

NO. 13

QUICKIE NEWSLETTER

JULY 1981

Q2 AND QUICKIES DOMINATE CAFE 250 AIR RACE

On 20 June, 1981, 3 homebuilt Quickies and a Q2 entered by QUICKIE AIRCRAFT CORPORATION demonstrated the superior efficiency, speed, and fuel economy of the two designs by finishing 1st, 2nd, 4th, and 12th in the CAFE 250 Air Race held at Santa Rosa, California. Forty-seven aircraft representing a broad cross section of the homebuilt and certified aircraft market competed in the race.

The CAFE 250 race had its origins one year ago when Brien Seeley of Santa Rosa, California, decided to organize a 250 mile race over a triangular course. The winner would be the aircraft with the best combination of speed, miles per gallon, and payload, based on the following formula:

(Speed) x (Miles per Gallon) x (Square root of Payload)

- FEF

where FEF represents the Fuel Efficiency Factor. The derivation of this formula is too complex to present here, but we do have copies of it available. Suffice to say that a variety of aircraft designers, pilots, and factories, in addition to actual comparative testing of many different aircraft, substantiates that the FEF is a valid means for comparing a wide variety of aircraft. With the above formula, a four place factory aircraft can realistically be compared with a single place homebuilt. We believe that the FEF formula will become the standard means for comparing different aircraft, and Mr. Seeley is to be congratulated for his hard work.

Printed below are the official results down through 20th place:

Note that the FEF of the Q2 is so high, and so much greater than even the 2nd place Quickie, that the spread in FEF between 1st and 2nd places, about 25,000 points, is also the spread between the 2nd place Quickie and the 17th place LongEze.

Note also that the Quickies and the Q2 finished 1st, 2nd, 3rd, and 4th in fuel economy. The Q2's fuel economy was nearly 50% higher than the next closest aircraft. Put another way, while the Q2 was averaging

about 3.5 gallons per hour, and the Quickies were averaging between 1.44 and 1.87 gallons per hour, the aircraft with the 5th best fuel economy was burning 5.7 gallons per hour.

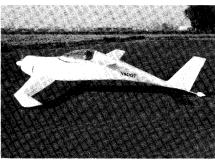


N81QA - 1st place, the Q2 and a proud Gene Sheehan

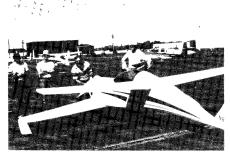


N88QB - 4th place finisher at the CAFE 250.

Many factory teams participated besides QAC. Since all types of aircraft were invited, a particular omission from the listing indicates that the company declined the invitation, or else did not show up.



N80QT - 2nd place finisher at the CAFE 250.



N80QK - 12th place finisher at the CAFE 250

20 June 1091

CAEE 250 DESIII TS

CAPE 230 RESULTS				20 June, 1961		
Rank	FEF	Aircraft Type	Reg.	Payload	Speed	MPG
1	125173	Q2	81QA	398.5	148.01	42.36
2	100155	QUICKIE	80QT	181.5	103.70	71.69
3	98699	VARIEZE	15LL	399.6	167.76	29.43
4	95620	QUICKIE	88QB	160.5	118.78	63.55
5	95385	F2B VARIEZE	4ZZ	399.0	163.96	29.13
6	89226	GLASSAIR	89SH	397.6	195.25	22.92
7	87667	VARIEZE	4EZ	400.0	172.45	25.42
8	87449	VARIEZE	42BS	398.0	169.32	25.89
9	82845	VARIEZE	64CB	398.1	161.87	25.65
10	81149	BEECH BONANZA	111MS	1066.0	173.34	14.34
11	79177	MODIF MUSTANG	5672	398.5	157.46	25.19
12	79038	QUICKIE	80QK	200.0	97.94	57.06
13	78810	LONGEZE	26MS	400.0	159.26	24.74
14	76007	MOONEY 201	3768H	798.2	161.65	16.64
15	75870	POWELL SPECIAL	25LP	345.6	167.86	24.31
16	75468	LONGEZE	79 RA	399.8	168.74	22.37
17	73866	RV-4	14RV	397.1	169.69	21.84
18	72628	MOONEY 201	3990H	796.9	154.59	16.64
19	69256	LINN MINI-MUST	10L	200.0	185.66	26.38
20	66677	DEFIANT	78RA	798.4	183.99	12.83

