

AIR & SPACE POWER *History*

SUMMER 2022 - Volume 69, Number 2
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know the past
.....*Shape the Future*





Center: McConnell.
Clockwise from Top
Right: Doolittle and
LeMay, Chapman,
Leavitt, Phillips, James
and Olds, Pitsenbarger.

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President's Message

Dear Foundation Members and Friends,

As General Holmes and I come to the end of our first year as Chairman and President, we look back on a number of successes—successes brought about by members, board members, staff, volunteers, and a very hard-working and creative consultant. Below, please find an overview of many of these initiatives.

Steve Newbold, one of our Executive Officers and Treasurer, and Kristin Walker, our Branding and Project Consultant, have spent much of this past year working with our agency partner, The Cirlot Agency, rebranding the Foundation and designing a new, more user-friendly website that will launch in June. The new website will highlight our programs and research efforts while allowing users to gain valuable insights into future initiatives and opportunities to get involved.

In February, the Foundation kicked off our new Book Club featuring *Fighter Pilot*, Christina Olds' biography of her father, Robin Olds. In April, we highlighted my book, *Calculated Risk*. My cousin, Jimmy Doolittle III, was also in attendance as we discussed our grandfather, Jimmy Doolittle's life and achievements, and our wonderful grandmother's support as an active-duty spouse. John "Pepe" Soto, Senior Defense Analyst, is the creative force behind this program and moderates the interviews with our Chairman, General Holmes. Pepe has also enlisted a group of highly accomplished volunteers that assist with being sure the session is running smoothly and available for any who were unable to join us live. The Book Club meets via Zoom every other month. For those who have not yet had an opportunity to join us, we certainly hope to see you at an upcoming session. Our next session will be held in June, and we will feature *A Fiery Peace* by Neil Sheehan. Registration details will soon be available on our website.

The "9/12 Project" has launched, and details related to how to get involved will soon be available on our new website. The "9/12 Project" aims to collect and preserve the personal voices, stories, and perspectives of Airmen, Guardians, DoD Civilians, and Dependents beginning on September 12, 2001, through the end of the war in Afghanistan. These stories will serve as a record of detailed experiences helping to preserve individual histories and serve as a scholarly and educational resource for various audiences to have a better glimpse into the twenty-year war both at home and abroad. We hope you will consider participating.

Robert Arnold, the grandson of General "Hap" Arnold, has given us the opportunity to digitize his grandfather's archives. The archives include pictures, films, papers, and voice recordings—many never before released publicly. As we embark on this project, we have partnered with the University of Alabama's School of Library and Information Studies. Our initial efforts this Spring were through a graduate student seminar course and have included the stand-up of an Exhibition-style viewing of materials. This viewing consists of a small sample collection of General Henry "Hap" Arnold materials and a sample oral history from the Foundation's "9/12 Project." As we continue to move forward with these efforts, we plan to begin creating a more expansive, searchable library of material to support the Foundation's mission of educating and promoting the preservation and appreciation of the history and heritage of the U.S. Air Force, the U.S. Space Force, and the organizations and individuals that have come before.

In working to advance the Foundation's mission, General Barry has assembled our first group of Air and Space Museum CEOs, forging new partnerships to help further the preservation of Air and Space power history. By focusing on the collections and expertise of these new partners, we hope to increase our visibility among various audiences and further our efforts in safeguarding and communicating the history and legacy of U.S. Air and Space operations.

In other exciting news, John "Pepe" Soto, our new Chairman of the Advisory Committee, is assembling a panel of historians to serve as advisors on several new projects. Please stand by for some exciting announcements. Along with these efforts, the Foundation plans to eventually expand the opportunity to capture oral histories from Airmen, Guardians, Reservists, and DOD Civilians who have served this nation. This would include a forum for spouses and children to share their stories and offer advice on the unique challenges and opportunities military families face throughout their service member's careers and into retirement.

The Foundation also plans to expand our partnership programs in the coming months to include professional organizations such as the Society of Experimental Test Pilots, River Rats, Daedalians, Distinguished Flying Cross, and others by profiling these organizations with links to their websites. We hope these efforts

and work with other groups, such as the 100th Bomb Group Foundation, will provide additional resources for our members and various audiences while helping further the mission of these individual groups through building increased awareness among our members.

On a personal note, the Doolittle Award recognizes the outstanding accomplishments of a team, and I've always felt Gramps would be incredibly proud of that award. He believed strongly that his team made success possible. This past year's accomplishments are largely due to our team's efforts, and I am proud to be part of such an exceptional group of individuals.

Finally, we would like to hear from you. Please share your ideas and consider getting involved. The continued success of many of our current and future endeavors depends greatly on the support of our members.

Respectfully,

Jonna Doolittle Hoppes,
President

From the Editor

Our issue this time seems to be gathered from all eras of our Air Force History, from post-World War I, through World War II to the Gulf War.

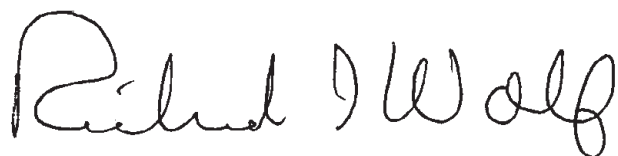
We start with an article by return contributor Theo van Geffen, with part 2 of his study on the first Gulf War, and how some of the systems used there came into being.

Our second article is by long-time USMC oral historian Fred Allison, whose article is derived from an upcoming book about Oscar Allison.

Our third article is by another of our returning contributors, William Head, who this time, writes about the World Flight of 1924. It's very interesting and well illustrated.

Our fourth article is by a contributor who is new to our pages, Edward M. Young. He is offering an alternative to the traditional views regarding the effectiveness of the Air Commandos in Burma during World War II. It's a thoughtful piece.

The President's Message begins on page 4. We have an author who requests some assistance on page 61. Don't miss Upcoming Events on page 62, although I fear you must continue to take all dates in that section as still uncertain at this point, but more firm than during the last two years. And the issue closes with the Mystery. Enjoy!



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Joint Task Force Proven Force and the Gulf War (Part 2)



The Squadron's first aircraft was the EC-121S with the first, prototype, delivered on July 16, 1968. To aid the Cambodian government by retransmitting civil radio broadcasts to outlying areas until ground transmitters were improved, JCS directed the unit in July 1970 to deploy two aircraft and personnel to Korat. The deployment was nicknamed CORONET COBRA and the operational mission, COMMANDO BUZZ. The Task Force redeployed to CONUS in the first week of January 1971. The photo shows one of the two Super Connies at Korat. (USAF)

Theo van Geffen

Starting in August 1990, U.S. and allied forces arrived in numbers in the Gulf region to persuade Iraq's Saddam Hussein to give up Kuwait, which was occupied on August 2 and proclaimed to be Iraq's 19th province. In mid-January, a second front was opened from Incirlik AB (Turkey). A score of aircraft types were involved. In a multi-part article we will have a closer look at the development and involvement of several aircraft types. In part 1 we did so at the B-52G Stratofortress and at JTF PROVEN FORCE at Incirlik. In this part we discuss the development of the EC-130E and EF-111A, and EC-130E operations.

Activation

After Iraq's invasion of Kuwait, the Air National Guard (ANG) began to survey its immediate assets in view of the needs of U.S. forces to initiate movement of troops and equipment to the Gulf Region. Mississippi's 172nd Military Airlift Group (MAG) at Allen C. Thompson Field in Jackson was one of the first ANG units to be contacted. The unit stated that four C-141As with crews were immediately available and that two additional Starlifters with crews would be the next day. The Group's 183rd Military Airlift Squadron (MAS) was activated on August 25 by Presidential Directive. The 183rd flew its first mission on the 7th into Dhahran, Saudi Arabia and through May 1991, 2,880 sorties were flown, airlifting 15,837 passengers and 25,949 tons of cargo.

Alerted

Up to August 24, ANG involvement in DESERT SHIELD had mainly been through tanker (KC-135E) and transport (C-5A, C-130B/E/H and C-141B) aircraft. On 24/2100Z Aug, six RF-4C Phantoms of the 106th TRS, Tactical Reconnaissance Squadron (117th TRW), departed Birmingham, AL, supported by two dual-role KC-10A Extenders. Arrival at Al Dhafra (United Arab Emirates, UAE) was 25/1320Z Aug. A total of 115 personnel deployed in a 60-day volunteer status. On November 13, the National Guard Bureau (NGB) announced plans to deploy 24 F-16As of the 169th Tactical Fighter Group (TFG, McEntire, SC) and 16 F-16As of the 174th Tactical Fighter Wing (TFW, Hancock Field, NY) to Al Kharj (Saudi Arabia, SA) with respectively December 12 and 16 as proposed deployment dates. Both were alerted on December 3 by U.S. Air Forces Central Command (USCENTAF) Rear for a forthcoming call-up and deployment. The order to deploy was issued on the 14th. On the same date, the NGB instructed both units not to repaint their F-16s in desert colors, but



A maintenance technician is performing a pre-mission check while on the wing of one of the four RIVET RIDER EC-130Es. The four fin-mounted pods contain the TV antennas. The aircraft were later modified with, among others, enhancement of self-protection (IR jammer and chaff/flares) and addition of WWCTV (Worldwide Color Television) capability. Modifications were performed during PDM at Lockheed Aircraft Services in Ontario, Calif. (LMAS, John Rossino)

to leave them in their ghost gray mode. The 169th TFG reported on December 30 that twenty-two of its F-16As had arrived at Al Kharj and that two had diverted into Cairo West with technical problems. A team was sent to repair them. Both aircraft joined the others on January 3, 1991. Air Tasking Order (ATO) #91-27 was issued on December 23 by USCENTAF Rear for a 02/1900Z Jan deployment of three cells of six 174th F-16As, plus two spares in each cell. Upon arrival, both units were assigned to 4th TFW (Provisional) at Al Kharj.

EC-121S Coronet Solo

The 193rd Special Operations Wing (SOW) of the Pennsylvania ANG (PAANG) at Harrisburg IAP was (and still is) the only ANG airborne Psychological Operations (PSYOPS) unit. The unit's airborne radio and television broadcast mission originated in the mid-1960s with EC-121S CORONET SOLO aircraft. As an outgrowth of the Dominican Crisis of May 1965, Secretary of Defense (SECDEF) Robert McNamara issued a directive to USAF to acquire a capability to electronically counter civil broadcasts and insurgent command and control nets in future limited war and counterinsurgency (COIN) action. This led TAC (Tactical Air Command) to direct TAWC (Tactical Air Warfare Center, Eglin AFB, FL), on February 5, 1968 to conduct an OT&E Cat III test (TAC Test 68-400) of the Tactical Electronic Warfare Support System that would be known as CORONET SOLO. It was to be installed in, ini-

Theo van Geffen has been an aviation journalist and historian since 1977. He is from Utrecht, The Netherlands. His focus is the history of the F-105 Thunderchief and the units it flew with, and of the Air War in Southeast Asia.

tially, four C-121Cs with the capability to join or disrupt commercial radio and TV facilities and to broadcast pre-recorded AM/FM/TV, plus ECM, Electronic Counter Measures. The aircraft were direct equivalents to the Navy's BLUE EAGLE NC-121J. The prototype aircraft was expected to arrive at Olmstead State Airport, where the 193rd TEWG was stationed then, on July 15 for subsequent deployment to Eglin for Cat III testing to begin on September 2. The C-121Cs were modified by Lockheed Aircraft Services (LAS) at LaGuardia International Airport, NY.

The test program called for the development of operating procedures and the training of operations and support personnel. In July 1968, USAF directed the prototype C-121 to deploy to SEA o/a September 1 for 179 days or until the Navy's NC-121J, which it was replacing, completed a modification program. On September 3, JCS cancelled the SEA deployment. The prototype test aircraft was delivered on July 16. To support the CORONET SOLO Project, TAC on July 19, designated and organized Detachment (Det) 3, TAWC at Olmstead. A Quick-Look evaluation of the MF (Middle) and HF (High Frequency) system portion was completed successfully on August 18. As a result of the decision to cancel the SEA combat evaluation, TAC, on October 1, discontinued Det 3, TAWC. By the end of September, problems had arisen in the VHF/UHF transmitter console which caused slippages in the delivery of the CORONET SOLO aircraft. In addition, a labor dispute at the LAS plant resulted in a strike with consequent delivery slippages. While the strike was in progress, a planning conference was hosted by TAC October 24-25. It was determined that, barring further complications, the OT&E would start on January 6, 1969. The strike was terminated on November 18. The revised delivery schedule showed that C-121C #2 would be delivered on December 6, with #4's delivery date unknown. The second aircraft, containing the required electronic equipment, arrived on December 13. Cat III was finally initiated on February 24, 1969 after the test force of one EC-121C, eight officers, 35 airmen, three technical representatives and selected support equipment had arrived at Eglin on the 13th and had completed aircrew orientation and mission briefings. Through February 28, three sorties were flown with the first one 50 percent productive, the second one 35 and the third one only 25 percent. By April 30, twenty-three sorties were flown for 105 hours. In April, the antenna pattern measurements phase on all frequencies was completed (22nd) and active FM (99.3 MHz) broadcasting and jamming in the AM, FM, and TV areas began (29th). The active TV broadcasting and jamming flight test phase of the program was begun on May 27, but due to technical problems, only a video signal was radiated. During the latter stages of the OT&E, TV ops proved to be satisfactory, while operator proficiency improved. OT&E was completed on July 20. The CORONET SOLO system demonstrated a capability to broadcast programming material in the AM, FM and TV frequency range. Also demonstrated was the capability to jam commercial AM, FM and TV stations. A draft of the final report was submitted to TAC on December 17, 1969.

In the meantime, on September 17, 1967, PAANG's 140th MAS/168th MAG were inactivated and replaced the same day by the newly activated 193rd Tactical Electronic Warfare Squadron (TEWS)/193rd TEWG. With 946 personnel, four EC-121S and four C-121C aircraft it would be TAC's first non-active TEW unit.

In a July 21, 1970 message, CSAF (Chief of Staff of the Air Force), Gen John Ryan, advised that the JCS (Joint Chiefs of Staff) had directed a 90-day deployment of two EC-121S aircraft with the necessary supporting elements to SEA to aid the Cambodian government by retransmitting civil radio broadcasts to outlying areas until ground transmitters were improved. Departure was to be within 72 hours after deployment notification by Pacific Command (PAC). Two days later, PAC notification was received with CORONET COBRA being the deployment nickname and the operational mission nicknamed COMMANDO BUZZ. Arrival of the Task Force at Korat RTAB with the aircraft and 75 personnel was on July 31. Over 250 Guardsmen rotated for periods of 30-60 days. The first mission was flown on August 5. On December 24, the final of 142 operational sorties was flown with 778.6 hours logged. Only one late takeoff was experienced due to failure of an engine-driven hydraulic pump. The next day, a US Army 50-Kilowatt (KW) ground radio transmitter located in Thailand assumed the EC-121S mission. The Task Force redeployed to CONUS in the first week of January 1971.

EC-130E Volant Solo

On November 9, 1977, the 193rd flew 54-0180, the last of its four C-121Cs, to MASDC, Military Aircraft Storage and Disposition Center, at Davis-Monthan (AZ) for storage. On June 30, 1978, aircraft assigned were three EC-121Ss and eight C-130Es. The first C-130E was received in August 1977 and all were to be modified to the EC-130E configuration. The first flight took place in November at LAS, Ontario (CA). The aircraft arrived in Harrisburg on March 16, 1979 with the first sortie flown six days later. With its introduction CORONET SOLO became VOLANT SOLO. The unit's second EC-130E arrived on May 9. On the 14th, the final EC-121S, ANG's and USAF's last EC-121, 54-0164, left Harrisburg for MASDC. On October 8, 1980 the units were re-designated to 193rd Electronic Combat Squadron (ECS)/193rd ECG, followed on November 15, 1983 to 193rd SOS/193rd SOG. In March 1983, MAC, Military Airlift Command, had gained the Group, while Air Force Special Operations Command (AFSOC) did so on May 21, 1990. On October 1, 1995, the Group became a Wing.

Mission

The Group's mission in 1990 was to provide combat-ready personnel and equipment for use during times of war or national emergency by maintaining a constant capability for short notice, global, tactical electronic warfare (EW) operations to, for instance, support VOLANT SOLO and SENIOR SCOUT/HUNTER. To perform its mission, the



The 193rd SOG had eight EC-130Es assigned, four RIVET RIDER-modified and four COMFY LEVI-configured aircraft. 63-7869 was a RR example and was one of the two VOLANT SOLO aircraft that deployed to King Fahd International Airport (KFIA). In early January 1991 it redeployed to Harrisburg, but returned to KFIA a second time in late February to replace 63-7773, which deployed to Incirlik (Turkey). (USAF, TSgt John Mcdowell)

193rd had 1,369 personnel, four EC-130E RIVET RIDER (RR) and four EC-130E COMFY LEVY (CL) aircraft assigned. With the former, PSYOPS (Psychological Operations), broadcasting in a frequency system which included standard AM/FM radios, television, short wave, and Command and Control Communications (C3) counter-measures were conducted. Secondary missions included limited intelligence gathering and communication jamming in the military spectrum. With the latter, SENIOR SCOUT and SENIOR HUNTER missions were flown, when required, on behalf of the AF Electronic Security Command (ESC) with its personnel as back-enders. The CL aircraft were basic, 'slick', C-130Es with palletized mission systems and clip-on antennas arrays. Non-configured, the aircraft were used to airlift passengers and equipment. The 193rd SOS was the most deployed ANG combat unit in 1990. On normal RR missions, the number of crewmembers was eleven, five aircrew and six mission, consisting of one officer and five enlisted personnel. All broadcast equipment was off-the-shelf (OTS).

Alert Notice

After Iraq invaded Kuwait, Pennsylvania Governor Robert Casey on August 10 approved DoD's request for use of PA Guard members and their resources. The next day, CENTAF, the Air Force component of USCENCOM, decided to request EC-130E VOLANT SOLO aircraft of the 193rd SOG. The CAT, Crisis Action Team, was activated on 21/1200Z Aug to support the deployment. This was followed on the 23rd by an alert notice to deploy two EC-130Es, two 'slick' EC-130Es and about 150 personnel to the tentative location of King Fahd International Airport (KFIA) in Saudi Arabia. In addition, transportation had to be provided for twenty-one personnel and equipment of the Army's 4th Psychological Operations Group (POG, Fort Bragg, NC). They would typically provide the messages, on reel-to-reel tape, compact disc, videotape, or laser disc, to be broadcast. Also on August 23, the NGB authorized the

Group to support DESERT SHIELD via a voluntary force, rotating every 30 days, the maximum volunteer period, as long as a fully operational status was supported in-theater. Many guardsmen returned for 3-4 rotations. The next day, a JCS tasking message directed the Group to deploy to a specific bed-down location in Saudi Arabia with no 'external' airlift or in-flight refueling support. Closure was to be 'as soon as possible'. When AFSOC notified on August 25 that airlift and in-flight refueling was non-available, attempts were made to tackle these problems by 'island hopping' and by self-deploying the assets. This would necessitate two round trips by unit aircraft to the AOR, Area of Responsibility, but would provide only the bare minimum assets to operate.

Desert Shield

On 28/1225Z Aug, deployment was initiated with two EC-130E (RR), 63-7773 and 63-7869, two EC-130E (CL) en route support aircraft, plus 72 unit and 21 4th POG personnel, and 30% of the required equipment to support the initial 60-day commitment. Although the itinerary was Keflavik (28/2026Z Aug), Aviano (29/1720Z Aug), and departure from Aviano for King Fahd (30/0820Z Aug), en route overnight stops were made at Lajes (Azores) and Aviano (northern Italy). After arrival at KFIA on 31/0736Z (the four aircraft flew a total of 49.7 deployment hours), accommodations included five tents, while an additional two were erected. Arriving with the aircraft was their first acting commander, Col Walter Ernst. Throughout DESERT SHIELD, a different acting commander would follow about every 30 days. A unit operations center, maintenance control, work space, and WRSK (War Readiness Spares Kit) storage areas were established. The two support EC-130Es returned to Harrisburg on September 1, with one returning to the AOR on the 5th with nineteen additional support personnel and another 13% of the necessary equipment. By that time, all necessary equipment had been received to reconfigure the EC-130Es to Arabic national standards for both TV and broadcast media to initiate PSYPOPS. The final initial deployment personnel and equipment arrived on September 10 with an USAF C-5B Galaxy, for a total of 121 personnel and 155,000 pounds of cargo.

As a way to provide capabilities of the Group's resources to mission planners and theater commanders, Liaison Officers were placed with USCENTAF (Forward), the Command Tactical Control Center, and the Army's 4th POG. This proved to be highly successful. The first familiarization and training sortie was flown over the Saudi desert on September 2. Two days later, '7773' flew a COMINT (communications intelligence) sortie for 4.2 hours. Iraqi and Kuwaiti commercial radio and television broadcasts were monitored as well as selected Iraqi tactical frequencies. Later that day, both EC-130Es flew to Masirah, Oman due to threatening conditions in the Northeastern region. Both returned on the 5th after the threat condition was lowered from *Charlie* to *Bravo*. It was reported that the mission priority for VOLANT SOLO



The broadcast studio in the cargo hold of the EC-130E VOLANT SOLO with six crew members and their (off-the-shelf) equipment. TSgt Barry Hein, foreground, an electronic communication systems operator, is coordinating a broadcast mission. (USAF, TSgt John McDowell)

would be PSYOPS and that personnel and aircraft would not move to Riyadh as originally planned, but remain at King Fahd, the home for all AFSOC aircraft. As of September 12, missions flown numbered 30 with 189.7 flying hours.

Swap-Over

On the day, September 18, Governor Casey signed the 'Fly the Flag-Support Our Troops' proclamation, urging all Pennsylvanians to support the troops of DESERT SHIELD, the first swap-over of personnel was accomplished by EC-130Es 63-7816 and -9816. Arriving were 88 personnel, while returning on the 24th were 98. Deployed were 94 personnel and two EC-130Es. A personnel swap-out would take place every month.

A 5.5-hour COMINT mission, which included in-flight refueling, was flown on September 29. The mission was to monitor and record specific frequencies and make contact with E-3 AWACS (Airborne Warning and Control System) aircraft and other friendly forces. Both aircraft were FMC, Fully-Mission Capable. After flying a COMINT mission on October 3, the Mission Control Commander (MCC) on board 7773 requested all future missions have linguists on board to distinguish significant traffic.

On October 15, CENTAF Forward reported that the mission of EC-130E VOLANT SOLO aircraft was to broadcast or jam radio and TV in support of psychological operations. Additional sorties were provided to the Joint Force Commander for tasking through the Joint Force Air Component Commander (JFACC). VOLANT SOLO was also to check in on electronic combat (EC) and the Voice Product Net (VPN) to receive HVAA (High Value Airborne Assets included AWACS, EC-130E ABCCC [Airborne Battlefield Command and Control Center], EC-130H CC [COMPASS CALL] and tanker aircraft) threat warning calls or to receive tasking for coms jamming of HF/VHF (High/Very High) frequencies. After language-qualified and regionally and culturally oriented personnel had been specifically organized, trained and equipped for PSYOPS, a combined cell

with representatives from the Egypt, Saudi Arabia, UK and US was formed by the end of October. The first actual 193rd PSYOPS mission airing *The Voice of America* into the Kuwait Theater of Operations (KTO) occurred on November 22, Thanksgiving, through a route called 'Gulf Coast South' by picking up the transmission from Greece, a little more than 90 days after arriving in Saudi Arabia. According to AFSOC, this meant it was the first major command (MAJCOM) to support a wartime mission.

Dispersal

The follow-on airlift support was not accomplished as scheduled. The crew of 63-9816 was tasked to leave Harrisburg on the 14th, to fly to Naples via Lajes on the 15th to offload the necessary parts to repair 63-7816, then continue to the AOR on December 17, return to Naples on the 18th and finally to Harrisburg on the 19th. '7816' would fly on December 17 to King Fahd after repair completion and return home on the 19th.

COMINT missions in general included monitoring, recording and rebroadcasting of assigned frequencies, including 'Baghdad Betty'. Although the EC-130E crew took off on December 24, the VHF and UHF (Ultra High Frequency) radios were inoperative and the mission was canceled. On December 31, the two RR EC-130Es had flown 492.7 hours, of which 243.7 by 63-7869 and 249.0 by 63-7773. On the same day, the 193rd SOG requested diplomatic clearances to deploy a third EC-130E (RR), 63-7783, to the AOR with a scheduled departure from Harrisburg on January 2, 1991 and arrival on the 4th to replace 869. It flew its first COMINT mission on the 5th for five hours.

On January 7, the scheduled EC-130E to fly a COMINT sortie was replaced due to the fact its #4 engine experienced mechanical problems. The logbooks showed the three EC-130Es had flown 154 COMINT and 305 support sorties for 1,140.7 flying hours. Via a 11/0750Z Jan message, USCENTAF concurred with a AFSOCENT (Air Force Special Operations Command Central) request to deploy one of the EC-130Es to Thumrait, Oman, considering the imminent hostilities. This plan was deemed necessary due to the serious SCUD threat at KFIA and a lack of revetments. It was considered to also disperse one AC-130H and two MC-130s, which were not tasked for missions in the early phase of war operations (all AFSOC aircraft were deployed at King Fahd). AFSOCENT, in a 15/0550Z Jan message, reported that USCENTAF did not approve the dispersal of assigned SOF (Special Operations Forces) assets and as a result would be dispersed as KFIA had no revetments. However, in a 15/0915Z Jan message, the 193rd SOG informed USCENTAF Forward that, in anticipation of forthcoming hostilities, its EC-130Es would be relocated to Thumrait and remain there until a return to King Fahd was advisable. The plan was to stand down until air superiority was achieved, but FMC from Thumrait would be maintained. Both aircraft landed at Thumrait on the 16th with EC-130E 63-7773 being PMC, Partly Mission-Capable. This fact is interesting as AFSOC's publication 'AFSOC in the Gulf War' stated that on January 14

HVAA (MC-130Es) which did not have an initial ATO mission were dispersed to Thumrait. Also, that CENTAF did not approve dispersal of their controlled SOF assets, the EC-130E and AC-130Hs. Since there were no revetments at KFIA, AFSOCENT dispersed the aircraft along the airfield (the eight MH-53Js, five MH-60Gs, and two HC-130P/Ns deployed on January 14 to the FOL, Forward Operating Location, Al Jouf, where they were on alert). Confusing?

During DESERT SHIELD, the 193rd SOS flew (training) sorties six days a week, while a nearly perfect mission-ready status was maintained. The sorties consisted of in-flight refueling, collection of Iraqi radio and TV broadcasts, plus the peaking of mission equipment. As of the first actual PSYOPS mission, every mission involved actual PSYOPS broadcasts in one or more formats. These missions were flown in northern Saudi Arabia and over the Persian Gulf. However, orbits were moved progressively closer to the Iraq/Kuwait border. The orbit had a racetrack pattern and was at an altitude of 18,000-20,000 feet. After every sortie, tasking and results were carefully reviewed by personnel associated with the VOLANT SOLO mission. Necessary field modifications to the broadcasting equipment were accomplished in minimum time with locally redesigned and produced equipment. Although the PSYOPS machinery had been in-theater since late August 1990, the permission to implement the campaign was granted by JCS only after a personal message from Gen Schwarzkopf. By January 12, 1991, all was ready for the campaign's initiation.

Desert Storm

Upon the start of DESERT STORM, January 16, the 193rd SOG Base Compound at Harrisburg IAP was put on a Threat Level B Alert as the possibility of local terrorism had become a serious threat. On D-Day, January 17, the Group reported it had one EC-130E on alert at Thumrait and that all its assets were prepared to carry out their mission. In the morning of the 18th, Thumrait was attacked



The author was unable to obtain any photos of EC-130E VOLANT SOLO aircraft involved in the Gulf War, except this 'not so good' photo of King Fahd International Airport. On February 1, 1991, KFIA not only was home to 32 USAF fixed-wing (special operations) aircraft, but also to 143 (O)/A-10A aircraft. (via AFSOC HO)

by SCUDs. All personnel and aircraft were undamaged and there were no impacts at the Group's location. The two aircraft returned to KFIA in a 2.6-hour sortie after which 7773 flew a 6.3-hour mission.

As psychological operations were assuming more significance at the CENTCOM level on January 20, the probability of multiple daily sorties were considered more likely. The need for additional personnel was unknown, however. Two COMINT sorties were flown on the 21st. On a 8.5-hour sortie, aircraft 7773 broadcast taped messages including news, a defection message, and music. Jamming was used on various SCUD HF C2 frequencies. Aircraft 7783 flew Orbit *Sea Isle* and also jammed SCUD frequencies. The longest EC-130E sortie was flown on the 22nd, when 7783 flew a 10.8-hour mission in *Sea Isle*. The assigned taped messages were broadcast and assigned frequencies jammed. Through January 24, the Group had averaged two 7-hour sorties/day. Operations were accomplished with high effectiveness and fourteen attack alerts were gone through. The first COMINT sortie that day, 7.2 hours, was flown in *Sea Isle*. Due to possible MiG-25 Foxbats in the area, the EC-130E's crew was warned by *Papa Bravo* and directed vector Southwest. The crew then temporarily established an orbit in the Jabaal area. The next day, 7783 flew a 7.4-hour mission in *Sea Isle*. Prior to orbit, *Papa Bravo* directed the crew to divert to a 080 heading for an additional tasking, which required a revision in the FM broadcast. Jamming was utilized, followed by broadcasts to support a leaflet drop by *Rattler 31*. As of five hours in the mission, SCUD frequency jamming was initiated, due to *Warlock's* ineffectiveness. Additional monitoring and broadcasts were accomplished. Jamming for a strike package was also being tasked upon EC-130E crews. While on a 7.0-hour COMINT mission in Orbit *Sea Isle*, a crew was requested by *Deep Sea* to jam for a strike package into Al Basra during 30 minutes. The unit stated they had been tasked to provide or supplement ECM support practically every night since the start of DESERT STORM.

