Missions for America
Semper vigilans!
Semper volans!

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Lt Col Stephen Rocketto Editor
Capt Steven Deigen-Schmidt, Publisher
Maj Roy Bourque, Paparazzo
Maj Scott Farley, Roving Correspondent

CURRENT EVENT

The T-1A Jayhawk, a modified Beechjet 400A, has been retired after 30 years of service.

Navy and Air Force Jayhawks at Pensacola

The Jayhawk was used to introduce Air Force pilots to multi-engine aircraft and training for navigator and combat system officer of the Air Force, Navy and Marines. Almost all of them have been flown to the 309th Aerospace Maintenance And Regeneration Group at Davis-Monthan AFB in Arizona. Future training for combat systems officers will be simulator based.

THAMES RIVER COMPOSITE SQUADRON

Where are they now?

Some of our former cadets are engaged in civil and military aviation activities.

Lt Col Erik Nelson, USAF

After leaving a Washington posting as a strategist in the Secretary of the Air Force Executive Action Group, Erik was selected to command the 509th Maintenance Squadron at Whiteman AFB just south of Knob Noster, Missouri. The 509th provides logistics and maintenance support capabilities for B-2 Spirit bomber.

He completed flight qualifications in the Northrop T-38 and is now a student in B-2 Transition Qualification Training.

Erik is married to Alexis and they are blessed with a newborn daughter, Emma Paige.

Noah Bosse

Noah is at Embry Riddle in Florida and has now earned his multi-engine endorsement and working on his flight instructor rating while he works as a ground instructor for the university.

Embry-Riddle uses the Diamond DA42-VI for multi-engine training.

In the spring, his tea,m competed in the National Intercollegiate Flying Association National Competition in both the Crew Resource Management and Traditional Navigation events. They took 6th place overall.

Brendan Flynn

Brendan lives in Wilmington and is in his second year as the intelligence staff chief at Coast Guard Sector North Carolina.

He got married last year to María Gracia in February of 2024

Their daughter, Marifé Lisieux, was born in November.

Part of their parental leave was spent in Arequipa, Peru, Maria's home town, where the Editor was stationed in 1968 before blotting his copybook, declared personal non grata by his own government and exiled to South Australia's Woomera Prohibited Area.

Plaza de Armas and cathedral in Arequipa, la Ciudad Blanca.

Ben Kelley

Ben is entering his junior year at Norwich University in Vermont. He was a member of the Editor's rifle team at the Quaker Hill Rod and Gun Club and made the varsity team at Norwich as a freshman. He competes in 3-position small-bore and air rifle and placed 12th in the Mid-Atlantic Rifle Championships held at the Massachusetts Institute of Technology.

Roan Schaeffer

Roan is majoring in Aviation Administration at Bridgewater State University in Massachusetts. He passed his instrument check-ride and is currently working on his commercial certificate. Roan joined the Commemorative Air Force and flying warbirds, mostly a 1943 Fairchild PT-26.

Real aviators fly tail-draggers

Matthew Fago, A1C, CTANG

Matthew has completed loadmaster training at Little Rock AFB in Arkansas and is currently working full time with the Connecticut Air National Guard, 103rd Airlift Wing at Bradley as a C-130H loadmaster.

He graduated from loadmaster initial qualification training at the end of April and is getting certified on specific missions that the 103rd AW accomplishes such as special fueling operations and low altitude airdrops.

Matthew will continue his college education as time and duty allows.

Art Dammers, Lt Col, CAP, retired

Art officially retired from CAP after 20 years, 15 in the CTWG and 5 in the NCWG.

He writes that he enjoyed his time serving as CTWG Internal AEO Internal AEO which included the first Commander's Cup rocket contest, our field trips to Washington, D.C. Olde Rhinebeck Aerodrome and the USS Intrepid Sea, Air and Space museum. But the absolute highlight of the past two decades has been mentoring cadets.

FEATURE ARTICLE

Heavy Fighters Part One

In the late 1930's and during Worlds War II and the Cold War a unique type of aircraft was

considered an important complement to the inventory of fighters. Governments requested that airframe manufacturers design a class of aircraft called a heavy fighter which could carry out long range bomber escort missions and night interceptions. The mission requirements demanded heavy fuel loads and/or the ability to lift the specialized equipment such as the radar needed for target location. The additional complexity called for additional crew members to serve as radar operators, navigators and gunners.

But the need to lift a heavier weight called with few exceptions, for a twin-engine aircraft, often a converted bomber. The sacrifice was a reduction in maneuverability compared to a conventional single engine fighter and a decided disadvantage if forced into a dogfight. This new class of aircraft was commonly known as a heavy fighter.

Notable among such designs was the Messerschmidt Bf 110 which suffered horrendous losses during the Battle of Britain. On the other hand, the Lockheed P-38 Lightning which was an effective fighter and its long range proved most successful in the Pacific theater of operations.

