Convair B-36: America’s Big Stick

There is an old African Proverb… “Walk softly and carry a big stick.” This proverb was standard for the United States Air Force Strategic Air command during the early to late 1950’s. It was personified in the Convair B-36 Bomber, which was given the name of “Peacemaker” and often referred to as “America’s Big Stick.”

The B-36 was unmistakable in appearance due to its size, engine combination and its total number of engines. Each wing had five engines, two J47-GE-19 Turbo Jet engines and three Pratt and Whitney R-4360-41 or –53 engines, which were 3000 horse power for the -41 and 3500 horsepower for the –53 engine. It carried a fuel load of 33,626 gallons of 115/145 Aviation Gasoline, which was used for the six piston powered engines and four Turbo Jets engines mounted on the outboard side of each wing. It had the longest wingspan of any airplane ever built.

With the appearance of the MIG-15 in Korea in 1950, the days of a piston powered propeller driven airplane was quickly coming to a close. The B-29, a propeller driven aircraft, experience during the Koran war caused the Air Force to switch from daylight to nighttime bombing missions. During daylight raids, the MIG-15 could attack the bombers with impunity…it could out maneuver the World War II piston powered Fighter airplanes and the American jet airplanes, which were inferior and could not adequately protect the bombers from their attacks.

The B-36 was the world’s first intercontinental bomber with enough range to carry very large bomb loads to a target half way around the world. Too late to see action during WWII, it became the standard carrier for the Stegritic Air Command during the late forties and fifties until its withdrawal from service in 1959. The B-36 was the first bomber capable of carrying a nuclear weapon without any modification to the airplane’s bomb bays. Until it was replaced by the B-52 in 1955, it was the primary nuclear weapon delivery vehicle of the Strategic Air Command. It set the standard for future bombers for range and payload.

During the early to late 1950’s, this aluminum giant roamed the skies of the world to demonstrate the lethality of America’s firepower. The Third Reich in Germany during World War II had a profound influence on the decision by the American Military to put in place an Intercontinental Bomber that could deliver an attack on hostile countries in Europe or Asia and return to its take off point without refueling.

On April 11, 1941, the initial completion of an Intercontinental Bomber had started to take shape on drawings and reached a level of finality by October 1941. Versions of the Bomber were created until a final version was decided upon, which turned out to be the first version of the B-36. By August 6, 1946, the first version of the B-36 (with some modifications) flew its first test flight.

My journey to become associated with the B-36 aircraft began two months after turning seventeen years of age; when I entered the United States Air force. After basic training, I was sent to Lake Charles Air Force Base in Louisiana for assignment and placed in a
food service unit in the officer's dining hall. After eight months of dining hall duty, I convinced my first Sergeant to get me reassigned to an Aviation Maintenance unit. I had determined that I wanted to be an aircraft mechanic after visiting the Base flight line during a public open house held on the base. During the open house event, I had an opportunity to go through the inside of a B-29 Bomber assigned to the base. It was my first up-close experience with an airplane. After my transfer to maintenance Squadron, my first maintenance assignment consisted of removing B-29 engine accessories and placing the engine in shipping containers. We were performing this task because the B-29 was being phased out of the Air Force inventory. After three months of disassembling B-29 Engines, I was sent to Chanute Air Force Base. My next assignment was Limestone Air Force Base, Maine (years later it was named Loring). After one month’s leave in my hometown of Marshall, Texas, I reported to my new assignment.

My first close-up look and tour inside of a B-36 was in the spring of 1954, on the flight line at Limestone Air Force Base, Maine. The number of instruments inside of the cockpit located on the flight engineers and pilots instrument panes was astounding. The forward end of the aircraft had two levels with five crewmembers on the top level and four on the lower level. When I arrived on the flight line at Limestone, my first assignment was to a B-36 ground crew of five mechanics. The Crew Chief of this aircraft was Sergeant Roy Ball. Our primary job was to perform preventive maintenance, servicing: oxygen, fuel, oil, tires, struts and hydraulic components. In addition to these duties, we would perform pre-flight inspections and assist the flight crews in preparing the airplane for its mission during their pre-flight inspection prior to departure. I remember most of the missions that my airplane flew were 20 to 25 hours in duration. Crewmembers would leave clean-shaven and could use a shave after their return flight.

