# NORTH AMERICAN F-107A ZERO-LENGTH LAUNCH

*By: Tony R. Landis*

Paths to the Present
FLASHBACK

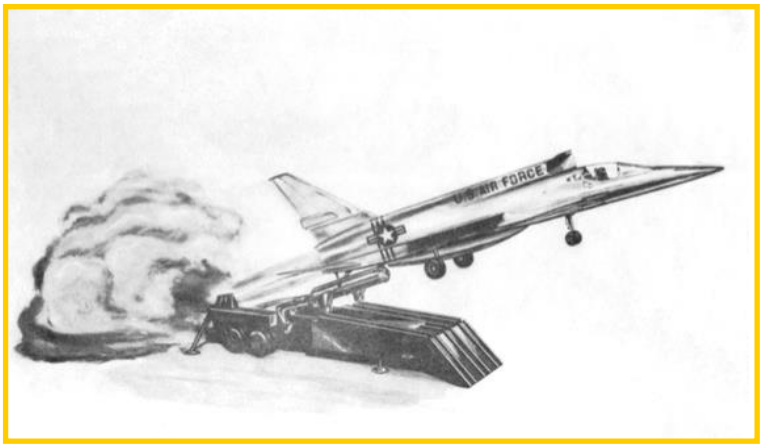
With the success of North American Aviation's F-100 Super Sabre, the company proposed a higher performance variant known originally as the F-100B. As the F-100B design evolved, it became clear that the upgrade would actually be an entirely new airplane and the project received the designation of F-107A. While there was a significant improvement in performance and load carrying capability, the Air Force chose the Republic F-105 Thunderchief over the F-107. During the course of development of the F-107A, the US Air Force also experimented with adding a zero-length (ZEL) launch capability to several of their fighter designs including the Republic F-84, and F-100, while the German Air Force tested ZEL launches with the Lockheed F-104 Starfighter.

The primary benefit of ZEL launching a fighter aircraft is to remove the necessity of using a hard surface runway, keeping the vehicles mobile, and difficult to locate. The relative simplicity of placing a large rocket beneath a fighter attached to a launch platform that could be placed anywhere was of keen interest to Air Force brass.


*A North American Aviation F-100 performs a zero-length launch during early testing.*

To quote the North American Aviation report: "Zero length launching capabilities can easily be added to the F-107A Airplane by making simple provisions in the fuselage structure to receive attachments of a rocket booster. Launching the airplane directly into flight gives it the tactical advantages that can be gained from starting a mission from forward areas where runways do not exist." It went on to state: "By adding zero length launching capabilities, the F-107 Tactical Weapon System can be launched from either hardened or mobile launching sites to strike targets quickly and effectively."

Through the use of a solid propellant rocket capable of 132,000-pound thrust added to the aircraft's engine afterburner, the system could safely launch an F-107A weighing up to 49,000 pounds. North American reviewed all 'off-the-shelf' boosters and determined that the X-226A booster being manufactured for the Snark missile could provide enough thrust to launch a fully loaded F-107A. Three men could load an airplane on the launch trailer in just 2 hours, and a fully loaded F-107A could be transported over improved terrain on the mobile launcher. Over unimproved terrain, the




*Artist concept of a North American F-107A performing a zero-length launch from a mobile platform at a remote location.*

airplane is transported on a separate dispersal trailer, towed by an Air Force Prime Mover.

