THE CLASSIC RYAN NAVION

By Walter A. Musciano

A LONG TIME MODELER'S FAVORITE

Part II will follow in the November issue with complete construction article.

PART I

by Walter A. Musciano

The Author thanks William Wagner and James V. Mulvey of the Ryan Aeronautical Co.; William Winter; and Henry (Hank) Tremont for photographs and technical information which made this article possible.

Since its introduction by North American Aviation in April 1946, the Navion has been a favorite subject for many modelers, however, very few kits have appeared over the years. The reason for this scarcity is probably the cost of manufacturing the enormous bubble canopy which is one of the outstanding features of the design. Patience, Navion fans, for a Navion project is on its way to the pages of R/C Modeler.

The word Navion is an acronym for North American Aviation and the plane made a big splash in the personal airplane field when it first appeared. The craft was an all-metal, four-passenger pleasure, sport, or business type with many big plane features at a moderate price. Powered by an air-cooled six cylinder 185 hp Continental E-185-3 engine swinging a variable pitch Hartzell propeller, the Navion cruised at 150 mph while the top speed was 157 mph. Range, with two pressed steel 39½ gallon wing located fuel tanks, was just over 500 miles. Empty weight was 1,660 lbs. and the useful load was 1,016 lbs., giving it a gross weight of 2,676 lbs. Fully loaded, the Navion could take-off into a 10 mph head wind, with flaps up, in a 560 ft. ground run. Rate of climb was about 800 ft./min. with a service ceiling of 14,000 ft. With the hydraulically operated flaps down, the stalling speed was 58 mph as was the landing speed. Landing into a 10 mph headwind with 40 degree flaps, at 58 mph touchdown speed, the craft required a 330 ft. ground run.

The design and construction of the Navion accented accessibility, low maintenance cost, and comfort. The elevator and horizontal stabilizer assemblies were interchangeable, left and right. All hinge points were fitted with ball bearings and control surfaces were easily removable. The monocoque engine mount was structurally part of the fuselage thereby eliminating the conventional steel tube design. In addition, any part of the engine was easily accessible for inspection or repair via large hinged panels.

The wing design gave the Navion exceptional aileron control at low speeds when approaching a stall. The root sections of the wing were the first to stall, thus eliminating the tendency of the plane to roll and it maintained excellent lateral control through the stall. The careful selection of airfoil sections gave the Navion the finest flight characteristics without loss of performance.

Visibility was excellent throughout 360 degrees, thanks to the enormous bubble canopy. The hydraulically retractable tricycle landing gear contributed to the same superb control tower visibility while the craft was being operated on the ground. This made the Navion a very safe plane to taxi, take-off and land. A large nose wheel was fitted to improve handling and to eliminate the difficulties normally encountered on rough field landings and take-offs. The nose wheel was steerable through 20 degrees.

The Navion's control system was of the pully and cable design, with dual wheel and pedal controls for the pilot and a co-pilot. The right hand or co-pilot's controls were, however, easily and quickly removed to accommodate a non-pilot passenger. The craft was very rugged and exceptionally stable; a sweet plane to fly. The control system was simplified so that the craft could be handled with the wheel control alone; operating the elevator and ailerons only. All necessary turns could be negotiated with the ailerons under normal conditions. The aileron cables and rudder cables were interconnected; the rudder cable being spring loaded. The rudder pedals became effective only when slight pressure was applied to overcome the spring connection.

