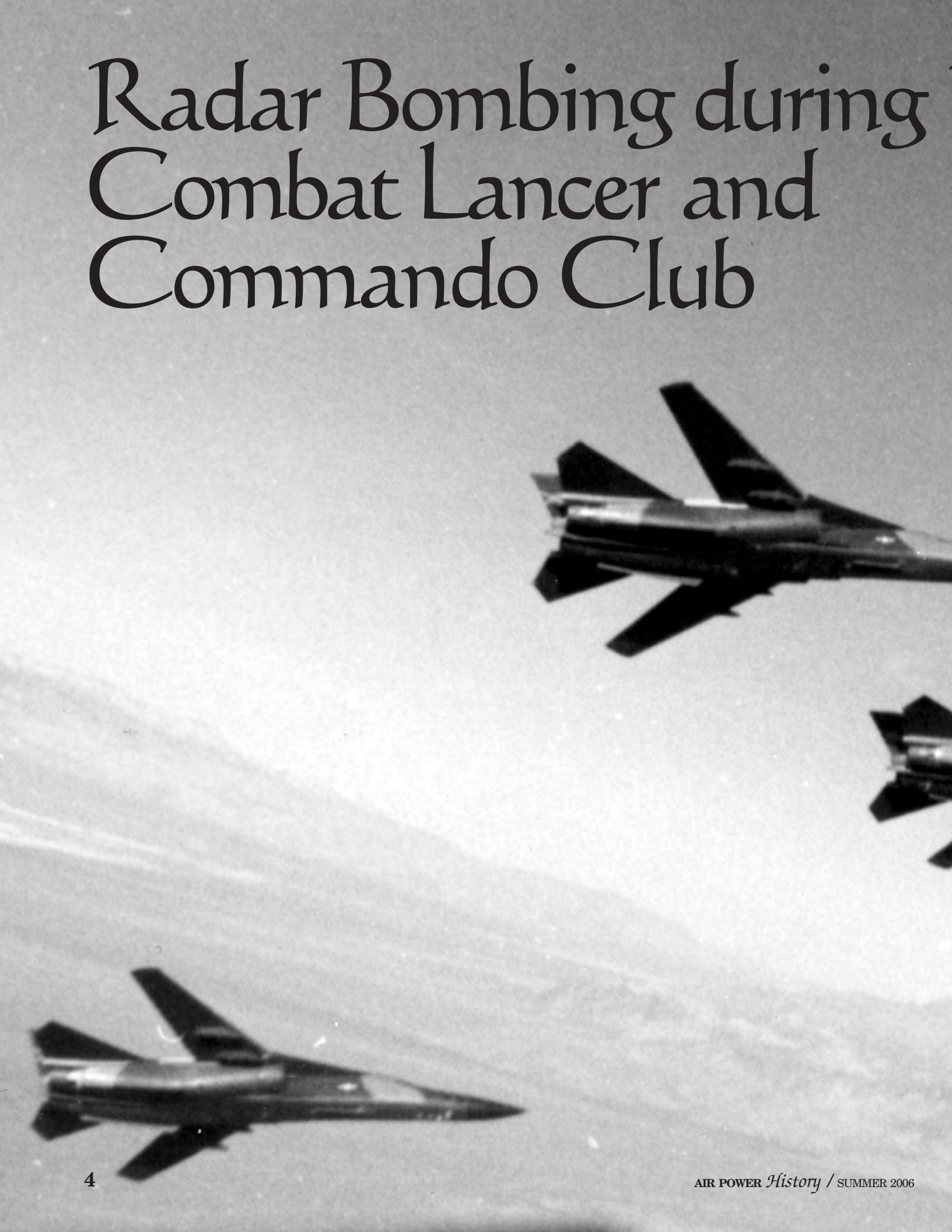
The seventeen books reviewed in this issue (beginning on page 46) eclipse the record set in *Air Power History* only in March. Readers who aspire to review new offerings are directed to page 56, where they'll find a new list of books received; Col. Scott Willey is anxious to hear from you. The departments include letters to the editor, upcoming events, news, notices, reunions, and Bob Dorr's "History Mystery" solution.

Also, be sure to read Lt. Gen. Michael Nelson's "President's Report," on the results of the April membership meeting. See page 58. Finally, meet our new publisher, Brig. Gen. Alfred F. Hurley, and the new Executive Director, Col. Thomas Bradley.

Please keep up the feedback to the journal with your opinions of the contents of *Air Power History* and to the Air Force Historical Foundation on what you believe we can do to better preserve the heritage of the USAF.



Radar Bombing during Combat Lancer and Commando Club



Rolling Thunder—Part II:

W. Howard Plunkett

(Overleaf) Combat Lancer F–111s at Nellis AFB, Nev. in March 1968. *(USAF photo)*

(Photos and map courtesy of the author, except where otherwise credited.)

Planning for F–111s at Takhli

On October 2 and 3, 1967, an advance party from the 4481st TFS from Nellis AFB visited the 355th TFW at Takhli to coordinate the arrival of six F–111As under "Combat Lancer." Capt. Malcolm D. Winter, an F–105 pilot from the 354th TFS who also worked as a staff officer at Takhli, had been planning the wing's reception of the F–111A since August.[108] The F–111A fighter-bomber was in operational testing at Nellis and a combat deployment was part of its test program. The planes, with their superior radar and low-level terrain navigation systems, were expected to provide a night, all-weather bombing capability over North Vietnam comparable to the Navy's A-6A and an improvement to the Commando Nail F–105Fs being flown by the 388th TFW at Korat.

Lt. Col. Edwin D. Palmgren, a former F–105B Thunderbird pilot, was the F–111A survey team chief from Nellis. Capt. Al "Mike" Michael, a Wild Weasel EWO, who with his pilot Maj. Jim Mirehouse began flying F–105F Commando Nail missions from Korat in July, recalled, "Jim Mirehouse and I [flew] into Takhli to brief Lt. Col. Palmgren.... We spent some time explaining our tactics, targets, and defenses we had encountered. He indicated that he envisioned a whole new approach to the night, single ship, low level mission. He thanked us, but made it clear that the ball was in his court now."[109] Takhli's wing history recorded a key agreement on their hosting the Air Force's most modern aircraft. "One of the operations items coordinated with this survey team involved the command and control relationship between the 355th TFW and the F–111 detachment after its arrival at Takhli. The F–111 representative expressed a desire for 'autonomous operation with only liaison as required with the 355th TFW'." Operations officers of the 355th TFW and Hq 7th AF agreed with this concept although wing Intelligence officers were to work closely with their counterparts in the F–111A detachment. The F–111s were projected to arrive at Takhli on February 1, 1968, but their arrival would be delayed by six weeks.[110]

The Fourth Commando Nail F–105F Crashes

On October 5, 1967, a Commando Nail crew (using call sign "Splendid") and their aircraft, F–105F (63- 8346), disappeared during a night attack against the Lang Con RR Bridge (JCS target 18.26) in Route Pack 5. The crew was Maj. Morris Larosco McDaniel, Jr. and his EWO Capt. William Allan Lillund. They had arrived at Korat in July with the first set of Wild Weasel crews who had trained at Yokota as replacements for the Ryan's Raider dual-pilot crews.[111]

Repeating the reaction after the second loss on May 15, this third loss to combat resulted once again in restricting F–105F Commando Nail missions to North Vietnam's lower route packs. From their first mission on April 26 to this one, Korat's Commando Nail crews had flown 415 sorties in Route Packs 1, 5, and 6A.[112] Nearly every night until the end of Rolling Thunder, the 44th TFS scheduled two to four F– 105F Commando Nail missions into the southern portion of North Vietnam to interdict the flow of supplies to North Vietnamese forces in South Vietnam.[113]

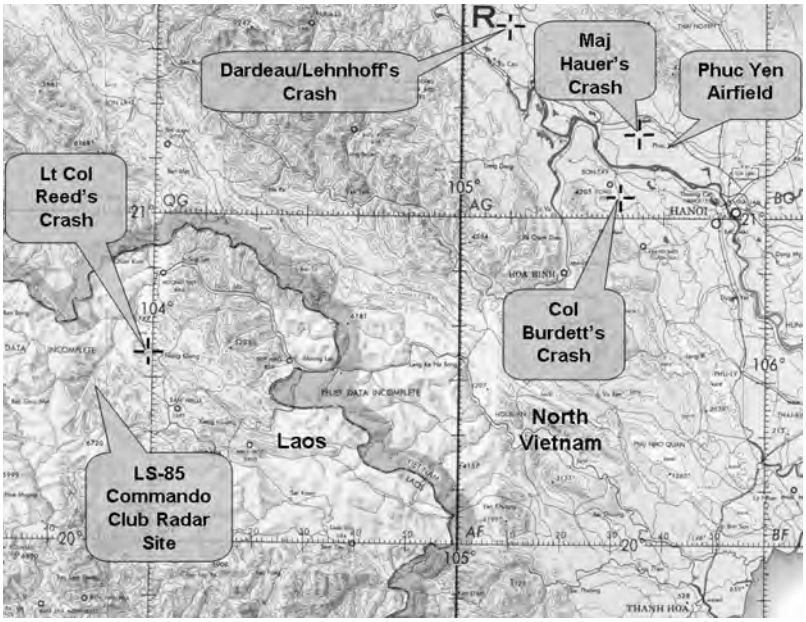
A Sky Spot Ground Radar Goes into Northern Laos

With Korat's Commando Nail missions no longer going to the Delta region of North Vietnam, the Air Force again needed another way to reach critical northern targets during the 1967–1968 monsoon season. As described earlier, the existing MSQ-77 Sky Spot radars in South Vietnam and Thailand allowed radar bombing up to 196 nautical miles from the stations, which limited them to targets only as far as Route Pack 3. However, this ground-radar guidance technique was proving to be a means of flying sorties despite bad weather and the Air Force came up with a new location for one of these radar stations that would enable planes to reach targets around Hanoi.

As early as November 1966, the Air Force and the Joint Chiefs of Staff had been working on establishing a Sky Spot radar station on a mountaintop in northern Laos, 12 miles from the North Vietnamese border and 125 miles from Hanoi. In a memorandum dated April 25, 1967, the Joint Chiefs of Staff proposed to Secretary of Defense Robert S. McNamara, that an MSQ-77-type radar be installed at Lima Site 85 (LS-85), the TACAN Channel 97 site on the 5,800-foot mountain called Pha Thi in Laos. The JCS contended that a Sky Spot radar at LS-85 would provide guidance during bad weather for the Rolling Thunder bombing campaign against targets in North Vietnam. Despite

THE AIR FORCE AGAIN NEEDED ANOTHER WAY TO REACH CRITICAL NORTHERN TARGETS DURING THE 1967–1968 MONSOON SEASON

W. Howard Plunkett is a retired Air Force lieutenant colonel. His twenty-year career as an aircraft maintenance officer began with F–105s in 1964. He was a distinguished graduate from Squadron Officers School and earned an MS in Logistics Management from AFIT. Since his retirement in 1983, he has worked in the aerospace industry as a reliability engineer, in software support and quality assurance, as a logistics manager and technical writer, and in business development. His previous publications about the F–105 include an article in the Air Force Museum's Friends Journal *(Winter 1994/1995) and a book,* F–105 Thunderchiefs*, published in 2001 by McFarland & Company, Inc., detailing the histories of all surviving F–105s in museums and on static display around the world. He wrote, "Ozark Lead is Out of the Aircraft," published in the Spring 2005 issue of* Air Power History.



This map identifies the site of the Commando Club TSQ-81 radar 125 miles from Hanoi and the crash locations of the four F–105s that were lost during the 388 TFW's Commando Club radar bombing mission against Phuc Yen Airfield on Nov. 18, 1967. Dardeau/Lehnhoff led the Wild Weasel flight that included Lt. Col. Reed. They were shot down by missiles from MiG–21s. Col. Burdett and Maj. Hauer were in the strike force and were hit by SAMs. After these losses, the strike force jettisoned their bombs and returned to Korat.

objections from William H. Sullivan, the U.S. Ambassador to Laos, President Lyndon B. Johnson approved the proposal. The Air Force issued a contract to Reeves Instrument Corporation to develop an air-transportable ground radar system designated TSQ-81.[114]

The PACAF briefing to CINCPAC for the period September 18-30 anticipated the benefits of using the Sky Spot radar at LS-85.

Although deteriorating weather will continue to degrade strike efforts for the next several months, operational status of Site 85 in northern Laos will allow strike forces to exert continuous pressure against important targets in NVN as well as targets in the Barrel Roll area. Site 85 is scheduled to be operational on 12 October. The present ECM and strike tactics will permit a sizeable strike force to fly formation in high threat areas during daylight hours. Maximum ECM support will be employed in conjunction with the MSQ missions. Weapons available in support of this effort include all high explosive bombs as well as CBU munitions. Bombing altitudes of 18,000 to 25,000 feet are most suitable for all targets out to 175 miles from Site 85.

The briefing listed eight targets that PACAF considered suitable for bombing using the radar at Site 85. Five of the targets were on the JCS target list.[115] The PACAF briefing concluded, "We feel that the application of air power under MSQ control during the forthcoming period of poor weather will add to the disruptive effects of the air campaign. The appearance of bombs raining through the clouds will certainly have a unique psychological effect, which will present a new problem for the enemy." [116] This comment became bitterly ironic in view of what happened on the first major bombing mission using this radar.

In mid-October, a team of forty-eight men, Air Force technicians but working under cover as employees of Lockheed Aircraft Service Company, arrived at Udorn, Thailand. Crews of nine men at a time shuttled in shifts to LS-85 to operate and maintain the TSQ-81 radar station installed at LS-85. Other technicians supported the Channel 97 TACAN equipment, which had been providing navigation signals for combat missions over North Vietnam since September 24, 1966. The Top Secret program was code-named "Heavy Green" and the TSQ-81-directed bombing missions over North Vietnam were called "Commando Club." [117]

Once the site was up and running, Seventh Air Force in Saigon tasked the 355th TFW at Takhli to fly two weeks of radar-guided bombing missions over North Vietnam to help calibrate the TSQ-81 Sky Spot radar. Col. John C. Giraudo, the wing commander, led the trial missions. The tests began over Laos and progressed to a final mission to bomb the Yen Bai railroad yards northwest of Hanoi. After completing the tests, Col. Giraudo objected to the missions as being too hazardous to his F–105 pilots who couldn't employ the successful ECM jamming pod defenses that the wing had developed. In a personal meeting with the commander of 7th Air Force, General William W. Momyer, Col. Giraudo requested that the 355th TFW be exempt from further Commando Club missions. General Momyer approved Col. Giraudo's request and assigned the first large-scale mission to the 388th TFW at Korat.[118]

First Combat Using Commando Club Radar

On November 1, 1967, the TSQ-81 radar at LS-85 in Laos was ready to support bombing missions over North Vietnam's delta region. Despite Col. Giraudo's request to exempt the 355th TFW from Commando Club missions, the wing did fly them. For example, on November 15th, pilots from the wing's 357th TFS struck the Yen Bai airfield in Route Pack 5 then returned to the same target on November 22 and again on the 1st and 23d of December. The wing history for the period commented on these missions and reported that there was "no BDA possible due to the techniques utilized (Commando Club radar bombing)." [119]

The 388th TFW, however, flew their first Commando Club mission on November 18, 1967. It was the first of seven such missions they flew in November. The mission turned into the disaster that Col. Giraudo had feared. Korat's target was the MiG-airfield at Phuc Yen (JCS Target 6), 14 nautical miles northwest of Hanoi in Route Pack 6A. Using regular daylight bombing attacks, both Korat and Takhli had hit Phuc Yen, the home of MiG-21s and IL-28 bombers, for the first time on October 24 and 25.[120]

The mission on November 18 included the large force typical of those assembled for conventional strikes against major targets in North Vietnam. Since clouds obscured the target, sixteen F–105s from Korat, flying at 18,000 feet, were to bomb the airfield shortly after 8 a.m. using the Commando Club radar. The F–105s carried a total of 27 ALQ-71 ECM pods that, when flown in a spe-

With its triangular, SAM-locating Azimuth-Elevation antennas aft of the radome, F–105F 63-8353 was one of the planes in the 44 TFS with dual capability for Wild Weasel and Commando Nail missions. It was lost to AAA during a Wild Weasel mission in Route Pack 1 on July 15, 1968. Its pilot, Maj. Gobel D. James, became a POW and its EWO, Capt. Larry E. Martin, was killed.

AFTER THIS EXPERIENCE, COMMANDO CLUB MISSIONS WERE EXECUTED IN SINGLE FLIGHTS IN HIGH THREAT AREAS AND THE STANDARD POD FORMATION WAS ADHERED TO

cific pod formation, had proven effective in jamming SAM radars. The force also included one flight of Wild Weasels from Korat with call sign "Waco" consisting of three F–105Fs and an F–105D. The Weasels flew 25 miles ahead of the strike force to suppress SAM sites around the airfield. Also protecting the strike force were four F–4Ds from Ubon for MiG CAP, three EC–121s with surveillance radar using call signs "Ethan Alpha" flying off the coast of North Vietnam to warn of MiGs, and five EB–66s for jamming SAM and AAA radar signals.[121] To help conceal the location of the Commando Club radar in Northern Laos, one of the EC–121s acted as a communications relay between the strike force commander and the radar controller at LS-85 who used the call sign "Wager Control".

Col. Edward Burdett, the 388th TFW commander, led the strike force as "Garage 1". He was on his 37th mission over North Vietnam and flying F–105D 62-4221. En route to the target, he talked on his radio over the UHF strike frequency using the awkward relay to Wager Control about details of setting up the strike formation for the bomb drops. Unfortunately, their lengthy radio discussions blocked three MiG warning calls from Ethan Alpha. Suddenly, two silver-colored MiG–21s swooped down on the Wild Weasels who had failed to hear Ethan Alpha's MiG alerts. The first MiG fired a missile at Waco 4 and the second launched one at Waco 1. Both missiles hit their targets and the MiGs headed north at high speed–a hit and run tactic that was becoming all too successful.[122]

Waco 1 was F–105F 63-8295 with Major Oscar Moise Dardeau, Jr. and EWO Edward William "Tiny" Lehnhoff, Jr. from the 44th TFS. Their plane immediately began shedding parts and trailing black smoke then disappeared into the clouds below. Both men died in the crash.[123]

Waco 4 was luckier. He was Lt. Col. William N. Reed from the 469th TFS (flying F–105D 60-0497) who managed to nurse his crippled plane to Laos. He ejected near the Commando Club radar site at LS-85 where a Jolly Green HH-3 helicopter picked him up.[124]

The strike force continued toward the target but with the loss of the Wild Weasels, became more vulnerable to the SAM sites protecting Phuc Yen airfield. The F–105 pilots were even more vulnerable than they realized. In recent months, the North Vietnamese had developed a track-on-jam tactic for their SAM operators who used it this morning when the Commando Club formations made it even more effective.[125]

As the first of the four strike flights approached the target, the pilots in the flight closed their formation from a 1,500-foot separation between their planes to 500 feet so their bombs would hit in a tighter cluster. Unfortunately, the maneuver degraded their precisely spaced ECM pod formation, which sharpened the jamming patterns on the radar screens of the SAM operators. With their track-on-jam technique, SAM crews from six missile battalions fired 13 missiles. Two of them found their targets. One hit Garage 1, Col. Burdett, and the other blasted Vegas 3, Maj. Leslie John Hauer from the 469th TFS. Maj. Hauer was killed and Col. Burdett was captured but died as a POW. The remaining strike force jettisoned their bombs before reaching the airfield and headed southwest out of the target area.[126]

The 388th wing history for the period tried to put a positive spin on this tragic event that resulted in the loss of their wing commander and one fifth of the F–105s on the mission. "The first COMMANDO CLUB attempt ... used the entire strike force to execute level bombing against Phuc Yen airfield. This mission was significant in that it resulted in the revision of COMMANDO CLUB tactics due to the degradation of ECM pod effectiveness when the entire force closed up from the normal pod formation to decrease bomb dispersal; and resulted in the shooting down of four aircraft (two by SAM and two by MiGs) including the wing commander. After this experience, COMMANDO CLUB missions were executed in single flights in high threat areas and the standard pod formation was adhered to." [127]

The Air Staff Evaluates Commando Nail and Commando Club

One day after this disastrous mission against Phuc Yen airfield, a high-level group of Air Staff officers from the Pentagon concluded a 10-day visit to SEA bases. Lt. Gen. Glen W. Martin, Hq USAF DCS/Plans & Operations, led the group. The officers visited 11 bases in South Vietnam and 7 in Thailand including Takhli and Korat. Their trip report included the status of Commando Nail and Commando Club.[128]

For Commando Nail, the Air Staff reported that there were six aircraft and seven crews in the 44th TFS flying Commando Nail missions and that, since the beginning of the program in April,

F–105F 63-8289 was one of the six 2098-modified Commando Nail aircraft in the 44 TFS. Without Azimuth-Elevation antennas, it did not have Wild Weasel equipment and lacked a control stick in the rear cockpit. It was lost on Sept. 7, 1968 due to engine failure. Its crew, Maj. Eugene A. Bonfiglio and EWO Maj. Lorne F. McCormick, ejected successfully with minor injuries.

over "... 600 missions have been flown against 70 targets - 41 targets in RP 1, 21 in RP 5 and 8 in RP 6. 3,594 bombs (1,349 tons) have been dropped." General Martin's report included statistics of the poor accuracy of these night bombing missions. "KA-71 camera evaluation of 14 sorties indicated a 3,300' CEP. Evaluation of radar-scope film was made for 45 sorties and indicated 3,100' CEP. Pre and post strike photography on 6 sorties revealed a CEP of 2,910'." The report, however, gave a positive assessment of the Commando Nail program. "... Crew morale is high since EWOs have been assigned for back seat duties. It is believed that this system has possibilities for employment in the pathfinder role using a formation similar to that developed for Commando Club." [129]

The Air Staff report also detailed the Commando Club program. At the time of the staff visit, twenty-five targets had been approved for Commando Club strikes. "This system ... has met with only very limited success. Operations have been plagued with poor weather and communications problems. From 18 Oct 67 to 16 Nov 67, 48 attempts have been made to hit selected primary Commando Club targets." The report indicated that 22 missions hit their primary or secondary targets, 10 attempts were cancelled or diverted due to weather, and nine more were ineffective due to communication problems between strike pilots and the relay aircraft and ground controllers. Other missions had been cancelled or diverted for other reasons including heavy defenses such as those encountered in the Phuc Yen attack. The report included rough measures of bombing accuracy. "Bomb hit reports ranged from zero to five miles. CEA based on 14 runs was 867 feet based on photo and FAC evaluation. Confidence in this figure is not high." The Seventh Air Force Vice Commander, Major General William C. Lindley, Jr., was tasked to solve the Commando Club communication problems, his only responsibility until the problems were resolved. Fixes included installing a third UHF transmitter at Site 85, moving the relay aircraft orbit from the Gulf of Tonkin to Laos, and relieving the relay aircraft from MiG-warning responsibility. "Until further evaluation, all Commando Club strikes in the high-threat area have been suspended by 7th Air Force." [130]

THIS SYSTEM ... HAS MET WITH ONLY VERY LIMITED SUCCESS

One day after Korat's first disastrous Commando Club mission, the Air Force and Navy flew numerous combat missions over North and South Vietnam. Aircraft losses on November 19 were even worse than the day before. Nine Air Force and Navy planes, six of them over North Vietnam, were lost to MiGs, SAMs, and AAA. On November 22, Hq PACAF convened a nine-day conference to determine ways to counter the increased effectiveness of North Vietnam's defenses. At the conference, PACAF decided to restrict Commando Club missions from the high-threat area of Route Pack 6 and to use single flights, not the large formations used in Korat's Phuc Yen raid.[131]

Commando Club Missions Continue

Once again, the winter monsoon weather severely restricted the Air Force's Rolling Thunder campaign. During the rest of 1967 and the first three months of 1968, the Air Force relied heavily on Commando Club missions. On December 21, due to the availability of the Commando Club radar and the increasing risk of sending EB–66s over North Vietnam, Seventh Air Force stopped using EB–66s for radar pathfinder missions.[132]

At this point, the Commando Club ground radar in northern Laos, the six Commando Nail F–105Fs at Korat, and the trained Commando Nail F–4D crews at Ubon, provided most of the Air Force's capability for delivering bombs through the low-lying clouds that obscured targets in North Vietnam.

During this period, Commando Club missions from both Takhli and Korat focused on area targets. The history of the 354th TFS from Takhli described their missions during December 1967. "December saw increasing weather over North Vietnam that frequently prevented visual bombing missions. Emphasis was shifted to radar-controlled 'Commando Club' missions, to keep the pressure on selected North Vietnamese targets. These strikes were launched against large storage areas, troop barracks, rail yards, and airfields. On the few times when it was possible to get visual BDA, our pilots reported these strikes as very accurate and successful." [133]

Many of the Commando Club missions flown by both Korat and Takhli between November 1967 and March 1968 were repeated attacks against the MiG airfields at Hoa Lac and Yen Bai. Their wing histories and other sources documented 15 Commando Club missions against Yen Bai and 10 against Hoa Lac. Bombing these airfields became important. MiG activity, as the 388th TFW history reported, increased significantly in January 1968. "It was noted during the month that the MiGs were

Two of the Combat Lancer F–111As that arrived at Takhli on March 17, 1968. (Photo from Web Site http://www.f-111.net.)

showing greater aggressiveness in their attacks and were flying further from their home bases. MiG sightings were made as far south as the 'fishes mouth' in RP-III and as far west as thirty miles from North Station in RP-V." [134] In keeping with the practice adopted after November 18, most were single-flight attacks against these area targets. The relatively few bombs dropped on each mission, bombing inaccuracies, and the rapid damage repair by the North Vietnamese, required returning to the airfields again and again.[135]

During the first two weeks in January, only four days were clear enough for visual bombing so that Commando Club missions continued to be one of the only means available to attack the MiG bases and other targets. "Although weather prevented visual strikes in the northern sector on all but four days of the period, 12 Commando Club targets were fragged as alternate missions to primary visual strikes. Of these, 7 were struck using the Commando Club radar delivery tactic." [136]

IN JANUARY, ONLY FOUR DAYS WERE CLEAR ENOUGH FOR VISUAL BOMBING SO THAT COMMANDO CLUB MISSIONS CONTINUED TO BE ONE OF THE ONLY MEANS AVAILABLE TO ATTACK THE MIG BASES

Weather worsened in February and March 1968. "February brought the poorest flying conditions in three years, and March was little better with the Northeast Monsoon prevailing nearly the entire month." During February 1968, "... the weather conditions caused attack sorties to drop to a low of 3,349." The Air Force flew 22 sorties in RP 5 and 19 in RP-6A. "The majority of the sorties in RPs V and VIA used Commando Nail (aircraft integral radar bombing system), and the Commando Club (ground controlled radar bombing system) techniques." [137]

On February 10, sixteen-F–4Ds from the 8th TFW at Ubon bombed Phuc Yen airfield using the Commando Club radar. The North Vietnamese had based IL–28 bombers at Phuc Yen that had sufficient range to reach bases in South Vietnam and the attack was intended to remove this threat. This large-scale attack, supported by EB–66s and Wild Weasels from Takhli, used cluster bombs, and a different method of attack from the one Korat used in their first F–105D Commando Club level-bombing attempt in November. Along with the Commando Club ground radar, the strike used the more versatile F–4D weapons release computers. Five miles from the target, the planes pulled up in a toss-bomb maneuver that lofted their bombs onto the airfield then escaped without encountering North Vietnamese defenses.[138]

The 44th TFS Gets Improved Commando Nail F–105Fs

Combat Bullseye radar bomb testing in the spring and summer of 1967 at Eglin AFB included two F–105Fs with modifications developed by Republic Aviation. Test results showed that these "Republic Mod" aircraft had significantly better radar bombing accuracy than all tested aircraft except the F–111A.[139]

The modification consisted of "... removal of the control stick from the rear cockpit and the installation of a blind bombing pedestal control." The modification replaced the original Direct View Storage Tube (DVST) radar scope with a larger cathode ray tube (CRT) that gave better resolution, "... and several changes [were] made in the radar controls and toss bomb computer." The modification also installed a radar altimeter (the same model used in the Navy's A–6A) and included the changes made to the F–105Fs under the original "Yokota" modification that the Ryan's Raiders and Commando Nail crews had been flying.[140]

Six F–105Fs from Korat received this modification at Kadena AB, Okinawa under modification number 1F-105F-2098, called the "2098 mod". The first two of these improved aircraft arrived at Korat on February 14, 1968. Two more 2098s arrived at Korat on February 22 and two more on March 5. Unlike the original aircraft that had both Commando Nail and Wild Weasel systems, these six planes did not have the Wild Weasel equipment so they could only fly Commando Nail or conventional bombing missions. "The [44th TFS] crews were sent two at a time to Kadena for five training flights and ground training to qualify with the new modifications. Those crews unable to go to Kadena were qualified locally with a training program, which included three training flights and eight hours of ground school. The locally qualified crews had been previously qualified in radar bombing and simply needed a check-out with the new equipment." [141]

On February 17, three days after receiving their first two aircraft, the 44th TFS flew the first Commando Nail night radar bombing missions using their 2098-modified F–105Fs. "During the month [of February], a total of 11 combat and 14 training sorties were flown in the new aircraft. The eleven combat sorties were "against nine different targets in RP-1. No secondaries were noted and a total of 24.75 tons of ordnance (or sixty-six 750-pound bombs) was dropped." [142]

On February 20, 1968, the 44th TFS converted to an all F–105F squadron to fly only Wild Weasel and Commando Nail missions. The squadron gave up their F–105Ds and their strike pilots transferred to the two other fighter squadrons at Korat — the 34th TFS and the 469th TFS. The squadron's fleet of "Fs" "included six '2098s' (night radar bombing modification), five 'Combat Martin' (special electronic countermeasures), and 12 'Wild Weasel III' aircraft. ... Six of the 'Wild Weasel III' aircraft were dual capable in that they also possessed the

radar equipment to perform the COMMANDO NAIL (night radar bombing) mission."

The squadron flew fewer Commando Nail missions in their dual-capable aircraft, preferring to fly these missions in their six more accurate 2098-modified aircraft and to use their dual-capable planes for Wild Weasel missions.[143] "In March, 58 of the 75 Commando Nail sorties flown were with the '2098' aircraft, although all were not flown with full '2098' capability due to equipment reliability problems." The new equipment lacked spare parts and technical data, and the new CRTs had a high failure rate. "By the end of March six of the CRTs had failed and at that time only two of the '2098s' had the CRT installed. The other aircraft had the standard DVS tube reinstalled, which ... downgraded the aircraft's mission capability. Extensive coordination was continuing between the 388th, the [depot at McClellan AFB, California] and the manufacturer, to work out a solution to this problem." [144]

THE LOSS OF THE COMMANDO CLUB RADAR STATION WAS A SEVERE BLOW TO THE AIR FORCE'S RADAR BOMBING EFFORTS

A Fifth Commando Nail Aircraft is Lost

On February 29, 1968, the 44th TFS lost its fifth Commando Nail aircraft, this one to a SAM. The plane crashed in RP 6B, North Vietnam. The crew, "Ozark 03", was providing Wild Weasel support to a strike against a Hanoi vehicle facility. Maj. Crosley James Fitton, Jr. and his EWO Capt. Cleveland Scott Harris both died. Their aircraft, F–105F 63-8312, was one of the squadron's six dual-capable planes and one of the original four Ryan's Raider aircraft that had arrived at Korat from Yokota on April 24, 1967.[145]

JCS Approves F–111 Deployment

On the same day the 44th TFS lost its fifth Commando Nail aircraft, the Joint Chiefs of Staff approved the deployment of six F–111s from Nellis to Takhli under Combat Lancer. "Aircraft deployment is planned for 15 March 1968 with initial deployments of supporting equipment and personnel commencing 1 March 1968. A total of 385 personnel are approved." [146]

In Combat Bullseye tests at Eglin between March and June 1967, the F–111A had achieved the most accurate radar bomb drops of all aircraft tested including the B–58. The Air Force's latest planes were expected to provide a night, all-weather bombing capability over North Vietnam that was superior to Commando Club bombing accuracy and to the accuracies of the Commando Nail missions being flown by F–105Fs from the 388th TFW at Korat and the F–4Ds from the 8th TFW at Ubon.[147]

North Vietnam Destroys Site 85

Six days before the F–111As arrived at Takhli, in the early morning hours of March 11, 1968, a North Vietnamese sapper unit attacked and destroyed the Commando Club radar station and killed or captured eleven Air Force technicians at LS-85 in Laos. The attack also destroyed the Channel 97 TACAN station.[148]

North Vietnam had threatened the site before. On January 12, 1968, four Soviet-built AN–2 fabric-covered biplanes had attacked the mountaintop radar station. Two of the AN–2s had dropped bombs that knocked the Channel 97 antenna out of alignment, putting the frequently used TACAN signal out of commission for several days. The bombs had not damaged the Commando Club radar. A CIA civilian crew flying a UH–1 helicopter had fired an AK-47 rifle, shooting down one of the biplanes. A second AN–2 had crashed on a nearby mountain while trying to escape.[149]

The loss of the Commando Club radar station was a severe blow to the Air Force's radar bombing efforts. The site's radar had guided F–105s and other aircraft over targets in North Vietnam for only 18 weeks but had become one of the Air Force's primary means of conducting air strikes in Northern Laos and North Vietnam during bad weather. Between December 1, 1967 and March 11, 1968, the Air Force had flown 300 Commando Club sorties against North Vietnam.[150]

During this time the Air Force increasingly flew more Commando Club sorties against targets in northern Laos than it did against targets in the upper route packs of North Vietnam, the expected use of the Commando Club radar. For example, between January 1 and March 11, 1968, the 388th TFW flew only 24 missions into North Vietnam's Route Packs 5 and 6A, all in January and February. However, the wing had flown 85 missions in the Barrel Roll region of Northern Laos, 29 in March alone. Many of these attacks in Northern Laos were to defend LS-85 itself from encroaching North Vietnamese forces.[151]

F–111s Arrive at Takhli

On March 17, 1968, the six Combat Lancer F–111As from Nellis AFB, Nevada, landed at Takhli. The group was designated Detachment 1 of the 428th TFS. Col. Ivan H. Dethman commanded the detachment that included 49 officers and 298 airmen. Lt. Col. Ed Palmgren, who had coordinated the deployment during his visit to Takhli in October 1967, was the detachment's Operations Officer.[152]

Takhli's base newspaper trumpeted the reception that heralded the arrival of the airplanes. "Heading the list of dignitaries on hand for the Southeast Asian debut of this new multi-mission weapon system were Gen. John D. Ryan, Pacific Air Forces commander-in-chief; Lt. Gen. Joseph H. Moore, U.S. Air Force inspector general; Maj. Gen. Ralph G. Taylor, Jr., commander of the Tactical Fighter Weapons Center at Nellis AFB, Nev.; and Col. Rachsin Vasharat, Royal Thai Air Force's 4th TFW commander." [153]

Despite his having completed 100 F–105 combat missions in January, Maj. Malcolm D. Winter who had helped the 355th TFW plan the arrival of the F–111s, was also at Takhli when the planes

The Vietnamese caption on this propaganda photo indicates that this F–105 was shot down on November 18, 1967 in Vinh Phu province. The date and location point to the F–105D of the 388 TFW commander, Col. Edward B. Burdett (62-4221) or of Maj. Leslie J. Hauer (62-4283) from the 469 TFS during the first Commando Club raid against Phuc Yen airfield. SAMs downed both planes and the pilots were killed. *(Photograph VA007563, No Date, Malcolm McConnell Collection, The Vietnam Archive, Texas Tech University.)*

arrived. "The F–111 pilots insisted on hooches on the same side of the base as the rest of the pilots. [The] only problem [was] that everyone else flew days and they flew nights. Needless to say, this made it hard for them to sleep. After about a week of that ... they relented and were moved to quarters on the other side of the base where the noise would be less." [154]

Like the early Ryan's Raider crews, both F–111A crewmembers were pilots. Lt. Col. Joseph T. Guastella, an experienced SAC radar bombardier, was assigned to the All-Weather Attack Branch at Headquarters 7th Air Force when the F–111s arrived at Takhli. In a Corona Harvest interview conducted on December 11, 1968, he commented on this arrangement.

