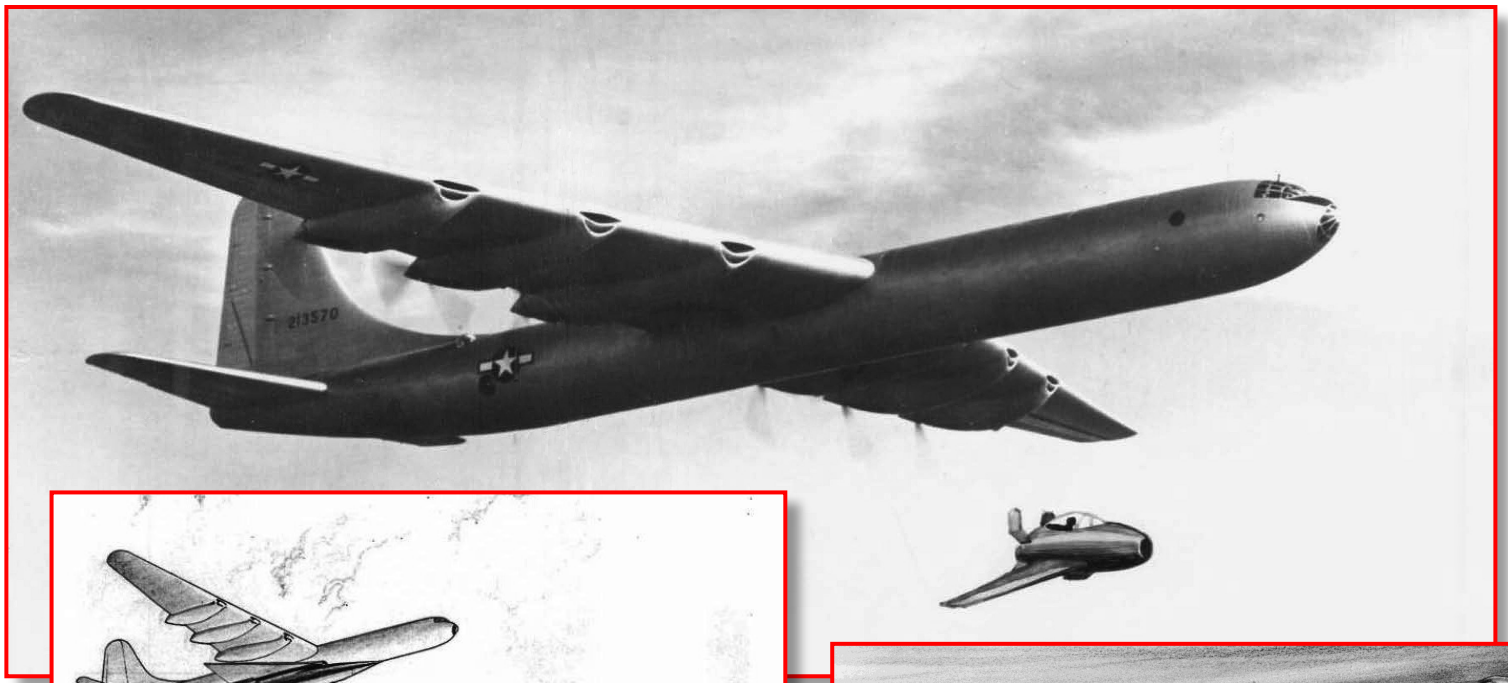
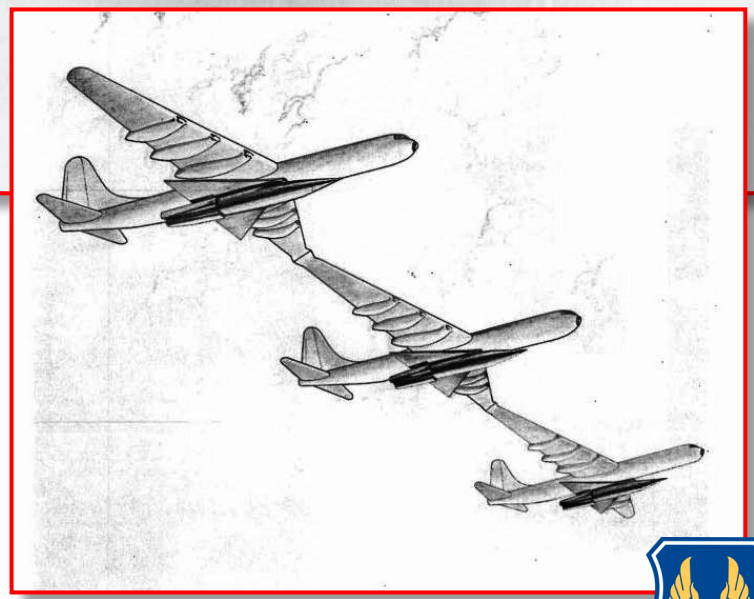
A Look Back...

PEACEMAKER PARASITES

GOBLINS AND OTHER STRANGE PROPOSALS





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HQ AFMC HISTORY OFFICE

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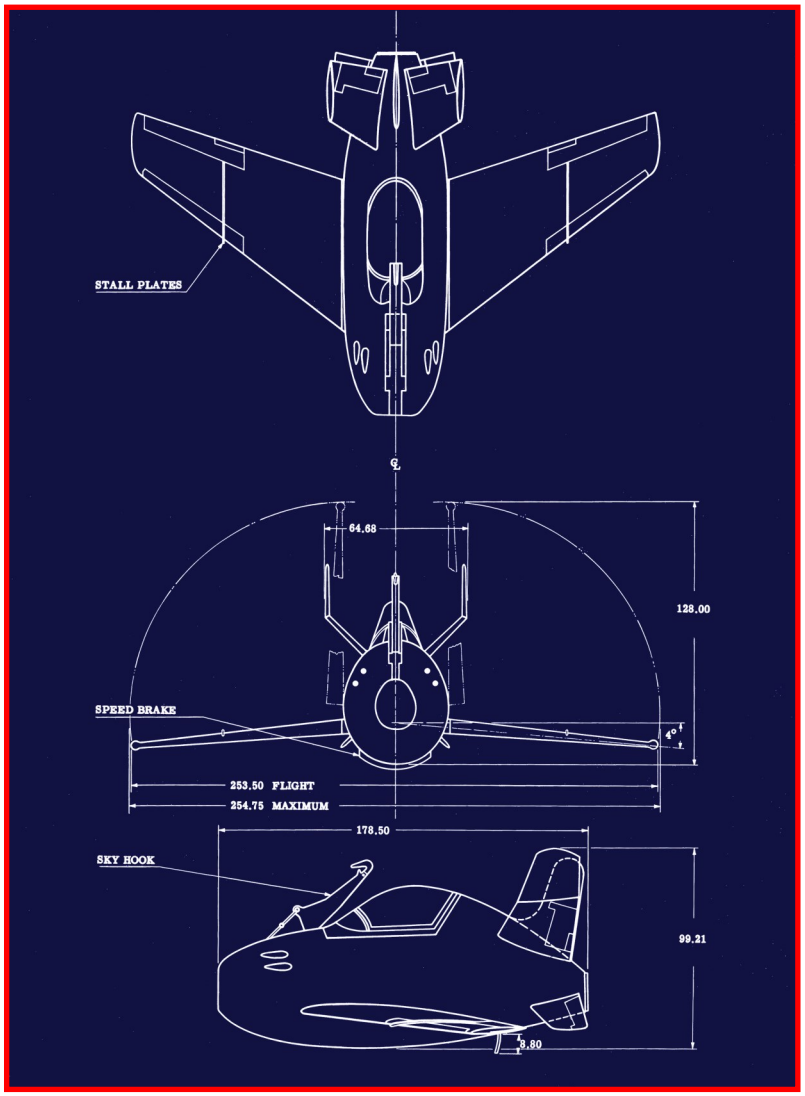
PEACEMAKER PARASITES

On 11 April 1941, the Army Air Corps issued a specification calling for industry to produce a bomber capable of carrying 10,000 pounds of bombs to targets 5,000 miles away and return without refueling. The Army Air Corps initially sent invitations to submit preliminary designs to Consolidated Aircraft Corporation and Boeing Aircraft Company with Northrop and Douglas Aircraft following a short time later. The Air Corps chose Consolidated on 3 October 1941 and a cost-plus-fixed-fee contract for two experimental models awarded on 15 November.

Events of World War II showed a need for fighter escort of bombers near the target area. The 10,000 -mile round trip flown at 330 mph, the mission required 30 hours to complete. The standard practice would have escort fighters along for protection and with aerial refueling still many years away, the range and duration were beyond the capability of fighter aircraft design and pilot performance and the concept of the B-36 internally carrying along a small parasite fighter began.



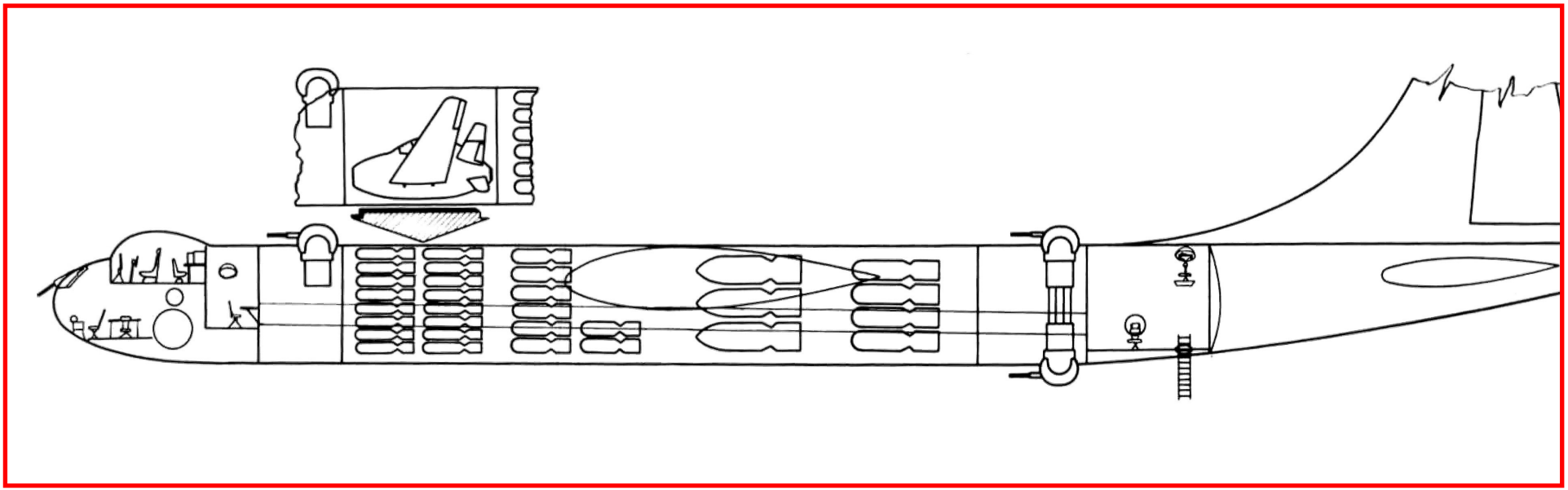
The concept of a parasite fighter that could be carried aloft for added protection against enemy aircraft has been around since the early 1930's. Large dirigibles like the US Navy's Akron and Macon carried F9C-2 Sparrowhawk biplanes for protection and surveillance. The Air Services also tested wing-coupling techniques by carrying smaller aircraft attached to the outer wing of the host aircraft.

The parasite fighter project became project MX-472 and McDonnell Aircraft Company of St. Louis, Missouri answered the RFP with four versions of its Model 27. No other aircraft companies had interest, and McDonnell was awarded the contract on 9 October 1945. McDonnell's Model 27E, a small single engine, low-wing monoplane with X-shaped vertical stabilizers and folding, swept-back wings, given the Air Force designation of XP-85, quickly earned the nickname Goblin.

The stubby parasite linked to the bomber via a skyhook located in the nose that caught a trapeze in the number 1 bomb bay in the B-36. The McDonnell-designed trapeze would raise and lower the aircraft. Since the vehicle operated exclusively from the host aircraft, there was no provision for conventional landing gear. With delays in the B-36 program, the flight testing of the new fighter would use a modified B-29 in place of the Peacemaker.

Wind tunnel testing of the first airframe, 46-523, now designated XF-85, began at NASA Ames Research Center's 40 x 80-foot wind tunnel in January 1948 but the airframe was damaged during a lifting operation and sent back to St. Louis for repairs and the second XF-85, 46-524, sent in its place. Once completed, the Goblin spent the next few months at McDonnell prior the beginning of flight testing at Muroc Air Force Base, California in June.

Three-view drawing of the McDonnell XP-85 Goblin shows the diminutive size of the parasite fighter.



The Army Air Force requested provisions for installing an XP-85 into the number 1 bomb bay of the Peacemaker be provided in kit form, in order for any B-36 to have the capability to carry a parasite fighter. Convair found specific modifications would have to be made on the assembly line.

A shortage of materials and engineers during WWII delayed development of the first truly intercontinental bomber. The XB-36 made its first flight nearly a year after the end of WWII on 8 August 1946. As originally conceived, the parasite fighter support components for the B-36 would be delivered in kit form as to not interrupt aircraft production. With Consolidated building the bomber and McDonnell building the fighter, the question of responsibility for the trapeze assembly arose in a letter on 13 September 1946, as well as the number of parasites carried on board. Air Materiel Command at Wright Field, Ohio responded:

"It is intended at this time to carry only one XP-85 in any one B-36. The B-36 is to carry a bomb load and a single fighter as protection. However, tactical requirements may dictate that the bomber carry the maximum number of fighters possible, which would be three. The B-36 has four bomb bays of which three are large enough to carry fighters.

"The fighter is to be stocked entirely within the parent airplane complete with all launching gear, the door closed so as not to change the external configuration of the B-36. Numerous bomb, fuel and fighter arrangements are possible depending upon opposition expected and the range required.

