COMMENT-RESPONSE DOCUMENT
Issoire Aviation CS VLA APM30 LION - CS VLA

The certification of the Issoire APM-30 has raised three issues that were subject of consultations:

1. Third Seat in CS-VLA (Special Condition)
2. Operation at night VFR (Special Condition)
3. Emergency Exits (Equivalent Safety Finding)

1. Third Seat in CS-VLA (Special Condition)

Statement of Issue:

The applicability of CS-VLA is limited according to CS-VLA §1 to a maximum seating configuration of two seats. Issoire Aviation requests an increase of the maximum seating configuration to three seats.

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 perceive importance for action is to answer Flying School request to operate an Aircraft with two trainees: both trainees can take part to the same flight i.e. read instruments, listen to radio traffic and flight instructor directives and comments, follow their own navigation procedure…

The range of aeroplanes certified to CS-VLA will increase, and therefore the boundary between CS-VLA and CS-23 will shift. This will have effect on future VLA design and major modifications.

Equivalent safety is mentioned in respect to Emergency Landing Dynamic Conditions. However, all safety aspects have to be considered. The same requirements have to be respected for the supplementary occupant. As the MTOW and stalling speed limitations are not changed, there is not any increased amount of kinetic energy. Nevertheless, the new fuselage load distribution due to the 3rd seat supplementary loading station should be considered.

Increasing the seating configuration to three seats will make new designed VLA more competitive with single engine piston aeroplanes certified to CS-23 and would increase an operational overlap between CS-VLA certified aeroplanes and CS-23 certified aeroplanes. It will also answer Flight School request to provide training to two trainee pilots during the same flight as today, the operational possibilities of CS-VLA certified aeroplanes is restrictive in comparison to the same aeroplanes certified according to FAR.

2. TEAM POSITION:

The following special conditions should be applied

SC VLA.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" by "This airworthiness code is applicable to aeroplanes with a single engine (spark- or compression-ignition) having not more than three 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"."

SC AMC VLA.23 is modified as :

Replace "(b) An occupant weight of 55 kg to 172 kg for two-seat aeroplanes." by "(b) An occupant weight of 55 kg to 258 kg for three-seat aeroplanes"."

3. IMPACT OF COMMENTS RECEIVED DURING CONSULTATION:

in addition, as a result of the consultation, the following Special Conditions are added to this CRI:

"**SC VLA 811** :

In addition to the CS VLA requirements, the CS23.811(a) requirement applies : " Each emergency exit and external door in the passenger compartment must be externally marked and readily identifiable from outside the aeroplane by –

(1) A conspicuous visual identification scheme; and

(2) A permanent decal or placard on or adjacent to the emergency exit which shows the means of opening the emergency exit, including any special instructions, if applicable."

Comment-Response Document
APM30 third seat Consultation

Commentor:	CAA-UK
Para:	Various
Comment:	This is a significant departure from the applicability parameters for VLA. The justification only considers the emergency landing dynamic conditions and does not consider why the VLA certification specification was limited to two seats in the first place. Since that information is not included, the justification does not address the original reasons for the limitation, and so the justification is not complete. CS-23 is applicable for aircraft of more than two seats, it is suggested that CS-23 should be applied in this case.
Response:	The CS VLA has been issued to provide specific requirements for very light, simple design aircraft with an arbitrary seats limitation of two. This VLA requirement is based mainly on limitations on maximum certificated take-off weight and stalling speed to ensure an equivalent of safety versus CS 23 requirements in respect to emergency landing dynamic configuration. It is practicable to develop a simple design three seater within the CS VLA concept (kinetic energy). Therefore, the team considers that the CS VLA can apply to the APM30 certification.

Commentor:	ACG
Para:	Various
Comment:	1. The change to three seats is an important change with respect to

