

There's no such thing as just owning a Navion. Once you buy one you become a member of a clan, one that's a good deal more self-centered than the most exclusive fraternity. It's a lot like the clan to which a Volkswagen owner belongs. The darned thing becomes a part of your life, not just a cold, inanimate piece of transportation. And the best way to gauge the depth of this Navion worship is to question anything about the airplane within earshot of a Clansman (as I've done, on occasion, to my chagrin).

Until comparatively recently, the Navion remained alive largely through the efforts of the Clansmen around the country who own, cherish and nurture their beloved Navions that range in age from the earliest North Americans (1947) up through the last of the Ryans (1951) to today's Rangemaster. According to FAA's records, there are currently 1,652 Navions registered in the U.S. These include what is perhaps the most diverse number of variations on the basic airplane of any single airplane in U.S. history. Only Piper, with all the many models that have stemmed from the basic Cub trainer, can top it.

Navion Clansmen have developed, modified and certificated a considerable number of changes and improvements on their own, footing the bills themselves. Many of these improvements are incorporated in the Rangemaster, which is now in production at Harlingen, Tex., where the Tusco Corporation moved its Navion Aircraft Company subsidiary recently. The company was just in the process of moving when I arrived in Houston to pick up Rangemaster N2470T to ferry to Executaire, Inc., Navion distributor in Pittsburgh. I should say that the factory was moving to Harlingen from its Galveston plant; a factory sales office will remain at Houston International Airport, with the marketing department headquarters at its source of supply, 320 miles away.

The present production Navion (the company is fighting a determined battle to get all and sundry to use their new trade name Rangemaster; the name "Navion" actually is a contraction of "North American Aviation," the company which developed the airplane in 1947 and sold out to Ryan after losing millions) is clearly and unmistakably a Navion, but with many differences. The famed sliding hatch over the cabin is gone and has been replaced by a solid roof and a large cabin door on the left side. In all the older Navions I'd flown, I had little trouble getting into the front seats, because I could stand up and walk into them, with the sliding hatch open. In the short time I spent with Rangemasters I never did learn how to get into the front seats without banging my head and grabbing all sorts of knobs and levers while getting seated.

The vertical tail has been changed considerably, largely for appearance's sake. The large tip tanks are another permanent difference, although tip tanks have for some time been one of the favorite modifications of Navion Clansmen. Such tanks were one of the first



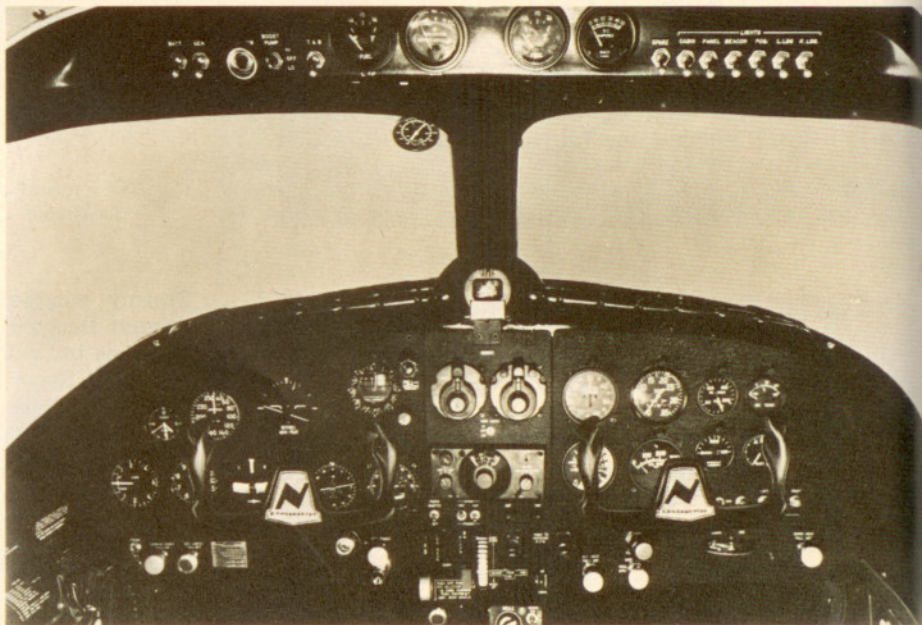
Navion Rangemaster in flight. The Texas-built version of the famed plane, carrying 107.5 gallons of fuel, has a nonstop capability of more than eight hours