"The XP-85 is armed with four .50 caliber M-3 machine guns. Total of 1200 rounds of ammunition is carried. Ammunition and fuel can be reloaded into the fighter when taken aboard the B-36. No provisions are made for rockets, bombs or external tanks in the fighter."

As engineering and assembly of both aircraft proceeded, the determination was that the required modifications could not be effectively completed in kit form and provisions would need to be built into the bombers on the assembly line. Air Materiel Command assigned specific components into Group "A" and Group "B" items with the trapeze assembly being separate.

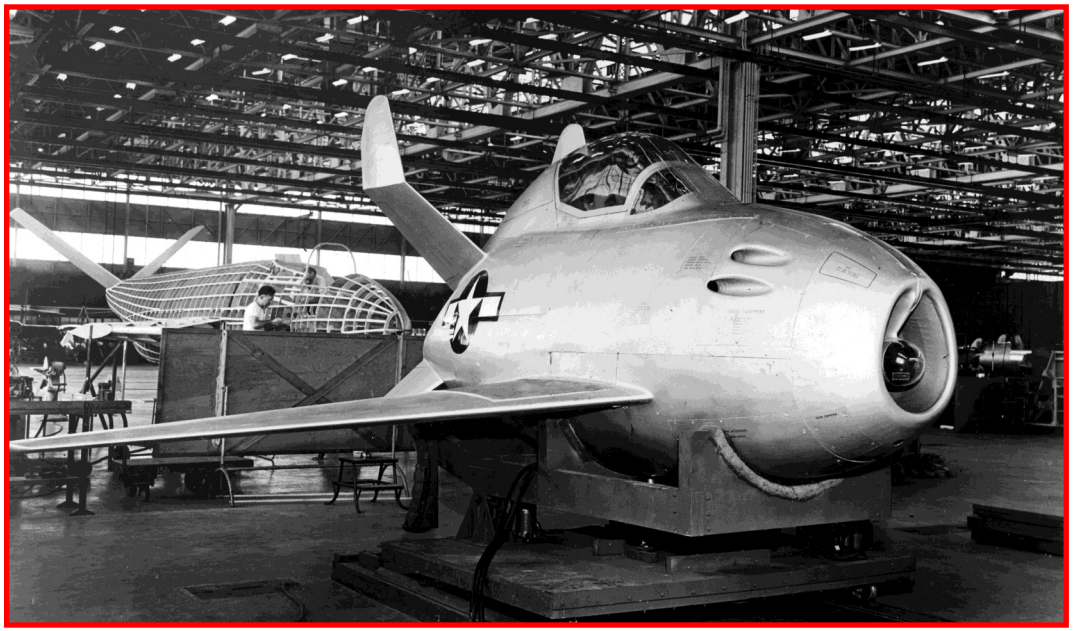
Group “A” parts:

Entrance door in bulkhead no.4- frame, door, valve, soundproofing, etc.
Depressurization chamber attachment fittings and carry-through.
Alteration to diagonal strap of bulkhead no.5.
Rework of bomb rack fitting attachment carry-through on longeron to provide bolt pattern interchangeability.
Structural carry-through for fighter nose bumper.
Fuel system cross-over- fuselage fuel lines including 3 valves and valve control wiring up through fuselage bulkhead no. 4 and fuel system controls to forward cabin.
Oxygen supply line tees for crew supply take-offs.
Ejected case and link container modification.
Radio operator’s table and panel modification.
Electric wiring for AC and DC power with receptacles.

Group “B” parts:

Bomb bay heating provisions consisting of insertion of diverter valve in tail anti-icing duct.
Ammunition stowage provisions for fighter.
Complete trapeze supporting structure.
Hydraulic system items consisting of electric motor and pump with supporting structure, reservoir and supports, control panel for hydraulic system, and emergency retraction provisions.
Depressurization chamber and installation details.
Electric System and wiring for depressurization tank, hydraulic system, etc.
Fighter oil provisions.
Fighter installation control panels, etc.
Walkways, service platforms, etc.
Oxygen provisions for depressurization chamber and maintenance crew.
Nose bumper for fighter.
Flexible hoses for fuel and bomb bay heating air.

Only the last 78 airframes on the original order of 100 Peacemakers would receive the provisions for carrying the fighter, based on the fact that beginning with the 23rd airplane, the bomb bay section was being designed to carry very large bombs, making it easier to accommodate the parasite. The basic parts of Group “A” (items 1 through 5) required installation on



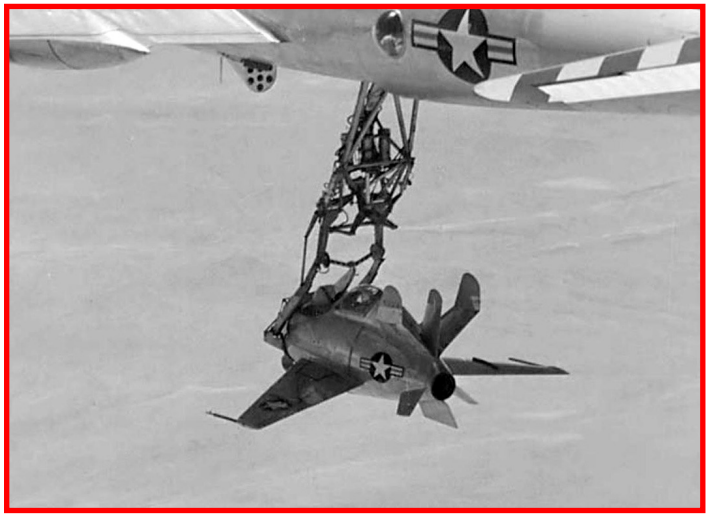
The wooden mockup for the XP-85 had provisions for four .50 caliber M-3 machine guns in the nose and included folding wings. Note the XP-88 mockup in the background.

the assembly line, while the rest of Group "A", and all Group "B" parts could be installed after the completion of XP-85 flight testing. Trapeze design and construction went to McDonnell in November 1946, while Group "A" and "B" parts went to Consolidated. Costs for Group "A" and "B" parts were estimated at $32,260.50 per airplane, plus $176,095.25 in engineering bringing the total cost for 78 airplanes to $2,692,414.25. The estimated cost for the trapeze assembly was noted at $151,145.00 each plus $72,919.00 for engineering. In order for the basic Group "A" parts be installed beginning with the 23rd production airframe, a directive would be required by 1 April 1947. Delays in B-36 production extended this decision date by one year.

Technicians went right to work on the Goblin upon its arrival at Muroc AFB, CA. The second airframe, 46-524, became the first to fly and performed the majority of flight testing.

On 2 April 1948, Major General Edward Powers, assistant to the deputy chief of staff for Materiel, Air Force Headquarters, approved the basic Group "A" modifications of the 78 aircraft. The Air Force deferred purchase of Group "A" and Group "B" components until Fiscal Year (FY) 1949. Meanwhile, with no B-36 aircraft available, flight testing of the XF-85 would be conducted using a B-29 in place of the Peacemaker.

The modified carrier aircraft, EB-29B, 44-84111, nicknamed Monstro, awaited the new aircraft at Muroc. Since the EB-29B lacked sufficient clearance between the fuselage and the ground to permit loading the XF-85, a special loading pit was constructed at Muroc, 24 ½ feet wide, 92 feet long, and 17 ½ feet deep at one end with an inclined ramp permitting the XF-85 to be lowered on its ground handling dolly. McDonnell assigned test pilot, Edwin Schoch, as the Goblin pilot for all flight testing at Muroc.



McDonnell test pilot, Ed Schoch stabilizes the XF-85 Goblin as it hangs beneath the EB-29B 'Monstro' mothership on a fully extended trapeze.

Prior to any free flights, the second XF-85, 46-524, performed a series of 5 captive flights beginning on July 22, 1948, where the Goblin was lowered into the airstream, engine started and 'flown' while on the trapeze. The first free flight took place on 23 Aug 1948 and lasted a total of 25 minutes with Schoch making two hook-up attempts, the second of which resulted in a broken canopy and Schoch's helmet being knocked off. With minimal damage, Schoch recovered and made a successful skid landing on the dry lakebed at Muroc.

The first successful hook-up came during flight 2 on October 14, during Schoch's second attempt during that flight. Flights 3 and 4, flown the following day resulted in successful hook-ups. The brief flights lasting only 6 minutes and 4 minutes, respectively, would be the last successful hook-ups of the program. By this time, officials questioned the requirement for carrying the fighter escort as advancements on in-flight refueling technology allowed fighter escorts to cover longer distances. The flight characteristics and short range of the Goblin also made it impractical as a bomber escort.

The Goblin returned to St. Louis for modifications after the fifth free flight. With modifications completed to both XF-85's, they returned to Muroc for further testing, though

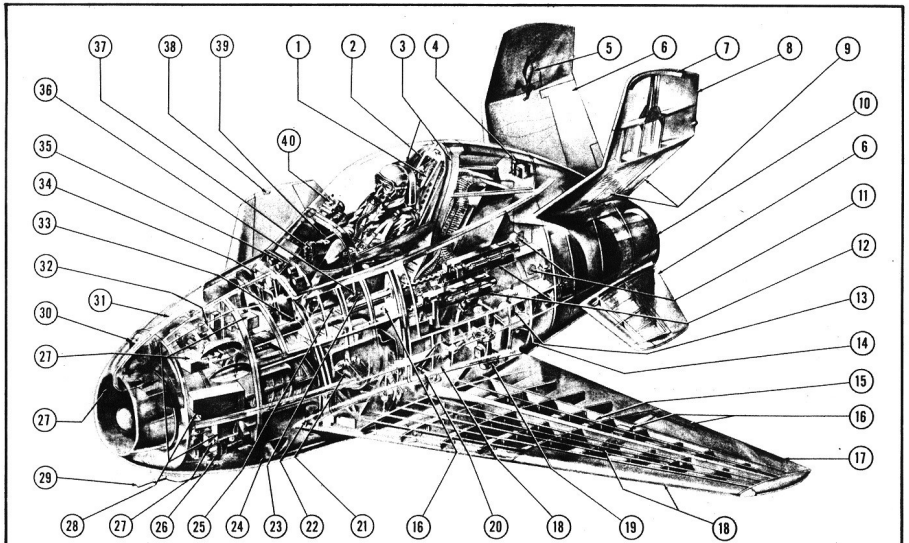
each flew just one more time each before cancellation of the program on 24 October 1949. Total flight time for the two vehicles totaled 2 hours and 19 minutes.

After a long and controversial development, the Strategic Air Command (SAC) accepted first B-36A on 26 June 1948, while improved B model followed a short time later. Over time, the B-36 won over its critics and became the backbone of strategic deterrence as originally envisioned. By the time SAC took delivery of the final airplane on 14 Aug 1954, a total of 381 Peacemakers had rolled off the assembly line. This number does not include the two prototypes, one static test airframe, the sole XC-99 or the two YB-60 jet prototypes.

The parasite concept did not die with the XF-85 program. Under the fighter conveyor (FICON) program, 10 RB-36D's and 25 Republic RF-84F aircraft were modified for use as extended range reconnaissance aircraft. After modifications, their designations became GRB-36D-III and RF-84K's respectively. Little is known about actual FICON missions, but rumors persist about overflights of north-eastern Russia before the Lockheed U-2 became available. While not an actual parasite, Convair did use a B-36 to ferry the B-58 static test article to Wright-Patterson AFB for loads testing.

With its heavy lift capacity, it is not surprising the Air Force and other airframe manufacturers chose the Peacemaker as a mothership for their various parasite proposals. Other fighter aircraft proposed for use with the B-36 included the Douglas F4D Skyray, unmanned F-86 missile, Convair F-102 Delta Dagger and Republic F-105 Thunderchief. All of the competing companies for the hypersonic X-15 test vehicle initially chose the B-36 as their mothership. Convair proposed using the Peacemaker to carry their GEBO II (Generalized Bomber) concept as well as early variations of MX -1626, which evolved into the B-58 Hustler and their triplesonic, manned, reconnaissance aircraft concept, named Fish.

North American Aviation proposed air-launch variants of their Navaho missile launching from the B-36 as did their competitor Northrop Aircraft with their MX-775B Boojum missile as well as an air-launch variant of Snark. Though none of these parasite concepts for the B-36 became a reality, the role of carrier aircraft for many future experimental test programs went to Boeing's B-52 Stratofortress prior to the last flight of a Peacemaker on 30 April 1959.



Cutaway of the XF-85 Goblin shows the locations of many major internal components of the parasite fighter design.