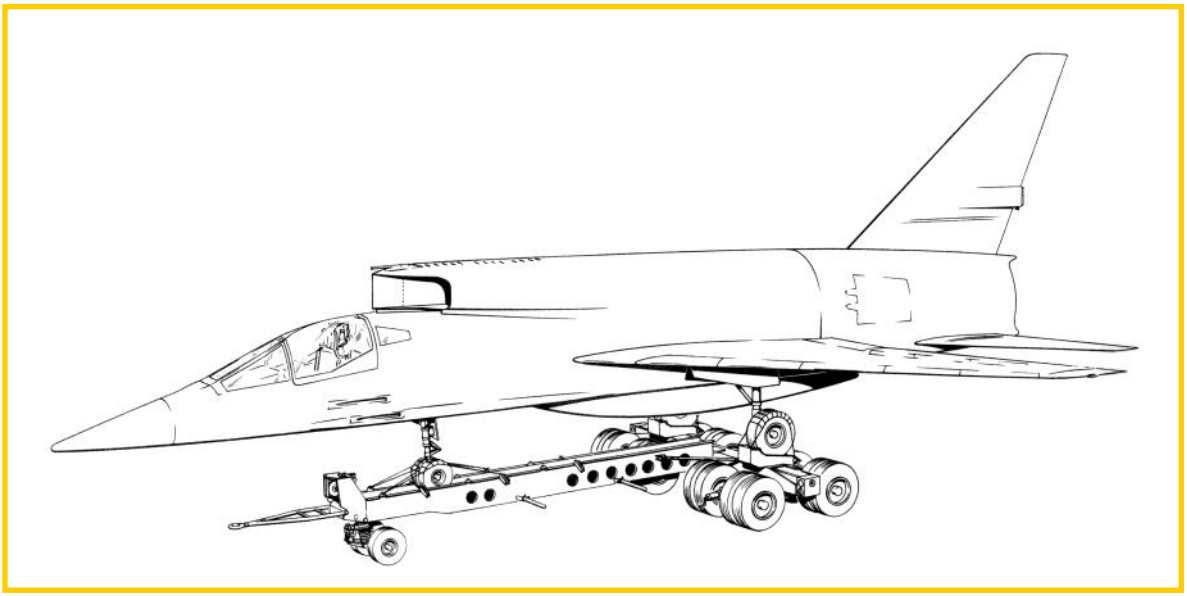
An F-107A could be prepared for launch within eight minutes, during this time, the pilot enters the cockpit, starts the engine, and the airplane raised to the launch position of 17 degrees with respect to the ground. Once the rocket booster fires and the aircraft departs the platform, it maintains flight until the rocket powerplant is expended, then the booster and frame attachment are released, the landing gear retracted, and the F-107A continues on its mission under jet engine power.

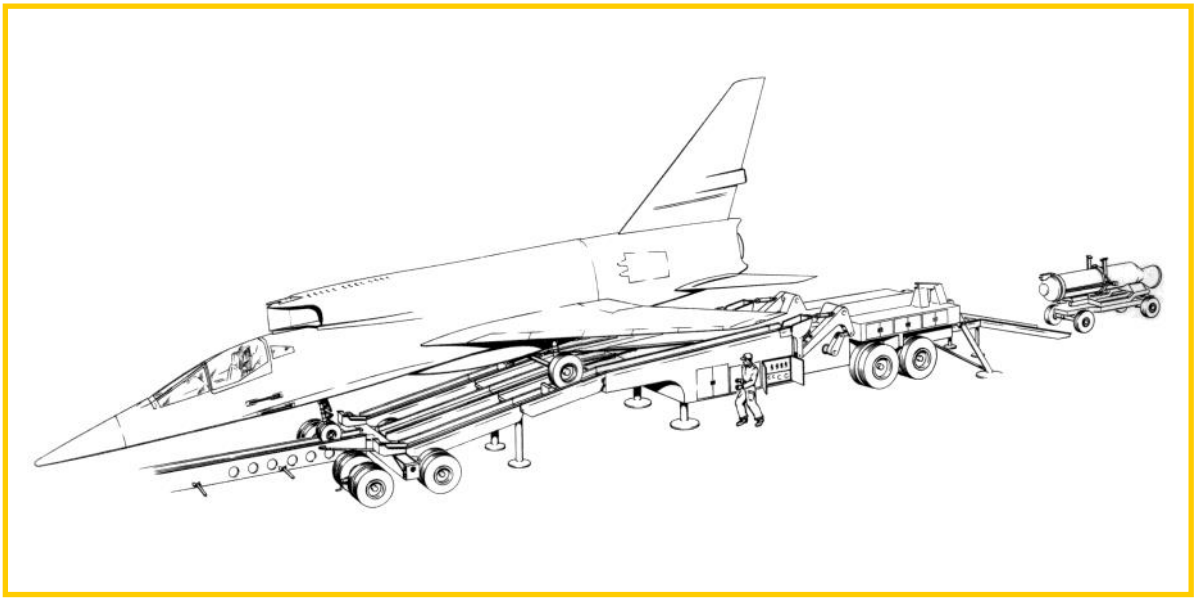
*In addition to the ground attack role, the F-107A was proposed for the bomber interceptor mission.*

In actuality, ZEL launches were not as effective as originally thought, and the idea of launching fighter aircraft from mobile platforms quickly lost favor within the Air Force and the concept was abandoned for many years. It has only recently been revived for use on the Kratos XQ-58A autonomous airborne platform.