	passenger safety. 2. Related to the payload issue it is important that the minimum payload can be ensured during production, not only for the certified single peace. 3. The Following Items of CS 23 should be in addition considered: • 23.562 • 23.791 • 23.803 • 23.807 • 23.811 • CS22 engines and propellers should be no longer accepted as for night VFR Operations, CS-E and P will be OK • 23.X1413 4. The Item of equal treatment for current production airplanes / Industry, with have to use CS23 up to now should be also considered, but this is not a technical comment but should be clearly addressed and argumented by EASA.
Response:	1. For this comment please refer to the previous CAA-UK comment. 2. The team does not consider this comment as a certification comment. 3. The team has the following comments : • CS 23.562 concerns the emergency landing dynamic conditions. The APM30 complies with the CS-VLA limitations, there is not any increased amount of kinetic energy compared to other CS VLA aircraft. Therefore, the team considers that the CS-VLA concept remains valid as en equivalent of safety versus CS 23 requirements in respect to emergency landing dynamic configuration. Therefore the CS 23.562 requirement is not applicable to the APM30 certification. • CS 23.791 concerns passenger information signs. In the APM30, the pilot can easily observe the others occupant's seats. Therefore CS 23.791 is not applicable to the APM30 certification. • CS 23.803 concerns emergency evacuation for commuter category aeroplanes. As the APM30 is not a commuter aircraft, the CS 23.803 is not applicable to the APM30 certification. • CS 23.807 concerns emergency exits. The CS VLA.807 applies to the APM30. The team considers that the CS VLA.783 and VLA.807 requirements have a noticeably same level of safety than the CS 23.807. So the team considers that the CS23.807 is not applicable to the APM30 certification. • CS 23.811 concerns emergency exit marking. The team accepts the comment and the following Special Condition is added : - SCVLA.811 : In addition to the CS VLA requirements, the CS23.811(a) requirement applies : " Each emergency exit and external door in the passenger compartment must be externally marked and readily identifiable from outside the aeroplane by – (1) A conspicuous visual identification scheme; and (2) A permanent decal or placard on or adjacent to the emergency exit which shows the means of opening the emergency exit, including any special instructions, if applicable." • Concerning engine and propeller certification, the APM30 will be day and night VFR certified. By this way, as stated in the CRI A3, engine and

	propeller installed will be CS-P and E approved or equivalent level of safety. The APM30 CRI A2 has no intent to determine if CS 22 engine and propeller should be or not accepted for a 3 seats CS VLA only day VFR certified aeroplane. • The 23.X1413 requirement does not exist longer on the CS 23 requirement. The JAR 23.X1413 requirement concerning safety belts and harnesses has been included to the CS 23.785 (b). The same requirement is found with CS VLA.785 (b). Therefore the previous JAR 23.X1413 requirement is taken into account the APM30 certification according CS VLA.785 (b). 4. This comment is not a certification comment.

Commentor:	Apex Aircraft
Para:	Various
Comment:	More seats should indeed be allowed. The limit to two is arbitrary, without substantiation. Therefore, this change should be made to CS-VLA, not to the certification basis of the APM 30. To create a Special Condition is to evade the responsibility to correct the original regulation, in the CS and in harmonized nations. The Stall speed limit protects those on board, and the mass limit protects those third parties not on board. As structures and power units become lighter, more useful load will become available for the humans portion, in theory approaching 750 kg. If the current limitation to two occupants is caused by sensitivity to injuries and deaths as interpreted by the public; as in "two killed in small aircraft crash" versus "three (or four, or family, or six) killed in small aircraft crash", then my comment is different. If this is the reason, then no increase above two seats should ever be made to this class. I completely disagree with this reason, however: it is wholly acceptable to me as a pilot, as a head-of-family, and as a European taxpayer, to substantially deregulate all air vehicles which are used only for non-payed uses. The insurance companies act as the overseeing agencies for such operations, and the use of taxpayer funds for this field is ineffective.
Response:	This positive comment in favour of this CRI reflects the need to do some arrangements to the CS-VLA requirement to provide more flexibility and operational possibilities for VLA design.

2. Operation at night VFR (Special Condition)

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. <u>TEAM POSITION:</u>

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 1·3 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)."

"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. IMPACT OF COMMENTS RECEIVED DURING CONSULTATION:

As a result of the consultation, 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."

Comment-Response Document
APM30 Night VFR Consultation

Commentor:	CAA UK
Para:	Para E Powerplant
Comment:	The 1st paragraph of this section advises that the engine fitted to this aircraft has been certificated to FAR 33 by ACG. However, NPA CS VLA/001 requires that an engine certificated to CS-E is fitted when night VFR approval is needed. This NPA requirement has not been included in the Special Condition. The requirement for a CS-E Certificated engine to be fitted for night VFR operation was introduced in the CS-VLA NPA in order to ensure improved engine reliability for night VFR operation.

	We recommend that in addition to the FAR 33 certification a review of the engine reliability data, including In flight shut downs, is carried out to ensure appropriate targets are achieved in combination with a failure assessment in accordance with CS-E 210.
Response:	The NPA CS VLA/001 requires that an engine certificated to CS-E is fitted when night VFR approval is needed. This requirement has been taken into account on the APM30 CRI A3 with Special Condition SCVLA.903. The point is that none piston engine has been already CS-E approved. Issoire Aviation has proposed to use an already EASA approved engine. This proposal ensures adequate engine reliability for night VFR operation. Issoire aviation intends to install Rotax 912S engine. This engine has been certified by AustroControl with Type certificate n° TW 9-ACG dated September 27, 2001. According EC 1702/2003 article 2 §3, this engine is deemed to be EASA type certificated. Therefore the team accepts Issoire Aviation to use Rotax 912S for APM30 night VFR certification because its FAR 33 certification supplies an adequate safety level equivalent to CS-E. Rotax 912S has received its AustroControl TC on September 27, 2001. According to EC 1702/2003 Part 21 §21A.21 (d), CS 23.901 and CS 23.903, this engine is suitable for installation on CS 23 certified aeroplane. A review of the engine reliability data, including in flight shut downs, carried out to ensure appropriate targets are achieved in combination with a failure assessment in accordance with CS-E 210 in addition to the FAR 33 certification is not applicable for day-night VFR and IFR CS 23 certified aeroplanes. Therefore the team does not agree with this comment.

