= North American XB @-@ 21 =

The North American XB @-@ 21 , also known by the manufacturer 's model designation NA @-@ 21 , and sometimes referred to by the name " Dragon " , was a prototype bomber aircraft developed by North American Aviation in the late 1930s , for evaluation by the United States Army Air Corps . Evaluated against the Douglas B @-@ 18 Bolo , it was found to be considerably more expensive than the rival aircraft , and despite the ordering of a small number of evaluation aircraft , only the prototype was ever built .

= = Design and development = =

North American Aviation 's first twin @-@ engined military aircraft , the NA @-@ 21 prototype was constructed at North American 's factory in Inglewood , California , where work on the aircraft began in early 1936 . The NA @-@ 21 was a mid @-@ wing monoplane of all @-@ metal construction , powered by two Pratt & Whitney R @-@ 2180 @-@ A Twin Hornet radial engines , which were fitted with turbosuperchargers for increased high @-@ altitude performance .

Flown by a crew of six to eight men , the XB @-@ 21 featured a remarkably strong defensive armament for the time , including as many as five .30 @-@ calibre M1919 machine guns . These were planned to be fitted in hydraulically powered nose and dorsal turrets , in addition to manually operated weapons installed in waist and ventral positions . Up to 10 @,@ 000 pounds (4 @,@ 500 kg) of bombs could be carried in an internal bomb bay , with 2 @,@ 200 pounds (1 @,@ 000 kg) of bombs being able to be carried over a range of 1 @,@ 900 miles (3 @,@ 100 km) .

= = Testing and evaluation = =

Undertaking its maiden flight on 22 December 1936 at Mines Field , company test flying indicated a number of minor problems . Modifications resolving these resulted in the aircraft being re @-@ designated NA @-@ 39 , and , accepted by the U.S. Army Air Corps as the XB @-@ 21 . The aircraft , which had been assigned the serial number 38 @-@ 485 , was evaluated early the following year in competition against a similar design by Douglas Aircraft , an improved version of the company 's successful B @-@ 18 Bolo .

During the course of the fly @-@ off , the gun turrets proved troublesome , their drive motors proving to be underpowered , and issues with wind blast through the gun slots were also encountered . As a result of these problems , the XB @-@ 21 's nose turret was faired over , while the dorsal turret was removed .

The XB @-@ 21 proved to have superior performance over its competitor , but price became the primary factor distinguishing the Bolo and the XB @-@ 21 . On this account , the modified B @-@ 18 was declared the winner of the competition , Douglas quoting a price per aircraft of $ 64 @,@ 000 USD , while North American 's estimate was $ 122 @,@ 000 USD per aircraft , and an order was placed for 177 of the Douglas aircraft , to be designated B @-@ 18A .

Despite this , the Army Air Corps found the performance of the XB @-@ 21 to have been favorable enough to order five pre @-@ production aircraft , to be designated YB @-@ 21 . However , soon after this contract was awarded , it was cancelled , and none of the YB @-@ 21s were ever built , leaving the XB @-@ 21 as the sole example of the type ever constructed . Operated by North American Aviation , the XB @-@ 21 served as a research aircraft until its retirement .

Although the XB @-@ 21 failed to win a production contract , it was the first of a long line of North American Aviation medium bomber aircraft , and provided experience and knowledge that assisted in the development of the North American NA @-@ 40 , which , developed into the B @-@ 25 Mitchell , would become one of the Army 's standard medium bombers of World War II .

= = Specifications (XB @-@ 21) = =

Data from

General characteristics
Crew : Six to eight
Length : 61 ft 9 in (18 @.@ 82 m)
Wingspan : 95 ft 0 in (28 @.@ 96 m)
Height : 14 ft 9 in (4 @.@ 50 m)
Wing area : 1 @,@ 120 sq ft (104 m2)
Empty weight : 19 @,@ 082 lb (8 @,@ 655 kg)
Gross weight : 27 @,@ 253 lb (12 @,@ 362 kg)
Max takeoff weight : 40 @,@ 000 lb (18 @,@ 144 kg)
Powerplant : 2 × Pratt & Whitney R @-@ 2180 @-@ A Twin Hornet turbosupercharged radial engines , 1 @,@ 200 hp (890 kW) each
Propellers : 3 @-@ bladed
Performance
Maximum speed : 220 mph (354 km / h ; 191 kn) at 10 @,@ 000 feet (3 @,@ 000 m)
Cruise speed : 190 mph (165 kn ; 306 km / h)
Range : 1 @,@ 960 mi (1 @,@ 703 nmi ; 3 @,@ 154 km) with 2 @,@ 200 pounds (1 @,@ 000 kg) of bombs
Combat range : 600 mi (521 nmi ; 966 km) with 10 @,@ 000 pounds (4 @,@ 500 kg) of bombs
Service ceiling : 25 @,@ 000 ft (7 @,@ 620 m)
Time to altitude : 10 minutes to 10 @,@ 000 feet (3 @,@ 000 m)
Armament
Guns : Five .30 @-@ calibre machine guns , mounted in single turrets in the nose and dorsal positions , and single manually operated mounts in the waist and ventral positions .
Bombs : Up to 10 @,@ 000 pounds (4 @,@ 500 kg) in an internal bay .