

APPENDIX F – THE COST OF AN AIR WAR

THE COST OF AN AIR WAR HORRIFIC WWII UNITED STATES ARMY AIR CORPS STATISTICS

“On average 6600 American service men died per MONTH, during WWII (about 220 a day)....”

Most Americans who were not adults during WWII have no understanding of the magnitude of it. This listing of some of the aircraft facts gives a some insight.

- 276,000 aircraft manufactured in the US .
- 43,000 planes lost overseas, including 23,000 in combat.
- 14,000 lost in the continental U.S.

The US civilian population maintained a dedicated effort for four years, many working long hours seven days per week and often also volunteering for other work. WWII was the largest human effort in history.

(There are more amazing facts at the end of the photos...)

WWII MOST-PRODUCED COMBAT AIRCRAFT

Ilyushin IL-2 Sturmovik

36,183

Yakovlev Yak-1,-3,-7, -9

31,000+



Messerschmitt Bf-109

30,480

Focke-Wulf Fw-190

29,001



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Supermarine Spitfire/Seafire

20,351



Convair B-24/PB4Y Liberator/Privateer

18,482



Republic P-47 Thunderbolt

15,686



North American P-51 Mustang

15,875



Junkers Ju-88

15,000



Hawker Hurricane

14,533



Curtiss P-40 Warhawk

13,738



Boeing B-17 Flying Fortress

12,731



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Vought F4U Corsair

12,571



Grumman F6F Hellcat

12,275



Petlyakov Pe-2

11,400



Lockheed P-38 Lightning

10,037



Mitsubishi A6M Zero

10,449



North American B-25 Mitchell

9,984



Lavochkin LaGG-5

9,920

Note: The LaGG-5 was produced with both water-cooled (left) and air-cooled (right) engines.



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Grumman TBM Avenger

9,837



Bell P-39 Airacobra

9,584



Nakajima Ki-43 Oscar

5,919



DeHavilland Mosquito

7,780



Avro Lancaster

7,377



Heinkel He-111

6,508



Handley-Page Halifax

6,176



Messerschmitt Bf-110

6,150



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Lavochkin LaGG-7

5,753



Lockheed Martin B-26 Marauder

5288



Boeing B-29 Superfortress

3,970



Short Stirling

2,383



STATISTICS FROM *FLIGHT JOURNAL* MAGAZINE

THE COST OF DOING BUSINESS

---- The staggering cost of war.

THE PRICE OF VICTORY (cost of an aircraft in WWII dollars)

B-17	\$204,370	P-40	\$44,892
B-24	\$215,516	P-47	\$85,578
B-25	\$142,194	P-51	\$51,572
B-26	\$192,426	C-47	\$88,574
B-29	\$605,360	PT-17	\$15,052
P-38	\$97,147	AT-6	\$22,952

PLANES PER DAY WORLDWIDE

Total Time Frame - From Germany's invasion of Poland 1 Sept 1939 and ending with Japan's surrender 2 Sept 1945
--- 2,433 days.

From the beginning of America's involvement in 1942 onward, America averaged 170 planes lost per day.

THE NUMBERS GAME IN TOTAL -

- 9.7 billion gallons of gasoline consumed, 1942-1945.

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- 107.8 million hours flown, 1943-1945.
- 459.7 billion rounds of aircraft ammo fired overseas, 1942-1945.
- 7.9 million bombs dropped overseas, 1943-1945.
- 2.3 million combat sorties, 1941-1945 (one sortie = one takeoff).
- 299,230 aircraft accepted, 1940-1945.
- 808,471 aircraft engines accepted, 1940-1945.
- 799,972 propellers accepted, 1940-1945.

According to the AAF Statistical Digest, in less than four years (December 1941- August 1945), the US Army Air Forces lost 14,903 pilots, aircrew and assorted personnel plus 13,873 airplanes --- inside the continental United States . They were the result of 52,651 aircraft accidents (6,039 involving fatalities) in 45 months.

Think about those numbers. They average 1,170 aircraft accidents per month---- nearly 40 per day. (However, less than one accident in four resulted in total loss of the aircraft)

It gets worse.....

Almost 1,000 Army planes disappeared en route from the US to foreign locations. But an eye-watering 43,581 aircraft were lost overseas including 22,948 on combat missions (18,418 against the Western Axis alone) and 20,633 attributed to non-combat causes overseas.

In a single 376 plane raid in August 1943, 60 B-17s were shot down. That was a 16 percent loss rate and meant 600 empty bunks in England.... In 1942-43 it was statistically impossible for bomber crews to complete a 25-mission tour in Europe the number set as the target needed to be achieved before returning stateside.

Pacific theatre losses were far less (4,530 in combat) owing to smaller forces committed The worst B-29 mission, against Tokyo on May 25, 1945, cost 26 Superfortresses, 5.6 percent of the 464 dispatched from the Marianas Islands

On average, 6,600 American servicemen died per month during WWII, about 220 per day. By the end of the war, over 40,000 airmen were killed in combat theatres and another 18,000 wounded. Some 12,000 missing men were declared dead, including a number "liberated" by the Soviets but never returned. More than 41,000 were captured, half of the 5,400 held by the Japanese died in captivity, compared with one-tenth in German hands. Total Army Air Force combat casualties were pegged at 121,867.