Commentor:	CAA UK
Para:	Various
Comment:	Paragraph 2 of the Proposed Special Condition advises that the requirements have been based on NPA CS-VLA/001, which was produced by the EASA Drafting Group. There are the following differences between the Special Condition and the NPA: a) Para B Flight states 'In lieu of the requirements of CS VLA.773, the pilot compartment …..'. However, NPA CS-VLA/001 required compliance with this new requirement in addition to the existing requirements of VLA.773. It is recommended that the words 'in lieu of' are changed to 'in addition to' so that the Special Condition is consistent with the NPA. b) Editorial - the 3rd paragraph of Section E Powerplant states 'In addition to the requirements of CS-VLA.1107 ….'. As CS-VLA does not currently include paragraph VLA.1107, it is recommended that the words 'In addition to the requirements of CS-VLA.1107,' are deleted. c) Editorial - the 3rd paragraph of Section G Operating Limitations and Information – the sentence 'the kinds of operation …..must be listed' has been included twice in this paragraph.
Response:	The team agrees with this comment. The CRI A3 will be changed to include the comment concerning CS VLA.773.

	Concerning CS VLA.1107 and CS VLA.1583, it was a mistake on the consultation document but CRI A3 Special Conditions are correct.

Commentor:	CAA UK
Para:	Additional Requirement for VLA Night/IFR.
Comment:	To enable VLA to operate safely at night it would be wise to include an additional requirement for longitudinal dynamic stability, the phugoid, into VLA. This would ensure that pilot workload is kept to a manageable level in the conditions of limited visual reference that occur at night-time. We would suggest using the existing words from 23.181(c) for a new VLA 181(c) as follows:- "(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." Some AMC material taken from the Part 23 Flight Test Guide, as follows would also be appropriate as new AMC VLA 181(c) :- 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.
Response:	The team agrees with this comment. In order to ensure that pilot workload is kept to a manageable level in the conditions of limited visual reference that occur during night VFR, CS 23.181 (c) and associated AMC 23.181 (c) are created as a Special Conditions : - SCVLA 181(c) : In addition to the CS VLA.181, it is added CS VLA.181 (c) stated : "(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))." - SC AMCVLA 181 (c) : In addition to the CS VLA AMC, it is added AMC VLA 181 (c) stated : "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." This issue of the phugoid has not appeared in the NPA CS-VLA/001 and the team considers that it would be appropriate to include this SCVLA 181 (c) and this SC AMCVLA 181 (c) to the EASA NPA CS-VLA/001 in accordance with this consultation.

Commentor:	ACG
Para:	Various
Comment:	The latest document that I have as a member of the Drafting group is from 7.2.2005. The SC does not contain all the Items of this document, some details and comments are missing. I propose to review this in detail. The most important Item from my side is that the AMC material is missing, as long as the VLA change is not done this must be a part of the SC, to ensure that the applicant uses the intended way of compliance.
Response:	The team agrees with the comment concerning the AMC material. Special Condition concerning CS VLA 1309 and 1321 and AMC are added to the CRI A3. These SC are the following : - SCVLA 1309 : In addition to the requirements of CS VLA.1309, reference to the AMC VLA.1309 is done. - SCVLA 1321 : In addition to the requirements of CS VLA.1321, reference to the AMC VLA.1321 is done. - SC AMC VLA 807 : In addition to the CS VLA AMC, it is added AMC VLA.807 stated : "Self-illuminating placards or signs are acceptable". - SC AMC VLA 1143 : In addition to the CS VLA AMC, it is added AMC VLA.1143 stated : "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, it is added AMC VLA.1147 stated : "When mixture linkage separation occurs, the mixture control should go to a full rich setting." - SC AMCVLA 1309 : In addition to the CS VLA AMC, it is added AMC VLA.1309 stated : "For night VFR operations, the installations of complex systems may require an assessment as required by CS 23.1309 b)." - SC AMCVLA 1321 : In addition to the CS VLA AMC, it is added AMC VLA.1321 stated : "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. Considering NPA CS-VLA/001 items CS-VLA 1384 to CS-VLA 1401, the team has not created SC because present CS VLA.1384 requirement is adequate for night VFR operation.

