VOLUME 24, ISSUE 9

THE SLIPSTREAM

THE NEWSLETTER OF GREEN RIVER EAA CHAPTER 441 KENT, WA

SEPTEMBER 2022

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August Meeting Minutes:

We shared what we had done during late July and August.

PRESIDENTS COLUMN:

Presidents Column:

Connecting the dots...it's what we do

EAA is just full of really clever and talented people, with resources. Moreover, the organization, the chapter network serves as a force multiplier for those networks of people.

You have probably heard me refer to my friend, Chuck, who lives near Syracuse. Chuck is an A&O, IA, and technical Counselor for his chapter. By trade, he's a retired pattern maker, one who made patterns for making cast parts of molten metal. Chuck specialized in complicated impellers for liquid pumps.

Chuck has also done some mechanical drawing in his past. Many (most?) of the drawings for the Buddy Baby Great Lakes biplane came from Chuck's pencil. As a result, Chuck serves as Technical Counselor to a number of Baby Lakes projects around the country, many of which he has never seen, but he knows the projects intimately as he examines photos and exchanges details with builders.

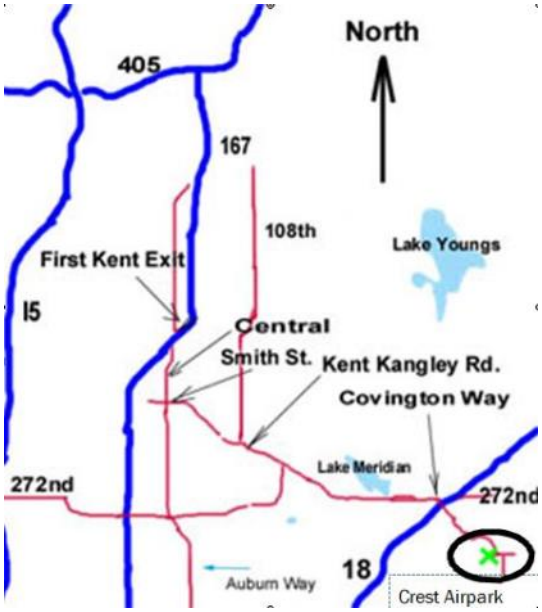
One such builder is on Rodney Fluharty, in Maryland. It seems that the Baby Lakes requires some really small streamlined tubing, with peculiarly odd dimensions: 1.349 major axis x .571 minor axis, x 0.035 wall. He needs just over 3 feet of the stuff (a "strong 3-feet").

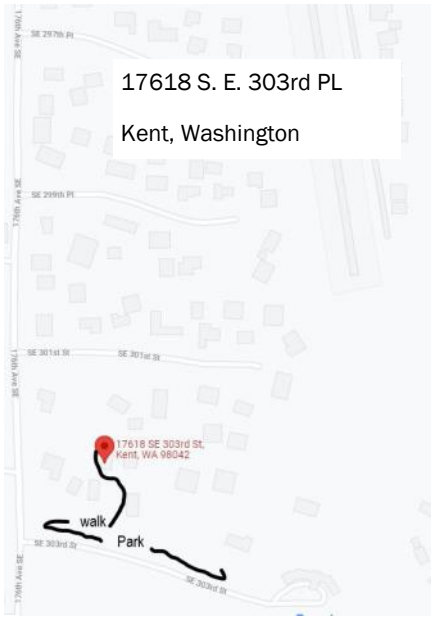
The other day, I was in Norm Pauk's shop, helping him sort out some stuff when I saw some streamlined tubing on the floor under the airplane. I commented that I'd never seen streamlined tubing that small before (being used to Cessna strut material). Well, Chuck and I talk regularly, and he commented that Rodney needed some really small streamlined tubing, and Chuck had sent him some Citabria strut material that he had. It was bigger than Rodney needed, but maybe he could use it.