For further reading see:

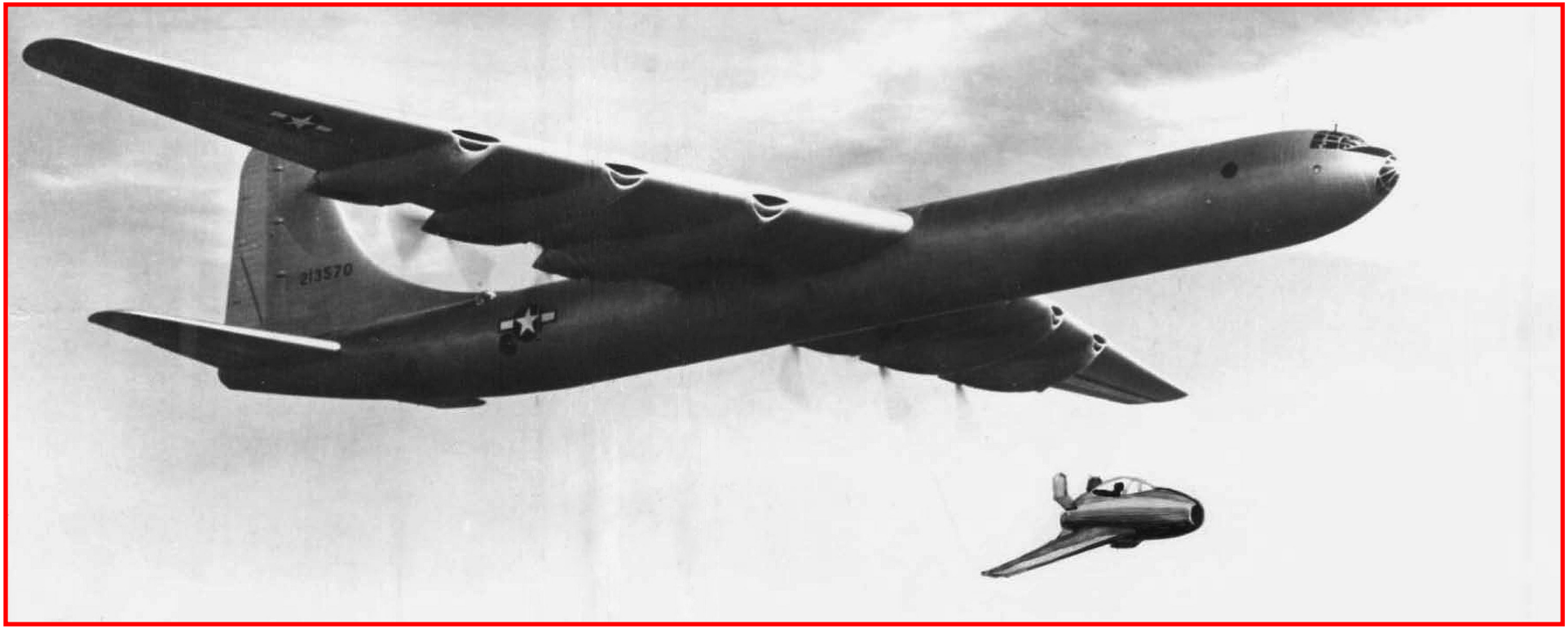
Case History of the B-36 Airplane, Air Materiel Command, Wright-Patterson AFB, 28 May 1948

'The Goblinarium' web site- http://www.cesarebrizio.it/AAFC/XF-85_page.htm

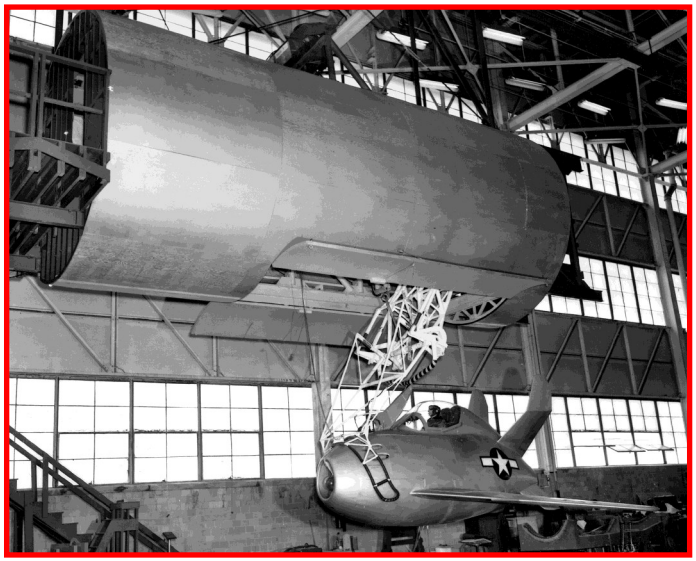
Richard D. Powers, "MONSTRO and the Goblins", AAHS Journal, Fall 1973

Dennis R. Jenkins, "Magnesium Overcast", Specialty Press, 2001

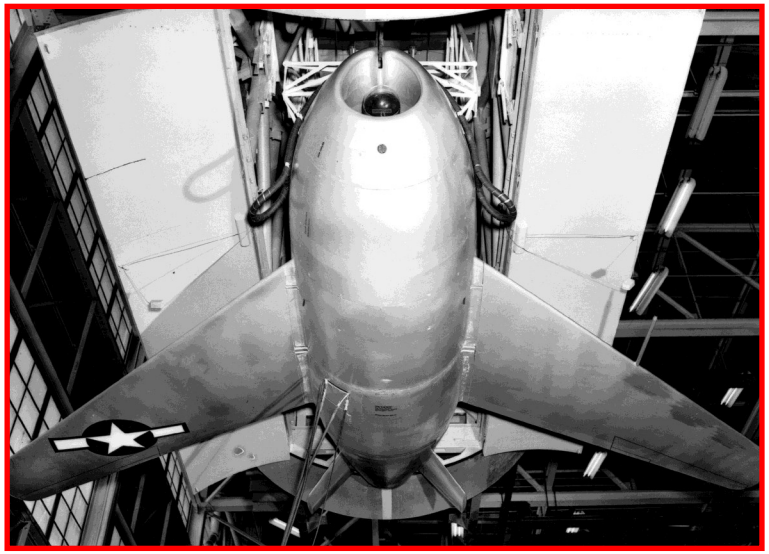
Tony R. Landis, A Look Back: "Peacemaker Personnel", AFMC History Office, 2020

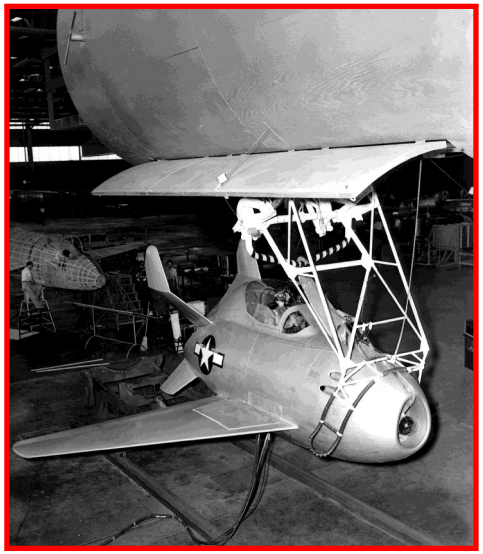


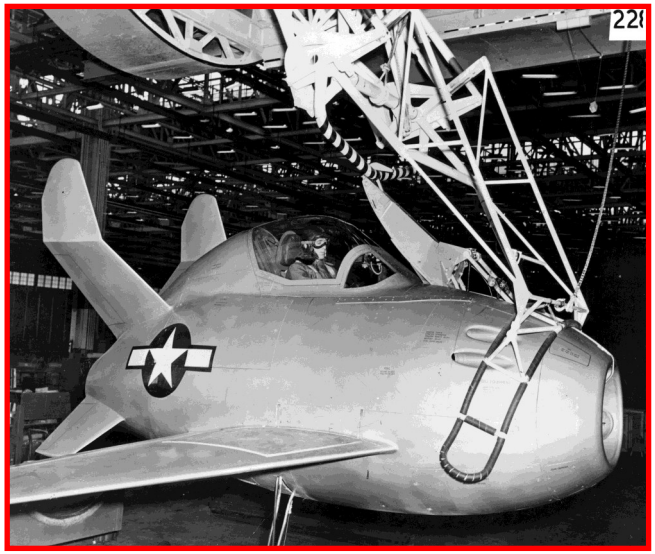
Composite photo from Convair Aircraft of the XF-85 in flight near the XB-36 Peacemaker prototype. Initial plans for the parasite fighter test program were to be done using the XB-36. Delays in design and production of the large bomber curtailed those plans and flight testing moved to a modified B-29 Superfortress.



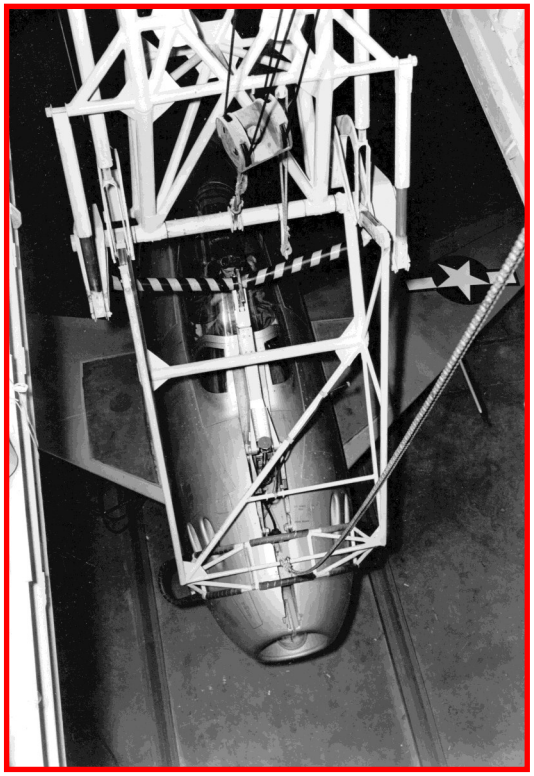
Responsibility for design and fabrication of the trapeze assembly went to McDonnell Aircraft Company. They constructed a full-scale mockup of the B-36 weapons bay and made use of the XP-85 mockup to finalize the design as shown in the three photos at left.

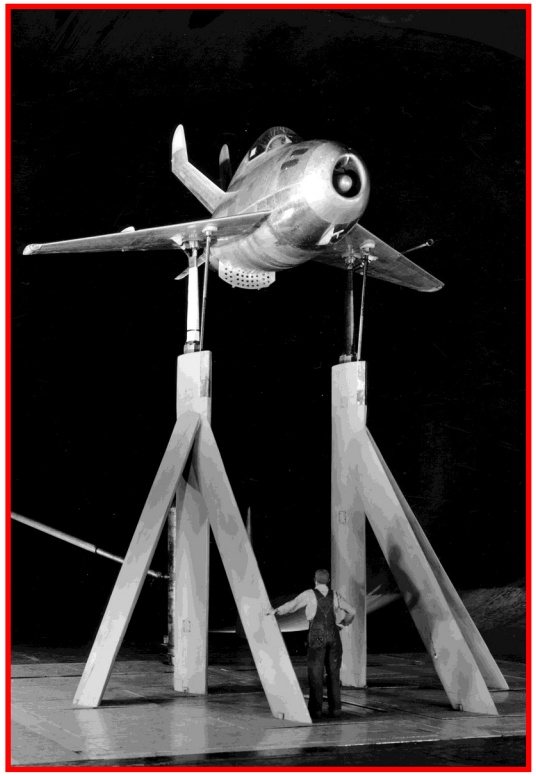


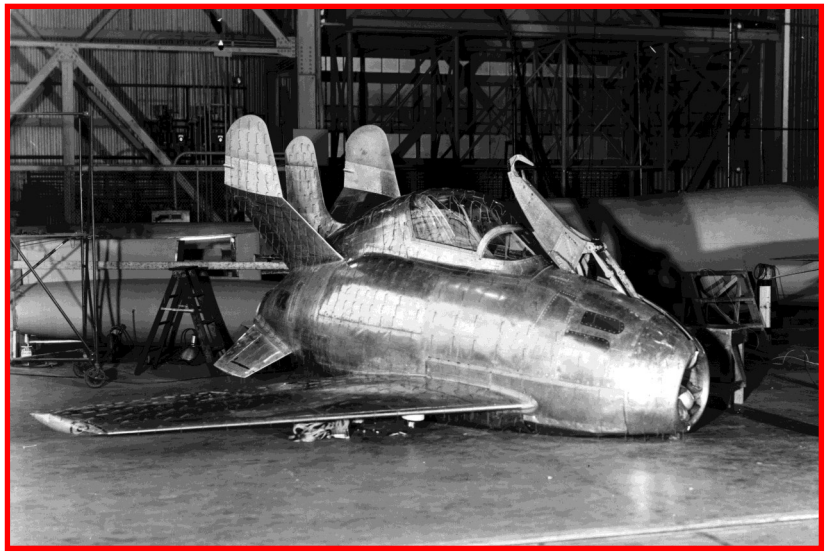




The XF-85 was designed to fit neatly inside a single bomb bay of the B-36. One Air Force proposal stated the possibility of a single B-36 carrying up to three parasite fighters as protection for a fleet of B-36 Peacemakers during a bombing mission. The trapeze assembly was capable of being raised and lowered while the hook assembly and folding wings on the XF-85 mockup were also fully functional.

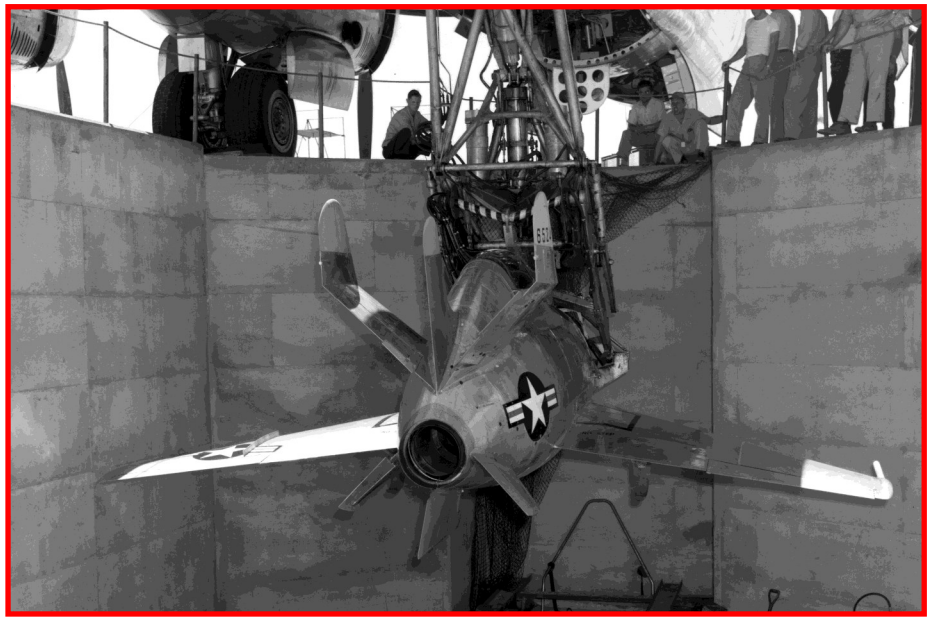






The second XF-85, 46-524, performed all the wind tunnel testing at NASA Ames Research Center, Moffett Field, CA (left) after the first aircraft, 46-523, was damaged while being lifted onto the wind tunnel support structure and required shipment back to McDonnell Aircraft in St. Louis for repairs (above).