*Though the F-107A showed improved performance over its predecessor, the Air Force chose to go with the Republic F-105 Thunderchief for the fighter-bomber mission.*

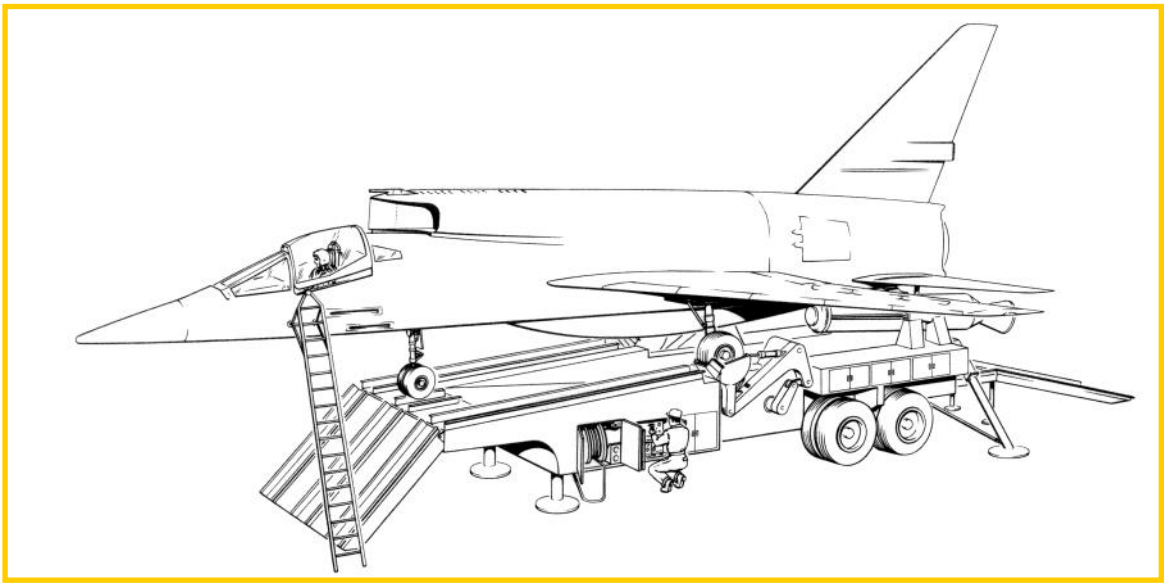
*The North American F -107A is shown on its transport trailer.*