CAFE 250 Continued

The 3 Quickies entered were privately owned:

N80QT Owner Al Thompson,
Pilot Martin Fisher

N88QB Owners George Holmes and
Bill Hartman, Pilot Bill
Hartman

N80OK Owner/Pilot Vic Turner Each of these three aircraft has a unique history. N80QT was damaged in an early flight incident and repairs were not finished until one week prior to the race. In that one week period, 40 hours of flying was accomplished on the aircraft by Martin Fisher, Gary Keep, and Jim Thompson. It was then ferried to Santa Rosa for the race. N88QB has over 675 hours of flying time by over 24 pilots, on the engine and airframe. It won an award for outstanding workmanship at the recent Merced, CA flyin. N80QK, which you have read about before, sported a different cowling and a new spinner installation for the race. It has accumulated over 150 hours of flying time.

Many designers discounted the Quickie in the race, and went gunning for the Q2. As the results indicate, not one of the other 45 racers managed to get by the Quickie for a shot at the O2.

Gene Sheehan was the ace Q2 pilot for the race, and Peter Lert, Senior Editor Air Progress Magazine, went along as navigator, radio man, and chief ballast. Although the sizable victory speaks for the efficiency of the Q2 itself, the race was not run at the theoretically optimum speeds and profile, which resulted in a FEF about 25% lower than the theoretical maximum, and about 10-12% lower than the practical maximum. Information learned from this race will be used to increase the FEF factor with a goal of 140,000+ for next year's race.

By careful optimization of the flight profiles, the Quickies can probably improve 15% on this year's performance.

In summary, the race results of the CAFE 250 demonstrate the impressive and decisive margin of superiority of the Q2 and the Quickie over all other homebuilt and factory production aircraft. While some aircraft may go further, and others may go faster, or carry more people, no other aircraft has a better combination of speed, economy and

payload. The Quickie or Q2 builder can be justifiably proud to own the most fuel efficient aircraft in the world.

Next year, we hope to see many more Quickies and Q2's participate. The event was relaxed, fun, and gave everyone the opportunity to rub shoulders with pilots from all over.

PREPARATION OF THE WINNING Q2

We think many of you would like to know how N81QA was prepared for the CAFE 250 race

N81QA was constructed from the standard components and construction plans available to the public. The surface finish is very smooth and wave free, and consumed two weeks of effort to achieve. N81QA was built over a three month period in our shop, which enabled us to show visitors an aircraft under construction. Many would return at two week intervals in order to measure the progress of the speedy construction.

For the race, we concentrated on the following plan:

- Develop an optimum race profile of speed, altitude, and rates of climb and descent.
- 2. Optimize the propeller for that profile.
- 3. Develop the optimum airframe rigging for that profile.
- Verify all predictions with flight testing under representative conditions.

The race profile involved a full power, full rich mixture takeoff, a cruise climb and descent, and short cruise segments at reduced power with the mixture leaned to peak EGT. The 42.36 m.p.g. returned for the race includes one takeoff and landing plus the pattern work, four climbs and descents, and several short cruise segments. To maximize the FEF, an economy cruise speed well short of the aircraft's full capability was used.

The final propeller selected was a 56 x 51 propeller similar in design to the standard Q2 propeller. It achieves greater efficiency at the race cruising speed, while sacrificing some horsepower during takeoff and climb, and at high speed.

