



# The AMA History Project Presents: Autobiography of KIRBY CRAWFORD



Written by KC (2019), reformatted and edited by JS (2019)

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*The following was written and submitted to the AMA History Project by Kirby Crawford in 2019.*

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## **The Story of the Mister Mulligan and the Curtiss Gulfhawk “Giant Scale” Model Airplanes In the Late 1970s**

By Kirby Crawford - 2019

I started building model airplanes at a very young age and have enjoyed the hobby all these years. I am now age 81.

In 1973, I was working for the Department of Defense and living in Chantilly, Virginia near Dulles Airport. That’s when I became interested in radio-controlled models. I joined AMA and the Northern Virginia Radio Control Club (NVRC) where I learned to fly RC. Around 1976 I read an article in a magazine about a gentleman in Canada who had installed a small gasoline engine into a large-scale model. I decided to build a similar model myself, so I started to look around for a large model kit. I decided to start with a Bud Nosen Mister Mulligan ¼ scale kit. I looked at a number of small chainsaws for sale and I purchased a Homelite 1.6 cubic inch chainsaw at a local store for around \$65.00.

### **Some History of the Original Mister Mulligan Aircraft**

The Howard DGA-6 was a pioneer racing plane, nicknamed Mister Mulligan. It was the only airplane ever designed for the specific purpose of winning the Bendix Trophy. The plane was designed and developed in the early 1930s by Ben “Benny” Howard and Gordon Israel, who later became an engineer for Grumman. The aircraft was designed to fly the entire length of the race nonstop and at high altitude. Neither had ever been done before. Mister Mulligan won the trophy, and thus changed the way in which long distance airplanes were designed.

In the 1935 Bendix race, the aircraft was loaded with 300 gallons of gasoline, 30 gallons of oil, and oxygen equipment for two, giving it the ability to fly for seven hours at 22,000 feet (6,700 m). At that load, the aircraft required 1,500 feet (460 m) of runway and had an initial climb rate of close to 2000 ft/min.

Howard and Israel flew the DGA-6 in the August 30<sup>th</sup>, 1935 Bendix Trophy race and won with a speed of 238.70 mph. Harold Neumann, racing the DGA-6, flew at 220.19 mph (354.36 km/h), winning the September 2<sup>nd</sup>, 1935 Thompson Trophy race at the National Air Races. No other pilot or single aircraft had ever won both races. Howard’s DGA-6 also had the distinction of

being the only racer during the golden age of air shows to evolve into a successful commercial production of several Howard DGA aircraft. The DGA stood for “Darn Good Aircraft.”

The Mister Mulligan was destroyed in an accident in the 1936 New York to Los Angeles Bendix Transcontinental Race, a propeller failure costing Howard both the plane and his leg, and injured both his wife’s (Maxine “Mike” Howard) legs.

### **Building the Mister Mulligan Model**

The original Nosen kit was designed using very light materials, mostly balsa and light plywood. To handle the larger engine, I used ¼” pine longerons and a ¼” plywood firewall. Five Kraft servos were used to operate throttle, ailerons, flaps, rudder, and elevator. The model was flown with a Kraft Series Seventy-Seven (1977) radio.

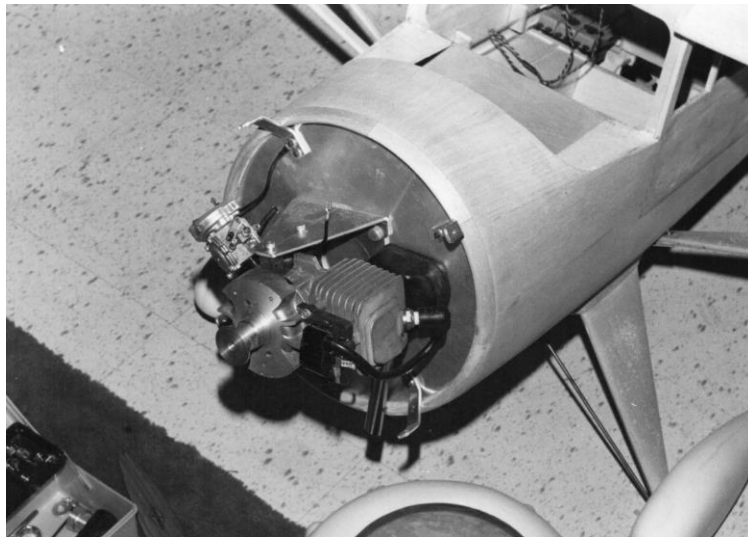


*1976: Framed up Mister Mulligan fuselage with pine longerons and a ¼” plywood firewall in my basement shop, Chantilly, VA. (Photo provided by Kirby Crawford.)*

During the building process in 1976 the word got around that I was building a quarter scale model with a chainsaw engine. Lots of interested people in the model aviation community visited my shop during that time. Visitors included Bill Winters, then the president of AMA, and a number of other prominent members of AMA, including Hurst Bowers.