Mobilization

After USCINCEUR supported JTF PROVEN FORCE's request to conduct one mission per day from Incirlik, JCS was requested by January 27 message for additional VOLANT SOLO assets. As a result, AFSOC requested on the 30th an increase in its mobilization ceiling to permit activation of the 193rd SOG. The Group already had two EC-130Es with associated aircrews, staff and maintenance personnel deployed in a voluntary status. In addition, the unit was also tasked for possible EC-130E (CL) support. Mobilization of 500 additional personnel would allow the Group to meet all projected requirements.

Two EC-130E COMINT sorties were flown on February 1 over the KTO. Both crews reported extremely heavy air traffic over the area. An E-3 AWACS aircraft was monitoring traffic to assist aircraft in mid-air collision avoidance. As the HVAA controller on board the E-3 became saturated, the possibility of such a collision increased. To help relieve saturation, it was suggested by the Group to



EC-130E 63-7773 on finals on March 28, 2006. Together with 63-7869 it arrived at KFIA on August 31, 1990. It flew its final sortie from King Fahd on February 25, 1991 for a total of 577.3 flying hours, was replaced there by 869 and deployed to Incirlik to support Operation PROVEN FORCE. The bulky pods on the outboards contain the WWCTV (Worldwide Color Television) VHF/UHF TV broadcasting equipment. 773 is on display at Fort Indiantown Gap, home of the Pennsylvania National Guard. (USAF, SSgt Matt Schwartz)

fly with two E-3 HVAA controllers and to establish a mission priority system. On February 3, the Group initiated a new orbit, *Baton*. In a 8.5-hour mission, an EC-130E broadcast a PSYOPS program of music and defection messages. Once more, the MMC recommended a linguist on board on each mission. Two days later, the crew of 7773 aborted their mission after 1.4 hours due to a broken HF antenna. After landing at King Fahd, the crew changed aircraft and flew another 6-hour mission in 7783, which had returned from an earlier mission.

Problems

With regard to the proposed deployment of an additional VOLANT SOLO EC-130E (RR), the 193rd SOG, on February 5, 1991 informed the Chairman, Joint Chiefs of Staff (CJCS) of relevant problems. The only two such aircraft the Group possessed, were at King Fahd. To support a more vigorous tasking for the G-Day Plan, two additional deployments were planned, one to Incirlik and one to King Fahd. The Group stated that a third VOLANT SOLO aircraft was undergoing modifications at Harrisburg with an estimated completion date of February 19 (the aircraft involved was 63-7869. The SCNS (Self-Contained Navigational System) modification was completed on February 8). The fourth aircraft, RIVET RIDER 63-9817, was at LAS in Ontario as of August 1, 1989 for PDM (Periodic Depot Maintenance), upgrade of the mission avionics, enhancement of self-protection (IR jammer and chaff/flares), and addition of WWCTV (Worldwide Color Television) capability. Estimated Time of Return (ETR) was December 1991 (it did return after two years at LAS). In addition, one of the two EC-130Es at KFIA was scheduled to be modified to the WWCTV configuration on September 1. Therefore, according to the Group, it was impossible to have four VOLANT SOLO EC-130Es deployed in 1991 at the same

time. It was also stated that preventive maintenance on a regular basis was already a problem. (In the early 1990s, USAF, LAS and Rockwell-Collins representatives had met at Wake Island to test what had previously been only a concept, airborne worldwide color television broadcast capability to transmit in any format. The resulting modification program involved six EC-130Es, of which the four RR aircraft. Although it was scheduled to return in December 1991, it arrived on July 29, 1992. Qualification, Operational Testing and Evaluation [QOT&E] was completed at Holloman, NM in 1993 and WWCTV was declared fully operational. With all the electronic equipment, the EC-130Es were among the heaviest in service. In most cases, the aircraft would take off with less than a full load of fuel, shortly later to be filled up by a tanker. Besides the bulky WWCTV pods, the outer wing also had two ax-head shaped blade antennas attached. There were eight large permanently mounted antennas. A fairing under the tail housed the HTWA, Horizontal Trailing Wire Antenna, which was primarily used for FM radio broadcasts. A winch assembly played the HTWA out to more than 600 feet behind the aircraft. Two 25-ton capacity air conditioners, mounted on the fuselage sides, kept the heat in the cargo hold from the equipment under control.

The third modified EC-130E arrived in January 1995. In November-December 1995, the 4th modified aircraft arrived at Harrisburg, while the two loaner C-130Hs, which had arrived in late 1991, departed. The fifth 'new' EC-130E aircraft arrived in the fall of 1996 with the sixth and final aircraft returning in February 1997. With the arrival of the 'new' EC-130Es, the mission name was changed from VOLANT SOLO to COMMANDO SOLO.)

Incirlik

With regard to the Incirlik deployment, the Group requested AFSOC approval on February 8 to deploy a liaison officer (LNO) there to coordinate the arrival of an EC-130E with support personnel and equipment. The LNO was to be followed by a site survey team, and finally an advance party to establish the bed-down location and prepare to receive and turn around the aircraft. AFSOC was also requested approval to deploy SNCS-modified EC-130E 63-7869 from Harrisburg to King Fahd and relocate 7773 to Incirlik to support JTF PROVEN FORCE. This plan, according to the 193rd SOG, allowing it to keep two SNCS-modified EC-130Es at King Fahd and making it possible to reduce maintenance/logistics problems. Also on the 8th, Hq Air Force Logistics Command (AFLC) permitted the 193rd to perform certain unit level inspections on their aircraft in lieu of the due major isochronal inspections. Due to their DESERT STORM tasking, it was not practical to return the aircraft to CONUS for this inspection.

Up to early February, EC-130E operations in the Gulf Region could be supported with rotations of volunteers. When the Group was tasked to support a second FOL (at Incirlik) with one EC-130E and support personnel, it became necessary to (partially) mobilize the Group, the first

time since the Korean War. For this reason, the 193rd SOG, on February 12, informed the NGB it was necessary to activate 44 officers and 222 enlisted personnel not later than the 25th. The partial mobilization of one EC-130E crew and 267 support personnel was reported by AFSOC on February 15, with 143 to deploy to KFIA, 95 to Incirlik, while thirty were to remain at Harrisburg. Two days later, USCINCEUR reported that the activated EC-130E, personnel, including two aircrews, and equipment were expected to initiate deployment on February 19. On the 22nd, CJCS issued the deployment order to deploy a third VOLANT SOLO EC-130E to the AOR, read Incirlik. The aircraft with approximately 150 personnel, materiel and its WRSK were to deploy as soon as possible, but not later than the 28th. 7773 flew its final sortie from King Fahd on February 25 for a total of 577.3 flying hours and deployed to Incirlik. According to the unit's history, the Incirlik FOL became operational only two days into the ground war.

Diplomatic

7783 was flown twice on February 19, with the first sortie, in Orbit *Baton*, lasting 8.9 hours. The second, 7.9 hours, was also flown in *Baton*. The crew broadcast two-minute messages on various frequencies. *Vacuum* requested the surrender tapes be used as a jamming tool. High-speed broadcast bursts were noted, interspersed by several minutes. After landing, the aircraft was FMC. On the 20th, both EC-130s flew one COMINT sortie each. In a 9-hour mission, the crew of 7783 broadcast a special B-52 message and a new, taped defection message. While airborne, a special request was received from SOCCE, Special Operations Contingency Communications Element, to monitor the 'Voice of Islamic Revolution'.





A unique picture of an EC-130E and EC-130J of the 193rd SOW together in the skies over Pennsylvania. The date was March 28, 2006 and according to the Wing, it was the first and the last time both types flew together. (USAF, SSgt Matt Schwartz)

Diplomatic clearances were requested by the 193rd SOG on February 21 for four unit aircraft: 63-7869 to replace -7773, and EC-130E (CL) 63-7816, -7828, and -7815 to transport support personnel and equipment to Incirlik. After arrival of "7869" at King Fahd, 7773 was to deploy to Incirlik to perform its VOLANT SOLO mission. All deployments were to begin at 23/1200Z Feb and to be completed by the 27th. In the meantime, on February 17, the Group announced that 7869 (RR) was FMC and ready for immediate deployment. This would be the aircraft's second deployment to the Gulf Region. It had deployed on August 28, 1990 and was returned to CONUS in early January 1991 after SNCS-modified EC-130E 63-7783 replaced it. Its final sortie was flown on the 3rd and the 5-hour duration brought 869's total flown to 257.8.

Ground Campaign

Both aircraft flew one COMINT sortie each in *Baton* on February 22, 7773 for 6.2 hours and 7783 for 8.9 hours. The crew of 7773 had to RTB early due to a pressurization problem. While airborne, the crew of 7783 was requested jamming support by *Deep Sea*. Tapes broadcast included 'Do It Now', 'Time Is Running Out', 'Final Preparation', 'February 22 Bombing', and 'The Cigarette'.

When the ground war begun at 24/0100Z Feb, the 193rd started to transmit an extensive series of PSYOPS broadcasts over the battle field in direct support of the Allied campaign. Missions were flown in Orbits *Baton* and *City Lights*. They included desertion and surrender messages to Iraqi troops. In addition, the unit supported the combined PSYOPS Leaflet/Bombing Campaign, which resulted in the surrender of thousands of Iraqi soldiers. On February 26, EC-130E 63-7869 flew its first (COMINT) sortie, 10 hours, after arriving at King Fahd.

The final two of a total of 76 COMINT sorties by the 193rd SOG were flown on the 27th, both in *City Lights*. A 4.7-hour mission by the crew of 7869 (total, 14.7 flying hours), but had to be aborted after some four hours due

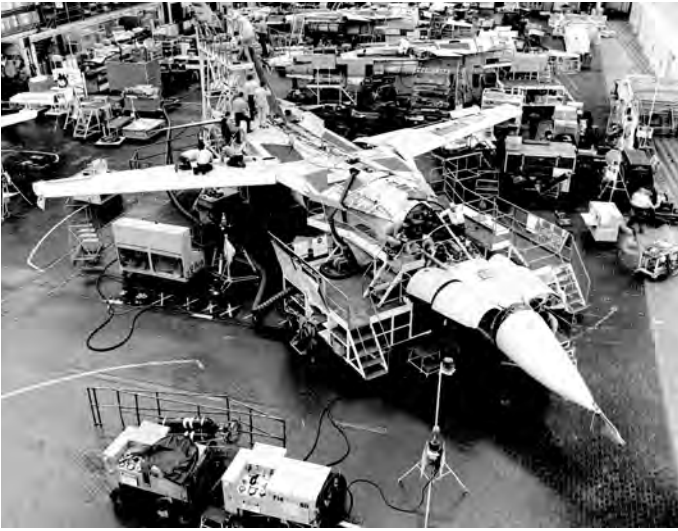
to weather. The crew of 7783 flew a 10.1-hour mission (355.2), broadcasting the 'Voice of the Gulf' and 'Dial-a-Surrender' messages. The final EC-130E mission was flown on March 15. Eight days later, notice of demobilization was received by Col Larry Santerini, the 193rd SOG commander. On the 26th, the last EC-130E and unit members returned to Harrisburg. Over the 211-day period, a total of 560 Group members directly participated in the deployment.

While in the Gulf Region, the unit's VOLANT SOLO EC-130Es were utilized 300% above their program rate just to meet minimum PSYOPS tasking. Only fourteen hours of the desired twenty-four hour coverage could be sustained due to the limited assets. Personnel of the 193rd Consolidated Aircraft Maintenance Squadron (CAMS) achieved 60 continuous days of coverage, exceeding the wartime tasking by 130%. EC-130Es were generated by Maintenance at a rate of 289% above their normal peace time level. Not a single maintenance delay or cancellation was suffered. Ultimately, 1,348 hours were flown during the deployment, of which 845 in combat. In January-March 1991, Group aircraft flew 46% of their yearly allocation of 3,900 flying hours. While on a DESERT STORM mission, an EC-130E surpassed the unit's 130,000 hours of accident-free flying.

According to its history, the Group's EC-130E missions were 'major contributors to the overall success of the Desert Storm operations, both from the psychological operations and electronic warfare standpoints'.

EC-130J Commando Solo

Congress added \$70.5M in FY 1997 for the procurement of one C-130J, its modification to EC-130J configuration and support. Another \$48.8M was added in FY 1998 for the procurement of one 'vanilla' C-130J, plus \$23.5M for its conversion to the EC-130J configuration. A force structure announcement of March 22, 2002 stated that the 193rd would convert from three EC-130Es to three EC-130Js and that its PAA, Primary Authorized Aircraft, then would be three aircraft each of the EC-130E and EC-130J configuration. The award date for the first two aircraft was December 1997, with the first one to be delivered in October 1999 and the second one in December 1999. Lockheed Martin Aircraft Systems (LMAS) would provide the basic platform and after 'DD250' acceptance, Lockheed Martin Aero-Palmdale 'Skunk Works', under a separate contract, would convert the J to the EC-J configuration in two phases. Phase I included installation of an Info Warfare crew station, generator and intercom system upgrades, and installation of an in-flight refueling receptacle. The contract for Phase I for the first two aircraft was let in September 1999. Phase II was the mission equipment integration effort (existing mission equipment was to be removed from EC-130Es and integrated onto EC-130Js). Contract for this Phase was expected to be let by August 2000. Budget for the next three EC-130Js was added by Congress in FY 1999-2001. The President's Air Force Budget for FY 2002 was a little more



F-111As were modified to the EF-111A configuration by Grumman Aerospace Corporation at its Riverhead Plant, Long Island, NY. The photo shows several F-111As in various modification stages. (Courtesy of Northrop Grumman Corporation)

specific: eight EC-130Js were to be procured with all going through Phase I, but only six to go through Phase II. The remaining two aircraft would be referred to as 'EC-130 Super Js'. Of the five aircraft appropriated through FY 2001, three would be delivered in the COMMANDO SOLO and two in the Super J configuration. The fifth C-130J was contracted for in December 2000 with a November 2002 delivery date. On May 1, 2001, the 193rd SOW retired its first EC-130E, 63-7783. When on June 2, 2003, 63-7828 was airborne on its final sorties, it surpassed 28,000 flying hours, the highest number in the fleet.

In February 2002, three C-130Js were in Palmdale for EC-130J conversion, of which two Super Js to go through Phase I only. The first Super J was scheduled to be delivered to Baltimore in July 2002 and remain there until November, the planned delivery date of the second Super J. Both aircraft would then join the 193rd SOW. The first COMMANDO SOLO EC-130J was to be delivered to Harrisburg in April 2003. As Congress provided inadequate funding in FY 2003 for the fourth COMMANDO SOLO, US Special Operations Command (USSOCOM) stepped in and provided an additional \$23M.

The first flight of the COMMANDO SOLO EC-130J took place in November 2003. In 2006, in the midst of a demanding deployment schedule for the 193rd SOW, the conversion program was halted at three of the six scheduled aircraft. This resulted in a Total Active Inventory (TAI) of only seven EC-130Js, three COMMANDO SOLO EC-130Js and four EC-130 Super Js. The former's mission is broadcasting and PSYOPS, the latter's special operations mobility SOF-FLEX (Special Operations Flexible, like infiltration/exfiltration and combat offload) and, to supplement the PSYOPS EC-130Js. A crew generally is comprised of four officers (two pilots, a flight systems and a mission systems officer) and seven enlisted personnel (two loadmasters, five electronic communications systems operators).



Grumman was also the builder of the Navy's F-14 Tomcat. The photo shows EF-111A prototype 60-0049 in special markings and a Tomcat in flight over the Atlantic in 1978. (Courtesy of Northrop Grumman Corporation)

EF-111A Raven

The EF-111A was a twin-engine, two-seat, supersonic, long-range electronic warfare (EW) aircraft, based on the F-111 fighter/bomber, which denied, degraded, deceived and disrupted enemy early warning, ground-controlled intercept (GCI) and acquisition radars. Missions included suppression of SAM threats during close air support operations, barrier surveillance jamming and escort jamming for deep strike missions.

Already as far back as November 1967, the Tactical Air Command Liaison Officer (TACLO) at 7th Air Force (7AF, Tan Son Nhut, South Vietnam) noted in his Activity Report that EB-66 support jamming had been generally successful in disrupting the North Vietnamese early warning and GCI radar environment. However, because of the standoff distances from which EB-66 aircrews had to operate, 60-100 NM, the aircraft were not as effective as desired against terminal threat electronic systems. For this reason, the TACLO concluded there was a need for an EW system, being capable of penetrating to the target with the strike force. As a possible future solution, he mentioned the use of an EF-111 with ASQ-96 and high power jammers of at least three KW.

Void

In early 1968, CSAF John McConnell testified before the Senate Armed Services Committee (SASC) and told the Senators that in supporting USAF's FY 1969 budget, a new EW aircraft would be sought to replace the EB-66. A number of proposals and developments designed to provide additional ECM support to the USAF tactical forces were examined during 1968. This as an effort to fill the void that existed between the capability provided by self-protection ECM for tactical fighters and ECM standoff jamming provided by the EB-66. Substantial interest was generated for three such concepts. One of them was an ECM escort or support jamming capability applicable to tactical fighter



EF-111A 66-0049 was the first EF-111A prototype, initially being used as aerodynamic test bed without an operational system installed. It was then brought up to production standards and rolled out on June 16, 1981 at Grumman's Riverhead Plant. The photo shows 049 being prepared for its first flight on June 16. It was delivered to Mountain Home on November 20 and assigned to the 388th ECS. (USAF, SSgt Ernest Sealing)

aircraft as envisioned in SEAOR (Southeast Asia Operational Requirement) 167, which identified a requirement for ECM support incorporated in an aircraft that could operate as an integral part of the strike force. All three concepts were considered valid and their development was actively pursued, although their overlapping capabilities made it essential to consolidate them into a unified program. In a working level conference at TAC in early December, the Air Staff presented a plan for consideration to representatives of PACAF (Pacific Air Forces), TAC, USAFE (United States Air Forces in Europe), AFSC (Air Force Systems Command) and AFLC, proposing achievement of an early operational capability by three means, including provision of large capacity jammer pods of the ALQ-76 type to equip tactical fighters for the escort jamming mission. Also, JSOP (Joint Strategic Objectives Plan) 1971-78 discussed a number of new systems, including, for example, an EB-66 follow-on. In its 1968 View on the Major Program Memorandum (MPM), TAC had given considerable attention to the TEWS force and the aging EB-66 force. TAC predicted a requirement for four squadrons, one each for PACAF, USAFE, support for USSTRICOM (US Strike Command) contingencies and a CCTS, Combat Crew Training Squadron. CSAF, however, directed that the modernization program for the EB-66 not be implemented. In fact, the 1969 MPM did not address a follow-on airframe. TAC's reaction was that one of two avenues had to be exploited, either the development of an EB-66 follow-on, or the equipment of fighter forces for the future with self-contained EW systems.

Overgrown

In a January 16-17, 1971 Air Staff Board visit to TAC to, among others, obtain an insight into specific requirements, the F-111 was one of the discussed subjects. TAC's commander, Gen William Momyer, stated consideration should be given to use of the F-111, suitably modified, as

a standoff jammer. According to Momyer, the air war in North Vietnam had proven the necessity for a fighter-carried ECM capability. According to USAF, the Navy's proposal for the EA-6B Prowler was not the answer for several reasons. The aircraft was an overgrown EB-66 with no additional capabilities: it lacked endurance and speed, aircrew and maintenance training problems, and the creation of a new logistic support system.

One of the two TEWS organizations addressed in a USAF Programming Document (PD) in January 1972 involved the 39th Tactical Electronic Warfare Training Squadron (TEWTS) at Shaw AFB (SC), which was extended in support of continued PACAF requirements and would now inactivate in the third quarter of FY 1974. The PD also projected the loss of one F-111A squadron in the fourth quarter of FY 1976, with the UE (Unit Equipment) dropping to 54 aircraft.

In the same month, TAC began considering the long-range impact on its F-111 force, even though an EF-111 program was not firm. After review, the Aeronautical Systems Division (ASD) at Wright-Patterson AFB (OH) determined on February 22, 1972 that the risks were low and requested TAC tail numbers of two F-111As to be modified as EF-111A prototypes. On May 15, TAC/XP sent a memo 'F-4D Wild Weasel/EF-111A Structure' to Gen Momyer, stating that since the F-111A was designed as a specialized weapon system, he recommended it join the F-4D (italic by author) WILD WEASEL aircraft in the tactical EW support role to promote retention of the 21-wing fighter force. TAC's XP further recommended that its three 24 UE WW F-4D squadrons be stationed at George AFB (CA) and the EF-111As at Nellis AFB (NV). Also, that the Research & Development (R&D) effort be at Nellis for commonality and that the EF-111A not be charged against the fighter attack force.

Priority

While waiting for funding approval, TAC, on June 24, sent a message to USAF 'EF-111A Program Status', stat-



These 366th TFW maintainers were not exercising to improve their PT grades, but were trying to close the doors of the canoe-shaped radome manually. It was mounted under the fuselage, occupying the old bomb bay space and housed the antennas for the high-powered jamming transmitters. (Guy Aceto)



The aircrew of EF-111A 66-0020 of the 390th Electronic Combat Squadron at Mountain Home is taxiing to the runway to fly a training sortie on August 13, 1988. The emblem is of its parent wing, the 366th Tactical Fighter Wing. The aircraft was one of the original six F-111As of Det 1, 428th TFS, which deployed to Tahkli RTAB in March 1968 on Combat Lancer. (USAF, SSGt Matthew Gildow)

ing its TEWS priority was realigned, resulting in the lower risk EF-111A becoming its first priority. This resulted in the F-4D WILD WEASEL program being moved below the EF-111 (and the COMBAT ANGEL TEW drone system) priority as the F-4D's tactical jamming systems were considered as more risky.

On December 22, 1972, USAF informed TAC in a message 'EF-111A Prototype' that an EF-111A prototype program was approved with the AN/ALQ-99 being used to permit support jamming missions. A draft ROC was coordinated as DoD approved a request to Congress to reprogram FY R&D funds for the EF-111A. Late in April 1973, a Request for Proposals (RFP) was released to industry. By June 13 a third version of the RFP was prepared. It included a two-phase program with the first phase by two contractors and the second phase, the hardware development, by a single contractor. Grumman Corporation and General Dynamics were involved in Phase IA, in which they competitively conducted system analyses and design definition to develop the tactical jamming system. On December 26, 1974, Grumman was selected to qualify and test two prototype EF-111As during a 38-month Phase IB. One month later, on January 30, 1975, Grumman was awarded a contract, initiating Phase IB.

Funds were made available to modify 42 F-111As for EW and a 'larger' number for SCANA (Self-Contained Adverse Weather Night Attack) operations (although the F-111A SCANA program was validated in July 1969 by PACAF, TAC and USAFE and the Air Staff agreed in April 1971 with an accelerated prototype development, the program never materialized due to insufficient funding). On March 15, 1974, the last two EB-66 squadrons were inactivated, the 39th TEWTS at Shaw and the 42nd TEWS at Korat RTAB. The final EB-66, an EB-66C at Shaw, was retired on the 20th, becoming a static display. In its FY 1974 history, TAC stated that loss of EB-66s caused urgent attention to interim TEWS, which included the EF-111A, drones, TERC (Tactical Electronic Reconnaissance) sen-

sors and Advanced WILD WEASEL.

In an effort to answer for the gap between the EB-66's retirement and the EF-111A's arrival, Savelist equipment, including ALT-28, ALT-31 and QRC-551, was taken in June 1975 from EB-66s and installed in a removable bomb bay pallet of an RF-111A. It was tested at Edwards in a F-111A in December 1975. However, it did not function effectively and it was concluded that the pallet items in the weapons bay of a F-111A was not the desired answer. As there was no off-the-shelf equipment available to improve the Savelist system, the F-111A was returned to its original status.

A Talking Paper 'EF-111A' of September 10, 1975, stated that experiences in the Air War in SEA and in Yom Kippur had shown the critical need to protect tactical strike forces from radar-augmented weapons. Even so, vital support jamming promised to be severely limited until the EF-111A would be ready in 1980. After retirement of the EB-66, the total jamming capability consisted of 24 EB-57Es, which were owned by Air Defense Command (ADC), and self-protection jammers on strike aircraft.

Jammer

The EF-111A, Grumman Design #273, was a conversion of the basic F-111A airframe, which meant TAC had to give up existing airframes from flying squadrons. F-111As were procured with FY 1966 and 1967 funds. The EF-111A had an operating envelope in excess of Mach 2.0 at altitudes of up to 44,000 feet and was supersonic on the deck. It carried over 32,000 pounds of fuel, allowing it to stay airborne for over four hours without refueling.

To cut down development time and technological risk, Grumman mainly used OTS electronic jamming subsystems of the EA-6B Prowler. Its Tactical Jamming System consisted of the AN/ALQ-99E jamming subsystem, which was a modification of the Navy's AN/ALQ-99, Sanders Associates ALQ-137 self-protection system, and the Dalmo-



F-111A 66-0041 was the second prototype to be configured to the EF-111A configuration, but the first one with EF equipment installed. The photo shows it at Mountain Home in early 1978 in distinctive color markings for visibility purposes. It was assigned to the 4485th Test Squadron at Eglin for use in the IOT&E. In the background three F-111As of the 390th TFS before the unit was re-designated as ECS with EF-111As. (Courtesy of Northrop Grumman Corporation)

Victor ALR-62(V4) RWR (Radar Warning Receiver). The crew compartment (side-by-side escape module) was rearranged with flight controls removed from the right side and the aircraft's navigation equipment relocated to allow access to both crewmembers. The resulting space was used for controls and displays of the EF-111A's electronic jamming equipment. In comparison to an EB-66C, which had a crew of six, including four EWOs, the Raven's mission was performed by a crew of two, a pilot and just one EWO, thanks to computer management. The automated AN/ALQ-99E system had exceptional agility and versatility to pick up, identify, and assign jammers to enemy emitters over a wide range of frequencies. Two of the many jamming variations included *obscuration* of any targets with powerful electronic noise and *confusion* by saturating the hostile radar display with a continuous stream of 'false alarm' signals. The AN/ALQ-99 was housed in a fin-tip pod, mounted on a reinforced vertical stabilizer. It encompassed ten transmitters, five exciters and one radio frequency calibrator, and associated equipment, including a processor to detect, locate and analyze hostile radar emissions. Jamming subsystem receivers scanned across frequency bands under computer or manual control. When threats were identified, the information was passed to a computer and appropriate electronic countermeasures were initiated, either automatically or with the EWO's assistance. Information about new threats, not in the computer's memory, could be fed into the system either through entries on the EWO's keyboard in the cockpit or by programming the computer via a cassette, which was plugged directly into the aircraft. When necessary, the EWO could make any corrections when testing the information. Exterior modifications also included a 16 feet long thin canoe-shaped weapons bay radome, mounted under the fuselage and housing the antennas for the high-powered jamming transmitters. Processors and other equipment were installed in what was the F-111's weapons bay. The electronics equipment weighed three tons. Unlike the EA-6B, the EF-111A could not be configured with the AGM-88 HARM. This meant USAF needed two aircraft to carry out the Prowler's mission, the EF-111A to jam and the F-4G to destroy.

'Raven'

With the planned 42 conversions, USAF wanted to equip two squadrons. The total cost of procurement, logistic support and spares was estimated at \$900 million. A 35-year operating life was projected for the airframe. A 25 percent reserve in computer data-handling capacity was accomplished by sound system engineering practices and some ingenious advances in EW technology, enabling it to cope with future new and more sophisticated threat radars.

The first EF-111A was an aerodynamic prototype fitted with a mockup of the ventral canoe mounted under the fuselage and a reinforced vertical stabilizer. The aircraft, 66-0049, made its first flight on March 10, 1977, initiating flight testing, which continued through December 1979. The pilot was Grumman's chief test pilot Chuck Sewell. That first flight, from the company's Calverton, Long Is-

land (NY) factory, was cut short when the pilot of the chase plane reported that stress wrinkle appeared on the vertical stabilizer. This was later found to be incorrect. The second aircraft, 66-0041, with an electronics suite, first flew on May 17, 1977 and was delivered to Det 3, 4485th Test Squadron (TS) at Mountain Home AFB (ID) for OT&E, beginning in September 1977. Early in 1978, both aircraft completed a 38-month development program at Grumman's Calverton and USAF facilities. Grumman's three-and-a-half month flight testing involved 84 sorties and 215 flying hours. The USAF team needed until April 1978 to complete the IOT&E, Initial Operational Test and Evaluation, which encompassed 78 sorties and 258 flying hours. It included, among others, verification of various mission operational concepts, the jammer's electromagnetic compatibility with other strike aircraft, and structural flight tests under all operating conditions, which demonstrated an 'infinite' life for all modified areas of the aircraft. It was also concluded that the performance of the jamming system was termed as 'outstanding' and that flying qualities were deemed virtually identical to those of F-111 strike aircraft. After the USAF review of the program, the first five production aircraft were budgeted in FY 1979. An EF-111A demonstration was conducted at Langley AFB for the TAC brass on January 4, 1980. On September 28, 1983, Secretary of the Air Force (SECAF) Verne Orr and CSAF Gen Charles Gabriel announced that 'Raven' had been selected as popular name for the EF-111A.