Airframe rigging changes included determining the correct c.g. location for maximum performance, and modifying the aileron rigging for a small benefit. These changes resulted in a more demanding aircraft to fly, particularly at high speed and on landing.

Approximately 2.8 hours of flight testing was accomplished specifically preparing for the race. Fuel flow instrumentation was reinstalled in the aircraft to assist in this phase. At 8,000 feet, 1040 lb gross weight, and 158 m.p.h. TAS, N81QA's fuel flow is 3.09 gallons per hour, which equates to 52.7 m.p.g. A power setting of 70% at 8,000 feet results in a TAS of 172 m.p.h. Measurements taken of rate-of-climb at gross weight bettered the advertised figures by about 10%.

We estimate that the airframe and propeller changes for the race made an incremental 3-5% improvement in the Q2's CAFE 250 performance. Therefore, extrapolation of the data for N81QA to the standard homebuilder configuration can be accomplished. The major findings at 1000 lb gross weight are:

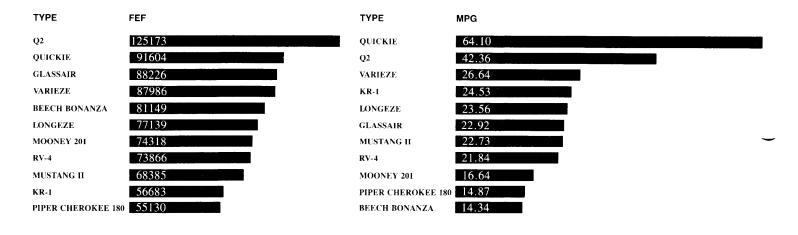
- 1. Maximum speed at sea level is 184 m.p.h.
- 2. Maximum cruise speed at 7,500 feet and 75% power is 174.5 m.p.h.
- 3. Fuel economy at 174.5 m.p.h. at 7,500 feet is 47.2 m.p.g. with a fuel flow of 3.7 gallons per hour.

Why is N81QA superior to the advertised performance? All published performance data was based on flight testing the Q2 prototype N8490P. The production homebuilt Q2's are cleaned up in many areas. Also, N81QA is an above average Q2, (if we may be allowed to say so), and all advertising is based on an "average" Q2.

A new exhaust system utilizing the advanced A/R technology is being shipped as a standard feature of the Q2 kit. It was tested on N81QA, but was not available for the prototype N8490P at the time that aircraft was being flight tested. This A/R exhaust system has made a substantial improvement in fuel consumption for the Revmaster 2100-DQ engine on the dyno. Flight testing confirms the lower fuel consumption.

As a result, customers are receiving a better aircraft at no additional cost.

Using a simple bar graph approach, here are some comparisons of FEF and fuel economy between several different models:





Larry Kienzle beside his recently completed Quickie, and...

QUICKIE NEWS

See the CAFE 250 results elsewhere in this newsletter!

Vic Turner's Quickie sported a new cowling and spinner installation for the race. Vic supplied most of the elbow grease, while we helped him with the shape and some of the mold work. A decision on availability to other Quickie builders awaits the completion of performance testing. Initial results indicate a 2-4 m.p.h. speed increase and better cooling to go with the snappy appearance. Vic will have it at Oshkosh.

The Turbo-Onan installation in our second Quickie is within 2 weeks of flying. We hope to make first flight prior to leaving for Oshkosh.

A production prototype Vari-Prop is installed on N77Q awaiting testing.

At last count, over 106 Quickies have made first flights. Many builders are grouping together for the trek to Oshkosh.

In late June, an inflight failure of the QCSA7 weldment was reported by a Quickie builder. The aircraft landed safely without damage. The piece may have been bent upon installation, but the final determination of the cause of the failure is awaiting laboratory testing. The failure propagated across the 'ear', and the crack apparently began on the outboard side. QCSA7 is not easily inspected without removal, but such inspection is mandatory for all Quickies now flying. Remove the QCSA7, clean it off, and examine it carefully for any signs of cracks or impending failure. Report any discrepancies immediately to us. This



Larry on final after his first flight

inspection notice should carry the weight of a mandatory Airworthiness Directive.