Modifications to the EB-29B, '48-4111' were completed by McDonnell Aircraft Company in St. Louis since they were responsible for the design of the trapeze assembly. 'Monstro' was resplendent with its bright yellow tail and yellow and black wing stripes.



A concrete loading pit was built on the eastern edge of the South Base ramp at Muroc to accommodate loading of the XF-85. The pit measured 24 1/2 feet wide, 17 1/2 feet deep and 92 feet in length.

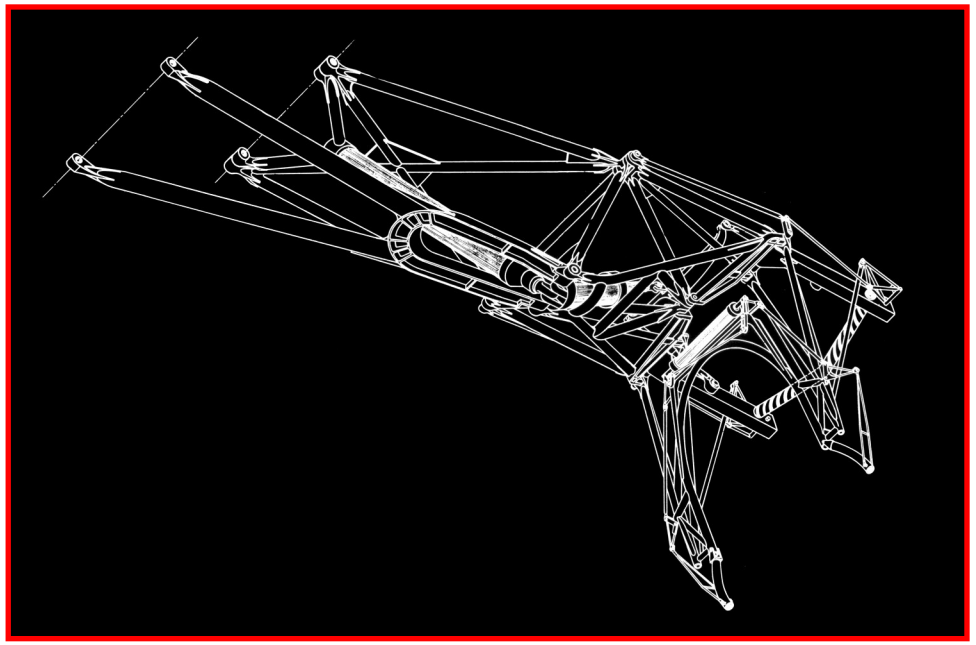


Illustration of the XF-85 trapeze assembly shown in the retracted position. The complex assembly included bracing to stabilize the aircraft, canopy protection and striped bar to assist in visual tracking during hook-ups.

McDonnell test pilot Edwin Schoch performs the first free flight of the Goblin on 23 August 1948 in the skies near Muroc AFB, CA (now known as Edwards AFB). After 10 minutes of free flight, Schoch made two, unsuccessful attempts to hook up with the mothership before making a safe, skid landing on the lakebed below.

McDonnell test pilot Edwin Schoch in the cockpit of an XF-85 Goblin. A WWII veteran pilot with four kills, Schoch joined McDonnell after the end of the war.

Few photos exist of the first XF-85, 46-523, at Muroc AFB since it was there only a short time and performed only a single, 30 minute free flight on 8 April 1949.

Both XF-85 airframes retained their folding wing feature despite not being utilized during testing with the EB-29B.

XF-85, 46-524 sits on the lakebed after it's sixth, and final, flight on 18 March, 1949. The 19 minute flight tested the redesigned nose hook and added winglets mounted on the outboard wings.

McDonnell Aircraft displayed the XF-85 mockup next to a B-36 at the St. Louis Airshow on 17 October 1948.

Personnel assigned to the XF-85 test program at Muroc Air Base, CA in April 1949. B-29 Ground Crew: J. Zerr, A. Farnham, J. Bogena, H. Steinhauser, W. Linnenkohl, D. Tillman, F. Fulks, L. Littrell, J. Cameron, T. Eversole, W. Laswell and W. Black: B-29 Flight Crew: C. Siler, A. Courtial, K. Curtis, J. Brown and Q. Harvey; XF-85 Flight Test Group: G. Cozad, N. Krause, R. Bucher, D. Burton, J. McEwen and E. Schoch; XF-85 Ground Crew: E. Lindsey, A. Merrill, R. Addams, B. Hatt, H. Trammell, O. Gordon, G. Wehling and F. Notson. Photo by C. Turk.

The diminutive size of the Goblin is well illustrated when parked next to a B-36 Peacemaker while on display at the St. Louis Airshow on 17 October 1948. The XF-85 would have been carried in the forward bomb bay of the B-36.

Under Project Tom-Tom, a sole B-36, 49-2707, was modified to carry two RF-84F aircraft, one on each wingtip. Between 2 November 1955 and 26 September 1956, only a few hook-ups were completed due to the hazards of the operation.

A follow-on to the XF-85 Goblin concept, Project FICON (Fighter Conveyor) made use of modified RF-84F Thunderflash aircraft, though initial testing was completed using a single Republic F-84E Thunderjet, 49-2115, as shown above.

To test the FICON concept, Convair constructed full scale, wood mockups of the B-36 center fuselage as well as the Republic RF-84F. The modified aircraft were given the designations GRB-36D and RF-84K respectively.

PEACEMAKER PARASITES

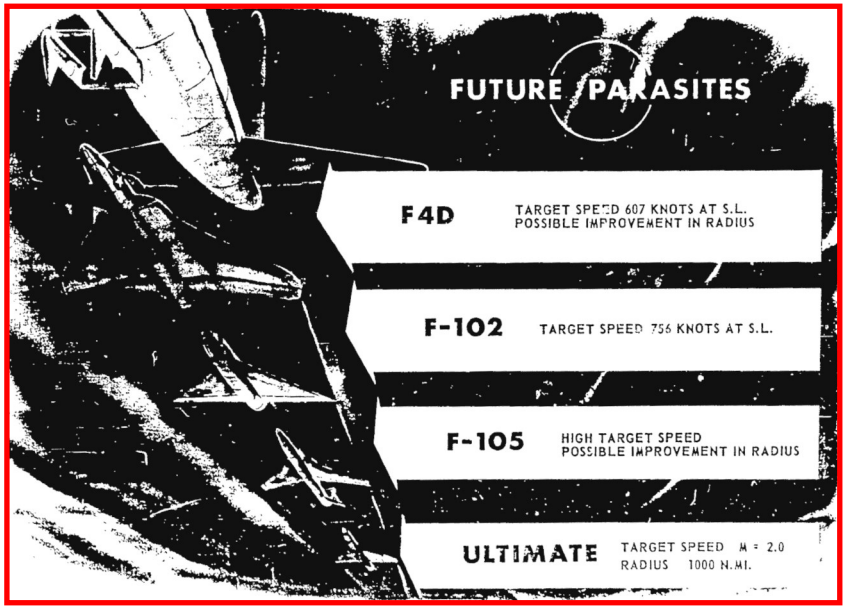
Operational RF-84K parasites were loaded into the GRB-36D via a special concrete pit constructed at Fairchild AFB, WA.

Convair built a set of ramps that placed the Peacemaker in a tail-high attitude to allowed the RF-84 to be towed underneath the B-36 for loading operations.

While loading operations could be accomplished on the ground, crews found it easier for the two aircraft to depart separately and mate up in flight (above, left). The RF-84K nearly always carried two external fuel tanks during normal operations. Little is known about the actual operational reconnaissance missions flown by Thunderflash crews. The view from the bomb bay during a hook-up looks pretty dramatic as shown above right during a hook-up test mission utilizing an F-84F Thunderstreak.

Though not exactly a parasite, the largest article carried by a B-36 was the static test airframe for the B-58 Hustler. B-36F, 49-2677, was used to take the test article from Convair's plant in Ft. Worth, TX to Wright-Patterson AFB, OH for static loads testing on 12 March 1957. Note the removal of the inboard propellers on the Peacemaker.

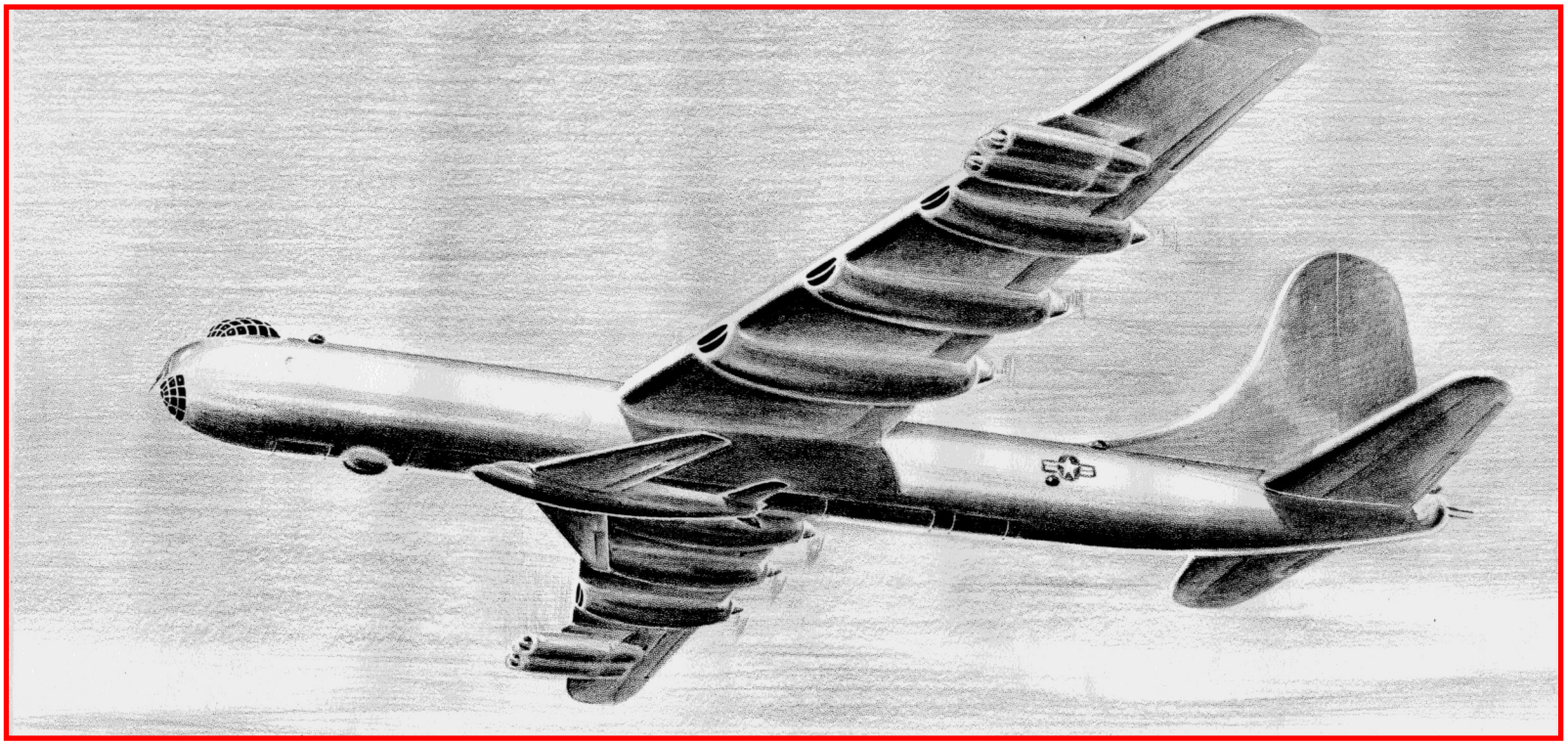
B-36F, 49-2677, carrying the B-58 Hustler static test airframe lands at Wright-Patterson AFB, OH on 12 March 1957. Convair found it safer to transport by air than by ground shipment.

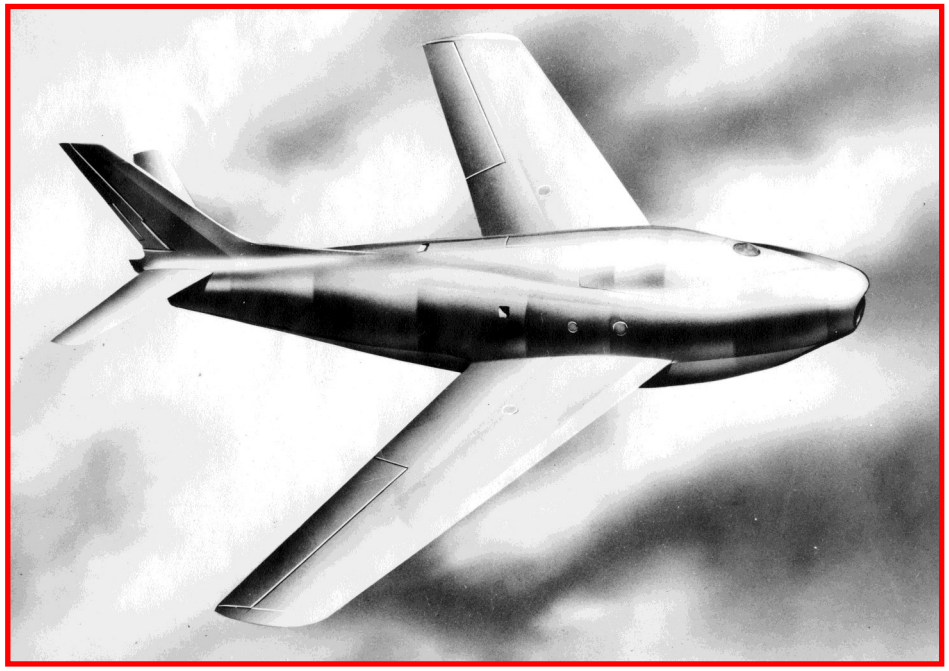


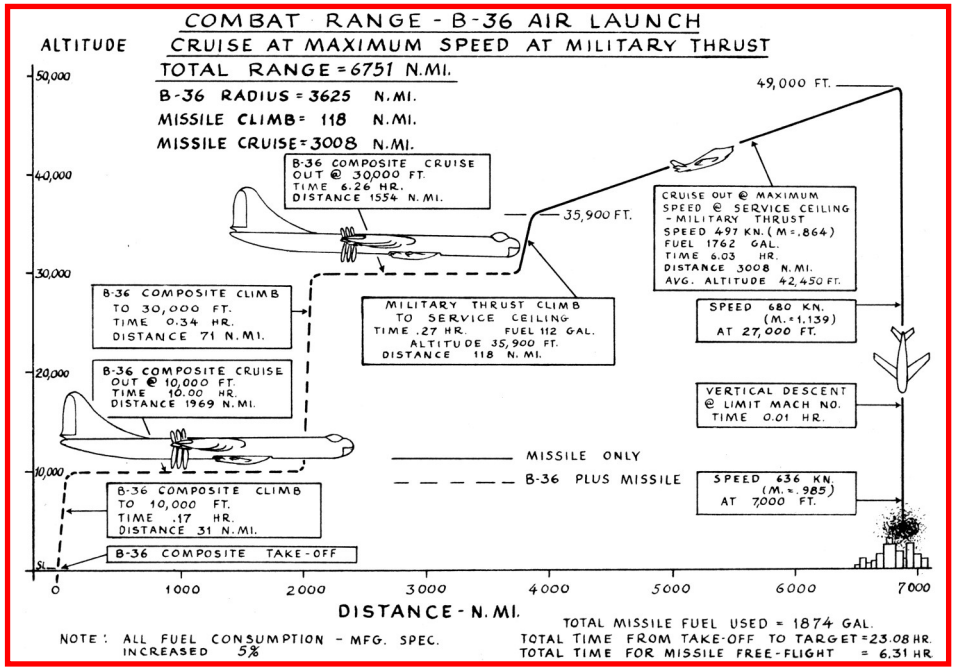
This poor quality illustration shows potential parasite considerations for the B-36; the Douglas F4D Skyray, Convair F-102 Delta Dagger, Republic F-105 Thunderchief and what appears to be a McDonnell F-4 Phantom.