Mountain Home

The first operational EF-111A, 66-0051, was rolled out on June 19, 1981 and made its first flight on the 26th. Guest speaker was L/G Lawrence Skantze, the commander of the Aeronautical Systems Division. It was delivered to the 388th ECS (366th TFW, Mountain Home AFB) on November 5. This was fourteen years after the TACLO had suggested to use the EF-111 as the next standoff jammer and almost eight years after the EB-66 had left the inventory. The 388th Tactical Fighter Training Squadron (TFTS) was re-designated ECS on January 29, 1981, activated on



Three EF-111As of the 390th ECS at Mountain Home in April 1989. The aircraft adorned with '366 TFW' on the tail is 67-0038. (Via Guy Aceto)



The 50th TFW Commander's F-16C 84-1250 is leading F-111E 68-0040 of the 79th TFS and EF-111A 67-0042 of the 42nd ECS over the hilly country side of Germany. (USAF, SSgt David Nolan)

July 1 at Mountain Home and assigned to the 366th. As of September 1, 1977 its responsibility had been F-111A training. On December 15, 1982, it was inactivated and replaced by the 390th ECS. This unit was part of the original 366th Fighter Group, inactivated on October 1, 1982 (at Mountain Home), re-designated ECS from TFS on December 10 and activated five days later. As first EF-111A squadron, the 390th attained Initial Operational Capability (IOC) on December 23, 1983. Besides having an operational mission, the Squadron also acted as RTU, Replacement Training Unit. Det 3, 4485th Test Squadron at Mountain Home had two EF-111As for trials and evaluation purposes. The final Raven was delivered on December 31, 1985. In the first half of 1987, the EF-111A flight simulator became operational. After SECDEF Donald Rumsfeld's October 27, 1976 announcement that Mountain Home's F-111Fs would be sent to RAF Lakenheath (England), the first three aircraft departed on February 28, 1977 to act as maintenance trainers. The last four Fs departed on July 29, 1977. In return, the 366th TFW received the F-111As from the 474th TFW at Nellis. The first F-111A arrived on March 1, 1977 for maintenance training. The first squadron of As arrived on June 6. With the August 5 arrival of the final F-111As, one of the largest peacetime moves of men and machines in USAF's history was complete. The Operation was called READY SWITCH.

In April 1991, SECDEF Richard B. Cheney announced that Mountain Home would form the Air Force's first air-intervention composite wing after completion of required environmental studies. The wing was to consist of 76 B-52G, KC-135R, E-3A, F-15C/D, F-15E and F-16C/D aircraft. As part of a USAF-wide restructuring, the 366th TFW was re-designated as simply Wing on October 1, 1991. On January 10, 1992, the Final Environmental Impact Statement was filed with the Environmental Protection Agency, followed on March 11 by the Record of Decision, approving the composite wing buildup. Two days later, the 389th (F-16C/D) and 391st FS (F-15E) were reactivated. By mid-1993 the entire composite wing (4,500 personnel) was in place. This meant the departure of the EF/F-111As. The F-111As of the 389th TFW and 391st TFS were all

flown to AMARC, Aerospace Maintenance and Regeneration Center, at Davis-Monthan, with the final four arriving on July 31, 1991. Both squadrons were inactivated. As the 390th would remain at Mountain Home and become an F-15C/D Eagle unit within the 366th Wing, it was re-designated Fighter Squadron on September 11, activated on October 1, 1992 and equipped with F-15C/Ds. To accept personnel and equipment of the 390th, the 429th ECS was activated and assigned to the Wing on September 11. The 429th was re-designated ECS from TFS on August 1, 1992. Through Air Combat Command (ACC) Movement Order (MO) 2 of June 10, 1993, the Squadron PCS-ed to Cannon AFB, NM effective the 22nd.

RAF Upper Heyford

In August 1982, preparations to expand USAF's EF-111A force with a second squadron had begun in earnest with the first meeting of the Upper Heyford Site Activation Task Force (SATAF). It followed the footsteps of Mountain Home's SATAF and was composed of approximately 100 specialists from various USAF commands and contractors. Its mission was to insure early identification of problems and careful coordination of the numerous actions required to reach IOC. Four more SATAF meetings were held through June 30, 1983. An EF-111A conversion review was held on December 6, 1983. That second unit was the 42nd ECS, which was activated on July 1, 1983 and assigned to the 20th TFW. It had been re-designated ECS from TEWS on May 23, 1983. The Squadron was to receive 12 EF-111As and sixty personnel, including pilots and EWOs, and to be supported by some 225 Wing maintenance personnel. Its first aircraft (66-0037) was received on February 3, 1984, the final one (66-0057) in October 1985, bringing the total to thirteen. In the May 7-17, 1985 period EF-111As participated in Exercise DISTANT HAMMER '85, the first time the type deployed to participate in a NATO exercise (the first NATO exercise EF-111As participated in from home base was ELDER



The aircrew of EF-111A 66-0057 of the 42nd ECS (RAF Upper Heyford) is flying past the Rock of Gibraltar on April 24, 1989 while participating in Exercise Open Gate '89 from Moron AB (Spain). It was a JCS/NATO exercise designed to simulate air and sea power tactics, required to keep the Straits of Gibraltar open during a crisis. (USAF, SSgt David Nolan)



A 42nd ECS EF-111A Raven aircraft is leaving its shelter area at Aviano (Italy) and turned onto a taxiway by its aircrew for a sortie during USAFE exercise Display Determination '89 on September 18, 1989. (USAF, SSgt David Nolan)

FOREST 84, March 5-7, 1984). On April 1, 1986, USAFE notified NATO that the 42nd ECS was ready to accept its tasking. A little over one year later, on April 14, six of its EF-111As, including two spares, were involved in Operation EL DORADO CANYON, the attack on targets at Tripoli and Benghazi in Libya. On June 1, 1985, the Squadron was assigned to the 66th Electronic Combat Wing (ECW, Sembach AB, Germany), but attached to the 20th. This action was reversed on January 15, 1991. From December 21, 1990 through December 31, 1991, personnel and equipment were engaged in combat operations like DESERT STORM, PROVEN FORCE and PROVIDE COMFORT. On December 31, 1990, the 42nd was authorized 12 EF-111As and 13 aircrews and had assigned 13 and 17 respectively. USAF announced on February 5, 1991, it planned to return 12 EF-111As and 66 F-111Es from Upper Heyford to CONUS, beginning in 1992 with a scheduled completion and base drawdown by 1994. The EF-111As would transfer to Cannon to join the EF-111A unit realigning from Cannon or retire. The F-111Es would either be relocated to Cannon or retired to AMARC. With a ceremony on July 1, 1992, the 42nd was inactivated. The final EF-111A (67-0042) departed on August 7 for Cannon.

Upgrading the Raven

In the meantime, in December 1981, the Sacramento Air Logistics Center (SM-ALC) had developed the F-111 Avionics Modernization Program (AMP), which would involve all F-111 models. Its purpose was to significantly improve the reliability and maintainability. Improvements included upgrading the Terrain Following Radar (TFR) and cockpit displays, adding a new Inertial Navigation System (INS) and installation of Global Positioning System (GPS) equipment. In November 1982, USAF approved SM-ALC's expedited AMP schedule with a FY 1983 program start and the delivery of the first AMP-modified aircraft in December 1986. The AMP would be one of the largest and most expensive avionics program in history, eventually costing more than one billion dollars. All 349 F-111s were

scheduled to be modified. On August 2, 1985, General Dynamics officially rolled out an integrated AMP aircraft (FB-111A 68-0247) at its Fort Worth facility. SM-ALC rolled out its first AMP-modified F-111 on December 15, 1986, FB-111A 68-0287. The aircraft was delivered on December 18 to Pease's 509th Bombardment Wing. The first AMP-configured F-111A made its first flight from Calverton on May 20, 1988. As of October 3, 1990, 228 F-111s had been modified, including two EF-111As. Completion of all forty-two was planned in 1994. The Air Warfare Center at Nellis published its final EF-111A AMP report in March 1991.

In the late eighties, ASD was involved in a three-phase approach to improve EF-111A's AN/ALQ-99E processing and jamming subsystems, the System Improvement Program (SIP). This would enable the aircraft to counter advanced electronic defenses for the 1990s and beyond. Phase I involved updating the AN/ALQ-99E encoder/processor, the heart of the system. Consisting of the encoder converter interface, countermeasures computer, digital display indicator, and onboard loader/recorder, the encoder/processor provided the Raven with, for instance, increased signal processing, memory capacity, and improved reliability and maintainability. Also, ASD modified the exciter, which generated the types of waveform that were transmitted back at the enemy. In March 1991, Grumman was awarded a contract for the EF-111A SIP. In a five-year full-scale development program, the Grumman team was to develop and upgrade hard- and software to improve the Raven's radar jamming capabilities. On February 8, 1993, a SIP-modified EF-111A completed two weeks of testing in Grumman's Anechoic Chamber at Calverton. The first flight of the SIP-modified EF-111A prototype, 66-0047, took place on March 14, 1995 by the 46th Test Wing at Eglin. Phase I was approved and expected to cost \$300M, but approval of Phase II/III was still being awaited. However, partly due to budgetary reasons, ASD had to decide to stretch out the program. Should Phase II/III be approved, it was expected it would be close to the year 2000 before the fully upgraded weapon system could be welcomed into the inventory. However, on December 18, 1994 OSD (Office of the Secretary of Defense) issued Program Budget Decision (PBD) 753, zeroing all EF-111A SIP funding beyond FY 1995. Accordingly it became necessary for USAF to cancel PMD 2366 (1) of July 15, 1994, which it did on June 20, 1995. Congress was informed by CSAF on June 14, 1995. Terminated were the contract with Grumman Aerospace Corporation regarding the encoder processor and digital based exciter and with Motorola regarding Band 4. The contract with AEL Industries for Band 9/10 was to be transferred to the Navy.

A series of crashes attributable to the failure of the F-111's original analog flight control system prompted a Class IV safety modification, aimed at replacing the analog flight-control computers with a more modern and reliable Digital Flight Control System (DFCS). Flight testing began in May 1989 at Edwards with the DFCS installed in FB-111A 68-0254. In February 1990, '254' was modified to a tactical configuration by replacing its wing tips and the



An EF-111A Raven about to be refueled by a KC-10A Extender. (USAF, SSgt Kevin Bishop)

pitch feel frame assembly. It flew 65 sorties, completing Phase I of the flight test program in October 1990. All test pilots who flew the DFCS-modified aircraft were impressed with its performance. General Dynamics then was awarded a LRIP (Low-Rate Initial Production) contract for the DFCS. The program was completed in 1997.

Cannon

The first F-111 Aardvark, an A model, for the 27th TFW arrived in July 1969 from Nellis for maintenance training. The first Es were welcomed in October. However, their stay would be short as in the summer of 1971, all were transferred to the 20th TFW at RAF Upper Heyford. In November, the Wing received the first F-111Ds.

With the AF decision (1) to stand up a composite wing at Mountain Home without F-111s, (2) to return the 20th FW WOPE (Without Personnel and Equipment) to Shaw to replace the 363rd FW and retire its F-111Es to AMARC, except twenty-two, which were assigned to Cannon's 428th TFS, (3) to convert the 48th FW at Lakenheath from F-111Fs to F-15Es, and to reassign the Fs to the 27th FW, while retiring its Ds to AMARC, all remaining F-111s would find a home at Cannon. The last F-111Fs departed Lakenheath for CONUS on December 17, 1992. On August 1, 1992, the 430th ECS was re-designated from TFS, activated at Cannon and assigned to the 27th FW, taking charge of the EF-111As of the 42nd ECS which were re-deployed to CONUS. After arrival of the 429th from Mountain Home on June 22, 1993, all EF-111As were consolidated into one squadron, the 429th, with the 430th ECS being inactivated on June 29, 1993. By that time, all aircraft had been relocated to Cannon, although EF-111As remained TDY to Incirlik. The Cannon aircraft also included the three crews, four officers, ten enlisted personnel and two EF-111As of Det 7, 79th Test and Evaluation Group (TEG). Their mission was OT&E of the EF-111A. On March 25, 1995, the 429th ECS deployed six EF-111As to Aviano (Italy) to support Operation DENY FLIGHT. According to the Wing, the 429th ECS passed 2,000 days of continuous deployment to Southwest Asia by June 1996 in



After the decision to retire Cannon's F-111s and replace them with F-16C/D Fighting Falcons, the 522nd FS was the first unit to convert. F-16C 87-0277 was one of the first, if not the very first, operational F-16s at Cannon, arriving from the 35th FW at Misawa (Japan) on June 28, 1995. 'Of course' it was adorned with '27th FW' and the colors of the four F-111 squadrons of the Wing, red (522ndFS), blue (523rd FS), yellow (524th FS) and black (429th ECS) on its tail. The photo was taken on November 30, 1995. (Guy Aceto)

support of Operations PROVIDE COMFORT (begun in December 1992) and SOUTHERN WATCH.

After National defense priorities had dictated that older weapon systems, like the F-111, be retired for newer weapon systems, USAF, in its August 11, 1995 announcement regarding structure and realignment actions for FY 1996, stated the 27th FW's 74 F-111E/Fs would begin retiring in late 1995 and be replaced with 54 F-16C/Ds. In addition, the high cost of maintaining the small remaining EF-111A inventory played an important role. As a result, the 27th, on January 1, 1996, began the conversion to the Fighting Falcon. Its 429th ECS would then be the last F-111 squadron of any type in the Air Force. The 428th FS flew its first six F-111Es to AMARC on October 11, 1995 with its final two Es departing on December 15. It was inactivated on October 12, 1995. The F-111Fs of the 522nd, 523rd and 524th FS departed for AMARC in 1995/6. For instance, the 522nd FS sent its first increment of F-111Fs off on October 11, 1995, flew its final training sortie on December 18, and lost its final three Fs on January 11, 1996. The final four-ship of F-111Fs were delivered to Davis-Monthan after a farewell event at Lockheed Martin Tactical Aircraft Systems in Fort Worth, called 'The Last Hurrah-a 'Vark Farewell Reunion'. On December 31, 37 EF-111As were operational, while the PAA, Primary Aircraft Authorized, was 26.

Prowler

In FY 1994, DoD began a comprehensive series of studies to assess the future adequacy of US EW capabilities, including examination of requirements for, among others, EW aircraft, aircraft self-protection, and lethal and nonlethal SEAD, Suppression of Enemy Air Defenses. The first phase of the assessment resulted in the plan to retire EF-111As and replace them with EA-6Bs. In his 1996 An-



The F-16C/EF-111A of the previous photo expanded with F-111F 70-2362 over Cannon's runway. The flight line still shows scores of F-111s, soon to be retired to AMARC. (Guy Aceto)

nual Defense Report, SECDEF William Cohen wrote that, in order to ease the transition to the new Joint Force concept, the retirement date for the 24-aircraft EF-111A force was slipped one year, to FY 1998, one year later than originally programmed. In addition, USAF planned to keep twelve operational in FY 1998-99. Once the EF-111A would have left USAF's inventory, the mission of tactical support jamming would be assumed by Navy and Marine Corps EA-6B Prowlers, the Joint Airborne Electronic Attack Program. For this purpose, the Navy would upgrade 120 EA-6Bs, extending their service life and updating their mission system, providing critical support for joint force operations. USAF would supply a number of EW-trained aircrews to selected Navy squadrons to facilitate such operations. In the meantime, the Marine Prowlers were retired and the Navy's replaced by the EA-18G Growler. USAF crewmembers are being trained at NAS Whidbey Island (WA). All USAF personnel at the Station are part of the 390th ECS, which provides administrative and logistical support. The Squadron is a geographically separated unit of Mountain Home's 366th Operations Group.

In its May 2, 1997 Force Structure Announcement for FY 1998, USAF stated the 27th FW would complete its EF-111A retirement, resulting in a reduction of 746 military and 12 civilian authorizations. On April 2, 1998, the 429th flew its final SOUTHERN WATCH sortie, followed by redeployment to Cannon. The final Ravens were retired

by the 429th ECS on May 2, 1998. The Squadron flew 35 EF-111As to AMARC, of which five in 1997 (the first, 67-0041, on July 30) and thirty in 1998 (final two, 66-0027 and 67-0039, on June 19). All except one were scrapped. Three of the 42 EF-111As were lost in crashes, one (66-0023), on February 14, 1991, during a combat sortie in DESERT STORM, one (66-0056) on April 2, 1992 near Fimmere, UK, and the final one (66-0044) on June 17, 1996 near Tucumcari, NM. At least three are on static display. While serving, the EF-111E had one of the highest utilization rates in USAF. The 'demise' of the 429th ECS occurred on June 19, 1998 when it was inactivated. ■

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 With special thanks to my photo man Sandor Kocsis, to Dianne Baumert-Moyik of Northrop Grumman Corporation, Guy Aceto and George Cully.

TWO LADIES FIGHT IT OUT OVER REGENSBURG



2nd Lt Robert P. "Bob" Bird's crew poses in front of "Sophisticated Lady." Kneeling L-R: 2nd Lt Bob Bird, 2nd Lt Anson F. Hughes, 2nd Lt Deane C. Manning, 2nd Lt Victor Harris; Standing L-R: S/Sgt Richard W. Leaf, S/Sgt Edward Szymanski, S/Sgt Frank W. Watkins, S/Sgt Jack K. Dixon, S/Sgt James M. Blake, Sgt Oscar Allison (Photo courtesy of 449th Bomb Group Association.)

Fred Allison

The 449th Bombardment Group (Heavy) deployed to Italy in December 1943. The "Flying Horsemen" as they were known, flying B-24s, was one of five bombardment groups that made up the 47th Bombardment Wing, Fifteenth Air Force, U.S. Army Air Forces. Based in Grottaglie, at the southern extreme of Italy's heel, the 449th flew their first combat mission on January 8, 1944. While the strategic bombing campaign, known as the Combined Bomber Offensive, was the top priority for the Fifteenth Air Force, the Italian land battle demanded the Fifteenth Air Force fly in support of Allied armies in Italy, battling the Germans. When the Anzio amphibious landing occurred on Italy's west coast, Fifteenth Air Force bombers flew air strikes, even close air support strikes, on behalf of Allied troops that had been entrapped on the beachhead.¹

On February 20, 1944, pilot 2d. Lt. Robert P. Bird and crew, took their B-24H, "Sophisticated Lady" on a mission to support the Anzio beach head. Flight engineer and top turret gunner Oscar Allison recalled that it was a rough mission: "We went in at low level for better accuracy, not wanting to bomb our own troops. The lines were very close and I think we took flak from both friend and enemy. It was the heaviest I'd ever seen. We had no opposition in the air, so all that I could see from the top turret was burst after burst of flak everywhere and very close several times. I couldn't shoot back and I just sat there petrified with fear."²

The [Sophisticated] Lady staggered through, shuddering and bucking as they made their bomb run and the gunners strafed German positions. One burst of flak was too close and shrapnel took out the Lady's hydraulic system. This had all sorts of ramifications. Hydraulic fluid flooded into the ball turret on the B-24's belly. With no hydraulic pressure the turret could not be raised which was required to allow the gunner, SSgt Edward T. "Skeets" Szymanski, to get out. Waist gunner SSgt Frank W. Watkins, and tail gunner SSgt James W. Blake went to work manually cranking up the turret. No hydraulic pressure also meant the landing gear would have to be manually lowered. This was an arduous task that required lots of muscle to crank the gear down held in place by a system of cables and locks. Practice at this task had been something pilot Bird had insisted upon. So, now that it was required for real, flight engineer Allison and SSgt Richard W. "Leafski" Leaf, assistant engineer and waist gunner muscled the gear down.³

With gear down and locked Bird made a no-flap, high speed landing back at Grottaglie. As the brakes faded and with the runway's end fast approaching, Bird managed to keep it under control. He allowed it to drift off the left side of the runway onto the grass, it made a gentle 360 degree turn and stopped with its wingtip just a few feet from the control tower. No one was hurt although belly turret gunner Szymanski looked to be soaked in blood. In actuality, it was hydraulic fluid, the emergency medical soldiers were a bit disappointed.⁴

The "Lady" had been punctured by 32 pieces of flak. Most were small but some were as big as a hand.

The crew took two days to recuperate. It would take longer than that, however, to get their B-24, back in fighting trim. The next mission, on February 22, 1944 targeted the Messerschmitt assembly factory at Regensburg, Germany. As the "Sophisticated Lady" was



2nd Lt Gilbert F. "Gil" Bradley's crew is award DFC medal on 8 April 1944 by Commanding General of the Fifteenth Air Force, Major General Nathan F. Twining at Fifteenth Air Force Headquarters, Bari, Italy. L-R: 2nd Lt Gil Bradley, S/Sgt Herbert R. Clements, 2nd Lt Kenneth E. Ebersole, S/Sgt Franklin A. Grubaugh, General Twining, 2nd Lt Anson F. Hughes, T/Sgt Joseph W. Montagna, 2nd Lt Joseph P. McMenimen, T/Sgt Robert J. Prescher, S/Sgt Irving J. Mills. (Photo Courtesy of the 449th Bomb Group Association, donated by J.P. McMenimen.)

still being repaired, Bird's crew took "Pistol Packin' Mama" which belonged to Second Lieutenant G.F. "Gil" Bradley and crew, also of the 716th Bomb Squadron. Besides their bomber, Bird's crew also took Bradley's co-pilot Second Lieutenant Philip J. Sheridan and navigator, Second Lieutenant Charles F. Popken. This was required because Bird's co-pilot Second Lieutenant Anson F. Hughes and navigator Second Lieutenant Victor Harris had been burned in a gas heater explosion in their quarters and were temporarily not on flight status.⁵

This was the first strategic mission for Bird and crew. It was in support of "Big Week," or Operation Argument, the Army Air Forces week-long bombing campaign aimed at crippling German aircraft production.⁶

Both the Eighth Air Force, flying from English bases, and the Fifteenth, flying from Italian bases were to strike German aircraft factories. During the Big Week about 3800 missions were flown by the heavy bombers of these wings in which almost 10,000 tons of bombs were dropped. About 600 German fighters were claimed also shot down. It was costly however, 74 American aircraft were shot down on February 22, the first day that the Fifteenth Air Force participated in the Big Week.⁷ An estimated total 200 American bombers went down under Nazi anti-aircraft fire or fighter attacks.⁸

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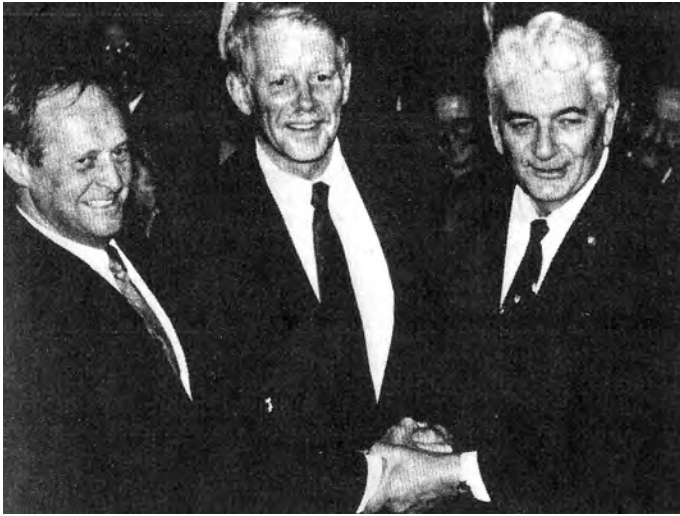
A JG 27 Bf 109G in flight 1943-1944. A Bf 109G of JG-27, the type of aircraft along with FW-190s, and squadron (among others) that delivered the fatal blows to "Pistol Packin' Mama" and "Sophisticated Lady." (Photographer: Hebenstreit; German Federal Archive, Identification Code - Bild 101-662-6659-37.)

Studying the effects of Operation Argument, historians and analysts determined that the strikes started an irreversible decline in Germany's fighter production, it was the beginning of the end for the Luftwaffe.

Bird's crew was one of 183 bombers from the Fifteenth Air Force that launched on February 22, targeting the Messerschmitt factory at Regensburg.⁹ The weather was predicted to be suitable for bombing at Regensburg, but that was not the case. They flew over a solid undercast the entire way and conditions did not improve when they approached Regensburg. This section of bombers chose to divert to a secondary target in Austria.¹⁰

There were other problems. Bird recalled that it was "screwed up from the start." The weather prevented their section from ever finding and joining with the other elements. Of these, six were from the 716th, four bombers of the original ten that had launched, had turned back due to mechanical issues before reaching Regensburg.¹¹ They never linked-up with the fighter escorts, also due to the poor weather. Some of the machine guns on their bomber froze-up and jammed. The traverse motor on the tail turret burned out well before they reached Regensburg. They were ill-prepared for what lay before them as they turned off their primary target and headed for the secondary.

At midday eight Bf 109G fighters of the 27 Jagddivision took off from an airfield at Wels, Austria. They joined up in a tactical formation over Vienna then flew a route that took them into the path of the B-24s turning toward Austrian targets. One of the German pilots was 23-year old Lieutenant Helmut Beckmann. Although young, by this time of the war he was a hardened veteran. He had joined the German military in 1939 two months before turning 18. He had flown a Messerschmitt against the British during the fighting in North Africa in 1942. His first kill was a Supermarine Spitfire Mk. V. The very next day in a fight with a Hurricane, he was seriously wounded, shot through the shoulder and right foot which cost him a toe. He managed to get his fighter back to base but was hospitalized until August 1942. Returning to a Messerschmitt's cockpit, he had scored two more Allied aircraft before the mission on February 22, 1944.



L-R Deanne Manning (bombardier), Robert Bird and German fighter pilot Helmut Beckmann meet and share experiences at a special reunion of adversaries organized by citizens of Koglhof, Austria in 1984 at a restaurant in Koglhof. Koglhof was very near to where Pistol Packin' Mama crashed after being shot down by Beckmann. (Photo copied from the book *From Tucson to Grottaglie*, (449th Bomb Group Association, 1985.)

Flight engineer Allison in "Pistol Packin' Mama" recalled: "The flight was long and tiresome. We flew above 20,000 feet and saw nothing but other B-24s and some B-17s in the distance headed in the same direction that we were. We had never flown with fighter escort on a mission; we'd never needed it so we didn't miss it. It was about mid-day and I was tired, hungry and badly needing a cigarette but we were on oxygen and the "No Smoking" rule was in effect. I was sleepy too and I guess not very alert. It had become boring."¹²

Then, like a flash, Messerschmitts appeared, head-on, guns blazing showering 20 mm shells into Mama. The bombardier, Second Lieutenant Deane Manning recalled, "We were met head-on by German 109s and [Focke-Wulf]190s, and although we took several attacks, the first one did all the damage. On this one they made a slicing head-on pass, hitting the main spar about 15 or 20 feet from the right wingtip, knocked out our No. 3 and No. 4 engines, knocked out the nose turret just above me and hit me just above the ankle, plus the intercom—all in the first pass!"¹³

Alerted by the call of "Fighters— 12 o'clock!" and the rattle of nose-turret gunner SSgt Jack K. Dixon's twin .50 calibers, Allison swung his turret around forward and saw four Messerschmitts bearing down on them head-on in single file with each in succession slightly stepped down. He began firing his guns, but no avail. His guns could not deflect enough to fire at the Bf 109s. His guns were hitting the stops that prevented them from shooting into his own aircraft. His tracers flew harmlessly just above the German fighters.

The same was true for Szymanski in the ball turret. His guns spit out bullets that sliced just beneath the Nazi fighters. Only Jackson had a clear shot at the fighters.

"It was a gunner's dream!" he recalled. It was a short dream, at the most 10 seconds, as the bomber and fighters closed at about 500 mph. He made the most of it though, hitting the second of four that came at Mama. His shells slammed into the grey fighter; it shuddered slightly as it ripped past, mortally wounded. But so was "Sophisticated Lady." Out of the top turret Allison looked to the right and saw a gaping "crater filled with twisted,



The heraldic design of the 449th Bomb Group, known as the Flying Horsemen, during World War II.

smoking metal that had a few seconds ago been a powerful smooth-running Pratt & Whitney R1830."¹⁴

Don Lapham, a co-pilot flying in another section saw the results of the attack: "I glanced out the side blister. Out at about two thousand yards was a tight formation of planes. "B-24s," I said to myself. One of the planes banked up sharply as seven of them [Messerschmitts] peeled off. My eyes bulged; they had [only] two engines."¹⁵

With both engines on the right wing blasted out, and still heavy with its load of bombs, "Pistol Packin' Mama" spiraled downward into the dead, right wing. Pilot Bird struggled to keep the big bomber from dropping off into a graveyard spin—holding it in a downward spiral, hoping the crew could clear. He radioed over the intercom, "Prepare to bail out!"¹⁶

Second Lieutenant Manning recalled: "The nose turret operator, [SSgt] Dixon, got out of the shattered turret and crawled back to the flight deck. I knew that I had lost a foot because it was barely hanging on. I took off my oxygen mask to talk to the navigator Popken, about giving me a shot of morphine from the nose first-aid kit and putting a tourniquet on my leg. I then opened the nose wheel hatch in case we had to get out in a hurry. Popken did get the tourniquet partially on, but he was a little nervous by this time—understandable—and dropped the morphine out the nose wheel hatch. From the nose compartment one can see the feet and legs of the pilot and co-pilot. About this time, I saw the co-pilot get up and leave, so I guessed we were bailing out....Then I saw through the controls, the pilot get up and leave.¹⁷ Since I had to get out, I put the small first-aid kit back in a chest pocket of my G.I. coveralls, got down on the floor of the nose compartment to bail out. I checked the altimeter and it still read about 17,000 feet."¹⁸



A bomber crew of the 449th Bomb Group is debriefed by an Intelligence Officer in February 1944. Debriefing was required of every mission. (Photo courtesy of the Air Force Historical Research Agency.)

Engineer Allison related what he saw from the top turret: “I caught sight of some, the same ones [Messerschmitts] I guessed, behind us and off to our right already above us and turning in our direction but out of range and still climbing. They knew though, as we did, that it was all over for us and they went on to strike someone else. I swung my turret to the left as quickly as I could, and saw other planes of our squadron and group, some smoking and tumbling out of control, one disappeared in a red ball of fire.” I continued turning and searching the sky for more, none appeared and Bob called, “Prepare to bail out,” we were going down fast. I unplugged oxygen and heated suit and intercom, climbed down to the flight deck, found my chest-pack chute and snapped the two snaps to my harness—I was ready to go. I wondered if my chute would still work after being thrown and kicked around for months. It was unreal, I’d never thought I would need it.¹⁹

I went down onto the catwalk of the forward bomb bay, the bombs still hung there, no wonder we were going down so fast. We were still carrying our full load of bombs. I managed to open the bomb bay doors about half way with the manual control located by the catwalk in the forward bomb bay. I saw Dixon coming back from the nose section, blood was pouring from his forehead and face, streaming down his chest. Behind him came Deane [Manning], being helped along by the substitute navigator who seemed to be all right, but Deane’s right ankle had been shattered by a 20mm shell. Dixon’s face and forehead were full of glass fragments from the “bullet proof” glass in the nose turret. A cannon shell had barely penetrated it and he said later that it landed (the shell) smoking in his lap. None of the glass had penetrated deeply and his eyes were not hurt, but pieces of glass came out of his forehead and face for months.²⁰

Deane’s leg had a tourniquet to stop the bleeding and he’d been given a shot of morphine from the first-aid kit and he gave me a grin as I fell backward through the open bomb bay door and out of their way.²¹

The other crewmen exited the Mama and managed to land alive, but not uninjured on the Austrian turf below. Manning was



Before the Regensburg mission, 449th Bomb Group Liberators hit targets in Italy in support of Allied troops battling the Germans in Italy. (Air Force photo.)

hospitalized by the Germans, treated and repatriated a few months later. Blake was injured when he landed. His parachute caught a tree branch and slammed him into the trunk of the tree injuring his leg, back and head..