## Converting the Chainsaw Engine

Using a metal cutting bandsaw and a small metal lathe in my shop, I removed all the extraneous aluminum castings and machined off the fins from the front of the flywheel. I machined a pair of brass thrust washers for the front and rear of the crank shaft and machined an aluminum propeller shaft. I installed a throttle arm on the carburetor throttle, made up an aluminum engine mount, and installed an aluminum sheet on the firewall.



*Converted 1.6 cubic inch Homelite gasoline reed valve chainsaw engine. (Photo provided by Kirby Crawford.)*



*Ready for final covering. (Photo provided by Kirby Crawford.)*



*1978: Finished model at the NVRC Field in Arcola, VA. (Photo provided by Kirby Crawford.)*

The model was covered with Permagloss Coverite and painted with hardware store polyurethane. The windshield was made from Lexan. The wingspan is nine feet and final weight is 20 lbs. A 20" x 5" Kolbo propeller was used.

The Mister Mulligan was one of the earliest "Quarter Scale" models using a gasoline engine to be built and flown in the eastern part of the United States before the quarter scale movement became popular. Many demonstration flights were flown in Northern Virginia, Maryland, and the Washington D.C. area in the late 1970s. It flew in one of the early annual all scale events and full-scale air show at Bealeton, VA in September 1977. It was invited to fly at many full-scale air shows including Maryland Air Park, Golden Wings over Richmond, VA, and in front of the crowds at Armed Forces Day at Andrews Air Force Base in May of 1979. Despite its large size, it was an excellent aerobatic performer.



*September 1977: Getting ready to fly at Bealeton, VA. (Photo provided by Kirby Crawford.)*



*(Photo provided by Kirby Crawford.)*



*Photo by John Preston. John was very active in scale modeling and in photography. (Photo provided by Kirby Crawford.)*

## Building and Flying the Curtiss Gulfhawk Model



*(Photo provided by Kirby Crawford.)*

In 1977, I decided to build another “giant scale” model. I came across Peter Westburg’s drawings of the full-scale aircraft and I found out that the original aircraft was located in the National Museum of the Marine Corps in Quantico, Virginia, on loan from the Smithsonian National Air and Space Museum. I decided that this classic biplane would make a very nice model.

### **Some History of the Original Curtiss Gulfhawk Aircraft**

The original aircraft was custom built in 1928 for famous aerobatic pilot Marine Major Al Williams. It was a variation of the Curtiss Navy FC6-4. In the 1930s, Al flew many flight exhibitions, and demonstrated aerobatics and dive bombing with the Gulfhawk. He thrilled the crowds at the 1931 National Air Races at Cleveland.

In the 1950s, the late Frank Tallman, another famous aviator, discovered the Gulfhawk in a New York aviation school. It was in deplorable condition. Al spent 5 years restoring it to its original condition. Frank is quoted as saying “It is doubtful to this aviator that a lovelier looking biplane ever flew.”

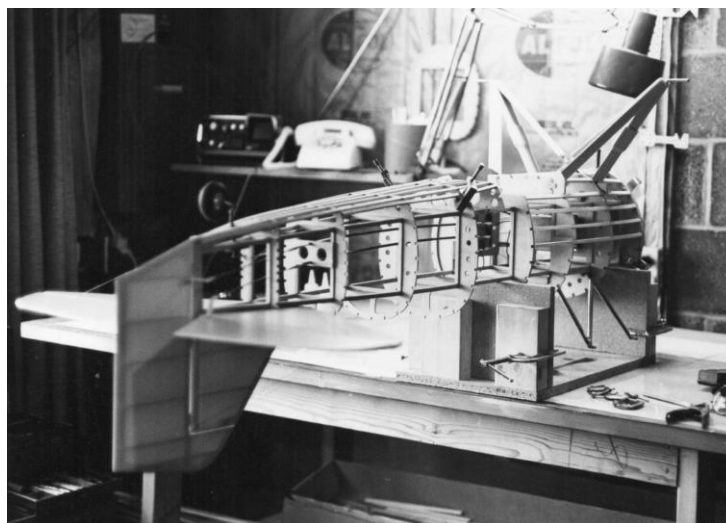
The original full-scale Gulfhawk is now on display in the National Air and Space Museum’s annex, the Steven F. Udvar-Hazy Center, near Dulles Airport, Virginia.

In 1977, I started working up the plans for the model. I photographed Peter Westburg's drawings of the full-scale aircraft and then used a 35mm projector to project the negatives at the correct scale onto a plywood door used as a drawing board. I also visited the National Museum of the Marine Corps in Quantico and took dozens of photographs and measurements.



