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WORLD

AIRSHOW NEWS

November/December 2008

David Martin
in the First

**Extra
330 SC**

Reno 2008 , Jana Leigh,
NAS Oceana, F-15 West Stands Down,
Will Ward and the MiG-17,
Cleveland National Air Show,
Physiology of Airshow Flying, Airshow Highlights
...and Lots More!

By Jim Froneberger

UNLIMITED AEROBATIC competition is one of the most extreme sports known to man – aerial gymnastics performed by men and women flying 300 hp muscle-planes, played-out in a three-dimensional gymnasium in the sky.

Not only must these elite pilots execute a sequence of challenging and complex aerobatic maneuvers requiring their bodies to endure up to plus or minus 10 times the force of gravity, they must do it while staying within a small cube of airspace. Most importantly, the maneuvers must be flown with great precision, with points deducted for even the slightest deviation from perfection.

Such a demanding environment requires the utmost in piloting skill, dedicated and consistent practice and training, and the best aerobatic aircraft technology available. These pilots are constantly on the lookout for more capable aircraft, as even the slightest advance in performance can give them an edge on the competition. That little something extra can mean a World Championship.

A World-Class Heritage

After flying a modified Pitts Special in the 1980 World Aerobatic Championships, award-winning pilot Walter Extra wanted more. “I just wanted to take my competition flying to another level,” says Extra, a mechanical engineer. “So I went to work designing and building the first Extra 230.” In the process, Extra created a new company, Extra Flugzeugbau, to design and build his own line of aerobatic aircraft.

The Extra 230 was completed in 1981 and featured a steel-tube fuselage, wooden wings, and a four-cylinder 230 hp engine swinging a two-blade prop. The success of this aircraft led him to build a more powerful version, the Extra

260, which featured a six-cylinder 260 hp engine and a three-blade prop. In the hands of Patty Wagstaff, the Extra 260 won multiple U.S. national aerobatic titles and is now in the Smithsonian Air and Space Museum in Washington, D.C.



Walter Extra (photo by Jim Froneberger).



David Martin and the First Extra 330SC

A LITTLE SOMETHING EXTRA

A two-seat, 300 hp version – the Extra 300 – followed in 1988. The Extra 300S, an improved single-seat 300 hp model, followed in 1992 and the two-seat version of the 300S – the 300L – was first flown in 1993.

After its introduction in 1992, the Extra 300S became a mainstay in the unlimited aerobatic competition scene. At contests in 1994, 1996, and 1998, as many as 25 Extras competed. At the 1998 World Championships in Slovakia, the 300S made up the core of the U.S. team with Michael Goulian, Phil Knight, and David Martin all flying the type in competition.

But that same year, the French Aerobatic Team won the team championship with Frenchman Patrick Paris being crowned World Champion. The French were flying the new CAP 232, and after both David Martin and Michael Goulian flew the 232, they both knew the choice of aircraft was a key element in the French win. “The 300S

was still a very capable aircraft and you could win the World Contest in it, no doubt,” explained Martin. “But what we found out was that the CAP was easier. It didn’t necessarily perform better, but it was easier. In competition, easy is better because if it’s easier to fly, you’re less likely to make mistakes and more likely to win.”

By the 2000 and 2001 world contests, the CAP 232 and Russian Sukhois were dominating the competition, and the number of Extra 300s entered had fallen to less than five. To stay competitive, even Goulian and Martin were soon flying the CAP 232 as well.

As the CAPs and Sukhois emerged as the leaders in unlimited aerobatic competition, Extra refocused its energies on the two-seat Extra 300L and the newer lighter-weight, higher-performance Extra 300LP. During those years, the company also diversified, developing the Extra 400 and 500, both six-place, pressurized, single-engine



David Martin flies his new Extra 330SC near his home in Texas shortly after taking delivery. The Breitling decals had not even been applied yet (photo by Scott Slocum).

business aircraft built with composite technology.

Extra Aircraft became a U.S.-owned and operated company in 2003, headquartered in Lancaster, Pennsylvania, but its primary manufacturing plant and Walter's R&D operation remained in Germany. While much of the company's R&D work since the late 1990s had been directed towards the two business-oriented models, the company never forgot its roots in high-performance aerobatic aircraft.

Building a Better Extra

In 2005, Michael Goulian began talking to Walter Extra about how the Extra 300S could be taken to the next level to create a new generation of airshow aircraft. The folks at Extra went to work, stripping 100

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pounds out of the 300S airframe and moving the center of gravity aft for increased maneuverability and decreased stability – desirable traits for an unlimited aircraft. To improve tumbling performance, the tail was also completely redesigned. The result was Goulian's Extra 300SHP, which debuted at the Berlin Red Bull Air Race in May 2006 and in the U.S. at EAA AirVenture in Oshkosh that summer.