The man on the right side who was making the radar release was not a fully trained radar bombardier like we know them in Strategic Air Command. ... We had some great pilots ... but they were pilots in the right seat trying to be radar bombardiers. ... Also the pilot in the 111 would transition every thirty days from the right seat to the left seat: for thirty days he was a pilot; the next thirty days he was a bombardier.

In the final analysis it still takes a highly trained individual to ascertain what a target looks like and to place his cross-hairs on that target and to set up his switches and set up his ordnance so that it will release at the right time, and you just don't get this overnight. You develop it through years of experience, and I think TAC is learning it, and they're starting to put radar people in the back seat of some of their aircraft and the program is moving along as a result of this.

As a result of their comparatively low experience, we utilized the 111 in ... Route Pack 1 — we put them in a fairly permissive area. [155]

COMBAT MISSIONS OF THE F–111A WERE TEMPORARILY HALTED. INVESTIGATION REVEALED THIS PLANE CRASHED DUE TO A STRUCTURAL FAILURE

On March 25, 1968, eight days after arriving at Takhli, Detachment 1 flew its first mission into North Vietnam. The crew of F–111A 66-0018 was Col. Dethman, commander of the 528th TFS detachment, and Capt. Rick Matteis in the right seat. Using their system radar on a night Commando Nail mission, they struck the Vung Chau truck park and storage area in Route Pack 1.[156]

An article in the newspaper from Las Vegas, Nevada, the location of Nellis AFB and the F–111's hometown, described the mission in glowing terms.

America's newest warplanes, the 1,500-miles per hour F–111s flew their first combat mission Monday through dark and overcast skies over North Vietnam - the kind of weather the Air Force says the radar-guided, swing-wing aircraft are designed to overcome.

Pilots and their bombs were on the targets - bivouac and truck and storage areas northwest of Dong Hoi, a coastal city 35 miles north of the demilitarized zone.

I think the only time they knew we were there was when the bombs went off." said Lt Col Edwin D. Palmgren, 41, of Atlanta, Ga., who flew one of the all-purpose jets.

The F–111s flew from the U.S. air base at Ta Khli, Thailand, where the first six of the new aircraft had arrived March 17. The number of planes on the mission was not announced, but Air Force flights usually include four.

Because of darkness and overcast, the nighttime strike was made wholly under radar controls. F–111s carry sophisticated radar equipment that permits them to fly automatically toward a chosen target at night and in all kinds of weather.

The lead plane was piloted by Col. Ivan H. Dethman, 48, of Seattle, Wash., commander of the 428th Tactical Fighter Squadron at Ta Khli, and Capt. Richard M. Matthis [sic]. [157]

Two F–111As Go Down

Ten days after their arrival at Takhli, on March 28, 1968, an F–111A was lost on a mission over North Vietnam. F–111A 66-0022 (call sign "Omaha 77") did not return from a night strike on the Chanh Hoa Truck Park in Route Pack 1 and its crew, Major Henry Elmer "Hank" MacCann and Capt. Dennis Lee Graham, were missing.[158]

Two days later, the second F–111A (tail number 66-0017) crashed in Thailand en route to a combat mission to North Vietnam. Its two-man crew, Maj. Sandy Marquardt and Capt. Joe Hodges (call sign "Hotrod 76") escaped injury when they ejected in the cockpit module and were picked up by helicopter. After this crash, combat missions of the F–111A were temporarily halted. Investigation revealed this second plane crashed due to a structural failure of an actuating valve in the stabilator system.[159]

These losses began restrictions on F–111A operations that minimized their contribution to the Commando Nail night radar missions.

Commando Nail Missions to North Vietnam Continue

By the end of March 1968, F–105Fs, F–4Ds, and F–111As had flown 1,987 Commando Nail sorties in North Vietnam. During March, their first month of operation from Takhli, the F–111As flew 19 of them, all in Route Pack 1.[160]

BOMBING ACCURACY WAS NOT GOOD. TEN COMPLETELY MISSED; FOURTEEN MAY HAVE. THE REMAINING THIRTY-ONE ACHIEVED AN AVERAGE ERROR OF 1,050 FEET

In contrast to the F–111s being restricted to targets in Route Pack 1, F–105F and F–4 Commando Nail aircraft in March were attacking targets in the greater threat areas of North Vietnam. For example, the 44th TFS flew 58 Commando Nail sorties with their "2098"-modified F–105Fs striking forty-one different targets in RP 1, fifteen in RP 5 and seven in RP 6. During these missions, they dropped 369 750-pound bombs but reported only three secondary explosions.[161]

Also during March 1968, F–4s from the 8th TFW at Ubon and 432nd TRW at Udorn, supported by Wild Weasel crews in the 354th TFS at Takhli, flew Commando Nail missions against major targets in the delta region of North Vietnam. The F–4s struck Yen Bai airfield, Ha Dong boatyard, Ha Dong Army barracks (JCS 31), Hanoi Vehicle Repair yard, Phuc Yen airfield (JCS 6), and targets on the northeast railroad. F–4Ds flew the Phuc Yen airfield strike on March 28 with four F–4D strike aircraft supported by eight F–4Ds for MiG cap and eight F–105 Iron Hand aircraft with three EB–66s that jammed early warning and GCI radars and dropped chaff. "The strike force encountered no MiGs, SAMs, or AAA fire." [162] An Air Staff report pointed out that F–4Ds had flown six times as many Commando Nail missions over the past several months as the F–105Fs from Korat, an indication of the growing importance of the F–4s for flying these radar missions.[163]

On March 30, F–105Fs from the 44th TFS "... flew a successful day Commando Nail mission against the Thai Nguyen thermal power plant (JCS 82.16). ... Aircrews released 20 M-117s over the target but adverse weather prevented BDA." [164]

President Johnson Restricts Rolling Thunder

In a television broadcast from the White House on March 31, 1968, President Lyndon B. Johnson announced a bombing restriction against North Vietnam and declared that he would not seek reelection as President. The restriction went into effect on April 1. All Rolling Thunder missions were limited to targets below the 20th parallel, 11 nautical miles north of Thanh Hoa in North Vietnam.[165]

However, three days later, on April 4, President Johnson, reacting to criticism by Senator J. William Fullbright, an opponent of the Vietnam War, further constrained Rolling Thunder by moving the restricted area 60 nautical miles further south to the 19th parallel. The move compressed all Commando Nail and other Air Force and Navy strikes into Laos and Route Pack 1, an area of North Vietnam 150 miles long by 50 miles wide that contained only two sizeable cities, Vinh and Dong Hoi, as well as the infiltration route of Mu Gia Pass.[166] Over the next three months, with few radar-significant targets in Laos, the 44th TFS flew over 300 Commando Nail night missions into Route Pack 1.[167]

Their Third Loss Stops F–111 Combat Missions

The 428th TFS Detachment 1 at Takhli lost their third F–111 in a combat mission on April 22, 1968. F– 111A 66-0024 (call sign Tailbone 78) did not return from a night strike against the Phoung Chay highway ferry in North Vietnam. Its crew, Lt. Col. Edwin David Palmgren, the unit's Operations Officer, and Navy exchange officer, Lt. Cdr. David Leo "Spade" Cooley, were missing in Laos. After this third loss, six weeks after the F–111A detachment's arrival at Takhli, the Air Force again grounded the planes. They remained grounded until June 21 when they began flying training routes within Thailand.[168]

The F–111As had flown 55 combat sorties into Route Pack 1. "The bombing accuracy for the fifty-five aircraft that reached their targets was not good. Ten completely missed; another fourteen may have done the same. The remaining thirty-one achieved an average error of 1,050 feet." [169]

This third loss resulted in the 355th TFW being forced to take operational control of the F–111As. The initial arrangement that Lt. Col. Palmgren negotiated when he had visited Takhli on October 2, 1967, had been for maximum autonomy for the F–111 operation. On June 21, when they started flying again, the Combat Lancer crews flew check rides in the rear seats of Takhli's F–105Fs. When they were released to fly their F–111s, they flew 6 functional check flights, 14 recurrency checks, and 11 retraining missions each of which was chased by an F–105F with a Combat Lancer crewman in the back seat. Combat Lancer crews flew terrain-following training flights over pre-surveyed routes in Thailand but never returned to combat.[170]

Lt. Col. Jack Sherrill Takes Over the 44th TFS

On May 5, 1968, Lt. Col. Guy J. "Jack" Sherrill replaced Lt. Col. Robert A. "Red" Evans as commander of the 44th TFS at Korat. Evans had

Lt. Col. Guy J. "Jack" Sherrill commanded the 44 TFS at Korat between May 5, 1968 and Mar. 17, 1969. During his combat tour, he flew 126 Wild Weasel and Commando Nail night missions. He is posing in front of F–105F 63-8347, a Wild Weasel aircraft that was lost to a landing accident at Korat on May 17, 1972. *(John Revak photo.)*

IN EARLY 1968, THE AIR FORCE ONCE AGAIN CHANGED THE CREW COMPOSITION IN THE F–105F COMMANDO NAIL PROGRAM BY HAVING RADAR-BOMBARDIERS INSTEAD OF WILD WEASEL EWOS FLY IN THE REAR COCKPIT

replaced Lt. Col. Jim McInerney on November 2, 1967 when McInerney had completed 101 combat missions and was assigned to the Operations Plans Division at PACAF Headquarters. Sherrill had arrived at Korat on March 14, 1968, without taking the Wild Weasel course at Nellis. However, he was an experienced F–105 pilot and quickly learned to fly both Wild Weasel and night Commando Nail missions. Capt. John A. Stetson became his EWO. Capt. Stetson was already at Korat and had flown 57 missions with his original pilot, Capt. Harry N. Gainer, who had developed an untreatable ulcer and had returned home.[171] Despite being the squadron commander with many administrative tasks, Col. Sherrill continued to fly Wild Weasel and Commando Nail night missions that he had been flying since his arrival in March. Col. Sherrill was to be the last commander of the 44th TFS who flew night Commando Nail missions as well as Wild Weasel missions.[172]

The First Commando Nail Wild Weasel Class Graduates at Nellis

On May 8, 1968, the first class of Commando Nail pilot/EWO crews graduated from their combined Wild Weasel and Commando Nail training at Nellis AFB, Nevada. Wild Weasel Class 68WW III-20, assigned to the 4537th FWS, had started on February 9. This class graduated over a year after 7th Air Force had approved Lt. Col. Jim McInerney's concept of Wild Weasel crews flying Commando Nail missions to replace the original Ryan's Raider dual-pilot crews. After graduation, the seven crews of pilots and EWOs all reported to the 44th TFS in the 388th TFW at Korat.[173]

One of the pilots, Capt. Ronald L. Shepard, described his Commando Nail training. "Some of our WW training flights at Nellis were (relatively) low altitude simulated radar bombing missions. Since most of the EWO's had not played radar navigator in some time, if at all, it was a learning experience for them as well. ... The commando nail training missions taught me one thing, based on watching the EWO try to use the manual terrain avoidance mode on the radar. Any mission I was involved in at night would be flown at least 500 feet above the highest terrain within 50 miles." [174]

Air Staff Recommends Ending Commando Nail Missions

In May 1968, the Air Staff published a secret report on the Commando Nail program in South East Asia. Their report, dated May 9, covered the period from April 1967 when the program started as Ryan's Raiders to March 1968. After reviewing Commando Nail operations of the F–105F, F–4D, and F–111A, and noting major limitations in "USAF tactical air power identified by the Commando Nail experience to date", the report made three recommendations:

***1**. Commando Nail type missions employing currently available weapon systems be limited to occasional harassment strikes and that further missions employed for the sole purpose of acquiring or validating data be discontinued pending availability of vastly improved all-weather/night capable weapons systems.*
***2**. F–4 and F–105 aircraft currently being employed in Commando Nail operations be returned to the primary strike role.*
***3**. Continuing emphasis be placed on the accelerated development of a broad spectrum of highly accurate internal all-weather systems to include terminally guided weapons which will provide integral acquisition, attack and ECM protective capabilities.* [175]

The Air Staff was acknowledging the limitations of radar bombing as well as the improved blind bombing technologies that were being developed, some of which would be introduced in the last stages of the Vietnam war.

Despite the Air Staff's recommendations, the 44th TFS continued to fly Commando Nail missions. The squadron commander, Jack Sherrill, flew many of them himself. In addition to Commando Nail night missions, he often flew night Wild Weasel missions that supported Commando Nail missions. Throughout May and June 1968, he and his EWO, Capt. John A. Stetson, flew 9 Commando Nail missions and 14 Iron Hand missions.[176]

Between June 9 and June 11, 1968, four more Wild Weasel crews who had completed Wild Weasel training at Nellis arrived in the 44th TFS and began flying F–105F Commando Nail as well as Wild Weasel missions.[177] The senior pilot, Lt. Col. Richard A. "Dick" Haggren had been an Air Staff officer in August 1965 and had participated in the Wild Weasel Task Force led by Brig. Gen. Kenneth C. Dempster that established the first Wild Weasel program in response to the introduction of SAMs in North Vietnam. He had helped develop and test anti-SAM systems for the F–100F and the F–105F Wild Weasel programs. Haggren had also flown F–105 tests at Eglin during the plane's development in the early 1960s. He became Operations Officer in the 44th TFS shortly after his arrival at Korat.

Navigator-Bombardiers Join Commando Nail Crews

In early 1968, the Air Force once again changed the crew composition in the F–105F Commando Nail program by having radar-bombardiers instead of Wild Weasel EWOs fly in the rear cockpit. F–105 RTU classes at McConnell rather than the Wild Weasel courses at Nellis provided this third change in F–105F Commando Nail crews. After graduating from their F–105 RTU training, selected pilots stayed at McConnell for additional training with a navigator-bombardier who had recently graduated from navigator school at Mather AFB, California. These crews received further training together in Commando Nail radar bombing.[178]

The 4519th Combat Crew Training Squadron (CCTS) conducted McConnell's new class under Course 111506K (called "Combat Nail" instead of Commando Nail). Lt. Col. Harry W. Schurr commanded the squadron. He was previously commander of the 469th TFS at Korat where he had earned the Air Force Cross for leading the 388th TFW's F–105s on the first strike on Hanoi's Paul Doumer Bridge on June 11, 1967.[179]

The first class started flying on June 20, 1968 in Class 69ARS under the squadron's "E Flight" led by Maj. Gayle D. Williams, Jr., a former Thunderbird pilot. Students flew 13 training sorties in the F–105F and 4 training sorties in the T–39B for the navigator-bombardier. McConnell's two F–105Fs that supported the training were similar to Korat's -2098 aircraft without the control stick in the rear cockpit.[180] "...The present syllabus requires the crews to fly five night missions on radar bombing sites, three daytime radar bomb missions, and three daytime missions on the Smoky Hill gunnery and bombing ranges." [181] McConnell's second Combat Nail class, 69BRS, began training on August 23 and graduated on November 8, 1968.[182]

Korat Loses Their Sixth and Seventh Commando Nail Airplanes

On July 15, 1968, AAA claimed a sixth Commando Nail F–105F during a Wild Weasel mission in Route Pack 1. Flying as "Bass 02", F–105F 63-8353 was one of the 44th's dual-capable planes that had been Commando-Nail modified at Kadena in 1967. The pilot, Maj. Gobel Dale James, became a POW and his EWO, Capt. Larry Eugene Martin, was KIA.[183]

FOR THE REMAINDER OF ROLLING THUNDER, THE FIVE REMAINING 2098-MODIFIED COMMANDO NAIL F–105Fs AT KORAT CONTINUED TO FLY NIGHT MISSIONS INTO ROUTE PACK 1

On September 7, 1968, another Commando Nail F–105F from the 44th crashed when its engine failed on a Commando Nail mission. This seventh loss was the second due to engine failure. The crew, Maj. Eugene A. Bonfiglio and EWO Maj. Lorne F. "Jack" McCormick (call sign "Packard") attempted an emergency landing at Udorn but had to eject when the engine's #3 bearing seized. The crew had graduated in May from the first Wild Weasel class that had received Commando Nail training at Nellis. F–105F 63-8289 was one of the six 2098- modified Commando Nail planes assigned to the 44th. "Maj. Bonfiglio suffered a compression fracture of the vertebra and Major McCormick suffered a hairline fracture of the collar bone." [184]

The 44th TFS Continues Commando Nail Missions

For the remainder of Rolling Thunder, the five remaining 2098-modified Commando Nail F–105Fs at Korat continued to fly night missions into Route Pack 1. The 44th TFS scheduled an average of four missions each night, some of which they flew in their six less-accurate dual-capable Wild Weasel III aircraft. "A typical CN frag consisted of four different targets with time over targets (TOT) five to ten minutes apart. These targets were truck parks, storage areas, petroleum, oil and lubricants (POL) dumps, and road interdiction points." The 388th TFW looked upon Commando Nail missions as harassing North Vietnamese road repair crews rather than destroying specific targets. "The CN mission contributed to the success of the 7th AF road interdiction program by the night radar bombing of specified interdiction points, which had been struck visually by fighter bombers the previous day, thus giving the enemy little time for rest or rebuilding." [185]

From, the beginning of Ryan's Raider operations in April 1967 through March 31, 1968, Korat's Commando Nail aircraft had flown 617 sorties into North Vietnam, 64% of them in Route Pack 1. From April 1968 through October 1968, they flew an additional 707 sorties. Therefore, during their Rolling Thunder combat period, Korat's Commando Nail aircraft flew 1,324 bombing sorties against North Vietnam, 83 percent of them in Route Pack 1.[186]

Their bombing accuracy was poor. Since truck parks or road intersections provided no radar returns, the crew used a prominent terrain feature as an offset aiming point that could be as far as 20,000 feet from the actual target, a distance that severely degraded accuracy. Since all sorties were at night, strike camera photos to confirm bomb impacts were not available. Accuracy measures published in 388th TFW histories were based largely on analysis of photos taken by radarscope cameras. For the period April through September 1968, the numbers show an average CEP of 1600 feet and a CEA of 3900 feet. (CEA was the average of all bombs dropped and CEP was the middle bomb of all bombs dropped, excluding gross bombs. Gross bombs were those that missed the target by 10,000 feet or more.) The squadron also tracked individual pilot CEA scores that ranged from 167 feet to 19,250 feet.[187]

The 44th continued contending with reliability problems with their 2098 systems. The Cathode Ray Tubes in the aft cockpit failed on the average of every 42 hours of operation, a figure that ranged from 3 hours to 119 hours. Those tubes that maintenance sent to the depot for rework and return to Korat were even less reliable lasting only 34 hours before failure. The original Direct View Storage tubes were temporarily installed when CRTs weren't available. However, by September 1968, most of the reliability problems had been resolved and all five remaining 2098 Commando Nail planes were equipped with the sharper CRTs.[188]

On July 12, 1968, Lt. Col. Joseph T. Guastella from Seventh Air Force, probably anticipating the arrival of the navigator-bombardier crews being trained at McConnell, visited Korat and flew a Commando Nail combat mission. As Deputy Chief of the All-Weather Attack Branch that oversaw radar-bombing programs in South East Asia, he was a highly experienced navigator-bombardier who had flown B–58s for seven years. It was a routine mission. He flew in the rear cockpit of F–105F 63-8281, one of the dual-capable Wild Weasel III airplanes, piloted by the 44th squadron comman-

der, Lt. Col. Jack Sherrill who was flying his 45th combat mission. They flew as "Machete", one of three Commando Nail single- ship missions into North Vietnam. They reached their target at 6:55 p.m., dropped six bombs, and then returned directly to Korat without post-strike refueling.[189]

AT MIDNIGHT ON NOVEMBER 1, 1968, PRESIDENT JOHNSON HALTED ALL BOMBING OF NORTH VIETNAM BRINGING TO A CLOSE THE ROLLING THUNDER CAMPAIGN THAT HE HAD STARTED IN MARCH 1965

During August and September 1968, the 44th TFS began receiving crews who were qualified to fly only one type of mission—either Wild Weasel or Commando Nail. The first crews who were qualified for only Commando Nail were the four pilot and navigator-bombardier crews who graduated from McConnell's Combat Nail training in August. These crews arrived at the 44th TFS on September 19. These single-mission crews caused scheduling problems. "Prior to this new concept, all crews flying the F–105F were qualified to fly both IH [Iron Hand] and CN [Commando Nail] missions, with the crew consisting of a pilot and EWO." Beginning in August, crews arriving at Korat served for one year rather than 100 missions.[190]

On October 3, 1968, the first of these pilot and navigator-bombardier Commando Nail crews flew their first combat missions in Route Pack 1. "The in-squadron checkout program was comprehensive and well carried out, due to the efforts of all those crews with Commando Nail experience. The CN mission, supported by IH when weather permitted, continued to contribute greatly to the success of the Seventh Air Force road interdiction program by the night all-weather radar bombing of specified interdiction points."[191]

During October 1968, their last month of Commando Nail missions, the 44th TFS flew 121 Commando Nail sorties and dropped a total of 210 MK-82, 300 CBU-24s, and 16 MK-117 bombs. In an all-too-common refrain, the wing history reported, "Bomb damage assessment (BDA) was handicapped by cloud cover over target areas. However, 14 CN crews observed five secondary explosions and 16 secondary sustained fires." [192]

President Johnson Ends Rolling Thunder

At midnight on November 1, 1968, President Johnson halted all bombing of North Vietnam bringing to a close the Rolling Thunder campaign that he had started in March 1965. The halt ended the F–105F Commando Nail radar bombing missions from Korat. After November 1, Commando Nail crews reverted to Skyspot missions over Laos using the radar ground stations in Thailand. F–105Ds equipped with radar beacon transponders led flights of two or four Commando Nail F–105Fs in day and night missions.[193]

On November 8, the 23d TFW at McConnell cancelled their third Combat Nail class, 69CRS, which they had scheduled before the bombing halt on November 1. The eight navigator-bombardiers from the first two classes were the only ones trained for the F–105F Commando Nail program.[194] However, McConnell's F–105 RTU program continued because the Air Force still needed F–105 pilots for its stepped-up Laotian campaign.

On November 19, after flying 55 Commando Nail missions in Route Pack 1 during their eight months at Takhli, the Combat Lancer crews of Detachment 1, 428 TFS, returned home to Nellis with their five F– 111As. [195]

Despite the cancellation of Commando Nail bombing of North Vietnam, the aircrew pipeline didn't stop. The 44th TFS received their last 4 Commando Nail aircrews on December 16 and 17. These men were from McConnell's last Combat Nail Class 69BRS that had graduated on November 8. Since the bombing halt three weeks before their arrival, these four crews with only Commando Nail training no longer had a mission. The 44th TFS squadron commander, Lt. Col. Jack Sherrill, recommended to 7th Air Force that the eight Navigator-Bombardiers in his squadron be "... cross-trained in-country to F–4Ds and assigned PCS elsewhere in Thailand." [196]

Between December 8 and December 20, 1968, over the objections of Lt. Col. Dick Haggren the 44th TFS Operations Officer, Korat transferred the five 2098-modified Commando Nail F–105Fs to the 23d TFW at McConnell for F–105 RTU training. The transfer was a result of a message, dated 5 November 1968, in which the Air Staff requested that CINCPACF provide additional F–105s to support McConnell's RTU program. CINCPACAF, through 7th Air Force, directed the transfer of the five 2098 F–105Fs. [197]

Lt. Col. Guy J. "Jack" Sherrill flew his last combat mission March 9, 1969, and completed his year as commander of the 44th TFS. Since his arrival at Korat on March 14, 1968, he had flown 126 combat missions and 333 hours involving both Wild Weasel and night Commando Nail missions. He remembered his final mission as a song to the tune of Wabash Cannonball.

Hello there Apache, this is Vampire number one,
I'm comin' 'cross the Mekong,
My flyin' here is done.
This is my final mission, and a sore ass I have got.
Jus' let me land this big ol' Thud,
On the runway at Korat.

When he landed, his troops greeted him with a "helluva parade. After two bottles of champagne the troops blockaded me in the squadron area with a fire truck and demanded chug-a-lug of a 6-pack for passage. A lot of it got spilled and the truck hosed me down after all. After climbing out of the pool, I rang the bell, had a martini, and went to the hooch to get on dry clothes.[198] Three days later, he relinquished command of the 44th TFS to Lt. Col. Herbert L. Sherrill (no relation to Jack) who had arrived at Korat with his EWO Maj. Jerry W. Hargis on December 26 after completing Wild Weasel training in Class 68WW III-25 at Nellis.[199]

Aftermath

Shortly after the transfer of the 44th TFS's five "2098" F–105Fs to McConnell, 7th Air Force initi-

Capt. William A. Lillund, one of the original Wild Weasel EWOs who trained to fly F–105F Commando Nail missions, designed this "Commando Wild Weasel" uniform patch as a counterpoint to the Ryan's Raider emblem showing an F–105F with a screw piercing the rear cockpit. As Mike Michael explained, "It was designed ... to let others know that we did not feel that we were getting screwed like the original pilot/pilot crews." *(A. L. Michael photo.)*

ated a Commando Nail program for night radar bombing of targets in Laos. Despite relatively few radar-significant targets in Laos, Seventh Air Force directed the 388th TFW as well as the 366th TFW at Da Nang, along with the 8th TFW at Ubon and 432nd TRW at Udorn, to begin F–4 Commando Nail missions. "The wing commander will identify crews to be qualified for CN bombing in Laos. Selection will be based on operator experience and past CN bombing records. Replacement crews will be extensively trained using camera attack scoring prior to selection as a CN crew. ... Commando Nail targets will be approved by 7 AF and listed as approved CN targets in the daily frag. Only fragged targets will be struck using CN procedures. CN bootleg activity will not be allowed." At Korat, the mission was assigned to the F–4Es that had replaced the F–105Ds in the 469 TFS on November 17, 1968. Korat's "... F–4E crews commenced training to become fully qualified in CN bombing techniques." [200]

THE AIR FORCE'S RADAR BOMBING PROGRAMS DURING ROLLING THUNDER—PATHFINDER, SKY SPOT, COMMANDO NAIL, AND COMMANDO CLUB—HAD VERY LIMITED SUCCESS

Over the next three years, Korat's five 2098 Commando Nail F–105Fs remained with the 23d TFW at McConnell who had received approval from HQ TAC on January 23, 1969, for their F–105 RTU students to fly the Commando Nail F–105F aircraft despite the lack of a flight control stick in the rear cockpit. In October 1969, the 23d received a change to their training syllabus that allowed them to use Commando Nail planes in place of F–105Ds. The change in TAC Syllabus 111106B allowed "more scheduling flexibility. ... The syllabus programs for each student to fly 17 dual F–105F sorties and 62 solo F–105D sorties; however, an F–105F may be substituted for the F–105D as necessary." [201]

Although the Commando Nail F–105Fs supported McConnell's RTU mission, their lack of Wild Weasel equipment delayed McConnell's 561st TFS when it gave up its RTU mission in April 1970, and picked up the Wild Weasel mission with F–105Gs — modified F–105Fs with advanced Wild Weasel equipment. The squadron transferred out all its F–105Bs and Ds that they had used for pilot training and, by June 30, 1970 had eight F–105Fs and nine F–105Gs. However, none of the Gs had all the programmed Wild Weasel equipment and five of the nine F–105Fs were the Commando Nail aircraft without aircraft controls or Wild Weasel equipment in the rear cockpit.[202] It took until 1972 for the Air Force to modify these five unique planes to F–105G Wild Weasels. After they were modified in the depot at McClellan AFB, California the planes supported training at Nellis and the 1972 Linebacker bombing campaigns that ended the war.[203]

Conclusions

The Air Force's radar bombing programs during Rolling Thunder—pathfinder, Sky Spot, Commando Nail, and Commando Club—had very limited success. The first three programs, due to heavy enemy defenses in North Vietnam's heartland and the inherent limitations of their systems, ended up being restricted to targets in the lower regions of North Vietnam and in Laos. All four systems suffered from inaccurate bombing.

Due to bombing inaccuracies and concerns for collateral damage, radar-bombing missions were more suited to area targets such as storage and vehicle parking areas instead of the high-value point targets of industrial buildings and bridges that constituted most of the JCS targets of the Rolling Thunder campaign. Bombing inaccuracies combined with the scarcity of bomb damage assessment due to darkness or weather conditions required repeated attacks against the same targets.

Commando Nail night missions, the longest lasting of the programs flown by F–105Fs, F–4s, and F–111s, were largely harassment missions against relatively minor targets rather than effective bombing of specific major targets.

The Air Staff was well aware of the limitations of Air Force systems for radar bombing but still instituted the programs. Radar technology was clearly not suited for the required bombing accuracies. What success the Air Force achieved was due to the brave aircrews willing to fly the missions. Unfortunately, many dedicated men lost their lives in carrying out these programs.