This two part essay will consider examples of heavy fighters developed by allied and axis air forces in World War Two.

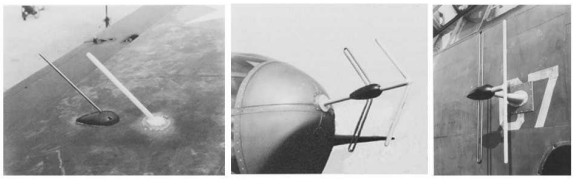
Douglas P-70 "Nighthawk"

The little known P-70 was an adaption of the Douglas A-20 Havoc light bomber known as the Boston in British commonwealth service. The A-20 design team was headed by Donald Douglas, Jack Northrop and Ed Heinemann.

(Credits: USAF)

Before the development of a practical airborne radar, the British came up with a unique solution for a night interceptor, "Turbinlite" They converted 31 Havoc Is by fitting them with a 2.7 million candlepower searchlight in the nose powered by batteries mounted in the bomb bay.

Turbonlite and Radar Antenna Installations



Radar would guide the Havoc to a target which would illuminate it. An accompanying Hurricane would then attack the German bomber. Only one confirmed kill, a Heinkel He 111 was recorded.

The early radars long wave, low frequency systems, were very heavy and required large antennas. Consequently, they were not suitable for single engine fighters. The invention of the cavity magnetron by British boffins made centimetric radar possible. These units were lighter, the antennas were smaller and the range and resolution were better.

The U.S. Army Air Corps converted 60 A-20s to variants called the P-70 and later converted some 68 A-20C and A-20Gs to the P-70A which saw combat in the Pacific with the renamed U.S. Army Air Force. The P-70s were equipped with copies of the British AI Mk radar mounted in the nose which also carried four 20 mm cannons. An auxiliary 250 gallon fuel tank was installed in the bomb bay. The C, G and J models replaced the cannons with six .50 caliber machine guns. Only two kills were recorded in the Pacific and they were

replaced by the Northrop P-61 Black Widow.

A-20C

Northrop P-61 Black Widow

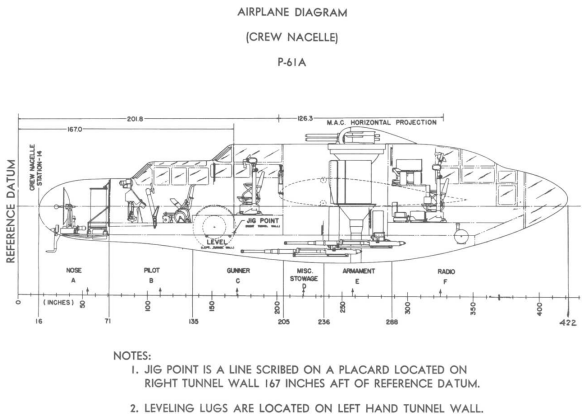
The Black Widow was designed as a dedicated night interceptor. Just over 700 were produced and its first flight occurred in May of 1952 but competition for components with other projects and design changes meant the its addition to combat did not occur for two years when it was introduced in the European theatre.

The first Black Widows has an olive drab livery.

425th Night_Fighter Squadron P-61 in the Pacific

The aircraft was very maneuverable and one of the first to use spoilers. Pilots praised it for its ease of handling but the early models were too slow to accomplish effective interceptions.

The crew of the Black Widow consisted of a pilot, radar operator and sometimes a gunner. Armament consisted of four 20 mm cannons mounted in the nose and four .50 caliber machine guns in a mid-ship dorsal turret. All eight guns could be fired straight ahead which avoided the pesky problem of harmonizing the guns. A serious problem with wing mounted guns.



Radar was an SCR-720 designed by the Radiation Lab at Massachusetts Institute of Technology. It used a scanning parabolic antenna which operated on the S band between 2 to 4 GHz with a wavelength of 7.5 to 15m cm.

She was a large aircraft with a wing span and maximum take-off weight and speed equivalent to a B-25 Mitchell. The P-61 replaced the P-70s in the Pacific where three Black Widow pilots and radar operators earned Ace honors.

Messerschmitt Bf 110 Zerstörer (Destroyer)

The Bf 110 was projected to operate as an escort fighter which would range ahead of a bomber formation and eliminate enemy interceptors. But during the Battle of Britain they were pummeled by the the nimble Spitfires and Hurricanes. Losses were so heavy that the 110s had to be withdrawn from the battle. But as the RAF's Bomber Command stepped up its night attacks they found

new employment as night fighters.

The 110F and G variants became successful interceptors. They were heavily armed sporting a nose mount with two 30 mm and two 20 mm cannons and two 7.9 mm flexible machine guns facing aft for defence. A Lichtenstein radar system using an array of nose mounted antennae proved effective for attacking RAF bombers at night.

For night fighting they were first equipped with the Liechtenstein radar. The operated in the low VHF band with a 61 cm wavelength. This required a complex array of antennae consisting of 32 dipole elements mounted in four groups of eight on four masts on the aircraft nose.