After their capture they were placed under guard on a civilian railroad train heading toward Germany. The train stopped in villages along the way, loading and unloading passengers. At the first stop, a Luftwaffe pilot boarded the train carrying his loose parachute bundled in his arms. Allison recalled that, “He wasn’t exactly friendly, but he wasn’t angry or hostile like some officers that we’d run into later. He was resigned and philosophic. He had been at war so long that he was used to it.

‘I shoot you down, you shoot me down,’ he said. He spoke very good English and wasn’t at all reluctant to talk to us about himself. We learned that he was from the yellow-nosed bunch and he admitted that a B-24 had got him and that he was lucky to be alive. He seemed tired and soon closed his eyes and rested.”²²

As it turned out this was the pilot that had shot them down. Pilot Bob Bird returned to Austria in 1982 and 1984 to locate the site where “Pistol Packin Mama” crashed and the site of his capture. He was successful and the friendly local Austrians feted him and in 1984 arranged a meeting with the German pilot. It was one and the same pilot they had met on the train, Helmut Beckmann. This incident was verified by an Austrian teacher and researcher who investigated and maintained records of World War II air battles. He discovered in a history of the 27th Jagdgeschwader (JG-27), which included an account of the air battle on February 22. Indeed, German fighter pilot Helmut Beckmann was responsible for shooting down Bird and crew and in turn had been shot down by Bird’s crew, and probably nose gunner, Jack Dixon. The account of the air battle in the JG-27 history even included Beckmann’s meeting a Liberator crew on a train as he returned to his base. In the course of the war, Beckmann had downed 15 Allied aircraft and he had been shot down four times. Beckmann after the war became a Baptist minister serving in Lunen, Germany.



Nose art. (Above) B-24H, "Sophisticated Lady." (Provided provided by Cynthia Fugure, 449th Bomb Group Association.) (Below) "Pistol Packin' Mama."



Three days later another Regensburg was laid on. Second Lieutenant Gil Bradley's crew was assigned to the mission.²³ Since their own "Pistol Packin' Mama" had been lost on the 22nd, they were assigned to fly Bird's "Sophisticated Lady." Having lost their co-pilot, Anson F. Hughes, from Bird's crew, substituted for Philip Sheridan. Bradley's crew flying Sophisticated "Lady" was one of twenty-four B-24s put up by the 449th Group as part of another raid on the Messerschmidt factory at Regensburg, Germany on February 25. Approaching the target Bradley recalled

that "the air space literally filled with aircraft, both American bombers and German fighters."²⁴

Flak was extremely heavy with B-24s, smoking, flaming, disintegrating and plunging earthward. Flak hit the "Lady" and knocked out the number two engine, reducing its speed and causing it to fall back behind the formation. The "Lady," was alone except for another B-24, the "Heavenly Body," flown by Bradley's best friend, Lieutenant Ed Drinan. Drinan queried his crew about staying with the "Sophisticated Lady." Every crewman agreed to

staying with the foundering “Lady.” Their guns could aid in her defense, maybe she could get home. This was against standing orders. Bombers were not to leave the formation voluntarily.

Despite Heavenly Body’s additional guns, the “Lady” staggered and slowed under the German onslaught. Smelling blood, the German fighters moved in for the kill. They lined-up awaiting their turn to make attack runs and came at the “Lady” from front and rear. Left waist gunner, Paul Biggart was killed after a 20 mm shell slammed into him. Before this, however, he had personally dispatched four German fighters. Pilots Bradley and Hughes held a steady course despite 20 mm shells smashing into the nose and cockpit. The gunners heroically battled the Luftwaffe fighters and a number went down.

Drinan swung his bomber back and forth covering the “Sophisticated Lady.” Under constant attack the Lady’s hydraulic, electrical, and communications system were shot out. When a third engine was blasted out by German bullets and shells, the crew had no choice but to bail out. The “Sophisticated Lady,” fighting to the end, then plunged into the snow-covered Yugoslavian Alps. Drinan circled overhead until Bradley’s B-24 crashed and exploded.

Gil Bradley’s crew, except for Biggart, survived the fight and bailout. Because of their heroic fight, bolstered by Drinan’s crew, they had made it out of Austria and into occupied Yugoslavia where they were rescued by Tito’s Yugoslavian partisans. The partisans led the American fliers on an epic, frigid and grueling 39-day journey, moving at night to avoid detection, through snowy and rugged mountains to get to an airfield where an American transport aircraft picked them up. They were returned six weeks after their bailout to the Fifteenth Air Force Headquarters in Bari, Italy. Each member of Bradley’s crew was awarded the Distinguished Flying Cross. The crew was credited with destroying 15 enemy fighters in the fight over Regensburg. Ed Drinan received the Silver Star for his selfless and heroic efforts to save Bradley’s crew and aircraft while each member of the Heavenly Body received the Distinguished Flying Cross.

Both of these B-24 “Lady’s” went down within three days of each other. Remarkably there was only one man killed out of the 20 that manned these two bombers. The two B-24s and their crews went down fighting. This attests to the skill and bravery of the crews and is a microcosmic view of the USAAF in World War II. ■

NOTES

1. Information on Anzio comes from, Albert F. Simpson, “Anzio,” in Wesley Frank Craven and John Lea Cate, eds. *The Army Air Forces in World War II*, Vol III, pp. 343-60.
2. Oscar Allison, “Memoirs of World War II,” unpublished ms, 1973, in possession author, Katy, TX; hereafter Allison.
3. Allison.
4. Allison.
5. Allison; G.F. Bradley, “The Crew of “Pistol Packin’ Mama’ Lays That Pistol Down,” *Journal of Arizona History* 36, no. 4, (Winter 1995), 355.
6. Information on Operation Argument and The Big Week come from: Walter J. Boyne, “Forceful Argument,” *Air Force Magazine*, August 2008. <https://www.airforcemag.com/article/1208argument/>, accessed January 9, 2021 and Arthur B. Ferguson, “Big Week,” in the Wesley Frank Craven and James Lea Cate, eds., *Army Air Forces in World War II*, Vol. III, (Wash., D.C.: Office of Air Force History, 1983), pp. 33-39.
7. Excel spreadsheet of U.S. Army Air Forces losses February 22, 1944 comes from the Army Air Corps Museum and was provided in an email dtd December 30, 2021, to the author by Austria researcher Christian Arzberger
8. This number of German fighters shot down no doubt is exaggerated. Historians have determined that aircrew claims were far above what were actually lost. This was due to the dynamic and complex nature of air combat with many aircraft twisting, turning, in the battlespace. Pilots and crewman were hard pressed recalling what actually happened. Craven and Cate, vol II, pp. xi-xii; Dr. Silvano Wueschner, “Operation Argument (‘Big Week’): The Beginning of the End for the German Luftwaffe,” <https://www.maxwell.af.mil/News/Display/Article/1754049/operation-argument-big-week-the-beginning-of-the-end-of-the-german-luftwaffe/> accessed March 6, 2021; Damon Turner, *Tucson to Grottaglie*, Book 1, p. 22.
9. Some sources say 342 bombers were over target that day, Ferguson in Craven and Cate however, is used here.
10. Allison; Both Bird’s and Manning’s account of the fight and shoot down are in Damon Turner, *From Tucson to Grottaglie: A History of the 449th Bomb Group, Book II* (449th Bomb Group Association, 1985), pp. 17-22. Hereafter, “Manning,” or “Bird.”
11. War Diary, 716th Bomb Sq (H), 22 February 1944, AFHRA,

Montgomery, Ala.

12. Allison.

13. Manning.

14. Allison.

15. Don Lapham’s diary cited in Damon Turner, *From Tucson to Grottaglie: A History of the 449th Bomb Group*, Book II (449th Bomb Group Association, 1985), pp. 3-4. The plane would have banked sharply from the effect of suddenly losing both engines on the right wing. It became the dead wing while the two engines on the left wing continued to roar at full speed. The left wing would have sharply risen causing a sharp turn into the dead right wing. Certainly a dangerous situation if immediate action was not taken. Pilot Bird’s and co-pilot Sheridan’s airmanship in controlling the Liberator is certainly to be commended here.

16. Manning; Allison.

17. The intercom had been shot out, therefore pilot Bird could not give the crew the bail-out order, although he had told the crew earlier to “prepare to bail-out” as Allison recalled.

18. Manning.

19. Allison.

20. Allison.

21. Allison.

22. An account of Bird’s visit to Austria and Germany that details this meeting with Beckmann can be found in, Robert P. Bird, “We Meet With Our Opponents,” in Damon Turner, *Tucson to Grottaglie: A History of the 449th Bomb Group*, Book II (449th Bomb Group Association, 1985), pp. 49-50; Allison; Ann and Bob Bird to Friends, letter dtd December 1984, copy in author’s possession, Katy, TX.

23. Most of the information on the February 25, Regensburg mission comes from Bradley, “The Crew of ‘Pistol Packin’ Mama’ Lays That Pistol Down,” *Journal of Arizona History* 36, no. 4, (Winter 1995): 351-366 and Gil Bradley, “Tribute to Ed Drinan, Bradley Tells of Epic Battle,” *This is Our Story, Book II of Tucson to Grottaglie*, by members of the 449th Bomb Group Association (449th Bomb Group Association, 1985), p. 124.

24. Bradley, “The Crew of ‘Pistol Packin’ Mama’ Lays That Pistol Down,” *Journal of Arizona History* 36, no. 4, (Winter 1995), 356.

THE WORLD FLIGHT AND MILITARY AVIATION IN THE 1920S



The World Fliers at Sand Point, Washington, before the World Flight. (Left to Right) Arthur Turner, Henry Ogden, Leslie Arnold, Leigh Wade, Lowell Smith, Frederick Martin & Alva Harvey posed for history. Erik H. Nelson and Jack Harding were absent; Turner did not fly. (Photo from special collections, Museum of History & Industry, Smithsonian Institution.)

William P. Head

In an age which began with the Wright Brothers completing the first powered aircraft flight on December 17, 1903 at Kill Devil Hill near Kitty Hawk, North Carolina and culminated with Charles Lindbergh's non-stop solo flight across the Atlantic in May 1927, military aviation, especially in the Army would evolve from a single Wright Flier to the Air Corps Act of July 2, 1926, which made the Army's air arm a co-equal branch with the cavalry, infantry, artillery, and other key corps components of the U.S. Army. While this did not satisfy advocates of a separate service, it proved to be a major step in that direction and allowed its first commander, General Mason M. Patrick, to continue his program of proving the value of airpower as a striking force rather than just an auxiliary service. In fact, the Act proved to be a major step in salvaging U.S. military aviation, which had fallen far behind European states after World War I.¹

While many men were to play a key role in the creation of what became first the Air Corps, then the Army Air Forces in World War II, and ultimately, the U.S. Air Force on September 18, 1947, the most famous was Brigadier General William B. "Billy" Mitchell whose writings, speeches, and aerial demonstrations awakened the American public to the vital nature of airpower. Even so, Mitchell's zeal angered leadership and found him out of the picture when the time came to push for a new Army Air Corps. Instead, it was the steadying hand of the Air Service commander, Mason M. Patrick, which opened the door to the establishment of the Air Corps and its eventual evolution into the United States Army Air Forces, which contributed mightily to the Allied victory in World War II.

Ultimately, it was Patrick's actions and those of his "boys" which demonstrated the voracity of his concepts and his words. One of the most dramatic achievements that Patrick led to fruition was the Around-the-World Flight by eight brave and daring airmen who risked everything to prove flying around the world was not only possible but socially, militarily, and economically important.²

Mason Patrick The Airmen's Airman

Mason M. Patrick was born on December 13, 1863 in Lewisburg, West Virginia and graduated second in his West Point class of 1886, which included such luminaries as John J. Pershing. In 1916, as a colonel, he led the First Regiment of Engineers during the Punitive Expedition into Mexico. In 1917, when the U. S. entered World War I, Patrick went to Europe as a brigadier general overseeing the construction of the ports, railroads, depots, and airfields needed to support the American Expeditionary Forces.³

On May 10, 1918, Pershing asked him to assume command of the Air Service to quell differences between Air Service



Sand Point, Washington in the 1920s.

leadership on how to employ the U.S. Army's air arm. "Black Jack" believed Patrick's organizational and administrative skills would create an effective unit. Patrick immediately instituted commonsense policies that, by the end of the war, had built an effective, combat-ready group. After the war, he supervised the demobilization of the Air Service combat units and returned to the Corps of Engineers, planning to finish his career as the commander of the Army's engineering school.

By 1921, the Air Service budget had been cut by 60 percent, and it had fallen into disrepair. The officer corps shrank from 2,219 in 1919 to 950 in 1921. While Billy Mitchell successfully demonstrated that aircraft could destroy ships, his strident public declarations created resentment among senior Army and Navy leaders, damaging the Air Service's reputation. Unable to diffuse Mitchell's outbursts, Air Service Chief Charles Menoher was forced to resign. The War Department asked Patrick to "come in and shake the foolishness out of this new service and sit on the lid." From the outset, Patrick understood how much the budget cuts were impeding the Air Service's mission.⁴

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During the 1923 Congressional hearings, Patrick declared that the Air Service was "practically demobilized and unable to play its part in any national emergency with its present inadequate strength and organization." He highlighted issues such as the lack of pilots and how outdated their aircraft were. They had a meager 3,369 aircraft, with only 910 airworthy. Worse, aircraft design advances in Europe made Air Service aircraft obsolete. Patrick worked tirelessly to add personnel to the Air Service, especially trained pilots. He also seized every chance to upgrade equipment.

Patrick also determined to learn to fly in order to gain the respect of his men. At the age of 59, Patrick had Maj. (later Maj. Gen.) Herbert A. "Bert" Dargue teach him to fly so he could earn his pilot's wings. He often flew to demonstrate his confidence in the Air Service's equipment and personnel. Even though he had previously opposed an independent Air Service, he changed his mind after realizing the principles of war never change; the technology does. He studied the theories of aerial warfare, concluding that military aircraft were most effective on the offensive. He decided military aviation was comprised of two spheres — the Air Service, which supported ground troops, undertook reconnaissance, and targeted artillery; and the Air Force whose missions were pursuit, bombing, and other offensive roles. Since this second function did not require coordination with ground units, Patrick stated they should not be part of the Army. The General urged his senior staff to lobby for a separate service. He wrote articles intended for military personnel and lectured at the War and Staff Colleges. Unlike Mitchell, he demonstrated the virtues of military aviation without alienating leadership. Using his political skills, he gradually worked for autonomy. In spite of Patrick's efforts, Billy Mitchell's public criticisms of Army and Navy leaders led to the latter's court martial in 1925. While Patrick could not risk publicly supporting Mitchell, he privately directed his executive officer, Ira Eaker, to provide Mitchell's defense team with any Air Service files it might need.

Even as the drama surrounding Mitchell played out, Patrick and his airmen undertook the aforementioned "Around-the-World flight" which proved to be, not only the first circumnavigation of the world by military aviators, but any aviators. Patrick not only approved the idea but instantly understood the potentially positive publicity which could be derived. He oversaw planning the route and was there as the remaining crew members returned home. Flying four Douglas World Cruisers, they went from west to east taking 175 days, from April 6 to September 28, 1924, to travel 26,343 miles. During the trip from Seattle, Washington and back, they faced difficult conditions that caused two of the four aircraft not to complete the flight. When they arrived home, they were welcomed by President Calvin Coolidge, General Patrick, and crowds of thousands of cheering citizens.

In January 1926, Patrick crafted what would become a bill designed to provide the Air Service limited autonomy, similar to that of the Marine Corps. In June, following several amendments and much debate, Congress passed the



Maj. Gen. Mason Patrick, Air Corps Chief. Patrick, learned to fly because as he declared, "airmen should be led by an Airman."

Army Air Corps Act of 1926 and the President signed it. The new designation reflected the Corps' independence. In addition, it was the basis for a five-year expansion plan of personnel and equipment as well as a remodeled contracting system providing for collaboration between the Corps and industry. Many airmen had sought total independence, but Patrick believed that half a loaf was better than none. He knew this was the first step toward full autonomy.⁵

Background: The World Flight

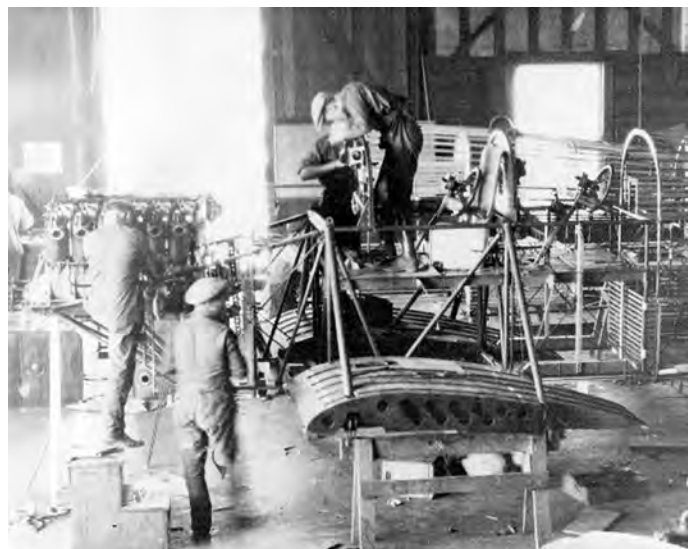
Among the many achievements made by Patrick and his intrepid airmen, the crowning jewel proved to be the daring around-the-world flight. As noted, it began on 6 April 1924, when eight U.S. Army Air Service pilots and mechanics, in four airplanes left Seattle, Washington, to be the first to circle the globe in airplanes. Six months later, they completed the journey having made 76 stops and covered 26,343 grueling miles. While it was part of a peaceful competition, it had an aura of military power about it. The Americans were by no means the only nation attempting such a challenging adventure. During the 1920s, fliers from many countries would attempt this perilous feat. In 1922, British crews made, the first of multiple unsuccessful attempts. The following year aviators from Italy, France, Portugal, and Great Britain announced they were planning to fly around the world. It was at this time that, Patrick and his people began to become interested in making an attempt. One big advantage they had was that this major Army effort was commanded by Gen. Patrick and underwritten by the War Department. It was supported by the



Crew members prior to the World Flight. L-R: Jack Harding, Erik Nelson, Leigh Wade, Fred Martin, Leslie Arnold, Lowell Smith, and Le Clair Schulze, who did not fly (*NASM*)

Navy, State Department, Bureau of Fisheries, and Coast Guard.⁶

Initially, War Department leaders directed the Air Service to see if the Fokker T-2 or Davis-Douglas Cloudster would suit their needs. Soon, as members of the planning group began mapping out the details of the World Flight, they realized neither of these aircraft were completely satisfactory. In fact, no existing military aircraft, then in service, had precisely what was required to successfully undertake the expedition. After due consideration, they decided to see if Douglas aircraft company might build what they needed. Thus, to solve their question of what airplane to use, they got officials to contract with Donald Douglas' company to develop a modified DT-2 torpedo bomber the company had produced for the U.S. Navy in 1921 and upgraded in 1922. Douglas agreed to deliver the planes within 45 days. To oversee the project, Lt. Erik Nelson, part of the planning council, was dispatched to California to



Building the Cruisers.



Lowell Smith before the flight.

work with Douglas' technicians and mechanics. The most important change to the DT-2 was the removal of the plane's internal bombing apparatuses, which were replaced by additional fuel capacity.

Based on Nelson's report to Patrick on August 1, 1923, the War Department contracted for a prototype that performed beyond expectations. This led to a production contract by which the company delivered four additional modified aircraft. These were prepared for the Flight, itself, while the prototype was used for testing, training, and backup. The last production aircraft arrived on March 11, 1924. The Air Service team also received 15 extra Liberty engines, 14 additional pontoons, and enough spare parts to construct two more planes.

The aircraft were built of Sitka Spruce lumber harvested from the coastal forests in the Pacific Northwest and had interchangeable landing gears, one for water landings and one for landing on runways. This was something that took a great deal of consideration. Many of the aviators from other nations overlooked this significant feature. People like Nelson urged this adaptable component. Considering that, in 1924, the vast majority of the world did not have adequate airfields, planners realized water landings would be essential. This element proved to be vital for success.⁷

Once the aircraft were completed, officials named them after U.S. cities and assigned each a number. These included the: *Seattle* (1), *Chicago* (2), *Boston* (3), and *New Orleans* (4). Ultimately, they flew over the Pacific, Indian, and Atlantic oceans and encountered climate extremes from



The Douglas Cruisers at Clover Field in Santa Monica.

arctic weather and icebergs to deserts and tropical rainforests. Only the *Chicago*, flown by Lieutenants Lowell Smith and Leslie Arnold, and the *New Orleans*, flown by Lieutenants Erik Nelson and John Harding Jr., would complete the entire journey.

From the beginning, the main goal of the World Flight proved to be the testing and evaluation of aviation technology to discover if it had the ability to become a worldwide military and commercial instrument. Patrick and his advisers postulated that operating the World Cruisers in extreme environments would assess their practicality and showcase America's aeronautical industry. Political leaders also hoped that, like the Great White Fleet did, during Teddy Roosevelt's day, this circumnavigation might join the world together through air routes and could foster better international relations by encouraging commercial cooperation. Patrick believed it would also create popular support for the Army Air Service and his goal of expanding its role within the U.S. military establishment.⁸

While Douglas modified the aircraft, the crew members made practice flights aboard the prototype until the production models were ready. During this time, they worked to develop and improve their navigation, and meteorological skills at Langley Field in Virginia. Since the aircraft would not have radios, radar, or avionics instruments of any kind they had to also hone their dead reckoning abilities. The only way they would be able to communicate would be by message bag drops and hand signals. They spent February and March 1924, at the Douglas facilities in Santa Monica and San Diego familiarizing themselves with the specific airplane in which they would be flying.⁹

Obviously, even in the 21st Century, the flight of the Douglas World Cruisers would have been a daunting undertaking. Fortunately, in 1924, planners had the good sense to sweat the details. Indeed, they engaged with their fellow U.S. Army Air Service compatriots, as well as key members of the U.S. Navy, Coast Guard, and Bureau of Fisheries, who shared the essential task of creating remote supply and repair depots and providing assistance on the open seas. Thousands of gallons of fuel and oil, 35 replacement engines, and numerous spare parts had to be distributed across the globe, including places where airplanes had



Crew members pose in front of the Chicago before the World Flight.

never flown before. To keep their airplanes light enough to get aloft, the fliers could only carry 300 pounds of supplies in each aircraft. They had to make tough decisions about what to include. Among the most draconian equipment omissions was their decision not to take parachutes or life preservers.

Planning had begun, in the spring of 1923, as soon as Patrick and Mitchell approved the World Flight. It fell to Major (later General) Augustine Warner Robins, commander of Fairfield Air Intermediate Depot (FAID) from 1921 to 1927, to support the ambitious flight. During Robins' tenure, Air Service military fliers, civilian mechanics, and logisticians had flown from California to Hawaii, held airshows, created a state-of-the-art parts/supply and maintenance/repair center that would grow to support the world's largest air force in World War II.¹⁰

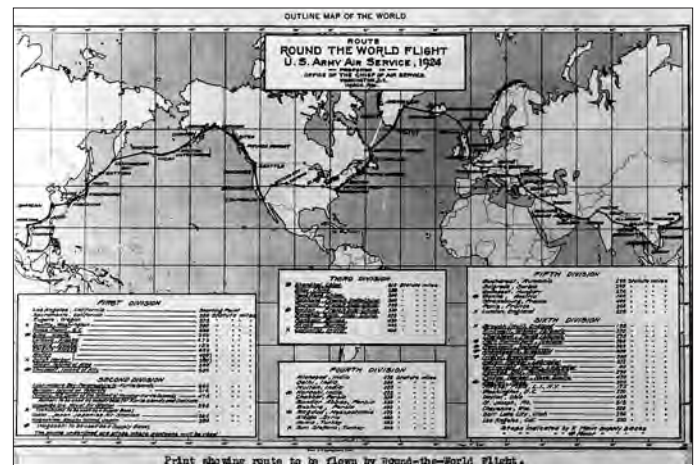
The lead planner was Major Elmer E. Adler, chief of the newly created Field Service Section (FSS), Materiel Division, Fairfield Air Depot, near Dayton, Ohio. Adler and his planning team selected the eventual route to, as much as possible, avoid bad weather conditions. In turn, it required Major George H. Brett's team, specifically Lieutenants Clifford Nutt and Clarence E. Crumrine, to survey potential sites in the Philippines, Iceland, Greenland, England, France, Alaska, India, Japan, and China. This critical part of preparations began in the summer of 1923 and, by the first days of 1924, the around-the-world flight itinerary and its six overseas and one U.S. supply regions had been established. They also created a series of support depots that eventually involved five of these same divisions.

Under the initial plan, the First Division, under 1st Lt. Clayton Bissell, was to support the flight from its point of origin in Seattle, Washington for 3,290 statute miles, across British Columbia, Canada, and Alaska to Chicagoff, Attu Island, Alaska. From Alaska, the airmen of the Second Division commanded by Nutt, assume charge of the flight. Plans called for this unit to sustain the mission for 2,980 statute miles across the northern Pacific, the Kurile Islands, and on to Kagoshima [today Nagasaki], Kyushu, Japan.

Plans called for the Third Division, under First Lieu-



The Cockpit of a Douglas Cruiser.



The planned routes to be flown by the World Flight crews.

tenant Malcolm S. Lawton, to sustain the fliers for the 4,860 statute miles, from Nagasaki, Japan to Shanghai, China, flying across east and Southeast Asia, eventually to Calcutta, India. At that point, members of Division Three passed along support and maintenance responsibilities to their colleagues in the Fourth Division. This unit was commanded by 1st Lt. Harry A. Halverson. They afforded logistics support for the flight for more than 4,355 statute miles, from India to San Stefano, Turkey. At this point, if they made it, they would already have flown farther than any other pilots in history. Yet, they would still be facing the most difficult part of the journey; crossing the North Atlantic.¹¹

The Fifth Division, under Major Carlyle H. Wash, was to assume responsibility for the crews in Turkey and support them for 1,815 statute miles, through the Balkans and Europe to London, England. The next leg of the journey fell to the Sixth Division, under the direction of 1st Lt. Crumrine. They supported the flight for 4,636 statute miles, across the North Atlantic to Washington, D.C., with stops in Iceland, Greenland, Newfoundland, Boston, and Long Island. The final leg of the trip was from Washington D.C. back to Seattle and was supported by various stateside Air

Service installations, such as FAID, and stretched across the final 3,000 miles.¹²

Ultimately, the actual plan they used was as follows:

Division 1— Seattle, Washington, to Attu, Aleutian Islands (April 6 to May 14)

Division 2— Attu, Aleutian Islands, to Kagoshima, Japan (May 15 to June 3)

Division 3— Kagoshima, Japan, to Calcutta, India (June 4 to 30)

Division 4— Calcutta, India, to Constantinople, Turkey (July 1 to 11)

Division 5— Constantinople, Turkey, to London, England (July 12 to 16)

Division 6— London, England, to Boston, Massachusetts (July 17 to Sept 7)

Division 7— Across the United States (Sept 8 to 28).¹³

Those in FSS were responsible for procuring, crating/packing, and distributing all spares, fuel, oil, lubricants, equipment, and other supplies to all the worldwide locations. As famed news reporter Lowell Thomas writes in his book on the flight:¹⁴

Spare parts for planes and engines, a fairly complete outfit of tools, small quantities of standard utility parts, and material, such as tubing, shock-absorber cord, plywood, and items other than spare parts, were sent to each station on the route of the Flight. The spare parts and tools were packed in specifically constructed boxes designed at the Fairfield Depot and built in the repair shop.

The boxes themselves were constructed of ash, spruce, and plywood so that they might be used for the furnishing of wood for emergency repairs. Carpenter tools for working up the wood were sent in the tool chests.

Thomas' detailed description of the process went on to describe just how well thought-out the planning had been:¹⁵

Tubing and other items which could not readily be bent were packed with the propellers in lengths of six feet or more. The weight, cubic contents, and dimensions of every article were carefully considered, about four hundred and eighty separate items being sent to each station, so arranged that the Fliers could find spare parts or repair material even in the dark. On the outside of each crate a diagram showed exactly where each item was located inside.

A complex maintenance schedule had to be drawn up for periodic repair of each plane's engine and structure. A set of essential tools, such as pliers, screwdrivers, hammers, wrenches, and flashlights, as well as emergency survival supplies were kept in each aircraft. Other items included two rifles, two automatic pistols, a flare gun and flares, fishing lines and hooks, concentrated food, first-aid kit, a 60-pound anchor, and 150 feet of rope. No parachutes, life-preservers, or rafts were carried, in order to lighten the load. Each man had an 11-pound fur-lined leather suit, fur-



Placing canvass on the Douglas aircrafts' wooden frame.

lined leather gloves, two changes of underwear, two flannel shirts, two pairs of long wool socks, a pair of hunting boots, a cap, handkerchiefs, waterproof matchboxes, a safety razor, and a toothbrush.

