

Very Light Jets And Aviation Safety

What are these "new" planes called Very Light Jets? NBAA defines Very Light Jets (VLJs), as "Jet aircraft weighing 10,000 pounds or less maximum certificated takeoff weight and certificated for single pilot operations. These aircraft will possess at least some of the following features: (1) advanced cockpit automation, such as moving map GPS and multi-function displays; (2) automated engine and systems management; and (3) integrated autoflight, autopilot and flight-guidance systems." The definition is from the National Business Aircraft Association Training Guidelines for Single Pilot Operations of Very Light Jets and Technically Advanced Aircraft.

Where did Very Light Jets come from? They were spawned by the NASA lead Small Aircraft Transportation System or SATS program. This innovative initiative aimed to provide safe air travel in all weather, in new single-pilot aircraft, with advanced navigation systems. SATS proposed the utilization of 5400 smaller airports in the US so we could enjoy point-to-point travel in modern aircraft at affordable prices.

SATS observed that 75% of people and cargo passes through 29 hubs which were over- crowded. By using the public airports accessible to most everyone in the US instead of the hubs, the program promised many advantages:

- Separation and sequencing of multiple aircraft operating at airports without ground based radar and communications systems resulting in higher system traffic volume.
- Safer aircraft takeoff and landing operations in poor weather at minimal equipped airports and lower minimums for operations because of advanced avionics.
- Make more single-pilot operations possible with improved technology.
- Incorporate large numbers of small aircraft into the National Airspace System for better airspace utilization.

Can they be safely integrated into our US National Airspace System (NAS)? Remember that NAS is in charge of all aircraft that are in motion at any given moment, both U.S. civilian and military craft flying over domestic airspace.

The long-term vision of SATS was "to enable a safe travel alternative that will free people and products from the constraints of today's ground and air transportation systems." Government funding of the five year \$150 Million dollar program ended in June of 2005. The SATS funding combined with private investment and the promise of a new and profitable era of air transportation has made VLJ travel an eminent reality!

The FAA, DOT, Insurance business, corporate aviation, airline industry, members of the flying public and others have expressed safety concerns about the rapidly approaching fleet of VLJs. The specter of their arrival placing unacceptable burdens on our air traffic control system is a growing concern.

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Can the altitudes and airspace previously reserved for the exclusive use of our corporate jets and commercial airliners safely make space for these new planes? Can the system safely consolidate the VLJ pilots with their varying levels of experience? These questions are on our minds as aviators as we awaken to the dawn of this new day in air transport technology.

How many VLJs are on the way for us to worry about? It depends on who we ask... last year the venerable Rolls-Royce predicted that manufacturers will deliver some 8,000 VLJs by 2023. From the UK, IMDC estimates approximately 850 VLJs will be produced by 2013 however Forecast International Inc. divines 3,500 as the number of deliveries by 2014. FAA estimates are for 4,500 sharing our airspace by 2016. Some VLJ manufacturers envision up to 20,000! Pick a number.

The FAA's own recent estimate of aircraft entering the NAS is 4,500 additional aircraft over the next 10 years. FAA also predicts a 300% increase in system demand by 2025!

Some of the air traffic control equipment still in use is from the 1950s. In June of 2005, House Report 109-153 recommended over \$1.5 Billion for new air traffic control facilities and equipment. This funding may be the key to gate of safety in future air travel.

The burden of additional aircraft on the system is real. The arrival of the VLJs is not the cause. They only represent a small portion of the forecast exponential growth in air traffic. Many of the VLJs will be arriving as replacements for obsolete aircraft which results in no net gain of air traffic. They are also not arriving all at once. Many of the larger orders to charter operators of the VLJs actually have staggered delivery dates. These controlled-growth factors should provide sufficient opportunity for the air traffic system to respond safely.

The safety of the NAS with the infusion of pilots with large variations in flight experience levels is another area of concern. The pilots of these innovative machines will be transitioning G/A pilots and pilot owners, or the pilots for the corporations, fractionals, and air taxi operations. This mix of pilot experience has demanded a new standard in flight training to balance the air safety equation.

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The National Business Aircraft Association, in cooperation with NBAA Safety Committee issued their recommendations in their "NBAA Training Guidelines for Single Pilot Operations of Very Light Jets and Technically Advanced Aircraft." Their report was compiled in association with:

- NBAA Safety Committee
- FAA/Industry Training Standards
- Adam Aircraft
- Cessna Aircraft Company
- Eclipse Aviation
- Insurance underwriters
- Training providers
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This NBAA guideline offers minimum pilot qualifications to include a Private pilot license, multi-engine rating, and instrument rating. Skills and prior knowledge of basic autoflight procedures, basic FMS (Flight Management Systems), and weather radar were also recommended.

Training plans disclosed by the manufacturers will be type-rating based. Cessna has signed with long-time partner FlightSafety International for their Mustang training. Eclipse is using United Services, a division of United Airlines, for their Eclipse 500.

The NBAA also recommends that upon completing the training program, the pilot, training provider, and the insurance underwriter determine the need for a mentor pilot.

The report further states that "mentors should be selected from experienced pilots that have ATPs and are type rated in jet aircraft that have technically advanced systems similar to the VLJ in which they will mentor. The prospective mentor needs to be recognized by both the aircraft manufacturer and the insurance underwriter as meeting these criteria. In addition, it is recommended that a training program on the specific aircraft in which they will mentor be completed."

Many of the Part 135 Very Light Jet operators have expressed an interest in hiring pilots from the cadre of mandatory

retired former airline pilots. Their expectation is that the high levels of maturity, airline based training and flight experience will add an element of safety. These progressive operators plan to use this group as a possible advantage as they build experience with insurance underwriters.

It appears that the NBAA and VLJ manufacturers, FAA, training organizations, and the insurance industry have converged to formulate a plan to insure the safety of this next wave in aviation. They have taken definitive steps to assure that the mix of pilots flying the new entrant VLJs will be trained to the highest standards available. They have collectively forged solid training programs based on NBAA guidelines to assure the collective safety and successes of the fledglings called Very Light Jets.

The Very Light Jets are almost outside our pressurized and polarized windows. Standby...

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