The Air Force's experience during Rolling Thunder was the springboard for later successes in precision and blind bombing that the Air Force applied in the Linebacker campaigns of 1972 and in subsequent wars. The targeting and bomb–guidance technologies that the Air Forced lacked in 1968 that were developed over the next 30 years included forward looking infrared systems, laser target designators, precision guidance adapters for conventional bombs, electronic low-light optical systems such as night vision goggles, and aircraft navigation and bomb guidance from satellite signals. These technologies were far more capable than radar for precision night and bad weather bombing. They led to today's F–15s, F–16s, and F–117s, descendents of the F–105s, F–4s and F–111s from Vietnam, "owning the night." ■

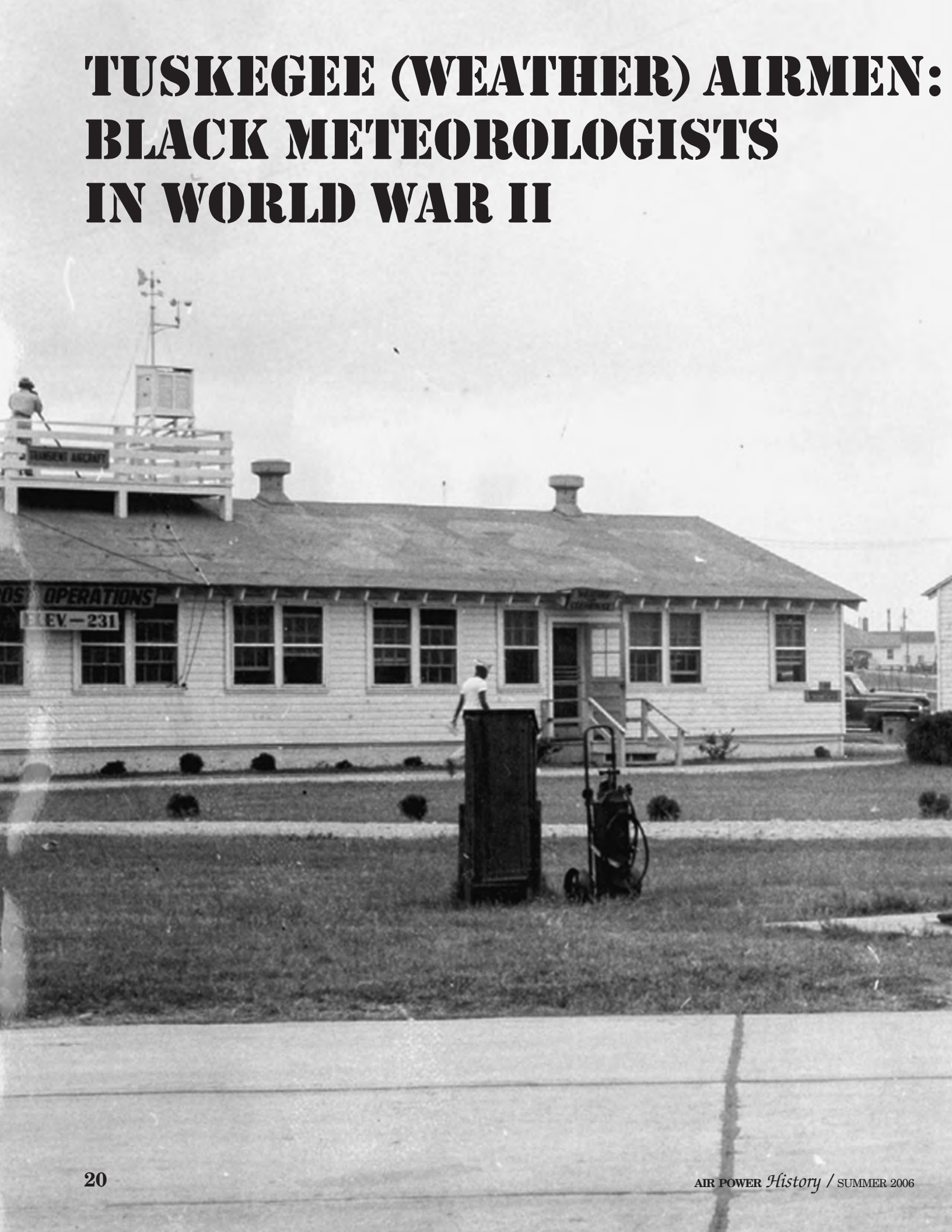
108. Combat mission log of Malcolm D. Winter transcribed by his son, Mike Winter.
109. A. L. Michael, e-mail to author Feb 5, 2006.
110. 355 TFW history Apr-Jun 68, USAF microfilm NO464, frames 0565 -0566.
111. Navy CNA Loss/Damage Database, USAF loss 709, page L23. Neither man's remains have been returned. Both names are on the Vietnam Memorial Wall, panel 27E line 49.
112. Dennis R. Jenkins, *F-105 Thunderchief, Workhorse of the Vietnam War*, pg 101.
113. Michael, Ryan's Raiders Corona Harvest report, pg 32.
114. Timothy Castle, *One Day Too Long, Top Secret Site 85 and the Bombing of North Vietnam*, pp 27–35.
115. The eight targets were:
1. Phuc Yen airfield (JCS 6)
2. Kinh No railroad yard. "The adjacent Nguyen Khe storage area (JCS 51) could also be targeted depending on activity."
3. Kinh No motor vehicle repair.
4. Hanoi Transformer station (JCS 82.24).
5. Hanoi/Duc Noi PPS. "This facility has a current residual capacity of 1900 MT."
6. Yen Vien Classification yard (JCS 19).
7. Hanoi railroad car repair shop and marshalling yard (JCS 20).
8. Hanoi storage area at Bac Mai.
116. PACAF briefing to CINCPAC for the period 18-30 September 1967.
117. Castle, pp 26 and 50–51.
118. *Ibid*, pp 52–53.
119. 355 TFW history, Oct 67–Mar 68, USAF microfilm NO463, frames 1029 and 1583.
120. 388 TFW history, Apr-Dec 67, Vol II, USAF microfilm NO584, frames 0030-034. Chronology of Seventh Air Force, 1 July 1967-30 June 1968, pg 5.
121. Thompson, pp 103–104. USAF Fighter Weapons Center Report, Red Baron II, Vol IV, Event 59, pp 67–72.
122. Red Baron II, Vol IV, Event 59, pp 69-70.
123. Navy CNA Loss/Damage Database, USAF loss 752, page D24. Dardeau's and Lehnhoff's remains were returned to the U.S. on November 25, 1987. Dardeau's name is on the Vietnam War Memorial Wall, panel 30E line 14; Lehnhoff's is on panel 30E line 16.
124. Navy CNA Loss/Damage Database, USAF loss 755, pg E24.
125. Merle L. Pribbenow II, "The -Ology War: Technology and Ideology in the Vietnamese Defense of Hanoi, 1967", in *The Journal of Military History*, Jan 2003, pp 194-195.
126. Red Baron II report, Vol IV, Event 59, pg 71. Pribbenow, pg 195. Thompson, pg 104. CNA Loss/Damage Database, USAF losses 753 (Hauer) and 754 (Burdett), page D24. Col Burdett was confirmed captured on January 16, 1968. His remains were returned on March 6, 1974. His name is on the Vietnam War Memorial Wall, panel 30E line 13. Hauer's remains were returned in September 1990. His name is on the Wall's panel 30E line 16. Col Jack C. Berger, the Assistant Deputy Commander at 7/13 Air Force Headquarters at Udorn, moved to Korat as interim wing commander to replace Col Burdett. On November 22, Col Neil J. Graham replaced Col Berger. 388 TFW History, Apr-Dec 67, USAF microfilm NO583 and Vol II in microfilm NO584, frame 0030. 388 TFW history, Jan-Mar 68, USAF microfilm NO584, frame 0622.
127. 388 TFW history, Apr-Dec 67, USAF microfilm NO583 and Vol II in microfilm NO584, frame 0030.
128. AFXOPG "Report on Staff Visit to Southeast Asia" for period 9-19 Nov 67. AFHRA call number K143.152-1.
129. *Ibid,* pp 9-10.
130. *Ibid,* pp 10-12.
131. Chris Hobson, *Vietnam Air Losses*, Midland Publishing, pp 126–127. PACAF Rolling Thunder briefing to CINCPAC for period 16-30 November 1967.
132. 42 TEWS history in 355 TFW history, USAF microfilm NO463, frame 1606.
133. 355 TFW history, Oct 67-Mar 68, USAF microfilm NO463, frames 1572-1573 and 1583.
134. 388 TFW history, Apr 67-Jun 68, USAF microfilm NO584, frames 0494 and 0495.
135. 355 TFW history, Oct 67-Mar 68, USAF microfilm NO463, and 388 TFW history, Apr 67-Jun 68, USAF microfilm NO584.
136. PACAF Rolling Thunder briefing to CINCPAC for period 1-15 January 1968.
137. Project CHECO, Rolling Thunder, Jan 1967-Nov 1968, pp 18–20.
138. 355 TFW history, Jan–Mar 1968, USAF microfilm NO463, frames 1652–1653. Thompson, pg 127.
139. Combat Target report, Annex N, pp i-ii.
140. Combat Target report, Annex N, pg N-31. The "Yokota" modification described in 388 TFW histories was called the "Nellis" modification in the Combat Target report. 388 TFW history, Jan-Mar 68, USAF microfilm NO 584, frames 0461 and 0519-0520.
141. 388 TFW history, Jan-Mar 68, USAF microfilm NO 584, frames 0461 and 0519-0520.
142. *Ibid*, frames 0522 and 0646.
143. *Ibid*, frame 0467 and Apr-Jun 68, frames 0713 and 0718.
144. *Ibid*, frames 0462, 0522 and 0545-0546.
145. Navy CNA Loss/Damage Database, USAF combat loss 834, page C25. Fitton's remains were returned in 1977. His name is on the Vietnam Memorial Wall panel 42E, line 5. Harris' remains were returned in April 1985. His name is on the Vietnam War Memorial Wall, panel 42E line 6.
146. Chronology of Seventh Air Force, 1 July 1967-30 June 1968, pg 12. 355 TFW history, Apr-Jun 68, Vol III, USAF microfilm NO464, frame 1615.
147. Combat Target report, Annex N, pp i and N-11.
148. Castle, pp 121–123.
149. Castle, pp 76–77. Red Baron II report, Vol IV, Event 90, pp 398–399. Pribbenow, pg 199.
150. Pribbenow, pg 199.
151. 388 TFW history, Jan-Mar 68, USAF microfilm NO584, frames 0462 and 0525. Pribbenow, pg 199. The 354 TFS at Takhli was one of the F-105 squadrons affected by the loss of this radar site. "During the first portion of the month before the loss of this valuable site, many Commando Club missions were flown in northern Laos in support of the Royal Laotian Forces. Afterwards, the weather forced 354th pilots to restrict their attacks to targets in Laos and the lower route packages of North Vietnam." 355 TFW history, Oct 67-Mar 68, USAF microfilm NO463, frame 1822.
152. 355 TFW history Apr-Jun 68, Vol I, USAF microfilm NO464, frames 0540 and 0575, and 1615.
153. Takhli Times, weekly base newspaper, Mar 22, 1968.
154. Mike Winter, son of Malcolm Winter, e-mail to author, July 31, 2003.
155. U.S. Air Force Oral History Interview of Lt Col Joseph T. Guastella, Corona Harvest Oral History #76, AFHRA call number K239.0512-076, pp 13-16.
156. F-111 Web site at www.f-111.net on Jun 1, 2000.
157. Las Vegas Review-Journal, Tuesday, March 26, 1968.
158. Navy CNA Loss/Damage Database, USAF combat loss 866, pg H25. Neither man's remains have been recovered. McCann's name is on the Vietnam Memorial Wall at panel 46E line 57. Graham's name is on panel 46E line 54. F-111 Web site at www.f-111.net on 1 Jun 00. 355 TFW history Apr-Jun 68, USAF microfilm NO464, frame 0638.

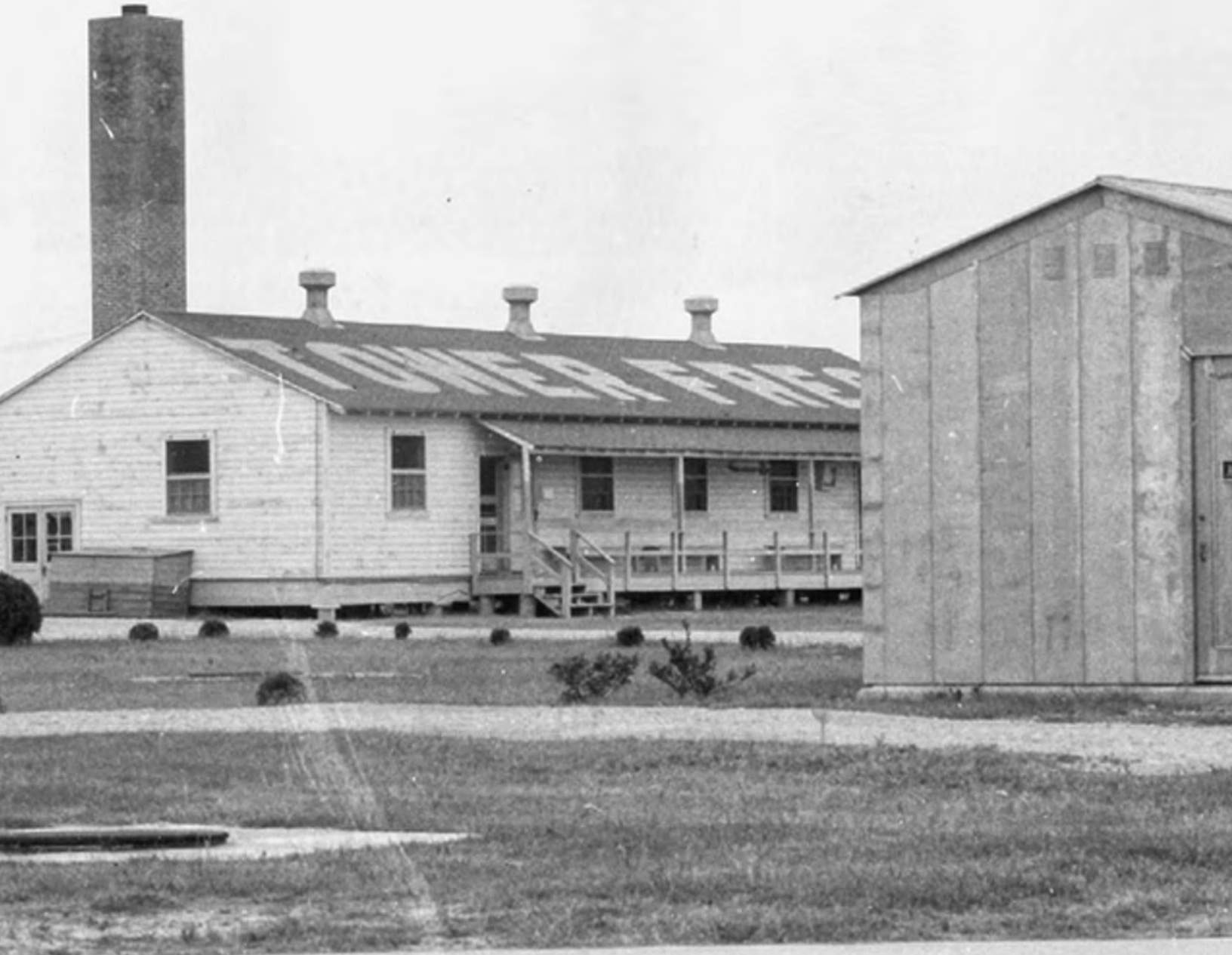
159. Navy CNA Loss/Damage Database, USAF Operational Loss 241, pg O09. F-111 Web site at www.f-111.net on 1 Jun 00. "Combat Lancer The F-111A's Introduction to War", USAF Museum Friends Journal, Vol 24, No 2, Summer 2001, pg 6.
160. "A Report on Commando Nail, April 67-March 68" by AFXOP, dated May 9, 1968, pg 3 and Tab A.
161. 388 TFW history, Jan-Mar 68, USAF microfilm NO 584, frames 0509 and 0522-0523.
162. 355 TFW history, Oct 67-Mar 68, USAF microfilm NO463, frames 1822 and 1826 and frames 1654-1655.
163. "A Report on Commando Nail, April 67-March 68" by AFXOP, dated May 9, 1968, pg 3.
164. 388 TFW history, Jan-Mar 68, USAF microfilm NO 584, frames 0463 and 0508.
165. 388 TFW history, Apr-Jun 68, USAF microfilm NO584, frames 0726 and 0740–0742.
166. Thompson, pp 140–141.
167. 388 TFW history, Apr-Jun 68, USAF microfilm NO584, frames 0726 and 0740-0742 and 1470.
168. CNA Loss/Damage Database, USAF combat loss 882, pg K25. Their plane had arrived at Takhli on April 5, 1968, as a replacement for one of the two planes lost earlier. See F-111 Web site at **www.f-111.net**. Neither man's remains have been found. Palmgren's name is on the Vietnam Wall, panel 51E line 32. Cooley's name is on panel 51E line 29. "Combat Lancer. The F-111A's Introduction to War", USAF Museum Friends Journal, Vol 24, No 2, Summer 2001, pg 7. 355 TFW history, Apr-Jun 68, USAF microfilm NO464, frames 0603 and 0637. Chronology of Seventh Air Force, 1 July 1967-30 June 1968, pg 15.
169. Kenneth P. Werrell, *Chasing the Silver Bullet*, pg 29.
170. 355 TFW History, Apr-Jun 68, USAF microfilm NO464, frame 0637, and Oct-Dec 68, USAF microfilm NO465.
171. 388 TFW history, Apr-Jun 68, USAF microfilm NO584, frame 1407. 44 TFS history, Oct 18-Nov 30, 1967, USAF microfilm NO584, frame 0091. Jack Sherrill, e-mail to John J. Revak, April 7, 2003.
172. 388 TFW history, Apr-Jun 68, Vol I, USAF microfilm NO584, frames 0686 and 1407.
173. The crews were: Maj Thomas J. Phelan and EWO Maj Clarence J. "John" Toole, Jr., Maj Eugene A. Bonfiglio and EWO Maj Lorne F. "Jack" McCormick, Maj Ralph C. Budde and EWO Capt Robert L. Wilbanks, Maj Ronald L. Shepard and EWO Capt Richard R. Middleton, Maj James D. Clendenen and EWO Maj John D. Thornton, Maj William M. "Bill" Pugh and EWO Maj Tom Baughman, and Maj Richard P. Cisco and EWO Capt Robert G. Denison. Photo caption in Red River Valley Fighter Pilots Vol III, Turner Publishing, 2000, pg 52. Class Roster, Wild Weasel Class 68WW III-20 published by the 4537 FWS.
174. Ron Shepard, e-mail to author, Feb 5, 2005.
175. "A Report on Commando Nail, April 67-March 68" by AFXOP, dated 9 May 1968, pgs 12-13.
176. Mission cards of Lt Col Guy J. "Jack" Sherrill.
177. 44 TFS Aircrew Roster dated Sept 29, 1968 and Wild Weasel class roster for Class 68WW III-22. The crews, comprising the entire Wild Weasel Class 68WW III-22, were: Lt Col Richard A. "Dick" Haggren with EWO Maj William A. Smith, Maj George K. Bowling and EWO Maj Thomas P. McGowan, Maj Bernard C. Reck and EWO Maj Robert M. Clark, and Capt Jay N. Mitchell and EWO Capt James E. Logan.
178. 23 TFW history, Jan-Jun 68, USAF microfilm MO554.
179. 388 TFW history, Apr-Dec 67, USAF microfilm NO583, frames 1575 and 1576.
180. One of McConnell's F-105Fs that supported Combat Nail training was 62-4419. It was lost in an accident during Brass Strike V on October 1, 1969.
181. 23 TFW history, Jun-Dec 68, USAF microfilm MO555, frames 1622 and 1728-1729. Crews of this first Combat Nail class, who graduated on August 9, were: pilot Capt Larry B. McBride and Bomb/Nav Capt Richard E. Dolan, pilot Maj Grant V. Swinford and Bomb/Nav 1Lt James W. Dearing, pilot Maj Leonard A. Morgan and Bomb/Nav 1Lt George G. Giddens, pilot Capt John M. Brucher and Bomb/Nav 1Lt John M. Winston. 388 TFW History, Jul-Sep 68, USAF microfilm NO585, frames 0815–816.
182. The four pilots in this class were Maj William H. Stockton, Capt Thomas J. Doubek, Capt Robert L. Nesbitt, and Maj Thomas A. Dodd. 23 TFW history, 30 Jun-31 Dec 68, USAF microfilm MO555, frames 0167-0169. The Navigator-Bombardiers were Maj Delbert B. Duncan, Maj Eldon N. Deardorf, Capt Stephen W. Stafford, and Capt Eldon G. Caldwell. 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frames 1773-1774.
183. CNA Loss/Damage Database, USAF combat loss 960, pg I26. Hanoi released Maj James on Mar 14, 1973. Capt Martin's name is on the Vietnam Wall, panel 52W line 36.
184. CNA Loss/Damage Database, USAF operational loss 279, pg D10. 388 TFW History, Jul-Sep 68, USAF microfilm NO585, frame 0080. After this loss, the 44 TFS had five 2098-modified Commando Nail F-105Fs: 63-8274, 63-8275, 63-8276, 63-8278, and 63-8363; and six that were dual-capable Commando Nail and Wild Weasel aircraft: 62-4424, 62-4428, 62-4446, 63-8281, 63-8285, and 63-8327. 388 TFW history, July-September 1968, USAF microfilm NO585, frame 0296.
185. 388 TFW history, Jul-Sep 68, USAF microfilm NO585, frames 0062-0064 and 0070–0071, 0101, 0742-0747, 0762, 0769, 1380, and 1404.
186. "A Report on Commando Nail, April 67-March 68" by AFXOP dated 9 May 1968, Tabs A and B. Specific figures included in 388 TFW histories for the period show the following monthly Commando Nail sorties in RP 1:

Apr 68	May 68	Jun 68	Jul 68	Aug 68	Sep 68	Oct 68	Total
117	122	120	123	111	113	121	707

187. 388 TFW history, Jul-Sep 68, USAF microfilm NO585, frames 0062-0064 and 0070–0071, 0101, 0818, and 0834-0835.
188. 388 TFW history, Apr-Jun 68, USAF microfilm NO584, Vol I, frame 0931.
189. July 12, 1968 mission card of Lt Col Guy J. "Jack" Sherrill. Per Jack Sherrill's mission card, they were scheduled to fly in one of the 2098-modified aircraft, 63-8289, but it ground aborted. 388 TFW history, Jul-Sep 68, USAF microfilm NO585, frames 0815 and 0826.
190. 388 TFW history, Jul-Sep 68, USAF microfilm NO585, frames 0062-0064 and 0070–007, 0101, and 0811-0814.
191. 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frame 1770.
192. *Ibid*, frame 1067.
193. 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frames 1061–1066 and 1772-1773.
194. 23 TFW history, 30 Jun-31 Dec 68, USAF microfilm MO555, frames 0167–0169, 1622, and 1728–1729.
195. 355 TFW history, Apr-Jun 68, USAF microfilm NO464, and Oct-Dec 68, USAF microfilm NO465.
196. 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frames 1773-1774.
197. *Ibid*, frames 1051-1052, 1056-1059, 1086, and 1528–1531.
198. Jack Sherrill, e-mail to author, May 13, 2003.
199. 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frame 1774.
200. 7th AF DOC message 130916Z Dec 68 in 388 TFW history, Oct-Dec 68, USAF microfilm NO585, frames 1067 and 1532-1534.
201. 23 TFW history, Oct-Dec 1969, USAF microfilm MO555, frames 0398, 1056-1058.
202. *Ibid.*
203. Individual aircraft status records in USAF microfilm AVH-18.

TUSKEGEE (WEATHER) AIRMEN: BLACK METEOROLOGISTS IN WORLD WAR II





Gerald A. White, Jr.

(Overleaf) Weather station at Tuskegee. *(Photos courtesy of the author.)*

World War II saw the breakthrough of blacks[1] into many areas of military service previously denied them. Although racial segregation allowed only a very few the full range of opportunities available, those who broke through the numerous barriers built a record of significant accomplishment. One area denied to blacks was service in Army Air Corps (later Army Air Forces[2]).[3] This denial extended to any support position in the Air Corps, including meteorological observing and forecasting. Creation of segregated flying units during World War II required they be manned by personnel fully trained in all support and technical specialties. How this process unfolded during and after the war illustrates some of the problems and contradictions created by the institutionalized segregation of the American military and society it reflected as the U.S. entered World War II.

RACIAL SEGREGATION ALLOWED ONLY A VERY FEW THE FULL RANGE OF OPPORTUNITIES … THOSE WHO BROKE THROUGH THE NUMEROUS BARRIERS BUILT A RECORD OF SIGNIFICANT ACCOMPLISHMENT

Expansion of the Air Corps Weather Service

Although plans for U.S. Army expansion were already underway, it was the German invasion of Poland, on September 1, 1939, that signaled the threat of war as real. As the Air Corps started its wartime buildup, it was transitioning from a small and exclusive organization. An Air Corps officer, like most of the rest of the Army before World War II, was by custom a white male[4] and, by law, with few exceptions, a pilot. To appreciate the growth of the Air Corps into the Army Air Forces (AAF) during World War II, there were only 2,727 Air Corps officers serving, 2,058 of them Regular Army, in September 1939. By 1945, the number of officers assigned or detailed to the AAF peaked at 388,295, which included 193,000 pilots and almost 95,000 navigators and bombardiers trained since 1939. Overall, the AAF went from a force of approximately 26,000 in September 1939 to almost 2,400,000 in the fall of 1944.[5]

This growth reflected both the world-wide nature of the AAF's wartime responsibilities and the quantum increase in aircraft capabilities from a short-range daylight (and good weather) force to a transcontinental organization capable of operating at night and in all but the most severe weather. The rapid improvement in aircraft technology through the 1920s and 1930s was reflected in the greatly increased performance, range, altitude, and payload of aircraft.

Concurrent with growth of the relatively new science of aeronautics was a revolution in meteorology, one of mankind's oldest subjects of interest, both assisted with and driven by the advancement of aviation. The ability to plan military and civilian flying activities with more than a forecast based on scattered ground observations, verified by the observations of a "dawn patrol" observation flight, was becoming a commercial and military necessity. Even without aviation requirements, public and business interests demanded more accurate forecasts to avoid losses to commercial fishing and shipping, transportation, agriculture, recreation and emergency planning for forecasting extreme weather phenomena such as tornadoes, blizzards, hurricanes, and thunderstorms.[6]

Despite the increasing interest, growth in civilian and military meteorological programs was slow prior to the war. Developing academic programs to explore this evolving science was costly and the impact of the Great Depression made it more difficult. By 1937, only three American universities offered graduate degrees in meteorology. The Massachusetts Institute of Technology (MIT) was first; Dr. Carl Gustav Rossby estimated that MIT spent "in the vicinity of $200,000 over the years from 1928-1938 to maintain such a department while, at the same time, the total tuition income probably did not exceed $25,000." The California Institute of Technology (Caltech) had created their meteorological department in 1933, and New York University (NYU) had established one by 1937.[7] As the Army's primary user of meteorological services, beginning in 1933, the Air Corps had sent a handful of pilots to MIT and Caltech for graduate work in meteorology, even though the Army's Weather Service did not move from the Signal Corps to the Air Corps until 1937.[8]

In July 1940, the Army had only 62 qualified weather forecasters, primarily in the Air Corps. This was part of only an estimated 377 in the entire country, counting 150 with the Weather Bureau, 94 with commercial airlines, 46 in the Navy and 25 in various educational institutions.[9] The rapid pro-

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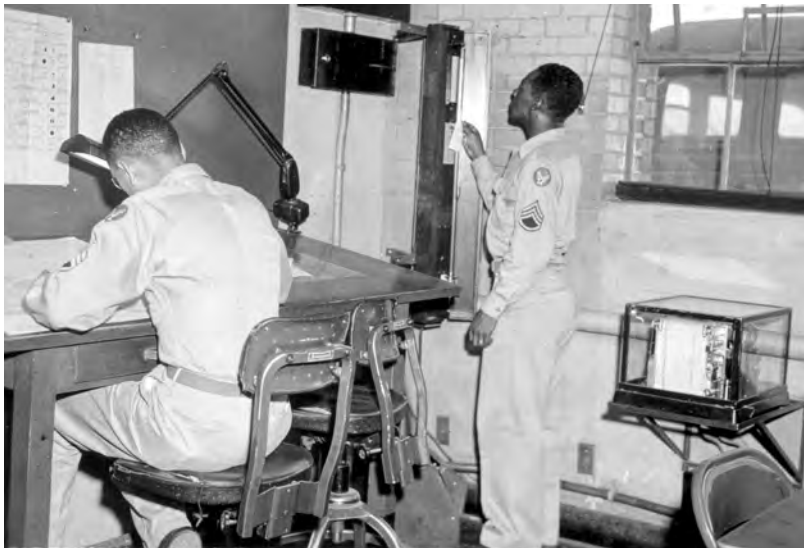


Godman Field weather station.

jected growth of the Air Corps required a growing number of weather officers, at one point estimated at many as 10,000, with another 20,000 enlisted observers and forecasters.

The answer was to create a training course at several leading universities to "mass produce" weather officers; a program set up by AAF weather officers and leading academics including Dr. Rossby, formerly of MIT and then at the Weather Bureau. In addition to MIT, Caltech, and NYU, departments were established subsequently at the University of Chicago and University of California at Los Angeles (UCLA) to meet the demand.[10] Initially, twenty aviation cadets who had washed out of flying training for other than academic reasons received an abbreviated (ten and a half week) course at MIT in the summer of 1940 to qualify them for teaching applied meteorology to aviation cadets. In conjunction with the universities and the Weather Bureau, this course was expanded into a thirty-three-week course, starting in September 1940, leading to a certificate in meteorology.

THERE WAS A GREAT INTEREST IN AVIATION IN THE BLACK COMMUNITY …HOWEVER, THEY WERE GREATLY UNDER-REPRESENTED DUE TO THEIR LIMITED ECONOMIC CIRCUMSTANCES, MADE WORSE BY JIM CROW LAWS

The course was free but applicants had to agree that "upon completion of the course [they] will take the next Junior Professional Assistant — meteorological option — Civil Service examination" if not already enrolled as a Flying Cadet or accepted into the Army, Navy, or other government agency by graduation. Prospective candidates needed to apply to the university of their choice, have an engineering degree or another degree with two years in mathematics (including differential equations and integral calculus) and one year in physics, as well as being able to pass a Reserve Officer physical and not be older than 26 when commissioned.[11] Those who met the academic requirements had their applications reviewed by the Air Corps before they started the course. There were 116 cadets in the 1940 class, in addition to several Navy aerology officers and civilians for the Weather Bureau. With continuing Air Corps expansion, the next class started in July 1941, with 182 cadets enrolled.[12] Once the U.S. entered the war, applicants were screened by Aviation Cadet selection boards before they could be admitted, the degree requirement was dropped so long as they met the science and math requirements and the maximum age was raised to 30. The first wartime class started with 440 cadets on March 16, 1942, another 400 started in September 1942 and 1,750 started in November 1942.

Blacks and Military Aviation

Like the rest of America, there was a great interest in aviation in the black community prior to World War II. However, they were greatly underrepresented due to their limited economic circumstances, made worse by Jim Crow laws and practices that restricted or denied their entrance into military and commercial aviation.[13] This started to change in 1939, with the creation of the Civilian Pilot Training (CPT) Program. The growing political influence of the black community resulted in the program initially being offered at six historically black colleges, including the Tuskegee Institute. In addition, some blacks who attended integrated colleges outside the south also entered the CPT program through their schools and two non-college affiliated programs run by blacks were set up in the Chicago area. It is estimated that as many as 2,000 black men and women completed one or more CPT courses between 1939 and the program's termination in 1944.[14]

The black military aviation experience started with activation of the 99th Pursuit (later Fighter) Squadron, activated at Chanute Field, Illinois, on March 22, 1941. Even though flight training did not begin at Tuskegee until July 19, 1941, this somewhat unusual arrangement allowed the Air Corps to segregate the enlisted trainees, given that the Army normally had each unit in their own barracks and mess-hall. When it came to race, separate was seldom completely equal.[15]

In many ways, the Air Corps approached the question of training these first black airmen in a somewhat contradictory manner. While planning for a segregated base located in the deep south, the AAF ignored calls to use a civilian school or import instructors to Tuskegee and pragmatically concentrated technical training for the 99th Pursuit Squadron at Chanute Field, an Air Corps training center since World War I. Instructors from other training centers at Scott Field, Illinois, as well as Lowry Field and Fort Logan, Colorado, were brought to Chanute and all courses were taught by white instructors. Through a recruitment and training program for civilian instructors across the military, one or more black civilians were weather instructors at Chanute by November 1942.[16] From the limited documentation available, it appears enlisted weather personnel were in integrated classrooms.

The Tuskegee Weather Detachment

The enlisted portion of the 99th Pursuit Squadron was manned by a small cadre of black

The staff of the Tuskegee weather station.

WALLACE PATILLO REED ... WAS ...SELECTED AS THE FIRST "COLORED" CADET AFTER AN EXTENSIVE SEARCH BY MIT OFFICIALS AT THE BEHEST OF THE AAF

Regular Army troops of the 24th Infantry Regiment and new enlistees, all with high school diplomas and many with college experience or degrees. In addition to training enlisted men in a wide range of mechanical skills and other specialties needed for an operational combat squadron, the 99th included five weather observers; John B. Branche, Victor O. Campbell, Walter E. Moore, Paul V. Freeman and James G. Johnson. After completing observer school, Branche and Moore completed the enlisted forecaster's course and Campbell, Freeman, and Johnson completed the teletype maintenance course.[17]

Wallace Patillo Reed, a 1941 University of New Hampshire mathematics graduate, was one of the MIT cadets who started in July 1941, having been selected as the first "colored" cadet after an extensive search by MIT officials at the behest of the AAF.[18] Graduated and commissioned as the Air Corps Weather Service's first black weather officer on February 14, 1942, the second lieutenant was assigned as the Tuskegee base weather officer on March 27, after a three-week orientation at Mitchel Field on Long Island, New York. He was joined on April 6 by the five enlisted weathermen trained at Chanute Field, the first of possibly as many as forty enlisted men who served there. Except for an eleven-week absence to attend a meteorology refresher course at Chanute Field in early 1945, Reed, promoted to captain in January 1944, held that position until the end of the war.

The Tuskegee Weather Detachment was formed on March 21, 1942. Originally organized as part of the Tuskegee Army Flying School, it was located at the Tuskegee Army Airfield, Tuskegee, Alabama. Detachment personnel received technical supervision and guidance from the 4th Weather Region at Maxwell Field, and, after April 1943, the Weather Wing at Asheville, North Carolina. On March 17, 1944, they were placed directly under the 4th Weather Region, by then relocated to Atlanta, Georgia. In September 1944, the detachment was redesignated the 67th Army Air Force Base Unit. A white officer from Maxwell Field, down the road at Montgomery, Alabama, was initially assigned but there is no evidence he ever appeared at Tuskegee.[19] This was in contrast to most other key functions at Tuskegee, where white officers remained in charge through the end of the war.

As Lieutenant Reed endeavored to get his detachment operational, he had to establish from scratch the business of a base weather station to collect, record and report weather observations, make forecasts and provide weather briefings for flying students and instructors. This, while also training his staff and working under the handicaps of no other weather officers, limited enlisted experience and staff turnover. Not only was there was no core of military experience past schoolhouse training to build around, there were no black Weather Bureau professional staff who could be commissioned or enlisted for weather service or even made available for detail as civilian instructors.[20] While new enlisted personnel arrived on a regular basis throughout 1942, valuable, if limited, experience departed almost as fast. Sgt. James Johnson left to become an aviation cadet in July

1942 but would wash out and return by November. One of two school-trained enlisted forecasters, SSgt. Walter Moore went to Officer Candidate School (OCS) in August. He was followed at OCS a month later by the other forecaster, SSgt. John Branche and Sgt Paul Freeman, a weather observer. Sergeant Johnson and Technical Sergeant Campbell remained in the weather detachment through mid-1943 before going to OCS, graduating in April and June 1943, respectively.

The rest of the enlisted staff of the base weather detachment, like much of the rest of the rapidly expanding Air Weather Service, were assigned from base personnel and trained as observers through an on-the-job training program.[21] However, at least four enlisted observers were sent to Chanute Field for the teletype maintenance technician course and one for the enlisted weather forecaster course.[22]

How Many Officers?

While specialized technical training such as weather training for blacks was limited to those personnel needed to staff current and projected combat and support units, rapid growth of the entire AAF created confusion as to the size and extent of the training program planned. On July 30, 1942, the Army Air Forces Technical Training Command (AAF TTC) sent an inquiry to their training district commanders stating: "These Headquarters [are] in receipt of information that Negro Aviation Cadets are entered into the Meteorology courses under this command." The letter went on to request a list of names and graduation dates and notification "whenever a Negro Aviation Cadet is entered into any type of training conducted under this command." Responses from district offices, all received by August 17, showed seven cadets in training.[23] This appeared to be the required number with just one base, Tuskegee, and four tactical units in training, three of them just activated.