Each mechanic had to take a turn on the night shift, which meant that you had to meet returning airplanes and crew after one of these missions to fuel and tow it to its parking location. Most Missions were started in early or midmorning and terminated the next night around midnight. If this was a winter time operation, it could be very challenging to work out in the open refueling airplanes late at night in temperatures most of the time 20 degrees below zero. Each airplane was required to carry a minimum fuel load of 15,000 gallons of fuel, which was called, a ramp load. I had the opportunity to see what the results were when this protocol was ignored. We had an airplane that was not refueled and was stored in a nose dock after its flight. When we arrived the next morning snow had accumulated on the tail of the airplane and it had lifted the cockpit in the air until the nose wheel was off the hangar floor. The top of the Cockpit was up against the ceiling. Sweeping the snow off the tail section slowly lowered it back to the floor.

Cold weather made maintenance more difficult as airplanes sat outside for days at a time when the temperature was below twenty or thirty degrees. I remember an incident where the mechanic was attempting to service the nose strut of a B-36 that was in a tail dock, in which the front of the airplane was outside and the nose was inside. This particular airplane had been in this position for several weeks. The normal procedure was to hook up a Joy Air compressor, which could supply 3500 lbs of pressure, which would slowly extend the oleo strut. With the air line connected and pressurized air entering the nose wheel strut, the mechanic would then stand up on the nose wheel landing gear tires and
jump up and down on the nose wheel tires to create movement to help un-stick a frozen strut and move the strut to the desired height. When it reached this level, the mechanic would disconnect the air hose from the nose strut servicing valve. This particular strut was stuck and did not move as the mechanic kept putting in air. Finally when it came unstuck, there was so much pressure in the strut interior that it blew the strut from underneath the mechanic who was standing on the nose wheel tires; jumping up and down while holding on to part of the nose wheel interior to keep his balance. Because he was holding on to the inside of the wheel well, he was not blown out with the landing gear which traveled thirty feet or more toward the rear of the aircraft and bounced off the closed hangar door. He was left suspended in the air holding on while the airplane began to slowly settle onto the ramp without the nose gear being attached.

The B-36 was too large to fit into most hangars in the Air Force inventory and, as a consequence, special hangars were built to accommodate their size. Due to their intercontinental requirements, the B-36 was often stationed in the northern continental United States, Alaska and Artic bases. This meant that, in the wintertime at these bases, ground crew personnel were forced to work inside when working on the engines and other preventive work. Due to the fact that we had a limited amount of hangars at Loring Air Force Base, your airplane was parked outside, unless it had work that required a hangar space.

During its lifetime, the B-36 was plagued with a host of engine problems. Because the engines were pusher engines (mounted on the rear of the wing) and actually flew backwards to a normal air-cooled radial engine (mounted on the front of the wing), it had inherent cooling and carburetor air heating problems for the same reason. As an engine mechanic working in the docks during an inspection, I remember the items that were the most troublesome were oil leaks followed by fuel leaks from fuel injection lines and changing engine spark plugs. The Pratt and Whitney Wasp Major R4360 had 28 cylinders and each cylinder had 2 spark plugs, which totaled 56 plugs for each engine. Each time the aircraft went into the docks for periodic maintenance, I usually would be assigned one side of the wing to work its engines. If I had to work all three engines on the wing by myself that I was assigned to, I might have to change some spark plugs in each engine, since each engine had 56 spark plugs, I might wind up having to change a very large number of plugs.

Oil leaks presented a challenge that you could never successfully cope with. Because of their high altitude flights, it was almost impossible to prevent cylinder rocker box covers from leaking. As a mechanic, you became a professional oil wiper. You had to keep a supply of rags at all times to help keep up with the oil leaks. Large amounts of engine oil on the engine cowlings, propellers and wings did not instill confidence in a flight crew getting ready to fly an airplane for twenty to thirty hours. As a consequence, good mechanics and crew chiefs kept their airplanes free of leaking oil as much as possible.