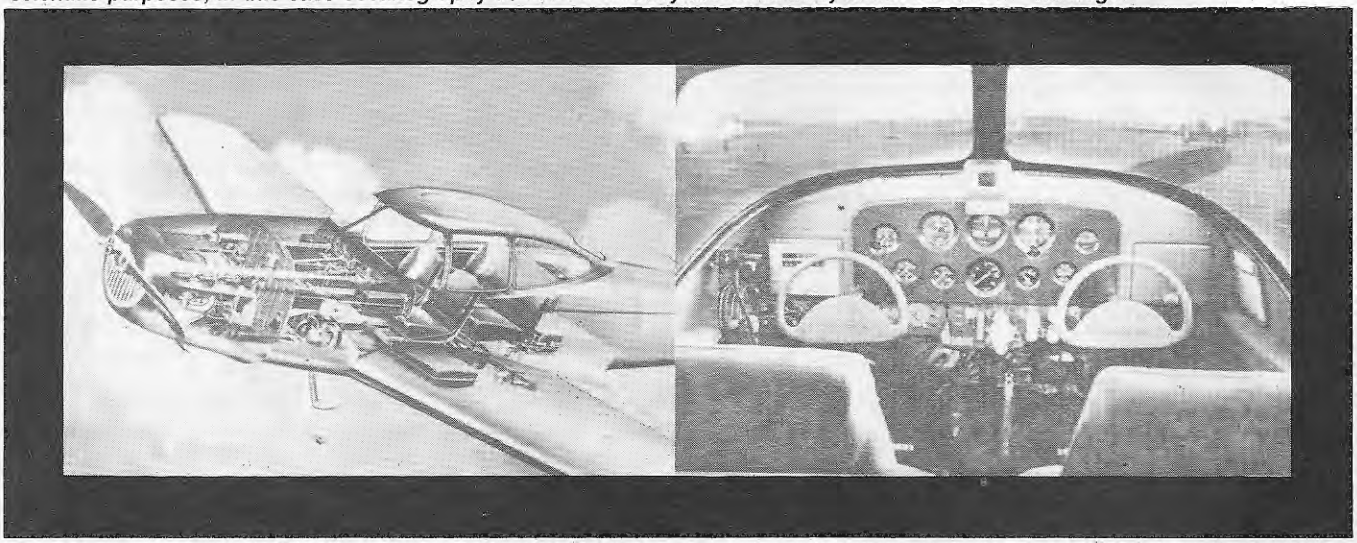
Considerable effort was directed to the Navion's interior design to provide comfort, luxury, safety and styling for the pilot and passengers. The entire passenger enclosure was constructed as a single unit for strength and passenger safety. The widest part of the fuselage was in way of the cabin which provided the roominess and appointment of a luxury automobile interior. The individual front seats were adjustable and the back seat could be removed to accommodate 435 lbs. of luggage in 46 cu. ft. of space. The co-pilot's seat was also removable to provide additional cargo space for salesmen, farmers or sportsmen. The normal luggage compartment was located behind the rear seat and could accommodate 80 lbs. of luggage with four passengers aboard. Several Navions converted this luggage compartment into heavy camera and other apparatus compartments to conduct aerial surveys and other scientific undertakings. The luggage compartment was covered when the canopy was in the closed position. The four seats could comfortably accommodate husky six-footers with ample leg room and the plane could be entered without stepping on the seats.

The United States Army Air Force purchased about two hundred Navions for Liaison and Observation work. These received the military designation of L-17, L-17A, and L-17B. The Navion saw extensive service in the Korean conflict during the Fifties in both its natural 24 ST aluminum skin and camouflaged in war paint.