PEACEMAKER PARASITES

One potential parasite combination included an unmanned North American Aviation F-86 Sabre used as a guided missile system. The F-86 could be launched more than 100 miles from the target, ascend to 49,000 feet and make a vertical descent on the target at near-supersonic speed.







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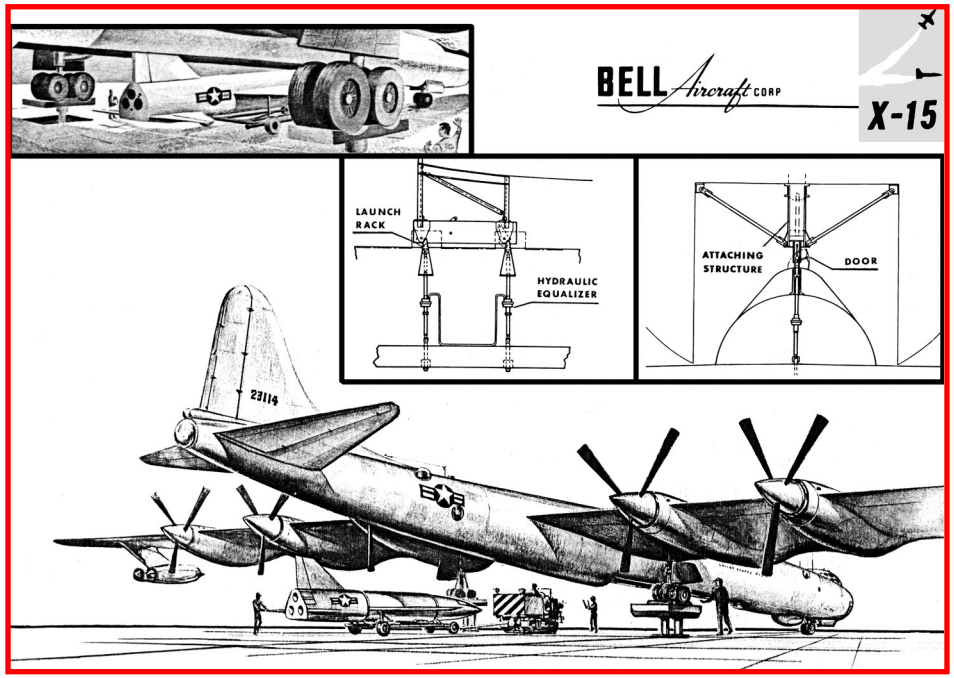
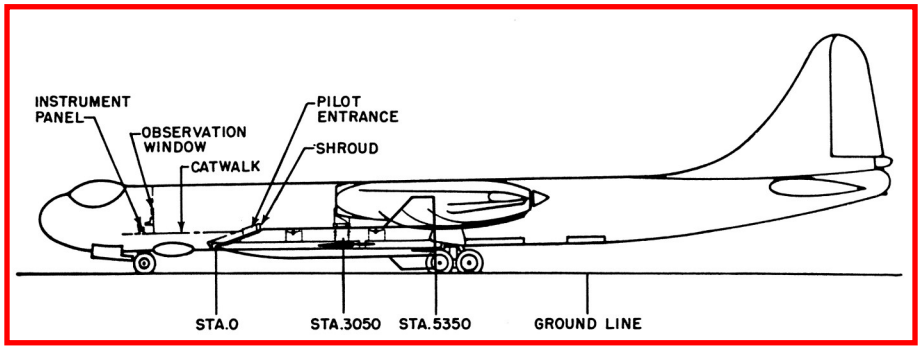
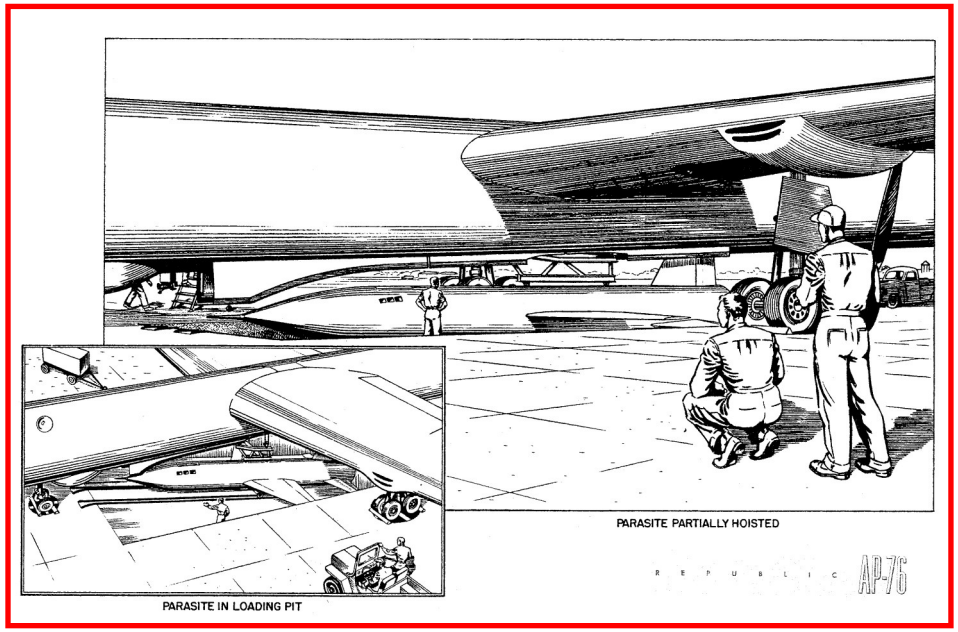
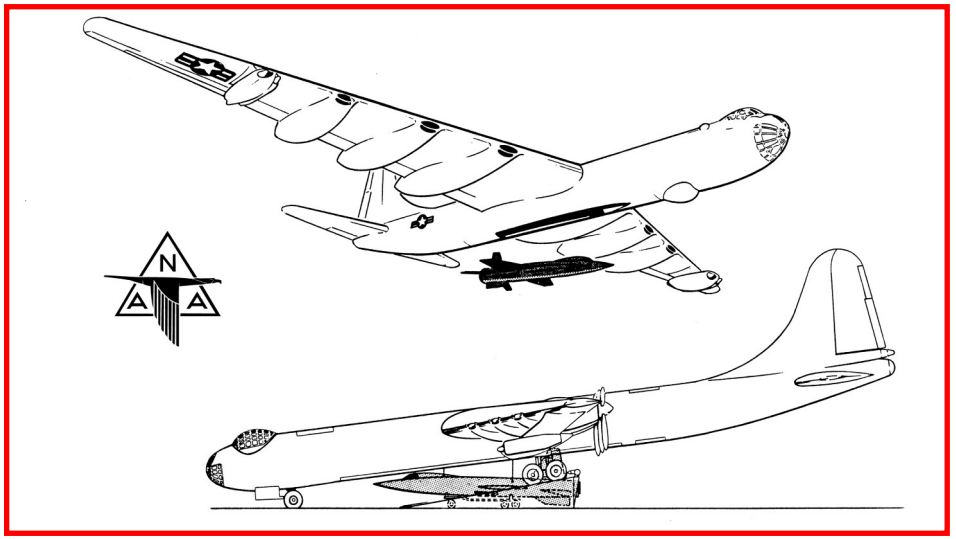


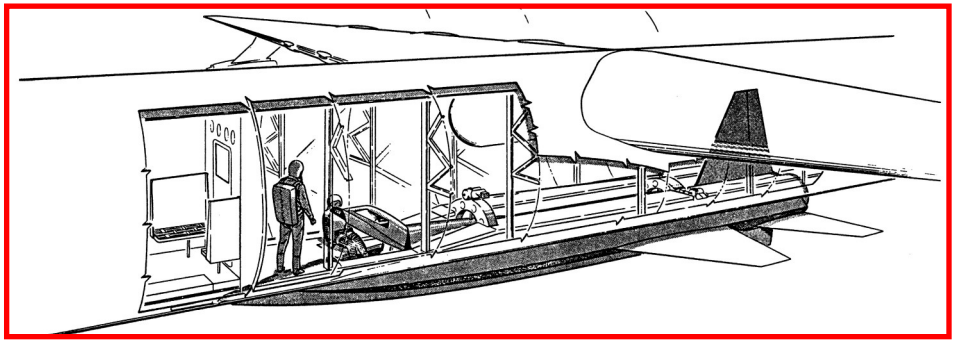


All competing manufacturers for the X-15 initially chose the B-36 as the carrier aircraft. Shown above and at left is Bell Aircraft Corporation's D-171 proposal.



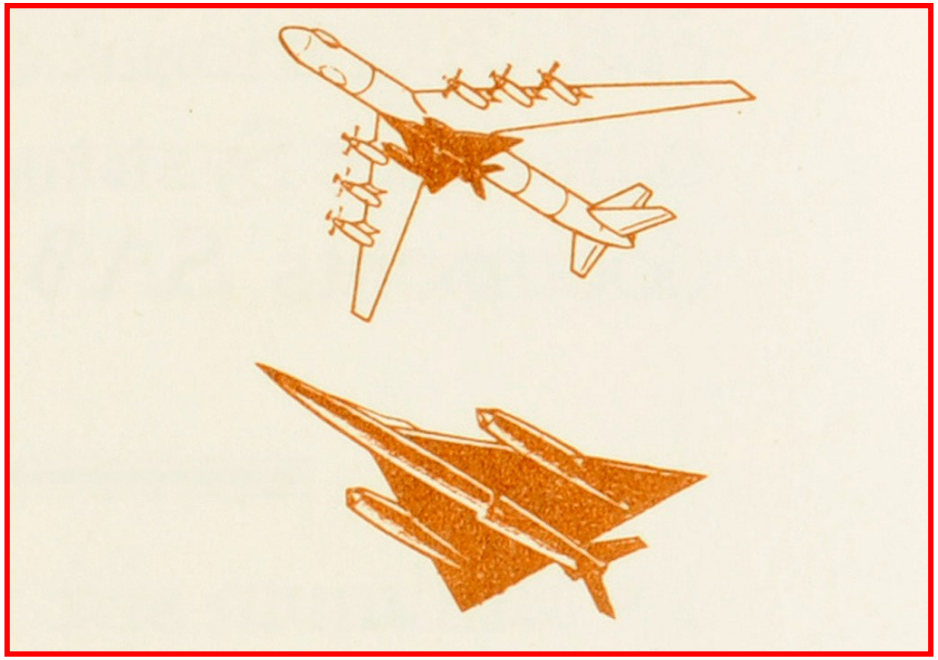
While the Bell Aircraft proposal made use of hydraulic lifts for loading operations, Republic Aircraft's AP-76 proposal is illustrated using a loading pit similar to the FICON and XF-85 programs.