Right away I called Norm to ask him to measure the tubing he had. Turns out it is precisely what the drawing calls for, and Norm had 75 inches of it. If I could cut it in half, it would give Rodney what he needed and a spare. Norm consulted an Aircraft Spruce catalog to see what it might be worth. Of course the catalog does not tell you that it's out of stock and hard to find. Norm cam up with a price, we made a deal, I cut the tubing in half. It was really hard to slice it the long way, so I just whacked it off perpendicular to the length, wrapped it to a 1x2 and dropped it into a mailing tube. Just like that Rodney can deep working on his project.

EAA is just full of talented, generous, and helpful people. Because of a chance conversation, a curiosity on Norm's floor, and a couple of conversations, a member now has what he needs. Things like this happen all around the world every day. EAA's chapter organization is set up precisely to help connect the dots. Every chapter meeting we have includes

WHERE DO WE MEET EACH MONTH?





SEPTEMBER PROGRAM

More of what we did during July and August and Project Updates.

Program:

Project Updates and more of what we did for the summer plus other topics as they arise.

2022

OFFICERS

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PRESIDENTS COLUMN, CONTINUED, PIETENPOL UPDATE, TABLES FOR SALE,EAA NEWS:

project reports. This is the opportunity on a local level to seek advice, ask questions.

You never know who might have that special tool you need, a piece of material you need, or has been there and done that and is willing to share.

See you on Thursday.

Brian

Pietenpol Update:

Denise and I are painting a logo inspired by the movie The Rocketeer on the facade of our hanger. We'll send more photos next month when it should be done.....

Jake

Free Tables:

Two Boeing Surplus steel tables, about 30 wide by 6 feet long. These are former conference room tables...the ordinary kind, not the mahogany row version. Cosmetics not good, but still solid. Perfect for the shop or hangar. Located on the west hill in Auburn. Call Ron Wanttaja

253-833-7394.

Ron Wanttaja

EAA News:

EAA Chapter 1522 Young Eagles Build & Fly and RV-12 Projects

Here at EAA headquarters, we enjoy hearing about successful chapter programs and activities that our chapters and Warbirds squadrons participate in. So often, good things are happening at chapters and we simply are unaware. Well here's an example that we are aware of and it's a good one.

Roll back to 2019. EAA Chapter 1522 in Cynthiana, Kentucky, decided to further their outreach to local youths who have participated in Young Eagles flights. The plan was to engage in the relatively new EAA-designed youth program called Young Eagles Build and Fly. This is a youth RC build-and-then-fly program designed to bring kids back to the airport, and back to the chapter after a Young Eagles flight. The program involves building a SIG LT-40 balsa wood model airplane outfitted with an electric motor.

To Read More: Click Here

A Young Eagles Milestone for Chapter 430:

On July 16, EAA Chapter 430 held a Young Eagles rally at Sequim Valley Airport in Sequim, Washington. We would be flying our 4,000th Young Eagle after 20 years of providing free flights to kids ages 8-17. Our special Young Eagle was Paige Biss, a 13-year-old Civil Air Patrol cadet from Port Angeles. Her pilot was Gordon Tubesing, EAA 1050151, who is also a member of UFO (United Flying Octogenarians). According to her mother, April Biss, she has wanted to fly since she was three years old.

To Read More: Click Here

Sign Up for a Chapter Leadership Academy in Oshkosh:

Registration is now open for the upcoming Chapter Leadership Academies in Oshkosh, Wisconsin. Every year, EAA offers these academies so chapter leaders can learn how to improve their chapter. These training sessions give you the opportunity to learn about best practices for running your chapter and provide you with information on new and existing chapter programs and resources. Perhaps most importantly, these events allow you to interact with other chapter leaders who can share their experiences and provide their perspectives on issues like the ones you may face in your chapter..