3. Emergency Exits (Equivalent Safety Finding)

Statement of Issue:

CS-VLA §807 requires:

> "Where exits are provided to achieve compliance with CS-VLA 783 (a), the opening system must be designed for simple and easy operation. It must function rapidly and be designed so that it can be operated by each occupant strapped in his seat, and also from outside the cockpit. Reasonable provisions must be provided to prevent jamming by fuselage deformation."

In order to comply with this requirement, Issoire Aviation requests an Equivalent Safety Finding (ESF).

Discussion:

1. BACKGROUND:

The CS VLA APM30 LION is an extension of the JAR VLA certified APM20 LIONCEAU. The APM20 presents a canopy locking system located along the airplane centreline above the instrument panel which is the same for the APM30.

In the APM 30 LION configuration, this system can not be reached by the third occupant strapped in his seat.

2. ISSOIRE AVIATION POSITION:

Issoire Aviation proposes to the certification team that the following ESF should be applied :

In addition to the backwards sliding canopy and safety harness with centralised locking system, the rapid escape of the aft occupant may be ensured by creating a clear unobstructed opening through the canopy by using a safety hammer. This opening would be large enough to admit a 48x66 cm ellipse (CS-23.807(b)).

This safety hammer would be located along the airplane centreline fixed to the back of the front occupant backrest frame. Thus, it could be reach by each occupant strapped in the seat.

In addition, this ESF provides an increased level of safety in the case of the turnover of the

aeroplane.

3. TEAM POSITION:

Issoire Aviation must conduct satisfactory tests to demonstrate the safety hammer capability to break the canopy.

If the tests are satisfactory, the team intends to accept Issoire Aviation position.

Comment-Response Document
APM30 Emergency Exits ESF Consultation

Commentor:	UK CAA
Para:	CS-VLA 807
Comment:	In the Comment Response Document to Special Condition – Third Seat CS-VLA 1, 25, 785, the Agency stated that CS-VLA had been issued with an arbitrary seat limitation of two. It is suggested that the need for Special Conditions such as the present one proves that one of the fundamental principles upon which CS VLA is based is that the code is for aircraft with not more than two seats. It is suggested that rather than the applicant trying to find novel solutions to requirements never intended for application to an aircraft with more than two seats, the Agency should reconsider its decision to apply a code based upon the principle of not more than two seats to a three seat design. There could be many unidentified risks in persisting in applying such a code to a configuration of aircraft never envisaged by the original authors of CS-VLA.
Response:	This issue is addressed in the response to item (1) above. The origins of the two seat limitation in the original JAR-VLA is not known but it is thought to be arbitrary based on typical airframe and engine weight then normal. Since then airframe and engine weights have reduced, allowing greater useful load. This SC does not affect the maximum weight or stalling speed limitations set in CS-VLA. This is the only comment received on the subject during the public consultation, and is not accepted.

Commentor:	UK CAA
Para:	CS-VLA 807
Comment:	In the Comment Response Document to Special Condition – Third Seat CS-VLA 1, 25, 785, in response to a comment from ACG regarding the equal treatment of current production airplanes/Industry, the Agency response is “This comment is not a certification comment”. Bearing in mind the CAA comment above, the UK CAA feels that considerations of fairness and equity are most certainly relevant to certification. When other designers have set out to design a greater than two seat aircraft it would have been of great interest to them to know that the opportunity was there to use CS-VLA. If the Agency intends to continue with this use of VLA for a three-seater aircraft, it needs to make the rest of the EU industry aware of this possibility.
Response:	This is a comment on a comment. The publication of this document in the official

	publication of the Agency constitutes its promulgation such that other applicants may take advantage of it.

Commentor:	UK CAA
Para:	CS-VLA 807, paragraphs. 2 & 3
Comment:	Requirement CS-23.807(b) is quoted. 23.807(b)(3) states that the means of emergency exit should be arranged and marked for easy location and operation, even in darkness. As it is intended to certificate this aircraft for Night-VFR operations, it is suggested that the tests to demonstrate the safety hammer capability are conducted under simulated night conditions.
Response:	Comment partially accepted. As stated in APM30 CRI A3 Special Conditions SCVLA.807 and SC AMC VLA 807, the means of emergency exit must be suitable for night VFR (self-illuminating placards or signs are acceptable). It will be demonstrated during night VFR evaluation. Concerning the test conditions to demonstrate the safety hammer capability to break the “Plexiglas”, simulated night conditions are not significant. Issoire Aviation must provide a test to demonstrate the effectiveness to break the “Plexiglas” of the canopy with the safety hammer. This effectiveness does not rely on day or night conditions.