Lichtenstein radar array

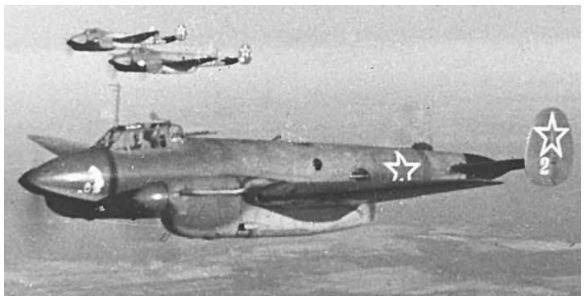
Many German night interceptors were fitted with Schräege Musik (jazz or strange music) cannons or machine guns mounted at an oblique angle on the top side of the fuselage. British bombers were not equipped with belly turrets.

Schräege Musik guns visible mid dorsal position.

The Germans would position their aircraft in the blind spot of the bomber, a Lancaster or Halifax or Sterling and open fire. British losses mounted and it took some time to figure out the Luftwaffe tactic.

P*etlyakov Pe-3*

The Pe-3 was a modification of the Pe-2 bomber. The bombing of Moscow called for a long range interceptor. Three additional fuel tanks holding 185 gallons were installed and offensive armament included a 20 mm cannon, three 12.7 mm machine guns. The crew consisted of a pilot and a navigator-gunner.



The aircraft was ineffective as a night fighter, Its own gun flashes blinded the pilot and anti-aircraft searchlights shown through the glazed nose. Flash hiders and a solid nose replaced the glazing. It found limited use at night but it did perform some escort missions, most usefully as a navigation leader for formations of single engine fighters. In the end, the Pe-3 reverted to a light bomber and recconaissance aircraft.

Kawasaki Ki-45 Toryu (Dragonslayer)

The Ki-45 was an Imperial Japanese Army log-range bomber escort, reporting name “Nick” but suffered the usual fate of a heavy fighter if it attempted to dogfight the more maneuverable single engine aircraft such as the P-40 Warhawk, P-51 Mustang or F6F Hellcat.

Armament of the Model D was a 37 mm cannon, two 20 mm Schräege Musik cannons in a dorsal mount and a 7.92 machine gun which provided defense against a tail attack.

Note the Japanese version of Schräege Musik. The angle is 30 degrees which differs from the Luftwaffe's 60 degree arrangement.

As a night fighter, the Ki-45 was crippled by the lack of a workable radar. By 1945, the American Army Air Force and Navy carrier aircraft had achieved air superiority over the Japanese homeland and it suffered the usual fate of a heavy fighter engaged by more maneuverable single engine fighters.

The Ki-45 did register some successful interceptions of B-29s but its service ceiling was 33,000 feet, and as it approached its service ceiling the Ki-45's handling deteriorated and it became almost impossible to set up a firing solution.

(Editor's note: The FAA defines service ceiling as “the maximum density altitude where the best rate of climb airspeed will produce a climb of 100 feet per minute at maximum weight while in a clean configuration with maximum continuous power.” The Editor once got a Piper Cherokee 140 up to its service ceiling, 14,000 feet and its maneuverability was seriously compromised.)

The heavy fighter was an attempt to provide a workable solution for two missions: long range bomber escort or night interceptor. But there is no free lunch in aircraft design. The designer mus weight many qualities which compete with each other: weight, armament, agility, engine placement and power, crew size and placement and fuel requirements.

In the end, two of the examples offered were based on modified bombers, the P-70 and the Pe-3. The Bf 110 and the Ki-45 were initially purposed as along range escorts. The P-61 is the only example of a design dedicated from the start as a night interceptor.

But in the end, the exigencies of war forced all of them to assume multi-role duties: reconnaissance, intruders and ground attack missions to name a few. The same was true in World War II and is true today. The Republic P-47 established a reputation as a superior ground attacker.as did the Vought F4U Corsair. McDonnells F-4 Phantom II, conceived or an an air superiority fighter flew many of its missions loaded down with bombs. The Grumman F-14 Tomcat was the Navy's primary long range fleet defense aircraft but is was also used were used for reconnaissance and ground attack when the A-6 Intruder was retired.

The F/A-18 Hornet, derived from the Northrop F-17 carries the unusual F/A prefix for “fighter/attack. The multi-role mission is made manifest. There is also some talk the the designation was a ploy to get around some procurement and funding issues. But additional roles are inevitable. EA-18G Growler is a version of the F/A-18F Super Hornet and is an electronic warfare aircraft whose primary mission is jamming enemy air defence radars and communications but has also scored a kill, downing a Houthi drone!

Part Two of Heavy Fighters will probably discuss the de Havilland 98 Mosquito, the Bristol Beaufighter, Fokker G.1, Junkers Ju-88 and Dornier 335 Pfeil.