To Read More: Click Here

The Quest for Vertical Flight::

This article continues on with the quest for vertical flight. The article started with the Sikorski heli-

TECH COUNSELORS AND FLIGHT ADVISORS

Chapter 441 is fortunate to have two tech counselors. Feel free to call Brian (253)-369-0489 , or Dave Nason any time. You don't need to wait for some significant milestone in your project. Remember, this is not an "inspection".

The shop doesn't need to be cleaned for a visit. All are quite used to looking at pieces, parts, and assorted bits, and will be happy to answer questions, offer advice, and generally talk about projects, building, flying, or whatever.

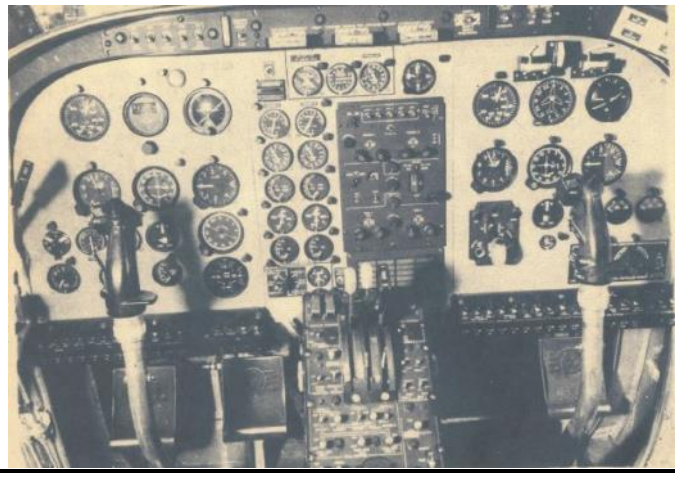
GUESS THAT AIRPLANE; GUESS THAT INSTRUMENT PANEL

This months Guess that Airplane:

See Page 9 for the August Airplane:

This months Instrument Panel:

See Page 10 for the August Instrument Panel



copter, to the Navy vision of the tail sitters that were intended to protect the convoys until the supporting Jet fighters could arrive and take over their duty of protecting the fleet. We now move on to tilt wing and tilt rotor aircraft.

Tilt Wing:

The SAE 1992 article for Tilt Winged aircraft describes an advantage of the tilt wing over a tilt rotor. It presumes things that have not happened, such as cargo and passenger flights out of small verti-ports or other airports. If that had happened General Aviation would have lost more ground while the primary commercial airports burdens would have been eased a bit.

The advantages proposed y the SAE article: The Tilt Wing Advantage - For High Speed VSTOL Aircraft written by William F. Chana and T. M. Sullivan are:

Public Acceptance:

Public is ok with helicopter noise for Police and Medical Evac. However if it sounds like a helicopter and looks like an airplane they do not want it over their homes.

Block Time:

Higher cruise speeds for distances greater than 50miles and at 300 miles the block time is about half that of the helicopter and slightly less than the tilt rotor.

Direct operating Costs:

at 300 miles the helicopter is DOC is 50% more than the Tilt wing.

Weight:

The weight comparison of like sized Tilt Wing (TW) and Tilt Rotor (TR) showed that the TR was 6% heavier.

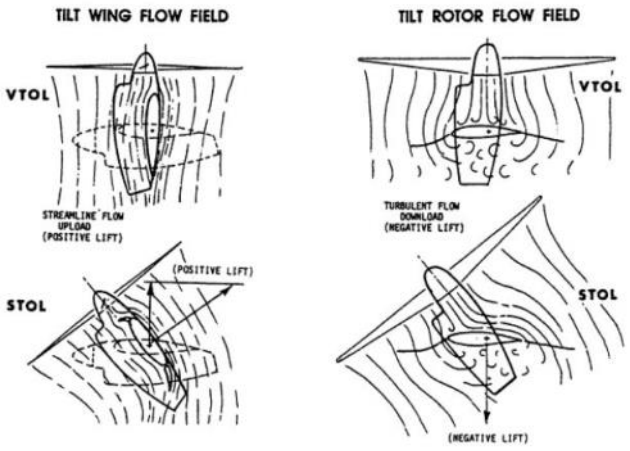
Vertical Lift:

The airflow is less disrupted by a TW than the straight short wing of a TR.