THE SUBJECT OF BLACKS IN THE METEOROLOGY CADET PROGRAM WAS VERY PUBLICLY SPOTLIGHTED WITH THE RESIGNATION OF JUDGE WILLIAM H. HASTIE AS CIVILIAN AIDE ON NEGRO AFFAIRS TO SECRETARY OF WAR HENRY L. STIMSON

Shortly after this the subject of blacks in the meteorology cadet program was very publicly spotlighted with the resignation of Judge William H. Hastie as Civilian Aide on Negro Affairs to Secretary of War Henry L. Stimson, a position he had assumed on October 25, 1940.[24] During the last half of 1942, Judge Hastie was increasingly frustrated with what he saw as AAF attempts to institutionalize segregated training and minimize black access to skilled positions to only those required to support flying units, a very small percentage of the total black manpower in service. By then, the 99th Fighter Squadron had been joined by the 100th, 301st and 302d Fighter Squadrons, under the newly activated 332d Fighter Group. With estimated requirements for weather officers reaching 10,000 at one point (this was later reduced; only about 6,200 were actually trained and commissioned and most of the last class was not assigned weather duties), he received many complaints from qualified black applicants who were unable to enter the program. Judge Hastie resigned his position in January 1943 and, through the auspices of the National Association for the Advancement of Colored People (NAACP), published a pamphlet on July 1943 titled *On Clipped Wings: The Story of Jim Crow in the Army Air Corps,* laying out the situation of blacks in the AAF and his experiences in trying to open the doors of opportunity.[25]

On February 26, 1943, AAF TTC wrote to the Director of Individual Training at HQ AAF," asking if the August 27, 1941, requirement for seven weather officers was still valid? This requirement was confirmed, but a census of black weather officers in training was made showing that with six already qualified, three about to graduate, and five more in training, a total of 14 officers were projected. No reason was given for this apparent doubling of the quota, as a second black combat unit, the 447th Bombardment Group, wouldn't be activated until January 1944.[26] It is important to note that the training for these meteorological aviation cadets was fully integrated. Black cadets attended class at every school except Caltech.[27]

In early December 1942, the next four cadet course graduates arrived at Tuskegee; Lts. Paul F. Byrd (MS, Mathematics, 1941, University of Chicago) and Benjamin F. Bullock, Jr. (BS, Mathematics, Morehouse College, 1941) reported from the University of Chicago, followed by Roosevelt Richardson and Luther L. Blakeney from New York University.[28] They were joined by 2d Lt. John Branche who returned from OCS and was reassigned to the Weather Detachment on December15. Apparently his enlisted training and experience was sufficient to let him bypass the weather officer course. 2d Lt. Paul Freeman also returned from OCS and served as a weather officer for four months after commissioning before moving to a series of other jobs on Tuskegee.[29]

Lieutenants Byrd, Bullock, Richardson, and Blakeney transferred to the recently activated 332d Fighter Group in late December 1942, initially training at Tuskegee before moving to Selfridge Field, Michigan, in March 1943. Lt. Richardson was assigned to the Group and Lieutenants Blakeney, Byrd, and Bullock were assigned to the 100th, 301st and 302d Fighter Squadrons respectively.[30] The function of a squadron weather officer was to brief his crews on target and en-route weather, based on information provided by the base weather station.[31]

The departed officers were eventually replaced at Tuskegee, although it was May 1943 before Horace M. King (Mathematics major, Knoxville College, Tennessee) and Charles E. Anderson (BS, Chemistry, Lincoln University, Missouri) arrived, both from the University of Chicago cadet program. The next officer to arrive, on June 7, 1943, was M. Milton Hopkins (BS, Physics, Xavier University, Louisiana), who also graduated from Chicago, although he originally started in the UCLA program. Hopkins had transferred to Chicago with most of his class part-way though the course to

even out classroom and living space at UCLA in preparation for a large incoming class.[32] He was at Tuskegee for just seven weeks before being sent to the 100th Fighter Squadron on July 29, then trained at Oscoda, Michigan, to replace Luther Blakeney, killed in an aircraft accident on June 16, 1943.[33]

The last black weather officers were assigned in September 1943. Grant L. Franklin (BS, Mathematics, Langston University, Oklahoma) and Paul Wise arrived from the Grand Rapids AAF Weather Training Center. Trained as meteorology instructors for Tuskegee pilot cadets but, for reasons yet undetermined, they were instead assigned to the Tuskegee weather station, serving as Assistant Weather Officers and receiving instruction in forecasting. Also arriving, from UCLA, was Archie F. Williams (BS, Engineering, UC Berkeley). Previously a civilian flight instructor at Tuskegee, he was, at almost 27, too old to enter flight training, and so was sent to UCLA for the weather officer course.[34]

AT LEAST THIRTEEN ENLISTED MEN WERE AWARDED THE AAF WEATHER OBSERVER BADGE, BASED ON DEMONSTRATED PERFORMANCE AND PASSING STANDARDIZED TESTS

The last two wartime cadets trained, coming from MIT, were John T. Willis (Education, Trenton State Teachers College, N.J., and Howard University, D.C.), and Robert M. Preer (BS, Chemistry, Morehouse College, Georgia). So far as can be determined, no other black meteorological aviation cadets were admitted to training before the last class graduated in June 1944.

Expanding Past Tuskegee

The nine officers assigned to the base weather detachment by September 1943, represented the high point of officer manning for Tuskegee but soon started to decrease. Charles Anderson departed on January 13, 1944, for Selfridge Field, serving as weather officer for the 553d Fighter Squadron, the replacement training unit for the 332d FG, later moving to Walterboro Army Air Base (AAB), S.C., in May 1944.[35] John Willis left Tuskegee on January 31, also assigned to the 553d FS. He then transferred at the end of March to the 477th Bombardment Group, reactivated at Selfridge Field as a segregated B–25 unit where he was joined by Horace King. Archie Williams, after completing a qualification course and rated a Service Pilot in fall 1944, was reassigned as a basic instrument flight instructor in the central instrument school. This put Captain Reed back to just four other officers for most of the rest of the war.[36]

Despite the turbulence and constant training required, the weather detachment completed its mission. The only negative inspection item noted in any history was the lack of a teletype circuit in the station and this was beyond the detachment's control.[37] John Branche was an accomplished forecaster, rated 46th among the top 100 AAF forecasters (of more than 2,000) in the continental United States from October 1943 through May 1944, and was normally in the top 100 forecasters for the remainder of the war.[38] At least thirteen enlisted men were awarded the AAF Weather Observer Badge, based on demonstrated performance and passing standardized tests from the Regional Control Office.[39]

The 332d Fighter Group deployed to Italy on January 30, 1944, with Lieutenants Richardson, Hopkins, Byrd, and Bullock, and was initially stationed at Capodichino Air Base near Naples. Lieutenant Byrd, injured in a non-hostile shooting accident within a month of arrival, was returned to the U.S. and not replaced. The other weather officers remained with the 332d FG through the end of the war.[40] Milton Hopkins relates that while at Capodichino, he periodically augmented the base weather station; that duty was cancelled after a general passing through objected to Hopkins's presence.[41] In June 1944, the 332d moved to Ramitelli Air Base, on the Adriatic coast near Foggia, where they were joined by the 99th Fighter Squadron. Equipped with the P–47 and then P–51, they assumed the bomber escort mission, for which they would become justifiably famous in not losing a single escorted bomber to enemy aircraft. The 332d returned to the United States in October 1945. There are few references to the weather officers in the 332d history; no weather officer was decorated but Richardson was promoted to captain and both Bullock and Hopkins were promoted to 1st Lieutenant. One may infer they performed well enough for Col. Benjamin O. Davis, Jr., noted as a demanding but fair taskmaster.

The only other segregated AAF combat unit, the 477th Bombardment Group, moved from Selfridge Field to Godman Field, Kentucky (adjacent to Fort Knox) in July 1944, entering a prolonged period of training. Elements moved at various times for training to Atterbury Field and Freeman AAB in Indiana, Sturgis AAB, Kentucky, and Walterboro AAB in South Carolina. While at Freeman Field in April 1945, an incident erupted concerning access by black officers to a "white" officers club. Termed a mutiny by some, it culminated a long series of improper, if not illegal actions by senior white leadership. The group commander was relieved in late June and Colonel Davis was brought back from the 332d FG to take over.[42]

The 477th BG was scheduled to deploy to the Pacific and training was stepped up. John Willis left Godman Field in late June to start pilot training at Tuskegee so the weather section was augmented in early July with John Branche from Tuskegee, joined by Robert Preer and Paul Wise and a cadre of enlisted weather observers, all transferred from Tuskegee.[43] Charles Anderson transferred to Godman from Walterboro AAB in October 1945. This made Godman Field the second of what would be only three all-black weather detachments in the Air Corps/Air Force between 1942 and 1949.

Postwar Changes

As the war came to an end in 1945, the Tuskegee weather officers faced the same decision to get out or stay in as most others in the wartime military. Complicating this decision was uncer-

A weather briefing at the 477th Composite Group.

tainty over how large a place blacks would have in the postwar military, offset by concern about what opportunities might be available in civilian life.[44]

Wallace Reed was among the first to leave the military, separating in December 1945. He went to the Philippines in 1946 as a Pan American Airways meteorologist under contract to the Air Weather Service. He later transferred to the Weather Bureau as part of the Philippine Weather Service rehabilitation program; this may have made him the first black civilian meteorologist in the Weather Bureau. When that program ended in late 1949, he was released and chose to stay in the Philippines where he operated several small businesses. He retired and returned to the U.S. in 1976, passing away in 1999. Of others who separated soon after the war (where information is available), Benjamin Bullock graduated Western Reserve University in 1950 with a degree in dentistry and Grant Franklin graduated medical school.

THE POST-WAR AIR WEATHER SERVICE FOR REASONS YET NOT DISCOVERED, STEPPED OUT AHEAD OF THE REST OF THE AIR FORCE AND PRESIDENT HARRY TRUMAN'S EXECUTIVE ORDER 9981

The 447th, now a Composite Group with two bomber squadrons and a fighter squadron and transferred to Lockbourne AFB, Columbus, Ohio, in March 1946. This move included the Godman Field weather detachment officers John Branche, Robert Preer, Horace King, Charles Anderson, and Paul Wise.[45] John Willis washed out of pilot training in the last phase during this time; he was transferred to the Lockbourne AFB weather detachment in July 1946. This was the last all-black weather detachment.

Paul Byrd was reassigned to the Tuskegee weather detachment in November 1944, after his release from the hospital and Archie Williams returned to weather duty in March 1946, as flying training at Tuskegee wound down. Also returning to Tuskegee was Milton Hopkins, reassigned when the 332d FG rotated back to the U.S. from Italy. All three then moved to Lockbourne in October 1946, when Tuskegee Army Airfield closed.[46]

The 477th CG inactivated on June 30, 1947, replaced the next day by a reactivated 332d FG, which, in turn, was inactivated on June 30, 1949. Lockbourne AFB then closed and all base personnel selected for retention by a "fitness for service" screening board run by then-Colonel Davis in 1949 were reassigned to other bases and units based on their skills and needs of the now-United States Air Force (USAF). It is unknown if Air Weather Service personnel were part of this review process. [47]

Almost as soon as this group was brought together at Lockbourne AFB, they started heading in diverse directions. Charles Anderson had already left for Brooklyn Polytechnic College and graduate work in plastics chemistry in July 1946. After serving with the Geophysical Research Division, he left active duty in July 1948 and went to work as a civilian for the Air Force's Cambridge Research Laboratory's Cloud Physics Branch. He worked there through 1962, where he did pioneering work on eliminating high-altitude contrails. While there, he earned a doctorate in meteorology from MIT in 1960, believed the first meteorology Ph.D. earned by a black. He later taught and was an Associate Dean at the University of Wisconsin-Madison. His last teaching post was at North Carolina State University. An American Meteorological Society award for promoting diversity in the atmospheric sciences is named for him. He retired from teaching in 1990 and passed away in 1994.

John Branche separated in late 1946, graduating from Queens College in Flushing, N.Y. with a BS in Biochemistry and Cornell University with a medical degree, specializing in pediatrics. Paul Wise was stationed at Lockbourne Field at the time of his death in an aircraft accident on April 3, 1947.[48] Paul Byrd separated in August 1948; his post-service career is unknown.

Air Weather Service Desegregates

The postwar Air Weather Service centrally managed all AAF/USAF weather personnel.[49] AWS, for reasons yet not discovered, stepped out ahead of the rest of the Air Force and President Harry Truman's Executive Order 9981 on July 26, 1948 that started the process of desegregating the military.[50]

Robert Preer was the first weather officer to leave Lockbourne AFB and enter a "desegregated" Air Force.[51] He transferred to Alaska in September 1947 with service at Elmendorf AFB and Shemya AFB in the Aleutian Islands. This was followed by staff tours and detachment command in both stateside and overseas assignments; he retired as a lieutenant colonel in 1963.

John Willis was sent to Keesler AFB, MS, in January 1948 for advanced training in radar and then went to Alaska where he worked on an automated weather station project. He retired as a major in 1963, also from the Cambridge Research Laboratory, after spending most of his postwar career in weather equipment research, development, testing and procurement.

The weather office at the 477th Composite Group.

NUMBERING ONLY 14 OF APPROXIMATELY 6,200 METEOROLOGICAL AVIATION CADETS GRADUATED, THE TUSKEGEE METEOROLOGISTS NUMBERED JUST 0.2 PERCENT OF ALL WEATHER OFFICERS

Horace King left Lockbourne AFB in April 1948 for an assignment at Ft. Richardson, Alaska. In 1951, he attended the Air Force Institute of Technology (AFIT) at Wright-Patterson AFB, Ohio, and then taught at the weather school at Chanute AFB from 1952 to 1955. He had several detachment command tours in the Far East before retiring in 1964 as a lieutenant colonel at March AFB.

In August 1948, Archie Williams and Milton Hopkins were accepted to AFIT for graduate engineering work in a two year course, becoming the third and fourth African-American officers to attend this school. Their normal "payback" tour in some form of engineering or research and development assignment was cancelled with the start of the Korean War, as weather officers were in short supply. Archie Williams was assigned as a weather officer in Japan where he also flew at least four combat missions in B–29s. He later served in operational assignments as a weather detachment commander in New York and Alaska before retiring as a lieutenant colonel in 1964 at March AFB, California.

Milton Hopkins was stationed in Germany after his AFIT tour and spent much of his career in high altitude weather research, primarily at Holloman AFB, New Mexico, and the Cambridge Research Laboratory at L.G. Hanscom AFB, Massachusetts, before retiring as a lieutenant colonel in 1965.

It may be worthwhile to look at these men as a group. John Branche, the only Tuskegee weather officer who didn't go through the cadet program, enlisted in 1941, shortly after graduation from high school. Of the twelve of fourteen men who went through the cadet program and whose records are available, eight had college degrees (one masters and seven bachelors) and the others had three or more years of college, all in mathematics, physics, engineering, or chemistry. Of those who worked in other jobs prior to entering the military, there was a wide range of experience. In addition to Archie Williams (flight instructor), Grant Franklin and Paul Wise were schoolteachers in Oklahoma and Delaware respectively. Paul Byrd was a statistical clerk for the Work Project Administration's Sociological Research Project while working on his MS and John Willis was a photogrammetric engineering assistant, compiling mapping data from aerial photographs for the Alaskan Branch of the U.S. Geological Survey. Benjamin Bullock was a mail carrier and Charles Anderson was a construction helper. Like their white peers, these officers had passed muster with both the Aviation Cadet screening boards and the university's academic screening process before entering the program to complete a rigorous course of study and earn both their certificate and commission.

Of this group as a whole, numbering only 14 of approximately 6,200 meteorological aviation cadets graduated, the Tuskegee meteorologists numbered just 0.2 percent of all weather officers; this percentage greatly under-represented the black population as a whole or even those who served in the AAF. While blacks represented approximately 10 percent of the American population in 1940, they comprised just 6.2 percent of the overall AAF by August 1945 and only 0.4 percent of the AAF officer corps.[52] How many potential candidates were eligible and not selected is unknown. Five of the original fifteen Tuskegee weather officers remained in service after the war, a retention rate of 33 percent, compared to an overall weather officer retention rate of less than 20 percent.[53]

Postwar Tuskegee Weather Officers

Five more Tuskegee Airmen became weather

officers after World War II. Claude A. Rowe graduated with the last pilot training class at Tuskegee in July 1946 and went directly into weather. He had earned his wings with the Royal Canadian Air Force as a Sergeant Pilot in 1944 before entering the AAF. He was passed over for promotion to major in 1958 and separated from the Air Force. He enlisted and served as a staff sergeant weather forecaster until retirement as a captain in 1964. While in pre-meteorology training at Keesler AFB in 1946, followed by weather officer training at Chanute AFB, he was joined by William L. Hill, a pilot, Carl B. Fountain, a navigator, and Harold C. Hayes, a non-rated officer, all of whom cross-trained into weather.

CARL FOUNTAIN WAS THE ONLY TUSKEGEE WEATHER OFFICER TO RECEIVE A REGULAR COMMISSION

Little is known about William L. Hill. He served as a fighter pilot in World War II in the 302d FS, where he was credited with one aerial victory, earning three Air Medals and a Purple Heart. After training as a weather officer in 1947, he had at least two overseas tours, one in Taiwan. He retired as a major from Grand Forks AFB in 1964 and died in 1981

While not a rated officer, Harold C. Hayes was an instructor in navigation and flight training at Tuskegee from 1941 to 1945, first as a contract civilian instructor and from June 1943 as a military instructor. When flight training ended at Tuskegee, he moved to Lockbourne Field and served as an administrative officer before training as a weather officer. His service included extensive overseas service and a tour with the National Security Agency. His last two assignments were with Aerospace Defense Command in California as both a detachment commander and staff weather officer for Air Defense Sectors. He retired in 1966 and died in 1980.

THESE MEN, LIKE THE REST OF THEIR TUSKEGEE PEERS, WERE PIONEERS

The last known World War II Tuskegee Airmen to train as a weather officer, Weldon K. Groves, cross-trained to weather in 1949 after the 332d Fighter Wing was inactivated. As a pilot in World War II, flying at various times the P–39, P–47 and P–51, also with the 302d FS in Italy, he was credited with shooting down one enemy aircraft during 93 combat missions. He retired in 1964 as a major at McChord AFB, Washington, having also commanded several weather detachments.

Carl Fountain stayed on duty longer than any other World War II veteran, alternating weather and flying assignments with AWS and Military Airlift Command until retirement as a lieutenant colonel in 1973. Commissioned as a B–25 bombardier, he cross-trained as a weather officer in July 1946, even before the 447th Composite Group's move to Ohio. Reporting to Lockbourne AFB for his initial weather assignment in 1947, he also went to Ladd Field at Fort Richardson, Alaska, in May 1948. There he flew weather reconnaissance missions over the North Pole and later a combat tour in B–29s over Korea at the end of the war. Other assignments included a tour in Korea as the staff weather officer for the U.S. Eighth Army and United Nations Command and several weather detachment commands.

Conclusion

Carl Fountain was the only Tuskegee weather officer to receive a regular commission, concurrent with completing the weather officer course.[54] None of the ten officers who remained until retirement was promoted to full colonel or selected to command a squadron, although almost all held detachment commands, some two or three in their career, or other responsible positions and continued with advanced technical and military education. Some had combat service, an important aspect of service for promotion. Weldon Groves and William Hill were both decorated pilots with service in Italy during World War II with the 332d FG where Milton Hopkins had served as a weather officer. Carl Fountain had nineteen B–29 combat missions as a bombardier and Archie Williams had four B–29 combat missions as a weather pilot, both over Korea.

At least five of these officers had served in Alaska, four in the late 1940s, when the isolation, relatively primitive conditions and severe weather made it the closest peacetime equivalent of a war zone, especially for weather officers. Almost all served multiple overseas tours, primarily in the Pacific. That nine of ten retired between 1963 and early 1966, soon after qualifying for a pension, perhaps should not be surprising, given these circumstances. For some, this might raise the question of potential opportunities missed in the buildup for the Vietnam War. When Carl Fountain fell short, despite a regular commission, outstanding evaluations and aviation service right to the end of his career, (admittedly a very small statistical sampling), it was quite possibly a sign they had made the right choice in getting out and starting second careers. How many factors impacting career progression were unique to the somewhat closed culture of the Air Weather Service or perhaps reflects a situation common across the Air Force is a question that deserves closer examination.

In retrospect, these men, like the rest of their Tuskegee peers, were pioneers. In joining the Army and becoming weather officers, a career choice unimaginable before World War II, they met the high entry standards and successfully completed the most academically rigorous course offered by the Army in World War II, a noteworthy achievement in its own right. From this group of twenty, that ten of them persevered to complete a military career as weather officers, despite prejudices and institutional practices slow to disappear, is perhaps their most enduring legacy. Their performance in one of the technically demanding military career fields helped lay to rest any doubts in all but the most bigoted minds about the ability of blacks to serve their country and succeed in any skill or profession. It laid a foundation for others to advance, based on their technical skill and record of accomplishment rather than on prejudices based on race or skin color. ■

NOTES

1. The racial terms of Negro or colored appeared throughout documentation of this period. African-American came into vogue later, but many who served in the military prefer the term black. Except where quoting sources, I have elected to follow their lead. See Gen. Benjamin O. Davis, Jr. *American*, Smithsonian Institute Press, Washington D.C., 1991, p. 423, (hereafter Davis) and Alan L. Gropman, *The Air Force Integrates, 1945-1974,* 2d Edition, Smithsonian Institution Press, Washington D.C., 1998 (hereafter Gropman).

2. The Army Air Corps was redesignated the Army Air Forces on June 20, 1941; the terms Air Corps and Army Air Forces (AAF) were used interchangeably thereafter in official documents and the media; AAF is used here.

3. This story has become well known and is well documented, see Davis; Gropman; Robert J. Jakeman, *The Divided Skies: Establishing Segregated Flight Training at Tuskegee, Alabama, 1934- 1942*, The University of Alabama Press, Tuscaloosa, Ala., 1992 (hereafter Jakeman); Lee, Ulysses, *United States Army in World War II,* Special Studies*, The Employment of Negro Troops*, Center of Military History, Washington, D.C., 1966 (republished 2000) (hereafter Lee); Alan M. Osur, *Blacks in the Army Air Forces during World War II*, Office of Air Force History, Washington, D.C,, 1977 (hereafter Osur), and Sandler, Stanley, *Segregated Skies; All Black Combat Squadrons of World War II,* Smithsonian Institution Press, Washington, D.C., 1992 (hereafter Sandler).

4. Specifically, in September 1939, there were two black Regular Army officers, Col. (later Brig. Gen. USA) Benjamin O. Davis, Sr. and 1st Lt. (later General, USAF) Benjamin O. Davis, Jr., along with 3 chaplains. There were an additional 150 National Guard and 353 Reserve officers; Lee, 192-93, Tables 3 and 4.

5. Wesley F. Craven and James L. Cate, editors, *The Army Air Forces in World War II, Volume VI: Men and Planes,* xxvii, University of Chicago Press, Ill. 1953, reprinted, Office of Air Force History, Washington D.C., 1983.

6. Donald R. Whitnah, *A History of the United States Weather Bureau,* University of Illinois Press, Urbana, Ill, 1965 (hereafter Whitnah).

7. Letter, Dr. Carl-Gustav Rossby to Dr. Edward Steidle, (Dean, School of Mineral Industries, Pennsylvania State College), March 11, 1943, Air Weather Service Training, MIT Correspondence File Folder 4, 360.711-4, IRIS 182468, USAF Collection, Air Force Historical Research Agency (AFHRA), Maxwell AFB.

8. For an overview of this shift, see Charles C. Bates, and John F. Fuller, *America's Weather Warriors; 1814-1985*, Texas A&M University Press, College Station, 1986, Chapter 3 (hereafter Bates & Fuller), and Wesley F. Craven and James L. Cate, editors, *The Army Air Forces in World War II , Volume VII: Services Around the World,* Jonas A. Jonasson, *The AAF Weather Service,* pp 311-38, University of Chicago Press, 1953, reprinted, Office of Air Force History, Washington, D.C., 1983.

9. Sgt. Raymond Walters, USAF Historical Study Number 56, *Weather Training in the AAF, 1937- 1945*, 1952, pp. 62 (hereafter Walters); Bates & Fuller, pp. 52-53.

10. Walters, Chapter III; Bates & Fuller, pp. 52-53.

11. "Announcement of Special Course in Meteorology to be offered at the Massachusetts Institute of Technology," Air Weather Service Training MIT Correspondence File Folder 4, 360.711-4, IRIS 182468, AFHRA.

12. Walters, pp. 63-65; Bates & Fuller, pp. 52-53. A May 16, 1941 letter to R. M. Kimball of MIT from Maj A. F. Merewether stated they had "over 300 applications for the 150 vacancies to study meteorology", this for the September 1941 course; MIT Correspondence File Folder 4, 360.711-4, IRIS 182468, AFHRA.

13. Jakeman, Chapters 1-5; Osur, Chapters 1-2, and Sandler, Chapter 1.

14. Dominick A. Pisano, *To Fill the Skies With Pilots: The Civilian Pilot Training Program, 1939- 1946,* Smithsonian Institution Press, Washington D.C., 2001, p. 76; Patricia Strickland, *The PUTT- PUTT AIR FORCE: The Story of the Civilian Pilot Training Program and The War Training Service (1939-1944),* Federal Aviation Administration, Department of Transportation, 1971, pp. 39-47; Jakeman, Chapters 5-6.

15. *History of Tuskegee Army Airfield, 21 Jul 1941- 6 Dec 1941*; Appendix I, Correspondence and Interviews Relative to study for Pilot Training at Tuskegee, Alabama, Volume 1, 289.28-1, IRIS 00179144, AFHRA.

16. Group photograph, Civilian Weather Instructors at Chanute Field, Nov 1942. Identities of what appear to be two black instructors have not been determined; there are also several Asians as well, Chanute Technical Training Center Collection, Octave Chanute Aerospace Museum, Rantoul, Ill.

17. HQ Air Corps Technical School, Chanute Field, Illinois, Special Order No. 263, paragraph 29, Nov 7, 1941, K146.002-61, IRIS 1151362, Octave Chanute Aerospace Museum Collection, AFHRA. This order sent the 99th Pursuit Squadron and Air Base Detachment personnel from Chanute Field, IL, to Maxwell Field, AL, "for temporary change of station pending completion of facilities at Tuskegee, Alabama" and shows all five listed as part of the Weather Detachment. This order, along with review of "History of the 67th Army Air Forces Base Unit (Tuskegee Weather Detachment) for 21 Mar 42 – 30 Sep 44" (289.28-3, V. 3, IRIS 00179153); 1 Oct 44 – 31 Dec 44 (289.28-6, V. 2, IRIS 00179162); 1 Jan – 31 Mar 45 (289.28-8, V. 2, IRIS 00179166) and 1 Apr – 1 Jun 45 (289.28-9, V.2, IRIS 00179168), (hereafter History, 67 AAFBU, date), AFHRA, and available personnel records of the five original weathermen contradict Bates & Fuller, pg 56, which indicates all enlisted training occurred at Tuskegee.

18. Letter, R. M. Kimball to Maj Merewether, June 19, 1941, Air Weather Service Training MIT Correspondence File Folder 4, 360.711-4, IRIS 182468, AFHRA.

19. "History, 67 AAFBU," 21 Mar 42 – 30 Sep 44; 1 Oct 44 – 31 Dec 44; 1 Jan – 31 Mar 45 and 1 Apr – 1 Jun 45.

20. E-mail, Albert Theberge [NOAA Historian] to Gerald White, Nov 28, 2005; it was the mid-1960's before there were any blacks on the Weather Bureau (now National Weather Service) professional staff, although Mr. Theberge notes that George Washington Carver was a Volunteer Observer for many years and those records are on file at the National Oceanographic and Atmospheric Administration Library. Approximately 700 Weather Bureau staff, mostly junior observers, entered all branches of the military in WW II, see Whitnah, p. 201.

21. Walters, pp. 26-29, see Appendix C for suggested curriculum.

22. "History, 67 AAFBU, 21 Mar 42 – 30 Sep 44."

23. Army Air Forces Training Command, Negro Personnel In Army Air Forces, Consolidated File Of Documents, HQ AAF TTC to Commanding General [ ] District, July 30, 1942, 220.765-3, IRIS 146003, AFHRA. Part of this confusion may stem from the fact that control of the meteorological aviation cadet program was just then passing from the Weather Directorate to the AAF Technical Training Command. Cadet candidates, once approved by the Aviation Cadet selection boards, were still being selected by the individual universities based on academic qualifications. The universities, in turn,

shortly thereafter ceded their role in evaluation and selection to a University Meteorological Committee (UMC) established in fall 1942; less than 10,000 applicants of some 30,000 total met both military and academic requirements; see Walters, pp. 68-70. How the schools and UMC received guidance on how many black cadets to admit is not yet clear.

24. Lee, p. 79.

25. Lee, pp. 162 – 74; a copy of Judge Hastie's pamphlet is found in the Alan Gropman Collection, 168.7061-69, IRIS 1012295, AFHRA.

26. Letter, AAF TTC to CG, HQ AAF (Attn: AFRIT), Subject: Weather Officers (Colored), 26 Feb 42 [apparently a typo; the outgoing date/time-stamp reads 27 Feb 1943] with 1st Indorsement to CG AAF TTC, 7 Apr 1943, Consolidated File, 220.765-3, IRIS 146003, AFHRA.

27. Except for the above mentioned references concerning Wallace Reed, review of University training detachment historical reports and official documentation on file at AFHRA has not yet uncovered any mention the race of any other black cadet; see histories for the Training Detachments at New York University, 234.605, and University of Chicago, 234.842 as examples. Each had two black cadets in wartime class #3, graduating Nov 30, 1942 and without knowledge of specific names, their race could not be determined. It is possible other materials on file at individual schools may reference race but the author was unable to review such material for this article.

28. All personal data is from the respective individual personnel file unless otherwise noted and is on file at National Military Personnel Records Center, St. Louis, Missouri, For numerous reasons, the 1973 fire among them, the quality and quantity of material in each personnel record varies widely. Little information was available on these enlisted personnel unless they were later commissioned; James Johnson's file contains one pay document from OCS. No information has been uncovered on Luther Blakeney and Roosevelt Richardson.

29. He served as an administrative officer, Adjutant, communications officer and Special Services officer, ending up as an Intelligence officer with the 477th Bombardment Group before discharge in March 1945.

30. There is no record any weather officer was assigned to the 99th FS.

31. "History, Selfridge Field Detachment , 2d Weather Squadron, Jul 37 – May 44," pp 58-59, SQ- Wea-2-HI, IRIS 00076205, AFHRA.

32. Interview, Dr. Todd Moye with Dr. Milton Hopkins, Tuskegee Airmen Oral History Project, National Park Service, August 2, 2001, (hereafter Hopkins Interview); my thanks to Dr. Moye for its use.

33. Accident report 43-06-16-01, microfilm reel 163, Microfilm 46214, IRIS 877161, AFHRA. 2d Lt. Blakeney was a passenger in a BT-13 piloted by 2d Lt. Nathaniel N. Hill on a local flight to check the weather. They impacted the waters of Lake Huron after Hill apparently became disoriented in low clouds; he was not qualified for instrument flying and the aircraft had a malfunctioning artificial horizon indicator.

34. Personnel file; interview, Gabrielle Morris with Archie Williams, *The Joy of Flying: Olympic Gold, Air Force Colonel, and Teacher: Archie F. Williams*, Feb 11, 1992; interview, George A. Hodak with Archie Williams, *Archie F. Williams, 1936 Olympic Games; Track & Field,* June 1988; article, Jerry White, Air Force Weather Agency History Office, "Archie Williams," OBSERVER, April-May 2005, p. 23.

35. As part of the move to Walterboro, the 553 FS was inactivated and the training mission was assigned to the 126th Army Air Forces Base Unit. Lt Anderson briefed aircrews and taught meteorology in the ground school until it closed in September 1945.

36. History, 67 AAFBU, 21 Mar 42 – 30 Sep 44, pg 32 and 1 Jan – 31 Mar 45, pg 13.

37. History, 67 AAFBU, 1 Jan – 31 Mar 45, pg 1.

38. Forecaster accuracy listings are found in the AAF Weather Service Bulletins, 1944-45; copies are on file at the Air Force Weather Agency History Office, Offutt AFB, NE.

39. History, 67 AAFBU, 21 Mar 42 – 30 Sep 44, Appendix, pg 32, and 1 Jan – 31 Mar 45, pg 13. Comparison of enlisted observer qualification rates with other detachments may be impossible. Unlike other base weather stations, Tuskegee did not send men overseas because of segregation. Turnover that did occur appears to be in part due to men leaving for various commissioning programs such as OCS, aviation cadets and the Army Specialized Training Program. In addition to the original five assigned to the 99 FS and later commissioned, at least six other weather observers were sent to these various programs.

40. It is interesting to note that both Hopkins and Bullock also have time as personal equipment (flying gear) officers in their records during their 332d FG service. No reference to support of the 332d FG can be found in the 12th Weather Squadron History for this period (SQ-Wea-12-HI, 1 Apr 44 – 30 Sep 45, IRIS, 76547, AFHRA); the 12 WS had responsibility for Italy and Central Mediterranean during this period and operated the base weather stations supporting the flying units.

41. Hopkins Interview.

42. James C. Warren, *The Freeman Field Mutiny,* Conyers Publishing Co., Vacaville, Calif.,1996; Gropman, pp.11-18; Davis, pp. 140-46.

43. "History of the 69th AAF Base Unit (2d Weather Region) 30 Jun – 30 Sep 1945," REG-WEA-2- HI, Microfilm Reel A0398, Frame 1581 (report pp 20-22), AFHRA. At this point, the Tuskegee weather Detachment was part of the 71st AAFBU but a review of the 71 AAFBU History, filed as the "104th Weather Group History, 1 July – 31 Dec 46," GP-Wea-104-HI, IRIS 00103385, AFHRA, makes no reference to the move; the reason for the omission is unknown.

44. Hopkins interview; Hodak interview.

45. Detachment History, Weather Detachment 0266, 74th AAFBU (102d Weather Group), 12 Mar – 30 Jun 46," GP-Wea-102-HI, Oct 45-Jun 46, Vol 2, IRIS 00103356, AFHRA.

46. Detachment History, Weather Detachment 0266, 71st AAFBU (104th Weather Group), 1 July – 31 Dec 46," GP-Wea-104-HI, Oct 45-Jun 46, Vol 2, IRIS 00103385, AFHRA. HQ 71 AAFBU General Order 56, 18 Sep 46 (Inclosure #2) closed the detachment and HQ 71 AAFBU Special Order 206, 3 Oct 46, (Inclosure #6) sent the 3 officers to Lockbourne; there is no mention of transferring enlisted men.

47. Gropman, pp. 57-62; Davis, pp. 154-61.

48. Accident Report 47-4-3-2, AFHRA; Lt. Wise was a passenger in an A-26 that crashed near Richmond, Va., while flying from Myrtle Beach, S.C. to Bolling AFB, Washington, D.C.

49. Bates & Fuller, pp. 137 –39.

50. *Ibid.,* p. 187: Gropman, Chapter 3.

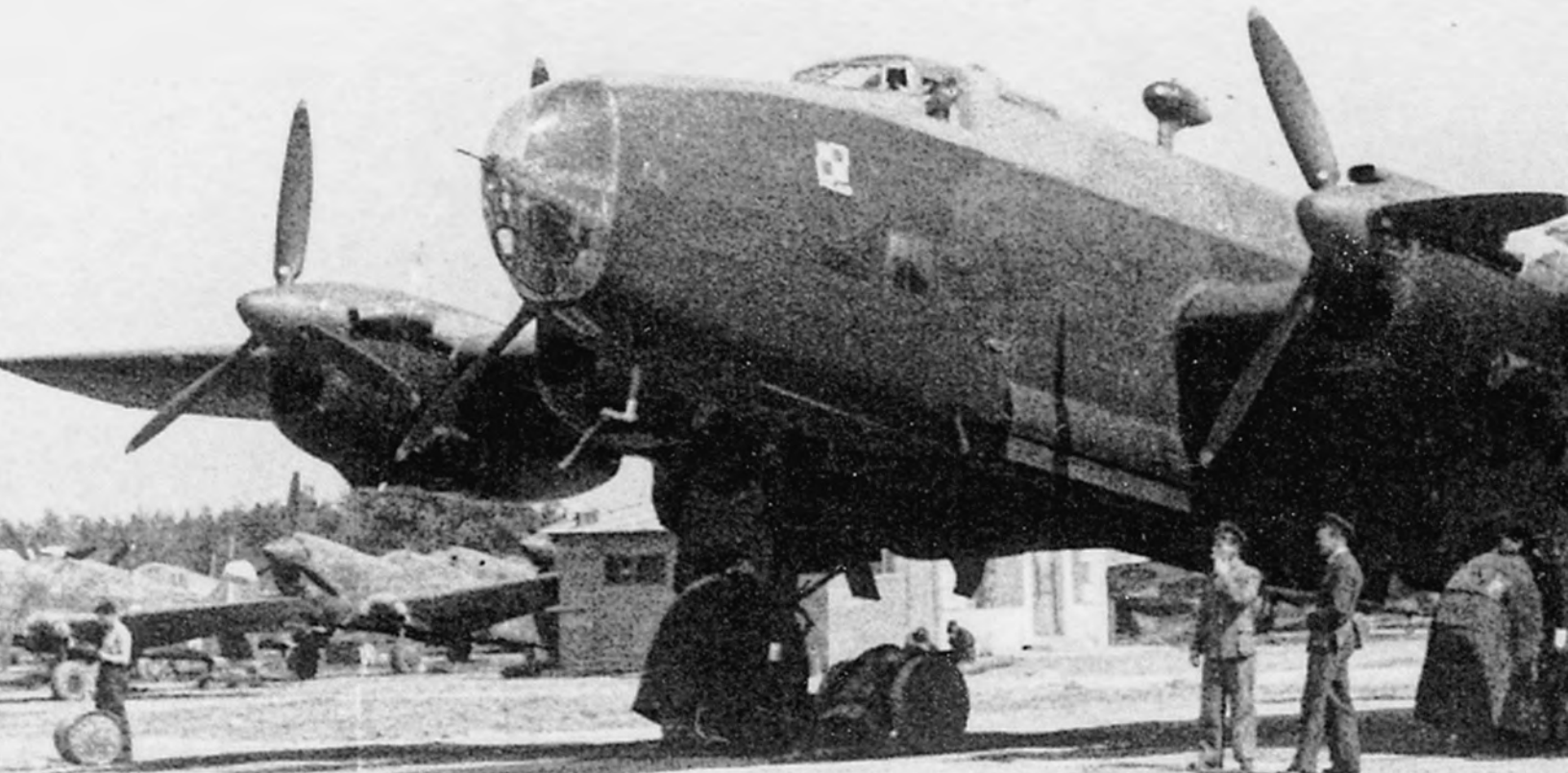
51. Gropman, p. xiii; in the Preface, he makes a distinction between desegregation and integration with desegregation the first step in the process and integration reflecting a level of cohesion that took time to appear.