The aircraft selected for the journey, at the recommendation of the Materiel Division's Engineering Department, were the aforementioned modified versions of the Douglas Airplane Company's new DT-2 single-engine tractor-type two-place biplane. Designed for easy conversion to land on land or water, it was perfect for the Army's purposes. The fuselage was made of steel tubing covered with fabric, was built in three sections, and had an aluminum-sheet cowling. The wings, also made of steel and cloth, had wooden box beams and built-up ribs. They were tightly braced. The length was 35 feet, 6 inches, the wingspan was 50 feet, and the height was 13 feet, 7 ½ inches. As noted, each plane's undercarriage was rigged to use either fixed-wheel landing gears for runways or pontoons for water landings. When configured as a land-based craft, each weighed 4,380 pounds empty and 5,180 loaded. When configured as a sea-plane, each weighed 6,915 pounds empty and 7,715 loaded. As a land-based aircraft, its maximum speed was 104 miles per hour, cruising speed 90 miles per hour, with a ceiling of 500 feet, and a range of 2,000 miles. As a water-based aircraft, its relative specifications were 100 miles per hour, 85 miles per hour cruising speed, 500 feet altitude, with a 1,650 mile range. Their engines were Liberty water-cooled V12 400-420-horsepower with fixed-pitch wooden propellers. Each one carried 644 gallons of fuel.¹⁶

While four planes were selected for the journey, the prototype was to act as a backup. The starting point was Lake Washington, Seattle, Washington. Here the crews, who had received a six-week special course of training at Langley Field, Virginia, gathered along with their aircraft. The final crews and planes were organized into two-man teams. The *Seattle*, or number 1, was manned by pilot Maj. Frederick L. Martin (1882-1954) and flight mechanic Sgt. Alva L. Harvey (1900-1992). The *Chicago*, or number 2, crew was comprised of pilot Lt. Lowell H. Smith (1892-1945) and co-pilot Lt. Leslie P. Arnold (1893-1961). The



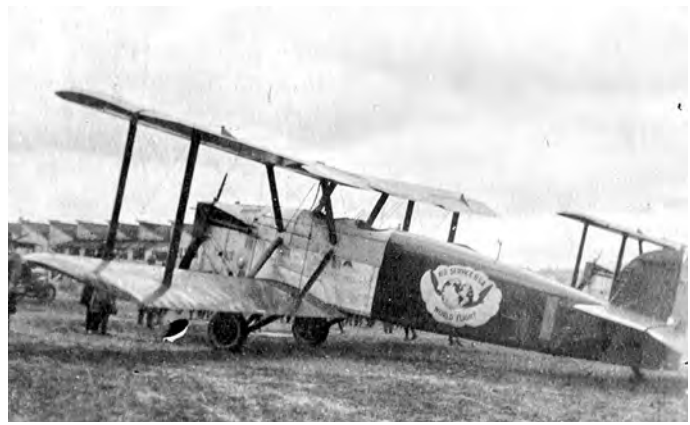
One of many crowds to wish the World Fliers well.

Boston, or number 3, crew was made up of pilot Lt. Leigh P. Wade (1897-1991) and flight mechanic SSgt. Henry H. Ogden (1900-1986). Last, but not least, the *New Orleans*, or number 4, was crewed by pilot Lt. Erik H. Nelson (1888-1970) and co-pilot Lt. John Harding, Jr. (1896-1968). Arnold was added to the expedition only four days before it began due to the illness of Sgt. Arthur Turner.¹⁷

The Flight Itself

On March 17, 1924, three of the Douglas World Cruisers – the *Seattle*, *Chicago*, and *Boston* departed from the company's site at Santa Monica, California headed for Seattle. They landed at the Vancouver Barracks Aerodrome (later Pearson Field), Washington across the Columbia River from Portland, Oregon. As Major Martin recalled, “the flight arrived at Vancouver, Washington at 1205 hours. The flying time was one hour and five minutes. Vancouver is directly across the Columbia River from Portland. We were met by the mayor of Portland, the mayor of Vancouver, General Kuhn, the Commanding General of Vancouver Barracks, and many other prominent people in addition to a large crowd from Portland and Vancouver.”¹⁸

Two days later, they attempted to rendezvous with the *New Orleans* in Seattle but were turned back by bad weather. Finally, they arrived on April 4. There they made final preparations for their perilous mission. Original crew member Arthur Turner had to be left behind due a severe illness. When the World Flight officially began at 0847 hours on the morning of April 6, it departed from Seattle, as scheduled, and flew up the coast of Canada to Alaska, where, according to Leslie Arnold, they encountered “bit-terly frigid temperatures, thick and capricious fog, and precipitously fierce storms.” He went on to write, “In Alaska's Aleutian Islands, the fliers encountered williwaws or woolies—sudden, strong, destructive winds up to 75 miles per hour that rushed down from the mountains.” Lt. Leigh Wade echoed these observations when he recalled that, “The hop from Sitka to Seward was to prove worse than anything we had so far experienced.”¹⁹ Wade would later observe, “When we took off from Seattle's Lake Washington



The *Seattle* at Vancouver Barracks (National Park Service.)

this morning to try to be the first around-the-world by air, the betting was that not one of the single-engine, two-place open cockpit planes would make it all the way. As one of the pilots for this vanguard adventure, a friend told me I was crazy: ‘You might as well crook your toe in a trigger and get it over with!’²⁰

From the very outset, the World Flight quickly ran into colder weather that proved to be only prelude to severe conditions they would experience as they flew from Canada to Alaska, where the temperatures became increasingly colder and the fog was like pea soup. This was bad enough but they also realized that plans called for them to soon cross the Pacific Ocean from the Aleutian Islands to the Soviet Union's Komandorski Islands.

Their departure took place 13 days after Archibald Stuart Charles Stuart-MacLaren left England flying east, instead of west, like the Americans. During the long flight, they passed French contender, Capt. Peltzer D'oisie, on June 7, between Shanghai and Tchin Koen Basy; three weeks later, they passed Capt. Stuart-MacLaren, near Akyab, Burma; and finally, they passed the Italian entrants while crossing the Atlantic in Iceland. All of these competitors were delayed or thwarted by mechanical malfunctions, or bad weather which caused them to crash. These incidents only pointed out how dangerous the trip was and what a remarkable achievement the aviators would eventually realize.²¹

Throughout the expedition, in order to assure the safety of the crews, the planes were accompanied by U.S. Navy ships, such as USS *Richmond*. Even so, the hazards were abundantly apparent. Indeed, these ships rescued other aviators and even provided Stuart-MacLaren with a new aircraft during this time. On April 15, shortly after leaving Prince Rupert Island on the first leg of the trip, Major Martin and Sargent Harvey blew a three-inch hole in the *Seattle's* crankcase and had to make an emergency landing on Portage Bay. Support personnel were able to provide them with a replacement engine and, on April 25, they took off for Dutch Harbor, where the other three aircraft were waiting.

Soon they were engulfed in dense fog and a snowstorm between Dutch Harbor and Chigmik, Alaska. On April 30, unable to navigate by dead reckoning, they crashed into a mountainside near Port Moller on the Alaskan Peninsula.



The *New Orleans* fitted with pontoons.

The airplane was a complete loss, and the fliers were left to face the bitter weather for six days before locating an abandoned cabin near Moller Bay. After four more harrowing days, they were miraculously rescued, but the *Seattle* was damaged beyond repair and forced out of the expedition.²²

With Lt. Smith now in charge, the flight continued. Bad weather, extreme heat and humidity, and the sometimes reluctant hospitality of their foreign hosts tested both the fliers and their airplanes as they ventured further into Asia in May and June. As mentioned, on May 15, their crossing from the Aleutian Islands to the Soviet Union's Komandorski Islands was the first flight over the Pacific Ocean. They landed even though they had not received official permission to do so. Soviet officials were nowhere near where they landed, and they did not seek them out.

After completing their necessary refueling and maintenance, they departed Siberia and headed toward Japan. The Japanese were enthusiastic about aviation but suspicious of an American military presence, thus, their officials provided the fliers with a circuitous route which avoided flying over military installations. According to the fliers, when they arrived a large crowd, numbering in the thousands, broke out in a massive roar of "Banzai."²³

They arrived in Tokyo in mid-May, and on the 25th, they received a cable saying, "MacLaren crashed at Akyab. Plane completely wrecked. Continuance of flight doubtful."



The *Seattle* wreck site in Alaska.



Martin and Harvey after their rescue in Alaska.

The delay put the British pilot far behind the Air Service fliers. Even so, the Americans arranged for him to obtain a spare aircraft from Tokyo, via Hong Kong, so he might attempt to, at least, finish the circumnavigation.²⁴

For the most part the flight from Korea to China, and on to Vietnam, (then French Indochina) went smoothly. The rivers and harbors of China proved to be chaotic and crowded with sampans and other vessels, but they were able to accommodate the aircraft and served as adequate refueling and repair stops. When they left Haiphong, the *Chicago's* engine snapped a connecting rod and had to land in a lagoon not far from Hue. The jungles of French Indochina tested the fliers as they raced to make repairs to the *Chicago* and stay on schedule. Missionaries in the area provided them with food and wine while the awestruck native peoples climbed onto the aircraft's pontoons. The other two airplanes flew on to Tourane (Da Nang) and retraced their steps in boats, finally, finding their comrades early the next morning. Employing local crews in paddle-powered sampans, they towed the *Chicago* 25 miles back to Hue. The trip took 10 hours and, as soon as they arrived they began the arduous task of replacing the engine with parts sent from Saigon. While in Saigon, the crew members tried to get a warm meal in



The *Chicago* being serviced in a Japanese Army hanger.



The World Fliers in China.

a French-run restaurant. They were refused service since they were not wearing jackets. They detailed their situation and even explained they could borrow their Navy comrades' shirts and trousers but they could not find any uniform coats. The waiter still refused to seat them. The next day, all three aircraft resumed the flight passing over Thailand and on to Burma. As they flew over Akyab, in a torrential rain, they could hear the sounds of what seemed to be another airplane. Indeed, it was Stuart-MacLaren resuming his own flight. They never did see the English pilot.²⁵

The World Flight's journey through the "Far and Middle East" in June and July spanned the tropical jungles of India and the blowing sands of modern-day Iraq and Jordan. They allowed Associated Press reporter Linton Wells to join them for part of the flight. When they arrived in Calcutta, they switched from pontoons to wheels in order to traverse land across south Asia and, then, on to Europe. Near disaster struck on June 29 when Lowell Smith tripped in the dark and broke a rib. Instead of giving up, he insisted on continuing the journey. With their lead pilot guiding them, they arrived in Karachi. The *New Orleans* barely made it experiencing severe engine problems as she limped into the city. It was here the fliers, supported by ground crews, refitted all three planes with new engines. After a brief rest, while the engines were tested, they began their journey across the Middle East and into Europe. By the time they reached Europe, news of their flight had excited the entire population of the continent where ever-larger and more enthusiastic crowds began to greet the fliers. They reached Paris on July 14, 1924, the anniversary of Bastille Day. As if foreshadowing Lindbergh's achievement three years later, massive cheering crowds gathered to salute the fliers as they landed.²⁶

Once they reached the United Kingdom, with Stuart-MacLaren nowhere in sight, they began to prepare for what they all knew would be the most perilous leg of the entire expedition by reattaching their pontoons for their longest, over-water flights while crossing the North Atlantic in August. The Navy stationed a series of ships along the route to rescue the fliers if they had to land in the open ocean where they realized dense fog and sudden storms would very likely prove to be a continual problem.



The World Flight in India.

On 3 August, as they flew from the Orkney Islands to Iceland, the *Boston's* oil pump began to seep oil at an alarming rate. Rather than risk crashing into the icy water, they set down in the choppy seas. The *Chicago* flew on to Faores where they dropped a message bag alerting the USS *Richmond* about the *Boston's* problem. The support craft rushed to the site and rescued the fliers, cold, but unharmed. They then took the aircraft in tow and carefully headed for Faores. As they did, the waves grew higher, and with land in sight, the plane finally capsized and sank.²⁷

The other two aircraft had flown on to Iceland where during an extended stay in Reykjavik, they prepared for the difficult trip on to Greenland. It was here they, quite by chance, ran into Italian aviator Antonio Locatelli and the three members of his crew, who would soon crash off Greenland, while attempting to make the same trip circumnavigation. Realizing the flight from Iceland to Greenland would severely test the pilots' skill and courage, plans called for five U.S. Navy ships, manned by 2,500 sailors, to be placed all along the route. They encountered heavy fog and had to fly very low and close to the waves. Flying at 90 miles per hour with little visibility, they barely avoided hitting towering icebergs. One of the pilots, later, admitted he



Tragedy in the Atlantic as the original *Boston* sinks while being towed.



The *Chicago*, *Boston II*, and *New Orleans* head toward Mitchel Field, Long Island, outside New York City on 8 September 1924.

was “terrified.” Finally, the *Chicago* and *New Orleans* arrived in Fredricksdal, Greenland. After continuing on to the refueling and repair stop at Ivigtut, the remaining crew members had new engines installed for the flight to Canada. In turn, the support ships took the precaution of loading additional supplies and equipment on board to make sure that at this late date, the flight would not fail. Throughout, the pre-flight preparations made by their fellow airmen at McCook Field and Fairfield Depot continued to prove how important logistics and repair skills were for the future of airpower and military aviation.²⁸

When the two planes reached Labrador, Canada, the *Chicago* had to delay while Arnold spent several hours hand-pumping foreign particles out of the fuel pump. From here, they flew on to Pictou, Nova Scotia where the original crew of the *Boston*, Wade and Ogden, joined the others in the prototype now renamed the *Boston II* in order to finish the flight. Their first stop in the United States was, somewhat ironically, in Boston, where the three planes, once again, changed out their pontoons for wheels.²⁹ Next, they landed at Mitchell Field, New York, and, then, on to Bolling Field in the nation’s capital. By the time they reached Washington, D.C., the Cruisers’ crew members had become honest-to-God, red, white, and blue heroes. They were warmly welcomed by President Calvin Coolidge in Wash-



Lt. Wade shows President Coolidge the cockpit of the *Boston II*.



Members of the World Flight with the Secretary of War Weeks, Gen. Patrick and President Coolidge, hands crossed, in the middle

ington, D.C. Normally an austere individual, even the President was gleeful, smiling for the press and newsreel cameras.³⁰

The final leg proved to be a trip across the United States, west through the Alleghenies to Dayton and Chicago, and south to Dallas. Undoubtedly, the most heartfelt salute came when they reached Columbus, Ohio, in mid-September. Here they were joined by a special escort from Wilbur Wright and McCook Fields. The accompanying aircraft included the four-engine Barling Bomber flown by Lt. Harold Harris. Major Robins ordered the words “Welcome World Fliers” painted on the ground next to the Airdrome at Wilbur Wright Field. After an exciting stopover of three days, from September 14-16, they crossed the desert southwest to San Diego. All totaled, they flew across nine states and stopped in fourteen cities. Their triumphant journey up the West Coast culminated in the official conclusion of the World Flight at 1330 hours on September 28, 1924, at Seattle’s Sand Point Field. Finally, they had returned home!³¹

What Did the Flight really achieve?

The results were well worth the effort. Patrick’s conviction that such flights would garner publicity and improve public awareness proved to be correct. Every major newspaper in America and Europe carried headlines for five months noting the progress and ultimate success of the World Flight. In addition, Lowell Thomas’ very popular account, published in 1925, brought aviation, especially Army aviation, to center stage and increased the public’s desire for more such daring feats. This soon manifested itself in the famous October 2-4, 1924, International Air Races held at Wilbur Wright Field and many more flights and air shows throughout the 1920s and 1930s. It also inspired members of Congress to pass the Air Corps Act and create an Army air arm that played a vital role in winning World War II and, eventually, becoming a separate Air Force!



World Fliers with the Secretary of War John W. Weeks and General Patrick.

What Happened to the crew members?

Many honors and awards were showered on the heroic fliers. Congress awarded all six fliers who completed the expedition the Distinguished Service Medal (DSM). It was the first time the medal was awarded for a non-combat achievement. Moreover, they were allowed to receive medals from foreign nations. Smith, Arnold, Wade, Nelson, and Ogden were awarded the 1924 MacKay Trophy for the “best flight accomplishment.”³²

Later, Sgt. Harvey was commissioned, eventually becoming a B-17 test pilot in 1936 and commanding a bomber group in World War II. Along with the DSM, Col. Harvey won for the World Flight, he received two more during the WWII as well as a Silver Star. He retired from the Air Force in 1957 and died on December 1, 1992 in Mt. Vernon Hospital at 92.³³

Martin spent his entire career in the Air Corps/Army Air Forces. Promoted to temporary Major General on October 1, 1940 to command the Hawaiian Air Forces, he was present when Pearl Harbor and Hickam Field were attacked on December 7, 1941. He retired on August 1, 1944 and died on February 23, 1954 at 71.³⁴

Erik Henning Nelson, who had been born in Stockholm, Sweden on June 12, 1888, attained the rank of brigadier general. Nicknamed the “Flying Viking,” he, like his comrades, won numerous medals from other nations. In his case, he won the French Legion of Honor, the Swedish Royal Order of the Sword, and medals from six other nations. In 1928, he went to work for Boeing Airplane Company in Seattle but returned to the AAF, on December 12, 1941 as a lieutenant colonel. Col. Nelson became one of General of the Air Force Henry H. “Hap” Arnold’s key advisers in the development of the B-29 bomber and joined the XX Bomber Command in India in 1944. He reached his general officer rank on October 25, 1945 and retired from the AAF on February 11, 1946. He passed away on May 9, 1970 in Hawaii at 81.³⁵

Lowell Smith, who led the World Flight, from Alaska back home to Seattle, was later promoted to colonel in March 1941. He trained bomber pilots and crews at Davis-

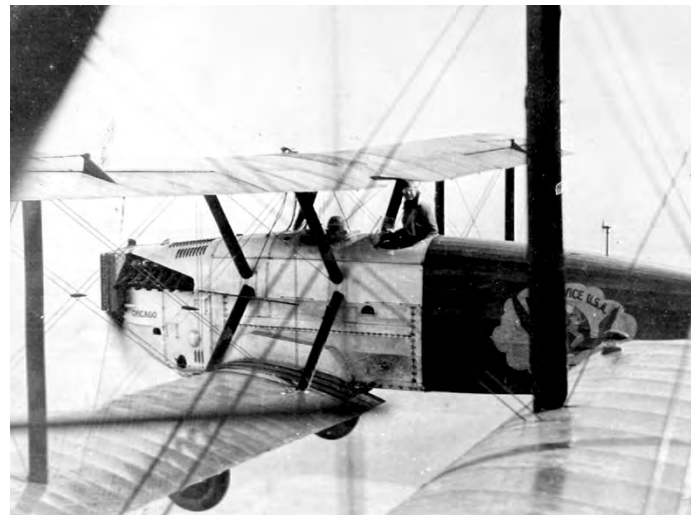


Smith and Wade with British High Commissioner Sir Henry Dobbs in Baghdad.

Monthan Field, Arizona, during World War II, finally becoming the commander of anti-submarine patrols off the South American coast in March 1945. In a cruel irony, he was killed in November 1945 when he was thrown from a horse while riding in Arizona. Fittingly, he was buried at Arlington National Cemetery, Virginia.³⁶

Leslie P. Arnold had already attained fame by the time he joined the World Flight. He barnstormed across the country after World War I, becoming a part of the Army’s Provisional Air Brigade, commanded by Billy Mitchell. He participated in the battleship bombing trials in 1921, which sank the German prize battleship *Ostfriesland*. He joined the Flight only four days before it departed and was co-pilot of the famed *Chicago*. He spent his career as a military aviator and an executive with what became Trans World and Eastern Airlines. He died in 1961.³⁷

Four years following the World Flight, Wade, who kept some of the most detailed accounts of the journey, left the Air Corps and went to work for Consolidated Aircraft. In 1940, at the request of General Arnold, he returned to active duty and served throughout the AAF at the staff and command levels. He even spent time as an attaché. He fi-



Lt. Arnold waving from the *Chicago* while in flight.



The Chicago on display in Pioneers of Flight Gallery at NASM.

nally retired as a major general in 1955 and passed away on August 31, 1991 in Ft. Belvoir, Virginia. He was buried in Arlington Cemetery.³⁸

Henry Ogden retired from the Army in 1926. Along with his brother, Perry, Ogden he established Ogden Aeronautical Company which developed its own tri-motor, passenger airplane. They later formed Ogden Shuttle Airlines, which served California, Nevada, Arizona, and New Mexico. In 1926, he and Leigh Wade attempted to fly to the North Pole but failed. Richard Byrd succeeded. Later, Ogden became vice-president of Lockheed aircraft in charge of servicing until he retired in 1965. He died in California in 1986.³⁹

Following the World Flight, Lt. John Harding joined Lowell Thomas on an extended lecture tour around the nation. After leaving the Air Corps he joined, World War I ace, Eddie Rickenbacker in organizing and running Florida Airways, which specialized in air mail and cargo flights. Throughout his very productive aviation career he employed his mechanical abilities in producing new, often specialized aircraft parts and equipment. In a post-World War II interview he noted that he was “particularly proud” of the unique fuel pump he developed for the B-29. In many ways he was the most well liked member of the team and was often referred to as “Smiling Jack.” He passed away in 1968 at age 71.⁴⁰

What happened to the aircraft?

As for the aircraft themselves, War Department officials sent the *Chicago* to the Smithsonian Institution. On September 25, 1925, it made its final flight from Dayton to Washington, D.C. There it was placed on display at the Arts and Industry Building. In 1974, it was restored and moved to the National Air and Space Museum. In 1957, the *New Orleans* was put on display at the National Museum of the United States Air Force near Dayton, Ohio. It was on loan from the Los Angeles County Museum of Natural History and was returned in 2005. Seven years later, it became part of the displays at the Museum of Flying in Santa Monica, California. Salvage personnel eventually recovered the



The Chicago with wheels.

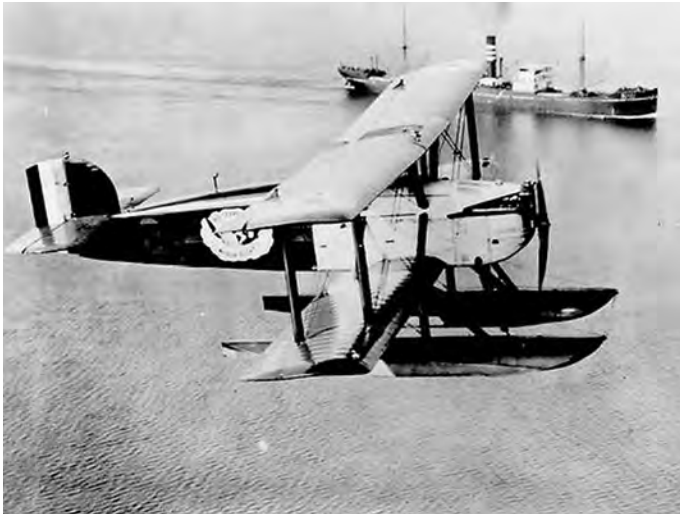
wreckage of the *Seattle*. Today, it is on display at the Alaska Aviation Heritage Museum.⁴¹

Some Concluding Thoughts

Undoubtedly, much of the importance placed on the achievements of the World Flight stem from its sheer difficulty. The ultimate failures of their competitors, to conclude their efforts, accentuated this fact. As alluded to earlier, Stuart-MacLaren, Britain’s hope, crash-landed in the Northern Pacific; the two French pilots experienced the same fate near Shanghai; the two Portuguese fliers’ aircraft broke down in Macao; the two Argentine pilots crash landed in Hanoi; and, last, but not least, Italian Antonio Locatelli went down in the North Atlantic. Clearly, their failures had been due to their lack of planning and the fact they did not make supply arrangements, nor did they have the full support of their nations like Americans enjoyed from the U.S Air Service, Navy, and others. In fact, by the end of 1924, the Air Service held more than 65 percent of the world records for land-based airplanes, as certified by the Federation Aeronautique Internationale.⁴²

One important lesson-learned proved to be the fact that competitions and feats such as the World Flight, advanced aviation through improvements in equipment, techniques, and experience. Throughout the pre-WWII era, these became the only real efforts to advance U.S. military aviation even as the Congress sank into a period of isolationism that reduced military expenditures in the face of the growth of airpower by future enemy foreign powers such as Germany, Italy, and Japan.⁴³

General Patrick retired from the Army on December 12, 1927 and briefly became an advisor to Presidents Herbert Hoover and Franklin D. Roosevelt as well as the Public Utilities Commissioner for the District of Columbia from 1929 to 1933. On January 29, 1942, Patrick died at Walter Reed General Hospital in Washington, D.C and was buried in Arlington National Cemetery two days later. While his service has been obscured by more flamboyant airmen from that time, such as Billy Mitchell, Charles Lindbergh, and Benjamin Foulois, his role as the leader of the Air Serv-



The Chicago flying fitted with pontoons.

ice, even as military aviation fought to find its place in spite of budget restraints and political prejudices, cannot be ig-

nored. Between the wars, while many air power advocates were often too brash, it was through his experience within the political and military halls of power that Mason Patrick helped the Air Service survive and take the first official steps toward being a separate service. Patrick, himself, described his years of service as “the most strenuous, most interesting years” of his life. In so many ways, Patrick’s patience and political shrewdness played a major role in building the foundation for an independent service in September 1947.⁴⁴

Perhaps a less publicized aspect of the great World Flight sums up how the nation viewed it and why it was important. In a telegram to the fliers, New York Senator James Wadsworth declared, “If our hospitality seems ferocious, forgive us because it comes from the heart. You will find as you proceed along the home stretch that these receptions are the first evidence of the feeling that all Americans long to show you. The world never forgets its pathfinders. Those who trod the wilderness and cross the seas filled with dangers are never forgotten by posterity.”⁴⁵ ■



The Original four Douglas Cruisers.

NOTES

1. For a detailed accounts of the first World Flight, see Carroll V. Glines, *Around the World in 175 Days: The First Round-the-World-Flight*, (Washington, D.C., Smithsonian Institute Press, 2001); Glines, “Around the World – Seventy-five years ago this

month, Army Air Service biplanes touched down in Seattle after circumnavigating the Earth,” *Air Force Magazine*, Vol. 82, No. 9, (September 1999), pp. 78-83; “The First Round-the-World-Flight,” *The Air Power Historian*, Vol. 11, No. 2, (April 1964), pp. 45-48.

For more on General Patrick and the role of the maintenance and logistics experts at Fairfield Air Depot, see William P. Head, *Every Inch A Soldier: Augustine Warner Robins and the Building of U.S. Airpower*, (College Station, Texas: Texas A&M University Press, 1995), pp. 94-98. [Hereafter *Every Inch a Soldier*].

2. The main source of all the photographs in this article is the National Air and Space Museum archives, Smithsonian Institution, Washington, D.C. Another major treasure trove resides in R. Ray Ortensie, ed., *A Look Back: First Around-the-World Flight, 6 April – 28 September 1924*, (HQ AFMC History and Heritage Program, no date), [hereafter *A Look Back*]. Ray's excellent publication, which compiled World Flight photographs, is on file at the AFMC Office of History's archives at Wright-Patterson AFB, Ohio.

3. For details on Mason Patrick's life and career see, Head, *Every Inch a Soldier*; Robert P. White, *Mason Patrick and the Fight for Air Service Independence*, (Washington, D.C.: Smithsonian Institution Press, 2001), [hereafter *Mason Patrick*].

4. For more on this period in the history of U.S. airpower see, DeWitt S. Copp, "A Few Great Captains:" *The Men and Events that Shaped the Development of U.S. Air Power*, (Garden City, N.Y., Doubleday, 1980), [hereafter *U.S. Air Power*]; Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power*, (NY: Franklin Watts, Inc., 1964); Mason Patrick, *The United States in the Air*, (Garden City, NY: Doubleday & Co., 1928); James P. Tate, *The Army and Its Air Corps: Army Policy toward Aviation, 1919-1941*, (Maxwell AFB, Alabama: Air University Press, 1998), [hereafter *The Army and Its Air Corps*].

5. See, Copp, *U.S. Air Power*; White, *Mason Patrick*; Tate, *The Army and Its Air Corps*.

6. Lowell Thomas, *The First World Flight*, (Boston: Houghton Mifflin, Co., 1925), pp. 4-6, [hereafter *First World Flight*].

7. *Ibid.*; Fort Vancouver National Historic Site, National Park Service, "First Flight Around the World: The Douglas World Cruisers at Pearson Field," <https://www.nps.gov/articles/douglasworldcruiserspearson.htm>, [hereafter NPS Article]; Walter J. Boyne, *The Aircraft Treasures of Silver Hill: The Behind-the-Scenes Workshop of the National Air and Space Museum*, (New York: Rawson Assoc., 1982), pp. 79-80, [hereafter *Aircraft Treasures*]; Judy Rumerman, "The Douglas World Cruiser – Around the World in 175 Days," U.S. Centennial of Flight Commission, 2003, ["World Cruiser"]; Courtland Bryan, *The National Air and Space Museum*, (New York: Harry N. Abrams, Inc., 1979), pp. 120-122.

8. Thomas, *First World Flight*, p. 43.

9. Thomas, *First World Flight*, pp. 10-12.

10. For a detailed account of Robins at FAID see, Head, *Every Inch a Soldier*, pp. 72-132. Also see, Lois Walker and Shelby E. Wickham, *Huffman Prairie to the Moon: The History of Wright-Patterson AFB, Ohio*, (Washington, D.C.: GPO, 1984), p. 66.

11. Head, *Every Inch a Soldier*, p. 94; *Aircraft Yearbook for 1924* Vol. 9, pp. 237-8; *Air Service Newsletter*, Vol. 8, (1 February 1924/31 October 1924), [hereafter *A.S. Newsletter*].

12. Head, *Every Inch a Soldier*, p. 94; *Aircraft Yearbook for 1924 and the Air Service Newsletter*, Vol. 8, (1 February 1924), [hereafter *A.S. Newsletter*].

13. R. Ray Ortensie, ed., *A Look Back: First Around-the-World Flight, 6 April – 28 September 1924*, (HQ AFMC History and Heritage Program, no date), p. 2. [hereafter *A Look Back*].