Goulian's Extra 300SHP was never designed to be a production airplane. It was simply a one-of-a-kind concept airshow airplane. But the success of that airplane, coupled with Walter Extra's desire to once again produce a world-class competitive aircraft, led to the decision to develop a new production airframe – the Extra 330SC.

The tail, fuselage dimensions, and shape of the 330SC are es-



Stopping roll maneuvers on a dime was a primary design goal for the 330SC. Below left: Michael Goulian's Extra 300SHP was the predecessor of the 330SC (photos by Jim Froneberger). Middle: The instrument panel and cockpit of the Extra 330SC (photo by Scott Slocum). Right: The 330SC is the state-of-the-art in world competition aerobatics (photo by Scott Slocum). Inset: David's Extra 330SC sits on the ramp at Reno during the 2008 Air Races (photo by Jim Froneberger).



essentially the same as the 300SHP. "It's basically the same airframe as Michael's plane," Walter Extra explained by telephone from his office in Germany. "But the aerodynamics are somewhat different and there have been many improvements in the new plane."

Extra says the main differences between the 300SHP and the 330SC are the wings and ailerons. "We did a complete redesign of the wing and ailerons," he said. "We made changes to the internal wing structure to reduce weight by using materials with better properties for strength and weight reduction." The changes to the ailerons give the pilot greater control, allowing a rapid 420 degree/second roll rate, but the ability to stop the roll on a dime. The aircraft also features a new MT propeller and a certified Lycoming 580 engine. "We are coming back to our roots and doing what we do best!" says Walter. "This is by far the best aerobatic airplane we've ever made!"

Southeast Aero of St. Augustine, Florida serves as Extra's North American assembly and support center. The company is also the exclusive North American dealer for Extra. With the impending arrival of the new plane, Kramer Upchurch President of Southeast Aero,

needed to find a pilot to launch the aircraft into the marketplace. He had to look no further than one of those pilots who switched from the Extra 300S to the CAP 232 back in 1999 – David Martin.

"I needed someone that I knew had the standing in the aerobatic community to be believable and have credibility," explained Upchurch. "I really wanted to see what a true competitor thought of the airplane, and wanted someone I could rely on to provide me with some straight feedback about it."

"The CAP 232 was first flown in 1993, so even though it still does well in competition, we were all thinking that it was about time for a new airplane," said Martin. "So Kramer comes to me and says that Walter is ready to do a really serious competition aerobatic airplane again based on the 300S, and would I want to fly it? Of course I would!"

David Martin

David Martin first started flying alongside his dad at the age of 12 in his family's Bonanza. He started aerobatics when he was in high school in his grandfather's 1941 Fleet biplane. His grandfather had

been an aerobatic instructor during World War II and insisted that David learn aerobatics as part of his basic pilot training. Shortly after graduating from high school, David flew with the legendary Duane Cole to further sharpen his aerobatic skills.

After graduating from Southeastern Oklahoma State University with a degree in aviation, David flew corporate jets for a few years until joining the Texas Air National Guard where he flew F-4 Phantoms as well as the F-16.

His first aerobatic airplane was a clipped wing Piper Cub, but he later owned a Decathlon and a Pitts S2A before he decided to build a Laser with the support and assistance of the great Leo Loudenslager. "With all the things in life, it took me a long time to build the Laser," remembers David. "It was pretty much past its prime by the time I finished it." By 1993, David had moved up to the unlimited level of competition aerobatics when he saw Sergei Boriak fly the Extra 300S at the U.S. Nationals. "It was obviously the airplane to have," said David. "So I hocked the house and everything else and bought a 300S in 1994!"

With the 300S, David began to seriously pursue competitive aerobatics. After narrowly missing a spot on the 1996 U.S. Aerobatic Team, David finally earned a spot on the 1998 Team. That contest was the one where the CAP 232 emerged as the plane to beat, and in 1999, David said goodbye to the 300S and bought a CAP.

David won the 2001 United States National Aerobatic Championship, and has participated in six world contests, winning one individual Gold medal and three team Bronze medals. (World contests are held every other



year, except for 2000 and 2001 when they were held back-to-back to switch from even years to odd years.) "I flew the CAP in World Championships in 2000, 2001, 2003, 2005, and 2007," says Martin. "My best was 2001. I won a Gold medal and was very close to winning the whole thing, but I made a mistake on one flight and that's all it takes."