52. Gropman, Tables 1 & 2, Statistical Appendix.

53. Bates & Fuller, p. 134; AWS dropped from more than 5,000 officers in 1945 to fewer than 1,000 weather officers by 1946, and fell to approximately 850 by 1948 before rebounding to approximately 2,000 in the Korean War, where it remained (with minor fluctuations) until the post-Vietnam drawdown in the early 1970s.

54. This, with no combat record, while many deserving combat veterans of the 332d FG were overlooked, much to General Davis's concern; Davis, pp. 154-55.

POLISH SPECIAL DUTIES FLIGHT NO. 1586 AND THE WARSAW UPRISING



Michael A. Peszke

(Overleaf) A Halifax of the Polish Flight.

(Right) The unsung and essential component of any successful mission. Mechanics working on a Liberator. *(All photos courtesy of the Polish Institute and General Sikorski Museum, London.)*

In a recent, highly acclaimed, and extensive monograph on the Warsaw Uprising of August 1944, the distinguished historian Norman Davies writes, "The Warsaw Airlift of 1944 is one of the great unsung sagas of the Second World War." [1] Moreover, Davies asserts that while the Allied participants included the Americans, Soviets, and British, "In reality, only the British and their partners made a significant contribution." Twenty years earlier, Neil Orpen made a similar observation: "I [first] realized the extraordinary nature of the Warsaw airlift of 1944, which I have since regarded as the most shining example of selfless courage in all my experience and research." [2]

Indeed, the Soviet contribution to the Poles should be left to Soviet propagandists.[3] The Americans, inveigled in major political and long term strategic policy issues, did make one major effort but only under great political pressure from the Polish-American Congress and strenuous urging by Winston Churchill.[4] In fact, while belated, the American effort produced significant results, both material and moral. Thus, equating Soviet and American contributions is preposterous. Further, Professor Davies, leaves the reader with the impression that it was the Royal Air Force that made "a significant contribution." This is grossly unfair to the one major American effort and a cavalier dismissal of the Polish Special Duties Flight 1586 and crews of the Royal South African Air Force. [5]

It should be emphasized that supply flights to German occupied Poland had been run more or less continuously since a Polish Special Duties Flight 1586 had moved to Italy from their RAF Tempsford base in the United Kingdom in late 1943.[6] The official establishment of the Polish flight was six crews plus two in reserve. In fact, the number of Polish crews slightly exceeded this number, limited only by the number of available planes, which consisted of American B–24 Liberators and Halifaxes. These long, arduous flights were conditioned not merely on favorable weather, but also sufficient darkness (i.e. moonless nights) since such missions were subject to visual interception by German fighters. These missions carried Polish military and political couriers as well as specialized sabotage and communications equipment.[7] In one of the last flights to Poland in December 1944 the Poles flew in the British Military Mission.[8]

THE SOVIET CONTRIBUTION TO THE POLES SHOULD BE LEFT TO SOVIET PROPAGANDISTS ... EQUATING SOVIET AND AMERICAN CONTRIBUTIONS IS PREPOSTEROUS

But until the Warsaw Uprising, and after its tragic demise, the drop zones for all flights were isolated rural areas, as far as possible from German concentrations. With the Warsaw Uprising the potential drop zone gave a new and very dangerous dimension to such missions since the crews would be expected to fly to a burning city and attempt to parachute supplies from a low altitude so that the supplies could be fairly concentrated on the drop zone. Now such flights had to contend with the presence of the German fighters around the City and heavy Anti Aircraft (AA) defenses in addition to all the prior hazards, such as changing weather, icing and the too frequent malfunctions of badly used and minimally maintained aircraft.

When the Polish Home Army staged its uprising in Warsaw on August 1, 1944, the Polish Special Duties Flight 1,586 had been reduced to five crews since several crews had completed their tours of duty, and one had been shot down on a mission to Hungary. [9]

When the news of the uprising reached the allied bases, Air Marshal Slessor authorized flights to Poland, but *not to Warsaw*. Bad weather intervened and delayed the mission for two days, until August 4. The Polish flight commander, Major Arciuszkewski, mobilized seven Polish crews, two of them volunteers who had completed their tours of duty and turned a Nelsonian eye to Slessor's order. Two Polish crews actually did fly over the city of Warsaw and made as successful a drop as

Dr. Michael Alfred Peszke was born in Poland. After the German invasion on September 1, 1939, he and his mother fled to Romania, France, Portugal, and, in July 1941, to the United Kingdom. He graduated from Trinity College, Dublin, with the medical degrees of MB, BCH, BAO, and the standard BA. In August 1956, he came to the U.S. on a special visa enacted for dependents of Polish World War II veterans. He pursued graduate studies in psychiatry at various schools and hospitals in New England. Among his positions, were professorships at several universities, including Chicago, Connecticut, and Maryland. In 1999, he retired from clinical and academic work in psychiatry. Dr. Peszke has published research in psychiatry and is a fellow of the American Psychiatric Association, a member of the American College of Psychiatrists, the Polish Institute of Arts and Sciences of America, and the Royal United Services Institute. He published The Polish Underground Army, the Western Allies, and the Failure of Strategic Unity in World War II *(McFarland, 2005) and wrote a chapter, "Poland's Military Aviation in September 1939," in* Defeat of Air Forces *(Kentucky, 2006), edited by Robin Higham and Steve Harris*

B–24 Liberator VI with the crew of Capt. Szostak. One of the first crews to drop supplies to the Warsaw insurgents on August 4, 1944. Lost over Poland on August 14th. The Poles were based in Brindisi, Italy and wear British-style tropical uniforms.

could be expected. Hence Davies is mistaken when he writes: "on the night of 4/5 August, the first RAF bomber appeared in the skies over Warsaw."[10] However, RAF crews flew to other targets in Poland and suffered severe losses. Slessor at this point cancelled all flights to any drop zone in Poland.

Under relentless political pressure from the Polish Government and its military staffs in London, Slessor relented and on August 8 allowed volunteer Polish crews to fly to Poland. Three Polish crews flew that night. Slessor cabled the British Chief of Air Staff,

CHURCHILL INSTRUCTED THAT ALL POSSIBLE AID BE GIVEN TO THE INSURGENTS.

Three Poles went to Warsaw last night and dropped supplies to the city. A good many night fighters were seen and flak experienced at Warsaw, but they got away with it. A gallant show. They will send five more tonight. They [it is unclear who] *are pressing me to send the (RAF) 148 Squadron also. But I intend to adhere to my original decision and not send any British Halifaxes till last quarter of moon. A few aircraft on a show like this will sometimes get away with it*.[11]

However Polish pressure on the British mounted and while in Naples, Prime Minister Churchill met with Air Marshal Slessor on August 11. Churchill instructed that all possible aid be given to the insurgents. Churchill was also requesting that President Franklin D. Roosevelt join him in pressuring Joseph Stalin for aid to the Poles, at the very least granting landing rights on Soviet fields.[12]

As a direct result of this political decision, a major effort was undertaken by fifty-four crews from 148 RAF, 178 RAF, 31 South African Air Force, and Polish Flight 1586. Eleven crews, including one Polish, failed to return, while many that did had severely damaged aircraft. The South African crews in particular endured very heavy losses, losing eight planes.

On August 15, Slessor cabled London: "Twelve successes, six failures, eight missing. In all cases the target was Warsaw. Last nights operations to Warsaw, 26 dispatched 11 successful. 8 missing including 6 Liberators of 205 Group. One of 148 squadron and one Pole. Group have lost 25% of their strength in two nights." Two days later Slessor cabled the following: "Eighteen aircraft dispatched, eight successful, six missing including four Liberators of 205 Group and two Poles of 1586. This is a second occasion on three nights in which about 30% of the force dispatched has failed to return and our losses in 13 night operations to Poland have amounted to 21 lost, three destroyed on landing due to flak damage."[13]

Polish crews and the few available RAF 148 Squadron planes continued their attempts but again the RAF losses were severe and again Slessor cancelled all flights to Poland. Under intense pressure, channeled through Portal in London, Slessor reluctantly agreed to Polish staff demands that Polish volunteer crews be allowed to fly these missions. The depleted Polish flight of just four aircraft went back on August 17.[14]

Between August 20 and 27, for eight consecutive nights, Polish crews carried out 35 sorties to the Warsaw area. Most were targeted to the forest outside the city, but Captain Ladro's crew carried out a daring low level mission over the insurgents.

At this point Polish replacement crews began to arrive from the United Kingdom. They came from training centers and also from the many Polish crews flying in the RAF Transport Command. But most had been qualified for Lancasters and needed to be familiarized either on Liberators or Halifaxes. The shortage of Polish pilots resulted in Halifaxes flying without the second pilot. There was also a shortage of planes. The heavy losses had exceeded expectation and even British Halifaxes needed to be modified for the specialized missions of such endurance.

Polish losses mounted and the loss of eight Polish crews (80 percent of establishment) resulted in a brief interlude to operations. On September 1, after a long pause caused by inclement weather, the Poles resumed their missions with seven planes. Aboard one of the Polish Liberators was General L. Rayski, who had been G.O.C. of the Polish Military Aviation between 1925 and 1938.[15] Four the Polish planes failed to return.

Finally, on September 5, Roosevelt responded to Churchill's pleas for a united front to confront Stalin's hostility.

Replying to your telegrams, I am informed by my Office of Military Intelligence that the fighting Poles have departed Warsaw and that the Germans are now in full control. The problem of relief for the Poles in Warsaw has therefore unfortunately been solved by delay and by German action, and there now appears to be nothing we can do to assist them. [16]

While intelligence sources in Washington stated that the Poles had departed supply flights from Italy continued sporadically to a burning and fighting city. Bad weather led to an interlude, but continued Polish pressure resulted in a major attempt from Italian bases on September 10 , when seventeen aircraft – five Polish, four from RAF 148, four from RAF

(Above) Close-up of nose art of a Polish Liberator VI.

(Above right) Another Polish Liberator VI and Crew. The markings show the many air support missions carried out to different countries. In this case, of the 39, 12 were to Poland.

178 and four from 31 South African Air Force flew to the Warsaw region. On this mission the allied aircraft used the recently developed British barometric parachute. Of the seventeen planes that started, five failed to return, three of them Polish.

Continued pressure and reports that the Poles were still fighting, led to a major American effort on September 18 from bases in the United Kingdom and landing at Poltava in the Ukraine. This mission flew over Warsaw, in full daylight and even though by the most optimistic accounts a mere twenty five percent of the dropped containers were received by the insurgents; the actual number of supplies dwarfed the missions flown from Italy. [17]

THE OVERALL BALANCE OF THIS GALLANT EFFORT WAS THAT THE POLISH FLIGHT FLEW 31 MISSIONS TO WARSAW AND 47 TO THE WARSAW ENVIRONS AND LOST 16 CREWS

On September 21, another all out effort was mounted from Italy as five SAAF, five RAF, and two Polish units again flew to the environs of Warsaw. This was the last effort on behalf of the Insurgents but it should be emphasized that the drop zone was outside of the City and probably of no benefit to them.

On October 3, after sixty three days of bitter and bloody street fighting, Warsaw capitulated. In his memoirs Churchill wrote of the arrest of the Polish Underground leadership by the Soviets in March,1945, with direct reference to the fate of the Warsaw insurgents. *"This was in fact the judicial liquidation of the leadership of the Polish Underground which had fought so heroically against Hitler.* ***The rank and file had already died in the ruins of Warsaw****."* [18]

Flights to Poland continued into December 1945 and the infusion of new Polish crews and ground personnel allowed the Polish Flight to be fleshed out to squadron establishment. The Squadron was initially numbered 319 (Polish) but RAF authorities quickly assented to the Polish request that it be re-numbered 301, reverting to the number of one of the original four Polish bomber squadrons, and the Poles also gave it the name of "*Defenders of Warsaw."* It became the only Polish Squadron to be given a Unit Decoration of the Virtuti Militari.

It is at best unfortunate that Polish gallantry is now subsumed by the RAF though the bravery of RAF and SAAF crews has been—and always should be— acknowledged. Only Polish crews actually volunteered to aid their fighting comrades.

The overall balance of this gallant effort was that the Polish Flight flew 31 missions to Warsaw and 47 to the Warsaw environs and lost 16 crews. Only two Polish crews survived the whole period of the Uprising. The official British history of the Polish Air Force records:

The devotion to duty and disregard of danger shown by Polish Special Duties air crews are worthy of all the more recognition in that they were so ready to risk their lives while fully recognising that their efforts could not save the city". [19]

During this time, the Soviets categorically refused permission for any planes from the West, RAF or Polish to land in their controlled Polish territory, even if damaged or if they had wounded aboard. After one successful mission by the Americans the Soviets rescinded their permission for American landings on their – so called allied airfields. If it is possible to at least entertain the notion that Rokossovsky's offensive on the outskirts of east Warsaw (Praga) became stalled because of an unexpected German counter offensive, the refusal of the Soviets to make their bases available is proof beyond any reasonable doubt of their ill will. It is pertinent to add that in his post war memoirs, Churchill wrote that he would have liked to send a message to Stalin along the following lines:

We are sending our aeroplanes to land in your territory, after delivering supplies to Warsaw. If you do not treat them properly all our convoys will be stopped from this moment by us. But the reader of these pages in after years must realize that everyone always has to keep in mind the fortunes of millions of men fighting in a world wide struggle, and that terrible and even humbling submissions must at times be made to the general aim. [20]

Part of professor Davies treatment of the Polish Air Force's contribution to the aid of the Polish Insurgents of Warsaw stems from a general

Another view of the mechanics at work.

perception that Poles in blue uniform in the United Kingdom were in fact somehow an integral part of the Royal Air Force personnel. [21]

Few historians are aware of the specifics of the Polish-British Military Agreement of August 5th 1940. Article I stipulated that "Polish Armed Forces (comprising Land, Sea and *Air Forces*) shall be organized and employed under British command, in its character as the Allied High Command, as the Armed Forces of the Republic of Poland allied with the United Kingdom." This agreement from 1940 was further modified in April 1944 and its annex, spells out;

The Polish Air Force in the United Kingdom, which constitutes a part of the sovereign Polish Armed Forces, shall be composed of...

Therefore, it is a major error to refer to the Polish Squadrons and ground personnel as volunteers.[22] The British obviously recognized that the Polish Air Force was a part of the Polish Armed Forces and an allied component. Poles were placed under British Command because it was the Allied High Command, just like the Polish 2 Army Corps in Italy was under British command, but its Polish divisions were not volunteers in the British Army. [23] ■

NOTES

1. Norman Davies, *Rising '44. The Battle for Warsaw*, New York: Viking, 2003. p. 307.
2. Neil Orpen, *Airlift to Warsaw. The Rising of 1944*, U. of Oklahoma Press, 1984, p. VII.
3. *"The Russians, however, made no attempt to support Bor's rising.* (i.e. G.O.C of the Polish Home Army) Hilary St. George Saunders, *Royal Air Force 1939-1945, The Fight is Won*, Vol. 3, London: HMSO, Third printing, 1995. p. 240.
4. Thomas A. Julian, "The role of the United States Army Air Force in the Warsaw Uprising, August-September 1944", *Air Power History*, 42(1995): 22-35.
5. See, Orpen, op. cit.
6. K.A. Merrick, *Flights of the Forgotten, Special Duties Operations in World War Two*, Arms and Armor, London, 1989. p. 178 The distance from Brindisi (Italy) to Warsaw was approximately 900 miles each way.
7. Ian Valentine, *Station 43. Audley House and SOE's Polish Section*, Sutton Publishing, UK. 2004. Also the classic, Jozef Garlinski*, Poland, SOE and the Allies*, George Allen and Unwin, London, 1969.
8. Jeffrey Bines, *Operation Freston: The British Military Mission to Poland*, 1944, Private Printing, Newport, UK. 1999. Excellent monograph and the only one dedicated to this politically charged British mission.
9. The Polish crews flew missions to other countries, such as Yugoslavia, Hungary, Greece, and North Italy. By the end of July, 1944 the Polish flight had flown 107 missions to occupied Poland, plus many other "milk runs" to Yugoslavia, North Italy and South France. Merrick, op.cit. writes that in April (1944) the Poles flew 58 missions and in May (1944) 138 of which 72 were to Poland. The Poles were trying to reduce the backlog of accumulated supplies destined for Poland and flew for as many as five nights in succession. Merrick, op.cit. p.184. In June the British placed all their emphasis on missions to Tito partisans. Since the RAF had flown missions to Poland now by reciprocity agreement the Poles flew to Yugoslavia. The RAF in turn was expected to reciprocate by missions to Poland. The best analysis of these tragic days and how the allied air forces attempted to cope is in Jerzy B.Cynk, *The Polish Air Force at War*, Atglen, Pa.: Schiffer Military Histiory, 1998. pp. 468-84.
10. Davies, op. cit. page 248.
11. British National Archives, Kew, PRO AIR 8/1170 15969. Also *Destiny Can Wait*, *The History of the Polish Air Force in Great Britain*, William Heinemann, London, 1949, This was an official British history of the Polish air Force, with a foreword by Marshal of the Royal Air Force, Viscount Portal of Hungeford. pp. 218-228., Finally Sir John Slessor, *The Central Blue*, Cassell, London, 1956. pp. 610-622.
12. Winston Churchill, *The Second World War*. Vol. VI *Triumph and Tragedy*, Cassell and Co., London, 1954. Chapter IX, The Martyrdom of Warsaw. pp. 113-128.
13. National Archives PRO AIR 8/1170 15969
14. Merrick, op. cit. p. 211.
15. General Rayski communicated through Polish channels that the flights to Warsaw were suicidal and futile.
16. Churchill, *Triumph and Tragedy*, op.cit. pp. 113-128. Also, Kimball ed.. *Churchill and Roosevelt. The Complete Correspondence*, in three volumes. Vol. III pp. 259-365.
17. Julian, op. cit.
18. Churchill, *Triumph and Tragedy*, p. 435.
19. *Destiny Can Wait. op. cit.,* This monograph gives an excellent subjective, human aspect account of the experiences of the Polish crews. pp. 221-228.
20. Churchill, *Triumph and Tragedy*, Chapter IX, "Martyrdom of Warsaw", pp. 113-128.
21. On a recent visit to the Museum at West Point Military Academy which hosts thousands of visitors I was surprised to see a Polish Air Force uniform captioned as belonging to a Polish volunteers in the Royal Air Force. I have no question that this is well meant but so far attempts to correct this have proven fruitless.
22. *Destiny Can Wait,* op.cit. , pp. 377-384.
23. Hilary St. George Saunders, *Royal Air force 1939-1945*. Vol 3. *The Fight is Won*, HMSO, London, third Impression, 1993. "*In June 1944 there were 31 allied (!) squadrons serving in home commands under Royal Air Force. These consisted of 12 Polish, 7 French, 4 Czecho-Slovakian, 4 Norwegian, 2 Belgian, and 2 Dutch*." p. 371.

Slanguage Revisited

By Brig. Gen. Brian S. Gunderson, USAF (Ret.)*

In five successive issues of the *Air Power History* (Winter 2000 through Winter 2001) an article on Royal Air Force Slanguage used during World War II was published. At that time, the author thought that it included all the terms that he had recorded or remembered over the years since that period. Since then, however, he found some additional notes containing more RAF slang expressions that had not been included in the original published listing. In addition, he had read some new books published in England to honor the sixtieth anniversary of Royal Air Force activities during World War II, which he had not seen or heard about before. Furthermore, he had received a letter from a friend, Maj. Gen. Edwin B. Giller, USAF (Ret.), who had flown with the 55th Fighter Group, Eighth Air Force, in England during World War II. Included with the letter were some slang terms used by RAF/USAAF fighter pilots to restrict the German fighter pilots from knowing what they were actually doing in the air. Putting everything together, an additional list of over 100 terms of RAF "Slanguage" and their U.S. Army Air Forces equivalent definitions was developed.

*General Gunderson submitted this manuscript shortly before his death.

ROYAL AIR FORCE TERM	U.S. ARMY AIR FORCES EQUIVALENT/ DEFINITION
ANCHORED	ORBITING A VISIBLE ORBIT POINT
ARCHIES	ANTIAIRCRAFT FIRE/ACK-ACK
ARRIVAL	AN AIRCRAFT LANDING OF BARELY ADEQUATE STANDARD
BANTER	TALK, CHATTER (USUALLY IN A GROUP)
BEAT	A DESIGNATED AREA AN RAF AIRCRAFT WAS ASSIGNED TO PATROL LOOKING FOR GERMAN SHIPPING TO ATTACK, ALONG THE COASTLINE FROM BRITTANY, FRANCE TO GERMANY'S NORTH SEA COAST
BEETLING ALONG	CRUISING ALONG AT SLOW SPEED
BENDERS	KNEES, E.G. "GET OFF YOUR BENDERS"
BIBLE-PUNCHER	A MILITARY CHAPLAIN, PADRE
BILLY-HO	FAST AS POSSIBLE, E.G. AN AIRCRAFT FLYING BILLY-HO FOR HOME BASE
BIT OVER THE TOP	AN EXAGGERATION
BLACKMAIL	SABOTAGE OPERATIONS BY FRENCH WORKERS
BLUEGIRLS	THE NICKNAME GIVEN TO WOMEN/GIRLS WHO WORE BLUE COVERALLS WHILE WORKING IN AN ORDNANCE FACTORY. WOMEN/GIRLS WORKING IN OTHER FACTORIES MANUFACTURING MILITARYPRODUCTS WORE DIFFERENT COLORED OVERALLS FOR EACH SPECIALTY. THIS IDENTITY CODE PROVED TO BE VERY GOOD FOR MORALE.
BOX	A FORMATION OF ENEMY FIGHTER AIRCRAFT
BRASS HAT	AN OFFICER ON THE GENERAL HQ STAFF
BULLY	PRESSED CORNED BEEF SERVED IN THE DINING HALL
BUTCH	NICKNAME AFFECTIONATELY USED BY ROYAL AIR FORCE PERSONNEL FOR THE COMMANDER-IN-CHIEF RAF BOMBER COMMAND, AIR CHIEF MARSHAL (LATER MARSHAL OF THE ROYAL AIR FORCE), ARTHUR HARRIS
BUTTON, ON THE	LANDING AN AIRCRAFT RIGHT ON APPROACH END OF A RUNWAY
CABRANK	SMALL FORMATIONS OF PATROLLING FIGHTERS AND FIGHTER-BOMBERS ON IMMEDIATE CALL FOR CLOSE TACTICAL SUPPORT OF ARMY TROOPS
CANDLES	SEARCHLIGHTS
CANUCK	A CANADIAN SERVICE PERSON
CHEESE-CUTTER	AN AIRMAN'S PREWAR PEAKED HAT
CHICAGO PIANOS	HEAVY CALIBER, QUICK FIRING ANTI AIRCRAFT GUNS ON GERMAN FLAK SHIPS POSITIONED IN RIVER ESTUARIES AND SEA LANES ALONG THE NORTHERN EUROPEAN COASTLINE

CHICKENS	FRIENDLY FIGHTER AIRCRAFT
CLOAK AND DAGGER SQUADRON	NICKNAME GIVEN TO THE ROYAL AIR FORCE, BRITISH COMMONWEALTH AND U.S. SQUADRONS THAT DROPPED ARMS, AMMUNITION, RADIOS, COMMUNICATIONS EQUIPMENT ETC. TO FRENCH MAQUIS AND OTHER UNDERGROUND UNITS IN GERMAN-OCCUPIED AREAS TO ASSIST THEM WITH THEIR SABOTAGE MISSIONS.
CLOBBER	COLLECTIVE TERM FOR CLOTHING RAF AIRCREW WORE ON MISSIONS E.G. "LONG JOHN" UNDERWEAR, THICK ROLL-NECK SWEATER, BATTLE DRESS UNIFORM AND WOOL-LINED FLYING BOOTS
CLOSE THE HANGAR DOORS	STOP TALKING SHOP
CLOT	A FOOL, AN IDIOT
CLUELESS	AN IGNORANT PERSON
CHOPBURG	TERM FOR BERLIN BECAUSE OF HIGH LOSS RATE OF RAF AIRCRAFT EACH TIME THEY BOMBED IT
COCKEREL	IFF (IDENTIFICATION FRIENDOR FOE) - E.G. MAKE YOUR COCKEREL CROW MEANT SWITCH ON YOUR IFF; STRANGLE YOUR COCKEREL MEANT SWITCH OFF YOUR IFF;
COP A PACKET	WOUNDED
COUSIN MAUD/ COUSIN JIM	PATROL BEACONS IN ENGLAND
CRACKED OFF FOR HOME	RETURNED TO HOME AIRFIELD AT HIGH SPEED
CRACKER	SIGNAL TO ATTACK ANY ENEMY AIRCRAFT WITHIN YOUR "BOX"
CUTHBERT	A CONSCIENTIOUS OBJECTOR
DAISY CUTTER	AN ANTI-PERSONNEL BOMB
DIVER	THE GERMAN V-1 FLYING BOMB
DLS/DREM LIGHTING SYSTEM	AN UPGRADED RUNWAY LIGHTING SYSTEM ADOPTED BY THE ROYAL AIR FORCE TO REPLACE GLIM LAMPS AND GOOSENECK PARAFFIN FLARES
DOG	A WORD TO DESCRIBE ANY AIRCRAFT OR VEHICLE THAT PERFORMS POORLY
DOUSE	EXTINGUISH SEARCH LIGHTS
EGGS	BOMBS
FATHER/UNCLE	BEAM APPROACH BEACONS IN ENGLAND
FISHES	TORPEDO AIRCRAFT
FLAMING ONIONS	NICKNAME GIVEN TO SMALL GROUPS OF GERMAN ROCKETS FIRED BY ANTI-AIRCRAFT BATTERIES-LOOKED LIKE ORANGE OR RED BALLS
FLYING GREENHOUSE	WWII RAF AVRO ANSON TWINENGINE AIRCRAFT USED PRIMARILY FOR PILOT, NAVIGATOR AND WIRELESS OPERATOR AIRCREW TRAINING
FREELANCE	ATTACK ANY ENEMY AIRCRAFT ANYWHERE WITHOUT RESTRICTION
FREYA	GERMAN RADAR INSTALLATION FOR LONG-RANGE DETECTION OF ENEMY AIRCRAFT
FRINGE MERCHANTS	A LESS THAN COMPLIMENTARY TERM GIVEN TO AIRCREWS THAT HAD A REPUTATION FOR DROPPING THEIR BOMBS SHORT OF THE TARGET TO AVOID INTENSE ENEMY FLAK ON BOMB RUNS
FRITZ	A TERM FOR A GERMAN SOLDIER
FRUIT SALAD	AN IRREVERENT NAME GIVEN TO THE COLLECTION OF MEDALS/RIBBONS WORN UNDER AIRCREW WINGS ON UNIFORMS
GOING IN, HAD IT	AIRCRAFT WITH PILOT IN IT ABOUT TO CRASH
GOLDEN EAGLE DAY	PAY DAY
GOON	NICKNAME FOR A GERMAN PRISONER OF WAR (POW) CAMP GUARD
GRAND SLAM	ENEMY AIRCRAFT SHOT DOWN
GREEN ENDORSEMENT IN PILOT'S FLYING LOG BOOK	AN HONOR ACCORDED TO A PILOT FOR SPECIAL DISPLAY(S) OF SUPERIOR AIRMANSHIP IN THE HANDLING OF AN AIRCRAFT IN AN EXCEPTIONALLY DIFFICULT AND/OR HAZARDOUS SITUATION
HARED BACK	SPED BACK TO BASE AFTER LEAVING THE TARGET
HAWKS	DIVE BOMBERS
HEIGHT BANDS	DIFFERENCE IN ALTITUDE IN FEET, E.G. 250 FEET SPACING ASSIGNED TO AN AIRCRAFT OVER AN AIRFIELD AWAITING LANDING INSTRUCTIONS IN BAD WEATHER CONDITIONS OR HEAVY AIR TRAFFIC IN A GIVEN AREA

HOOKS	SERGEANT'S STRIPES
HOVERING EAGLE	NICKNAME GIVEN TO A MINIATURE METAL BADGE/BREVET THAT WAS WORN ON THE POCKET FLAP OF THE ROYAL AIR FORCE/ALLIED FORCES UNIFORMS OF PATHFINDER AIRCREW MEMBERS
INTAKES	NEWLY ACQUIRED AIRCREW MEMBERS ASSIGNED TO A UNIT
JAMMY TRIP	AN EASY TRIP, A "MILK RUN"
JUMPER	A SWEATER
LIZZIES	WWII RAF WESTLAND LYSANDER AIRCRAFT, USED PRIMARILY TO FLY SUPPLIES AND/OR PERSONNEL TO AREAS WHERE UNDERGROUND FORCES ON CONTINENTAL EUROPE NEEDED SUPPORT
MANNA	AIR TRANSPORTATION OF SUPPLIES AND FOOD TO THE CITIZENS OF HOLLAND DURING THE PERIOD APRIL/MAY 1945
MATTRESS	BELOW CLOUD LEVEL
MILLENNIUM	1000-BOMBER ATTACK BY RAF ON COLOGNE, GERMANY ON 30/31 MAY 1942
MOPA	MILITARY OBJECTIVES PREVIOUSLY ATTACKED
MOTHER/GRANNIE	A HOMING BEACON IN ENGLAND
MOTHERS MEETING	ANY CONFERENCE OF SENIOR OFFICERS
NITS	A NICKNAME GIVEN TO RAF PERSONNEL BEING TRAINED TO BE PILOTS
NO BALL	A GERMAN ROCKET OR FLYING BOMB SITE
ODD BODS	AN AIRCREW MADE UP OF INDIVIDUALS FROM DIFFERENT COUNTRIES-BRITISH, CANADIAN, AUSTRALIAN, NEW ZEALANDER, SOUTH AFRICAN, RHODESIAN, U.S., NORWAY, POLISH, DUTCH, FRENCH, CZECHS, ETC
PAN HANDLE	WWII RAF HANDLEY PAGE HAMPDEN TWIN ENGINED BOMBER
PARAFFIN PETE	FLYING CONTROL OFFICER IN CHARGE OF FLARES FOR EARLY FORMS OF RUNWAY ILLUMINATIONS AT NIGHT, USING GOOSENECK FLARES
PIGSTICKER	A BAYONET
PINK PANSY	A 4000 LB. INCENDIARY BOMB USED AS A TARGET MARKER
POPEYE	IN THE CLOUDS
PULL THE HANDLE	EJECT FROM A FIGHTER AIRCRAFT
PUNCH AND JUDY	A CLOTH/CANVAS COVERED FRAME, SHAPED LIKE A PUNCH AND JUDY PUPPET SHOW ENCLOSURE USED TO PROTECT RAF FIGHTER AIRCRAFT ENGINES WHEN IT IS VERY COLD OUTSIDE. INSIDE THE FRAME WAS A SMALL PARAFFIN HEATER TO KEEP THE AIRCRAFT ENGINE WARM.
QUILT	ABOVE THE CLOUDS
RABBIT RUN	THE MOST DIRECT ROUTE TO A TARGET OR ON THE RETURN FROM TARGET TO HOME BASE/AIRFIELD
RATS	IDENTIFIED ENEMY AIRCRAFT
RAZOR WIRE	BARBED WIRE
ROCKET	A SEVERE REPRIMAND FROM HIGHER AUTHORITY
RUMBLED	DISCOVERED DURING AN ESCAPE ATTEMPT FROM A GERMAN POW CAMP
SAUCEBOAT	GRAVY DISH
SAUSAGE	AN OBSERVATION BALLOON OR BARRAGE BALLOON USED AS PART OF DEFENSE SYSTEM AGAINST GERMAN AIRCRAFT PENETRATING BEYOND THE ENGLAND COAST
SCARPER	SCRAM, LEAVE QUICKLY
SCATTY	WACKY, SCATTERBRAINED
SCORE, WHAT'S THE	RAF JARGON FOR "WHAT THE HELL'S HAPPENING?"
SCRAMBLE	TAKE OFF, SET COURSE AND CLIMB. E.G. "SCRAMBLE, ZERO FOUR ZERO, ANGELS TEN"

SCREENING	TERM GIVEN FOR SELECTING AIRCREWS OFF OF OPERATIONS FOR A REST PERIOD, USUALLY AFTER THEY HAD FLOWN A SUSTAINED PERIOD DURING WHICH SORTIES WERE AGAINST MAJOR, WELL-DEFENDED TARGETS. THIS HELPED PRESERVE CREW INTEGRITY BY AVOIDING INDIVIDUAL CREW MEMBERS CRACKING UNDER PRESSURE OR BECOMING AN LMF (LOW MORAL FIBER/FEAR OF FLYING) CASE
SCULLING AROUND	REFERS TO LUFTWAFFE AIRCRAFT FLYING OVER THE ENGLISH COUNTRYSIDE AT NIGHT HOPING TO CATCH AN RAF BOMBER IN ITS LANDING PATTERN AFTER A MISSION AND THEN SHOOT IT DOWN
SHEPHERD'S PIE	LEFT OVER ROAST BEEF OR LAMB, GROUND UP AND COVERED WITH MASHED POTATOES AND BAKED IN AN OVEN.
SHOVE - HALF PENNY	GAME PLAYED, ESPECIALLY IN ENGLISH PUBLIC HOUSES (PUBS) PLAYER SHOVES (WITH PALM OF HAND) A POLISHED OLD HALFPENNY (PRONOUNCED HA - PENEE), OR SIMILAR SHAPED DISC, ALONG THE BOARD SPLIT INTO HORIZONTAL SECTIONS HAVING NUMERICAL VALUES
SHOW A LEG	RISE AND SHINE IN THE MORNING
SLIP-ON SHOES	LOAFER - TYPE SHOES
SLOSHED	DRUNK, TIPSY
SMACK	ONE POUND STERLING (CURRENCY)
SMARMY	TOADY, OILY
SNORTER	HUMDINGER
SPEND A PENNY	GO TO THE BATHROOM
SQUASH	A SOFT DRINK, A SODA
SQUEAKERS	HIGH-PITCHED SOUND THAT RADIO HEADPHONES PICKED UP WHICH WARNED AIRCREWS THAT WERE FLYING TOO CLOSE TO BARRAGE BALLOONS AROUND ENGLISH CITIES, DESIGNED TO DISRUPT PENETRATION BY GERMAN BOMBERS (BALLOONS USUALLY FLEW AT 8,000-12,000 FEET)
STAND DOWN	A PERIOD WHEN ALL COMBAT AIRCRAFT OPERATIONS WERE CANCELLED, USUALLY DUE TO HEAVY FOG EXTENDING OVER A LENGTHY PERIOD
STARKERS	NAKED
STICKY WICKET	A DIFFICULT SITUATION
STONY	BROKE FINANCIALLY
SUBALTERN	A COMMISSIONED OFFICER BELOW THE RANK OF CAPTAIN
SWOT	STUDY HARD FOR AN EXAM
TOTAL BAG	TOTAL NUMBER OF GERMAN AIRCRAFT DESTROYED ON A GIVEN DAY RELEASED BY AIR MINISTRY
TRADE	TERM USED BY RAF FIGHTER PILOTS TO INDICATE ENEMY AIRCRAFT ARE IN THE AREA
TRAMLINES	BEAM APPROACH
UBENDUM-WEMENDUM	MOTTO OF RAF GROUND MAINTENANCE PERSONNEL. DIFFICULTIES QUICKLY OVERCOME-MIRACLES TAKE A LITTLE LONGER
VACUUM FLASK	A THERMOS BOTTLE, USUALLY FILLED WITH HOT TEA, TAKEN ON LONG MISSIONS BY AIRCREW PERSONNEL
WAISTCOAT	A VEST
WALKING OUT	PARACHUTING OUT OF A BURNING AIRCRAFT
WATCH OFFICE	THE OPERATIONS CONTROL TOWER ON A MILITARY AIRFIELD
WELL-OILED	DRUNK, UNDER THE INFLUENCE OF LIQUOR
WHITE FLASH	A PIECE OF WHITE CLOTH THAT WAS INSERTED IN THE RAF WEDGE CAP WORN BY AIRCREW TRAINEES PRIOR TO GRADUATION
WONKY	UNSERVICEABLE - AS WITH AIRCRAFT EQUIPMENT

REVIEW ESSAY

Review of the Desert Storm Air War

By Dr. Ronald H. Cole, Joint History Office

On Target: Organizing and Executing the Strategic Air Campaign against Iraq. By Richard G. Davis. Washington, D.C.: Air Force History and Museums Program, 2002. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xii, 385. $45.00 ISBN: 0-16-051259-X GPO Stock No. 0080070-00780-1

and

Lucrative Targets: The U.S. Air Force in the Kuwaiti Theater of Operations. By Perry D. Jamieson. Washington, D.C.: Air Force History and Museums Program, 2001. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xii, 385. $35.00 ISBN: 0-16-050958-0 GPO Stock No. 0080070-00775-4

During Operation Desert Storm, from January 17 to February 28, 1991, U.S. and Coalition air forces dazzled the world with an unprecedented display of technology and operational skill. In seven days they drove Saddam Hussein's best aircraft from the skies and, during the following thirty-two days, so weakened his army in Kuwait that American and Coalition ground forces outflanked and rolled over Iraqi troops in a mere 100 hours.