*1977: Me at the Marine Air Museum in Quantico, VA.  
(Photo provided by Kirby Crawford.)*

The actual size of the model was dictated by the size of the scale-like 6-inch wheels and tires that were available in 1977. So, the final scale came out to 1 over 4.5, or just slightly smaller than  $\frac{1}{4}$  scale. The fuselage was made up with a square central spruce framework with light ply formers and spruce longerons attached. Because the original fuselage was metal covered, the entire fuselage was sheeted with balsa. To make up the large cowl, a master was made out of pine and then a fiberglass mold was laid up on the outside. This mold was then used to lay up the final cowl on the inside. The streamlined bubbles on the outer cowl were vacuum formed in my kitchen oven over a wooden master. The wing struts were made out of music wire, streamlined with wood, and covered with chrome covering film. Functional flying wires were made out of music wire. A scale venturi for the underside of the model was machined out of brass. A scale instrument panel with instruments along with a pilot seat were fabricated.



*1977: Framing up the fuselage in my basement shop in  
Chantilly, VA. (Photo provided by Kirby Crawford.)*

The wings presented quite a challenge because they were tapered in both cord and thickness. There were 51 ribs in the top wing and 38 in the bottom. Each rib was a different size, starting from the center out to the tip. A drawing had to be made up for each rib size. It took me 4 months to draw up the plans and 6 months to build the model.



*Ready for covering - the top wing spanned 84" and the bottom was 69". (Photo provided by Kirby Crawford.)*

### **Converting a Chainsaw Engine for the Gulfhawk**

Because this model was going to be heavier with much more frontal area than the Mister Mulligan, I decided to convert a 1.9 cubic inch Homelite chainsaw engine vs. the 1.6 cubic inch used in the Mister Mulligan. Similar modifications were made to this larger engine. I installed a metal tank above the engine to hold Diesel fuel for the smoke system.

Crank case pressure was tapped off the engine to pressurize the tank. Diesel fuel was injected into the exhaust muffler using a separate servo to operate a homemade metering valve.



*1.9 cubic inch chainsaw engine – the metal tank above the engine was used to hold diesel fuel for the smoke system. (Photo provided by Kirby Crawford.)*





*Taxiing the model at the NVRC field near Dulles Airport, VA.  
(Photo provided by Kirby Crawford.)*



*A flyby with air show smoke. (Photo provided by Kirby Crawford.)*

In September of 1978 the District of Columbia Radio Control Club (DCRC) held one of its earliest “Monster Scale” contests at the Flying Circus field near Bealeton, Virginia. I entered the Gulfhawk and competed in scale judging and flying. Some notable RC pilots competed, including Walt Moucha and others. The Gulfhawk took first place and Walt came in second.



*1978: Me with the Gulfhawk, ready to take off at the DCRC “Monster Scale” Contest in Virginia. (Photo provided by Kirby Crawford.)*



*1978: Diving for speed for a fast flyby, with air show smoke for the judges, at the Bealeton, VA Monster Scale Contest. (Photo provided by Kirby Crawford.)*



*1978: Contestants at the DCRC Monster Scale Contest in Virginia. Kirby is on the far left and Walt Moucha is in white coveralls. (Photo provided by Kirby Crawford.)*



*Photo by Luther Hux. (Photo provided by Kirby Crawford.)*

### **Air to Air RC Photographs by Luther Hux**

During the 1970s and '80s, my friend Luther Hux was very active in designing, building, and flying RC models with film cameras on board. Many of his photos have appeared in publications over the years. In 1978, Luther and I drove out the Bealeton Flying Circus field in Virginia to do some air to air photo work. We had been doing some practice flying models in close proximity to the field that day. Notice the top wing of his "Snapshot II" model can be seen at the top of the

photo. This photo along with many others appeared in an article titled “Project Snapshot” by Luther in the June 1979 issue of *Model Aviation* magazine.



*Kirby's Gulfhawk in the AMA's National Model Aviation Museum in Muncie, IN. (Photo provided by Kirby Crawford.)*

In the 1991, the AMA's museum was still located in Reston, Virginia. Hurst Bowers contacted me and asked if I would be interested in donating both the Mister Mulligan and the Gulfhawk models. I was honored by the request and transferred both models to the museum. Eventually they made their way to the new museum in Muncie where they reside. In the early '90s while making a trip out east from Wisconsin I had the pleasure of visiting the museum and was happy to see the Gulfhawk on display. I took the above photograph at that time. It's comforting to know the two models that gave me so much pleasure building and flying in the 1970s are being well preserved and taken care of in the National Model Aviation Museum.

I'm happy to say that I'm still an active RC flyer and enjoy my membership in the local Rice Lake Model Airplane Club in Rice Lake, Wisconsin.

Kirby Crawford - 2019

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