14. *A.S. Newsletter*; Thomas, *First World Flight*, pp. 2, 15.

15. Thomas, *First World Flight*, p. 2.

16. Head, *Every Inch a Soldier*, p. 96.

17. Thomas, *First World Flight*, pp. 2, 43; Head, *Every Inch a Soldier*, p. 96.

18. NPS Article.

19. Thomas, *First World Flight*, pp. 6-7; Ortensie, *A Look Back*.

20. Cecelia Goodnow, "Eighty years ago, eight brave men made history when they left Seattle and flew around the world," *Seattle Post-Intelligencer*, Aug. 18, 2004.

21. Head, *Every Inch a Soldier*, p. 97. Ultimately, Stuart-Ma-

claren made six attempts to fly around the world.

22. Thomas, *First World Flight*, pp. 72-79, 86-91; Head, *Every Inch A Soldier*, p. 97; Rumerman, "World Cruiser." Also see, Rene J. Francillon, *McDonnell Douglas Aircraft Since 1920*, Vol. 1, (London: Putnam Inc., 1979); Ben Mackworth-Praed, *Aviation: The Pioneer Years*, (London: Studio Editions, 1990), [hereafter *Aviation*].

23. [World Flight], *The Atlanta Constitution*, Aug. 11, 1924, p. 3.

24. Thomas, *First World Flight*, p. 142.

25. Thomas, *First World Flight*, pp. 167-175, 189-190.

26. *Ibid.*, pp. 205-210; Ortensie, *A Look Back*; Mackworth-Praed, *Aviation*, pp. 234-235.

27. Thomas, *First World Flight*, pp. 255-265; Head, *Every Inch a Soldier*, p. 97.

28. Thomas, *First World Flight*, pp. 266-267, 270, 272, 283. The Italians flew a duel-engine, all metal hulled Dornier Do J Wal ("whale") flying boat. Their attempt ended on 21 August, in a thick fog, 120 miles short of Greenland. American search vessels rescued them.

29. For a contemporary account of the Fliers' arrival in Boston, see "World Fliers Arrive at Boston amid Sound of Sirens and 'Airmen show strain of five months of travel'," *The Bristol Herald Courier*, Sept. 6, 1924, p. 1.

30. Thomas, *First World Flight*, pp. 28, 287, 293-294, 311-313; Head, *Every Inch a Soldier*, p. 97.

31. Thomas, *First World Flight*, pp. 315-316; Head, *Every Inch a Soldier*, p. 97; AAF Hist., p. 68; [World Flight], *Dayton Herald*, September 28-30, p. 1; Letter, 30 September 1924, A.W. Robins to Sally Nelson Robins, Robins Collection, 78 ABW History Office Archives, Robins AFB, GA.

32. Thomas, *First World Flight*, pp. 325-326; Bob Ogden, *Great Aircraft Collections of the World*, (New York: Gallery Books, 1986), p. 168, [hereafter *Great Aircraft*].

33. Obituary, "Alva L. Harvey dies," *The Washington Post*, 3 December 1992.

34. USAF Biography, Major General Frederick Martin, <https://www.af.mil/About-Us/Biographies/Display/Article/108125/major-general-frederick-martin/>.

35. USAF Biography, Brigadier General Erik Henning Nelson, <https://www.af.mil/About-Us/Biographies/Display/Article/108125/brigadier-general-erik-henning-nelson/>.

36. "Col. Lowell Herbert Smith," Nevada Aerospace Hall of Fame, <https://www.mccarran.com/NVAHOF/HomeTouchScreen>.

37. "Lt. Leslie P. Arnold," Barron Hilton Pioneers of Flight Gallery, Smithsonian Institution, <https://pioneersofflight.si.edu/content/Lt-leslie-p-arnold-0>.

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39. Henry Ogden: Mississippi's "Round the World" Aviator, <https://www.mdah.ms.gov/senseofplace/author/alyons/> >April 7, 2014<.

40. *Aircraft Yearbook, 1925*, by Aeronautical Chamber of Commerce of America, Inc., New York City, pp. 66-95. Copy located in the University of Virginia Library, Charlottesville, Virginia; Norman B. Patterson, "Past Forgetting? – The World Flight of 1924," *Stereo World*, Vol. 13, No. 6, (November/December 1986), p. 14.

41. Boyne, *Aircraft Treasures*, p. 18; Ogden, *Great Aircraft*, pp. 168-169.

42. Maurer Maurer, *Aviation in the U.S. Army, 1919-1939*, (Washington, D.C. Office of Air Force History, 1987), pp. 187-188.

43. See, Annual Report of the War Department, 1932, (Washington, D.C.: War Department, 1933), p. 40; Statute 42, 840, U.S. statues at large, the opinions of the Attorney General and the compilation of Military Laws of the US Wash DC Office of the JAG of Army.

44. White, *Mason Patrick*.

45. "First Flight around the World," Barron Hilton Gallery, Smithsonian, <https://pioneersofflight.si.edu/content/first-flight-around-world#:~:text=On%20April%206%2C%201924%2C%20eight,and%20covering%20about%2027%2C550%20miles.>

Deploying the Air Commandos in Air Command, South-East Asia: An Alternative View



1st Air Commando Force gliders at the Broadway landing ground. The Air Commandos used small bulldozers to prepare a rough landing strip for AAF and RAF transport planes to fly in General Orde Wingate's Special Force and their supplies. (NARA)

Edward M. Young

In March 1944, General Henry Arnold, commanding the U.S. Army Air Forces (AAF), informed Admiral Lord Louis Mountbatten, Supreme Allied Commander, South-East Asia Command (SEAC), that following the initial success of the 1st Air Commando Force (later the 1st Air Commando Group) supporting Operation THURSDAY, British Major General Orde Wingate's long-range penetration mission behind Japanese lines, he had ordered the formation of four air commando groups and four combat cargo groups and intended to assign these units to SEAC to aid in the re-conquest of Burma.¹ Although desperate for the more than four hundred transport aircraft these units would provide, the conditions Arnold attached to his proposal made Mountbatten and Air Marshal Sir Richard Peirse, Royal Air Force (RAF), commander of Air Command, South-East Asia (ACSEA), and Major General George Stratemeyer (AAF), Deputy Commander of ACSEA and Commanding General, India-Burma Sector, AAF, reluctant to accept Arnold's offer. In histories of the 1st Air Commando Group, their reluctance to employ the additional Air Commando and Combat Cargo units Arnold offered has been criticized as narrow-minded adherence to traditional military organization and procedures. In his book *Air Commandos Against Japan*, Thomas Y' Blood criticized their lack of "imagination and drive."² Major R.D. Van Wagner, U.S. Air Force (USAF), commented in his history of the 1st Air Commando Group on the difficulty of the military mind accepting new revolutionary ideas.³ Similarly, Major John Torres, USAF, wrote that British failures in Burma were due to a traditional, parochial mind set among British military commanders and bemoans the fact that operational control over the Air Commandos "smoothly and quietly reverted back to the usual chain-of-command structure."⁴

There is an alternative to the argument that Mountbatten and his air commanders lacked imagination and were not open to new forms of warfare. From a different perspective, the conditions that General Arnold wanted to impose on deploying the Air Commando and Combat Cargo groups to ACSEA ran counter to the principles of unity of command, economy of force, and centralized control of air power. Given the operational, geographical, and logistical constraints Peirse and Stratemeyer had to deal with in ACSEA, these principles were vital to the effective employment of air power in the campaign against the Japanese in Burma. General Arnold's offer led to a little-known debate over two of the most contentious issues in coalition warfare: the quest for unity of command and the challenge of dealing with national caveats, the limitations or restrictions a nation may place on its forces in a coalition.⁵

Arnold's Conditions for Deploying the Air Commandos

Based on the success of Operation Thursday, Arnold believed that the 1st Air Commando Force had established a

new form of warfare. In a note to Mountbatten, Arnold wrote, "I am very hopeful that out of these operations will come a new air-ground technique that will—I am going to say revolutionize—perhaps that's the right word—modern principles of cooperative warfare."⁶ Arnold saw in the Air Commandos' success proof of his idea for an air unit combining different components of air power—fighters, bombers, transports, and liaison aircraft—that could exploit the air equivalent of fire and movement, bringing together offensive striking power and air mobility in support of the ground forces.⁷ Such a unit would incorporate the key principles of air power—flexibility, versatility, concentration—but the system of command and control over such a unit became the focus of a debate between Arnold and ACSEA.

A revolutionary form of warfare required, in Arnold's mind, a new type of unit with energetic and aggressive leadership and command. As he wrote to Lt. General Joseph Stilwell, commanding the American China-Burma-India Theater (CBI), "far-reaching consequences for the future may rest on our willingness and ability to expand and use our air resources with vigor and imagination."⁸ For Arnold the key was to create a command and control system that would ensure the vigor and imagination he wanted. At this period in the war, Arnold lacked trust in the ability and willingness of the leadership in ACSEA to provide the bold action and timely execution he was looking for. During his visit to India in February 1943 Arnold had not been impressed with the quality of the senior British officers he had met.⁹ In conversation with Field Marshal Sir John Dill, head of the British Joint Staff Mission in Washington, at the end of May 1944, Arnold conveyed his "anxiety of air affairs in Burma" and what he termed "unaggressive leadership" of ACSEA.¹⁰ Arnold had no desire for the "dead hand" of higher command to interfere with the employment of the air commandos, and so resisted putting the unit under ACSEA's direct control.¹¹ Instead, Arnold put conditions on his offer of additional Air Commando and Combat Cargo units to Mountbatten. Arnold insisted on five conditions for the deployment of these units to ACSEA:

They were to be known as U.S. Army Air Force Air Commando Units.

Their operations were to be directed by the senior U.S. Air

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Col. Philip Cochrane (middle), co-commander of the 1st Air Commando Force, talking with Maj. Gen. Orde Wingate (left), who conceived the idea of inserting a division-sized force behind Japanese lines. Together with Col. John Alison, Cochrane organized a multi-faceted air unit combining transport, liaison, glider, fighter, and bomber sections, initially designated Project 9, to support Wingate's operation. (NARA)

Force Commander.

Orders and control were to employ a U.S. chain of command.

The American integrity of the units was to be maintained. The Theatre was to contribute to the support of the operations of these units.¹²

With these caveats, Arnold was insisting that command and control of the Air Commando and Combat Cargo groups would be an American prerogative, not British, and not integrated into the existing Allied air organization, ACSEA, despite Arnold's previous support for integrating Allied air units. Arnold wanted a command structure that was outside the existing organization of air units within ACSEA so that the Air Commando and Combat Cargo units would be employed as he wished them to be employed, by men trained in air commando operations. Arnold wanted these units to be reserved for supporting long-range penetration missions, and not have their strength and experience dissipated in day-to-day operations.¹³ As Arnold explained to Air Marshal Sir William Welsh, head of the British Joint Staff Mission in Washington, D.C., Arnold could control his own senior officer in ACSEA—Stratemeyer—but he could not control the RAF commanders in the theatre and would therefore resist attempts to place the air commando units under the command of men who were not experienced in air commando operations.¹⁴

Arnold's proposal ran counter to the principles of unity of command and centralized control of air assets. In arguing for no intermediate commanders between the air commando units and the ground echelons they were supporting, Arnold was proposing the idea of "a separate air unit to support specific land formations" an idea the air commanders in ACSEA thought fundamentally unsound.¹⁵ Arnold's conditions brought up an issue that he did not ad-



General Henry Arnold, Commanding General, U.S. Army Air Force, talks with British Admiral Lord Louis Mountbatten at the QUADRANT Conference in Quebec in August 1943 where Mountbatten was appointed Supreme Allied Commander, South-East Asia Command, an integrated Allied command to prosecute the war against the Japanese in South East Asia more effectively. (NARA)

dress: if there were no plans for long-range penetration missions, would these units remain idle? Could any air force, not just ACSEA, afford to have air units unemployed simply waiting for a mission? In discussions on this aspect of command and control of the Air Commando and Combat Cargo units, Air Marshal Welsh found Arnold “dogmatic and inflexible” on the issue and speculated that Arnold’s attitude was due to his views of the leadership of ACSEA.¹⁶

Unity of Command and Economy of Force

The debate over command and control of the Air Commando and Combat Cargo groups reflected differences over issues that were fundamental to the effective employment of air power in the air war over Burma. Because of the Allied Germany first strategy, SEAC was, for most of its existence, lowest in priority for the allocation of Allied resources. ACSEA also faced severe logistical and communications constraints, with forward air units operating hundreds of miles from their sources of supply. Supplies had to travel over the inadequate road and rail system in India. These combined factors resulted in shortages and delays in receiving supplies and reinforcements. These circumstances put a premium on maximizing effective use of the resources that were available to ACSEA.¹⁷

Since fighting power is the means of waging war, effective use of available resources is critical to maximizing fighting power.¹⁸ The great military thinker Carl von Clausewitz argued that two of the most fundamental principles of war were the concentration of force and economy of force. “There is no higher principle of war”, he wrote,

“than that of keeping one’s forces concentrated.”¹⁹ A commander had to have all available forces in the right place at the right time to confront the enemy. Regarding economy of force, Clausewitz said a commander should “always to make sure that all forces are involved—always to ensure that no part of the whole force is idle.”²⁰ Forces that are idle are next to useless. In the context of the resource constraints facing ACSEA, keeping any air unit idle was a luxury the Command could not afford.

For coalitions in war, Clausewitz’s principles of concentration of force and economy of force are captured in the principle of unity of effort, the idea that all a coalition’s resources and energies are devoted to achieving the coalition’s desired ends.²¹ Clausewitz believed that unity of effort could only come through unity of command, where all forces in the coalition served under a single commander following a single strategic plan.²² Of all the issues confronting a coalition in war, the most contentious issue relating to unity of command is that of command and control, the degree of authority over their own forces that coalition partners are willing to grant a coalition commander.²³ Unity of command implies the exercise of control over all coalition forces, but even in a coalition as close as the Anglo-American alliance became during World War II, there were still issues of sovereignty that remained a source of tension as differing national interests come into play.²⁴ This was particularly true within SEAC, where differences in national interests and objectives were more pronounced than in other theatres of war.²⁵

Unity of command is especially important in the application of air power. As Marshal of the Royal Air Force



Air Marshal Sir Richard Peirse, Royal Air Force, presenting Maj. Gen. George Stratemeier, Commander, Army Air Forces, India-Burma Sector, with the British Order of the Bath in November 1944. Peirse and Stratemeier were Mountbatten’s key air commanders as Commander and Deputy-Commander, respectively, of Air Command, South-East Asia that integrated Army Air Force and Royal Air Force units in India. (NARA)

the Lord Tedder, one of the leading Allied air commanders in World War II, wrote, “air warfare cannot be separated into little packets...it is a unity and demands unity of command.”²⁶ Among the most important attributes of air power are its flexibility, its versatility, and its ability to concentrate rapidly in time and space; as Tedder argued, separating air assets into “little packets” prevented the flexible use of these assets and their concentration toward a single objective.²⁷ The RAF and the AAF came to accept that applying these attributes effectively came through centralized control of air assets. Unity of command gave centralized control. A single air commander had to have control of all air assets and authority for planning, directing and controlling these assets in military operations, mirroring Clausewitz’s principles of concentration of force and economy of force.²⁸ The principles of unity of command and centralized control of air assets became accepted doctrine in the AAF and the RAF.²⁹ Even though by the end of 1943 unity of command and centralized control of air assets had become accepted air power doctrine, differences in national objectives and interests could still have a direct impact on command and control.³⁰ Where coalition partners seek to impose national caveats as Arnold did with the air commandos and combat cargo groups, these national caveats can act as a constraint on the ability of the coalition to employ its resources effectively and run counter to the principles of unity of command and centralized control.³¹

The Allied Air Forces Command Structure

The debate between Arnold and Mountbatten and his air commanders must be viewed in the context of the complexity of the political and command and control relationships in SEAC and the CBI. America, Britain, and China each had their own national interests and objectives, and it is not surprising that these were at times in conflict, and that this conflict should have influenced the command structure in the theater. American objectives were to ensure that China remained an active participant in the war and continued to tie down the many Japanese Army divisions in China, while Britain looked to regain control of its colonial possessions, Malaya and Singapore.³² These differences complicated reaching agreement on a strategy for confronting the Japanese Army in Burma and a structure of command of Allied forces. The Americans sought to retake northern Burma to secure land and air communications with China. Senior British political and military leaders, looking at the daunting prospect of pushing through the jungle-covered mountain ranges that ran along the India-Burma border, preferred to by-pass Burma altogether in favor of operations to retake Malaya and Singapore.³³ The contrasting approaches created tension among Allied commanders and a suspicion, among the Americans, that the British lacked the resolve to combat the Japanese in Burma.³⁴

The desire to have a more effective prosecution of the war against the Japanese in Burma led the British and American Combined Chiefs of Staff and their political lead-

ers, at the QUADRANT Conference in Quebec in August 1943, to agree on a strategy for operations in Burma and the necessity of establishing unity of command.³⁵ At QUADRANT the Allies agreed to an integrated Allied command for South East Asia under a single commander, with subordinated but integrated commands responsible for land, sea, and air operations. British Royal Navy Admiral Lord Louis Mountbatten was appointed Supreme Allied Commander of the new South-East Asia Command (SEAC), with Lt. General Joseph Stilwell as his Deputy-Commander.³⁶

Mountbatten recognized that having the RAF and the AAF in India operating separately hindered the efficient and effective employment of air power. Prior to the formation of SEAC, the command and control of Allied air forces in India lacked unity of effort, much less unity of command. The American Tenth Air Force and the RAF command in India operated in parallel command structures. An informal system of cooperation existed, working through liaison officers and daily conferences, but in the main the two air forces conducted their operations separately.³⁷ This structure of command and control ran counter to the principles of unity of command and centralized control of air assets that by 1943 had become accepted doctrine in other theaters. The effective employment of air power in SEAC required an integrated air force with unity of command. Mountbatten made this a key objective, despite initial American reluctance.³⁸ A combined Allied air force, Air Command, South-East Asia, came into being on December 14, 1943, comprising the American Tenth Air Force and Royal Air Force units in India under Air Marshal Peirse, formerly commander of Royal Air Force units in India, as Air Commander-in-Chief with Stratemeyer as his deputy. Stratemeyer was made commander of a subordinate operational command, Eastern Air Command, exercising command and control over the integrated American and British units in four functional commands: the Third Tactical Air Force, the Strategic Air Force, Troop Carrier Command and the Photo Reconnaissance Force.³⁹ Despite this aim, unity of effort and unity of command were not fully realized. The Americans insisted that American and Chinese forces in China—including the American Fourteenth Air Force and the India-China Wing of the Air Transport Command flying the Hump route to China—not come under Mountbatten’s command so that these forces would not be diverted from supporting China’s war effort.⁴⁰

ACSEA’s Counter-arguments to Arnold’s Conditions

The counter-arguments that Mountbatten’s air commanders Peirse and Stratemeyer put forward to counter Arnold’s conditions for deployment of the Air Commando and Combat Cargo units, with strong support from Air Chief Marshal Sir Charles Portal, RAF, Chief of the Air Staff, centered on three key issues: first, the principles of unity of command and centralized control that were the foundation of ACSEA; second, the need to attain the most economical use of forces assigned to ASEAC; and third, a belief that regular air units, with proper training, were per-



Supplies for British and American forces fighting in Burma off-loading at the port of Calcutta, after a journey of nearly two months from the United States. (NARA)

factly capable of carrying out air commando operations, allowing a far more economical use of forces available.

Unity of command and centralized control were foundational principles of ACSEA and central to its formation as an integrated Allied air force. As Supreme Allied Commander Mountbatten believed he had to have the authority to control all units and operations within his Theatre command, especially regarding American and British air units.⁴¹ Portal strongly supported Mountbatten's position. Writing to Air Marshal Welsh in Washington, Portal said "it is essential that the air commander in chief have latitude to use all resources in his theatre in the most economical way possible."⁴² In arguing for unity of command and centralized control within ACSEA, Peirse said that an essential aspect of command was the ability of the Allied Air Commander to move Allied air units within the Theatre and to allocate them according to operational necessity.⁴³ Writing to Portal, Peirse noted that a strict interpretation



With few roads leading from Assam to the front lines along the India-Burma border, air transport became critical to delivering supplies to American, British, and Chinese units pushing into Burma. (NARA)



From Calcutta, the Indian railroad system carried supplies to Assam in northeast India, having to be ferried across the Brahmaputra River, and then trucked to supply centers near airfields for air transport to forward bases. (NARA)

of Arnold's conditions would result in an overly restrictive directive for operational control within an integrated air force. Taken literally, he said, Arnold's proposals for a purely American chain of command structure would tend to disintegrate, rather than integrate the Allied air force.⁴⁴ With the integrated air command in ACSEA working well, this would have been a retrograde step.

The second issue for Mountbatten, Peirse and Stratemeyer was their concern with obtaining the most economical use of the forces allocated to ACSEA and to ensure the greatest flexibility in the use of these forces. These were vital issues in a theatre of war with inadequate resources. The conditions Arnold wanted to impose violated these principles of economy of force and flexibility in two ways: first, Arnold's insistence that the Air Commando and Combat Cargo units be used only for long-range penetration missions would lead to the creation of units that would remain idle when not required for these types of missions; second, placing small pockets of air forces under the control of Army commanders would dissipate and negate the flexibility of air power. In its early appreciation of the operation of the 1st Air Commando Force the staff of ACSEA wrote that:⁴⁵

command of an air unit supporting the land forces must be concentrated in the Commander of the Tactical Air Force... Again the danger must be avoided of tying down fighter and bomber aircraft permanently and exclusively to any particular Army formation. To do so runs the risk of duplication and lack of flexibility.

Portal and Peirse argued that when not required for special operations, these units should be made available to support the day-to-day operational requirements of the Tactical Air Force in their respective roles, thus maintaining the principle of economy of force and following Clause-



Where there were no landing strips, the transport aircraft would air drop supplies to forward units. Here an AAF C-47 drops supplies to a British unit in Burma in December 1944. (NARA)

witz's principle that no forces should remain idle.⁴⁶ Waste of effort was something ACSEA could not afford; Stratemeyer agreed that a prime objective for the Command should be "the most economical and efficient use of forces available."⁴⁷

Portal and the air commanders in ACSEA were impressed with what the 1st Air Commando Force had achieved during Operation THURSDAY and understood that there were valuable lessons to be learned from their experience. Peirse and Stratemeyer did not disagree that the large-scale movement of troops and supplies by air offered the means to overcome the logistical and communications burdens facing Allied ground forces in Burma. They, however, wanted to incorporate the lessons of the 1st Air Commando Force into operations of the regular units of the Tactical Air Force and its Troop Carrier Command and use these units in lieu of specialized Air Commando units. This promised greater economy of force and greater flexibility in the application of air power. Portal, Peirse and Stratemeyer understood that using regular squadrons of the Tactical Air Force could provide a far greater level of support to an aerial invasion than relying on a few Air Commando units.⁴⁸ In fact, during Operation THURSDAY the RAF and AAF transport squadrons of Troop Carrier Command airlifted 77 percent of Special Force troops into the landing areas behind Japanese lines, and delivered 79 percent of the supplies, providing support for Portal's, Peirse's and Stratemeyer's belief that regular transport units could just as easily undertake support of long-range penetration missions as part of their normal operations as the more specialized air commandos.⁴⁹ Peirse, Stratemeyer and Portal were arguing for proven concepts for the effective and economical employment of air power and were not, as YBlood, Van Wagner and Torres argue, lacking in imagination or blind to new ways of warfare. The issue was one of the most effective ways of implementing these concepts, not that they should not be implemented. Training regular units in air commando operations was a means of maximizing the limited resources ACSEA had available and enabling economy of force that Clausewitz argued for.



Immediately after its arrival in India, the 3rd Combat Cargo Group started flying regular air supply missions for General Joseph Stilwell's Chinese forces in the Northern Area Combat Command, despite General Arnold's earlier insistence that these groups be restricted to supporting long-range penetration missions. Troops from an African-American aviation engineering battalion load a section of a truck onto a C-47 of the 12th Combat Cargo Squadron. (NARA)

Working Out a Compromise

Resolution of the debate between Arnold and ACSEA provides an illuminating example of how coalition commanders deal with national caveats affecting command and control relationships and how in finding a workable solution they will, at times, "accept a degree of compromise to achieve the objective."⁵⁰ Clausewitz recognized that commanders of national forces in a coalition had to answer to their governments, and governments could set objectives that were ambiguous.⁵¹ This means, in most cases, that national commanders are bound to follow the dictates of their governments.⁵² To sustain cohesion within a coalition, the coalition commander "will necessarily have to compromise as well as having to continually encourage the participant nations to subjugate their own national interests to the common goal."⁵³ This is never an easy task.

Stratemeyer's position on the issue of command of the Air Commandos illustrates the dilemmas a national commander within a coalition can face. Stratemeyer agreed with Peirse's and Portal's arguments supporting the principles of unity of command and centralized control and, like Peirse and Portal he did not see the air commando concept as a specialized branch of aviation requiring specialized units.⁵⁴ However, once Arnold had listed his conditions for the employment of the Air Commando and Combat Cargo groups, Stratemeyer felt compelled to go along with Arnold and accept his conditions; he could not overrule his own ultimate boss. As Commander, AAF, India-Burma Sector, Stratemeyer reported both to Stilwell as CBI Theatre commander and to Arnold as Commanding General, AAF, and as he explained to Mountbatten the integration of the AAF and RAF into ACSEA, "did not relieve me of my responsibility to General Arnold."⁵⁵ Despite his commitment to an integrated air coalition, and his own disagreement with

Arnold's conditions, Stratemeyer chose to follow his own national commander in this instance rather than the wishes of his coalition partners.

Arnold's other concern was that the Air Commando and Combat Cargo groups be effectively employed. Arnold had insisted that the units he was organizing be used for worthwhile operations in their intended roles. In his communications to Mountbatten, Stratemeyer and Stilwell, Arnold repeatedly expressed his frustration with the lack of firm plans for the employment of the Air Commando and Combat Cargo units from SEAC toward this objective.⁵⁶ But by September 1944, however, SEAC did have plans for an offensive into Burma (designated Operation CAPITAL) that incorporated airborne operations requiring the Air Commando and Combat Cargo groups.⁵⁷ These plans were based on a new directive from the Combined Chiefs of Staff approved at the OCTAGON Conference at Quebec on 16 September 1944. This directive told Mountbatten that "your object is the recapture of all Burma at the earliest date", to secure new air staging posts at Myitkyina and the overland route from India to China.⁵⁸ What Arnold had not believed the British would ever attempt, the re-conquest of Burma, was now agreed Allied strategy; he no longer needed an American chain of command for the Air Commando and Combat Cargo groups to ensure the American objective would be obtained. Following the OCTAGON Conference, Arnold wrote to Mountbatten that his staff was "making every effort to get your additional combat cargo group, air commando group and supporting units to you as quickly as the tight shipping situation will permit. I know that you are as anxious to get them into action as I am."⁵⁹ Arnold made no mention of the command and control issues that had featured in previous communications, nor his insistence on restricting use of these units to long-range penetration missions. This suggests that Arnold had by this point abandoned the conditions he had earlier insisted on.

The OCTAGON Conference coincided with a compromise that Peirse and Stratemeyer, despite Stratemeyer's initial reluctance, worked out that bridged the gap between Arnold's insistence on maintaining unit integrity and an American chain of command and ACSEA's need to employ the Air Commando and Combat Cargo groups in day-to-day Tactical Air Force operations. Peirse and Stratemeyer set up a separate command to control the Air Commando and Combat Cargo groups with an American commander. The critical point for ACSEA was to ensure economy of force and the most efficient allocation of resources within the theatre. Peirse did not object to the formation of a special task force within ACSEA to co-ordinate and control the Air Commando and Combat Cargo units nor to the creation of the American chain of command that Arnold wanted. As he wrote Portal, he was willing to go along with this command structure if he could ensure that once this special task force was established these units would contribute to regular operations if not required for special missions.⁶⁰ The compromise demonstrated a sensitivity to national caveats, but also a commitment to the principles of unity of command and centralized control of air power.



Loading supplies on to a C-46 Commando of the 4th Combat Cargo Group, the third combat cargo group assigned to ACSEA. The C-46s dramatically increased the carrying capacity of the Combat Cargo Task Force. (AFHRA)

The compromise appears to have been a case of form over substance.

On September 14, 1944, Stratemeyer activated a new command within his Eastern Air Command—the Combat Cargo Task Force (CCTF). The CCTF integrated AAF and RAF transport units in ACSEA, including the Air Commando and Combat Cargo groups that were assigned to the theatre, under Brig. General Frederick Evans, AAF.⁶¹ The Air Commando and Combat Cargo units assigned to the CCTF retained their identities as numbered American units as Arnold had requested. And at least nominally, these units were within an American chain of command. Evans, an American, directed CCTF operations, reporting to Stratemeyer, the American Commander of Eastern Air Command. With the formation of CCTF Arnold had, in form at least, the unit integrity and the American chain of command he wanted.

But while Arnold had the form he had insisted upon, he did not have the substance. Critically for ACSEA, Stratemeyer's order activating the CCTF specified that these units could be used for regular tactical operations when not needed for special operations. The two missions the CCTF was assigned were in contradiction to the restricted uses Arnold had earlier insisted on:

The delivery by air of supplies to units of the Northern Combat Area Command [Stilwell's forces in north Burma, later deleted from the order], Fourteenth Army, and such other forces as required, in accordance with plans previously approved by the Air Commander, Eastern Air Command.

