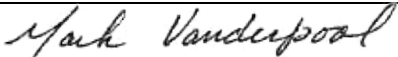


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Signature	 MARCUS S.VANDERPOOL, Pilot and Maintenance Training, Textron Aviation



Operational Suitability Data (OSD) Flight Crew

**CESSNA 525, 525A, 525B, 525C
(CJ, CJ1, CJ2, CJ1+, CJ2+, CJ3, CJ3+, CJ4, M2)**

Rev. 1

28 July 2015

CESSNA 525, 525A, 525B, 525C (CJ, CJ1, CJ2, CJ1+, CJ2+, CJ3, CJ3+, CJ4, M2)

Operational Suitability Data (OSD) – Flight Crew

Revision Record

Rev. No.	Content	Date
OEB Report Rev 2	Operational Evaluation Board Report Cessna 525 (CJ, CJ1, CJ2, CJ1+, CJ2+, CJ3)	22 Oct 2010
OEB Report Rev 1	Operational Evaluation Board Report Cessna Citation 525C (CJ4)	22 Oct 2010
OSD FC Original	Replaces and incorporates the OEB reports for the Cessna 525 (CJ, CJ1, CJ2, CJ1+, CJ2+, CJ3) and for the Cessna 525 (CJ4). Addition of the Cessna 525 M2 operational suitability data.	20 Jun 2014
OSD FC Rev 1	OSD Data for Cessna 525 CJ3+ incorporated.	28 Jul 2015

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Acronyms

ACAS	Airborne Collision Avoidance System
ADC	Air Data Computer
AHRS	Attitude & Heading Reference System
AMC	Acceptable Means of Compliance
AMM	Airport Moving Map
ATO	Approved Training Organisation
ATPL	Airline Transport Pilot Licence
CAS	Crew Alerting System
CBT	Computer Based Training
CDU	Control Display Unit (FMS)
CPD	Common Procedures Document for conducting Operational Evaluation Boards, dated 10 June 2004
CPL	Commercial Pilot Licence
CRM	Crew Resource Management
CS-FCD	Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data CS-FCD, Initial issue, 31 January 2014
CS-FSTD(A)	Certification Specifications for Aeroplane Flight Simulation Training Devices of 4 July 2012
ECL	Electronic Check List
EFB	Electronic Flight Bag
EFIS	Electronic Flight Instrumentation System
EGPWS	Enhanced Ground Proximity Warning System
ESIS	Electronic Standby Instrument System
EU-OPS	Commission Regulation (EC) No 859/2008 of 20 August 2008, amending Council Regulation (EEC) No 3922/91 as regard common technical requirements and administrative procedures applicable to commercial transportation by aeroplane
EICAS	Engine Indicating and Crew Alerting System
FADEC	Full Authority Digital Engine Control
FD	Flight Director
FFS	Full Flight Simulator (Level C/D)
FMS	Flight Management System
FPT	Flat Panel Trainer
FSI	Flight Safety International
FSTD	Flight Simulation Training Device
FTD	Flight Training Device

GDU.....	Garmin Display Unit
GM	Guidance Material
GPS	Global Positioning System
GTC.....	Garmin Touch Screen Controller
HPA	High Performance Aircraft
IEM	JAA Interpretative and Explanatory Material
IFIS	Integrated Flight Information System
JAA	Joint Aviation Authorities
LPC	License Proficiency Check
LST	License Skill Test
MCC	Multi-Crew Cooperation
MDR	Master Differences Requirements
MEL	Minimum Equipment List
MFD.....	Multifunction Display
MMEL	Master Minimum Equipment List
MP	Multi-Pilot
ODR	Operator Differences Requirements
OEB	Operational Evaluation Board
OPC	Operator Proficiency Check
OSD	Operational Suitability Data
OTD	Other Training Device
Part-ARA	Annex VI to Commission Regulation (EU) No 290/2012 of 30 March 2012 amending Regulation (EU) No 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
Part-ARO	Annex II to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
Part-CAT.....	Annex IV to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
Part-FCL.....	Annex I to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
Part-ORA	Annex VII to Commission Regulation (EU) No 290/2012 of 30 March 2012 amending Regulation (EU) No 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of

the Council (as amended)