Propulsive Advantage:

High parasitic drag of the Rotors results in 69% propulsive efficiency of the TR vs 82% efficiency of the TW.

Pilot Transition:



Pilots whether from conventional aircraft or helicopters found the transition easier for the TW

Reliability/Maintainability:

The TR has a much higher maintenance requirement du to the nature of the rotor systems. The must be synchronized in some manner to and automatically stop the tilting if they become de-synchronized.

Development and Production Costs:

See article discussion.

Structural Dynamics:

The rotors have a higher maintenance requirement.

CTOL/VTOL/STOVL:

The TW propellers can be designed to clear the ground in level flight attitude whereas the TR cannot.

SAR:

Aircraft designed around the TW concept:

Proposed and never built or flown:

CTW-409
Ishida TW-68

Developed to at least a prototype:

Airbus A³ Vahana (2018):

General characteristics

Crew: None (self-piloted) , Alpha One (N301VX) / Alpha Two (N302VX)
Capacity: 1 passenger, 90 kg (200 lb), Alpha Two: 2 pax, 200 kg (440 lb)

QUEST FOR VERTICAL FLIGHT CONTINUED:

Length: 5.7 m (18 ft 8 in) , Alpha Two: 5.86 m / 19.5 ft
Wingspan: 6.25 m (20 ft 6 in)
Height: 2.81 m (9 ft 3 in)
Empty weight: 695 kg (1,532 lb)
Max takeoff weight: 815 kg (1,797 lb)
Propellers: 1.5 m (4 ft 11 in) diameter

Performance

Cruise speed: 200 km/h (120 mph, 110 kn) , Alpha Two: 230 km/h (140 mph; 120 kn)
Range: 50 km (31 mi, 27 nmi) (Alpha Two: 100 km (62 mi))
Service ceiling: 1,524 m (5,000 ft) , at 35°C, Alpha Two: 3,048 m (10,000 ft)

Canadair CL-84 Dynavert (1965):

General characteristics
Crew: 2
Capacity: 12 passengers
Length: 47 ft 3.5 in (14.415 m)
Wingspan: 34 ft 4 in (10.46 m)
Height: 14 ft 3 in (4.34 m)
Wing area: 233.3 sq ft (21.67 m2)
Airfoil: NACA 633-418
Empty weight: 8,417 lb (3,818 kg)
Max takeoff weight: 14,500 lb (6,577 kg) (STOL), 12,600 lb (5,710 kg) (VTOL)
Maximum width over propeller tips:34 ft 8 in (10.56 m)
Maximum height over propellers during wing tilt: 17 ft 1½ in (5.22 m)
Powerplant: 2 × Lycoming T53 shaft-turbines, 1,500 shp (1,100 kW) each
Main rotor diameter: 14 ft 0 in (4.27 m)
Propellers: 4-bladed, 14 ft 0 in (4.27 m) diameter

Performance

Maximum speed: 321 mph (517 km/h, 279 kn)
Cruise speed: 301 mph (484 km/h, 262 kn)
Never exceed speed: 415 mph (668 km/h, 361 kn)
Range: 421 mi (678 km, 366 nmi) with max wing fuel, VTOL, & 10% reserves
Rate of climb: 4,200 ft/min (21 m/s)
Disk loading: 195 kg/m2[14]
Power loading: 1.35 kg/kW

Hiller X-18 (1959):