Richard Hallion, the former Air Force chief historian, observed that "Desert Storm had become the template for air operations over Bosnia, Serbia, and Afghanistan…. Planners studied its centers of gravity, stealth aircraft, PGMs, effects-based bombing, avoidance of civilian casualties." (Davis, p.vi) Even if the 1991 air war were not a template, its unique planning, technology, and execution make Davis' *On Target* and Jamieson's *Lucrative Targets* well worth reading.

Davis and Jamieson are prolific authors whose expertise extends beyond contemporary air operations. Davis has written extensively on U.S. strategy air campaigning since World War II and is an expert on Gen. Carl Spaatz. Jamieson is a Civil War historian with a flair for describing in accurate and vivid detail infantry operations. The two books are complementary with Davis writing on the strategic bombing campaign over Baghdad and central Iraq, the first phase of the four phase air campaign, and Jamieson covering the three tactical phases: air supremacy over Kuwait and southern Iraq, preparation of the battlefield, and close air support.

If you factor in Diane Putney's in depth study of the air war planning process, *Air Power Advantage*, you have the complete story of the air war, with each volume overlapping the other and telling one aspect of the same story. Perhaps the authors could produce a capstone volume and call it "It Doesn't Take an Army."

For access to key documents and planners, Davis and Jamieson acknowledge their indebtedness to Wayne Thompson, the first air historian to enter an inner sanctum of Desert Storm air planning. Thompson entered Col. John Warden's deputy directorate for Warfighting Concepts on the Air Staff—Checkmate—and collected and organized the documents later used by the Gulf War Air Power Survey (GWAPS), the Services, and the Joint History Office. Jamieson also benefited from the efforts of Thompson, Chief Master Sergeant John Burton, and other Air Force field historians. He gained access to valuable sources, including documents created in the Central Command Air Force (CENTAF) special planning group in Riyadh known as the Black Hole. Lt. Gen. Richard Horner permitted Chief Burton to record on audiotape his daily remarks to his staff in the Tactical Air Control Center (TACC), Jamieson was able to use transcripts of these comments and other TACC materials.

In the course of research, Davis and Jamieson encountered conflicting views on doctrine within the Air Force high command (Air-land Battle -vs.- independent air campaign) and among the other Services regarding targeting and joint command and control. By presenting all sides to every controversy, the authors provide balance and objectivity. Yet they could not completely suppress pride in what air power had accomplished over Iraq and Kuwait during the winter of 1991.

On Target and *Lucrative Targets* share a common theme: that Desert Storm marked a great victory for modern air power in which new technologies since the Vietnam War combined with innovative thinking about independent air campaigns in the late 1980's to produce a strategy and tactics that aimed American strength at enemy weakness. For Davis the F–117A Nighthawk fighter attack plane epitomized that development: "A single F–117A with two laser-guided bombs could achieve the same destruction that in World War II required 108 B–17s with 648 bombs….The twin-engine F–117A could strike any target and replaced the traditional heavy bomber as the strategic weapon of choice." (Davis, p. 41).

Davis summarizes the theme with a sound bite: "Strategic air power, when combined with the tactical effort, constituted the decisive factor in the Coalition's quick and almost bloodless victory in the Persian Gulf." The story of air power's "almost

bloodless victory" began in August 1990, days after Saddam Hussein's forces invaded Kuwait, when Gen. H. Norman Schwarzkopf, head of U.S. Central Command, asked the Chairman of the Joint Chiefs of Staff, Gen. Colin Powell, to have the Air Staff provide CENTAF the plan for an independent strategic air campaign. Schwarzkopf wanted something to punish further "heinous acts" by Iraq, including the killing of hostages and invasion of Saudi Arabia.

Schwarzkopf's request technically violated the Goldwater-Nichols DoD Reorganization Act of 1986 that forbade Service staffs from planning theater campaigns independently of the combatant commanders. Using expanded powers given him by Goldwater-Nichols to support combatant commanders, Powell provided the Air Staff protective cover. He temporarily made Checkmate part of the Joint Staff's directorate of operations, J-3, and dual-hatted Lt. Gen. Jimmy Addams, the deputy chief of the Air Staff for operations, as the deputy J-3 for air operations.

Powell also instructed Checkmate to include planners from other Services to help develop a tactical phase that would include operations against Iraqi field forces in Kuwait. Powell told the Air Force that he wanted "to leave smoking tanks as kilometer posts all the way to Baghdad." Warden invited intelligence experts from DIA and other agencies to join his organization, but they came bereft of many of the collection assets they had enjoyed during the Iran-Iraq War. Gen. Robert Russ, commander of the Tactical Air Command, who opposed any Air Staff meddling in theater operational planning, refused to send his target planners. Warden himself refused to ask intelligence experts on the Air Staff to join because he feared that their concern for security and compartmentalization would straight-jacket his planners.

Warden's strategic air plan, Instant Thunder, suffered from the absence of target intelligence. It called for a six-day campaign against a mere 84 targets, and made no mention of a tactical phase. Instant Thunder also ignored national policy against assassination by placing Saddam Hussein, a chief of state, in the innermost of Warden's five concentric rings for bombing—leadership command and control. Fortunately, shortfalls in the plan and violation of national policy would be remedied once Horner's staff expanded the strategic campaign, added three tactical phases, and received better policy guidance from the Joint Staff.

On August 19, 1990 Warden and three lieutenant colonels flew to Riyadh to brief Horner on Instant Thunder. Like General Russ, the head of Tactical Air Command, and Lieutenant General Addams, deputy chief of staff for operations on the Air Staff, Horner resented Washington's intrusion in CENTAF air planning, even if Schwarzkopf had asked for it. Horner dismissed Warden, but kept the three lieutenant colonels to continue working the strategic plan as part of CENTAF's special planning group, the "Black Hole." One of the three, Dave Deptula, an ardent apostle of Warden's concentric rings, was himself an innovative tactician who introduced "simultaneity" and "effects-based bombing" to the air campaign. For brilliance and impact, Davis compared Deptula to Minoru Genda, the Japanese naval commander who masterminded the surprise attack on Pearl Harbor.

Deptula benefited from an experienced staff of planners who had served three years or longer with CENTAF and knew well the intricacies of master attack plans and their derivative air tasking orders. Moreover, just two months earlier, they had participated in Exercise Internal Look, a scenario for war with Iraq that eerily paralleled the real thing. The cohesion and experience of Deptula's planners facilitated their shift from the paradigms of Air-Land Battle to Warden's independent air campaign and Deptula's new tactics.

Enjoying direct liaison with RAdm. Mike McConnell, the JCS J-2, and Colonel Warden back at Checkmate, Brig. Gen. Buster Glosson, the director of the Black Hole, and Deptula expanded the number of strategic targets by mid-December from Warden's original 84 to 350, and apportioned them among twelve target sets. Glosson and Deptula frequently bypassed CENTAF's J-2 because that office had been stripped of computer and other intelligence processing equipment right after the Iran-Iraq War, forcing it to use formal intelligence channels to Washington that took days to obtain what McConnell and Warden could find out within hours.

How well did concentric rings warfare, simultaneity, and effects-based bombing translate in the crucible of combat? Let's begin with D-day, January 17, 1991. Davis set the tone with these words: "The pilots paid special attention to survival kits and …last letters home. Each shared anticipation of possible death and the accompanying rush of adrenaline and sweaty palms. Despite their level of professional training, most Air Force pilots…were about to embark on their first combat mission." (p. 32)

They need not have worried. Within the first hours F–4 Wild Weasels destroyed Iraqi early detection radar with HARM missiles, and other aircraft disrupted the headquarters and sector stations of the Iraqi national air defense network, KARI. Without KARI's computers to vector interceptors and surface to air missiles, local Iraqi antiaircraft (AA) gunners could only hit targets below 10, 000 feet.

During the first 48 hours the strategic air campaign achieved mixed results. The sorties were most successful against KARI, the Iraqi Air Force, and command and control bunkers. They were less successful finding and destroying bunkers believed to contain weapons of mass destruction, mobile SCUD missiles and their launchers, and the armor, artillery, and munitions of the Republican Guard. Of the latter targets, Davis disputes that effects-based bombing would have sufficed. He explained that "in some fights, it is not enough to knock your opponent down [effects-based bombing]; you must also break his legs [destruction] and keep him from

returning to the ring." (pp. 216-17) Davis also explains that failure to find and destroy the mobile SCUDs opened the door for Iraqi attacks against Israel that, had Israel retaliated, might have driven Egyptian, Syrian, and Gulf state allies out of the Coalition. To prevent that, Horner and Glosson reluctantly diverted up to 10 per cent of strategic sorties to SCUD hunting in western Iraq.

In *Lucrative Targets* Jamieson tells the story of air supremacy and the tactical air war over the Kuwaiti Theater of Operations. In his chapter, "Battle of the Shelters," he describes how 2,000-pound GBU-27 bombs penetrated hardened shelters and disabled Saddam's most advanced Mirages and MiGs. The Iraqi pilots, he says, unable to fight and unable to hide, may as well have adopted the motto attributed to them by humorist Dave Barry, "'We're out of here!" and fled to Iran.

The defeat of KARI and attainment of air supremacy led to Phase III, "Preparation of the Battlefield." Once F–111s equipped with Forward Looking Infrared Radar located the engine heat signatures of Iraqi tanks hiding under manmade sand dunes, F–16s zoomed down for the kill. Slow and ungainly A–10 Warthogs flew low and destroyed other tanks as well as artillery and armored personnel carriers. At higher levels the two Boeing 707s configured with Joint Surveillance Target Attack Radar System (JSTARS) aimed strike aircraft against mobile ground targets. By mid-February Phase III would reduce the firepower of front line regular Iraqi divisions by as much as half. Jamieson quotes a sign that hung over Lieutenant Colonel Deptula's desk: "We are not preparing the battlefield—we are destroying it."

In the chapter, "An Intricate Ballet," he dissects bombing accuracy, adjustment of tactics, the effects of poor flying weather, and such joint concerns as bomb damage assessment and the Joint Force Air Component Commander or JFACC. The last was especially controversial, and Jamieson thoroughly discusses all points of view. He notes that, while Air Force doctrine made the JFACC supreme over all air operations, Horner's authority was challenged for good reason by Schwarzkopf and his top subordinates. The Marine commander, Lt. Gen. Walter Boomer grew impatient with the pace of preparation of the battlefield, and retained a number Marine aircraft to weaken the Iraqi firepower facing his two divisions. Admiral Arthur also kept many naval fighter interceptors for combat air patrols over the fleet. Schwarzkopf and his Army component commander, Lt. Gen. John Yeosock, also insisted that Horner divert aircraft from strategic strikes for sorties against Scuds and Iraqi tanks. Even General Powell restricted the JFACC when, after the bombing of civilians hiding in the Al Firdos command and control bunker in downtown Baghdad on February 13, Powell banned further "bombing of the rubble" in Baghdad without case by case justification.

By mid-February President Bush, Secretary Cheney, and General Powell pressed Schwarzkopf to begin the ground war. The Washington leaders were concerned that the Iraqi foreign minister, Tariq Azziz, and his Soviet counterpart, Eduard Shevardnadze, would broker a peace treaty before ground forces could destroy the Iraqi armored and Republican Guard divisions. Davis points out that the Checkmate and the Black Hole shared a more parochial concern, that diplomacy would end the war before air power could win it single-handedly.

Before the diplomats or air power enthusiasts could end the war, however, the President ordered the ground campaign to begin on February 24. A week earlier General Glosson and Lt. Col. Sam Baptiste, head of the Kuwaiti Planning Cell, began shifting sorties from preparation of the battlefield to the fourth and final phase of the air war—close air support. Jamieson credits it with cratering massive holes in the Saddam Hussein barrier along the Saudi-Kuwaiti border and with destroying Iraqi tanks either advancing to meet the allied armies or fleeing toward Iraq.

On the evening of February 25 a JSTARS aircraft pierced through the rain, sand-filled winds, and columns of black smoke from oil well fires to detect a large column of vehicles—military and civilian—jammed with loot and fleeing north toward the Iraqi border city of Basra. After USAF F–15 Strike Eagles bombed the lead and trail vehicles to halt the column, most Iraqi drivers and passengers fled before other aircraft pulverized the abandoned vehicles. Mocking Saddam Hussein's earlier boast that he would fight "the mother of battles" against the Coalition, Secretary of Defense Cheney called the flight "the mother of all retreats."

As mentioned earlier, Jamieson's experience as a Civil War historian helped him to supplement the story of close air support with a detailed and accurate description of ground operations. In an exception that proves the rule, however, he erred in depicting the 1st Cavalry Division during the 100 hour ground war destroying a major Iraqi armored force. That never happened. Although the division had conducted artillery raids near Wadi al Batin before the ground campaign began, to mislead the Iraqis as to the true direction of the U.S. ground attack, the cavalry division remained in Saudi Arabia as a part of Schwarzkopf's theater reserve until the third day of the ground war, February 26.

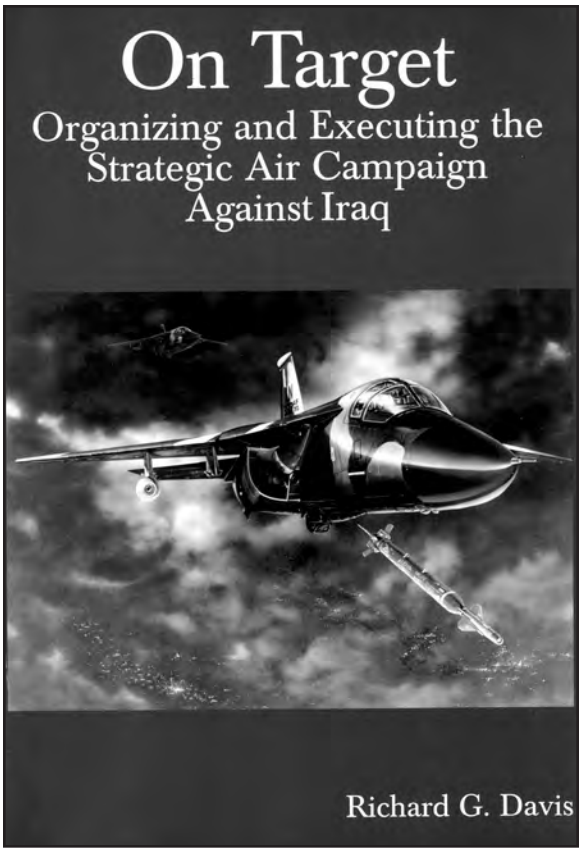
During the 26th and most of the next day, the division raced north into Iraq, to the rear of four VII Corps divisions and one armored cavalry regiment that were facing east for the final assault. On the evening of February 27, as the 1st Cavalry took its place on the northern flank of that battle-line, the corps commander, Lt. Gen. Fred Franks, halted the offensive overnight. Early the next morning, Schwarzkopf ordered VII Corps to cease fire in preparation for truce talks. The ceasefire denied the cavalry division its last chance for combat. Perhaps Jamieson confused the 1st Cavalry with the 2nd Armored Cavalry Regiment that defeated an Iraqi armored force at 73 Easting on February 26 or the 2d Brigade of the 1st Armored Division that savaged part of the Medina Division on February 27.

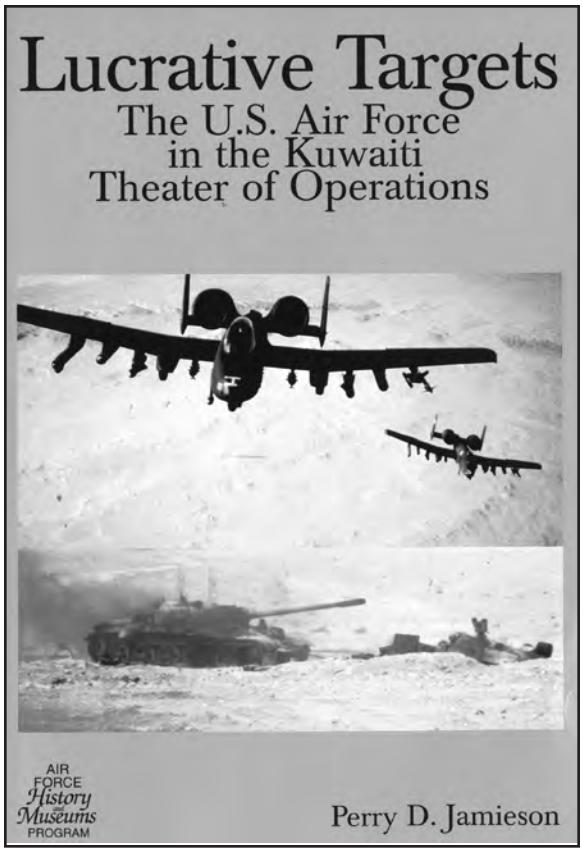
What was unique about air power in the Persian Gulf War? Davis called the air war a new synthesis of ideas and technology that maximized the destructive force of air power using non-nuclear weapons to devastate KARI and the Iraqi air force; cripple communications, oil, electrical facilities and the transportation infrastructure; and set the stage for subjugation within 100 hours of a very large and well armed Iraqi army.

All true, but then Davis crows that the strategic air campaign was a decisive factor in Iraq's defeat; and, when joined to the tactical effort, constituted the decisive factor in the U.S. and Coalition's quick and almost bloodless victory. That sound bite suggests an air power triumphalism that does not accord with the facts and conclusions that Davis and Jamieson cite in their chapters. For example, during the first weeks of the buildup, when the Iraqi army greatly outnumbered Schwarzkopf's command, Saddam Hussein missed an opportunity to invade Saudi Arabia and overwhelm much of the allied force. Jamieson quoted Air Force Gen. Bryce Poe II: "We should remember that we had five months to get ready, and an incompetent leader on the other side. If Saddam Hussein had been smarter, the first F–15s might have gotten there and found enemy tanks on the runway." Toward the end of December 1990, when Schwarzkopf's force reached peak strength of nearly 800,000 U.S. and Coalition troops, it fixed the Iraqi army in place making preparation of the battlefield and attrition much easier for air power to accomplish.

Jamieson is most persuasive when he concludes that the Desert Storm air campaign was a "cautionary tale" in which certain factors that favored success cannot be counted upon in future conflicts: the "target rich environment" that desert warfare affords an air force; inept leadership by the enemy; continued U.S. superiority in stealth, PGMs, infrared radar, GPS, and other technologies; and the absence of a peer equivalent to challenge U.S. air power.

Finally, although Davis and Jamieson could not know it when they began their volumes, the early glow of Desert Storm would quickly fade. Despite brilliant air efforts over Baghdad and Kuwait, Saddam Hussein, the Baath Party, and the Republican Guard remained to crush Kurds in the north, Shiites in the south, and to harass U.S. aircraft patrolling over both sectors. It took another war, twelve years later, Operation Iraqi Freedom, with a ground attack all the way to Baghdad to remove Saddam and his supporters. Today, in the wake of a persistent insurgency and deadly terrorist attacks in Iraq, we realize that in the 21st Century, neither a high tech air force nor superior ground force, acting alone or jointly, can guarantee total or lasting victory. The military must tie ground and air operations to a third campaign—a well planned and robust program of postwar occupation and nation-building that assures the liberated country stability, progress, and hope. ■





Naval Leadership in Korea: The First Six Months [The U.S. Navy and the Korean War]. By Thomas R. Buell. Washington D.C.: Naval Historical Center, 2002. Photographs. Pp. ix, 50. Paperback. ISBN: 0-945274-46-7

Tom Buell is a rightly acclaimed writer on naval subjects. This monograph is a departure from his usual endeavors in that it covers only the first six months of Korea—the period of the most intense and decisive naval operations. He singles out six key figures but doesn't ignore the bigger picture into which they fit. The part leading up to Korea is fascinating with some detail about the infighting within the Navy and between the services new to me (and other general readers—no pun intended). For example, many have tended to canonize Forrest Sherman for his untimely death after becoming CNO, but it appears some thought him less saintly—overly ambitious and an opportunist.

Buell is rightly critical of some Army command arrangements but is kinder toward the can-of-worms that existed among five naval headquarters (he is, of course, a Naval Academy graduate and retired commander). While studying from the Naval War College, I learned something about the Task Organization. I fail to recognize Korea as an approved "school solution." It better serves as an example of how to jump the chain-of-command!

Most accounts after Inchon concern ground operations and the support thereof. This work covers some little-known problems of minesweeping. This has always been an orphan in the Navy, as recently illustrated in the Gulf. Here it was necessary to call on (very quietly) the Japanese who had been allowed to keep forces to clean up mines we'd sown in World War II. The fleet's mastery of adjacent waters had made it possible for the UN to remain in Korea, build up the forces hanging on there, and then to counterattack to regain lost territory.

The test is illustrated and enlivened by 29 group and individual shots, 19 action pictures, and one map (another of smaller scale of larger area would have been handy). At the risk of showing an Army bias, I think a few more soldiers might have been included. Certainly Lt. Gen. Walton "Bulldog" Walker, CG Eighth Army, deserves it; perhaps the CG of the "other" division at Inchon, Maj. Gen. David Barr of the 7th Infantry Division, as well.

There are also five sidebars of varying degrees of significance, but all entertaining. One is about Blue Flag messages, a special category of private communication among a small circle of senior flag officers. This is a variant of what is better known in the services as "back-channel" exchange of information. This was a practice of officers at all levels (somehow evading censorship) to transfer data and achieve results that could not be done through official channels. Matters might include pending operations, personnel changes, and evaluation of individuals being considered for assignment or relief.

An epilog neatly ties together the later careers of the six protagonists. The story reads like a novel but is based in real life, drawn from personal communication and interviews. It achieves its avowed purpose of explaining the command relationships among the six—contorted as they were.

This monograph is the second in the Naval Historical Center's new series on the Korean War. Others may concentrate on the operational aspects of the conflict, but this is the one that gives insight into the role of the First Team that played during the First Quarter of the Big Game.

Curtis Hooper O'Sullivan, Brig. Gen., ANG (Ret.), Salida CA

A World at Total War: Global Conflict and the Politics of Destruction, 1937-1945. By Roger Chickering, Stig Forster, and Bernd Greiner, Eds. Washington, D.C.: German Historical Institute and Cambridge University Press, 2005. Tables. Notes. Index. Pp. x, 392. $70.00 ISBN: 0-521-83432-5

This book is a series of essays (chapters) resulting from a conference on the Second World War at Hamburg in 2001. The chapter authors, by their listed credentials, are all academics from the U.S., Germany, Canada, and the UK. Among the twenty-three contributors are such well-known—at least to this reviewer—scholars as Michael Howard and Hew Strachan of Oxford, Dennis Showalter of Colorado College, and Roger Chickering of Georgetown.

A World at Total War addresses a series of elements surrounding the issue of total war:

Wrestling with a specific definition of total war.

Identifying methods of combat that characterize total war.

Examining the economic mobilization of the adversaries including suggesting parameters for measuring the degree of totality of war.

Analyzing the levels of human mobilization of the whole society and the interregnum debates over total war given the First World War experience.

Examining the advance of airpower as a means for war to extend beyond belligerent forces to the industrial and human elements that sustain a nation's military power with a concomitant blurring of the distinctions between military forces and the civilian population.

A digression, in my view, reviewing "criminal war" and the impact on the concept of total war of atrocities visited upon the civilian population ranging from organized widespread massacre and genocide to rape.

The book ends with a chapter by Michael Howard tracing the history of total war from Clausewitzian absolute war to the Second World War ending with the reflection that during the Cold War and the ongoing war on terrorism, the civilian population has been only a minimal participant. In Howard's words, "Globalization has eroded if not the destroyed the Grotian 'system of states' that provided the framework for Clausewitizian concepts of strategy."

In addition to a thorough and balanced examination of the Second World War as a total war, the authors provide an excellent tour through the history of societal resource mobilization in support of war. Of particular recommendation are the chapters addressing the American, Soviet, British, and German economic mobilizations.

With the exception of the chapter entitled "Why Didn't the Soviet Economy Collapse in 1942?" and, of course, the scholarly bent of the authors, the book is an easy read. The Soviet Collapse chapter requires a bit more persistence than do the others. It is, however, a very interesting and informative analysis of how economies involved in total war can cope when defense production overwhelms the society's ability to provide even minimal civilian goods. This chapter is filled with enough production possibility curves to warm the hearts of economists everywhere. The curves are effectively used to describe and analyze the expected behavior of "rats" and "mice" in the civilian population under conditions of great scarcity and economic crisis. A patriotic, sacrificing citizen is a *mouse*; and a self-serving citizen is a *rat*. The distinction is not moral but simply one based on expected payoffs. I don't want to spoil the ending, so you will have to read it yourself to find out which rodents win.

From a resource analysis perspective, World War II was not a total war, except perhaps in the Soviet case. In wars of the magnitude and duration of the Second World War, the bottom line may be that more is always superior to less or, more simply put, the Allies out-produced the Axis and there-

fore ensured victory in a war of attrition:

	Allied	Axis
Armed Forces	28.6M	15.6M
GDP (1941)	$1,798B	$911B
GDP (1944)	$2,325B	$748B
Population	345M	191M

The book is strongly recommended to those who wish to delve more deeply into the context and concept of total war and resource mobilization, especially in this post-Westphalian era.

Dr. Gerald Abbott, Professor, Industrial College of the Armed Forces, National Defense University

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Logbook of Signal Corps No. 1: The U.S. Army's First Airplane. Edited by Meghan Cunningham. Washington D.C.: Air Force History and Museums Program, 2004. Pp 52 [Pamphlet].

The pamphlet interestingly documents the activities of 2d Lt. Benjamin D. Foulois and his associates in performing flights in the initial stages of Army aviation, beginning in July 1909 at Fort Myer, Virginia. The Chief Signal Officer of the U.S. Army, Brig. Gen. James Allen, had recently acquired the Wright military aircraft; and Foulois was selected to assess its military value as an adjunct to the Signal Corps.

After preliminary tests were flown at Fort Myer, weather problems dictated the operation move to Fort Sam Houston, Texas. From there, Foulois and his associates practiced and experimented with variations of techniques. In effect, Lt. Foulois became a "mail order pilot" because of the extent of correspondence between himself and the Wright Brothers.

Crashes were frequent, and significant repairs slowed progress in acquiring flying skills and developing improvements for the craft. Detailed logs were maintained of each flight, and the summary of these logs' content are the subject of this pamphlet. Entries include any mechanical problems, repair activities, and details giving close timing of the flight, types of maneuvers conducted, weather and wind conditions. Numerous photos add interest to these chronicles. It is an interesting look at the very earliest, modest efforts at the start of what became the U.S. Air Force.

Col. Paul C. Fritz, USAF (Ret), Dallas, TX

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The Window at St. Catherine's. By John F. Dobbertin, Jr.. Lincoln Neb.: iUniverse, Inc., 2005. Appendices. Bibliography. Pp. ix, 153. $15.95 paperback. ISBN: 0-595-36921-9

The author sent me a copy of this book to review; and, when I first started to read it, I had to wonder why in the heck I was looking at this for *Air Power History*. It was all about a couple of guys who are really into sport fishing and fishing equipment up on the Great Lakes! Not being a fisherman, I had to wonder, "When is this going to get good? When is there going to be some flying and war stuff?" Well, it turns out that it got "good" right from the start—the fishing part of the story is integral to understanding the life that Dobbertin portrays.

The principal character is Bill Cullen, a fishing and outdoorsman who hosted *The Great Outdoors Show* on Chicago radio for decades. But during World War II, Cullen was an ace fighter pilot with the 355th Fighter Group of Eighth Air Force flying out of Steeple Morden in the UK. During two tours of duty from D-Day until the end of the war, he was officially credited with six aerial victories and 21 kills on the ground. He was the first pilot in Europe to nail eight strafing kills in one day and 15 in two days. On April 8, 1945, his P–51 was shot down at low altitude by flak over Ansbach airfield. He jumped out and evaded the enemy for days until he was captured by retreating Waffen-SS troops. One of the officers took Cullen's .45, placed the weapon against his right side, and shot him. Through the intervention of a Jewish doctor and some nuns forced into nursing service, Cullen survived, escaped again, and was finally picked up by advancing troops of the 14th Armored Division. He returned to Chicago in June with a DSC, Silver Star, and a chest full of other decorations—and never again piloted an aircraft.

The much younger author met Cullen through business, and the two eventually became good friends. It was not until years later that Dobbertin began to learn about Cullen's war adventures. For the 355th pilots, the steeple of St. Catherine's Church in the nearby town of Litlington was something special: put the left wingtip on it for the turn to final—especially in bad weather—and you were lined up for landing. Cullen attended services there regularly and converted to Catholicism just before his last mission. When the group held a reunion in 1993 marking the 50th anniversary of its arrival at Steeple Morden, a major event in Litlington was installation of a new stained-glass window in the old church to honor the men who had flown from the town for two years. Its builder was an amateur artist in stained glass—John Dobbertin. The beautiful window cemented the friendship between two groups of people from opposite sides of the Atlantic who were brought together during the war.

This is a wonderful little book. It is an easily read tale of friendship, heroism, war, and its aftermath that I think anyone would like. Take a couple of evenings, sit back, and enjoy.

Col. Scott A. Willey, USAF (Ret.), NASM Docent and Volunteer

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Sorties Into Hell: The Hidden War on Chichi Jima. By Chester Hearn. Guilford Ct.: The Lyons Press. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. xvi, 226. $14.95 Paperback ISBN 1-59228-687-9

Mr. Hearn quite obviously spent considerable time researching World War II Japanese involvement in the Bonin Islands and, particularly, Chichi Jima. From chapter one, the reader gets an in-depth sense of not only what people were seeing and reading in the media, but also a feeling of the horror experienced by American aircrews downed in the Chichi Jima area.

The author devotes a reasonable amount of the book to the history of these islands off the southern tip of Japan dating back to the 1800s. But the story quickly reverts to a "mystery." What happened to airmen who were shot down over the islands? The end of the war brings Colonel Presley M. Rixey and a Marine unit to the island in an effort to determine the facts and later discover just how ruthless the Japanese were to American men. He is determined to find out what happened to these missing men and the names of enemy personnel directly involved.

As the mystery started to unfold, the stories coming out were incredible. Rixey and his staff are overwhelmed by the gruesome stories being told by Japanese officers and enlisted men. Bayoneting and beheading were common means of executing our flyers. But more interrogation revealed that "flesh eating" had become the "norm" for many enemy personnel. The description is very vivid. The desire of some Japanese to eat human flesh is mind-boggling. They couldn't get enough of it, even though the abhorrent practice of cannibalization was contrary not only to the Geneva Convention, but humanity as well. Many of our aircrew personnel met this horrible fate.

The investigations into Japanese atrocities on Chichi Jima began on October 13, 1945 and ended on June 6, 1946 when Rixey turned over more than 1200 pages of testimony and exhibits to the Commander of the Marianas on Guam. What had begun as a search for four flyers had turned into an extended period of testimony as to what happened to many of our crewmen.

With the end of the trials and the executions of those responsible for these horrors, one cannot help but come to the conclusion that war makes some normal people do abnormal things.