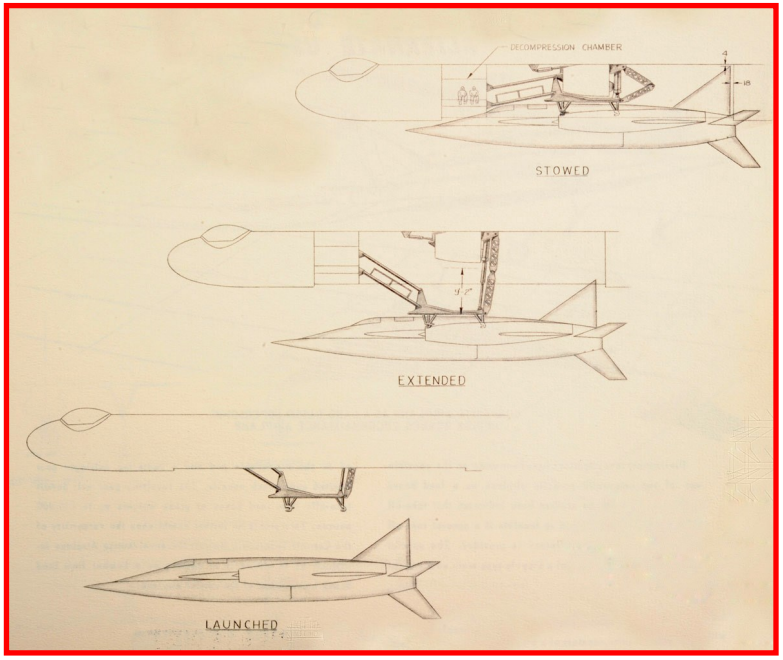


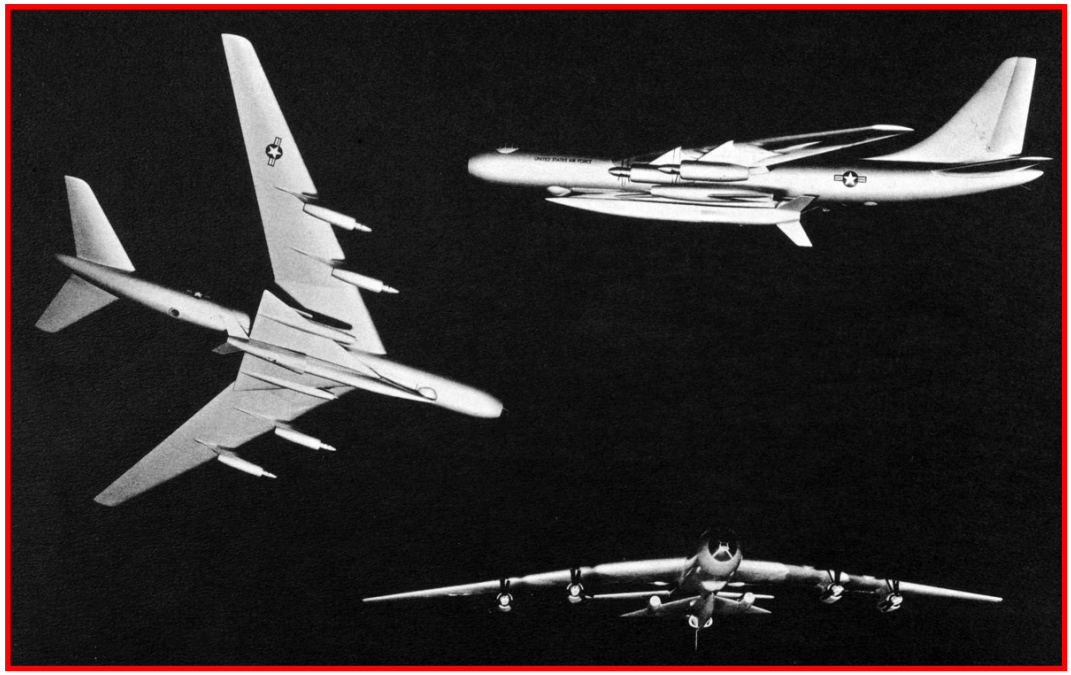


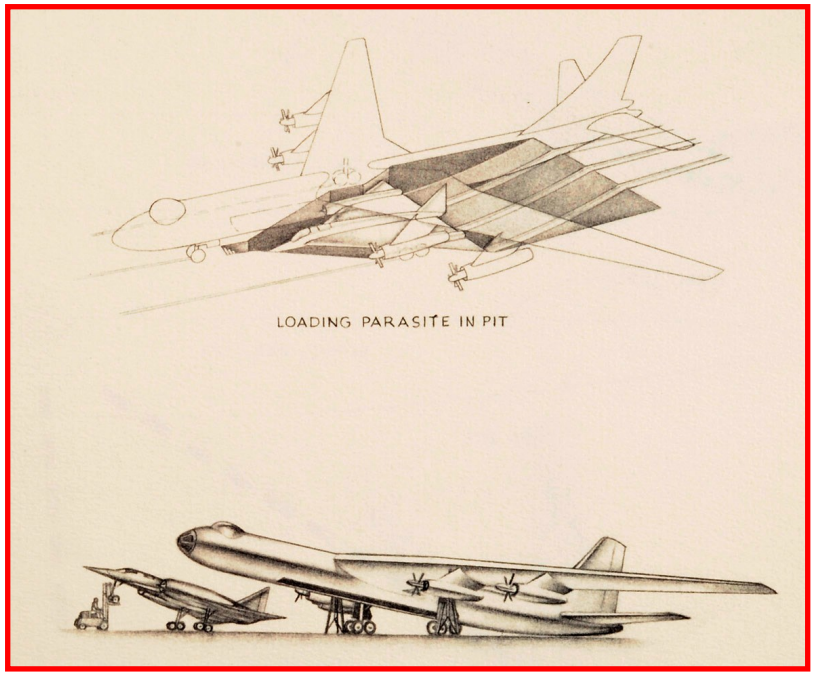
North American Aviation's ESO-7487 proposal shown in the illustrations above, had the B-36 utilizing a similar ramp system to what Convair used on the FICON program. The large bomb bay allowed the pilot to enter the test craft just prior to release.

PEACEMAKER PARASITES



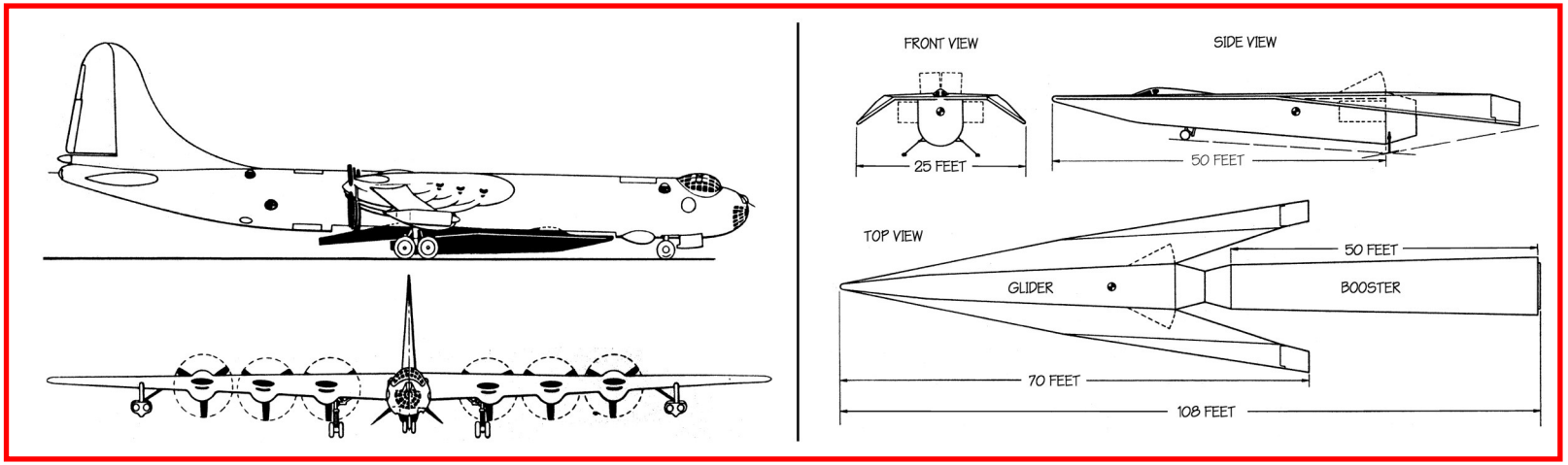




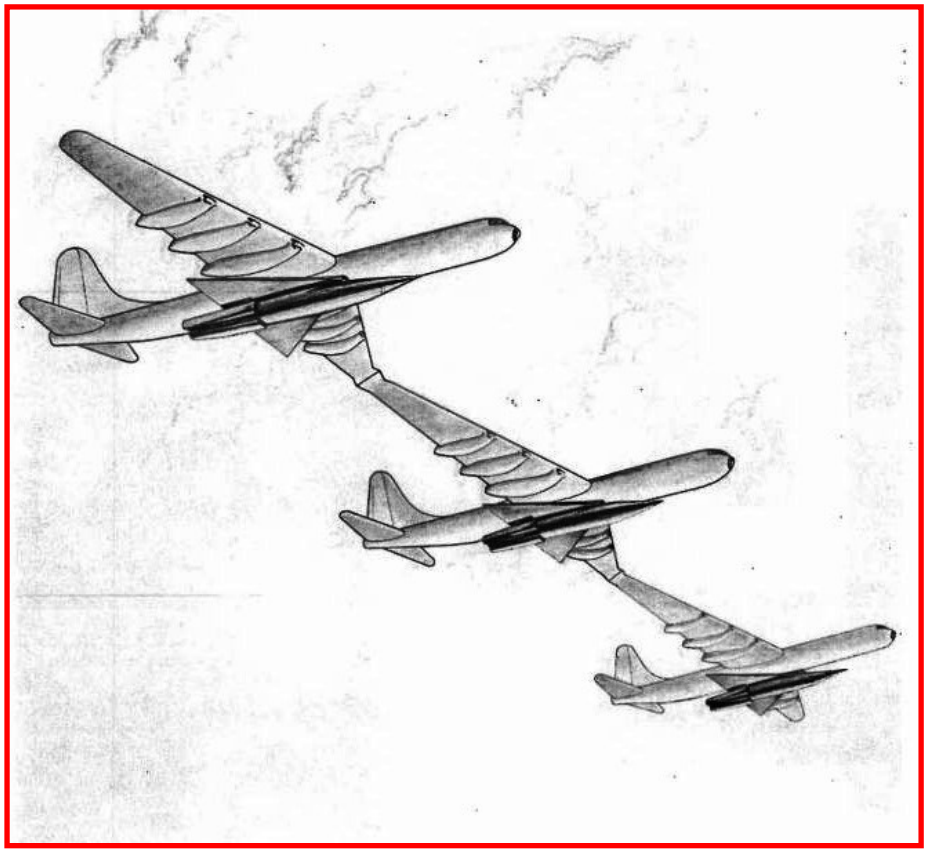


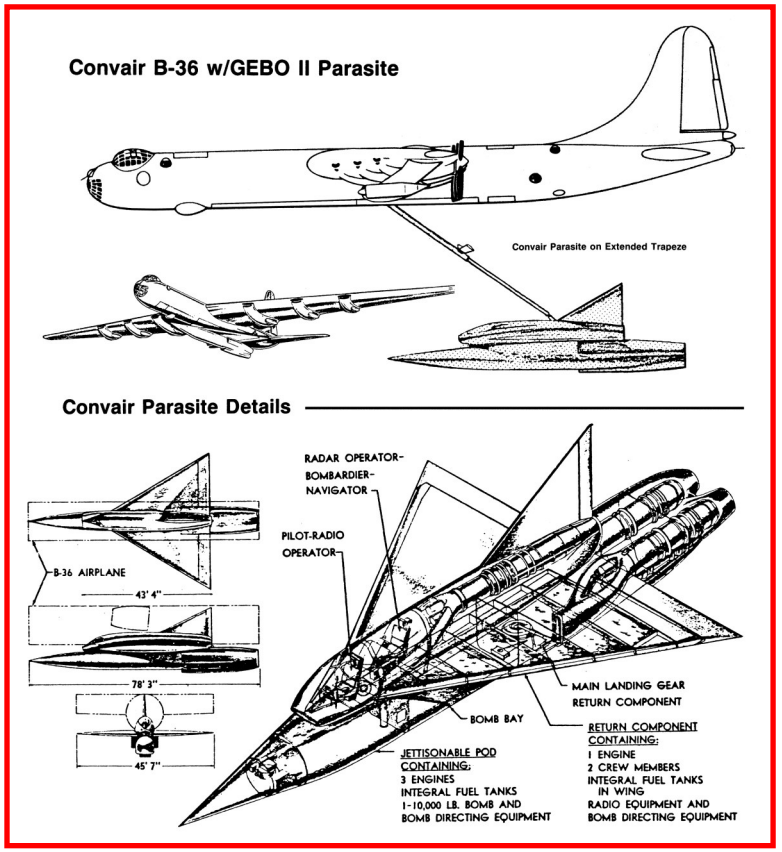
Early concepts for the B-58 Hustler, such as the MX-1626 shown in the illustrations above, were parasite concepts launched by a swept-wing, turboprop variant of the Peacemaker. Due to difficulties in acquiring jet engines, Convair offered the YB-60 concept as a turboprop powered option.

PEACEMAKER PARASITES

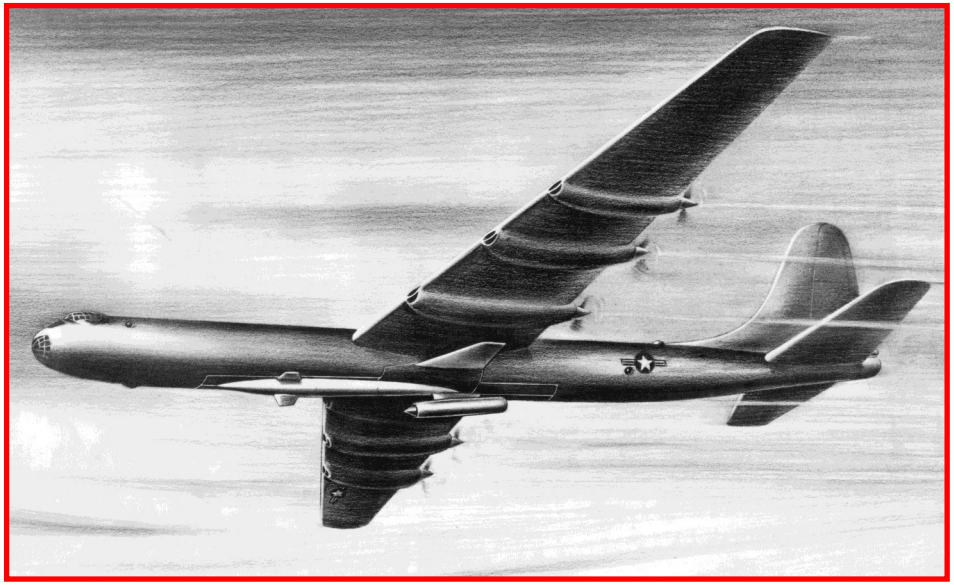


NASA proposed an enhanced performance follow-on to the successful X-15 program that had potential to reach Mach 10 after air-launching from the B-36 carrier aircraft.

