

**Proposed Special Condition – Airworthiness standards for CS-VLA aeroplane to be operated
under night-VFR operations.
Applicable to Issoire Aviation APM30**

1. Introductory note :

The hereby presented Special Condition shall be subject to public consultation, in accordance with EASA Management Board decision 02/04 dated 30 March 2004, Article 3 (2.) of which states:

“2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency.”

2. Background :

a. Identification of issue

The Issoire Aviation APM 30 is a CS-VLA aeroplane. The certification of this aircraft is currently under way. The certification basis of this aircraft is based on the CS-VLA Original Issue.

The APM 30 will be operated under day and night VFR conditions.

According to the CS-VLA 1, this airworthiness code is applicable to aeroplanes to be approved for day-VFR only. Therefore, night-VFR operation is a kind of operation for which CS-VLA does not contain adequate safety standards. In accordance with Part 21A16B(a)(2), the EASA team considers that there is a need to define a special condition.

A drafting group tasked by TOR dated 12 May 2004 has supplied to EASA the NPA CS-VLA/001 final draft on February 7th, 2005. So, the Special Conditions provided in CRI A3, based on EASA NPA CS-VLA/001 final draft, are proposed for application to the Issoire Aviation APM30.

b. EASA position

The Special Conditions VLA.1, VLA.773, VLA.807, VLA.903, VLA.905, VLA.1107, VLA.1121, VLA.1143, VLA.1147, VLA.1322, VLA.1325, VLA.1331, VLA.1351-1, VLA.1351-2, VLA.1351-3, VLA.1353, VLA.1381, VLA.1383, VLA.1431, VLA.1547, VLA.1559 and VLA.1583 provided in the CRI A3 are proposed for application to Issoire Aviation APM30 certification and are based on EASA NPA CS-VLA/001 final draft.

These proposed Special Conditions cover night-VFR operation:

A – GENERAL

In lieu of the requirements of CS VLA.1, it must be stated: “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).”

B – FLIGHT

In lieu of the requirements of CS VLA.773, 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.

D - DESIGN AND CONSTRUCTION

In addition to the requirements of CS VLA.807, markings must be suitable for night VFR.

E – POWERPLANT

In lieu of the requirements of CS VLA.903, the engine must meet the specifications of CS-E for night VFR operations. Isoire Aviation applies for Rotax 912S engine operation with APM30. This engine has been certified in accordance with FAR33 under AustroControl TC n°TW 9-ACG 27 September 2001.

In lieu of the requirements of CS VLA.905, the propeller must meet the specifications of CS-P for night VFR operations.

In addition of the requirements of CS VLA.1107, 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.

In addition of the requirements of CS VLA.1121, no exhaust gases may be discharged where they will cause a glare seriously affecting the pilot's vision at night.

In addition of the requirements of CS VLA.1143, 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.

In addition to the requirement of CS VLA.1147, 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.

F – EQUIPMENT

In addition to the requirements of CS VLA.1322, if warning, caution, or advisory lights are installed in the cockpit, they must be effective under all probable cockpit lighting conditions.

In addition to the requirements of CS VLA.1325, 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 $1.3 V_{SO}$ with flaps extended and $1.8 V_{S1}$ with flaps retracted. However, the error need not be less than ± 9 m (± 30 ft)."

In addition to the requirements of CS VLA.1331, 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."

In lieu of CS VLA.1351(b)(2), electric power sources must function properly when connected in combination or independently.

In lieu of CS VLA.1351(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.

In addition to the requirements of CS VLA.1351(f), the location must allow such provisions to be capable of being operated without hazard to the aeroplane or persons.

In addition to the requirements of CS VLA.1353, 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 loads shedding action.

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

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

In addition to the requirements of the CS VLA.1431, for operations for which electronic equipment is required, compliance must be shown against CS-VLA 1309.

G - OPERATING LIMITATIONS AND INFORMATION

In addition to the requirements of the CS VLA.1547, 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.

In lieu of the requirements of CS VLA.1559 §(b), a placard must state ‘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’.

In lieu of the requirements of CS VLA.1583 §(f), it must be stated: “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.”

Considering above mentioned, EASA accepts the Special Condition to certify the CS-VLA APM30 under day and night VFR conditions.