This outstanding book is a must for military historians—particularly those who study World War II in the Pacific. It closely parallels the book *Flyboys*, but with much more detail. However, it is not a book for people with queasy stomachs.

SMSgt. Stu Tobias, USAF (Ret.), Indianapolis Ind.

Hit & Run: Daring Air Attacks in World War II. By Robert Jackson. South Yorkshire, England: Pen & Sword Books Limited, 2005. Photographs. Index. Pp.193. ISBN: 1-84415-162-X

Robert Jackson was the defense correspondent for a leading national newspaper. Since his retirement, he has written many best selling books on the history of World War II. He now lives in Darlington, England.

In this book, Jackson describes fifteen of the most dangerous air raids of World War II. Some raids were successful due to luck while others were unmitigated disasters. Going in chronological order, Jackson starts his book by describing air raids by both British and German air forces facing naval targets in the North Sea during 1939. After a series of heavy losses, the British soon realize that their idea of bombers being able to defend themselves successfully from enemy fighters was wrong. This series of losses lead to the doctrine that bombers, when at all possible, must be escorted by fighters, especially during daylight hours. Later in the war, the British switched to nighttime bombing.

In a later chapter, Jackson describes a battle that confirmed the practical use of fleet aircraft. In 1940, Fleet Air Arm aircraft conducted a nighttime raid on the Italian fleet harbored at the naval base at Taranto. This battle was significant because it was the first time naval-based aircraft were used to, in this case, badly cripple a battle fleet. This raid was so significant that it was studied carefully by Admiral Isoroku Yamamoto while planning his attack on Pearl Harbor thirteen months later.

Jackson continues to describe many other daring missions such as the thrilling raid of Jimmy Doolittle and his small force of sixteen B–25 bombers that dropped the first American bombs on the Japanese mainland—a harbinger of things to come several years later. In the next chapter, Jackson describes the aerial attack by sixteen P–38 Lightings against six Japanese "Zero" fighters and two "Betty" bombers. What made this air battle memorable was that Admiral Yamamoto and a number of senior staff died when both of the "Bettys" were shot down. Later in the book, Jackson talks about the tragic losses of the B–24 Liberators during the first raid on the oil fields at Ploesti, Romania.

In the last two chapters of *Hit and Run*, Jackson speaks to the new generation of German aircraft and the Allies' reactions to them. He describes a German Me 262 pilot's flight against Allied bombers and fighter aircraft. Had the jet aircraft been for production earlier in the war, the outcome of the war in the air may have been different.

The final chapter addresses night missions and how radar was used to direct British aircraft against enemy aircraft.

Although this book was written with attention to detail, it contains no new information nor does it present new theories about the conduct of the air raids described. I was surprised at the lack of footnotes and maps. The work would have been more authoritative had they been present. Jackson's style is straightforward and easy to read making it a good book for readers who have a casual interest in air operations of the Second World War.

Bill Nardo, Docent, National Air and Space Museum

Reconsidering a Century of Flight. Roger D. Launius and Janet Daly Bednarek, Eds. Chapel Hill: The University of North Carolina Press, 2003. Maps. Illustrations. Photographs. Notes. Bibliography. Index. Pp. xii; 300. $49.95 ISBN: 0-8078-2815-7

The book consists of an introduction written by the editors and twelve essays by different authors discussing several aspects of powered flight since its invention by the Wright Brothers in 1903. While such a book could be a valuable source of information on the history of flight, this is definitely not that book. The twelve essays are divided into four categories of three essays each: 1) Innovation and the Technology of Flight, 2) Civil Aeronautics and Government Policy, 3) Aerial Warfare, and 4) Aviation and the American Imagination.

While these four categories might be useful, one could easily describe four more systematic and useful categories to conduct a survey of the history of flight. Moreover, the essays that comprise the categories jump around and do not address the categories in any orderly way. For example, the first category does not deal with the systematic approach that the Wrights and, later, others took to the development of aviation. Rather the essays talk a little bit about technology and, oddly, one of them addresses the Wrights and government policy.

The next category is worse. The first essay describes the influence of Herbert Hoover on the development of aviation policy from 1921 to 1923. A book that purports to deal with the century of flight might do better with a discussion of aviation policy than one man's contribution over a period of three years. Another essay deals with Eddie Rickenbacker's reaction to the aviation policies of the 1930s. Admittedly, it was in the 1930s that U.S. Government aviation policy was established that defined commercial aviation until deregulation in the 1970s. However, the reaction of one man does not qualify as a definitive discussion of this vital issue. The last essay deals with the problem of icing—a serious problem—but how a discussion of this phenomenon fits into the category of government policy is unfathomable.

The third category misses a great opportunity. Clearly, warfare was completely changed by the advent of aircraft. The issues of employment of aviation in combat could have been the source of many thought provoking essays, but the editors produced a series of essays that do little or nothing to examine this vital area. Two essays deal with the Wright Brothers and aerial warfare, which is ridiculous since the Wrights made almost no contribution to the employment of aviation in war. The third essay is a rehash of the argument about strategic warfare in World War II that had been covered so many times that this short essay adds nothing.

The last category is the worst of the four. The essays attempt to describe how aviation became mass transportation but add little to the knowledge that anyone

Leon Bennett explores the combat sequences, the arts of aerial gunnery, and the weapons and planes used by the World War I fighter pilots. He gives the lowdown on why it was so hard to score a hit and what qualities helped the aces succeed. Bennett uses his detailed insight into the mechanics of air warfare to search for the answer to the enduring controversy of what finally brought the Red Baron down.
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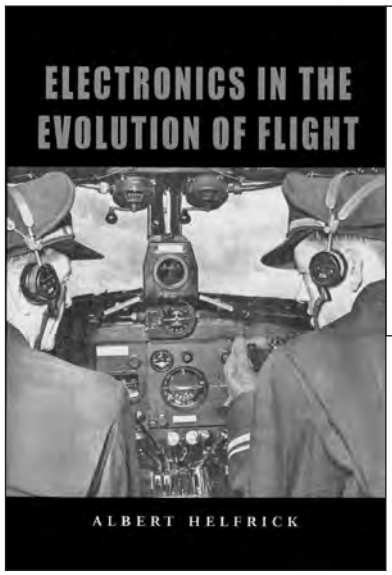

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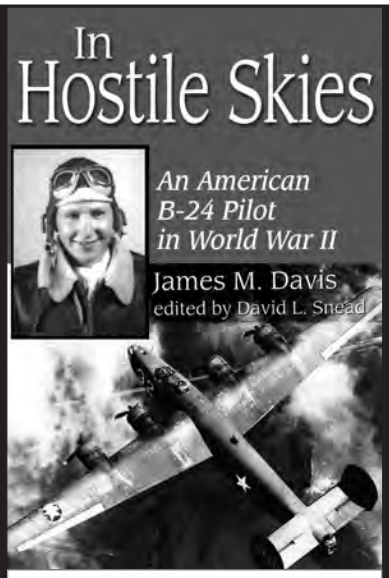

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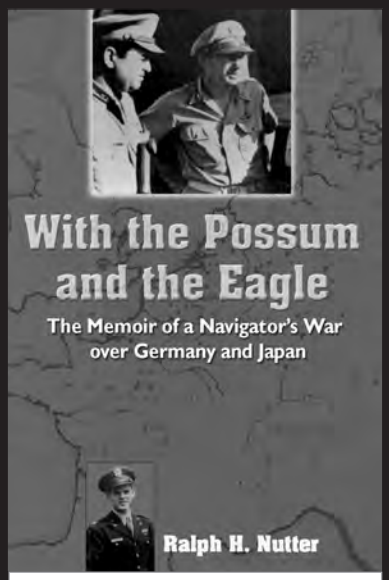

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even slightly familiar with aviation would already have. Next we have a really strange essay on the influence of aviation on art. In it the author describes some little known, very abstract pieces of art that the average reader would not cross the street to see and probably wouldn't understand if he did! The last essay purports to deal with the misinterpretation of the Spirit of St. Louis on display in the National Air and Space Museum. This is sheer intellectual puffery. The Spirit of St. Louis is an aircraft that was the vehicle for an act of incredible skill and heroism that had a profound effect on the whole world and was a seminal event in the development of aviation. Everybody who looks at is awed by the fact that Charles Lindbergh was able to fly this flimsy looking machine across the Atlantic, to stay awake, to navigate successfully, and to prove that it could be done.

John R. Braddon, Col. USMC (Ret.)

Woodbine Red Leader: A P–51 Mustang Ace in the Mediterranean Theater. By Lt. Gen. (Ret) George Loving. New York: Ballantine/Presidio Press, 2003. Map. Diagram. Illustrations. Photographs. Appendices. Glossary. Pp. viii, 292. $6.99 paperback. ISBN: 0-89141-813-X

Gen. Loving has put together a great story in this book. Here, in the words of a combat pilot with 151 missions under his belt, is a story not often written about—the air war in the Mediterranean theater of operations. With the notable exception of the heavy bomber attacks against Ploesti, this theater just didn't get the coverage that the Eighth Air Force war over western Europe received (but, then, no area received the coverage the Eighth got). And Loving has a unique perspective. While the subtitle states he flew Mustangs, it doesn't indicate that the general's first 101 combat missions were flown in Spitfire Mk V and IX aircraft.

In one way, the book is typical of the I-was-there books by many pilots in World War II. But a far higher percentage of this one is devoted to flying and combat service than most. Loving covers his early life, and ends with his leaving the combat theater for the U.S. It is not a life history. Rather, it is a rich chronological narrative of 16 months of flying training and 10 months of combat.

One of the great features of the book is the excellent overview of pilot training from indoctrination as Aviation Cadets in Class 43-C through primary, basic, and advanced flight training, introductory fighter training, and type training in the Spitfire in North Africa. Loving then flew all of his combat with the 31st Fighter Group, joining this distinguished unit as a 20-year-old in October 1943 at Pomigliano Airdrome in Naples. For the first five months, his combat experience was primarily one-and-a-half to two-hour patrols and fighter sweeps over the slowly moving combat line, particularly over the Anzio area. He was gaining experience which would be invaluable for his next combat phase.

The 31st was reequipped with P–51Bs in the early spring of 1944 and moved to San Severo northwest of Foggia. This was to be a new ballgame involving bomber escort missions deep into Germany, Hungary, Romania, Austria, and France—missions that lasted up to six hours. During this time, he flew as an element, flight, squadron, and even group leader (he celebrated his 21st birthday on mission 145 leading the entire group) and racked up five kills along with several damaged. By far, one of the most interesting experiences was the third time USAAF used bases in the Soviet Union. In July 1944, the group escorted P–38s on ground attack missions and then continued on to a base in the Ukraine. For three days, this force helped soften up enemy forces for the advancing Soviet army in Poland. Everything about the mission—navigation, living with the Soviets, the primitive conditions, and the combat—is fascinating.

Loving uses one other feature I liked. At the beginning of many of the chapters, he gives a short synopsis of what's going on in the war around the world, putting his part of the action into perspective. For a good, easy read on an interesting piece of World War II aerial combat, this is an excellent book to spend several evenings on.

Col. Scott A. Willey, USAF (Ret.), NASM Docent and Volunteer

Howard Hughes: Aviator. By George J. Marrett. Annapolis Md.: Naval Institute Press, 2004. Photographs. Index. Pp xi, 242. $27.95 ISBN 1-59114-510-4

George Marrett authored this biographical book that should be interesting and informative for any student/hobbyist of early U.S. aviation. He served in Thailand during the Vietnam War as a Douglas A–1 rescue pilot, flying 188 combat missions. He then completed USAF Test Pilot School and later became a test pilot at Hughes Aircraft Company, lending a "close to home" aspect to this narrative.

Howard Hughes was an "out-in-front" leader in aviation activities beginning in the 1920s as he paralleled Charles Lindbergh's prowess in the search for new "aviation mountains" to climb. Lindbergh required monetary support from backers in St. Louis for his activities, while Hughes had the comfort of a well-endowed family.

Hughes moved from his native Houston, Texas, to Los Angeles where he became involved with numerous aspects of aviation to include self-taught piloting, aircraft design and construction, as well as major airline development and operation. The Hughes Aircraft Company was his vehicle for design and manufacture of various types of aircraft. The plant was located at an adjacent airfield near the present Los Angeles International airport. There, he made not only various prototype military aircraft, but also conducted major subcontractor production of the famed *Constellation* airliner. Through this era, he capitalized on the glamor of Hollywood for such movies as *Jet Pilot* and *Hell's Angels*, using the medium to expand the acceptance of flying for not only war fighting, but as a thrilling method of travel as well.

A most remarkable aspect of his piloting activities was the use of "trial and error" methods. He first learned to fly that way and then tested his own aircraft designs that way as well. It was a radically different method from the closely controlled and supervised pilot training methods common to the military. Somehow he managed to live through his escapades, despite a few crashes.

Hughes became the first billionaire as he created or influenced a significant number of aircraft. He played a large role in developing the BT-13 that many of us flew as World War II pilot trainees in Basic Flying Schools. The *Constellation* transport aircraft that he fostered became popular with many airlines. He expanded his business activities significantly when he bought Trans World Airlines. He later sold it for more than $546 million, but to avoid federal taxes on the sale, he reinvested the money in Las Vegas and Reno casinos. Of course, the most famous of his aircraft ventures was with the Hercules flying boat, or the *Spruce Goose* as it was popularly known.

In 1973, Hughes was inducted into the Aviation Hall of Fame at Dayton, Ohio, joining other pioneering aviators, such as the Wright brothers, Charles Lindbergh, Eddie Rickenbacker, General "Hap" Arnold, and Wiley Post. At age 71,

Hughes passed away on April 5, 1976, ending the career of one of America's most colorful, interesting, and famous aviators.

Col. Paul C. Fritz, USAF (Ret.), Dallas TX

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From the Pilot Factory, 1942. By William P. Mitchell. College Station: Texas A&M University Press, 2005. Photographs. Notes. Bibliography. Index. Pp. x, 195. $32.95 ISBN: 1-58544-387-5

"I just can't keep my mind off flying." These were the sentiments of an aviation cadet in the Army Air Corps' pilot-training program in early March 1942 at Garner Field, Uvalde, Texas. *From the Pilot Factory, 1942* is the story of William P. Mitchell—told through his letters home—from his pilot training through his participation in World War II.

After bowling with a friend near his home of Kirkwood, Missouri, Mitchell returned home to discover his father "glued to the radio" listening to coverage of the Japanese bombing of Pearl Harbor. Keeping his job at the Johns-Manville factory in St. Louis making asbestos shingles, Mitchell waited—as his father had predicted—for the Air Corps to lower the entrance requirements for pilot training. Prior to 1939 the Army Air Corps graduated roughly 1,200 pilots per year, but by 1942 the goal increased to 50,000 per year. At its peak this rate would increase to more than 74,000 annually. To help meet this high demand, a number of initiatives were taken. By 1942, more than fifty civilian contract flying schools were in operation. Along with expanding Army Air Corps aviation training, entrance requirements were relaxed by lowering the minimum age to 18 and eliminating the college requirements. On his train trip to the Pre-Flight Center at Kelly Field in San Antonio, Texas, Mitchell began to ask the question that is still asked today: "Did I really want to fly?" He reflected that it was really not *his* dream but his dad's. He could recall as a youth witnessing stunt pilot Art Killips' fatal crash at an Oklahoma City air show, but the hazardous occupation did not curtail his will to fly. Through the letters he wrote home, one can sense that he really did want to fly and enjoyed it. Flight training would be a rigorous feat and, even before heading to primary, Mitchell expressed his dismay of being totally out of touch with current events. Reflecting on how demanding pilot training was going to be, Mitchell learned two weeks after the fact of Jimmy Doolittle's raid on Tokyo and the infamous Bataan Death March.

After Pre-Flight, Mitchell was sent to Garner Fieldfor primary flight school. His class, 42-J, was the second class to train at the new air field with Hanger Six, a civilian contractor, training in the Fairchild PT–19S Cornell. Nine weeks later, Mitchell was back in San Antonio for basic flight school at Randolph Field. Flying the North American BT–9 (an aircraft that contributed to a high fatality rate in training), Mitchell remarked that it was the "oldest [and] klunkiest trainer" but was reassured by instructors that if you could fly the BT–9 then you could fly anything.

Once finished with basic, Mitchell found himself assigned to Brooks Field for advanced flight school. With this assignment to Brooks, Mitchell and others believed they had gotten their wish to fly fighters because they would be training in the North American AT–6 Texan. After seventy-five hours in this "good-looking [and] sweet-flying" aircraft, the next step was to a fighter aircraft. But the needs of the Air Corps dictated Mitchell's next assignment. Between December 1942 and February 1943, while assigned to Del Valle Army Air Force Base in Austin, Texas, he learned to fly the Douglas C–47 Gooney Bird. He was not sure how he announced "his humiliation" to his cousins who were flying the Martin B–26 Marauder and other combat types, but he did receive some solace: most of his classmates were assigned to the Gooney Bird also.

Mitchell would eventually end up with the 434th Troop Carrier Group based out of Alliance Air Base, Nebraska, where they trained with the 326th Glider Infantry and 507th Parachute Infantry. The Group began its move to the European Theater in September 1943 and arrived at their new home at Fulbreck, England, in October. The 434th would participate in Operation's Market Garden and Varsity, dropping paratroopers and towing gliders. But it was the mission of hauling supplies and evacuating wounded where Mitchell saw his training in the pilot factory pay off—short-field and strange-field landings and takeoffs, dead-reckoning navigation, night formation, and weight-and-balance management.

Through the letters sent home to his parents, Mitchell transports the reader into the cockpit where he gains an insightful view of the pilot factory. Mitchell considers himself fortunate to have flown the C–47. It allowed him to view the "most crucial military contests" in the European Theater, having an up-front view of the war while delivering supplies and evacuating wounded and, later, liberated POWs. *From the Pilot Factory* is an excellent read that touches on a time when military aviation was in full gear meeting the wartime needs through the lens of its product.

R. Ray Ortensie, U.S. Air Force Historian, 479th FTG, Moody AFB, Ga.

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The *Enola Gay* and the Smithsonian Institution. By Charles T. O'Reilly and William A. Rooney. Jefferson N.C.: McFarland & Company, 2005. Notes. Appendices. Bibliography. Index. Pp. 247. $39.95 paperback. ISBN: 0-7864-2008-1

Perhaps no other decision of the Second World War has provoked so much controversy as the use of the atomic bombs to quickly end the war with Japan. To highlight the highly controversial nature of this issue, someone recently commented that this decision was "the abortion issue of World War II." The existing fires of controversy were stoked even higher in 1994 when the National Air and Space Museum (NASM) of the Smithsonian Institution planned an exhibit, utilizing the recently restored *Enola Gay*—the B–29 that dropped the first atomic bomb—along with pictures of results of the atomic attacks, to mark the upcoming 50th anniversary of the end of the war. Additionally, the exhibit's original script, *The Crossroads:—The End of World War II, the Atomic Bomb and the Origins of the Cold War*, portrayed "America's Pacific War [as a war] of vengeance while Japan defended itself against Western Imperialism."

Because the original exhibit portrayed the United States as the perpetrator of a war crime and the Japanese as its innocent victims, veterans of the war and other groups, such as the Air Force Association, took exception. These veterans remembered the ferocious fighting on the Japanese-held islands in the Pacific, the *Kamikaze* attacks against U.S. naval ships, and the brutal and inhumane conditions in Japanese prisoner-of-war camps. Faced with a growing storm of protest, the NASM revised the script and exhibit several times to present a more balanced depiction of the Pacific War and the role of the *Enola Gay*. The revised exhibit became one of the most popular in the history of the Smithsonian. This maelstrom is the focus of O'Reilly and Rooney's book.

The authors have a special interest in presenting the story and implications of the NASM exhibit. O'Reilly was a uni-

versity professor and administrator and had written about research methodology, social work history, and the 1943-45 Italian campaign. Rooney served during the war as an Army Air Forces intelligence officer in India and China and as a counter-intelligence officer during the Korean conflict. He was also one of the original letter writers to the Smithsonian asking for the restoration of the *Enola Gay*. While the controversy over the NASM exhibit is the book's central focus, the authors also present an outstanding, well-argued critique of the revisionist historians from whom the NASM curators drew their inspiration for the original exhibit and their version of this event.

O'Reilly and Rooney begin with a thorough review of *The Crossroads* exhibit. They then meticulously (and generally impartially) examine the most significant issues of the use of the atomic bombs against Japan: whether or not Japanese leaders were actually on the verge of surrender in late July 1945, how the American adherence to unconditional surrender influenced Japanese leaders at that time, whether the "bomb" was dropped on Japan because of racial prejudice, and where the various casualty figures for an invasion of Japan come from. For each issue, the authors examined the positions of the more significant revisionist historians who have written on this momentous decision.

In each case, the authors convincingly argue that the conclusions of the revisionist historians about the use of the atomic bombs are based on hindsight, the particular agenda of these historians, and/or speculative reasoning that goes beyond reasonableness. For example, the revisionist historians wrote that the A–bombs were unnecessary as Japan was on the verge of capitulating, that aerial bombing and the submarine blockade had virtually eliminated Japan's ability to continue fighting, and that the Japanese leaders had sent out tentative "surrender" feelers which Truman ignored. The authors adequately demonstrate that the Japanese military still had sufficient strength to inflict hundreds of thousands of casualties and that these "surrender" feelers were actually attempts to negotiate an end to the war on Japan's terms. Similarly, the authors provide an excellent discussion of Truman's great concern about the large numbers of casualties (American, Allied, and Japanese) that would probably result from an invasion of Japan and the continuance of the war beyond November 1945, and the domestic political context of July 1945 that made ending the war imperative.

This book is about not only the NASM exhibit itself but also, and perhaps more importantly, the revisionist historians who inspired the original exhibit and the way they practice their craft. Many people, and especially some historians, look at past decisions in terms of their own background—and agendas. They fail to realize or, more importantly, ignore that people make decisions based on the information at hand, filtered through their own biases, in a specific historical context. O'Reilly and Rooney well demonstrate the historical context in which Truman had to decide whether or not to use the atomic bombs as the means to quickly end the war with Japan. In doing so, they also demonstrate the fallacies of the revisionist historians in general.

Dr. Robert B. Kane, Air Armament Center Office of History, Eglin AFB, Fla.

The Gift of Valor: A War Story. By Michael M. Phillips. New York: Broadway Books, 2005. Maps. Sources. Pp. 241. $19.95 ISBN: 0-7679-2037-6 *and* **The Last True Story I'll Ever Tell: An Accidental Soldier's Account of the War in Iraq**. By John Crawford. New York: Riverhead Books, 2005. Pp. 219. $19.95 ISBN: 1-57322-314-X

In *The Things They Carried*, Tim O'Brien presents an idea that has been accepted as a classic tenet of military life: "A true war story is never moral. It does not instruct, nor encourage virtue, nor suggest models of proper human behavior…. If a story seems moral, do not believe it. If at the end of a war story you feel uplifted…then you have been made the victim of a very old and terrible lie. There is no rectitude whatsoever. There is no virtue. As a first rule of thumb, therefore, you can tell a true war story by its absolute and uncompromising allegiance to obscenity and evil."

By this standard, Phillips' *The Gift of Valor* tells an absolutely true war story about combat in Iraq. In fact, he subtitled his book *A War Story*, which makes me believe that his writing aims at confirming O'Brien's belief. *The Gift of Valor* consists of 235 pages of relentless suffering, pain, and anguish. And the hero of the story—Corporal Jason Dunham, who smothers a hand-grenade blast with his body—dies at the end. Following Dunham into battle, the story recreates chaotic encounters between Marine patrols and insurgents and describes extreme efforts to save the lives of wounded men.

As a reporter for the *Wall Street Journal*, Phillips completed four tours in Iraq with the Third Battalion, Seventh Marines. He knows what he writes about. But even more, he interviewed practically every person who interacted with Corporal Dunham prior to and during his ordeal, and Phillips also researched medical and personnel files to a level above and beyond the norm of current authorship. It amazes me that he obtained access to so much specific information. For example, his chapter on brain surgery spares no detail: "He lifted off the piece of skull—called the bone flap—and exposed the injured brain below. Dr. Gullick gently removed loose bone fragments, the residue of the shrapnel's forced entry. Then he poked a suction tool into the wound itself and removed eight or ten tablespoons of dead, purplish-black brain until he exposed the living salmon-and-white brain below. It was hazardous work, done by both sight and feel. The dead brain had the loose consistency of milk curd." The depth of Phillips' investigation makes his book spellbinding.

The story's drama speaks for itself, and Phillips provides no personal commentary or opinion. Nevertheless, the book caused me to feel a distinct sadness for the men of whom he writes. The Marines in the story project an aggressive and determined mindset, but because of the demands of the daily mission, they are compromised into behaving like innocent adolescents, walking or driving into places where ambush is certain. Consequently, Marines find themselves transformed into little more than targets for insurgent gunfire. The demands for this type of behavior create "a source of enormous frustration for Marines trained to close with and kill their enemies," Phillips says. Based on what the book tells the reader about Americans in Iraq, *The Gift of Valor* appears to be incorrectly titled: valor is not a gift; it is a curse that brings predictable punishment to its possessor.

During my years in Southeast Asia, particularly while crewing C–130 trash-haulers during the Tet Offensive, I observed that Marines repeatedly drew the worst living conditions and the toughest combat assignments. John Crawford's *The Last True Story I'll Ever Tell* goes a long way toward dispelling my decades-old conclusion. In describing the duties of his Army unit, Crawford says: "Things were so bad there was nothing to do but take pride in it. When two noncommissioned officers from another company disobeyed orders and married some local Iraqis in a secret ceremony, they were punished by being sent to our platoon. 'Worst f——g place in the world, man.

Worse even than Leavenworth,' someone said."

Having already served three years in the 101st Airborne Division, Crawford was a college senior when called up with the Florida National Guard for duty in Iraq. His unit then passed around "like a virus" from the Third Division to the 108th Airborne, First Marine Expeditionary, 101st Airborne, and finally the Armored Division, all of which are sent home while the Florida guardsmen remain in Iraq.

At times Crawford describes his experience in a manner that makes "an accidental soldier's" life in Iraq sound like a light-hearted romp through the war zone. His account of a ride across Baghdad at night as a passenger in the sidecar of a stolen motorcycle should delight Hunter Thompson fans. Frequently Crawford writes in a gonzo voice filled with irony and cynicism. He says, "Our job was simple: Keep the peace and preserve order" and then goes on to detail both the great danger and monotony inherent in constant patrolling and being ambushed. Hunkered down in a dust storm with his mud-caked weapon, while awaiting an enemy armor attack that never comes, he tells himself, "Modern warfare my ass. …there I was with a light machine gun, no air cover, no heavy weapons, no naval gunfire. Infantry against tank, f——g World War II s—t. I wasn't really excited about visiting the cradle of civilization in the first place, let alone dying there." Despite his unhappiness with his plight, Crawford maintains a concern for other people. He works to make friends with Iraqis, a task often as demanding as the endless patrols.

Crawford's story of what he did in the Middle East is an excellent follow-on to two earlier first-hand accounts about war in that area of the world. In *Jarhead* (2003), Anthony Swofford chronicled his experiences in the Gulf War, and in *This Man's Army* (2004), Andrew Exum recounted his Ranger training and combat in Afghanistan. These three authors were not career soldiers; which makes their stories extremely valuable. They fit the mold of other non-careerist writers such as O'Brien and Phillip Caputo who provided outsiders' views of the Vietnam War. Even though today's armed forces depend entirely on volunteers, historical records need to include the thoughts of people who are citizen-soldiers at heart, a classification that includes Crawford, Swofford, and Exum.

The Gift of Valor and *The Last True Story I'll Ever Tell* are straightforward true war stories. They describe the action and leave political analysis for others. Both authors provide excruciating descriptions of the damage bullets and shrapnel inflict on flesh. Their books are excellent companion pieces regarding peacekeeping in Iraq. The first focuses on the life of a man who believes his destiny lies in combat, while the second relates the observations of a man who would much rather be anywhere else.

Lt. Col. Henry Zeybel, USAF (Ret.).
Austin Tex.

The Royal Air Force: An Encyclopedia of the Inter-War Years. Volume I: "The Trenchard Years" 1918 to 1929. By Wing Commander Ian M. Philpott. Barnsley, South Yorkshire: Pen and Sword Aviation, 2005. Maps. Tables. Diagrams. Illustrations. Photographs. Appendices. Glossary. Bibliography. Index. Pp. xvi, 492. £35 ISBN: 1 84415 154 9

Encyclopedias are notoriously difficult to write. Covering a myriad of diverse topics, they require either a group of experts—often of varying abilities—guided by a knowledgeable editor, or they are written by a single individual. The latter is the far more challenging task: how many are well versed in the several areas covered by a broad reference work? Yet, Ian Philpott, himself a retired Royal Air Force (RAF) officer, has done an admirable job of sketching out the history, technology, leadership, basing, doctrine, finances, etc. of the RAF in the decade following the Great War.

The focus of this work often falls on Air Chief Marshal Sir Hugh Trenchard, the legendary Chief of Air Staff for this entire period. This is not inappropriate. Trenchard was a dominating and domineering presence within the RAF: he had to be since he was surrounded by predators looking to destroy his service.

The RAF was formed in 1918 specifically because of the German bombing raids that had caused havoc bordering on panic among the British populace. When the war ended and the immediate danger had passed, however, the Royal Navy and British Army fully expected that the infant air service would be strangled in its cradle, and the air assets they had lost would be returned. Such was not to be the case, due largely to Trenchard's forcefulness, shrewdness, and political in-fighting abilities.

One of his more astute moves was to claim for the RAF the mission of imperial policing—using airpower as a cost-saving alternative to the presence of large army garrisons in India and the Middle East. It

was not much of a mission, but the RAF performed it well, and that fact kept the service alive until a more worthy foe (Germany) could present itself in the following decade.

Philpott covers all of this accurately and clearly. Imperial policing was a savior for the RAF, but it also had its drawbacks that were not noticed until a real enemy and a real war appeared later. Fighting pre-industrial and largely illiterate natives in an environment of air supremacy taught bad habits regarding the physical and psychological effectiveness of air attack—a tendency to exaggerate that already existed in air theory of the time. In addition, the air policing operations stifled technical development in aircraft and weapons—neither new fighters nor bombers were really necessary, just obsolescent crates left over from the First World War. The RAF paid dearly for this neglect.

Philpott also provides invaluable details regarding a host of other topics essential for an understanding of the RAF in the decade of the 1920s: the various Parliamentary commissions and studies that molded and shaped the service; the education and training of mechanics and other enlisted personnel; the state of the British aviation industry and the aircraft it produced; expansion plans driven by external threats—both real and imagined; the location of RAF airfields and the aircraft they housed; annual defense budget appropriations (on average the RAF received a paltry 12 percent of the British defense pie during those ten years); the Fleet Air Arm (unlike in the US, the RAF manned the aircraft of the Royal Navy); the social life of officers and enlisted personnel; biographical sketches of major air leaders; the formation of air reserve and auxiliary units; annual air shows ("Pageants"); pay and allowances, and doctrine.

This last was crucial. Without a codified doctrine understood and internalized by its personnel, the RAF was not so much a combat arm as a collection of airplanes. Trenchard understood this, which is one reason why he pushed so strongly for a separate Staff College to educate airmen and for publication of an official RAF doctrine manual that explained the airmen's vision of future war. In one of the book's few missteps, this discussion of doctrine and its formulation is mishandled. Never mentioned, for example, are the RAF's formal doctrine manuals published in the 1920s. It was these manuals and their revised offspring that the RAF would take into World War II.

Such quibbles aside, this is an excellent reference work for exploring all aspects of the RAF in the decade of the 1920s, and it contains a mass of very detailed and useful information. Volume II, which will cover the 1930s, should be eagerly awaited.

Phillip S. Meilinger, Col., USAF (Ret.), Northrop Grumman Corporation

Letters of the Wright Brothers: Letters of Wilbur, Orville and Katherine Wright in the Royal Aeronautical Society Library. By Brian Riddle and Colin Sinnott, ed. Charleston S.C.: Tempus Publishing, Inc, 2003. Photographs. Appendices. Bibliography. Index. Pp. 287. $37.50 ISBN: 0-7524-2584-6

Orville and Wilbur Wright. To those of us who have lived our lives around airplanes, both military and civil, those names are almost hallowed. However, in the long run, they were just men with all their faults and petty problems. By allowing them (and their sister, Katherine) to present themselves to us through their own letters, Brian Riddle and Colin Sinnott have provided a significant contribution to the literature of aviation.

Providing just enough narrative to cover those individuals and events that may be vague, the editors allow the reader to make judgments as to the brothers' actions over the years. The letters generally cover the entire time period following the first flight at Kitty Hawk until Orville's death in 1948. Most significant among them are the letters that cover their fight against patent infringement by various companies in Europe and by Glenn Curtiss in the US. Other letters cover the Wright's long-running dispute with the Smithsonian Institution over the Langley airplane and with the British magazine *Nature*.

The book's four appendices are an excellent addition to the work. They include two on the construction characteristics of the Wright flyer, one by Orville Wright on his decision to send the original flyer to the British Museum, and one giving the assembly instructions for the 1903 Wright airplane.

This book is well planned and illustrated. The paper it is printed on is of heavy stock and, although it is in paperback format, is a handsome volume. Overall, this is an excellent addition to the library of any aviation enthusiast.

MSgt. Dennis Berger, USAF (Ret.) history teacher, Lubbock, Tex.

The Flying Tiger: The True Story of General Claire Chennault and the U.S. 14th Air Force in China. By Jack Samson. Guilford, Ct.: The Lyons Press, 2005 [copyright 1987]. Photographs. Pp. xiv, 365. $16.95 paperback. ISBN: 1-59228-711-5

With the anniversary dates of the past few years, there has been revived interest in what happened almost 65 years ago. The author is more a hagiographer than an historian. He has written prolifically, but mostly about fly-casting. His partisanship is not necessarily bad. It helps to balance an equal bias in *The Stilwell Papers* and some other accounts abut Vinegar Joe. The announced purpose of the book is to tell the "true" story. The use of that word arouses suspicion of a cover-up or a rebuttal to a different version of the story. Samson makes extensive use of Channault's own words and so is able to preach the truth from that source. He interlards it with sound background material from the official Army and AAF histories.

The work is divided into three parts—roughly pre-war, World War II, and post-war. The first is of specialized interest and has a glaring deficiency in not giving adequate attention to the subject's share in the intellectual ferment that was going on at the Army Air Corps Tactical School (Samson misnames that institution). The World War II coverage is excellent, except for some failure to place events into the larger picture. Too many names are dropped without the brief biographical data that would have clarified their roles. The space given to the number of teal and widgeon shot on hunting trips might have been better used for this purpose. The last part is of least general interest though it helps to round out the story. Obviously, it has nothing to do with the Fourteenth Air Force; whereas Part I, at least, described events that led to the creation of that organization.