Part-ORO.....	Annex III to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
Part-SPA.....	Annex V to Commission Regulation (EU) No 965/2012 of 05 Oct 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (as amended)
PIC	Pilot In Command
PF	Pilot Flying
PFD	Primary Flight Display
PNF	Pilot Non Flying
QRH	Quick Reference Handbook
Route Sector	as defined in Part-FCL ["Route sector" means a flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing phases]
RVSM	Reduced Vertical Separation Minimum
SFD	Standby Flight Display
SOE	Supervised Operating Experience
SOP	Standard Operating Procedures
SP	Single-Pilot
TASE	Training Areas of Special Emphasis
TAWS	Terrain Awareness & Warning System

Preamble

1. Introduction

Where references are made to requirements and where extracts of reference texts are provided, these are at the amendment state at the date of evaluation or publication of this document. Users should take account of subsequent amendments to any references, in particular concerning requirement for civil aviation aircrew and air operations.

Determinations made in this document are based on the evaluations of specific configurations of aircraft models, equipped in a given configuration and in accordance with current regulations and guidance.

Modifications and upgrades to the aircraft evaluated require additional OSD assessment for type designation, training / checking / currency, operational credits, and other elements within the scope of the OSD evaluations.

In accordance with Commission Regulation (EU) No 69/2014 of 27 Jan 2014, the Operational Suitability Data contained in this document are identified as follows:

[M] mandatory Operational Suitability Data, bearing the status of rule (see GM No 3 to 21A.15(d))

[AMC] non-mandatory Operational Suitability Data, bearing the status of Acceptable Means of Compliance (see GM No 3 to 21A.15(d))

The certification basis for the OSD Flight Crew data contained in this document is CS-FCD, Initial Issue, dated 30 January 2014.

2. Operational Evaluation CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3

EASA evaluated the CE-525 CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3 series aircraft in April 2007. The evaluation was based on the EASA Terms of References for OEBs, the CPD, and the processes detailed in the JAA Administrative and Guidance Material, Section One, Part Two, Chapter 5 and JAR-FCL 1 including associated appendices, AMC and IEM. Compliance was evaluated against requirements of EU-OPS, JAR-FCL 1 and JAR-FSTD.

The OEB team consisted of one pilot who was initially trained on the CJ, flew both the CJ and the CJ2 aircraft, attended the CJ2 recurrent training programme and the differences training between CJ2 and CJ2+ followed by training between the CJ2+ and the CJ3. Training was provided by Flight Safety International (FSI) in Wichita, Kansas. Each training sequence was validated by checking.

An FFS was used for normal operational procedures, use of normal, abnormal and emergency checklists and practical operation of aircraft. No FTD was available.

3. Operational Evaluation CJ4

An operational evaluation of the CJ4 was requested on 02 Mar 2010. The evaluation was based on the EASA Terms of References for OEBs, the CPD, and the processes detailed in the JAA Administrative and Guidance Material, Section One, Part Two, Chapter 5 and JAR-FCL 1 including associated appendices, AMC and IEM. Compliance was evaluated against requirements of EU-OPS, JAR-FCL 1 and JAR-FSTD.

A T-2 test was performed on 25-28 Jan 2010 as a basis for a C525 single license endorsement. A T-5 test for SP type rating training was performed in June 2010 at the FSI facilities in Wichita, KS. Operational suitability flights were completed on 24 Jun 2010 (on aircraft N525CZ). As a second part of the evaluation, 3 complete T-3 tests evaluating differences training from the CJ1 to the CJ4 and 'reverse' differences training from the CJ4 to both the CJ1 and the CJ3 were completed. An assessment of the training implications for operating the CJ4 with a MP crew was made.

The EASA OEB Section Business Jet Manager, the OEB team members and operational and certification experts have participated to evaluate operational suitability, operational documentation, including MMEL, and a number of training courses (single pilot/FSTD, and 3 Differences Training modules). As part of this evaluation process, the Normal, Abnormal, and Emergency procedures were reviewed in the aircraft and recommendations for improvements and/or optimization have been implemented as appropriate.

The following optional equipment was evaluated:

- 2nd FMS / GPS / DME
- Mark V EGPWS
- ADF

The following optional equipment was not formally evaluated. Where operational approval is sought for the use of any of these systems or any optional systems and equipment that may become available, a separate evaluation may be required.