The transport of ground or airborne troops by air and air evacuation of personnel, in accordance with plans previously approved by Air Commander, Eastern Air Command.⁶²

This was a creative compromise. Arnold had his command and control structure, but ACSEA won the right to use these units in day-to-day operations when they were not

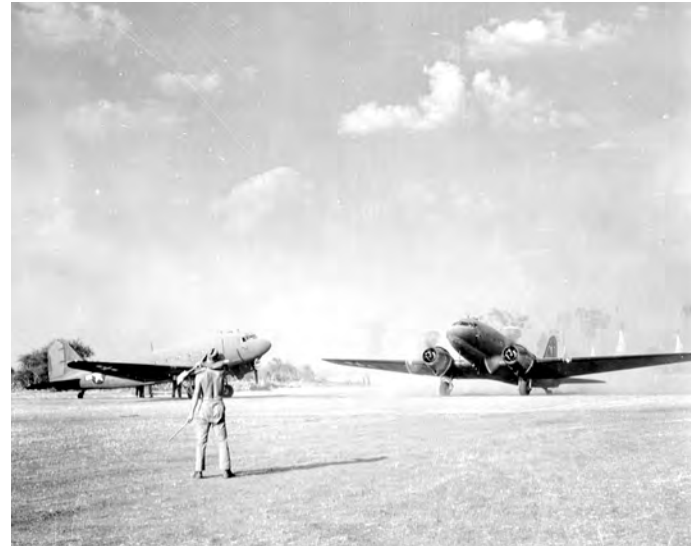


After 17 Division captured the Japanese airfield at Thabutkon near Meiktila, the 1st and 2nd Air Commando Groups flew in gliders with aviation engineers to make the airfield ready for flying in 17th Division troops. The first plane to land was a 1st Air Commando Group P-47 damaged by ground fire. (NARA)

called upon for special missions, a decision in favor of the principles of unity of command and centralized control of air assets that Peirse, Portal and Stratemeyer had been arguing for. These units would not remain idle when not required for long-range penetration missions.

Thomas Y'Blood attributes the breaking of "the logjam over the use of the new Air commando units in the CBI" to Arnold's 'veiled' threat to divert the units to the Pacific as well as the development of new offensive plans for the theatre confirmed at the OCTAGON Conference.⁶³ There is, however, an intriguing possibility that Arnold and Portal settled the issues surrounding deployment of the Air Commando and Combat Cargo groups in ACSEA between them when they met in London in June 1944, following the Allied invasion of France, prior to the OCTAGON Conference. After receiving Air Marshal Welsh's reports of Arnold's intransigence on the issues of command and control, and his resentment at Stratemeyer and senior RAF officers in ACSEA for their reluctance to take up the air commando concept with enthusiasm, Portal told Welsh on June 3, 1944 to "let this question rest and I will discuss it with Arnold when I see him."⁶⁴ Arnold did meet with Portal at the Combined Chiefs of Staff meetings in England on June 10, 11 and 14, and privately on June 15, though his diary entry for his meeting with Portal only says, "discussed this and that".⁶⁵ While documentary evidence has yet to surface, it may well be that Portal persuaded Arnold to accept a compromise solution: an American chain of command in return for an agreement that the Air Commando and Combat Cargo units could be used for regular Tactical Air Force air supply operations when not needed for long-range penetration missions.

It is interesting to note that soon after Arnold and Portal met in England, and before formation of the CCTF, the first of the new Combat Cargo groups, the 3rd Combat Cargo Group, arrived in India. Shortly after its arrival the 3rd Combat Cargo Group began flying air supply missions



C-47s from the 2nd Air Commando Group's 317th Troop Carrier Squadron on the main airfield at Meiktila. As the airfield was often under fire from Japanese artillery, pilots were instructed not to turn off their engines, but to dump their cargo and take off as rapidly as possible. (NARA)

in support of Stilwell's operations in northern Burma, while the 1st Combat Cargo Group, arriving in August, started flying regular air supply operations in support of the British Fourteenth Army.⁶⁶ In neither case were these combat cargo groups involved in the type of missions that Arnold had envisioned, nor were they restricted from flying regular tactical support missions. This can be taken as evidence that a solution to the deployment of the Air Commando and Combat Cargo groups had been reached and, to all appearances, Arnold accepted the compromise.

Success of the Combat Cargo Task Force

The success of the CCTF in the re-conquest of Burma supports the argument that Portal, Peirse and Stratemeyer were correct in their commitment to the principles of unity of command and centralized control as the most effective means of employing air power in ACSEA. The command and control restrictions that Arnold wanted to impose for the employment of the Air Commando and Combat Cargo groups, had he succeeded in having them implemented, would have acted as a significant constraint on Operation CAPITAL, the Fourteenth Army's overland advance from Imphal in India to Rangoon by May 1945, and might well have prevented its success.

Having shattered the Japanese Army in its ill-fated attempt to capture Imphal, General Sir William Slim, commanding the British Fourteenth Army, developed a plan to pursue and destroy the Japanese in central Burma and recapture Rangoon. This became Operation CAPITAL, approved at the OCTAGON Conference. Air supply was vital to CAPITAL. During its advance into central Burma, the Fourteenth Army was almost entirely dependent on air supply as the land lines of communication between India and Burma were inadequate.⁶⁷ As Slim said after the war, "there was no main operational plan made in the Four-



For Operation MULTIVITE, the capture of Meiktila, the Combat Cargo Task Force called on the 1st Air Commando Group's 5th and 6th Fighter Squadrons to provide close air support to 17th Division, while the P-51s of the 2nd Air Commando Group's 1st and 2nd Fighter Squadrons carried out interdiction and counter-air missions, demonstrating the CCTF's ability to rapidly organize an operation combining all aspects of air power. (NARA)

teenth Army which was not based on air supply.⁶⁸ This offensive could not have gone forward if the air transport aircraft Fourteenth Army required had not been available. The CCTF embodied the principles of unity of command and centralized control. As an integrated Allied force, the CCTF could allocate daily supply missions to its component squadrons without regard to the nationality of the squadron, using whatever airplanes were available. Between October 1944 and May 1945, the squadrons of the CCTF carried 332,136 tons of supplies to Fourteenth Army, airlifted 339,137 troops, and evacuated 94,243 casualties during the campaign.⁶⁹ Arnold's insistence on using the Air Commando and Combat Cargo groups only for special long-range penetration missions would have prevented these units from contributing to daily operations. The CCTF's impressive record of air support to Fourteenth Army would have been impossible to achieve if over half the available transport aircraft been restricted to their bases waiting for another type of mission.

Moreover, when it became necessary to form a special air task force to support a bold advance behind Japanese lines, it was a relatively straightforward process to pull the

selected air units out of their regular operations as Peirse and Stratemeyer had argued it would be. In the re-conquest of Burma under Operation CAPITAL, there was one operation that fit the application of air power that Arnold had envisioned for the Air Commando and Combat Cargo groups, the "movement by air of large ground forces and the maintenance of these forces for an extended period". The capture of Meiktila in Central Burma during February-March 1945, Slim's masterstroke of the entire Burma campaign, saw the 17th Indian Division punch through Japanese lines to capture and defend the town of Meiktila, the Japanese Army's administrative and logistical center. Once behind Japanese lines, 17th Division relied entirely on the CCTF for air supply. The Air Commando and Combat Cargo squadrons had been heavily involved flying regular air supply and close air support missions, but when needed were organized into a special task force to support 17th Division's capture and defense of Meiktila, returning to their regular duties when this operation was over. The use of air support in the capture of Meiktila provides a convincing demonstration of the flexibility and versatility of air power and its effectiveness under centralized control.

Conclusion

Issues of command and control are difficult to resolve within coalitions. The restrictions placed on national units in the form of national caveats can have an adverse impact on the ability of a coalition to achieve unity of effort, the marshalling of all available resources to accomplish its objective.⁷⁰ To resolve these issues, coalition leaders must compromise, as do leaders of national military forces. In this instance, Mountbatten, Portal and Peirse were sensitive to Arnold's desire to have the Air Commando and Combat Cargo units come under an American chain of command; since Stratemeyer, an American, was already in

command of Eastern Air Command under Peirse, it does not seem that the British commanders found it particularly onerous to set up another command with an American commander and place it under Stratemeyer. On the more critical issue of allowing these units to be used in everyday operations, it appears from the actual experience of these units once in the theatre that Arnold was apparently willing to compromise on the nature of their employment. He may have come to realize that his initial conception of restricting these units to one type of operation made little sense given conditions facing ASEAC and the requirements for future offensive operations to achieve what Arnold really wanted: the re-conquest of Burma. ■

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Special Duties Pilot: The Man Who Flew the *Real 'Inglorious Bastards' behind Enemy Lines.* By John M. Billings. Philadelphia PA: Air World, 2021. Photographs. Appendices. Index. Pp. xi, 127. \$29.95. ISBN: 978-1-52678-626-5

Autobiographies by first-time authors often can be a little bit rough around the edges. In this case, however, Billings has presented a very straightforward description of his life in aviation. He discusses his upbringing and first airplane ride in 1926. That's *not* a typo! In the late 1930s, he began taking flying lessons.

He entered the US Army Air Forces in the summer of 1942. However, he didn't start primary pilot training until December 1943. He proceeded through the basic and advanced levels and eventually found himself assigned to the Consolidated B-24 Liberator, the most widely produced American military aircraft of World War II.

In August 1944, he joined the 825th Bomb Squadron of the 848th Bomb Group, part of the Italian-based Fifteenth Air Force. The Fifteenth's bombers provided a counterpunch to the English-based Eighth Air Force as both armadas attempted to pummel the Axis industrial base and, in the process, defeat the defending German *Luftwaffe*. While with the 848th, he completed 14 missions.

From there, his combat flying took an unexpected course. He changed gears completely with an assignment to the 885th Bomb Squadron. Employing B-24s because of their long range and generous payload, this unit was also known as the 885th Special Squadron. The units' all-black aircraft typically flew at night. They frequently dropped agents working for the Office of Strategic Services (OSS) behind enemy lines. To accomplish this mission, the squadron's aircraft were modified to enable the agents to depart via an opening in the bottom of the fuselage. Besides inserting agents into Italy and Yugoslavia to support partisans fighting the Axis, the aircraft also dropped supplies.

Perhaps Billings' most important mission was what the OSS labeled Operation *Greenup*. Because of poor visibility, the mission was delayed several days before he successfully flew three agents into the Alps, where they parachuted onto a frozen lake. They were tasked with determining how the Germans were able to move trains through the heavily-bombed Brenner Pass. The trio's reporting favorably affected Allied targeting and slowed the German supply effort.

After the war, Billings continued his military career for a couple of years. He occasionally test flew B-24s coming out of maintenance. Eventually he joined Trans World Airlines. Furloughed after a brief stint, he moved on to Eastern Air Lines, retiring in 1983. While in his mid-90s (at the time this work was written), he was happily flying for Angel Flight, a volunteer organization supporting those in need of special medical attention.

An easy read, this book is recommended to anyone who enjoys sharing the joy of flying with another pilot. It pro-

vides an interesting glimpse of special-operation aerial activities in the Balkans and northern Italy during World War II.

Steven D. Ellis, Lt Col, USAFR (Ret), docent, Museum of Flight, Seattle



P-51B/C Mustang Northwest Europe 1943-44. By Chris Bucholtz. Oxford, UK: Osprey Publishing, 2022. Photographs. Illustrations. Appendices. Index. Pp. 80. \$22.00 paperback. ISBN: 978-1-47285004-1

This book is part of Osprey's Dogfight series. It is a very short book whose target audience seems to be people who are just beginning to be interested in World War II aviation history or in the P-51 Mustang. As such, it is not a bad book and is a reasonable introduction to these subjects. The many photos (all but two of which are black-and-white), are reasonably well reproduced, though generally small. More space is devoted to the "ribbon illustrations" that attempt to show how some of the dogfights the Mustang was involved in unfolded. These are an interesting and sometimes useful way of illustrating some of the dogfights described in the text. While they may be helpful in assisting understanding of one-on-one engagements, they seemed to me to be more confusing than useful in enhancing one's understanding of many-on-many engagements.

A very good feature of the book is that, in describing some of the pilots and their combat actions, Bucholtz has focused on some of the lesser-known pilots who flew the P-51B or C (Clayton Goss and John Godfrey are examples) rather than the better-known Don Gentile, Don Blakeslee, and Clarence Anderson.

Fortunately, the book covers somewhat more than just P-51B/C combat over northwest Europe in World War II. In fact, I found the descriptions of the dogfights to be the least interesting part of the book. The background on the development of the P-51B/C provided in Chapter 4 is a useful introduction; but, in just twelve pages, it tries to cover the information that Marshall and Ford (in their *P-51B Mustang*) covered in 280+ larger pages. Therefore, there are the unavoidable simplifications and lack of nuance that result from this kind of compression. This said, this chapter does have one of the best short discussions I have seen of the mechanical and structural problems that plagued the Merlin Mustang during early deployments and the fixes that were developed (usually in the field) for them.

Perhaps it was poor sentence construction; but, as printed on the page, the first paragraph of Chapter 5 has a howling error. It reads that Germany was receiving information from its air attaché in Washington in 1942, which, of course, was not possible after the mutual declarations of war on Dec 11 and 12, 1941!

In sum, this is a good introductory paperback on the P-51B and C, their use in northwestern Europe in World War II, and the combat experiences of some of the lesser-known pilots who flew them.

Leslie C. Taylor, National Air & Space Museum docent, Udvar-Hazy Center



The Erawan War Volume 1: The CIA Paramilitary Campaign in Laos, 1961-1969 and Volume 2, 1969-1974. By Ken Conboy. Warwick UK: Helion Company, 1921 and 1922. Bibliography. Photographs. Illustrations. Pp. 56 and 64. \$ 27 and \$25. ISBNs: 978-1-914377-06-8 and 978-1-915070-60-9

The events in these monographs take place when the Dominoes Theory of communist aggression was a key factor in American national security policy. It held that as each country fell to the communists it would in turn tumble into the next victim. Hence, the importance of Laos was sealed, because it bordered on both China and North Vietnam, on one hand, and Thailand, South Vietnam and Cambodia on the other. Consequently, the Eisenhower Administration placed remote, landlocked Laos squarely on the Cold War chessboard. The US became clandestinely involved in its largest-ever paramilitary covert operation in what was otherwise a civil war between different Lao factions, including the communist Pathet Lao.

Nicely supported throughout by photographs and maps, the volumes describe the CIA's efforts to reverse the successful advances of the communist Pathet Lao and its ally, the North Vietnamese army (PAVN), across much of northern and central Laos. Similarly, important missions were conducted to counter the PAVN's use of the Ho Chi Minh Trail in eastern and southern Laos, and the Sihanouk Trail in Cambodia, to move troops and supplies into South Vietnam. Demonstrating incredible initiative, a handful of CIA field officers assisted by Thai special forces successfully imbedded themselves with various tribes and built a formidable fighting force to counter the enemy. Equally impressive were trail-watching teams that collected intelligence on PAVN movements and assessed effectiveness of the US bombing campaign. One of the most audacious operations (*Fox*) inserted teams into the People's Republic of China to tap phone lines. Another operation trained a team of Nung (Chinese tribesmen from Vietnam) to conduct direct-action operations against the PAVN on the trail. Accounts of the superb air support provided by both Air America and Bird and Sons are included.

Volume 2 seamlessly follows Volume 1 in describing the evolving nature of operations (with an army numbering perhaps eight indigenous divisions). It focuses on CIA-trained guerilla units recruited from the hill tribes and Thailand and on their missions. On the Ho Chi Minh Trail,

teams were able to penetrate defenses, destroy supply-laden trucks, and gather intelligence. They even conducted attacks inside North Vietnam itself. Although in the greater scheme of things these missions were pinpricks, President Nixon wanted them as an additional means of applying pressure on Hanoi. The real test, however, came when guerilla regiments found themselves pitted against regular North Vietnamese (PAVN) divisions employing combined arms tactics with armor, artillery, special forces teams, and infantry. Many of the same PAVN units, already known for their aggressiveness in South Vietnam, were also fighting in Laos.

Out of necessity, the CIA recruited increasing numbers of Lao tribesmen and Thai volunteers, forming new battalions to fight in the rapidly expanding war. In one case, President Nixon was so elated by their successes that he conveyed his admiration directly to the Thai prime minister. But even they could not stop the PAVN's steady advance. Thai battalions became essential to stall PAVN advances in the Plaine des Jarres region. The large-scale war in Laos was, in many ways, as important as the war in Vietnam and secretly included US military personnel on operations there. USAF helicopters flew significant combat airlift missions. Air Force combat controllers and forward air controllers also figured significantly in Laos operations. Again and again, US military assets based in Thailand and Vietnam were crucial to success on the battlefield. USAF and Navy airstrikes made a critical difference.

These monographs reveal the tragedy of this story: men and boys recruited from the hill tribes by the CIA struggled against an enemy with seemingly unlimited manpower and weaponry. Irregular forces, frequently assisted by Thai special forces, infantry, and artillery, were able to resist advancing PAVN and Pathet Lao allies until, with the end of all American involvement, the hill tribes were left to fend for themselves in a losing battle and suffer the consequences at the hands of vindictive Pathet Lao and North Vietnamese. This Erawan War history is very informative about a conflict little known to the American public, yet one of America's longest running Cold War engagements.

John Cirafici, Milford DE



F3D/EF-10 Skyknight Units of the Korean and Vietnam Wars. By Joe Copalman. Oxford, UK: Osprey, 2022. Photographs. Appendices. Pp. 96. \$24.00 paperback. ISBN: 978-1-4728-4625-9

The latest entry in Osprey's Combat Aircraft series covers the Douglas F3D/EF-10 Skyknight, the first jet-powered U.S. Navy night fighter. Nearly 300 of these twin-engine, straight-wing, relatively slow but dependable aircraft were built from 1950-1952. Armed with four 20mm

cannon, the aircraft had a crew of two and an advanced radar suite. The advent of fast single-seat jet fighters soon prompted the Navy to shift Skyknights to training and test duties; but, with the US Marines, the plane came into prominence. Operated by VMF(N)-513, the F3D escorted B-29 bombers on night missions over Korea, scoring the first jet night kill. Upgraded after the war to electronic reconnaissance as the F3D-2Q, it flew Cold War missions out of Japan and Taiwan with VMCJ-1 and -3.

Teething troubles delayed ambitious plans to replace Skyknights with advanced EA-6A Intruders, so the proven, if aging F3D (redesignated F-10 in 1962) soldiered on into the 1960s to meet global demand for electronic intelligence and radar jamming. VMCJ-1 flew the aircraft as the EF-10B radar jammer to protect Rolling Thunder missions from SAMs during the Vietnam War. Jamming escort of night interdiction aircraft along the Ho Chi Minh trail was added in 1966. Halfway around the world, VMCJ-2 monitored anti-aircraft missile radars off the coast of Cuba. The venerable warplane was even upgraded in the late sixties. The Marines finally retired the well-worn aircraft in 1970.

Air-war histories often cite the F3D/EF-10 only in passing, if at all, devoting far more space to more popular Sabres, Crusaders, and Phantoms. Until now Steve Ginter's (1982) and Alan Carey's (2012) technology-focused volumes were the most complete efforts. An expert in Marine Corps aviation (*Modern USMC Air Power*, 2020), Copalman has given us the fullest treatment yet of this neglected warplane. There is much new information in this unique volume. Typical of the Combat Units series, it is sourced from unit records, oral histories, diaries, and interviews. The photos, many of which are fresh from personal collections, are tied closely to the text, illustrating specific people, planes, and details (e.g., the radar scope) that figure prominently in the narrative.

The book concentrates on the Skyknight's combat record, leaving details of specifications and modifications to such standard references as Rene Francillon (1988) and William T. Larkins (1959). The style is lively and informal, putting the reader in the cockpit while hunting MiGs at night over Korea, going eyeball-to-eyeball with Soviet interceptors during the Cold War, or jamming SAM radars over Vietnam. At times the book reads almost like an afternoon hangar-flying session, with crew members recalling hair-raising low-level night flights over the Ho Chi Minh trail, or sweating out an overwater return in a damaged aircraft. Maps depicting where the F3D/EF-10 fought would have been welcome. Nonetheless this book admirably fills a gap in our knowledge of this ground-breaking aircraft and its role in the air wars over Korea, Vietnam, and the Cold War, and is highly recommended.

Steven Agoratus, Hamilton NJ



Fw 190D-9: Defence of the Reich 1944-45. By Robert Forsyth. Oxford UK: Osprey, 2022. Photographs. Maps. Diagrams. Tables. Pp. 80. \$21.57 paperback. ISBN: 978-1-4728-4939-7

This book is a brief history of the development, testing, deployment, and operational life of the Fw 190D-9. A development of the radial, air-cooled engine Fw 190A, the D-9's pilots knew it as "Dora." Powered by a Junkers Jumo 213 twelve-cylinder, liquid cooled engine of 1,750 horsepower, the D-9 was faster and performed better at high altitude than the Fw 190A. Despite its superior capabilities, the plane's designer, Kurt Tank, regarded it as a stopgap until his Ta 152 was complete and, thus, did not intend it for volume production. The Luftwaffe had other ideas, however, and spread manufacture among a number of factories. Eventually almost two thousand D-9s were produced. Forsyth is an authority on the Luftwaffe with a number of such Osprey titles as *Luftwaffe Viermot Aces* (2011) and *Fw 190 Sturmböcke* (2009) to his credit.

The Fw 190D-9 entered combat in September 1944 after an almost three-year development and testing period. By then the air war had taken a desperate turn for Germany. Free-ranging Allied fighters—notably Mustangs, Tempests and Spitfires—challenged the Luftwaffe at every turn, even stalking airfields to pick off the recently introduced Me 262s on take-off and landing. Thus, an early Dora mission was top-cover for the jets. The D-9 soon was assigned to such operations as ground attack and bomber interception, often serving as escorts for other fighters. Toward the end of the war, the lack of experienced pilots resulted in Doras frequently coming out on the losing end of dogfights. Scarce fuel supplies often meant only a few of a unit's aircraft at a time could fly a mission.

The book is based on official records, interviews, correspondence, and secondary sources. Rather than endnotes, the text itself cites such classic works on the D-9 as Creek and Smith (2015), Hermann (2003), and Crandall (2009). Eyewitness and participant accounts are drawn both from original sources and such Luftwaffe unit histories as Caldwell (JG 26) (1998, 2014), and Urbanke (JG 54) (2005). The reader will find further details on air battles depicted here in Osprey's Weal, *Fw 190 Defence of the Reich Aces* (2011), *Focke-Wulf Fw 190 Aces of the Western Front* (1996), and *Jagdgeschwader 2 "Richthofen": A Photographic History* (2000), and Forsyth's own *Tempest V vs Fw 190D-9 1944-45* (2019).

A skilled artist, Forsyth illustrated this book with schematic diagrams of dogfights and paintings of key moments of air combat to bring dogfight accounts to life. Photos depict pilots, ground crew, planes, and the extreme conditions under which these aircraft operated. Forsyth so effectively tied photos to the text that the book at times reads like a combat diary. Maps and diagrams of bases, targets, and mission plots enable a clear understanding of how aerial combat action evolved over the course of a mission.

Both the Allied and the Luftwaffe sides of individual combat incidents are given, with the perspective of the hunter and the hunted. This fast-paced book provides a fresh perspective on the latter stages of the air war over Europe and is highly recommended.

Steven Agoratus, Hamilton NJ



X-Planes from the X-1 to the X-60: An Illustrated History. By Michael H. Gorn and Giuseppe De Chiara. Cham, Switzerland: Springer/Praxis Books, 2021. Illustrations. Photographs. Bibliography. Index. Pp. xx, 163. \$34.99. ISBN: 3-030-86397-5

This new book on the development and testing of American experimental aerospace vehicles is a thoroughly researched, well-written, and beautifully illustrated volume of aerospace history and technology that should be of special interest to readers of this journal. There have been plenty of books on the better-known X-planes and two previous books covering most of them. This book, however, offers an unprecedented combination of historical perspective; details about program management; personal insights about the executives, engineers, and test pilots involved; and technical data on every experimental vehicle ever to bear the X designation.

This coverage reflects Dr. Gorn's wide experience and deep knowledge of the subject garnered during his career as a USAF and NASA historian. Some of his previous books are especially relevant, including biographies of the influential aerospace visionary Theodore von Kármán and National Advisory Committee for Aeronautics (NACA) and NASA executive Hugh Dryden. The attractive color illustrations by aviation artist Giuseppe De Chiara show at least three views of each model of every vehicle discussed.

An extensive prologue on the evolution of the NACA and its relationship to the aviation branches of the Army and Navy sets the stage for the experimentation that followed the Second World War. The rest of the book is logically organized into two parts: the first on X-planes during the Cold War (1945-1990), and the second on the years since (1990-2021). Each part is then divided into three sections that chronologically cover related types of technologies and research objectives. By grouping related X-planes together, each section offers a coherent narrative on the background and evolution of these technologies. There is at least a capsule history of even the most obscure or short-lived projects, while the more famous and influential endeavors receive detailed analyses. The book thus serves as a handy reference on specific X-planes as well as a 75-year survey of key aspects of aviation and space technology, including both triumphs as well as detours and dead-ends. The book explains how even those experiments considered failures could yield valuable data and lessons-learned.

Part I starts with fresh insights into the early X-1 models and progresses through a wide variety of manned and unmanned vehicles—exploring such capabilities as vertical takeoff and landing; ramjets; laminar airflow control; forward-swept wings; lifting bodies; and, most famously, manned hypersonic flights to the edge of space with the X-15. Part II features the generally more focused investigations of specific air and space vehicles and technologies. The most momentous was a design competition for the future Joint Strike Fighter (JSF) between the Boeing X-32 and Lockheed-Martin X-35. Unlike a “fly-off” contest between prototypes, each was tested separately and evaluated on its own merits. Today the X-32 is only a curiosity, while the X-35 evolved into today's massive multi-service and multi-national F-35 stealth fighter program. The latest vehicles discussed—NASA's X-59 Quiet Supersonic Technology Demonstrator and the Air Force's classified X-60 hypersonic scramjet—were still under development when this otherwise complete historical account of each X-plane was published.

Lawrence R. Benson, Retired USAF historian



The Forgotten American Volunteer Group: US Volunteers in the Colombia-Peru War, 1932. By Dan Hagedorn. Stamford UK: Key Books, 2020. Map. Tables. Illustrations. Photographs. Notes. Pp. 96. \$24.95 paperback. ISBN: 978-1-913870-02-7.

Dan Hagedorn has completed more than two dozen books, many of them focusing on Latin American aviation. In fact, he may well be the foremost expert on this region's aviation history writing in English. He served 25 years in the U.S. Army. After that, he was research team leader and adjunct curator for Latin American aviation at the National Air and Space Museum followed by a stint as senior curator at the Museum of Flight in Seattle. Most recently, he has moved to Virginia to continue research and writing.

In September 1932, Peruvian forces captured the Colombian village of Leticia. The village is located in the southernmost corner of Colombia on the Amazon River. The unprovoked attack stoked the patriotic and nationalistic passion of the Colombian people. The government seized this opportunity to dramatically expand its air force over the next few years. Whereas the belligerents reached a peace agreement in May 1933, Colombia continued to expand its aerial fleet.

Prior to the conflict, German interests dominated Colombian aviation. They controlled Latin America's first airline—*Sociedad Colombo Alemana de Transportes Aéreos* (SCADTA). They operated various Junkers aircraft. *Aviación Militar* (AM) used these aircraft as well as three specifically acquired from Germany for military purposes after hostilities broke out.

While the Colombians continued to acquire assorted German aircraft as well as those made in America, the AM relied extensively on Curtiss aircraft. Of the approximately 160 aircraft Hagedorn lists as part of the AM fleet from 1928 to 1942, almost half came from Curtiss, with Falcons and Sea Hawks the most numerous.

Struggling for its existence during the dire economic conditions of the 1930s, Curtiss increasingly depended on overseas sales. Thus, the Colombian market played a critical role in the company's fortunes. With the rise of Adolf Hitler and the overt militarization of Nazi Germany, many German nationals in Colombia headed for home. Curtiss, which had expected to use the Germans to train Colombians to fly its airplanes, with support from the AM, turned to American civilians. Thus American pilots and mechanics shipped out for Colombia.

Though they arrived well after hostilities ceased, they had a profound impact on shaping the AM. By the mid-to-late 1930s, the AM was perhaps the most capable air force in Latin America.

This work reflects an extraordinary research effort. Aviation developments between World War I and World War II, including the use of aircraft seldom seen in the United States, as well as export competition among American manufacturers are other interesting themes. The absence of a bibliography, citations, and index is unfortunate; but students of Latin American aviation should still find it most useful.

Steven D. Ellis, Lt Col, USAFR (Ret), docent, Museum of Flight, Seattle



Desert Storm 1991: The Most Shattering Air Campaign in History. By Richard P. Hallion. Oxford, UK: Osprey, 2022. Maps. Photographs. Illustrations. Index. Pp. 96. \$24. ISBN: 978-1-4728-4696-9

In a 39-day campaign, a U.S.-led assemblage of coalition aircraft neutralized Iraq's air force and integrated air defense systems and degraded its land forces, leading ultimately to 1991's victory in the Gulf War. This informative monograph by airpower-historian Hallion neatly captures the chronology; leadership; decision making; and, especially, the aircraft and crews who significantly contributed to that victory. There is a wealth of information contained in this succinct account of the campaign. The easy-to-read reference tables list equipment and aircraft employed, sorties flown, aircraft losses, and aircraft crews lost or captured during the conflict. Maps depict air bases used and air defense systems employed.

Many of us who served in the Gulf War recall that we came to the desert with skills and capabilities honed during the Cold War, which had ended only a year before. Consequently, the war in the desert was a test between the

NATO way of fighting and Soviet doctrine, tactics, and weaponry as employed by the Iraqi military.

One interesting take away in this monograph is the list of firsts in the campaign: the longest strategic attack mission (seven B-52s flown from Louisiana to the Middle East and back); the first-ever anti-ballistic missile kill, executed with a Patriot system; the first precision-ballistic-missile strike ever, conducted with ATACMS; the first submarine-launched precision-cruise-missile attack; and the first-time use of the experimental E-8 J-STARS. This was also the first-time large-scale use of "smart" munitions. Although only 10% of ordnance used, they took out 75% of targets, changing the nature of warfare. In contrast, the Iraqis sent one fifth of their aircraft on Day 10 to Iran for self-imposed internment, while parking MiG-21s in the biblical city of Ur next to the famous Ziggurat.