We have received several inquiries concerning use of the 44" diameter propeller for first flights on Quickies with the standard tire package. This combination offers improved climb performance. We could also offer a true climb prop optimized for climb at the expense of cruise. If this would be attractive for those builders nearly ready to fly, please contact us.

Don't forget the banquet at Oshkosh! See all of you there.

Current delivery on a Quickie kit is 3 weeks. Most components, including engines, are in stock. Current prices are \$3,295.00 for Package 1 and \$1,700.00 for Package 2. Note that the complete kit now consists of two packages, instead of the original three.

Available options are as follows \$125.00 Large Tire Option. 300.00 22.5 h.p. Option including Kevlar engine mount.

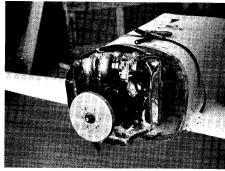
125.00 Kevlar engine mount separate. 125.00 Custom Upholstery set.

51.00 Prefabricated fuel tank.
(Standard with Package 1)

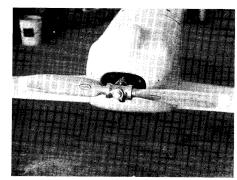
13.50 Communications *or* Navigation Antenna kit.

150.00 44" diameter propeller.
(Discounted price for currently flying builders).

The 44" diameter propeller is to be used with the large tire option and 22 h.p. engine option. This propeller provides greater rate-of-climb (about 20%) with a loss in top speed of about 4 m.p.h. It would be particularly useful for short fields at higher density altitudes.



Turbo Onan almost ready to fly.



Here's a view of the production prototype Vari-Prop.

QUICKIE PLANS CHANGE NOTICES

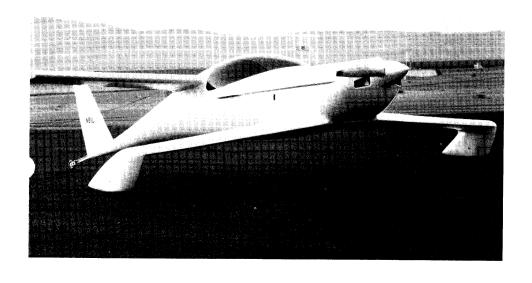
Quickie Plans Change notices (QPC) are mandatory revisions to the Quickie plans. Each QPC has a number and a publication date along with a description of the change. All QPC notices should be incorporated into the builder's set of Quickie Construction Plans immediately upon receipt by the builder. Any Questions on a QPC notice should be referred to Quickie Aircraft Corporation.

NUMBER: QPC33 DATE: 24 June, 1981

Immediately remove and inspect the QCSA7 weldment for signs of cracks or impending failure. Continue this inspection periodically every 50 hours until further notice. (See QUICKIE NEWS, this month.)



The third Q2 to fly was built by Garry LeGare and made its first flight in late May at Mojave, CA. Since both Garry's aircraft and N8IQA were constructed from the same components and plans as those available to the public, a comparison of performance and flying qualities is interesting. Garry is reporting essentially the same performance as N81QA in climb and cruise. Takeoff and landing speeds are lower, and the ground handling of his aircraft is somewhat easier. Garry has adapted a set of disc brakes to his aircraft, resulting in much shorter landing distances. Preliminary data indicates a landing distance at mid weight and 6,000 feet density altitude of about 1400 feet, as compared to about 2200 feet for N81QA. These distances are obtainable by an average pilot experienced in the Q2. At sea level, a substantial reduction in distance would be



found. We recommend a minimum of 5000 feet of hard surfaced runway for first flights to allow for the inexperience of the pilot.

