Subject: Special Condition – Night VFR

Status Open

Requirement reference: CS-VLA

Next action by EASA

Statement of Issue:

The applicability of CS-VLA is limited to day-VFR operation only. Issoire Aviation requests an extension of CS-VLA applicability to night-VFR operation.

Discussion:

1. BACKGROUND:

Increasing the CS-VLA applicability will provide more flexibility for VLA design and operational possibilities. This is in line with the current technical developments of VLA. The range of aeroplanes certified to CS-VLA will increase, and therefore the boundary between CS-VLA and CS-23 will shift. The number of aeroplanes in the CS-VLA category will increase. This option will have a positive economic effect for VLA manufacturers.

The perceive importance for action is to answer Flying School and private pilot request to operate CS-VLA certified aeroplanes under night-VFR conditions as night operation training may become mandatory for PPL training schedule

Increasing the CS-VLA applicability to night-VFR operation will make new designed VLA more competitive with single engine piston aeroplanes certified to CS-23.

It will also answer private pilot request to operate their VLA certified Aircraft under night-VFR conditions. The operational possibilities of CS-VLA certified aeroplanes is restrictive in comparison to the same aeroplanes certified according to FAR.

2. TEAM POSITION (dated 03 August 2005) :

A drafting group is tasked by TOR dated 12 May 2004, to deliver a draft EASA NPA to amend CS-VLA to allow VFR operations. The NPA CS-VLA/001 final draft was supplied to EASA on February 7th 2005. Based on this NPA CS-VLA/001, the team position is therefore that the following special conditions should be applied :

"SCVLA.1 :

Replace "This airworthiness code is applicable to aeroplanes with a single engine (spark- or compression-ignition) having not more than two seats, with a Maximum Certificated Take-off Weight of not more than 750 kg and a stalling speed in the landing configuration of not more than 83 km/h (45 knots)(CAS), to be approved for day-VFR only. (See AMC VLA 1)." by "This airworthiness code is applicable to aeroplanes with a single engine (spark- or compression-ignition) having not more than two seats, with a Maximum Certificated Take-off Weight of not more than 750 kg and a stalling speed in the landing configuration of not more than 83 km/h (45 knots)(CAS), to be approved for day-VFR or for day- and night VFR. (See AMC VLA 1).""

"SCVLA.773 :

Replace "The pilot compartment must be free from glare and reflections that could interfere with the pilot's vision, and designed so that –" by "The pilot compartment must be free from glare and reflections that could interfere with the pilot's vision in all operations for which the certification is requested. The pilot compartment must be designed so that –"."

"SCVLA.807 :

In addition to the requirements of CS-VLA.807 the following applies :

Markings must be suitable for night VFR."

"SCVLA.903 :

Instead of CS-VLA.903(a), the following applies :

(a) The engine must meet the specifications of CS-E for night-VFR operation."

"SCVLA.905 :

Instead of CS-VLA.905(a), the following applies :

"(a) The propeller must meet the specifications of CS-22 Subpart J for day-VFR operation. For night-VFR operations the Propeller and the Control System must meet the Specification of CS-P except for fixed pitch propellers, for which CS-22 Subpart J is sufficient."

"SCVLA.1107 :

In addition to the CS-VLA requirements, the following applies :

If an air filter is used to protect the engine against foreign material particles in the induction air supply--

(a) Each air filter must be capable of withstanding the effects of temperature extremes, rain, fuel, oil, and solvents to which it is expected to be exposed in service and maintenance; and

(b) Each air filter must have a design feature to prevent material separated from the filter media from re-entering the induction system and interfering with proper fuel metering operation."

"SCVLA.1121 :

In addition to the requirements of CS-VLA.1121, the following applies :

No exhaust gases may be discharged where they will cause a glare seriously affecting the pilot's vision at night."

"SCVLA.1143 :

In addition to the requirements of CS-VLA.1143, the following applies :

Each power or thrust control must be designed so that if the control separates at the engine fuel metering device, the aeroplane is capable of continuing safe flight and landing."

"SCVLA.1147 :

In addition to the requirement of CS-VLA.1147, the following applies :

Each manual engine mixture control must be designed so that, if the control separates at the engine fuel metering device, the aeroplane is capable of continuing safe flight and landing."