- XM broadcast / Graphical Weather
- Datalink / ACARS
- Lightning Detection Stormscope
- FMS Performance DB
- Integrated Electronic Checklist
- Flight Data Recorder

4. Operational Evaluation M2 and CJ3+

An operational evaluation of the CE-525 M2 and CJ3+ was conducted in a joint FAA/EASA operational evaluation during the period July 2013 to June 2015. The EASA evaluation was based on CS-FCD and the applicable requirements for civil aviation aircrew and air operations.

A T-2 test was performed and confirmed no handling qualities differences from the base aircraft CE-525 CJ1+ and the CE-525 M2 and CJ3+. A T-3 test performed on 17-21 Mar 2014 confirmed the proposed differences training from CE-525 CJ1+ / CJ2+ / CJ3 / CJ4 variants to the M2 and CJ3+. Initial full type rating training was successfully evaluated on 11-26 Mar 2014. The M2 and CJ3+ was also evaluated for compliance with the requirements contained in Part-CAT, Subpart D – Instruments, Data, Equipment.

5. Operational Evaluations – Group Composition

Name	Organization	Function
Tom Kieffaber ³⁾	FAA	FSB Chairman
Charles Miller ³⁾	FAA	Team Member
Randall Sizemore ³⁾	FAA	Team Member
Hans Hermansson ²⁾	EASA	T-5 / T-3 Team Member
Dietmar Hyll ³⁾	EASA	T-3 Team Member
Ilkka Laine ^{2) 3)}	EASA	T-3 Team Member
Per Kirk Laursen ¹⁾	EASA	Team Member
Herbert Meyer ³⁾	EASA	EASA Section Manager
Georgios Moraitis ³⁾	EASA	T-5 Team Member
Evan Nielsen ^{1) 2)}	EASA	Flight Standards Manager
Oliver Puff ³⁾	EASA	T-5 Team Member
Poul Rasmussen ^{1) 2)}	EASA	OEB Section Manager Business Jets
Klaus Walkner ³⁾	EASA	OSD Chairman
Adam Whitehead ²⁾	EASA	OEB Chairman, T-5 / T-3 tests

1) CJ, CJ1, CJ2, CJ1+, CJ2+ and CJ3 evaluation 2007

2) CJ4 evaluation 2010

3) CE-525 M2 and CJ3+ evaluation 2013 / 2014

Operational Suitability Data (OSD) – Flight Crew

1. Aircraft Type Designation and Pilot License Endorsement [M]

With reference to Part-FCL, FCL.010 ('type of aircraft') and GM1 FCL.700, the Cessna 525 series aircraft have been evaluated for aircraft categorisation and license endorsement.

In accordance with Part-FCL, all C525 aircraft are designated as HPA.

All CE-525 series aircraft have been assessed as variants. Associated Difference Levels and relevant Familiarization and Differences Training are contained in this document.

The license endorsement is established as "C525".

EASA Type Rating & License Endorsement List – Aeroplanes:

Manufacturer	Aeroplane Model / Name	License Endorsement	Variants	Complex	SP / SP HPA / MP	OEB FC REPORT / OSD FC available	Remarks
Cessna	525 – CJ	C525	X	X	SP HPA	X	OSD FC, Rev. 1, dated 28 Jul 2015
	525 – CJ1						
	525A – CJ2						
	525 – CJ1+						
	525A – CJ2+						
	525B – CJ3						
	525B – CJ3+						
	525C – CJ4						
525 – M2							

2. Aircraft Specifics

A table at Appendix 5 summarizes the characteristics of the C525 variants:

2.1 **CJ, CJ1, CJ2, CJ1+, CJ2+ and CJ3**

The CE-525 CJ aircraft are low wing aeroplanes fitted with two turbojet engines mounted on the tail. The Citation 525 Series initial aeroplane was the CJ. The CJ1 model is a variant of the CJ. The CJ1+ model is a variant of the CJ1. The CJ2 was a new model (525A) in the 525 Series, which was derived from the CJ1. The CJ2+ model is a variant of the CJ2. The CJ3 was another new model (525B) in the 525 Series, which was derived from the CJ2.

The CJ3 was the first model to incorporate the integrated Pro-Line avionics suite to include the FMS-3000 and the Electronic Flight Bag, as well as the Full-Authority Digital Engine Control (FADEC). The CJ3 preceded the CJ1+ and CJ2+ models.