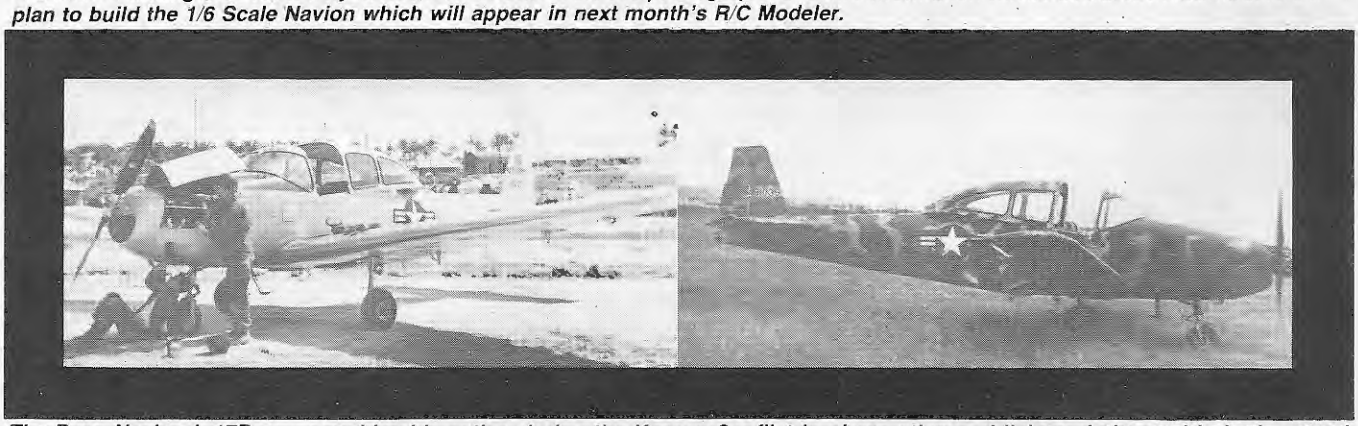
Despite its advanced features, ruggedness and excellent handling qualities, the Navion's conservative speed could not compare with the high stepping go of some of its contemporaries, regardless of cost. It soon became evident that a mass production manufacturer of sophisticated high performance fighter planes, such as the WW II Mustang and the post war Sabre Jet, could not hope to avoid production losses with a relatively inexpensive private type. Within a few years of its introduction, the design and production dyes were sold to the Ryan Aeronautical Company who, after making several modifications, began marketing the plane in 1949 as the Ryan Navion. The new Navion manufacturer added a 20 gallon auxiliary fuel tank behind the rear seat which increased the range to 750 miles. Also improved was the cabin ventilation and sound proofing. The 185 hp was gradually increased over the years to 205 hp, 225 hp, and 265 hp engines.

In 1955, Ryan had stopped production and sold the design plus tooling to a Houston, Texas Corporation and in 1961 the craft was being manufactured by the Navion Aircraft Company of Galveston, Texas. By this time the plane had undergone so many design changes that it bore very little resemblance to the original North American and Ryan production models. Gone was the magnificent bubble canopy with its 360 degree vision and in its place was a conventional four window cabin and standard hinged doors. Cylindrical streamline wing tip fuel

The "First and the Last" of the bubble canopy Navions are shown here. Note the simple single-color paint job of the early version (left) and the most recent with its multi-striped scheme (right). Notice the wing and fin located registration numbers on the early version. The later Navion featured a simplified fillet fairing and main landing gear covers. As with many Navions this particular plane was used for scientific purposes; in this case oceanography as can be seen by the sonic buoy nestled under the fuselage.



The interior arrangement of the Ryan Navion is shown in the two photographs and this information can be useful to those modelers who plan to build the 1/6 Scale Navion which will appear in next month's R/C Modeler.



The Ryan Navion L-17B saw considerable action during the Korean Conflict in observation and liaison duties and in both natural aluminum and war paint. Camouflage colors were tan and brown or tan and dark green with very light powder blue-gray undersides.

tanks were added and the dorsal fin had disappeared by 1962. A small prop spinner was added to complete the transformation. The Navion interests changed hands several times and our information indicates that the Janox Corporation of Arcanum, Ohio, were the most recent owners.

Despite the Navion's many outstanding features and splendid innovations the design was not financially rewarding to its several manufacturers. Perhaps it was too advanced and ahead of its time and not fully appreciated by the airplane buyers of the private sector. This substantial airplane is one of the best values on the used plane market today and there are many of the thrity-five year old Navions efficiently operating; serving farmers, businessmen and sportsmen.

It will, forever, remain one of the truly classic personal-type airplane designs and the Navion makes such a great R/C project that a 1/6 size or a 2" to the foot scale Navion construction project will be presented in R/C Modeler in next month's issue. Don't miss it! □