"SCVLA.1322 :

In addition to the requirements of CS-VLA.1322, the following applies :

If warning, caution, or advisory lights are installed in the cockpit, they must be effective under all probable cockpit lighting conditions."

"SCVLA.1325 :

In addition to the requirements of CS-VLA.1325, the following applies :

Each static pressure system must be calibrated in flight to determine the system error. The system error, in indicated pressure altitude, at sea-level, with a standard atmosphere, excluding instrument calibration error, may not exceed ±9 m (± 30 ft) per 185 km/h (100 knot) speed for the appropriate configuration in the speed range between $1{\cdot}3\ V_{SO}$ with flaps extended and $1{\cdot}8\ V_{S1}$ with flaps retracted. However, the error need not be less than ±9 m (± 30 ft)."

"SCVLA.1331 :

In addition to the requirements of CS-VLA.1331, the following applies :

For night VFR operation there must be at least two independent sources of power and a manual or an automatic means to select each power source for each instrument that uses a power source."

"SCVLA.1351-1 :

Instead of CS-VLA.1351(b)(2), the following applies :

(b)(2) Electric power sources must function properly when connected in combination or independently."

"SCVLA.1351-2 :

Instead of CS-VLA.1351(b)(3), the following applies :

(b)(3) No failure or malfunction of any electric power source may impair the ability of any remaining source to supply load circuits essential for safe operation."

"SCVLA.1351-3 :

In addition to the requirements of CS-VLA.1351(f), the following applies :

The location must allow such provisions to be capable of being operated without hazard to the aeroplane or persons."

"SCVLA.1353 :

In addition to the requirements of CS-VLA.1353, the following applies :

In the event of a complete loss of the primary electrical power generating system, the battery must be capable of providing 30 minutes of electrical power to those loads that are essential to continued safe flight and landing. The 30-minute time period includes the time needed for the pilot(s) to recognise the loss of generated power and to take appropriate load shedding action."

"SCVLA.1381 :

In addition to the CS-VLA requirements, the CS23.1381 requirement applies :

The instrument lights must –

(a) Make each instrument and control easily readable and discernible;

(b) Be installed so that their direct rays, and rays reflected from the windshield or other surface, are shielded from the pilot's eyes; and

(c) Have enough distance or insulating material between current carrying parts and the housing so that vibration in flight will not cause shorting.

A cabin dome light is not an instrument light."

"SCVLA.1383 :

In addition to the CS-VLA requirements, the CS23.1383 requirement applies :

Each taxi and landing light must be designed and installed so that –

(a) No dangerous glare is visible to the pilots;

(b) The pilot is not seriously affected by halation;

(c) It provides enough light for night operations; and

(d) It does not cause a fire hazard in any configuration."

"SCVLA.1431 :

In addition to the requirements of the CS-VLA.1431, the following applies :

For operations for which electronic equipment is required, compliance must be shown against CS-VLA 1309."

"SCVLA.1547 :

In addition to the requirements of the CS-VLA.1547, the following applies :

If a magnetic non-stabilised direction indicator can have a deviation of more than 10° caused by the operation of electrical equipment, the placard must state which electrical loads, or combination of loads, would cause a deviation of more than 10° when turned on."

"SCVLA.1559 :

Replace in §(b) "A placard stating 'This aeroplane is classified as a very light aeroplane approved for day VFR only, in non-icing conditions. All aerobatic manoeuvres including intentional spinning are prohibited. See Flight Manual for other limitations'." by "A placard stating 'This aeroplane is classified as a very light aeroplane approved for day VFR only or day and night VFR, whichever is applicable, in non-icing conditions. All aerobatic manoeuvres including intentional spinning are prohibited. See Flight Manual for other limitations'."

"SCVLA.1583 :

Replace in §(f) "The kinds of operation (day VFR) in which the aeroplane may be used, must be stated. The minimum equipment required for the operation must be listed." by "The kinds of operation (day VFR or day and night VFR, whichever is applicable) in which the aeroplane may be used, must be stated. The minimum equipment required for the operation must be listed."