We have been using N81QA as a test bed for options. In addition, we have made a number of small changes to assess their effect on the handling qualities and performance. One change that we made was to increase the angle of incidence of the canard 1 degree. (Nose high). This change improved the ground handling without affecting high speed performance or flying qualities. For this reason, we recommend it to all Q2 builders. The ground handling of the Q2 is very good for a taildragger, being superior to the normal assortment of Cubs, Champs, and Citabrias. Eventually, we would like to make it as easy to fly as the Quickie, and will continue working toward that goal. We will offer a disc brake option later in the year.

Those of you coming to Oshkosh will be able to make your own comparisons, as both aircraft will be there.

There will be a general price increase on the Q2 effective 9 August, 1981. The kit backlogs have already increased to 4-6 weeks, and we expect a further increase by early August.

Feature articles on the Q2, including cover pictures, will be appearing in the August, 1981 issues of both Popular Science and Private Pilot magazines. Also, Flying magazine has scheduled a 5 page full color spread on the Q2, probably for the October, 1981 issue.

One builder recently questioned the operating limitation in the Q2 Pilot's Manual for the yellow arc range from 146-200 m.p.h. This speed range should be avoided in



Load testing Garry LeGare's Q2

turbulence. It should not be confused with the never exceed speed, or red line, which is 200 m.p.h. The Q2 can be flown continuously up to 200 m.p.h. in relatively smooth air. These speeds are Calibrated Air Speed (CAS); 146 CAS at 10,000 feet is 170 TAS, which is the maximum cruising speed of the aircraft. Therefore, even in turbulence, the Q2 may be flown at maximum cruise speed at normal operating altitudes. We will expand the operational envelope of the Q2 when options become available which significantly improve performance.

Cockpit noise level measurements have been made on N81QA. At maximum cruise speed, noise level is 92 db. As a point of comparison, a Grumman Tiger is about 92 db at cruise also.

Current prices are \$5,400.00 for Package 1, \$1,350.00 for Package 2, and \$3,095.00 for Package 3. When purchased together, the customer saves \$250.00 at the \$9,595.00 price.

Available options are as follows: \$148.00 Electric Starter

235.00 Geared Electric Starter

75.00 Oil Filter System

30.00 Oil Sump Drain Assembly

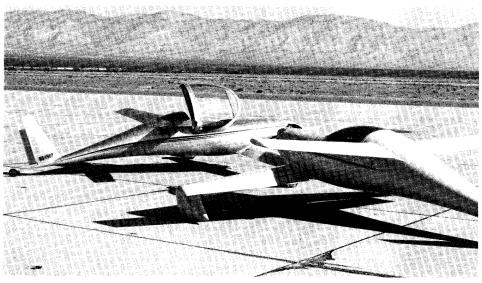
98.00 Prefabricated fuel tank

350.00 Custom Upholstery Set (Blue)

The custom upholstery set contains the following items: seat cushions (2), seatback cushions (2), thigh cushions (2), headrest cushion, and coverings for the consoles (both center and side) and the side cockpit panels. Installed, this upholstery set gives the Q2 an expensive production aircraft look.



Custom upholstery set. no Q2 should be without!



Garry LeGare's Q2 next to our prototype N81QA.

Q2 PLANS CHANGE NOTICES

Q2 Plans Change notices (Q2PC) are mandatory revisions to the Q2 plans. Each Q2PC has a number and a publication date along with a description of the change. Al Q2PC notices should be incorporated into the builder's set of Q2 Construction Plans immediately upon receipt by the builder. Any questions on a Q2PC notice should be referred to Quickie Aircraft Corp.

NOTE: Quickie Newsletter No. 12 mistakenly listed both Q2PC3 and Q2PC4 under the QUICKIE PLANS CHANGE NOTICES, instead of under this heading as they should have been. Please make sure that those two notices are incorporated into your Q2 Construction Plans.