The major shortcoming is the absence of any maps. Without them the reader is flying blind much of the time. Literate Americans are generally aware of major rivers and coastal cities, but the interior is largely *terra incognita* (though Chunking and Kunming became known during the war). Even with two excellent Oxford atlases, it was difficult (and, in some cases, impossible) to locate key locations—especially with the variants of Chinese spelling.

Chennault attracted attention beyond the value of his accomplishments but was still a significant and interesting figure. It is impossible to compare air forces and their commanders (just as it is

with field armies and corps). The setting for each is different. Fourteenth Air Force had a shorter existence than some but performed well with limited resources at the end of the longest line of comunications in the war. In a sense the Flying Tigers were the genesis of the Fourteenth. In the seven months of their operations they provided a ray of hope and excitement during a period of general defeat and discouragement.

With the reservations expressed, *The Flying Tiger* is worth reading. The reader can decide for himself/herself the truth of the story.

Brig. Gen. Curtis Hooper O'Sullivan, USANG (Ret.), Salida, California

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Lost in Tibet: The Untold Story of Five American Airmen, a Downed Plane, and the Will to Survive. By Richard Starks and Miriam Murcutt. Guilford, Ct.: The Lyons Press (An Imprint of The Globe Pequot Press), 2004. Photographs. Bibliography. Notes Pp. x, 210. $14.95 Paperback ISBN: 1-59228-785-9

To "Hump" aircrews flying the India-China-India route in World War II it was a simple directive: "Follow the beam to destination." In fact, it was considered so simple that airlift staffers in India decided to eliminate the navigator position aboard the C–87—the pure cargo version of the B–24 bomber. This made staffers on both ends of the route happy because it permitted carrying an additional 1,000 pounds of cargo to China. Airlift staffers also calculated that an empty C–87 returning to India needed only 1, 200 gallons of fuel. And anything above that fuel figure was siphoned off at Kunming, China, for local air operations. What to worry? Follow the beam and nothing can go wrong if you follow the beam.

At dusk on November 30, 1943, a C–87 with a crew of four aboard plus a vehicle mechanic hitching a morale boosting "incentive flight," took off from Kunming headed for Jorhat, India. They landed, minus their plane, in a severely down rated "Shangri-La" to which none of the crew would ever long to return.

Apparently, they had lost their beam over Burma. Ground stations could not triangulate a fix on them. Hours later, their radio went silent. While they calculated that they were over India's steamy Assam Valley region, mountains 20,000 feet high kept popping up. Finally, fuel starvation forced them to bail out at 18,500 feet. They expected a 15,000-foot parachute ride down, but after one or two parachute swings they slammed into the barren mountainsides of Tibet.

They found no Shangri-La-like setting. The people were helpful but they lived a bare-rock existence. The Tibetan government suspected they were aerial spies for china, which had plotted an invasion. Indeed, Chinese troops on the border were being supplied by equipment airlifted to China, at high human cost, to fight the Japanese. Chinese politicians sought to use the distressed American flyers only as pawns to gain Western favor regarding reoccupying a breakaway province. The aircrew's only real friends were at the British legation in Lhasa. Yet, even the British wanted the Americans gone quickly in order to renew political tranquility on India's northern frontier. What the aircrew wanted was to return to India—which now seemed to offer them healthy conditions, a favorable climate, good food, and political stability.

It took the Americans fifty-one days of cold quarters, miserable food, winter ridge riding on mules—there were three automobiles and no roads in Tibet—and major power political wrangling for them to return to the U.S. Army airfield at Jorhat, India.

A good read, especially the survival aspects—an aircrew having to explain to villagers in sign language that they had parachuted from an airplane. What's an airplane?

Murdock M. Moore, a twenty-two year military veteran—mostly in airlift support, Findley, Ohio.

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Books Received

Armstrong, Alan. *Preemptive Strike: The Secret Plan that Would Have Prevented the Attack on Pearl Harbor.* Guilford, Ct.: The Lyons Press, 2006 [An imprint of the Globe Pequot Press]. Notes. Appendices. Bibliography. Index. Pp. xvii, 237. $22.95 ISBN: 1-59228-913-4

Bennett, Leon. *Gunning for the Red Baron*. College Station: Texas A&M University Press, 2006. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Glossary. Bibliography. Index. Pp. 207. $29.95 ISBN: 1-58544-507X

Chun, Clayton K.S. *Thunder over the Horizon: From V-2 Rockets to Ballistic Missiles*. Westport, Ct. and London: Praeger Security International, 2006. Maps. Illustrations. Photographs. Notes. Appendix. Bibliography. Index. Pp. xi, 221. $49.95 ISBN: 0-275-98577-6

Davis, James M. and David L. Snead, Ed. *In Hostile Skies: An American B-24 Pilot in World War II.* Denton: University of North Texas Press, 2006. Maps. Photographs. Notes. Glossary. Bibliography. Index. Pp. xx, 226. $27.95 ISBN: 1-57441-209-4

Gaffney, Frank J. *et al. War Footing: 10 Steps America Must Take to Prevail in the War for the Free World*. Annapolis, Md.: Naval Institute Press, 2006. Appendices. Index. Pp. xviii, 301. $29.95 ISBN: 1-59114-301-2

Higham, Robin and Stephen J. Harris, Ed. *Why Air Forces Fail: The Anatomy of Defeat.* Lexington: University Press of Kentucky, 2006. Photographs. Index. Pp. 382. $39.95 ISBN: 0-8131-2374-5

Jones, Tom. *Sky Walking: An Astronaut's Memoir.* New York: Harper, Collins, 2006. (Smithsonian Books) Photographs. Appendix. Glossary. Bibliography. Index. Pp. xiv, 369. $26.95 ISBN: 0-06-085152 X

Lewis, W. David. *An American Hero in the Twentieth Century*. Baltimore, Md.: The Johns Hopkins University Press, 2005. Photographs. Notes. Bibliography. Index. Pp. xiii, 669. $35.00 ISBN: 0-8018-824-3

McLoughlin, J. Kemp. *The Mighty Eighth: A Memoir.* Lexington: University of Kentucky Press, 2000 [paperback ed., 2006] Photographs. Appendix. Index. Pp. x, 208. $19.95 Paperback ISBN: 0-8131-9159-9

Minker, Ralph L. and Sandra O'Connell, and Harry Butowsky, Eds. *An American Family in World War II*. Tarentum, Pa.: Word Association Publishers, 2005. Illustrations. Photographs. Pp. xxiii, 432. $24.95 ISBN: 1-59571-081-7

* Starks, Richard and Miriam Murcutt. *Lost in Tibet: The Untold Story of Five American Airmen, a Doomed Plane, and the Will to Survive.* Ct.: Lyons Press, 2005. Photographs. Notes. Bibliography. Pp. x, 210. $14.95 Paperback ISBN: 1-59228-785-9 [303-415-0689 starksmutcutt@msn.com]

Tillman, Barrett. *The Dauntless Dive Bomber of World War Two.* Annapolis, Md.: Naval Institute Press, 1976 [Paperback Ed. 2006]. Photographs. Appendix. Bibliography. Index. Pp. x, 232. $19.95 Paperback ISBN: 1-59114-867-7

PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the new books listed above 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: **scottwille@aol.com**

* Already under review.

Compiled by George Cully

Jun 28-30

The **Centre for European Conflict and Identity History** will host an international conference entitled "War and Sexuality in 20th Century Europe." The event will be held on the campus of the University of Southern Denmark, located in Esbjerg, Denmark. Contact:

CONIH – Centre for European Conflict and Identity History
Niels Bohrs Vej 9
DK-6700 Esbjerg
Denmark
e-mail: fj@adm.sdu.dk
website: http://websrv5.sdu.dk/conih/war.html

Jul 17-19

The **University of Bristol's Group for War and Cultural Studies** will host a conference entitled "War Without Limits: Spain, 1936-1939 and Beyond." Its goal is to explore the international social, political, military and cultural history of this conflict from 1936 to the present. Contact:

Dr Martin Hurcombe
Department of French
University of Bristol
19 Woodland Road
Bristol BS8 1TE
United Kingdom
e-mail: M.J.Hurcombe@bristol.ac.uk
website: http://www.bris.ac.uk/arts/birtha/centres/war_withoutlimitsconference.html

Jul 25-27

The **U.S. Army Center of Military History** will host its biennial Conference of Military Historians in Washington, DC. This year's theme Is "Terrorists, Partisans, and Guerillas: The U.S. Army and Irregular Warfare, 1775-2005." Contact:

US Army Center of Military History
Attn: DAMH-FPF
103 Third Ave.
Fort McNair DC 20319-5058
e-mail: 2006CAH@hqda.army.mil
website: http://www.army.mil/cmh/

Jul 31-Aug 6

The **Society of American Archivists** will hold its annual meeting in Washington DC. Contact:

Society of American Archivists
527 S. Wells St.
5th Floor
Chicago, IL 60607
(312) 922-0140, Fax 347-1452
website: http://www.archivists.org

Aug 15-20

The **International Committee for the History of Technology** (ICOHTEC) will hold its 33rd symposium, "Transforming Economies and Civilizations: The Role of Technology," in Leicester, United Kingdom. Contact:

website: http:://www.icohtec.org/

Aug 29-31

The **Association for Unmanned Vehicle Systems International** will host the "Unmanned Systems North America 2006" Symposium and Exhibition at the Gaylord Palms Resort and Convention Center in Orlando, Florida. Contact:

AUVSI
2700 S. Quincy Street, Ste. 400
Arlington, VA 22206
(703) 845-9671, Fax x9679
e-mail: info@ausvi.org
website: http://www.ausvi.org

Sep 19-21

The **American Institute of Aeronautics and Astronautics** will hold its Space 2006 conference, "The Value Proposition for Space Security, Discovery, Prosperity," at the San Jose Convention Center in San Jose, California. The conference will address a wide array of topics, including technical, economic, and policy themes, to provide a forum to discuss "the value proposition for space." Contact:

website: http:://www.aiaa.org/content.cfm?pageid=1

Sep 19-21

The **NASA History Division** and the **Department of Space History** at the **National Air & Space Museum** will co-host a conference on "The Societal Impact of Space Exploration." The meeting will be held in Washington, DC. Contact:

NASA History Division
Office of External Relations
Washington DC 20546
(202) 358-0384
e-mail: histinfo@hq.nasa.gov
website: http:/history.nasa.gov

Oct 12-15

The **Society for the History of Technology** annual meeting will be held at the Imperial Palace in Las Vegas, Nevada. Contact:

website: http://shot.press.jhu.edu/.

Nov 2-5

The **History of Science Society** will hold its annual meeting in Vancouver, British Columbia. Contact:

website-http://www.hssonline.org/society/index.html

Nov 16-18

The **French Ministry of Defense** [*Service Historique de la Defense* (SHD)] is hosting a history conference in Paris, on "The Suez Crisis and the Western Powers." Contact:

SHD
Relations Internationales
BP 166
00468 Armees – France
Tel.: 01.41.93.22.23

If you wish to have your event listed, contact:

George W. Cully
10505 Mercado Way
Montgomery Village, MD 20886-3910
e-mail: warty@comcast.net

THE PRESIDENT'S REPORT

I'm happy to report that the new bylaws, replacing those crafted originally in 1953, were approved by the members of the Foundation at our meeting of Trustees and members on April 18, 2006. Although printing and postal delays allowed little time for responses by proxy, well more than the required 10 percent of the eligible members voted, and those votes were overwhelmingly in favor of the change. I thank each of you who interrupted your schedule to send in your proxy, and I apologize for not giving all members sufficient time to react. We learned a valuable lesson about observing lead times for mailings of this type.

The Trustees at the meeting also agreed to extend the current Board's oversight authority until the next meeting, scheduled for October 26, 2006, in order to provide time to implement the new governance structure. Additionally, I was given the green light to form an Executive Committee, whose immediate primary task will be to nominate candidate Directors to populate the new Board. I plan do that very soon. We will be seeking members who represent various constituencies, including active duty and retired enlisted members and officers, Reservists, Guardsmen, and civilians. If you are interested in serving, please contact Col. Tom Bradley at 301-736-1959 or e-mail: **afhf@earthlink.net**.

We have linked up with the Chief of Staff's team preparing for the celebration of the 60th Anniversary of the United States Air Force's independence, which will begin this year and run through the actual birthday in September 2007. We are planning a symposium that will fit well with other plans under-

way. *Air Power History* will feature special articles honoring the occasion, and we have in mind a major dinner event in which we will inaugurate Foundation awards to persons who have made major contributions to Air Force history. It will be an exciting year.

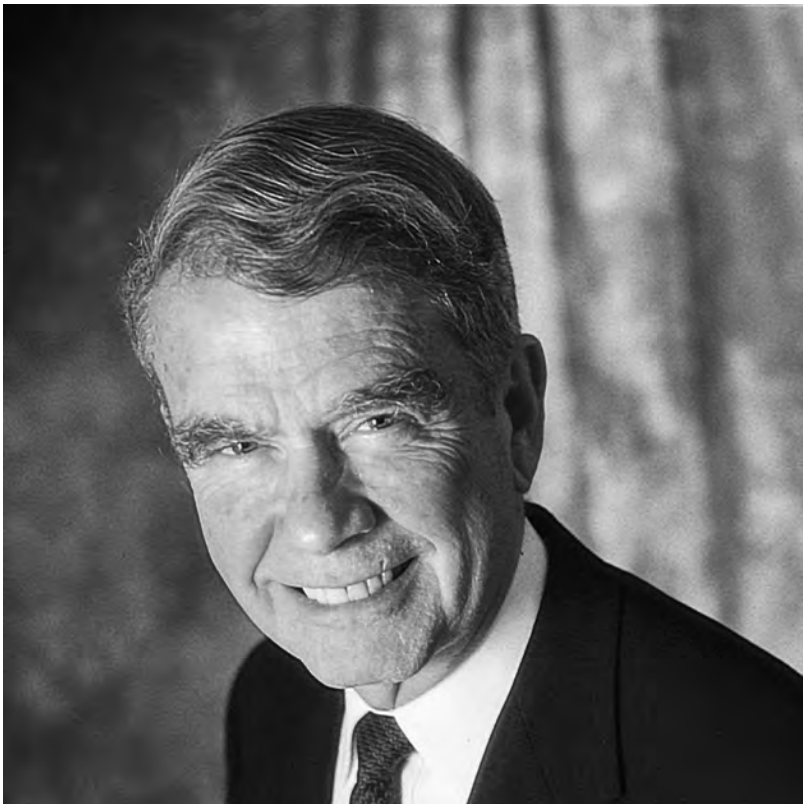
I am pleased to introduce to you Col. Tom Bradley, USAF (Ret.), our new Executive Director. You will find his biography on page 61. We are most fortunate to have Tom, who is well known and respected by active duty and retired people alike, join us. I'm looking forward to an exciting future with him in the office.

At the same time, we say goodbye to our faithful, departing Executive Director, Col. George Williams, USAF (Ret.) after two years in the chair. We have been served well by George, who will be moving to North Carolina in June. We wish him and his wife a happy and fulfilling retirement in their new home.

Finally, I thank those of you who, in addition to sending in your proxy, also filled out our member survey. Our intrepid editor-in-chief, Jack Neufeld, is smiling since the responses indicated very high marks for the magazine as it is now being produced. Well done to Jack and the several people who help him to produce our flagship publication.

Lt. Gen. Michael A. Nelson, USAF (Ret.)
President of the Air Force Historical Foundation

Meet the New Publisher



Brig. Gen. Alfred F. Hurley, USAF (Ret.) was named as the publisher of *Air Power History*; he succeeds Brig. Gen. Brian S. Gunderson, who died in September 2004.

In 1950, Dr. Hurley earned a BA in English from St. Johns University, Brooklyn, N.Y., and an MA (1958) in history and PhD (1961) in history from Princeton University, New Jersey.

Dr. Hurley is a nationally-renowned educator, principally associated with the University of North Texas, at Denton. He served in several higher education positions with the University of North Texas, including vice president for administrative affairs, president, chancellor, history professor, and president emeritus.

His earlier educational reputation was made at the U.S. Air Force Academy, where he was a member of the history department faculty from 1958 to 1963, department head from 1966 to 1980, and chair of the Humanities Division from 1967 to 1980. At the Academy, he taught undergraduate courses in U.S., world, and military history. He also taught a graduate course in cooperation with Indiana University.

In 1950, he enlisted in the Air Force as a private and rose in rank to brigadier general. He had extended assignments in Texas, Colorado, and Germany, with briefer periods in Washington, D.C. and Vietnam. He served as a reconnaissance navigator and war plans officer in Germany, from 1963-1966.

General Hurley wrote the first scholarly biography on *Billy Mitchell: Crusader for Air Power* (Franklin Watts, 1964). His publications include: a CHECO report on the EC-47, he contributed to numerous symposia proceedings and other accounts published by the Air Force History and Museums Program. He has also contributed to various professional journals, such as, *The American Historical Review*, *Journal of American History*, *Military Affairs, Air Power History* and its predecessor (*Aerospace Historian*).

He served on various advisory committees, including the Secretary of the Air Force's advisory committee on the Air Force Historical Program. He was a member of the American Military Institute, the U.S. Commission on Military History, the American Committee on the History of the Second World War, Air Force Historical Foundation, USAF Academy Falcon Foundation, and the Texas Philosophical Society. He was on the editorial advisory boards of *Military Affairs*, *Aerospace Historian*, and the *Military History of the West* journal.

General Hurley won a Guggenheim Fellowship in the Humanities (1971-1972), was appointed a fellow in the Smithsonian Institution's Eisenhower Institute (1976-1977), and regularly lectured at the National, Army, and Navy War Colleges, and other Air Force schools between 1966 and 1980. From 1966-1980 he led the development of the USAF Academy's now forty-year-old symposia in Military History series.

Meet the New Executive Director

Col. Charles Thomas "Tom" Bradley, USAF (Ret.) the newly appointed executive director of the Air Force Historical Foundation, retired in 2004 after thirty years of active duty in the U.S. Air Force. His last assignment was as chief of the Air Force Foreign Liaison Division, Office of the Chief of Staff, Headquarters, United States Air Force, the Pentagon, Washington, D.C. He was responsible for enhancing U.S. military international relationships and promoting the image and prestige of the Air Force, the Department of Defense, and the United States while working primarily with the air attachés assigned to Washington embassies from 102 foreign countries. He worked for two defense consulting firms prior to this appointment.

Colonel Bradley was born in Lebanon, Tennessee, where he graduated from Castle Heights Military Academy in 1969. He was commissioned in 1973, after completing the Air Force Reserve Officer Training Corps program at the University of Tennessee, Knoxville, where he received the Bachelor of Science degree, with a major in political science and a minor in history. He performed flying duties as an instructor weapon systems officer in the F–4 aircraft and has extensive staff experience in operations planning, regional planning, war gaming, security assistance, foreign military sales, management innovation, change management, strategic planning, and international affairs. He earned an MA in political science from Auburn University at Montgomery; he is a residence/Airpower Research Institute graduate of the Air Command and Staff College, and graduated from the Air War College by seminar. He had flying assignments at Luke AFB, Clark AB, and Homestead AFB, and staff assignments on the Pacific Air Forces (PACAF) staff at Hickam AFB and on the Air Staff in the Pentagon, and was assigned twice to Maxwell AFB, once as a researcher for PACAF and the second time as a war gamer.

Tom is married to Brig. Gen. Sandra Gregory, USAF, who is the principal operations and maintenance (O&M) and personnel budget officer for the U.S. Air Force, assigned to the Undersecretary of the Air Force (Financial Management and Comptroller) in the Pentagon. They make their home in Fairfax, Virginia, where their two sons, Rob and Bryan, attend high school.

Letters

The Mukden Mission

I enjoyed reading Yang Jing's "The Unforgettable B–29s: A Tribute," [Spring 2006 issue of *Air Power History*.] Yang Jing is to be congratulated for the accuracy of his article. I was the top gunner of a B–29 crew in the XXth Bomber Command's 468th Bomb Group, 792d Squadron. The 468th was based near Kharagpur (Salua Airfield), India, and its forward Chinese base (designated A7) was near Pengshan (Penshan). All four forward China bases were in the Chengdu area. Our bomb group lost four B–29s on the Mukden Missions. For some reason, unknown to me, out crew wasn't scheduled to go on these two missions.

Roger Sandstedt, Ballwin, Missouri.

Editor's Note: Mr. Sandstedt's book, My B-29 Story: A Top Gunner's World War II Experiences, *was reviewed in the Spring 2005 issue of* Air Power History.

U.S.-Japan Dialogue

Editor's Note: We received a message from Ms Kinue Tokudome, Executive Director of the U.S.-Japan Dialogue on POWs, Inc. who requested to post Mr. Yang Jing's article "The Unforgettable B–29s: A Tribute," [Spring 2006 issue of Air Power History] on her website. The bilingual website is: http://www.us-japandialogueonpows.org *which seeks to promote an understanding of the history of POWs of the Japanese.*

News

AFH FOUNDATION NAMES PUBLISHER AND EXECUTIVE DIRECTOR

Lt. Gen. Michael Nelson, USAF (Ret.), President of the AFHF, named Brig. Gen. Alfred Hurley, USAF (Ret.), as publisher of this journal succeeding Brig. Gen. Brian Gunderson, who died in September 2004. Also, Col. Thomas Bradley, USAF (Ret.), will succeed Col. George Williams, USAF (Ret.), who's leaving the D.C. area to retire once more. **[see pages 60-61 for brief biographies]**

DOOLITTLE RAIDERS CELEBRATE 64TH ANNIVERSARY

DAYTON, Ohio - The Doolittle Raiders, a group that helped restore American morale during World War II, celebrated their 64th anniversary at the National Museum of the U.S. Air Force from April 17 through 21. Included among the public events were a dinner, lecture, memorial service, exhibit dedication, and autograph sessions.

On April 18, 1942, Lt. Col. James H. Doolittle led a successful bombing mission of military targets in principal cities of Japan, along with 79 airmen of the U.S. Army Air Forces, flying 16 B-25 Mitchell land-based bombers. They took off from the U.S. Navy carrier USS *Hornet* and accomplished a feat believed impossible at the time.

The Doolittle-led raid caused material damage, severe psychological shock to the Japanese, and provided a great boost to American morale. Japanese land, sea, and air forces were recalled to protect the Japanese homeland; and the Battle of Midway was directly precipitated by the raid.

For more information about the Museum , visit their Web site at:
http://www.wpafb.af.mil/museum or call 937-255-3286, ext. 302.
For more information on the Doolittle Raider Reunion, visit :
http://www.wpafb.af.mil/museum/pa/doolittle.pdf

The National Museum of the United States Air Force is located on Springfield Pike, six miles northeast of downtown Dayton. It is open seven days a week from 9 a.m. to 5 p.m. (closed Thanksgiving, Christmas and New Year's Day). Admission and parking are free.

BRIG. GEN. ROBERT SCOTT (1908-2006)

Brig. Gen. L. Robert Scott, a World War II ace died of a stroke on February 27, 2006, at Warner Robins, Georgia. He was ninety-seven. In 1943, General Scott wrote the book, *God is my Co-Pilot*, which was made into a film in 1945.

Born in Waynesboro, he grew up in Macon, Georgia. His interest in flying began when he was only twelve years old. He built and flew his own glider, then bought a World War I Curtiss "Jenny" biplane. After an enlistment in the Army, he won a spot at West Point and graduated in 1932. That winter, as an Army Air Corps pilot, he flew the airmail between New York and Chicago. Before World War II, he served as a flight instructor and built airfields in South America.

After the attack on Pearl Harbor, he joined the war in the Far Eat, flying food and supplies over the "Hump" (Himalayas). Scott met Gen. Claire Chennault, the commander of the Flying Tigers, and borrowed a P-40 fighter to escort the transports. In the fall of 1943, he was credited with thirteen enemy planes shot down and six "probables." He won the Silver Star and Distinguished Flying Cross

Following the war, he commanded the jet fighter school at Williams AFB, Arizona; was the Air Force Director of information; and commanded Luke AFB, Arizona. He retired in 1957. Scott was an advocate of the need to compete with the USSR in space. He wrote several other books, including *Between the Elephant's Eyes!* (1954), about hunting in Africa; *Flying Tiger: Chennault in China* (1959); and *The Day I Owned the Sky* (1988).

His wife, Katherine Green Scott died in 1972. He is survived by a daughter, Robin Fraser, a sister, four grandchildren, eight great grandchildren, and two great-great grandchildren.

WILLIAM M. LEARY (1935-2006)

Historian William M. Leary, 71, passed away at his home in Watkinsville, Georgia, on February 24, 2006. Born in Newark, New Jersey, he served in the Air Force during the Korean War, and later received his doctorate from Princeton University. After teaching at Princeton, San Diego State University and the University of Victoria (Canada), he joined the faculty at the University of Georgia, where he worked for 32 years, retiring last year as the E. Merton Coulter Professor of History. Author of numerous articles and books on the history of aviation, he received the Central Intelligence Agency's Studies in Intelligence Award in 1995, held the Charles A. Lindbergh Chair in Aerospace History at the National Air & Space Museum (1996-1997) and was awarded four Fulbright grants. A consummate traveler, mentor, and scholar, he lived and taught in numerous countries in Europe and Southeast Asia. Predeceased by his brother Tom, he is survived by his wife, Margaret, four siblings: Paul, Kenneth, Kathleen and Cindy, four children: Patricia, Douglas, Maureen, and Peter, and granddaughter, Andrea.

ALBERT SCOTT CROSSFIELD (1921-2006)

The legendary test pilot Scott Crossfield was killed in the crash of the Cessna 210 he was flying from Montgomery, Alabama, on April 20, 2006. He was eighty-four.

He was a test pilot for the National Advisory Committee for Aeronautics (NACA), forerunner of NASA. On November 20, 1953, inside his experimental craft D-558-II, Crossfield was taken 32,000 feet aloft by a Boeing P2B (the Navy designation for the B-29 Superfortress). Then he was dropped out, climbed to 72,000 feet and dived to 60,000 feet, reaching a speed greater than 1,320 mph.

In 1955, he joined North American Aviation as a test pilot and on June 8, 1959, became the first person to fly the X-15 rocket plane in an unpowered glide from 37,500 feet. On September 17 and subsequent flights, he reached speeds approaching Mach 3.

Crossfield was a Navy pilot and flight instructor in World War II. He earned BS (1949) and MA (1950) degrees in aeronautical engineering from the University of Washington. He also worked at the university's Kirsten Wind Tunnel. In his later years he was an executive for Eastern Airlines and Hawker Siddeley Aviation; he consulted for the House Committee on Science and Technology. In 1983, Crossfield was inducted into the Aviation Hall of Fame.

Survivors include his wife, Alice Crossfield, six children, and two grandchildren.

Notices

History of Air Power Researcher Available

I am retiring from the Air Force this summer and am interested in a position as an air power history researcher. Because I have spent my entire career independently studying Twentieth Century warfare, I believe that I can be of assistance to authors working on air power history topics. In a previous assignment, I hosted a "Billy Mitchell Society," where I assigned my junior officers monthly presentations on topics in Air Force history. Academically, I have served as an AFROTC Detachment Commander/ Professor of Aerospace Studies, where I taught a sophomore class in Air Power History. I will be available beginning about September 1, 2006. My contact information is as follows:

Stetson M. Siler, Colonel, USAF
411 Brett Drive
Wright-Patterson AFB, OH 45433
(937) 879-7538
stetson.siler@wpafb.af.mil

Reunions

Pilot Class 43-D, all commands, will hold a reunion May 31- June 3, 2006, in Burlington, Vt. Contact:
Frank Dutko
316 Florida Ave.
Gulf Breeze, FL 32561
(850) 932-3467
e-mail: duke43d@hotmail.com

Air Force Pilot Training Class 56-I, will hold a reunion June 7-11, 2006, in Dayton, Ohio. Contact:
Richard W. Wood
3565 Spring Valley Rd.
Birmingham, AL 35223
(205) 967-5804
e-mail: jollygreen@charter.net

The 3d Bomb Group will hold a reunion June 7-11, 2006, in Concord, Ohio. Contact:
Bill Beck
PO Box 50095
Colorado Springs, CO 80949
(719) 599-5336
e-mail: havocbill@datawest.net

The USAF Class 56Q and Navigator Class 09 will hold a 50th anniversary reunion June 24-28, 2006, at San Antonio, Texas. Contact:
Ned Derhammer
2722 Covington St.
West Lafayette, IN 47906
(765) 463-4988
e-mail: ned3nola@gte.net

Fairchild AFB invites all former and present attached units to attend an event honoring World War II veterans of the **92d Bomb Group** on July28-30, 2006, at Coeur d'Alene, Idaho. Contact:
Guy Perham
2820 E. Snowbery Lane
Spokane, WA 99223
e-mail: perhgd@ieway.com

The **B-26 Marauder Historical Society's Gathering of Eagles** will hold a reunion August 23-26, 2006, in Dayton, Ohio. Contact:
B-26 MHS
3900 E. Timrod St.
Tucson, AZ 85711-4170
(520) 322-6226
e-mail: dues@B-26MHS.org

Pilot Class 43-K will hold a reunion September 6-10, 2006, in Chattanooga, Tenn. Contact:
Hal Jacobs
(707) 426-4959
e-mail: jakes43k@aol.com
or
March Dean
(334) 514-6877
e-mail: yoe43k@elmore.rr.com

The **1st Fighter Association (27th, 71st and 94th Squadron**s) will hold a reunion September 10-14, 2006 at Hampton and Langley AFB, Virginia. For details and registration visit
http://www.1stfighter.org

The **21st Air Transport Group** (310th, 311th, 312th ,325th Ferrying Sqdns.; 86th, 87th, 320th, 321st Transport Sqdns.; 319th, 320th Service Sqdns.) will hold a reunion September 25-28, 2006, in Las Vegas, Nevada. Contact:
Fred Garcia
6533 W. Altadena Ave.
Glendale, AZ
(623) 878-708

The **Association of Air Force Missileers** will hold a reunion September 27-October 1, 2006, in Cheyenne, Wyoming. Contact:
AAFM
PO Box 5693
Breckenridge, CO 80424
(970) 453-0500
e-mail: aafm@afmissileers.org

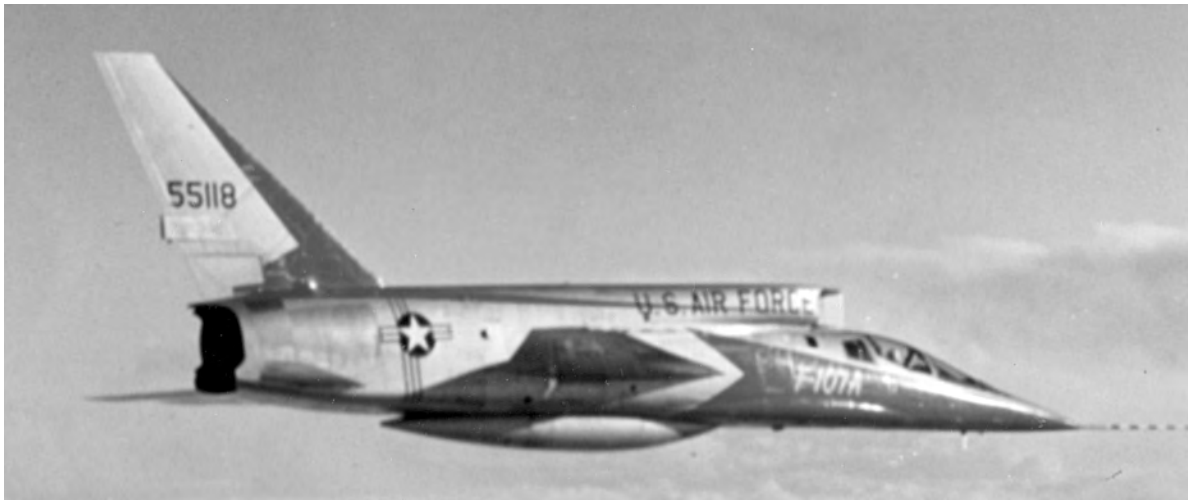
The **391st Bombardment Group** will hold a reunion in fall 2006 [TBA]. Contact:
Bill Graves
(256) 534-6711

Pilot Class 56-H will hold a reunion October 4-6, 2006, at Reese AFB, Tex.: Contact:
(865) 458-1535 or (386) 324-3342
e-mail: dsprich@charter.net
or
e-mail: gjaspers@cfl.rr.com

Pilot Class 56-V will hold a reunion October 13-15, 2006, in Eureka Springs, Ark.: Contact:
George Partridge
105 Quail Run
Prattville, AL 36067
e-mail: gpartridge56v@knology.net

History Mystery

by Robert F. Dorr



Air Power History readers made short work of the F–107A, alias the Ultra Sabre. It was a supersonic fighter that might have found its way to Vietnam if history had turned out differently. Conceived as an improvement over the F–100A Super Sabre and initially dubbed the F–100B, the plane underwent numerous design changes at North American Aviation, Inc., before emerging as a fighter-bomber with nuclear and conventional capabilities.

The Air Force ordered three F–107As (serial numbers 55-3118/3120). The first completed its maiden flight at Edwards Air Force Base, California, on September 10, 1956, with civilian test pilot Robert Baker at the controls.

The F–107A was powered by the Pratt & Whitney J75 turbojet engine, an improved version of the J57 used by the F–100A. The F–107A was 60 feet 10 inches long and weighed about 41,000 pounds when fully loaded.

The F–107A performed well in tests and had clear potential. However, the Air Force preferred an aircraft with similar capabilities being offered by Republic Aviation. The F–105 Thunderchief, also with nuclear and conventional capabilities, made its mark in Vietnam, where it carried the brunt of the Rolling Thunder aerial campaign over North Vietnam from 1965 to 1968.

Despite its promise, the F–107A ended up as a museum piece. The two surviving examples are at the Pima Air and Space Museum in Tucson, Arizona, and at the National Museum of the United States Air Force in Dayton, Ohio.

Opening this contest to e-mail brought forth a total of 37 entries (29 of then via e-mail), more than double the number from last time, and only one reader misidentified the F–107A. Our History Mystery winner, chosen at random from among the correct entries, is William L. Shields of Tucson. He'll receive as his prize a copy of *Chopper: A History of American Military Helicopter Operations from World War II to the War on Terror*, by Robert F. Dorr.

This Issue's Mystery Plane

Once more, we present the challenge for our ever-astute readers. See if you can identify this month's "mystery" aircraft, seen in a photo from reader Robert Hauger. But remember the rules, please:

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

2. Correctly name the aircraft shown here. In addition to identifying the aircraft type, please provide its military designation. Also include your address and telephone number. Entries not accompanied by a phone number will be disqualified. If you have one, please include your e-mail address.

3. A winner will be chosen at random from the postcards with the correct answer. The winner will receive an aviation book.

This feature needs your help. In that attic or basement, you have a photo of a rare or little-known aircraft. Does anyone have color slides? Send your pictures or slides for possible use as "History Mystery" puzzlers. We'll return them to you.