3. ISSOIRE AVIATION POSITION (dated 29 August 2005) :

Issoire Aviation accepts the team position that the above special condition should apply except SCVLA.903 since we apply for Rotax 912S engine operation.

Indeed, this engine is FAR 33 certified under the AustroControl Type Certificate N° TW 9-ACG dated on the 27/09/2001.

4. TEAM POSITION (dated 19 September 2005) :

Type Certificate TW 9-ACG concerning Rotax 912 Series has been issued prior to 28 September 2003 and transferred to EASA.
The Team intends to accept Issoire Aviation position.

5. TEAM POSITION (dated 19 January 2006) :

According to the CRD document following consultation period of this CRI, the following Special Conditions are modified as stated :

"SCVLA.773 :

In addition to the requirements of CS-VLA.773 the following applies :

The pilot compartment must be free from glare and reflections that could interfere with the pilot's vision in all operations for which the certification is requested."

According to the CRD document, the following Special Conditions are added to this CRI :

"SCVLA 181(c) :
In addition to the CS VLA.181, the following applies :
(c) Any long period oscillation of the flight path (phugoid) must not be so unstable as to cause an unacceptable increase in pilot workload or otherwise endanger the aeroplane. When in the conditions of CS VLA 175, the longitudinal control force required to maintain speeds differing from the trimmed speed by at least plus or minus 15% is suddenly released, the response of the aeroplane must not exhibit any dangerous characteristics nor be excessive in relation to the magnitude of the control force released (see AMC VLA 181 (c))."

"SCVLA.1309 :

In addition to the requirement of CS-VLA.1309, the following applies :

See AMC VLA 1309."

"SCVLA.1321 :

In addition to the requirement of CS-VLA.1321, the following applies :

See AMC VLA 1321."

"SC AMCVLA 181(c) :

In addition to the CS VLA AMC, this AMC VLA 181(c) applies :

The long period or phugoid oscillation is characteristically lightly damped, sometimes even unstable. Mild levels of instability are acceptable as long as they do not significantly interfere with normal piloting tasks such as trimming to a desired speed or holding altitude. Useful guidelines are that the oscillation should be near neutrally stable if the period is less than 15 sec., or, for motions with longer period, the time to double amplitude should be greater than 55 sec."

"SC AMC VLA.1309 :

In addition to the CS-VLA AMC, this AMC VLA.1309 applies :

For night VFR operations, the installations of complex systems may require an assessment as required by CS 23.1309 b)."

"SC AMC VLA.807 :
In addition to the CS-VLA AMC, this AMC VLA.807 applies :
Self-illuminating placards or signs are acceptable".

"SC AMC VLA.1143 :
In addition to the CS-VLA AMC, this AMC VLA.1143 applies :
When throttle linkage separation occurs, the fuel control should go to a setting that will allow the pilot to maintain level flight in the cruise configuration."

"SC AMC VLA 1147 :
In addition to the CS-VLA AMC, this AMC VLA.1147 applies :
When mixture linkage separation occurs, the mixture control should go to a full rich setting."

"SC AMC VLA.1321 :

In addition to the CS-VLA AMC, this AMC VLA.1321 applies :

For night VFR operations, the following arrangement of instruments is acceptable:

(a) For each aeroplane the flight instruments required by CS-VLA 1303 and, as applicable, by the Operating Rules should be grouped on the instrument panel and centred as nearly as practicable about the vertical plane of the pilot's forward vision. In addition –

(1) The instrument that most effectively indicates the attitude should be on the panel in the top centre position;

(2) The instrument that most effectively indicates airspeed should be adjacent to and directly to the left of the instrument in the top centre position;

(3) The instrument that most effectively indicates altitude should be adjacent to and directly to the right of the instrument in the top centre position; and

(4) The instrument that most effectively indicates direction of flight, other than the magnetic direction indicator required by CS-VLA 1303(c), should be adjacent to and directly below the instrument in the

top centre position.

(b) If a visual indicator is provided to indicate malfunction of an instrument, it should be effective under all probable cockpit lighting conditions."

6. ISSOIRE AVIATION POSITION (dated 10/02/2006) :

Issoire Aviation accepts the above team position and will take into account the above added Special Conditions.

Conclusion