The CJ1+ and CJ2+ models incorporated the same avionics and the FADEC as installed on the CJ3.

2.1.1 Specific equipment

Citation (CJ): Standard Flight Instrument Configuration Consist of an integrated Honeywell SPZ-5000 Flight Guidance System (IFGS). Standard FMS is the KLN900.

Citation (CJ1, CJ2): Standard Flight Instrument Configuration consist of Rockwell Collins Pro Line 21 Integrated avionics Processing System (IAPS). Pro Line 21 can support different FMS systems with the UNS-1C/K as standard.

Citation (CJ1+, CJ2+, CJ3): Basic avionics is supplied by Rockwell-Collins and includes fully integrated flight instruments, flight guidance and communication / navigation systems. Collins Pro Line 21 system manages the electronic instrument and engine displays, the autopilot and flight guidance system. The standard long-range navigation system is the Collins FMS-3000.

2.1.2 Cockpit Layout CJ3



2.2 CJ4

The CJ4 is a Twin Turbo-jet aeroplane, with 2 pilots' seats and a maximum 9 passenger seats.

General: Two Williams FJ44-4A turbo-fan engines with Full Authority Digital Engine Control (FADEC) power the aircraft. Undercarriage flaps, modulated speed brakes and ground spoilers are hydraulically operated. The main flight controls are unassisted, cable controls except for a bleed-air rudder bias system to assist in directional control in the event of an engine-out condition.

The CJ4 received its first Type Certification in March 2010, under FAA CFR Part 23 Commuter Category including day, night, VFR, IFR and flight into known icing conditions. The aircraft is compliant with all Reduced Vertical Separation Minimums (RVSM).

Structure: The CJ4 airframe is a conventional, pressurised, swept low-wing design using both bonded and riveted aluminium construction with some composite parts. Engines are fitted to short pylons on the tail section of the fuselage, above the line of the wings. The swept 'T-tail' structure is similar to the other "CJ" models.

Landing Gear and Brakes: The CJ4 has a fully retractable, hydraulically actuated tricycle landing gear with mechanical up-locks, pneumatic back-up deployment system and mechanical nose-wheel steering. Trailing-link main landing gear legs have an electronic, anti-skid wheel-braking system. Each leg has a single tyre, the nose-wheel is fitted with a chine each side to deflect surface contamination away from the engine intakes. The aircraft may only be operated from paved surfaces.

The hydraulic systems for undercarriage deployment and normal braking are independent (for undercarriage deployment hydraulic system, see Hydraulic System, below). Main brake pressure is provided through a dedicated DC electric hydraulic pump and accumulator. The pneumatic back-up system is shared by the two parent systems providing emergency undercarriage lowering and emergency wheel braking when required. The electronic braking and anti-skid systems both require DC power and are not connected to the Emergency Bus. The anti-skid system includes touch-down protection. With the anti-skid system inoperative the required scheduled landing distance is almost doubled.

Cabin: The cabin is entered through the main cabin door with folding airstair located in the forward, left side. Emergency egress is provided through a single plug door at the opposite side behind the rear cabin window, just ahead of the right engine.

There are 4 main seats in a 'club 4' arrangement at the centre of the cabin with a further 2 forward facing seats behind. There is a further, side-facing seat (or optional 2 seat couch) opposite the main door at the front of the cabin and a further belted (toilet) seat at the back of the cabin.

There are 2 non-pressurized baggage compartments; 1 in the nose and one in the tail section, each with a smoke detection system.

Pressurisation System: The CJ4 has a fully automatic cabin pressurisation system. Cruise level, departure and landing elevation are determined from the FMS flight-plan entries made by the pilot. The rate and differential scheduling for flight is then computed automatically. Landing elevation may be entered manually. There is no manual ‘rate’ or pressure differential controller. Non-automatic or ‘standby’ control of cabin pressure relies on the cabin altitude limiter (max 14,800’) and the maximum differential pressure relief valve (max 9 psi). This abnormal operation requires the cabin to be de-pressurised by the pilot opening the ‘Cabin Dump’ valve before landing.

A high altitude mode will automatically schedule a lower cabin pressure (higher cabin altitude) for landing at airports above 8000’ elevation.

To avoid pressure bumping on take-off, once the power levers are set to take-off power, the pressurisation system will begin to pressurise the cabin very slightly (‘down’ to approx. -200’) during the take-off roll. For this, and other reasons, reduced power take-offs are not authorised in the CJ4.