General characteristics

Crew: 2-3
Length: 63 ft (19 m)
Wingspan: 48 ft (15 m)
Height: 24 ft (7.3 m)
Wing area: 528 sq ft (49.1 m2)
Aspect ratio: 4.36
Airfoil: NACA 23015[6]
Empty weight: 27,052 lb (12,271 kg)
Max takeoff weight: 33,000 lb (14,969 kg)
Fuel capacity: 1,000 US gal (833 imp gal; 3,785 l)
Powerplant: 2 × Allison T40-A-14 coupled turboprop engines, 5,850 hp (4,360 kW) each equivalent
Powerplant: 1 × Westinghouse J34 turbojet, 3,400 lbf (15 kN) thrust for jet reaction pitch control
Propellers: 6-bladed Curtiss-Wright, 16 ft 1 in (4.90 m) diameter contra-rotating propellers

Performance

Maximum speed: 253 mph (407 km/h, 220 kn)
Maximum wing-tilt speed: 178 mph (155 kn; 286 km/

QUEST FOR VERTICAL FLIGHT CONTINUED:

h)
Range: 224 mi (360 km, 195 nmi)
Service ceiling: 35,300 ft (10,800 m)

Kaman K-16B (1959):

General characteristics
Crew: 2
Length: 38 ft 4 in (11.68 m)
Wingspan: 34 ft 0 in (10.36 m)
Height: 19 ft 2 in (5.84 m)
Empty weight: 6,500 lb (2,948 kg)
Gross weight: 8,000 lb (3,628.74 kg)
Powerplant: 2 × General Electric YT58-GE-2A turboshafts, 1324.9 hp (988 kW) each
Propellers: 3-bladed Kaman, 14 ft 10 in (4.5 m) diameter

Performance

Maximum speed: 200 mph (321.9 km/h, 173.8 kn)
Range: 250 mi (402.3 km, 217.24 nmi)
Service ceiling: 16,000 ft (4,876.8 m)

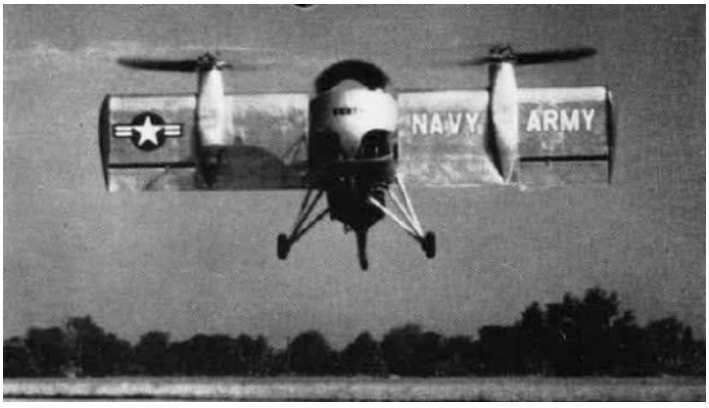
LTV XC-142 (1964):

General characteristics
Crew: 2
Capacity:
32 fully-equipped troops or
24 stretcher patients and 4 attendants or
8,000 lb (3,600 kg) cargo
Length: 58 ft 1 in (17.70 m)
Wingspan: 67 ft 6 in (20.57 m)
Height: 26 ft 1 in (7.95 m)
Wing area: 534.5 sq ft (49.66 m2)
Aspect ratio: 8.6:1
Empty weight: 22,595 lb (10,249 kg)
Gross weight: 34,474 lb (15,637 kg) (VTOL weight)
Max takeoff weight: 44,500 lb (20,185 kg) (STOL)
Fuel capacity: 1,400 US gal (1,200 imp gal; 5,300 L)
Powerplant: 4 × General Electric T64-GE-1 turboprops, 2,850 shp (2,130 kW) each
Propellers: 4-bladed Hamilton Standard variable-pitch propellers, 15.5 ft 0 in (4.72 m) diameter

