

AIRCRAFT PERFORMANCE EVALUATIONS

Last fall I received a telephone call from Brien Seeley on behalf of the CAFE Foundation (Comparative Aircraft Flight Efficiency). After conducting ten successful CAFE 400 Races, the CAFE Board of Directors, all of whom are EAAers, were looking for new challenges.

Brien called to ask my advice on a project they were considering. They were interested in sponsoring a Primary Aircraft Category Design Competition. They felt that if the competition were conducted in a proper manner it would provide an incentive for new aircraft designs, with the possibility of one of them going into production under the proposed Primary Aircraft Category rules.

After discussing the merits of this idea, I suggested to Brien that there was a project more important that would have immediate benefits to the sport and general aviation community. I suggested that the CAFE Foundation serve as an independent flight testing organization at the request of the Experimental Aircraft Association. The CAFE Foundation has developed a reputation of integrity combined with an excellent technical background. These factors, combined with their experience, convinced me they were the "right organization" for this important project.

There is a need to obtain detailed and accurate performance data on the various custom built designs available today. EAA Headquarters receives numerous calls from people who are trying to make a decision as to what airplane they should build. The questions cover a wide range of subjects such as, "Is the technical support from the designer or kit supplier good? What experience is necessary to build the airplane I am interested in? What does it fly like? Are the performance numbers presented by the designer accurate?"

We are able to provide information regarding various construction techniques and methods, plus assistance is available from EAA Technical Counselors around the world. In many cases Information Services provides the names of EAA aircraft builders, picked randomly from our files, to help a potential builder of a certain aircraft design. These are builders who are building or have completed the airplane in question, and are able to provide, for the most part, objective information. But we have not had accurate flight performance data, developed by an independent testing organization. One of the main reasons has been the lack of available test equipment needed to accurately measure performance.

The purpose of this program is not to provide a "seal of approval" or to become "consumer advocates" looking over the shoulder of the designer or aircraft materials supplier. We want to present factual data on a range of performance characteristics including such things as takeoff distance, liftoff speed, rate of climb and cruise speed.

With this in mind, I told the CAFE Foundation Board that one of EAA's prime missions is to assist the aircraft homebuilder. I presented the following to them for their consideration: "EAA would like to engage the CAFE Foundation to develop a format and program for flight testing homebuilts. EAA would disseminate this information in written report form through our distribution network. I would envision highlighting these Aircraft Performance Reports in SPORT AVIATION, as well as in response to individual inquiries. They would also make excellent documents to be shared at Chapter meetings and other related functions, as well as through the EAA Technical Counselor Newsletter. The potential uses are unlimited, all of



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which would serve the homebuilding community."

In addition to testing current designs, we are hoping to evaluate design modifications in order to determine how they may enhance performance characteristics.

In response to my request, the CAFE Foundation presented a proposal highlighting the existing equipment they have on hand as well as other equipment needed to perform the tests accurately. I visited the home of the CAFE Foundation in Santa Rosa, CA in mid-February for a day long meeting with various members of the CAFE Board as well as EAA Chapter 124. As a result, we have entered into an agreement for a flight performance program with the CAFE Foundation. They are proceeding ahead, designing the additional equipment necessary, including barographs, engine monitors and a torquemeter. A test facility, with built-in scales, will be constructed at the Santa Rosa Airport, which is home for EAA Chapter 124.

Test pilots have been contacted who have expressed a willingness to participate. In addition to specific data, we would like to obtain general information on flight handling characteristics. The CAFE Foundation is currently distributing a questionnaire, asking pilots and potential aircraft builders what type of information they would like to see developed as a result of this program. If you have suggestions or comments, please send me a letter. I would like to hear from you.

As you can see, this important effort is being approached in great detail and with professionalism. Articles will be appearing in SPORT AVIATION over the next few months, highlighting the development of test equipment as well as providing progress updates. It is hoped that the first airplanes will go through the flight performance evaluation program in the fall of this year. Aircraft will be selected by EAA in conjunction with the CAFE Foundation. We will also work with the aircraft designers and/or kit suppliers.

I would like to acknowledge the CAFE Foundation, EAA Chapter 124 and all who have offered their support. This program will provide an important service to EAA members and the aviation community. The performance evaluation program, will span at least a five year period of time, if not longer. The homebuilt aircraft movement has come a long way over the past four decades. This is further evidence of the progress made by EAAers in promoting aircraft design and development.

I have just returned from the Second Annual General Aviation Forecast Conference. The Conference provided me the opportunity to highlight sport aviation's growing role in aviation. The 12 year forecasts for general aviation aircraft construction and pilot population statistics were interesting . . . and disappointing. Next month I will share my thoughts and observations on the conference with you.