During the 1950’s, as a carry over from World War II, the crew chief’s name was always painted on the side of his airplane and the airplane was named by the crew chief. The airplane that always stood out in my mind was an airplane crewed by Sgt. Trotter that he had named, “Shake, Rattle and Roll.” Each Crew Chief had a very high level of respect for his airplane and usually boasted about its record. These were my greatest days of aviation maintenance learning.
In his book entitled, “Convair B-36,” Meyers K. Jacobsen quoted some comments from several pilots who flew the B-36:

‘I distinctly remember my impression of flying the B-36, especially the first one. The size alone had to be the most profound. It was intimidating. And statistics contributed to the effect-total horsepower including converted pounds of thrust was 44,000 pounds, plus the wingspan was only 70 feet shorter than the length of a football field, gross weight over 178 tons, total bomb carrying capacity 86,000 lbs, in flight maintenance capability within the wing, sixteen 20 mm cannons for self-defense.’

‘…the redundancy of 10 engines (with jets) gave a high degree of safety on long missions…losing an engine is not a desirable situation on any airplane, but with the B-36 it was not usually a worry…’

‘…the characteristics that impressed me were many among them were the maneuverability at altitude…the tremendous load lifting capacity and range…the safer of having the engines on the trailing edge of the wing where a raging fire…were extinguished by shutting down the engine and turning off the fluids.’

The B-36 was originally conceived to carry 10,000 lbs of bombs 10,000 miles. These statistics were well beyond the range and capability of any airplane on the drawing board during this time period. It could carry 35,000 lbs of bombs from Hawaii to Tokyo and return without refueling. The B-36 had a huge bomb bay section and could carry any size bomb that had been designed at the time it was manufactured. No other airplane in the Air Force inventory had this capability, which left it in a class by itself. This, perhaps, may have been one of the deciding factors that gave it preference over its competitors and its nickname, “Big Stick.”

It could also take off from Loring Air Force Base in Maine, which was three miles from the Canadian border, and fly to the Continent of Europe non-stop and return without refueling. On many occasions, while working the night shift, I saw one of the squadron airplanes land. I would take the follow-me truck out to the taxiway to guide it to its fueling location, only to discover that it had a few more hours of fuel left. The pilot would continue to conduct practice landings and take-offs until the fuel was burned off before they landed.

Eventually, it became time to say “good-by” to the B-36 and it was replaced by its chief competitor, the B-52, which was faster and more efficient. It could be operated with six less crew members and be refueled from the air, which meant that it had a much greater bomb lift capacity because it could eliminate having to lift off with enough fuel to go to its objective and return.

The 42nd Bomb wing at Loring Air Force Base was the first Wing to completely convert to the B-52. My Squadron was the first to receive a B-52. We received the first airplane in June of 1956. Our flight crews would fly a B-36 to Arizona and leave it there, then transport to Castle Air Force Base in California for B-52 training. After completing
training, we would fly the B-52 back to the factory location and fly an airplane back to our unit at Loring. I was discharged from the Air Force in November of 1956 and said “good bye” to the B-36 and the Air Force. I learned a tremendous amount of aircraft knowledge and what it meant to be an aircraft mechanic.

Some B-36 Statistics

Fuel Load:

- Main Wing tanks--------------------------------- 21,053 gallons
- Main Wing Tanks and Auxiliary----------------- 30,630 gallons
- Main Wings, Auxiliary and Bomb Bay tanks------ 33,626 gallons

Engines:

- Pratt and Whitney R-4360-25 (3000 horsepower)
- Pratt And Whitney R4360-41/53 (3500 horsepower)

Reciprocating Engine Oil Tanks------------------ 250 gallons per engine (six oil tanks)

Bomb Load-------------------------------------- 42,000 lbs. bombs (2 each)

Top Speed-------------------------------------- 420 MPH (Approximately)

Cruise Burn Approximately---------------------- 600 Gallons per hour