Performance

Maximum speed: 431 mph (694 km/h, 375 kn) at 20,000 ft (6,100 m)
Cruise speed: 288 mph (463 km/h, 250 kn) at sea level
Combat range: 230–470 mi (370–760 km, 200–410 nmi)
Ferry range: 3,800 mi (6,100 km, 3,300 nmi)
Service ceiling: 25,000 ft (7,600 m)
Rate of climb: 6,800 ft/min (35 m/s)
NASA GL-10 Greased Lightning (2014):
General characteristics
Crew: 0
Wingspan: 10 ft (3.0 m)
Powerplant: 10 × electric-powered propellers
Powerplant: 2 × diesel prime movers driving generators , 8 hp (6.0 kW) each

Vertol VZ-2 (1957):



QUEST FOR VERTICAL FLIGHT CONTINUED, EDITORS CORNER

General characteristics

Crew: one pilot
Capacity: 1 passenger/observer
Length: 26 ft 5 in (8.05 m)
Wingspan: 24 ft 11 in (7.59 m)
Diameter: 9 ft 6 in (2.90 m)
Height: 15 ft 0 in (4.57 m)
Empty weight: 3,700 lb (1,678 kg)
Powerplant: 1 × Avco Lycoming YT53-L-1 turboshaft , 700 hp (522 kW)

Performance

Maximum speed: 210 mph (340 km/h, 180 kn)
Range: 130 mi (210 km, 110 nmi)
Service ceiling: 13,800 ft (4,200 m)

I have shortened the article to only the TW concept for this month. I will continue with the TR concept next month and do a more in-depth article on each of these Aircraft.

The Tilt wing concept has some issues inherent to the design:

The ability to cross link engines across the fuselage is not feasible due to wing structure flexing, especially in a twin engine version. It is more easily to accomplish this in a four engine where the cross linking is done on a shorter frame.

The use of electric engines that are coming on reduces the need for single engine failures because the involve many electric motor's.

The tilted wing is much more susceptible to cross winds due to the size of the wing, full flap and aileron extension.

Cross training into either a TW or TR is no longer as large an issue as seen by the SAE article due to computers and digital control of the aircraft.

Boeing and the Osprey V22 has considerable usage and maintenance experience that was just beginning in the early 1990's.

Tilt Wings are still being designed and porotype, mostly around the emerging electric motors.

Editors Corner:

My health continues to wobble a bit. Plus I have had to move out of my house which will last up to two months. I have asked for assistance on guiding the Newsletter and Ron Wanttaja will take over those responsibilities starting next month. Thank you Ron. I know the newsletter is in good hands.

I plan to continue to provide articles for the Newsletter on various aspects of aviation, especially those related to WWII and prior.

This is the 75 anniversary of the USAF formed in September 1947. Happy Birthday USAF!

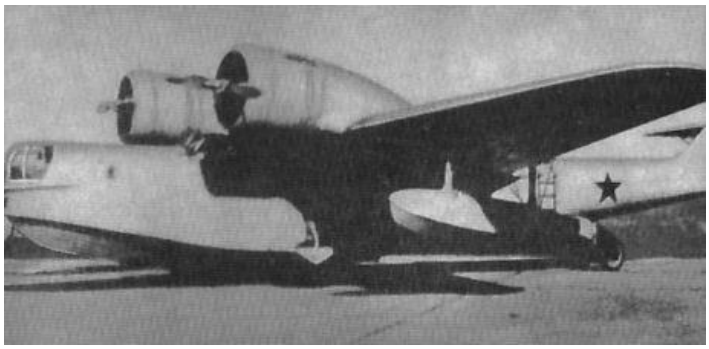
Build Straight

Berling

Some recent prototypes and proposals for Tilt Wing Aircraft:

GH Craft models for quad Tilt Wing

LAST MONTHS GUESS THAT AIRPLANE:



The Chyetverikov MDR-6

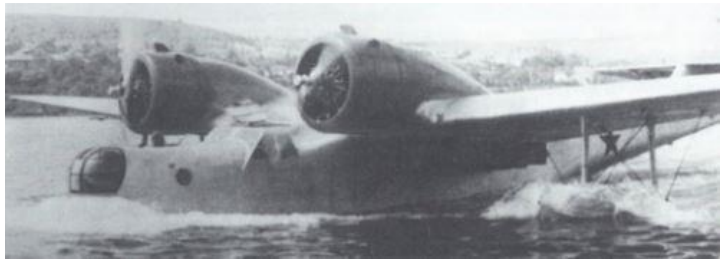
The Chyetverikov MDR-6 was a 1930s Soviet Union reconnaissance flying-boat aircraft, and the only successful aircraft designed by the design bureau led by Igor Chyetverikov.