NUMBER: Q2PC5 DATE: 22 June, 1981

The fuel header tank should be vented to the atmosphere so that it receives ram air pressure in order to minimize mixture changes with speed and attitude. To do so, bond a short length of 1/4" O.D. Aluminum tube to the top of the fuel header tank and bend it forward so that it captures the airstream. Alternatively, you could run the vent out the bottom of the fuselage to hide the vent line tube.

NUMBER: Q2PC6 DATE: 22 June, 1981

Raise the angle of incidence of the canard 1 degree nose up. (See discussion in Q2 NEWS). We believe this change to be worthwhile enough to make mandatory. Contact QAC for details and/or further discussion.

NUMBER: Q2PC7 DATE: 22 June, 1981

Page 14-9; QCSA3 Aileron Bellcrank—In order to optimize the pitch/roll stick ratios, reduce the center-of-hole to center-of-hole distance of QCSA3 between the two F34-14 Rod Ends from 4.5" to 2.9".

NUMBER: Q2PC8 DATE: 22 June, 1981

Page 11-5; Brake Drum—In order to provide better brake feel, there are two procedures that can be used. First, you may elect to increase the tension on the two brake shoe springs by drilling two new holes in each assembly to stretch the springs more taut. Second, you may elect to maintain tension in the system with a return spring on the brake arm, fastened to the bottom of the wheel pant. In either case, careful work will be necessary to properly set up equal feel to the left and right brakes. One should expect rework to be required during the early flight testing phase in order to achieve a good balance.

OSHKOSH 1981

Just a reminder that the big Oshkosh 1981 flyin is from 1 August thru 9 August this year. The Q2 forum is at 1:30 p.m. Sunday, 2 August. A Quickie forum will be presented on Tuesday, 4 August, at 1:30 p.m. There will also be a Quickie Construction Workshop all week long; everyone is invited to participate.

The Quickie/Q2 banquet will be at the Anchor Inn on Monday, 3 August. If you plan to attend, please drop us a note with the number of persons attending.

We are planning trophies and prizes for the outstanding Quickies and Q2's at Oshkosh this year. Further details will be released later.

Finally, act now for room reservations!

QUICKIE AND Q2 PLANS

Both the Quickie and Q2 Construction Plans are available for purchase separately from the kits. This is so that prospective builders may examine the construction procedures prior to purchasing the kits. It is not recommended to build either the Q2 or Quickie without the kits because of the prefabricated components.

The price of the Quickie Construction Plan is \$150.00. The engine installation plans are only furnished with Package 2 of the Quickie kit.

The price of the Q2 Construction Plans is \$150.00 for Section I and \$40.00 for Section II. Section II covers engine installation details.

In either case, for the Quickie or Q2, a plans purchaser who later buys the kit receives a credit for the amount of the plans purchased at the time of the kit purchase.

QUICKIE AND Q2 COMPOSITE MATERIALS INTRODUCTORY PACKAGE

This \$49.95 package of materials including a booklet has been put together to provide 'on the job training' in composite aircraft construction techniques for the prospective builder of a Quickie and/or Q2. Several projects are built using techniques similar to those utilized constructing the aircraft. This allows the prospective builder to hone his skills and determine his level of enthusiasm prior to committing several thousand dollars for the purchase of a kit. The booklet is available separately for \$14.50.

The package can be sent UPS for speedy delivery (we usually have them in stock), and we take VISA and MasterCard for those of you in a hurry.

EXPANDED BUILDER HOT LINE COVERAGE

Dave Elliot has recently come onto staff full time. He participated in building N8IQA as well as part of a Quickie, and will be available to assist builders.

As a result, we are expanding our Builder Hotline coverage days to include Tuesday, Wednesday, and Thursday afternoons from 1:00-4:30 p.m. and Saturday from 9:00-4:00 p.m.

A builder of either the Quickie or Q2 should have received the unlisted phone number for the QAC Hotline to be used *only for builder questions*. By funneling these types of calls in on a separate line, we can provide better service and a quicker response time. As before, the line will only be answered when either Gene, Tom, or Dave are available. Builders may try calling at times other than those listed above. We very much appreciate your consideration in making everything run smoothly.