PILOT editor studies new Rangemaster on cross-country flight. He finds that Texas-built plane lives up to its colorful ancestry despite many changes. Its phenomenal range is considered one of its outstanding features

It's Still A Navion

by MAX KARANT • AOPA 18

Rangemaster's instrumentation is arranged for the convenience of the pilot. Flight instruments, radio controls and engine instruments are separately grouped and an overhead panel keeps the main instrument panel from being cluttered. Fuel gauges and less frequently used switches are placed on the panel above the windshield where they will not be confused with flight and navigation dials



kit-sale items of Brittain Industries of Hawthorne, Calif.; the head of Brittain, Dr. Karl Frudenberg (AOPA 96042), prominent California obstetrician and gynecologist, was a Clansman at the time.

The welded steel step ahead of the leading edge of the left wing is gone, as is the big can-lid handle just ahead of the left windshield. Instead, two steps now are built into the trailing edge of the left flap, and there's an attractive assist handle just under the rear window. Because the left flap is actually the step, the *Rangemaster* pilot must learn a new technique in operating the ship. After landing, you retract the flaps while taxiing in, to avoid damaging them with blowing rocks. But after you park, and just before turning off the engine, you again lower full flaps and leave them there, because that's the only way you can get in or out of the ship.

Another difference is the engine: the 260-h.p. Continental IO-470-H, and its McCauley constant-speed propeller. The added 55 h.p. over the Ryan, and 75 h.p. over the original North American, does much for the *Rangemaster's* over-all performance, even though the gross weight has been increased 400 lbs. over the North American and 300 lbs. over the *Navion B*, the version Ryan produced with the 260-h.p. Lycoming and certificated in 1950. In the flying I did with 70T I used 70% power for cruise (maximum recommended is 75%), and at that setting my fuel consumption worked out to 14.8 g.p.h., though the special power-setting computer that comes with each airplane says fuel consumption should be 12.7 g.p.h. at that setting. This despite careful use of the fuel-injection system's easy-to-use power-setting indicator.

One of the most outstanding features



AOPA PRODUCT REPORT

is part of the *Rangemaster's* name—range. It carries 107.5 gals., the same as the *Apache*, which gives it a nonstop capability of more than eight hours, which is well beyond the range of most pilots (and all women). Even at the excessive rate of 14.8 g.p.h., 70T had a maximum range of 0720. I flew 70T nonstop from Houston to Kingsport, Tenn., in 0553 and it took 87 gals.; I still had over 0120 range left. Such range has several advantages. The longer you can stay at cruising altitude and speed, the better your over-all performance, even though the plane's basic cruising speed is lower than other planes. The *Rangemaster's* performance on a given trip would be better than that of a faster plane that had to make one or two gas stops.

I made a number of true-air-speed checks at 7,500 ft. and they worked out to 178 m.p.h.; Navion's specifications call for 181 m.p.h. at the 70% power setting. A number of timed climbs at various loadings—none of them maximum—averaged between 550 and 570 f.p.m. for sustained climbs to 1,000, 3,000 and 7,500 ft. On takeoff from Houston on the return flight, 70T had full fuel and my baggage in addition to myself. The ground temperature was 78° and the temperature at 7,500 ft. was 60°. At 110 m.p.h. indicated, 70T averaged 550 f.p.m. to 7,500 ft.

I had a slight tail wind most of the

way from Houston to Tri-Cities airport at Kingsport. Block-to-block ground speed for that leg was 154.8 m.p.h. For the final leg, from Kingsport to Pittsburgh, block-to-block speed was 165.6 m.p.h., also at 7,500 ft. For the entire 1,214-mile flight the block-to-block average was 160.2 m.p.h.

The *Rangemaster's* fuel load is distributed between the main tank (39.5 gals.) and the two tips (34 gals. each). Normal procedure is to use about half of the main tank first, then switch to the right tip for an hour, then the left, back to the main, and so on. It's best to burn off fuel in such sequence because of the 204 lbs. of fuel weight at each wing tip. Any substantial unbalance between the two tips is quite noticeable in the plane's flight characteristics.