Martin has also flown airshows for much of the past twenty years or so, including some shows in his aerobatic Bonanza. "Several years ago, the U.S. Aerobatic Team started flying at Sun 'n Fun to raise money and I've flown Sun 'n Fun almost every year since then," says David. "I've also flown Oshkosh four or five times, first representing the U.S. Team and now representing Breitling who signed on as my sponsor in 1994."

After a six-month development and certification process, David Martin took delivery of Extra 330SC production airframe number one in May 2008 at his home base in the Dallas/Ft. Worth area. He performed in the aircraft a few months later at Oshkosh 2008 and later on at the 2008 Reno Air Races where Breitling is a major sponsor. In late September, after flying the new aircraft for only about four months, David placed second to Debby Rihn-Harvey at the 2008 U.S. National Aerobatic Championships in Sherman, Texas, earning a spot on the U.S. team that will compete in the 2009 World Championships in the United Kingdom.

An Aerobatic Wish-List

So what does the Extra 330SC bring to the unlimited competition table? "The perfect competition airplane would have excellent snapping capabilities, plenty of power, and



Top: David Martin and his new Extra (photo by Jim Froneberger). Middle: David will compete with the U.S. Aerobatic Team at the 2009 World Aerobatic Championships in the United Kingdom (photo by Scott Slocum). Above: Flying inverted for the crowd at Reno (photo by Jim Froneberger).



The 330SC is an extreme performer (photo by Jim Froneberger).

a fast, yet controllable roll rate,” explains Martin. “You have to roll fast, but you also must be able to stop it on a dime. In competition, the better that you can stop it, the better scores you’re going to get.” According to Martin, the 330SC fits the bill. He also says the power generated by the Lycoming Thunderbolt 580 gives the new Extra the acceleration to attain the optimal speed for each maneuver in a competition sequence.

While tumbling performance is not as critical to competition flying as it is in airshow flying, David says the new 330SC can tumble with the best of them. “This is the only plane I’ve ever flown that will tumble with the CAP,” he says. “The prop has more pull at slower speeds, so I think after I fly it a little bit longer, I’ll be able to do some things I haven’t even been able to do in the CAP.”

One other advantage of the new aircraft is aerobatic fuel capacity. While Michael Goulian’s 300SHP holds less than 14 gallons for aerobatics in the centerline tanks, the new 330SC holds 26.7 gallons. “That’s a big deal!” exclaims Martin. “For an airshow, it’s great to just have 14 gallons. But to go out and do a photo flight or to go out to a practice area and come back, you need to put a bit of fuel in the wing tanks. Now we don’t have to do that.”

One of the keys to the extra performance generated by the 330SC is weight reduction. “We’ve got the empty weight down to 1265 pounds with this particular airplane,” explains Kramer Upchurch. “But it still incorporates the safety features and methods of construction that have been proven by time to be safe – steel fuselage tubing, carbon fiber surfaces – things that we know survive and tolerate the kind of flying stresses that unlimited aerobatics can impose on an airplane.”

While getting the competitive edge in world-class competition is what attracts pilots like David Martin to the 330SC, for Extra Aircraft it means even more. “What is important about this airplane to Extra is that once again we’re sort of pushing our capabilities

as a manufacturer to produce an airplane that flies this way,” says Upchurch. “Hopefully, that will help feed ideas that improve our other airplanes. Maybe we’ll make them safer; maybe they’ll be more controllable. It also helps our brand and name recognition to see our company back in the heart of aerobatic competition.”

Upchurch sees the market stratifying into three segments – a small top-end niche for the single-seat high end performance airplane, a two-seat high-performance airplane (the Extra 330LC, expected in spring 2009), and a true sport touring aircraft with a little more comfort, range, and speed, but still with aerobatic capabilities. “The aerobatic capabilities of the touring version may be pulled back a little bit to achieve some of these other objectives,” he says. “But we’re going to have a family of airplanes so that whatever turns you on, we’ll hopefully have the airplane that you want.”

In its first few months, the 330SC has already seen success in world competition. In addition to David Martin’s second place finish in the U.S. Nationals, Matthias Dolderer of Germany flew his 330SC to second place in the 2008 World Aerobatic Cup and to first place in the German Aerobatic Championships. Renaud Ecalle of France flew his 330SC to a Gold Medal in the 2008 European Aerobatic Championships and earned second place in the overall standings.

Look for more Extra 330SCs to soon be showing up in future aerobatic contests around the world. As of September 30, total orders for the 330SC were 14, with five destined for the U.S. market. The factory had delivered seven of those, so with a production rate of one or two per month in addition to the regular 300L production stream, their order book extends well into the first quarter of 2009.

“They took all of our wish lists and put them into this new airplane,” says David Martin. “We wanted more gas, we wanted better roll rate, we wanted great acceleration, and we wanted better snap capability. Walter figured all that out!”

