Rebuilding & Restoring a Corsair

By Harry Kraemer
Contributing Editor

Restoring a vintage WW II airplane from a pile of twisted metal to an airworthy status is a testament to an A&P's skills and dedication. This is the story of Craig McBurney's mission to restore and to fly a WW II Corsair.

Memories of watching the television show "Baa Baa Black Sheep" are vivid in my mind as Craig McBurney guides me around the Pratt & Whitney facility where he is undertaking a total rebuild and restoration of a United Aircraft Corporation-built F4U-4 Corsair. Other than a few recognizable parts (the familiar cowling, canopy, and main wing spar), it's hard to believe that there is an airplane here. (The hangar facilities are provided by Pratt & Whitney, one of the many sponsors of this project. For a complete list of sponsors, see the box on page 32.)

Perhaps one of the most recognizable aircraft silhouettes, the Corsair and its inverted gull wing seems to signify power. Designed around the 2,000-horsepower Pratt & Whitney R-2800 Double Wasp radial engine, it was the first single-engine military airplane to top 400 miles per hour in level flight. Hollywood helped to enhance this legendary aircraft's image with the television series "Baa Baa Black Sheep," about the Marine Corps's top ace, Major Pappy Boyington and his famous Black Sheep Squadron, VMF-214.

I asked McBurney, "why the Corsair?" Like many of us in aviation, McBurney used to hang on the local airport fence, watching the activities on the field and eventually becoming a mechanic and pilot. And again, like most of us, he had to pick a favorite airplane. McBurney's local airport happened to be across the street from where United Aircraft was building Corsairs. The rest is history.

This Corsair's History

Built in 1945, this Corsair left the assembly line as Serial Number 9484, destined for operations with the U.S. Navy. It was assigned Bureau Number 97330 by the Navy and it first saw service with Aerial Engineering Squadron 12 at Quantico, Virginia. It was later sent to the Naval Air Station (NAS) Quonset Point in Rhode Island for an overhaul and reconditioning. From there 97330 was assigned to the Navy's fighter squadron VF-42 (the "Green Pawns"). While with VF-42, 97330 was stationed aboard the USS Saipan. During service with VF-42, the aircraft was stationed at NAS Cecil Field, NAS Oceana, and NAS Norfolk. During this time she endured two more overhauls at NAS Quonset Point. She later served as a student trainer at NAS Olathe and NAS Grosse Ile. By 1956, 97330 was retired from Navy service and put into storage at NAS Litchfield Park in Arizona. By late in 1957, the aircraft was purchased by a private individual and in 1974 was registered as N5222V. Bureau number 97330 was sold for the sum of $917, quite a contrast to the original cost of $250,000 in WW II dollars. The aircraft was eventually sold to William Barnes, the son of the famous Pancho Barnes. Sometime in 1985, several years after Barnes's death,

Author Harry Kraemer has had a long fascination with Corsairs and took this photo of a flight-worthy Corsair at Montgomery County Airpark a few years ago.

his wife sold the aircraft to Jack Erickson of Erickson Air Crane. In 1991, the aircraft suffered substantial damage after being involved in an accident. In 1993, Craig McBurney's Bootstrap Aircraft Company purchased the aircraft where it is currently under restoration.

The Corsair's roots are planted deep in Connecticut. The aircraft is powered by a Pratt & Whitney engine. Pratt & Whitney is one of Connecticut's most famous companies. Another Connecticut-based company—Hamilton Standard—produced the massive propeller. The prototype was completed at Vought-Sikorsky's plant in Stratford, Connecticut, and its first flight took place at the Bridgeport Municipal Airport. The Corsair went on to set a speed record (405 miles per hour) between Stratford and Hartford, Connecticut in 1940. So it seems fitting that Bureau Number 97330 would find its way back to Connecticut for its rebirth. And who knows, maybe we'll see a recreation of the record-setting flight between Stratford and Hartford.

Finding parts

Are parts hard to find? Considering that production ended in December 1952 and out of the 12,751 built less than 90 are known to exist today with only about a dozen still flyable, McBurney said, "yes, extremely hard." What can't be found will be fabricated from old drawings or by using worn-out parts for templates. McBurney said that you end up being part detective and part archaeologist tracking down leads and trying to purchase anything and everything you can find. In his search for parts, he has been just about everywhere, from chicken coops to horse barns.

Sometimes when he least expected to find a gem, McBurney would strike it rich. Such is the case with the canopy. While traveling the U.S. as a pilot and mechanic with a group of bombers—a restored B-17 and B-24—McBurney met a gentleman, and the conversation quickly led to Corsairs. McBurney learned that the man's father had purchased a surplus canopy (new, never used) decades earlier. It had been stored in a horse barn intended to be used on a farm car. Lucky for McBurney, the farm car was never built. Needless to say, McBurney was thrilled.