The challenges of an air campaign of this magnitude in a relatively small battlespace required excellent planning, superlative command and control, and timely intelligence to design strike packages and designate target sets while coordinating and deconflicting the many activities of an air armada of nearly 2,700 aircraft assembled from the air forces of ten different nations. Even that large number does not include strategic airlift, strategic bombers and tankers, and helicopters. The number of missions flown during the war is staggering and included air superiority, SEAD and ground attack, air refueling, strategic and tactical airlift and reconnaissance, AWACS, close air support, SOF team insertion, search and rescue, forward air control, battle management, psyops, jamming and electronic warfare, and intelligence gathering. In total, an incredible 119,000 coalition sorties were flown during the campaign. Strategic airlift in support of the campaign performed amazing feats in having moved deploying forces and their support equipment in minimal time to create a substantial combat force for Kuwait's liberation.

Hallion also addresses Iraqi organization and strategy for air defense against the coalition, its weapons systems, and offensive capabilities that threatened coalition partners, Israel, and deployed forces. He describes an Iraqi strike led by F-1 Mirages on a Saudi Arabian oil terminal that came close to success.

In just 96 pages, Hallion is able to present the Gulf War air campaign in a fact-filled narrative laden with supporting and easy-to-follow maps and tables of mission data. In all, this monograph is a very useful reference to a very successful campaign.

John Cirafici, Milford DE



Truk 1944-45: The Destruction of Japan's Central Pacific Bastion. By Mark Lardas. Oxford UK: Osprey, 2021. Maps. Diagrams. Illustrations. Photographs.

Chronology. Bibliography. Index. Pp. 96. \$24.00 paperback. ISBN: 978-1-4728-4585-6

This is another fine book by Osprey. The publisher has brought all of its usual resources to bear in telling the story of the reduction by air and sea forces of one of the primary Japanese bases in the Pacific. Detailed maps leave no question for the reader as to where actions took place. Excellent photos and drawings depict the personnel, equipment, and fortifications involved in the actions. An index allows a reader to find information in a hurry. And, in addition to an excellent overall narrative of the who, what, why, where, and when, author Lardas has included an excellent chapter on the aftermath of the various actions and an analysis of the entire campaign.

Simply put, Truk atoll (a Japanese name now changed back to its Carolinian name, Chuuk) was vital to the Japanese as a key part of their outer defense ring. It had a huge anchorage for the Combined Fleet, a submarine base, and a number of airfields on the various islands. It posed a major threat to any Allied attempts to attack the Marianas, Rabaul, the Philippines, and the Home Islands. The allies wanted it neutralized and, until early 1944, assumed they would have to invade it. That never happened. Truk, like the Home Islands, fell without having a single Allied boot on the ground.

On February 4, 1944, a USMC PB4Y (B-24) photo reconnaissance flight got the first good look at the atoll. As Nimitz was in the process of taking the Marshall Islands, thus putting US airpower within range of the Carolines, this one flight convinced the Japanese Fleet commander to exit his ships. Many of the major warships got out, but large numbers of transports and smaller naval vessels were still there on February 17-18 when U.S. Navy carriers hit Truk during Operation *Hailstone* with hundreds of fighters, torpedo planes, and dive bombers. That's why Chuuk is still so popular as a vacation spot for divers! Seventh and Thirteenth Air Force B-24s started hitting the atoll in March. On Apr 30–May 1, the carriers came back. By October, B-29s from the newly captured Marianas were hitting the atoll's installations. Long-range P-47s from Saipan began raids in January 1945, and the British Pacific Fleet hitting it by both aircraft and surface ships in June. Running short of ammunition, aircraft, pilots, spare parts, and just about everything else, the Japanese were able to keep a few airplanes in the air (more to save face than anything else), but Truk was out of the war. As Lardas succinctly put it in his analysis, "Up until the surrender, they kept up the pretense that they were not a self-administered prisoner-of-war camp for the Allies."

Because of Lardas' excellent narrative and the usual Osprey quality of graphics and layout, any reader interested in one key facet of World War II in the Pacific now has a thorough account of Truk, its role in the war, and its elimination without a single soldier or Marine crossing the beaches.

Col Scott A. Willey, USAF (Ret), Book Review Editor, and former National Air and Space Museum docent



Boeing B-47 Stratojet & B-52 Stratofortress: Origins and Evolution. By Scott Lowther. Horncastle UK: Tempest Books, 2021. Illustrations. Tables. Bibliography. Index. Pp. 387. \$49.99. ISBN: 978-1-911658-76-4

Lowther is a former aerospace engineer and, now, an aerospace historian and digital artist. He has created many aircraft and aerospace-vehicle diagrams over the years, most of which were actual aerospace designs—they are not fictional. He has made every effort to ensure his diagrams are as accurate as possible. Lowther has published several books including *Lockheed SR-71 Blackbird—Origins & Evolution* and *US Bomber Projects*. Many of his drawings were created for publications such as *Aerospace Projects Review*, a journal covering unbuilt aircraft and spacecraft projects.

Design of the Boeing B-52 Stratofortress began just after the Second World War. It has been in service for more than 60 years and is an icon of American air power. The Boeing B-47 Stratojet was a major step forward in aeronautical design. It embodied advanced technologies and sleek, swept-wing, jet-aircraft design. It paved the way for the B-52. However, the B-52 began life not as an enlarged clone of the B-47, but as a much less-forward-thinking aircraft. In its earliest incarnations, the B-52 was a straight-winged, propeller design. The development of the B-52 went on for a number of years, taking advantage of what was learned on the B-47. The actual evolution of both aircraft was a process involving hundreds of designs.

Lowther's book attempts to flesh out those evolutionary steps, as well as the evolution from first concepts to prototypes. Various major variants are included, as are several unbuilt projects for derivative designs. These include a nuclear-powered, hydrogen-fueled B-52 as well as supersonic variants. Additional designs were proposed to use the B-52 as a carrier aircraft. Many of Lowther's diagrams were found in Boeing historical archives and in other published sources.

Lowther begins with a chapter on B-47 evolution, including many competitive straight wing, propeller driven designs: Martin XB-48, Consolidated Vultee XB-46, North American XB-45, and Douglas XB-43. He next describes the B-47 development and special projects which were accomplished after the contract award that turned the Boeing preliminary design into reality. Lowther next describes B-52 evolution, beginning with the B-29 and evolving from straight-wing, propeller design to swept-wing jets. He goes on to describe B-52 development following contract award against competitors that included the Douglas 1211, Fairchild 121, Douglas 1064, and Convair B-36. Development included many design changes that had to be made

to trade off performance requirements of range, speed, altitude, defensive armament, and payload capabilities. While not a textbook, Lowther's book provides sufficient detail to understand the rationale for various design choices. He finishes the B-52 evolution description with chapters on nuclear propulsion, miscellaneous designs, the B-52 as a carrier aircraft, re-engine studies, and B-47- and B-52-derived transport designs.

This is a good reference book. It provides an overview of the developmental processes involved during the transition from World War II aircraft to the early days of Cold War swept-wing jet designs. The General Data Update Tables are particularly noteworthy. Lowther obviously conducted much research. It is difficult to ensure the actual status of all the designs that he presents here. Several of his drawings are based on only basic and preliminary information. However, some designs are real eye-openers. It is worth a look!

Frank Willingham, NASM Docent



King of Fighters: Nikolay Polikarpov and His Aircraft Designs—Volume 2: The Monoplane Era. By Mikhail Maslov. Warwick UK: Helion & Co., 2021. Tables. Diagrams. Illustrations. Photographs. Pp. vi, 260. \$42.95 paperback. ISBN: 978-1-913336-19-6

An aeronautical engineer who worked in both the Tupolev design bureau and the government's Central Aerohydrodynamic Institute, Maslov now works for the Nikolay E. Zhukovsky Scientific Memorial Museum in Moscow. Zhukovsky is considered the father of Russian aviation. Besides this work, Maslov has published books on Nikolay Polikarpov's production fighters as well as other books about Russian aviation.

The first volume featured the designer's biplanes, while this work looks at Polikarpov's monoplanes, primarily the I-16. The title is a bit misleading as the text includes very little about Polikarpov the man (perhaps there is more in the first volume?). Furthermore, Volume 2 examines Polikarpov's efforts to develop aircraft other than fighters before and during the Great Patriotic War.

About 60 percent of the content is devoted to the I-16. Based on factory records, twelve types of I-16s, including two-seat versions, were built between 1934 and 1942. Altogether, 10,292 aircraft rolled out of the factories, making it the world's most ubiquitous fighter of that time.

While no citations are included, Maslov appears to have carefully culled available records to provide an extraordinarily detailed account of this classic aircraft. He includes numerous small and large-scale photographs as well as engineering drawings or sketches. Modelers will find the color illustrations of particular interest. In addition, he examines the aircraft's performance in various con-

flicts from the Spanish Civil War to the Great Patriotic War.

Maslov devotes the remainder of the book to Polikarpov's efforts to meet Soviet Air Force requirements for other aircraft. These included high-performance fighters, a light bomber, a heavy escort fighter, and a glider. While prototypes were produced for these various types and extensively tested in most cases, serial production was basically nonexistent.

Like many air forces in World War II, the Soviets found it challenging to produce reliable and powerful engines in sufficient numbers. In many instances, Polikarpov's engineers modified designs after discovering the original engine planned for a prototype was unavailable, underperformed, or both.

This work reflects a remarkable research effort. It is probably best suited for those with a sound understanding of aeronautical engineering (something I lack) or those with an interest in Russian aircraft development before and during the Great Patriotic War. "Rivet counters" or model builders interested in the I-16 should enjoy immersing themselves in the details surrounding the development of this type's many variants.

Steven D. Ellis, Lt Col, USAFR (Ret), docent, Museum of Flight, Seattle WA



Damn Lucky: One Man's Courage During the Bloodiest Military Campaign in Aviation History. By Kevin Maurer. New York: St. Martin's, 2022. Bibliography. Index. Pp. 304. \$29.99. ISBN: 978-1-250-28118-0.

Maurer, the best-selling author of *No Easy Day* (the inside account of the assassination of Osama bin-Laden), has, over the past 20 years, established himself as one of the most accomplished American military reporters. He has accompanied American forces in various combat zones including Afghanistan and Iraq. Along the way, he earned the trust of veterans willing to share their stories. Of his ten previous books, seven concern military activities in the 21st century. The three others are set in Korea, the Philippines in World War II, and South America in the 1960s. This work is his first attempt to examine the American bomber assault on Germany during World War II.

In this effort, he focuses on John H. Luckadoo, who celebrated his 100th birthday in March 2022, though he does cite the experiences of others. Luckadoo enlisted in the Army Air Corps shortly after the United States entered World War II. The book follows his progress through training and his eventual assignment as a replacement co-pilot on a Boeing B-17 bomber in the 100th Bombardment Group.

Once in Britain, Luckadoo's aircraft commander wasted no time in making it clear that he planned to com-

plete the 25 missions necessary to return home to the United States as fast as possible. Unfortunately, Luckadoo missed some missions. His crew, which arrived in June 1943, went home in September, but he was four missions short.

Because of his experience and a high casualty rate, he became his squadron's operations officer despite holding the rank of second lieutenant. Having survived the October 8, 1943, Bremen mission, where the 100th experienced heavy losses, he learned he would play a key role in the Eighth Air Force's first raid on Berlin. As it turned out, the mission was cancelled. The Eighth would wait until early March 1944 to hit the German capital. By then, Luckadoo was back in the United States. The remainder of the book concerns his life after World War II.

An exceptional storyteller, Maurer makes this book an easy read. He blends the human element with the technical aspects. For the most part, he avoids the frequent trap of fabricating quotes to dramatize a particular situation. Knowledgeable readers will spot minor errors, but these are nitpicks. There is one serious exception, however. Whereas other sources confirm 100th crews were briefed on the morning of November 23 for an attack on Berlin, the mission profile as described in Chapter 10 totally contradicts Eighth Air Force operational doctrine.

The book provides insight into what it was like to fly with the Eighth Air Force in 1943 and 1944. This work is best suited for a general audience, particularly the grandchildren or great-grandchildren of Eighth Air Force crewmembers.

Steven D. Ellis, Lt Col, USAFR (Ret), docent, Museum of Flight, Seattle WA



Flying Fury: Five Years in the Royal Flying Corps.

By James McCudden. London: Spitfire Publishers, 2019. Photographs. Pp. 338. \$30.79 paperback. ISBN: 978-1-07490664-1 (first published as *Five Years in the Royal Flying Corps* by the Aeroplane and General Publishing Co, London, 1918)

James McCudden was one of the pantheon of heroic aviation pioneers produced by the British in World War I. He achieved 57 aerial victories in two years, 1914-1916, before his death in an aircraft accident. McCudden came from a military family and first served as an enlisted member of an engineering regiment. James was one of four brothers who flew with the Royal Flying Corp; only one of his siblings survived.

McCudden's autobiography is a comfortable and casual read. As should be expected, the syntax and word choice are occasionally odd to the modern reader, especially when combined with the formal style produced by a British officer of the period. But at the same time, the book is very

personal. McCudden freely discussed his personal feelings, his frustration at the shortcomings of early aviation technology, his discomfort at shooting a "Hun" down in flames, and his respect for his skilled and capable adversaries. To my mind, these glimpses into the personalities of the writer are the real value in reading autobiographies and journals. McCudden obviously kept a diary of some sort to recall the extraordinary details that fill the book. For someone who took part in so many aerial combats to remember them in sufficient detail to draw the reader into the stories is noteworthy. I can envision many young British lads being drawn to aviation and the Royal Air Force only to find themselves fighting another generation of "Huns" twenty years later.

The book is filled with wonderful technical details. McCudden's love for all things aviation shines through. He used his mechanical knowledge to personally modify an S.E.5a with everything from a captured German propeller spinner to changing the dihedral of the wings. He "tweaked" the Constaninesco-Collier interrupter gear to improve his machine gun's performance. Then he developed tactics to fit his aircraft's improved capabilities. As I read the book and began to build a picture of the man, I saw distinct similarities to Oswald Boelcke in their similar approaches to aerial combat.

McCudden the man becomes very real. He conveyed his excitement at finding a French shop that carried his favorite hair oil. He took his friends to a tea shop staffed by a mademoiselle he met years earlier when he was a junior enlisted mechanic. He built personal defense mechanisms to deal with the horror of war, seeing the enemy as impersonal machines and being surprised to realize that there was a man in the machine.

Autobiographies and journals depend heavily on the personality of the writer. Dry, impersonal writers produce dry impersonal books. *Flying Fury* is alive. If McCudden was half the person portrayed in the book, he would have been a great person to know and share a pint with. I strongly recommend this book.

Gary Connor, docent, Smithsonian National Air and Space Museum's Udvar Hazy Center



Air Power and the Arab World: 1909-1955. Volume 5: The Road to War, 1936-1939.

By Dr. David Nicolle and Air Vice Marshall Gabr Ali Gabr. Warwick UK: Helion & Co., 2021. Map. Illustrations. Photographs. Bibliography. Pp. 72. \$29.95 paperback. ISBN: 978-1-914377-23-5

Dr. Nicolle has for many years devoted much of his research and publishing efforts to military affairs in the Middle East. He has authored more than 100 books, mostly on warfare in the Middle East. Air Marshall Gabr is a veteran of the Egyptian Air Force, having flown the de Havilland

Vampire in the 1956 Suez Conflict and directed air operations in the 1973 war with Israel.

The authors reserve the first 10 pages (two brief chapters) to a discussion of the political, cultural, and military conditions in Egypt and Iraq followed by a similar summary in other Arab territories.

In Chapter 3, they examine the growth of aviation in Saudi Arabia. At that time, Italy and Great Britain attempted to influence several Arab states. Italy initially held the advantage as Saudi Arabia purchased several Italian aircraft. Ultimately, the Saudis chose to rely on the Egyptians, who were heavily influenced by the British, for training. The same nations were competing for aircraft sales in Iraq. In the years immediately before World War II, the Italians succeeded by delivering several sophisticated aircraft such as the Savoia-Marchetti SM.79B bomber and the Breda Ba.65 attack airplane. Unlike Saudi Arabia, Iraq relied on the Italians through 1939. Italian personnel departed Iraq shortly before Italy entered World War II in June 1940.

The second half of this work is devoted to the Royal Egyptian Air Force's separation from the Egyptian Army. Much space is devoted to personalities who influenced the beginning of Egypt's independent air force. From 1936 to 1939, Egypt purchased mostly British-built single-engine aircraft—a combination of trainers and light attack/pursuit types. Of course, British instructors were very much involved.

Aside from passing references to European-based airlines, civil aviation receives minimal treatment. Exceptions are Egypt's Misr Air and the Tour of the Oases Air Derby in February 1937.

This work is best suited for those with a special interest in the Middle East, smaller air forces, or overseas aircraft sales between World War I and World War II. Complementing the text is an exceptional collection of photographs, many of them from the authors' personal collections. Modelers probably will find the 21 color illustrations useful for their purposes. Like their other efforts, the authors have included a bibliography but chose to omit an index and citations.

Steven D. Ellis, Lt Col, USAFR (Ret), docent, Museum of Flight, Seattle WA



Air Power and the Evacuation of Dunkirk: The RAF and Luftwaffe during Operation Dynamo, 26 May-4 June 1940. By Harry Raffal. London: Bloomsbury Academic, 2021. Map. Tables. Notes. Appendices. Bibliography. Index. Pp.vi, 336. \$115. ISBN: 978-1-3501-8049-9

Dr. Raffal's detailed examination of the role of air power in the evacuation of British and French forces from Dunkirk in May-June 1940 is an excellent case study in the application and effectiveness of air power. Given the legendary status of the evacuation effort and the standard

narratives in the historiography, his well-researched and well-argued conclusions may come as a surprise. Raffal is historian at the Royal Air Force (RAF) Museum in London. He has done previous work on the RAF in the Battle of France. This book is based on his doctoral thesis at the University of Hull.

Raffal begins with a straightforward question: to what extent did the British and German air forces employed during the evacuation influence the behavior of their adversaries, and did they realize the military outcomes they wanted to achieve? The Luftwaffe's aim was to prevent the evacuation, while the RAF's objective was to protect the evacuation and British shipping. Raffal argues that the experiences of both air forces during the evacuation demonstrate both the utility and the limitations of air power. The RAF and the Luftwaffe achieved limited success; but, he argues, both failed to achieve their larger aims.

The book carefully analyzes the reasons behind their respective failures. It starts with a comparison of the two air forces, looking at comparative distances from the evacuation beaches, aircraft employed, training, and combat tactics. Both air forces suffered from a lack of training in flying at night and in bad weather, but the Luftwaffe benefited from superior combat tactics and having leaders at the squadron level with actual combat experience. With this background, Raffal examines the air combats on May 29 and June 1, when the Luftwaffe had the most success, shutting down daylight evacuations on June 1 and causing heavy losses in shipping. He then looks at RAF operations on other days during the evacuation and includes useful sections on the contribution of RAF Bomber and Coastal Commands and the Fleet Air Arm. Limitations in Luftwaffe training hindered effective coordination between Luftwaffe fighters and bombers in poor weather and resulted in a complete failure to carry out attacks on the evacuation area at night. Raffal argues that when weather conditions were good, and when the Luftwaffe fighter and bomber units could cooperate effectively, RAF Fighter Command was unable to adequately protect the evacuation. He sees Fighter Command's decision to increase the number of squadrons patrolling over the evacuation beaches at less frequent intervals, in response to facing greater numbers of Luftwaffe fighters and bombers, as a tactical error. The decision created gaps in coverage that the Luftwaffe successfully exploited on its most successful days. Weather proved to be a more effective deterrent to Luftwaffe attacks than Fighter Command's patrols. The RAF could have employed more fighter squadrons to cover the evacuation, but Air Marshall Hugh Dowding had to consider the forces he would need for a likely assault on Britain to follow the loss of France and deployed fewer squadrons than he might have done.

This study demonstrates the challenges air forces face in coping with limitations in training, technology, available resources, operational conditions, and operational focus. Highly recommended.

Edward M. Young, PhD, volunteer, Museum of Flight, Seattle WA



British Special Projects: Flying Wings, Deltas and Tailless Designs. By Bill Rose. Stroud UK: Fonthill Media, 2020. Photographs. Illustrations. 288Pp. \$52.00. ISBN: 978-1-78155-805-8

Rose's book falls in a niche that could be labeled "what might have been." He presents a collection of designers-fantasy aeronautic projects much the same as auto designers offer "concept cars." While these concept cars never make it into full scale production, bits and pieces of design and technology may find their way into the mainstream. In the case of British "Special Projects," these bits and pieces include swing wings and a variety of delta designs of varying shapes and capabilities.

The book is oddly organized: a general chronological structure is intermixed with major sections on design, propulsion, and the impact of German World War II aviation research. When combined with the unique British method of "naming" projects and government requirements, the book can be hard to follow. Plentiful illustrations help the reader keep things organized.

Rose offers a detailed catalog of early flying-wing projects circa 1910-1920. Several of these designs were sufficiently successful that they were purchased by foreign countries for evaluation and operational use. A Burgess-Dunne flying wing purchased by the US Navy set a seaplane altitude record of 10,000 feet in 1915. A similar type was the first military aircraft purchased by Canada. History demonstrated that flying wings had limited success until the 21st Century, but Rose does little to explain why they were not more widely embraced.

A significant portion of the book is dedicated to rocket-powered interceptors. This chapter showed that British efforts drew extensively on German efforts in the field. And the narrative spends as much time discussing various power plants as well as aeronautic designs. Rose correctly notes that the exotic fuels required by rocket engines did not lend themselves to wartime logistics and engineering systems.

Rose documents an interesting divergence in how company test pilots viewed experimental designs as opposed to their Royal Air Force (RAF) counterparts. He notes that special designs that made it to the experimental stage frequently received positive reviews by the corporate test pilots only to be slammed by the RAF and rejected out of hand. Many times, it seemed as if the two groups of test pilots were flying entirely different aircraft to entirely different standards.

For the aviation enthusiast who is into what might have been, *British Special Projects* fits comfortably into the niche. Photographs and drawings add to the narrative, while internal summaries are a useful research tool. But as I read the book, I could not help but compare photos and drawings to the vehicles in the British television sci-fi series "Thunderbirds." The various flying vehicles in the show presented designs that suspended all rules of physics, propulsion, and fluid dynamics to create fanciful designs to stir the imagination. Many of the designs Rose offers for consideration seem to serve the same thought-provoking purpose. Discussing the challenges of bringing a special project to life, Rose makes a very key observation. He notes, "... EAG4426 would have been an impressive military aircraft, assuming the technical, political and cost issues had not got in the way." At the end of the day, technical, political, and cost issues usually win.

Gary Connor, docent, Smithsonian National Air and Space Museum's Udvar Hazy Center



PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess books for the journal should contact our Book Review Editor for a list of books available and instructions. The Editor can be contacted at:
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Request for assistance:

I am writing a book on Air Force Capt. Joseph McConnell, Jr., the top-scoring ace of the Korean War. I am trying to find photos, personal recollections and other materials related to Capt. McConnell. He was stationed at Elmendorf AFB, Alaska 1949-51 and George AFB, Calif. 1951-52. He was assigned to the 16th Fighter Interceptor Squadron, 51st FIW at Suwon (K-13) Korea in September 1952. In January 1953, he moved over to the 39th FIS, 51st FIW at Suwon. In May 1953, he returned to George AFB and assigned to the 479th Fighter Bomber Wing. During World War II in early 1945, he was assigned to the 714th Squadron, 448th Bomb Group at Seething, UK. Any photos or personal recollections would be greatly appreciated. I post research updates on 'Capt. Joseph McConnell' pages on Gettr and Facebook. My name is Don Holland, and my email is: Don92392@yahoo.com.

Coming Up



Compiled by
George W. Cully

In light of the coronavirus pandemic, events listed here may not happen on the dates listed here, or at all. Be sure to check the schedules listed on the individual organization's web sites for the latest information.

June 17-18, 2022

The **International Committee for the History of Technology** will present its annual symposium in virtual format; the symposium will consist of three sessions, of which this is the first. The remaining sessions will follow on September 24-25 and October 15-16. For registration and other details, see the Committee's website at 2022 Virtual Symposium (icohtec.org)

June 27-July 1, 2022

The **American Institute for Aeronautics and Astronautics** will host its annual Aviation and Aeronautics Forum, which it bills as "the only aviation event that covers the entire integrated spectrum of aviation business, research, development, and technology." The event will occur in Chicago, Illinois and on line. For more details as they become available, see the Institute's website at AIAA AVIATION Forum and Exposition | AIAA.

July 6-10, 2022

The International Organization of Women Pilots, better known as **the Ninety-Nines**, will hold their annual meeting at the Francis Marion Hotel in Charleston, South Carolina. For registration and other details, see their website at 99s International Conference & Career Panel 2022 - Charleston, South Carolina (swoogo.com).

July 18-20, 2022

The **American Astronautical Society** will present its annual John Glenn Memorial Symposium at Case Western Reserve University in Cleveland, Ohio. See the Society's website at John Glenn Memorial Symposium | American Astronautical Society for more information as it becomes available.

September 8-10, 2022

The **Tailhook Association** will hold its annual gathering at the Nugget Casino Resort Hotel in Sparks/Reno, Nevada. The theme of this year's presentation is "Celebrating 100 Years of U.S. Navy Aircraft Carriers." For reservations and other details, see the Association's website at www.tailhook.net.

September 17-18, 2022

The **Air Force Association** will hold its annual meeting and convention at the Gaylor National Resort in National Harbor, Maryland. For registration and schedule particulars, see the Association's website at 2022 National Convention (afa.org).

September 21-24, 2022

The **Society of Experimental Test Pilots** will hold its 66th annual symposium and banquet at the Grand Californian Hotel in Anaheim, California. For details, see the Society's website at <https://www.setp.org/symposium/meetings/annual-symposium-banquet/>.

September 24, 2022

The **National Aviation Hall of Fame** will hold its 59th annual dinner and enshrinement ceremony to honor the Class of 2022's nominees. This event will be held in conjunction with the Wright State University's 2022 Festival of Flight to be held in Dayton, Ohio. For more information see the NAHF's website at National Aviation Hall of Fame.

October 7-8, 2022

The **National Museum of the United States Air Force** will host its biennial World War I Dawn Patrol Rendezvous on the Museum's grounds in Dayton, Ohio. For a schedule of events, see the Museum's website at <https://www.nationalmuseum.af.mil/Upcoming/Events/>

October 10-12, 2022

The **Association of the United States Army** will offer its annual meeting and exposition at the Walter E. Washington Convention Center in Washington, D.C. Download a prospectus from the Association's website at Home (ausa.org).

October 19-22, 2022

The **Oral History Association** will hold its annual meeting at the Millennium Biltmore Hotel in Los Angeles, California. The theme of this year's meeting is "Walking Through the Fire: Human Perseverance in Times of Turmoil." For registration and more information, see the Association's website at <https://www.oralhistory.org/2022-call-for-proposals/>

October 24-25, 2022

The **American Astronautical Society** will host its annual Wernher von Braun Memorial Symposium at the University of Alabama in Huntsville at Huntsville, Alabama. For registration and other details, see the Society's website at Wernher von Braun Memorial Symposium | American Astronautical Society.

October 25-27, 2022

The **Association of Old Crows** will offer its 59th annual international symposium and convention in Washington, D.C. For more details as they become available, ping a Crow at AOC Annual Symposium (crows.org).

November 10-13, 2022

The **Society for the History of Technology** will hold its annual meeting in New Orleans, Louisiana. For specifics as they become announced, see the Society's website at 2022 SHOT Annual Meeting, 7-13 November, New Orleans (Louisiana) - Society for the History of Technology (SHOT).

November 17-20, 2022

The **History of Science Society** will hold its annual meeting in Chicago, Illinois. For specifics when they are determined, see the Society's website at Meetings & Events | History of Science Society (hssonline.org).

January 5-8, 2023

The **American Historical Society** will hold its 136th annual meeting at the Philadelphia Marriott Downtown in Philadelphia, PA. Details remain to be determined; see the Society's website at Future Annual Meetings | AHA (historians.org) for more information.

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

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Montgomery, AL 36106
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History Mystery Answer



As part of Operation Torch, on November 10, 1942, the 33rd Fighter Group “Nomads” began launching its seventy-seven Curtiss P-40F Warhawks from the *USS Chenango*. The *Chenango* was one of the U.S. Navy’s newest escort carriers. Seventy-seven P-40F were catapulted from the *Chenango*. Their destination was the airfield at the Port of Lyautey in French Morocco. In addition to the aircraft that were catapulted from the *Chenango*, thirty-five “advance attrition” aircraft, also P-40F, were catapulted from the British escort carrier *HMS Archer*. What makes the launching of the P-40F from the two carriers more impressive is that the pilots were Army Air Corps pilots. While the P-40F had been tested on a ground catapult, it had not been catapulted from an aircraft carrier before. Today the 33rd Fighter Wing is a graduate flying and maintenance training wing for the F-35 Lightning II.

To learn more, go to:

Air Phase of Operation Torch: <https://www.afhra.af.mil/Portals/16/documents/Studies/101-150/AFD-090522-041.pdf>

North Africa: <https://www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/196187/north-africa/>

P-40: <https://www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/196309/curtiss-p-40e-warhawk/>

33rd Fighter Wing: <https://www.eglin.af.mil/About-Us/Fact-Sheets/Display/Article/390944/33rd-fighter-wing/>



This Issue's Quiz: In November 1942, less than a year after the attack on Pearl Harbor, the Allied powers decided to open a second front. The second front came in the form of an American and British landing in North Africa. As part of the operation, an Air Corps Fighter group was launched from an American and a British aircraft carrier. In this issue we have a multipart question. What was the name of the military operation? What Air Corps Fighter Group launched from the deck of aircraft carriers. What type of aircraft were they flying? For a bonus, can you name the aircraft carriers?



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