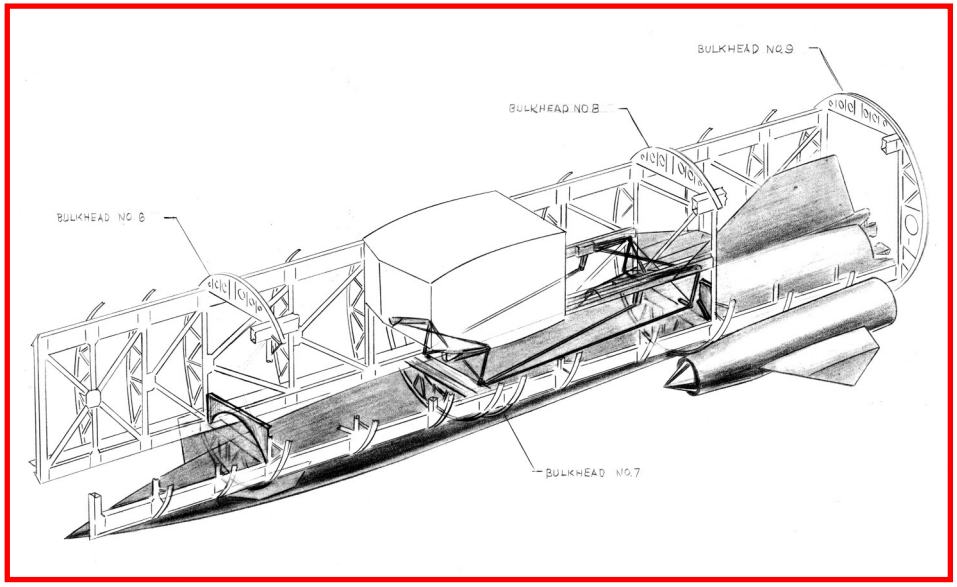




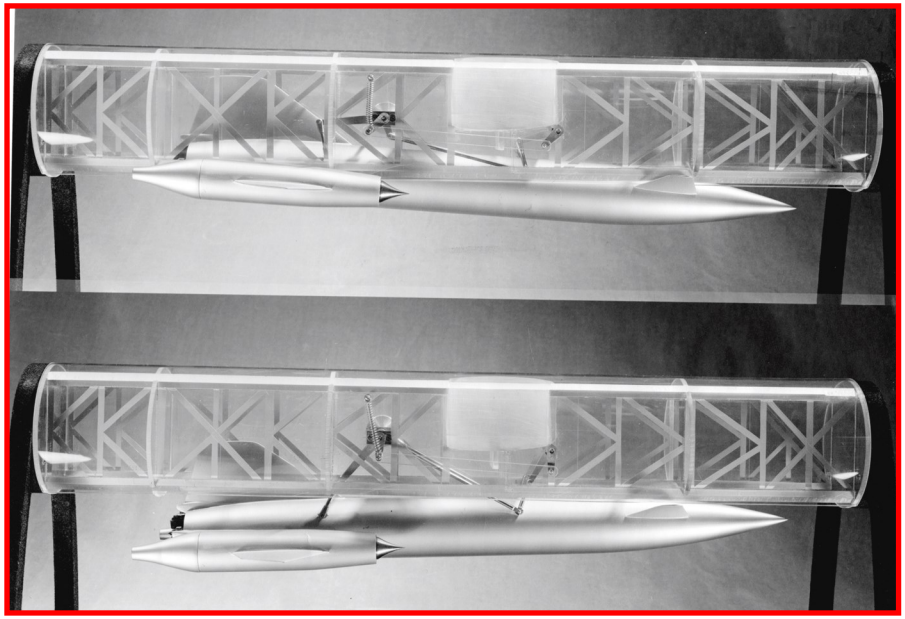
The Air Force began studying the concept of a Generalized Bomber (GEBO) concept in October 1946. A 1950 concept from Convair revealed a concept that looked much like a two-seat XP-92 atop a jettisonable weapons pod carried aloft by a B-36 Peacemaker, while a similar Convair study had three Peacemakers attached at the wingtips, similar to the Tom-Tom concept, all carrying a GEBO parasite.



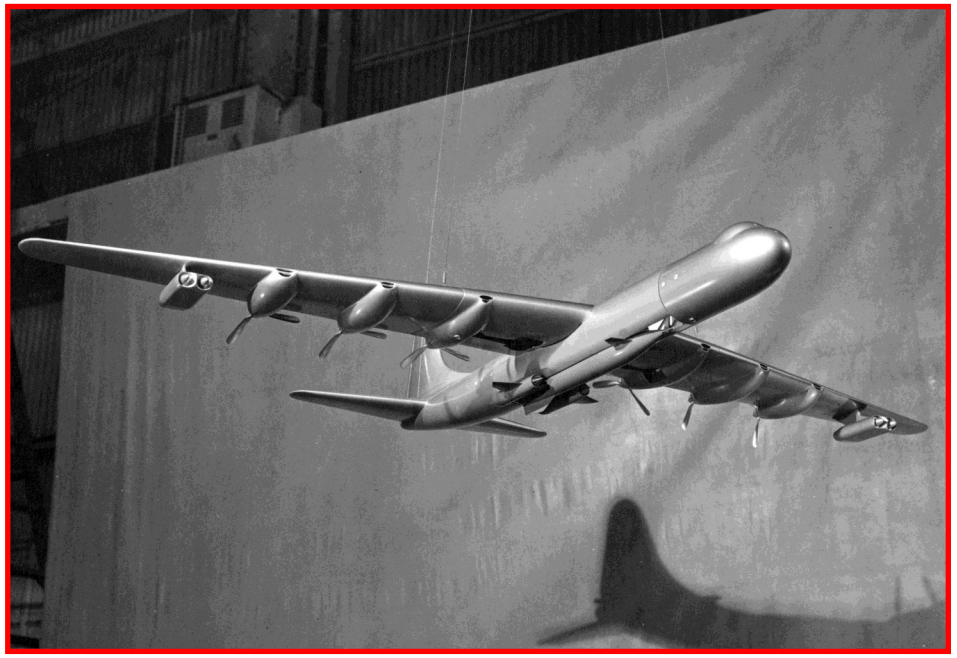
Early concepts of the North American Aviation Navaho missile system were air-launched designs such as this single-engine variant carried aloft by a B-36.

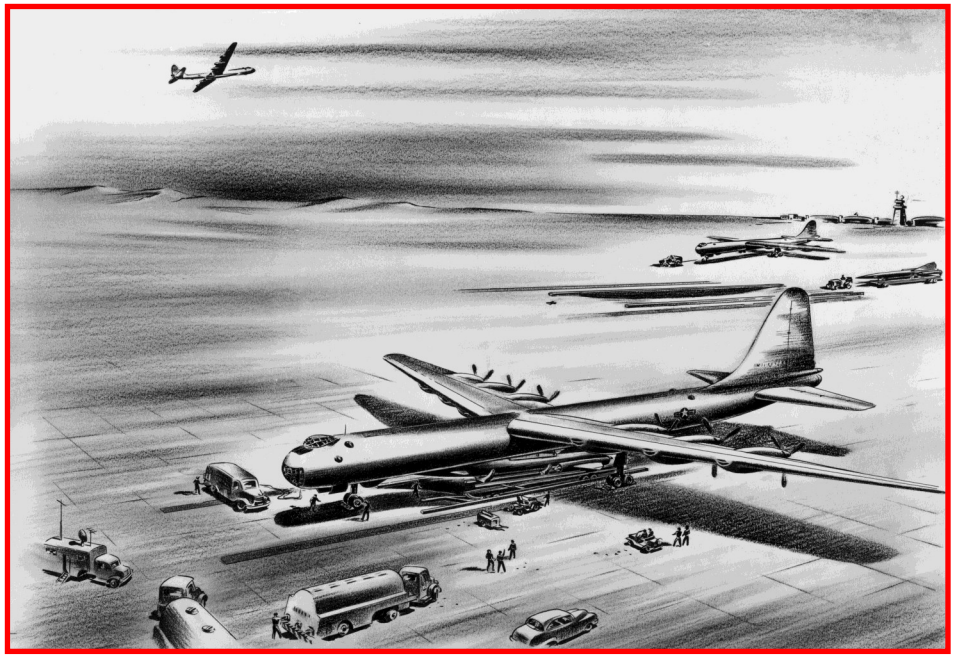


The twin-engine Navaho design generated a lot of interest by the Air Force, and North American put significant design work into the proposal.

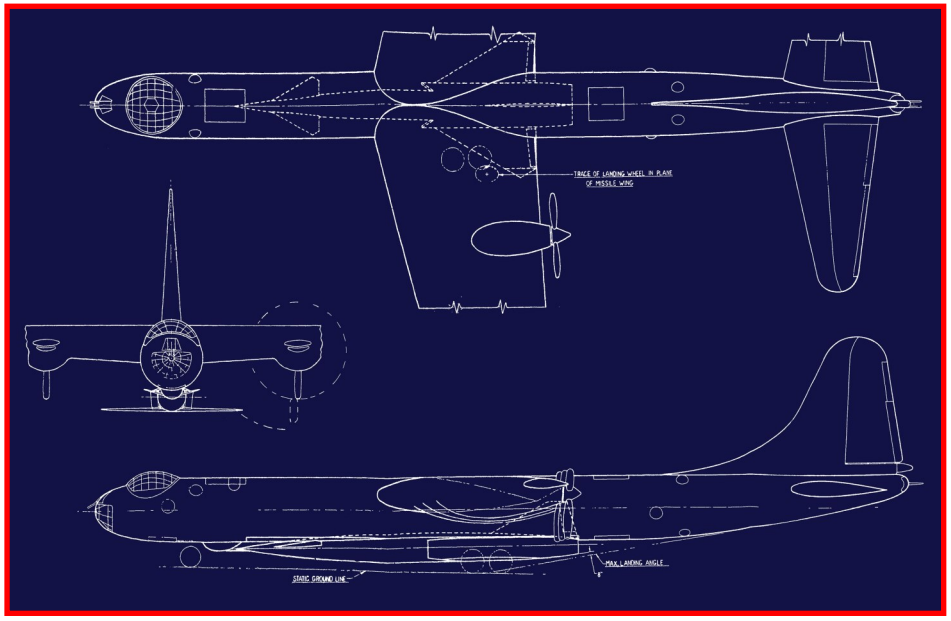


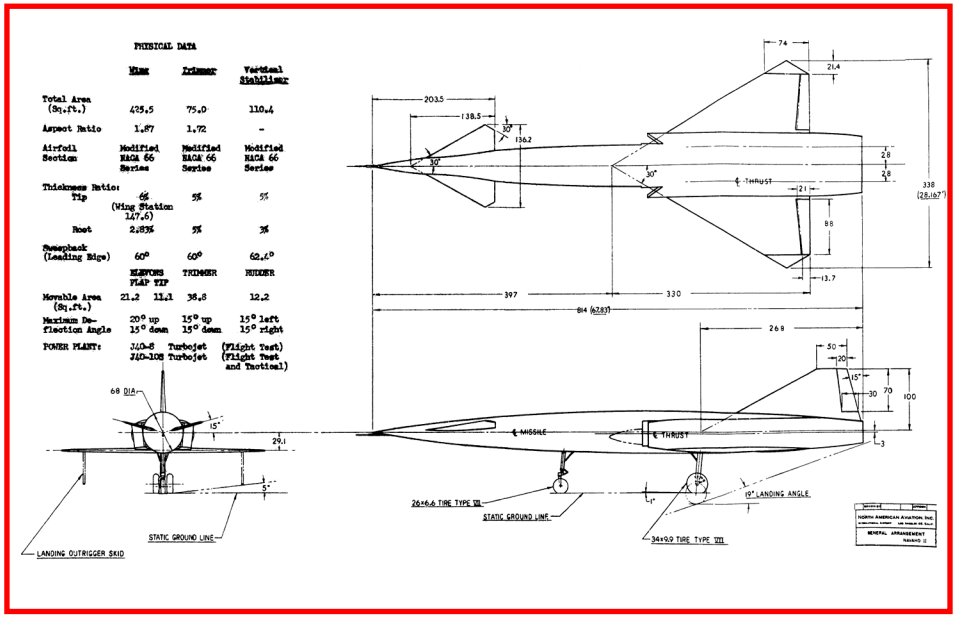
North American constructed several detailed models to verify the air-launch capability of the Navaho missile system. The model above shows the missile in the stored, and pre-launch positions. The illustration at left shows a Navaho launch from a diving B-36 Peacemaker.



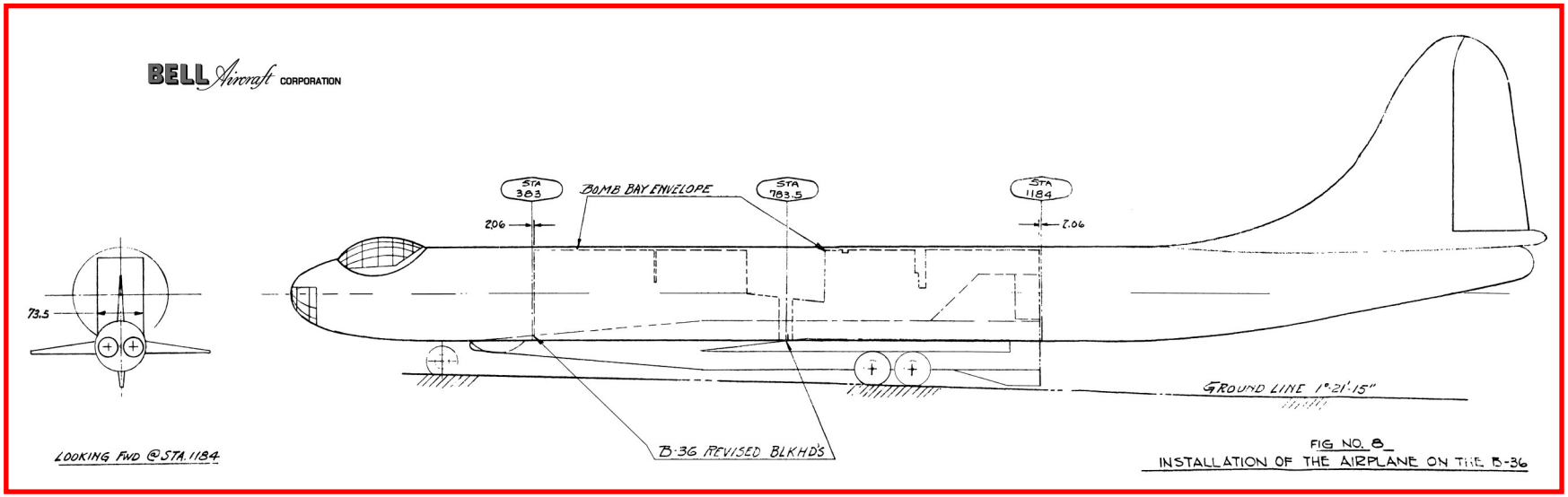


North American constructed a large scale model of the B-36 that was photographed with each new variation of the ramjet-powered, air-launched Navaho missile concept as shown above, left. Most illustrations of Navaho loading operations depicted a custom, concrete pit similar those used by the XF-85 and FICON RF-84.