US manpower made up the deficit. The AAF's peak strength was reached in 1944 with 2,372,000 personnel, nearly twice the previous year's figure.

The losses were huge---but so were production totals. From 1941 through 1945, American industry delivered more than 276,000 military aircraft. That number was enough not only for the US Army, Navy and Marine Corps, but for allies as diverse as Britain, Australia, China and Russia. In fact, from 1943

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onward, America produced more planes than Britain and Russia combined and more than Germany and Japan together 1941-45.

However, our enemies took massive losses. Through much of 1944, the Luftwaffe sustained uncontrolled hemorrhaging, reaching 25 percent of aircrews and 40 planes a month. And in late 1944 into 1945, nearly half the pilots in Japanese squadrons had flown fewer than 200 hours. The disparity of two years before had been completely reversed.

EXPERIENCE LEVEL

Uncle Sam sent many of his sons to war with absolute minimums of training. Some fighter pilots entered combat in 1942 with less than one hour flying time experience in their assigned aircraft.

The 357th Fighter Group (often known as The Yoxford Boys) went to England in late 1943 having trained on P-39 Mustangs. In theater the group never saw a Mustang until shortly before its first combat mission.

A high-time P-51 pilot had 30 hours flying time experience in assigned aircraft type. Many had fewer than five hours. Some had one hour.

With arrival of new aircraft, many combat units transitioned in combat. The attitude was, "They all have a stick and a throttle. Go fly 'em." When the famed 4th Fighter Group converted from P-47s to P-51s in February 1944, there was no time to stand down for an orderly transition.

The Group commander, Col. Donald Blakeslee, said, "You can learn to fly '51s on the way to the target."

A future P-47 ace said, "I was sent to England to die." He was not alone in his feelings.

Some fighter pilots tucked their wheels in the well on their first combat mission with one previous flight in the aircraft. Meanwhile, many bomber crews were still learning their trade: of Jimmy Doolittle's 15 pilots on the April 1942 Tokyo raid, only five had won their wings before 1941.

All but one of the 16 copilots were less than a year out of flight school.

In WWII flying safety took a back seat to combat. The AAF's worst accident rate was recorded by the A-36 Invader version of the P-51: a staggering 274 accidents per 100,000 flying hours.

Next worst were the P-39 at 245, the P-40 at 188, and the P-38 at 139. All were Allison engine powered.

Bomber wrecks were fewer but more expensive. The B-17 and B-24 averaged 30 and 35 accidents per 100,000 flight hours, respectively-- a horrific figure considering that from 1980 to 2000 the Air Force's major mishap rate was less than 2.

The B-29 was even worse at 40; the world's most sophisticated, most capable and most expensive bomber was too urgently needed to stand down for mere safety reasons. The AAF set reasonably high standard requirements for B-29 pilots, but the desired figures were seldom attained.

The original cadre of the 58th Bomb Wing was to have 400 hours of multi-engine time, but there were not enough experienced pilots to meet the criterion. Only ten percent had overseas experience. Conversely,

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when a \$2.1 billion B-2 crashed in 2008, the Air Force initiated a two-month "safety pause" rather than declare a "stand down", let alone grounding.

The B-29 was no better for maintenance. Though the R3350 was known as a complicated, troublesome power-plant, no more than half the mechanics had previous experience with the Duplex Cyclone engine. But they made it work.

NAVIGATORS

Perhaps the greatest unsung success story of AAF training was Navigators.

The Army graduated some 50,000 during the War. And many had never flown out of sight of land before leaving "Uncle Sugar" for a war zone. Yet the huge majority found their way across oceans and continents without getting lost or running out of fuel --- a stirring tribute to the AAF's educational establishments.

CADET TO COLONEL

It was possible for a flying cadet at the time of Pearl Harbor to finish the war with eagles on his shoulders. That was the record of John D. Landers, a 21-year-old Texan, who was commissioned a second lieutenant on December 12, 1941. He joined his combat squadron with 209 hours total flight time, including 2 in P-40s. He finished the war as a full colonel, commanding an 8th Air Force Group --- at age 24.

As the training pipeline filled up, however those low figures became exceptions.

By early 1944, the average AAF fighter pilot entering combat had logged at least 450 hours, usually including 250 in training. At the same time, many captains and first lieutenants claimed over 600 hours.

FACT

At its height in mid-1944, the AAF had 2.6 million people and nearly 80,000 aircraft of all types.

In 2009 the US Air Force employed 327,000 active personnel (plus 170,000 civilians) with 5,500+ manned and perhaps 200 unmanned aircraft.

The 2009 figures represent about 12 percent of the manpower and 7 percent of the airplanes of the WWII peak.

IN SUMMATION

Whether there will ever be another war like that experienced in 1940-45 is doubtful, as fighters and bombers have given way to helicopters and remotely-controlled drones over Afghanistan and Iraq. But within living memory, men left the earth in 1,000-plane formations and fought major battles five miles high, leaving a legacy that remains timeless.