Development:

First flying in July 1937, the MDR-6 was a two-engined high-wing monoplane of all-metal stressed skin construction. The prototype was powered by two M-25 radial engines. A production run of 20 units powered by M-63 engines were produced in 1940 and 1941. All the aircraft were withdrawn from service in 1942 due to structural problems.

To Read More:

Wikipedia: Click Here
Academic Dictionaries and Encyclopedia: Click Here
Airpages.ru: Click Here



General characteristics

Crew: 3
Capacity: 3
Length: 15.73 m (51 ft 7.25 in)
Wingspan: 19.4 m (63 ft 7.75 in)
Wing area: 52.3 m2 (562.97 sq ft)
Empty weight: 4,100 kg (9,039 lb)
Gross weight: 7,200 kg (15,873 lb)
Powerplant: 2 × Shvetsov M-63 radial piston , 821 kW (1,100 hp) each

Performance

Maximum speed: 360 km/h (224 mph, 195 kn)
Cruise speed: 220 km/h (137 mph, 119 kn)
Range: 2,650 km (1,647 mi, 1,431 nmi)
Service ceiling: 9,000 m (29,530 ft)
Armament
1 × 7.62-mm (0.3-in) ShKAS machine gun in bow turret
1 × 12.7-mm (0.5-in) UBT machine gun in dorsal turret
1,000-kg (2205-lb) bombload

LAST MONTHS GUESS THAT INSTRUMENT PANEL:

Boeing B-47

The Boeing B-47 Stratojet (Boeing company designation Model 450) is a retired American long-range, six-engined, turbojet-powered strategic bomber designed to fly at high subsonic speed and at high altitude to avoid enemy interceptor aircraft. The primary mission of the B-47 was as a nuclear bomber capable of striking targets within the Soviet Union.

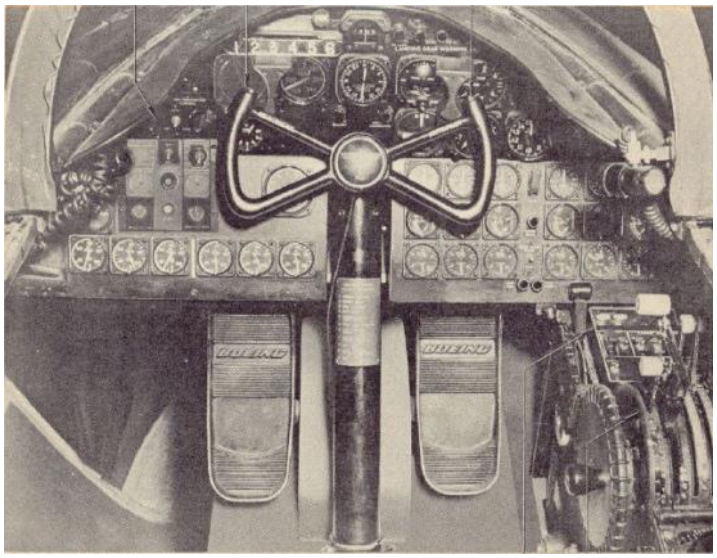
General characteristics

Crew: 3

Length: 107 ft 1 in (32.64 m)
Wingspan: 116 ft 0 in (35.36 m)
Height: 28 ft 0 in (8.53 m)
Wing area: 1,428 sq ft (132.7 m2)
Aspect ratio: 9.42
Airfoil: NACA 64A(.225)12 mod (BAC145)[134]
Empty weight: 80,000 lb (36,287 kg)
Gross weight: 133,030 lb (60,341 kg)
Max takeoff weight: 221,000[135] lb (100,244 kg)
Zero-lift drag coefficient: 0.0148 (estimated)
zero-lift drag coefficient area: 21.13 ft2 (1.96 m2)
Powerplant: 6 × General Electric J47-GE-25 turbojet engines, 7,200 lbf (32 kN) thrust each

