



Special Content from the Western Museum of Flight

Northrop In 1940: A New Beginning on the Eve of War *Bill Vas*



Jack Northrop's new company, Northrop Aircraft, Inc., opened the doors of Plant One for business in February 1940. His new venture had been incorporated in March 1939 and by July, a six-person engineering staff had been established as the core group. Northrop was President and Chief of Design and Engineering, with Walt Cerny as Assistant Chief of Design. Their first task was to undertake engineering of the proof-of-concept flying wing as conceived and designed by Northrop, as a company-funded project.

In August, the engineering department set up temporary office space in the nearby Hotel Hawthorne, eager to get the company started in the order of business. Northrop initiated preliminary studies, as a private venture, to explore the potential of a gas turbine engine for future aircraft applications on the encouragement of his Chief of Research, Vladimir Pavlecka, with the possibility of securing a contract from the Air Corps or Navy with funding for further research.

Construction of the new aircraft manufacturing plant, with a floor area encompassing some 170,000 sq ft, began with groundbreaking in September. The expanse and layout of the 72-acre site was adjacent to land being developed by the city of Hawthorne for an airstrip with a 4,000 feet concrete runway. It was part of an agreement to entice Northrop to build his factory there and would be christened Northrop Field.



A month following the completion of Plant One, construction began on a wind tunnel east of the new plant.

This would give Northrop its own test facility and help to alleviate the crowded test schedules at the Guggenheim Aeronautics Laboratory of the California Institute of Technology in Pasadena, the only other wind tunnel in the state and utilized by all the other aircraft manufacturers in Southern California.

Major business activities in 1940 included:

January: A large subcontract from Consolidated Aircraft in San Diego to build complete tail assemblies for the PBY-5 Catalina flying boat, then entering full-scale production.

February: A follow-on subcontract from Consolidated for the manufacture of engine cowlings and seat installations for the PBY-5 Catalina.

The US Army Air Corps issued Request for Data R40-C, an open invitation to aircraft manufacturers to submit proposals for a new generation of single-engine fighters capable of exceeding 425mph at 15,000 feet and equipped with heavy armament.



March: A contract awarded from the Norwegian Purchasing Commission for the production of 24 seaplane patrol bombers following initial discussions regarding design/configuration and negotiations. This would be designated N-3PB and was the first production contract for the company.

April: The fabrication shop began construction of a full-scale wood mockup of the N-3PB's fuselage for the engineering detail design group.

May: Within a secured and partitioned-off section of the manufacturing floor, the fabrication and construction of the experimental N-1M flying wing was on schedule and nearly complete. The next phase would be weight and balance testing preparatory to flight test.

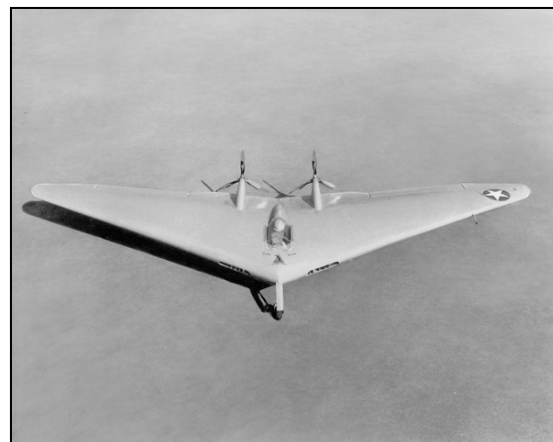
June: The Air Corps issued a contract for preliminary engineering data and a powered wind tunnel model. Northrop was one of three companies selected as finalists for their R40-C proposals. Assigned company project number N-2B, it would be designated XP-56.

July 3: First flight of the N-1M flying wing demonstrator from the hard-packed bed of Muroc Dry Lake with Vance Breese as test pilot. US Army Air Corps observers were present.

August: The first N-3PB fuselage structure was started down the production line.

September: The British Purchasing Commission awarded a subcontract to build 200 Vultee Vengeance dive bombers for the Royal Air Force. Vultee's Nashville plant was at maximum capacity.