Incidentally, that fuel-switching gave me quite a start until I got used to it—if you can or should ever get used to having the engine start to quit because of fuel starvation. I discovered this characteristic, without warning, when switching the fuel valve from the main to left tip tank. Within seconds after the valve was turned, the engine suddenly began to slow down and buck. Having been acquainted with the auxiliary electric fuel pump during my checkout at the factory, I instinctively snapped it on after switching the valve back to the main tank. The engine immediately resumed normal power, and I settled back and began to experiment.

Then I remembered a similar set of circumstances reported to us by a member who owned a new Continental-powered fuel-injection *Aero Commander*. Under certain circumstances one engine would invariably run down or actually quit. Turned out to be a peculiarity of the fuel-injection system, and the "cure"

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A luxurious interior is a feature of the *Rangemaster*. The Navion people say there is "no jump-seat nonsense" in their new plane. The fifth seat, which is not shown in the photograph, can be folded away when not in use. A cabin door has replaced the famed Navion sliding hatch over the cabin

Here is a view of the *Rangemaster's* interior looking back from the pilot's seat. The author classes its five seats as among the best in the industry, and they all incline. He also found that the cabin's five individual ventilators gave excellent ventilation



Comparison of Rangemaster with Some Other Planes in Same General Class

(Items listed were selected by Navion Aircraft Company)

	Navion Rangemaster	Beechcraft Bonanza	Beechcraft Debonair	Piper Comanche 250	Cessna 210
Base price	\$25,900.00	\$26,875.00	\$22,750.00	\$21,990.00	\$23,975.00
Full panel	Standard	550.00	850.00	790.00	530.00
Instrument post lights	Standard	195.00*	195.00*	N.A.	N.A.
Right hand brakes	Standard	150.00	300.00**	Standard	Included with dual controls
Dual controls	Standard	125.00	125.00	Standard	140.00
Super soundproofing	Standard	130.00	195.00	Standard	N.A.
Maximum range fuel tanks	Standard	775.00	775.00	550.00	375.00
Rotating beacon	Standard	115.00	115.00	120.00	95.00
Head rests	3 Standard	2 Standard	(2) 70.00	4 Standard	(2) 31.50
Window curtains	Standard	150.00	150.00	120.00	N.A.
Fifth seat	Standard	480.00	N.A.	N.A.	N.A.
50 amp. generator	Standard	Standard	100.00	Standard	Standard
Front seat arm rests	Standard	Standard	60.00	Standard	N.A.
Rear side windows	Standard	Standard	130.00	Standard	Standard
Cyl. head temperature gauge	Standard	Standard	Included with full panel	60.00	Standard
Deluxe interior & exterior	Standard	Standard	Standard	Standard	Standard
Fuel injection	Standard	Standard	Standard	Available June, 1962	Standard
Reclining seats	Standard	Standard	Standard	Standard	Standard
Ground service plug	Standard	N.A.	N.A.	N.A.	24.00
Heated pitot tube	Standard	65.00	65.00	50.00	19.75
TOTAL	\$25,900.00	\$29,610.00	\$25,880.00	\$23,680.00	\$25,190.25

N. A.—Not available

* With edge lighted sub panel, on Model P35 **Bonanza** and Model B33 **Debonair**

** With rudder pedals installation in Model B33 **Debonair**

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was to immediately switch on the auxiliary pump until the engine resumed normal power. So I tried that technique and it worked for the rest of the flight. Incidentally, this only happened to me when switching from main to left tip, but not to the right tip. The problem has to do with vapor lock in the long lines from the tips, and I was told that the only way to prevent it is to keep an eye on the fuel-pressure gauge, and snap the electric pump on the moment the gauge starts waving.

With all that fuel aboard, the *Rangemaster* needs a firm hand on the controls. As a matter of fact, the Mitchell "Executive Co-Pilot" with which 70T was equipped, is a very useful addition to the *Rangemaster*; Navion strongly recommends it as optional equipment.