QUICKIE/Q2 TRAILERS!

At last! One of our new dealers is feverishly working away on a prototype trailer that will handle either the Quickie or the Q2. It will include a simplified mounting/attachment procedure to make the entire job practical for an anemic 102 year old man. He expects to have the prototype at Oshkosh this year. If it proves to be practical, he would offer it in plans/kit form and perhaps ready-built. More details will follow as they become available.

DEALER NETWORK

In February, 1980, we began to carefully establish a network of dealers across the country in order to better serve our customers.

Since the last newsletter, we have welcomed three new dealers onboard.

Several more are in the works, and we expect he prime areas to be taken by September.

Several key areas, including parts of the midwest, remain open. A dealer information package is available from Quickie Aircraft

Corporation.

We encourage all prospective builders to visit their local dealer, as our dealers not only stock kits, plans, and some materials, but also have real live Quickies and/or Q2's under construction for you to examine. To anticipate a question, the dealership does not result in higher prices to the consumer, only superior service. As a first time homebuilder, you need and deserve the support of us and our representatives throughout your construction and early flying.

Dealers

California

Q-Aircraft of So. Cal., Inc. P.O. Box 2367 Mission Viejo, CA 92690 (714) 951-3681

NOR-CAL Quickie Aircraft 15942 Via Cordoba San Lorenzo, CA 94580 (415) 357-7865

Florida

Southeast Quickie, Inc. 5610 Pinetree Rd. Pompano Beach FL 33067 (305) 721-9265

Illinois

Q-CRAFT Distributors Box 194 1121 Illinois Ave. Fairfield, IL 62837 (618) 842-2390

Michigan

Quickie Aircraft Sales of Michigan P.O. Box 201 Plainwell, MI 49080 (616) 685-5238

Minnesota

Quickie Aircraft of Minnesota 10260 Amsden Way Eden Prairie, MN 55344 (612) 941-1450

New Mexico

Composite Aircraft Co. 106 Jefferson Place Hobbs, NM 88240 (505) 393-4479

North Carolina

Ray Stroud P.O. Box 34 Wilkesboro, NC 28697 (919) 838-8957

Ohio

Deltec Aircraft 6616 Madison Cincinnati, OH 45227 (513) 561-5400 (513) 561-7165

Pennsylvania

R.F. "Bob" McFarland Harrisburg Seaplane Base 333 So. Front St. Wormleysburg, PA 17043 (717) 763-7654 (717) 737-2665

South Carolina

Clio Crop Care P.O. Box 422 Clio, SC 29525 (803) 586-9225

Washington State

Quickie Northwest, Inc. 17633 S.E. 301 Street Kent, WA 98031 (206) 854-2543 (206) 852-7787

Outside United States Eastern Canada

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(2nd edition)* \$8.00
Q2 Information Package \$10.00
Pilot's Manual* \$8.00

*Add \$1.00 for Air Mail overseas (U.S. funds)

California residents should add 6% state sales tax.

Quickie Aircraft Corporation is located on the east end of the flight line at the Mojave Airport. Mojave, California which is located approximately 80 miles north of Los Angeles You are welcome to come by to see the Quickie & Q2 prototype, to ask questions, and to bring in parts of your Quickie for inspection. The hangar number is 68

We are normally open from 9 to 5 on Tuesday thru Saturday, but you should call first if you are coming from far away, since we occasionally must close the office to attend a flyin, conduct business, etc.

attend a flyin, conduct business, etc.
Weather permitting, Saturday, at 10:00
we often give a flight demonstration.

When writing to QAC, always send a stamped self-addressed envelope along if a reply is necessary.



N81QA at the El Mirage FAA flyin in late April. (Note George Holmes' Quickie N88QB just visible on the right behind the crowd)







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FIRST CLASS MAIL