A contract awarded by the US Navy to investigate the effects of experimental full-span Zap flaps. Northrop would design and build new wings to incorporate this new feature patented by aeronautical engineer, Edward Zaparka. A US Navy Vought OS2U Kingfisher was bailed to Northrop for this project.



The Air Corps awarded a contract for construction of one prototype of the XP-56 for flight test evaluation.

October: The US Army Air Corps issued preliminary specifications to Northrop for a night interceptor to be equipped with a then-secret "device to locate enemy aircraft in the dark" and heavy armament to bring them down. Air Corps brass had observed the night bombing of London first hand.

November: A contract awarded from Boeing to build engine cowlings and nacelles for the B-17E Flying Fortress then about to enter full-scale production.

Northrop submitted preliminary design sketches to Air Materiel Command, Wright Field, for the proposed night fighter with a twin-engine, twin-boom configuration. After review and some design changes, it was formally resubmitted. In a December response the Air Corps issued a Letter of Authority for Purchase, to produce two prototypes and two small scale models for wind tunnel testing,

with a formal contract award to follow in January 1941. Northrop Specification 8A would be designated XP-61.

December 13: The first N-3PB was rolled out and made ready for test flight.

December 22: First flight of the N-3PB seaplane patrol bomber from Lake Elsinore with test pilot Vance Breese.

Within the past two years, England and France had sent government representatives and members of their purchasing commissions to explore potential purchases of warplanes from American aircraft manufacturers. In May 1940, President Roosevelt addressed a Joint Session of Congress at the Capitol Building, calling for American manufacturers to gear up to the ability to produce at least 50,000 planes per year.

The new company welcomed every business opportunity in anticipation of growth and expansion. Unfilled orders totaled over \$20,000,000. Plant One had capacity to build 50 single-engine aircraft per month. Plant expansion would increase this. Towards the end of 1940, management agreed on opening a school to train aircraft mechanics. The N-3PB program was on schedule for deliveries in February 1941.

There was an air of challenging optimism and unlimited potential for the future despite the severity of a world war involving America looming just over the horizon. It would accelerate the development of aircraft and applicable technologies based on changing and ever-increasing requirements. The Northrop company was prepared to do its part.

A surviving legacy:

The sole N-1M, constructed of plywood over welded steel tubing, was completely restored by the Smithsonian's Air & Space Museum and put on exhibit in 1983. It can be seen in the Steven F. Udvar-Hazy Center in Chantilly, VA.

The sole-surviving N-3PB was recovered from the glacial Thjorsa River in Iceland in 1979 and the wreckage transported by a Royal Norwegian Air Force C-130 to the Northrop facility in Hawthorne. There it was reconstructed by a dedicated team of Northrop retirees and volunteers and rolled out with ceremony in November, 1980. Among the VIPs in attendance was retired Royal Norwegian Air Force Lt. Col. W.W. 'Sevi' Bulukin, who piloted this N-3PB in 1943. It is on permanent exhibit as part of the Norwegian Armed Forces Aircraft Collection at Gardermoen, Norway.

Plant One still stands today, its outward appearance looking much as it did in 1940. For the past 79 years, it had been in operation in the business of manufacturing aircraft structures, components and subassemblies. Sold by Northrop Grumman in the nineties to Vought Aircraft Industries, and in turn acquired by Triumph Aerostructures in 2010, manufacturing activities continued until the plant was closed in December 2019. Its future remains uncertain as of this writing.

Photos, from top:

- *Jack Northrop in his office on the second floor of Plant One.*
- *Plant One in late 1940 shows the wind tunnel at top and the Vought OS2U at left prior to modification for incorporating the Zap flaps.*
- *The first N-3PB patrol bomber nearing completion in early December 1940. It would be partially disassembled and transported to Lake Elsinore for its first flight.*
- *The N-1M shown in 1942 with US national insignia. It had a wing span of 38 feet.*

All photos from Western Museum of Flight archives collection. This article originally appeared in the June 2020 edition of the E-Supercruiser (Vol. 20.2).