The autopilot in 70T had a circular ring around the directional gyro which can be turned with a special knob so that the desired heading can be set, after which the plane will hold that heading indefinitely. This one operated normally for 0245, then the heading lock failed. Though the basic autopilot continued to work, I found it next to impossible to use it to maintain any kind of course; the turn knob had to be used almost continuously to keep the plane anywhere near the desired heading. And flying the *Rangemaster* by hand, with all that fuel still out in the tips, got a little tiring. After a while I began tinkering with the broken heading-lock setting knob and found that, although it

wouldn't hold the heading set at the indicator, it would still hold a heading if I could juggle the ring in such a way that it would lock in straight and level flight without regard for the heading shown at the index. For a considerable time I maintained a course of 040° this way, though the index read 238°. When I got to Pittsburgh they found the directional gyro conversion to the heading lock had failed. They told me they'd had five autopilot gyros fail in other planes within two weeks.

Radio in 70T included a King KX-120 and an ARC ADF-501A. Both worked beautifully and would have been ample for IFR operations. These added \$3,060 to the \$25,900 base price of the *Rangemaster*, and the Mitchell autopilot was an added \$1,480. These brought the total price of 70T to \$30,440. Only discrepancy I noted in connection with the radio (which is mounted just under the compass) was that the compass swung an average of 25° every time I pushed the mike button.

The *Rangemaster's* interior is very attractive and comfortable. The five seats are among the best in the industry, and they all recline. Ventilation is excellent; there are five individual ventilators throughout the cabin structure and two in the floor. The fifth seat is actually in the area that must be used for baggage, hence it is easily removed. It also has a shelf behind it. Toe brakes have replaced the old *Navion* pump handle brake.

There are five overhead lights, and the instrument panel is lighted by eyebrow lights. The panel itself is nicely laid out, and is strongly reminiscent of

the older *Navions*. Many of the knobs, buttons and control levers are identical to those of the older North American and Ryan models. Most of the electrical switches, however, have been moved to an overhead panel at the top of the windshield, where the sliding hatch used to open on the earlier ships. The fuel gauges also are on that overhead panel.

The sealing of the overhead hatch into a conventional cabin with a single side door has done wonders for the noise level. The sound level is quite good at cruising power, and it is no problem to listen to the radio on the overhead speaker in cruising flight, or to converse.

Navion ordered new control wheels for the *Rangemaster*, and they are shown in the accompanying photographs. But then an FAA engineer in the Ft. Worth regional office took a look and decided he didn't like the 1/4-in. steel core in the new wheel, and ordered Navion to get wheels with 3/4-in. cores. Result is that 70T, and the other *Rangemasters* around the country, are equipped with old Ryan wheels while Navion orders new wheels to comply with the FAA order.

Visibility out of the *Rangemaster* is outstanding in all directions except to the front and rear. The windshield is narrow and shallow, and is the same as the older *Navions*. But the view out the sides is excellent; in some ways the passengers in the back seats have better visibility than the pilot.

Flight characteristics of the *Rangemaster* are still true *Navion*, which is about the highest compliment you can pay a private plane. The wonderful low-speed characteristics are still there, and the stall is almost not a stall at all, it's so gentle. But there's been one change. In the older *Navions* it used to be that you could slow it up, put flaps and gear down, then hold the air speed at about 75 m.p.h. as you started down to a landing on final approach from as high as 2,000 ft. off the end of the runway. This gave the *Navions* an angle of descent that was enough to pop the eyes of the most sophisticated pilot. Then, as the plane came over the end of the runway, you simply pulled the nose up steeply, touched down on the rear wheels, and held the wheel hard back so that the plane was only rolling very slowly when the nose wheel finally touched.

You can't do that with the *Rangemaster*, at least not to that extreme. Because of its changed configuration and moved C.G., you can't make such a steep approach with full flaps unless you have a pretty heavy load in the rear of the cabin. The nose doesn't come up as far as it used to, and you could make a pretty hard landing. With two in front, you can get a good version of such short-field operations with half flap.