Performance

Maximum speed: 607 mph (977 km/h, 527 kn)
Cruise speed: 557 mph (896 km/h, 484 kn)
Combat range: 2,013 mi (3,240 km, 1,749 nmi) with 20,000 lb (9,100 kg) bombload
Ferry range: 4,647 mi (7,479 km, 4,038 nmi) with underwing tanks
Service ceiling: 40,500 ft (12,300 m) [136]
Rate of climb: 4,660 ft/min (23.7 m/s)
Wing loading: 93.16 lb/sq ft (454.8 kg/m2)
Thrust/weight: 0.22
Armament
Guns: 2 × 20 mm (0.787 in) M24A1 autocannon in a remote controlled tail turret with
Bombs: 25,000 lb (11,340 kg) of ordnance, including:
2 × Mk15 nuclear bombs (3.8 megaton yield each), or
4 × B28 nuclear bombs (1.1–1.45 megaton yield each), or
1 × B41 nuclear bomb (25 megaton yield), or
1 × B53 nuclear bomb (9 megaton yield), or
28 × 500 lb (227 kg) conventional bombs



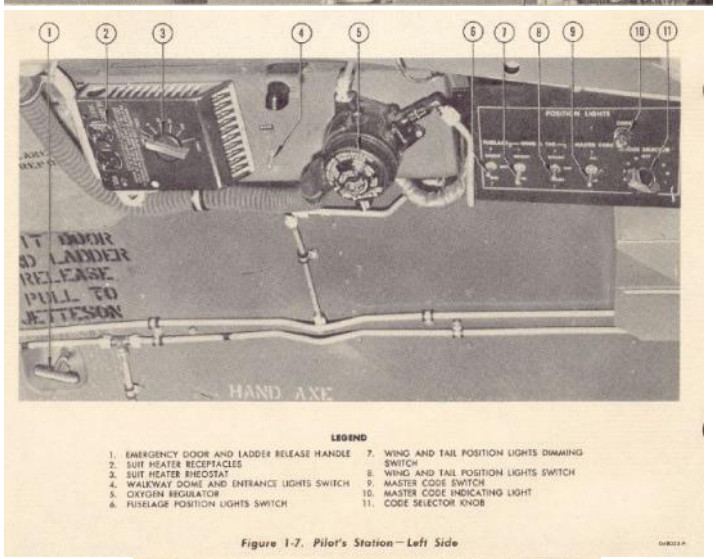


Figure 1-7. Pilot's Station—Left Side

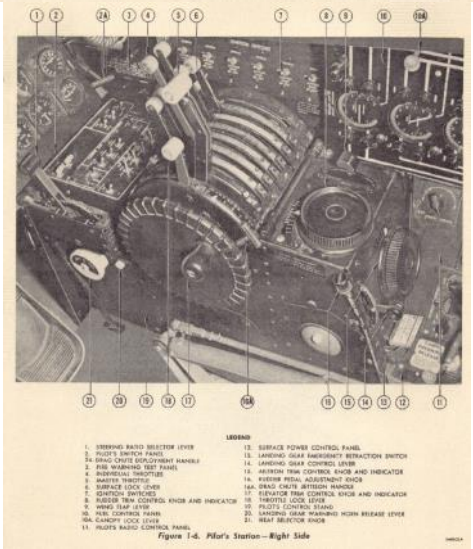


Figure 1-8. Pilot's Station—Right Side