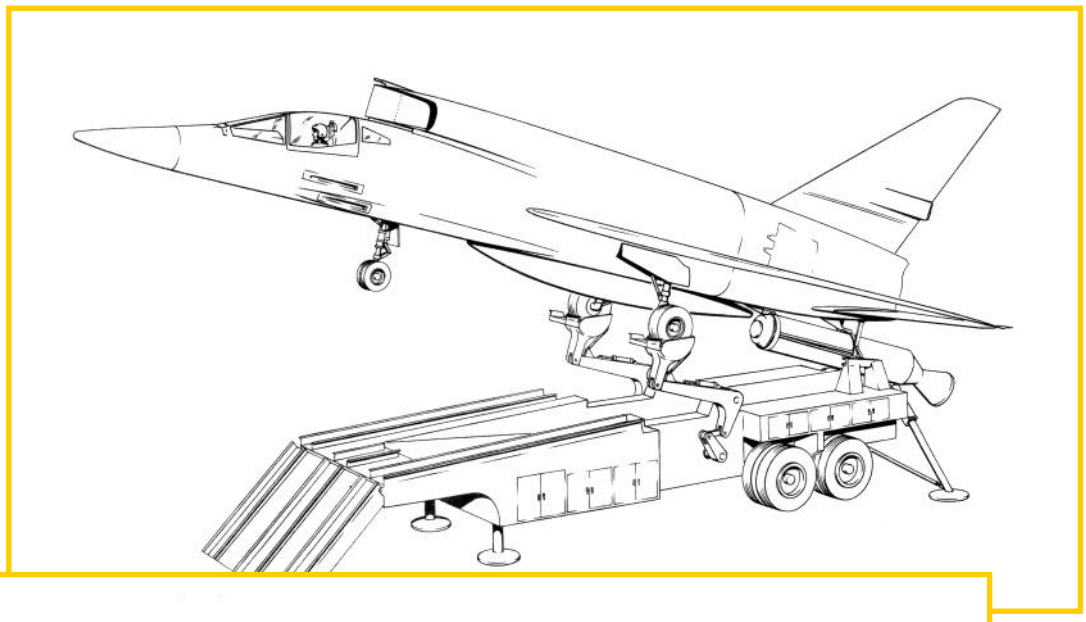


*Loading the F-107A onto the mobile launch platform.*

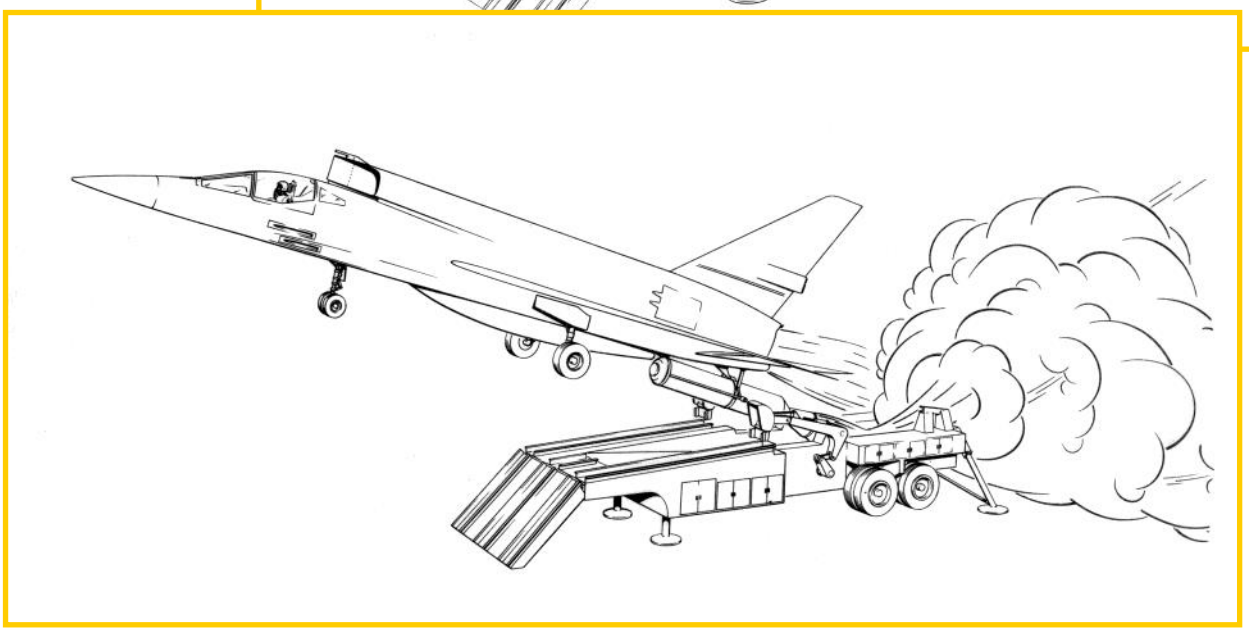
*North American stated the F-107A could be ready for launch in just eight minutes once the order was received.*



*The F-107A is moved into launch position on its mobile platform (right).*



*LAUNCH!! (middle)*



*Rocket-assisted zero-length launches with the Kratos XQ-58A are becoming commonplace.*

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