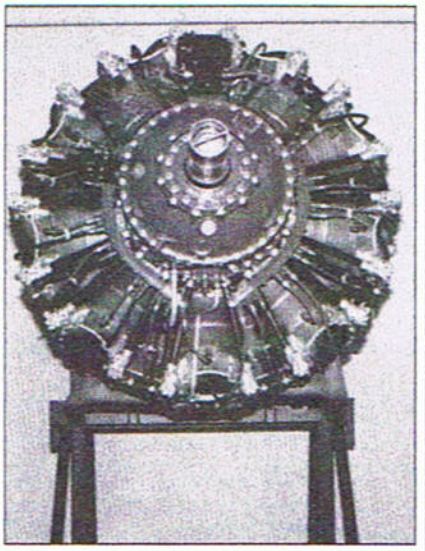
And there are times when parts seem to find McBurney, as in the case of some ground loop kits that were being stored in a former chicken coop. The parts dealer who had them in inventory had sent McBurney a catalog listing them. Another find came while traveling again with the bombers. While wearing a Corsair shirt, McBurney was approached by an older man, who had a "Strut Installation-Intercooler Flap-Actuating" that he had "liberated" (while working for United Aircraft Corporation) for use on his manual convertible top. The man wanted to convert his car top to hydraulically operated. Fifty years later, after never completing the top conversion, he gave the new old part to McBurney

Luck was with McBurney again when he came across an engine (with only 917 hours total time) that had been in storage since 1955. It was missing the logbooks (which have since been found), but it was preserved and in excellent condition. Stored by the Navy, the engine was in a sealed drum. Upon opening the drum, the Bootstrap crew found a tag that was attached to the engine by the Navy, describing the details on how the engine was preserved. The engine was filled with preservative

oil, desiccant packs filled any openings to prevent rust, and the drum was sealed and pressurized with nitrogen. Not only was the engine in excellent condition, but it was authentic too. It had an original two-stage, two-speed blower that was used only on the F4U-4.

The engine was disassembled, inspected, cleaned, and repainted. Poly Fiber supplied the paint. During this process, detailed photographs were taken to document the condition and assembly of the engine. McBurney used USF Surface Preparation Group's Armex cleaning and coating removal system to clean the entire engine. This system cleans without damage to the finish and it is also friendly to the environment.

The Har-Conn Chrome Company replated all of the hardware back to the original specs. And the team at Bootstrap Aircraft completed the reassembly of the engine. The engine was then filled with preservation oil provided by Phillips 66. The spark plugs and ignition wires were supplied by Unison (Autolite), and Concorde Battery supplied the aircraft battery.



The Bootstrap Aircraft Corsair's Pratt & Whitney R-2800 Double Wasp radial engine.

Putting it together

Finding the parts is sometimes the easy part. As parts arrive at the hangar, they are inspected and a decision is made as to whether they are usable or not. Some parts are only usable enough to make a pattern from which new parts will be manufactured. One of the first steps in processing any parts that arrive at the hangar is to thoroughly clean them. Most have been sitting around for 30 to 40 years.

McBurney purchased from a museum some copies of original detail drawings for use in the restoration. They are in the process of being digitized by AirLog Imaging, one of the many sponsors of the project. Once digitized, the data will be in a searchable database for use during the restoration project. In addition, AirLog Imaging is building a complete set of aircraft records for the Corsair including the historical documents, the restoration process, and all of the many inspection reports, records, and documents needed to register the aircraft once it is complete.

After the main beam (spar) arrived, a brief inspection revealed that it was in relatively good condition. Only some of the metal showed signs of corrosion. Through the use of manuals, photos, and original drawings, this main beam will be used as a pattern to build a new one. And by using the old parts, drawings, and manuals, CAD/CAM (computer-aided design/computer-aided manufac-

turing) data will be generated and new parts will be manufactured. This same stand will be used in the reconstruction of other parts of the aircraft, such as the wing's center section, cockpit, fuel bay, and landing gear. Other parts of the aircraft will be sent out to shops that have completed this process on various portions of the Corsair for other restoration/rebuild projects. It has been decided that the engine, propeller, and landing gear (Michelin will supply the tires) will all be sent out for overhaul and brought up to airworthy standards.

Challenging work

How is the Corsair restoration different from working on a current production aircraft? "Parts availability," McBurney responded. Every part is valuable as a pattern, for reverse-engineering-type work. If you have the original part, even if it is non-airworthy, using the manuals, reference photos, and drawings, you can either have it copied or repaired, he said. McBurney said that this project has forced a lot of detective work on his part, calling on national archives and museums for information.

Don Jordan (left) and Phil Munn (right) pose with Bootstrap Aircraft's Craig McBurney (center).

There are no toll-free phone numbers to call for assistance; no factory rep to make visits. Through their detective work, the Bootstrap Aircraft team was able to obtain the original vendor list for the Corsair, in hopes of finding parts or drawings. And to their surprise, team members had to tell some of the companies that they had indeed made parts for the Corsair. It seems that a lot of the vendors were pressed into wartime production, just making various parts not necessarily related to their normal business. After the war, this part of their history may have been lost to time until

The Bootstrap Aircraft Corsair Restoration Sponsors

The following companies have donated materials and processes to help bring about the restoration of Corsair 97330. Craig McBurney and Bootstrap Aircraft are actively seeking additional sponsors, parts sources, and any other pertinent assistance and may be contacted at: www.bootstrapaircraft.com

ACA Abrasives	(www.acaabrasives.com)
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they received a call from knowing Bootstrap Aircraft personnel.