The *Rangemaster* is being produced under the original North American type certificate, A-782, which was first issued January 28, 1947. Since that date the *Navion* has had a long and checkered career. The many versions of the *Navion* have had a total of 42 mandatory

Navion Rangemaster

Specifications

Gross weight (lbs.)	3,150
Empty weight (lbs.)	1,950
Useful load (lbs.)	1,200
Baggage capacity (lbs.)	190
Wing span	34 ft. 9 in.
Wing area (sq. ft.)	184.33
Length	27 ft. 10 in.
Height	8 ft. 6 in.
Power loading (lbs. per sq. ft.)	12.1
Wing loading (lbs. per sq. ft.)	17.1
Fuel capacity (main tanks & accumulator—U.S. gals.)	39.5
Fuel capacity (tip tanks—U.S. gals.) (34 gals. each)	68
Minimum fuel octane	100/130
Engine	Continental IO-470-H 260 hp. at 2,625 r.p.m.

Performance

Top speed (m.p.h.)	198
Cruise speed (65% power, 7,500 ft.—m.p.h.)	181
Best economy cruise (50% power, 12,000 ft.—m.p.h.)	177
Cruise range (Maximum at 73% power at sea level—miles)	1,360
(Maximum at 65% power at 7,500 ft.—miles)	1,475
(Maximum at 50% power at 12,000 ft.—miles)	1,858
Stalling speed (flap and gear down—m.p.h.)	59
Best rate of climb speed (m.p.h.)	105
Best rate of climb (ft./min.)	1,250
Absolute ceiling (ft.)	22,400
Service ceiling (ft.)	20,500
Fuel consumption (gals. per hour at 73% power)	13.5
(gals. per hour at 65% power)	12.7

airworthiness directives issued against them, a box score that is tied for first place with Piper's J-3 *Cub*. Technically speaking, the present *Rangemaster* is the *Navion G*. The first North American was the *Navion 4*; it was Ryan that started the lettering series with its *Navion A*. That airplane had the 205-hp. Continental. Ryan also produced the *Navion B*, which was the 260 Lycoming version. The *Navion C* was a Ryan designation that they never built. The *D* was the first Tusco version, had a 240-hp. Continental, McCauley prop, tip tanks and a 3,150-lb. gross. The *E* was the *D* with a 250-hp. fuel-injection Continental, five seats. The *F* was an *E* with 260-hp. fuel-injection. The *G*, or *Rangemaster*, was the first model to eliminate the sliding hatch and go to the solid cabin with left-hand door.

The *D*, *E* and *F* all were conversions of existing *Navions*. If you're interested in serial numbers, North American's ran from 1 through 1110. Ryan's ran from 1111 through 2350. The *Rangemaster* started at 2351, goes through 2368, picks up again at 2401 and runs to the present time. Numbers 2369 through 2400 were destroyed by a hurricane that hit Galveston, and all but wiped out the factory. The airplane I flew for this article was 2470; the present company managed to get a block of registration numbers from the FAA that coincide with the planes' serial numbers, with

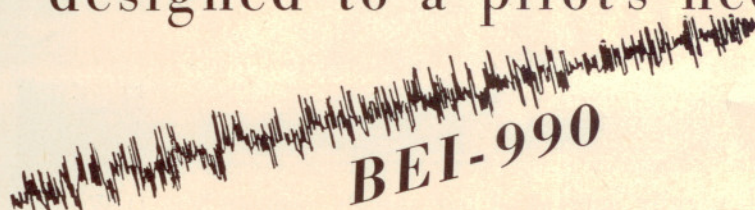
the letter T (probably for Tusco) to boot.

The *Navion* branched out in other ways, too. Ryan once proposed a trimotored version, with 115-hp. Lycomings, but never built it. The twins were different; there were—and are—several versions extant. Riley started it by converting *Navions* to a pair of 150-hp., then later to 160-hp. Lycomings. Then Temco took over and came up with 165-hp. Lycomings; they later sold out

to Univair in Denver. The Cameron Iron Works produced a version called the *Camair* (it had two 240-hp. Continentals), then sold out to one William Taylor in Melbourne, Fla. One other version, made by a company by the name of Dauby, also entered the picture briefly.

All told, the *Navion* has had a wonderful, colorful history. The *Rangemaster* is certainly a worthy successor to the line. END

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