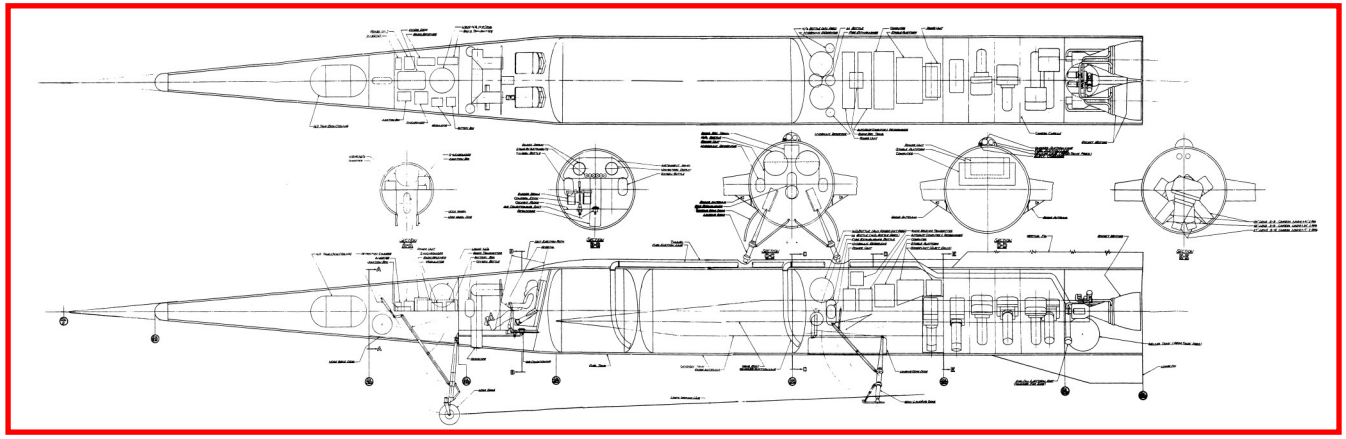
In addition to the ramjet-powered Navaho designs, North American proposed using the Westinghouse J40 turbojet engine in their Navaho II design. This concept differed from the X-10 Navaho testbed by its swept-forward intakes and single vertical tail design.

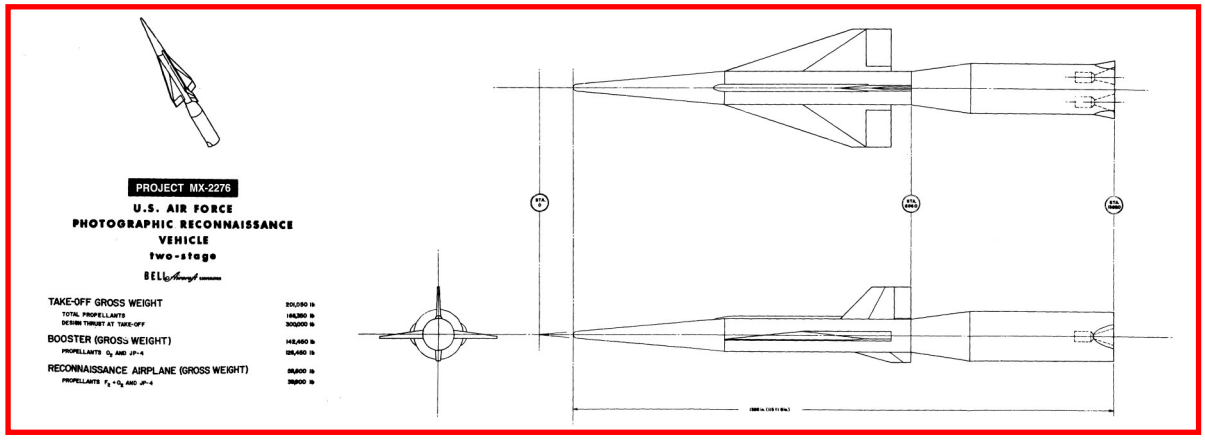


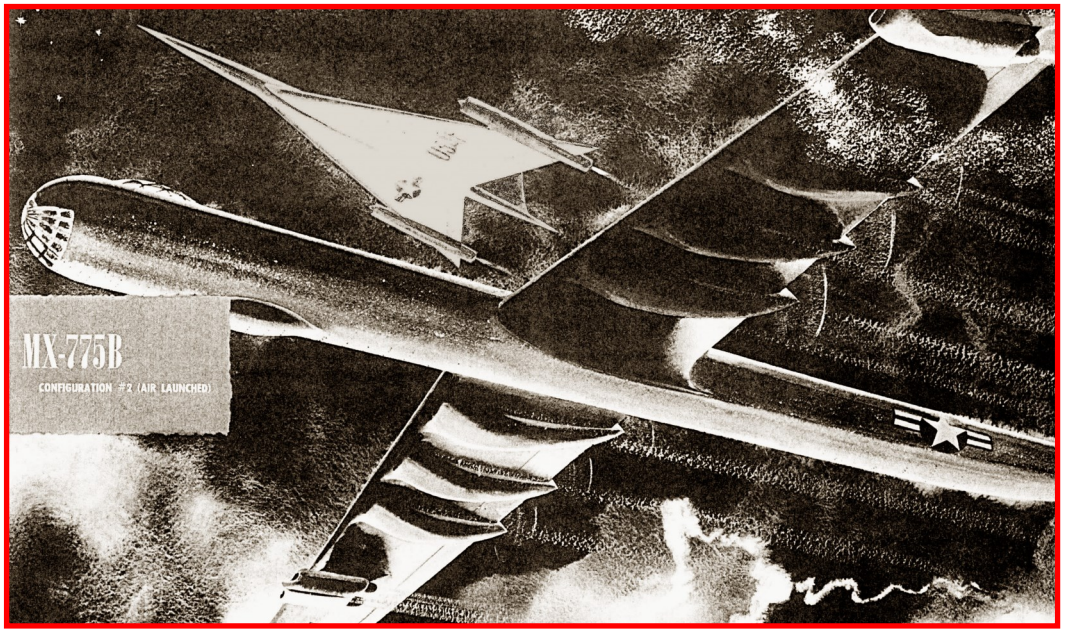
During the period from 2 May 1955 to 1 December 1955, the Bell Aircraft Corporation conducted a study to adapt the MX-2279 concept to satisfy the criteria presented under Systems Requirement (SR) 118P. The system consisted of a recoverable rocket booster attached to a manned, reconnaissance vehicle which achieved its range from a hypersonic glide profile.

Capabilities of the vehicle included daylight photography, high-order ferret, and high resolution radar reconnaissance with a mission profile of 100,000 to 150,000 feet altitude and mission radius of 1,500 to 2,000 miles.

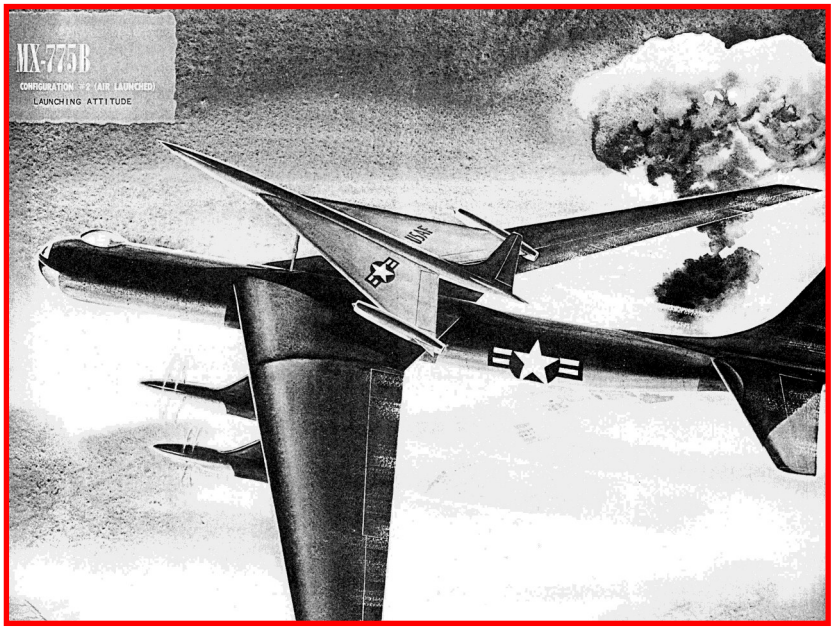
Designed as a vertically-launched weapon system, transporting the MX-2279 to various launch locations required a large transport aircraft such as the Douglas C-124, Lockheed C-130 or modified Convair B-36, shown at top.



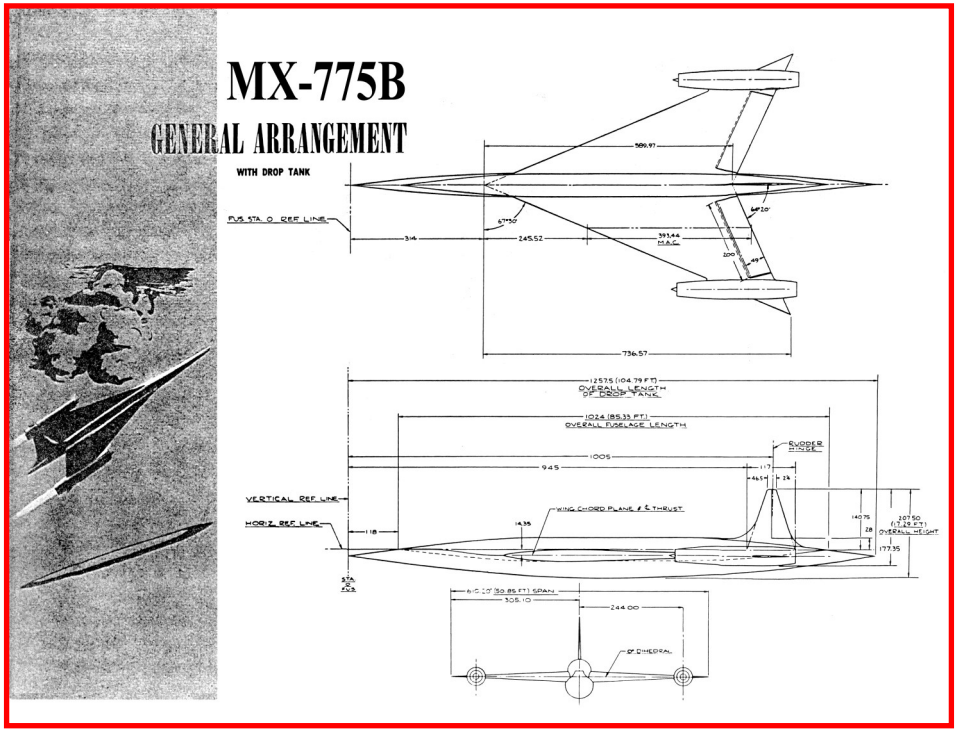


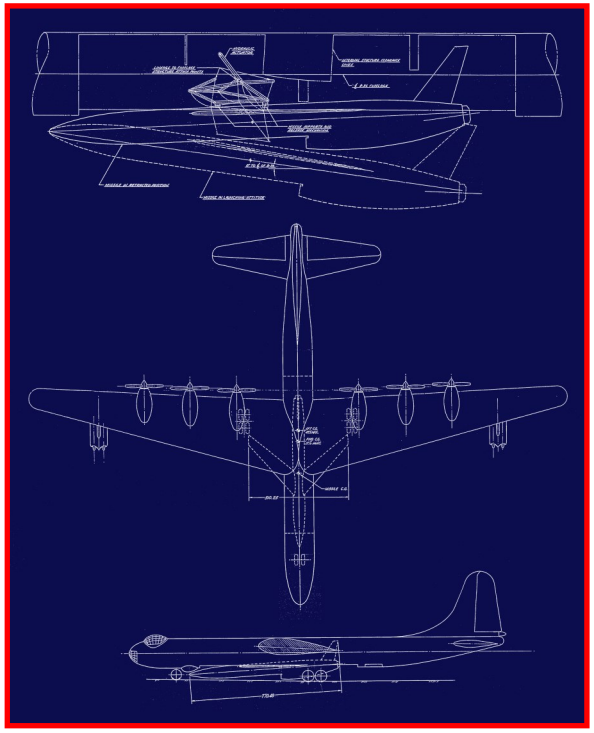


Competing directly with North American's Navaho was the Northrop Aircraft XSSM-A-5 Boojum missile system under project number MX-775B, shown launching from atop a B-36 carrier.



Northrop's Boojum, known internally as N-25B, has lineage to their later Snark missile program, is shown launching from a turboprop B-60 bomber.





Northrop Aircraft proposed air-launching a version of the SM-62 Snark missile from beneath a B-36 carrier aircraft (left). The nose-up attitude in the launch position is noteworthy.

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