The Bootstrap Aircraft Corsair project has an inspiring side to it as well. McBurney's goal is to "light a spark in today's children," as he put it. Besides the restoration of the Corsair, he is also working to set up scholarships and develop aviation curricula to educate, enlighten, and recruit young people into aviation. "The Corsair is the hardware, the attention getter," he explained. Tax-deductible donations (for the Corsair project) can also be made through the Bootstrap Aircraft website (www.bootstrapaircraft.com).

The people

One of the most exciting and interesting aspects of a project like this is meeting the people involved with the production of the aircraft and its history. And McBurney has certainly met his share. In fact, he keeps a copy of Boone T. Guyton's book "Whistling Death, The Test Pilot's Story of the F4U Corsair" on his desk. The inside cover is filled with signatures of distinguished visitors to the Bootstrap hangar.

Japanese fighter pilots nicknamed the Corsair "Whistling Death" because of the high-pitched shriek the aircraft created. It was the air rushing through the intercoolers that caused this famous whistle. Many civilian operators who acquired Corsairs as surplus from the government simplified the maintenance by substituting the original two-stage, two-speed engine for a civilian engine. Unfortunately this caused the distinctive whistle to disappear. Bootstrap Aircraft is installing the correct engine, whistle and all.

One of Craig's visitors was Don Jordan, who worked at Vought Aircraft from 1937 to 1948 as an aeronautical engineer. Jordan was responsible for

the installation of the engine and all of its associated components including the cowling/intercooler that gave the Corsair the famous whistle. McBurney has met numerous other veterans and retired engineers (from Hamilton Standard, Pratt & Whitney, Sikorsky Aircraft, and Chance Vought Aircraft).

As with any project of this nature, it helps to network and if you were a Corsair owner/restorer, there was no better place to do so then at the Gathering of Corsairs and Legends in Indianapolis during the fourth quarter of 2002. Among those attending the gathering were members of the Jolly Rogers, about a dozen members of the famous Black Sheep Squadron. Robert Ginty, the actor who played Lieutenant T. J. Wiley, even made an appearance. Also present were Jeff McKay, who played French, and Red West, who was known as the surly mechanic Micklin.

The Professional Aviation Maintenance Association Annual Symposium and Trade Show is also a valuable resource for McBurney and his team. The show is not only a good place to network, but Bootstrap team members can also see the latest in new processes and identify potential sponsors and suppliers.

While the Corsair project may prove to be challenging, the team at Bootstrap Aircraft is quite capable. McBurney, an A&P mechanic with Inspection Authorization, served in the U.S. Air Force as a crewmember on B-52s. He holds a bachelor of science in aviation management from Embry-Riddle Aeronautical University. No stranger to warbirds, he later worked four years as a lead mechanic and pilot on the B-24 Liberator and as a pilot and mechanic on another B-24 for an aviation museum. McBurney is type rated in the B-24 and B-25, among other radial-engine aircraft.

Todd W. Turner is another member of the team at Bootstrap Aircraft. Turner has been around aviation nearly 30 years. In the Air Force he worked on KC135s. He later went on to work for Pratt & Whitney where he did development work on Pratt's experimental jet engines. Turner, along with Norm LeDuc (a Pratt & Whitney employee and a volunteer on the Corsair project), have assisted by making specialty tools for the project and volunteering their time. Marnie Sablan manages the Bootstrap website and assists at the many trade shows the team attends. She is a 1989 graduate from Embry-Riddle Aeronautical University and an A&P mechanic, having worked as a line mechanic on Boeing 727s, 747s, and DC-10s, and she puts her maintenance skills to work on the restoration project. Sablan's other experience as an FAA liaison will be helpful throughout the certification issues for the Corsair.

Steve Ahern, another team volunteer, was captivated by aviation at an early age, growing up within a quarter mile of the runway at the Tweed-New Haven airport in Connecticut. Ahern is finishing his masters degree in education and is building a website aimed at bringing aviation into the educational curriculum. He is using the Corsair project as the core and also lends a hand during the restoration.

While neither the U.S. Navy nor other government agencies operate their vintage aircraft, organizations such as Bootstrap Aircraft are working to fill that void, putting life back into these airplanes and returning them to the skies to be viewed by the public and to promote careers in the aviation/aerospace industry. This also helps the military services to recruit because of the historical connection of the Corsair. Just as important is the promotion of careers within companies associated with the Corsair. Many of the companies that originally built the Corsair offer job opportunities, such as Pratt & Whitney, Hamilton Sundstrand, and Sikorsky Aircraft. ■AM

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