Oxygen System: A single oxygen bottle supplies the cockpit and cabin oxygen masks. The cockpit masks are quick donning with settings for oxygen/air mix, 100% oxygen and pressure flow for high altitude and smoke protection. Drop-down masks are arranged above each passenger seat. These are set to deploy automatically at approximately 14,800’ cabin altitude or manually by selection from the cockpit.

The CJ4 has a manual oxygen shut-off valve in the cockpit. Whilst this is not uncommon in other aircraft, all of the other 525 series aircraft have an open system that cannot be isolated in this way. A rapid check of oxygen flow may appear normal as oxygen residual pressure is released from the line when the crew mask is tested; even with the valve selected to off. There is no CAS message or warning to the crew that this valve is selected to off and the oxygen system is disabled. This presents the significant risk that pilots familiar with other 525 aircraft may take-off unaware that the oxygen system is disabled and crews converting to the CJ4 from other 525 variants must be familiar with this feature and its implications.

Maximum Level for Single-pilot Operations: The CJ4 cabin volume is small and decompression will lead to a rapid reduction of pressure in the cabin and cockpit. When pressurization is lost, the time of useful consciousness without additional emergency oxygen decreases critically as altitude is increased, to as little as a few seconds at 45,000’. To minimize the risk of an unassisted pilot becoming incapacitated before the mask can be fitted correctly, an altitude restriction should be established for single-pilot operations without wearing the mask (or above which altitude the pilot’s mask should be worn continuously).

Wings: The wings are a 3-spar design constructed of aluminium mounted beneath the cabin, each with an integral fuel tank. Control surfaces on the wing include aileron, hinged flaps, ground spoiler panels on the top and speed brake panels above and below each wing. The right aileron

incorporates an aerodynamic trim tab. Wing leading edges are anti-iced using engine bleed air. 2 stall strips and 6 vortex generators on each wing contribute to the benign handling characteristics of the CJ4.

Flight Controls: The main (dual) flight controls are all cable operated. Electrically operated aerodynamic trim tabs are fitted to the right aileron, right elevator and the rudder. A secondary power circuit and control system is provided for the elevator trim, there is no manual trim mechanism available. A rudder bias system uses engine bleed air to assist in directional control during engine-out operation.

A single autopilot is able to follow commands from one of 2 Flight Guidance Computers (FGC) and is controlled through a single flight guidance panel (FGP) at the top centre of the main instrument panel. The FGP is equally accessible from either cockpit seat. The active FGC will take roll, pitch and yaw inputs from the selected PFD and accompanying AHRS, and compute flight guidance commands for the flight director and autopilot. Lateral flight guidance modes include roll, heading, navigation and approach modes, with a half-bank function available. 'Back-course' approach mode is also available for use where these approaches are authorised. Vertical guidance is computed by the active FGC and is available in pitch, flight level change (speed hold) and vertical speed modes. A vertical navigation mode is also available when the primary navigation data is derived from the FMS.

Engines: The CJ4 is fitted with Two Williams FJ44-4A turbofan engines with Full Authority Digital Engine Control (FADEC). The engines are twin-spool (co-rotational) medium bypass turbofans with mixed exhaust and high-cycle pressure ratio. Each engine produces approximately 3,600 lbs of thrust providing a considerable weight to thrust ratio of less than two and a half to one. There is no thrust reverse or thrust attenuation system.

Engine start sequence, power control, and shutdown are managed by the respective FADEC unit, each of which is independently powered by its own engine driven Permanent Magnet Alternator (PMA). Back-up electrical power for the FADEC is the main aircraft electrical system. If a complete loss of aircraft electrical power occurs, each PMA will power its respective FADEC unit to maintain engine operation. Engine start, required thrust and shut down are selected by the pilot through the cockpit engine starter control buttons, thrust lever position and run/stop buttons respectively. Distinctive detentes are provided at take-off, climb and maximum cruise power settings for ease of operation. There is no separate fuel cut-off other than through the FIRE buttons, which also isolate the hydraulic pump and the generator field circuit on the respective side for emergency engine shutdown.

Ignition System: Each engine has a dual ignition system with 2 igniters controlled by the FADEC fired either singly or together as required by the FADEC. Ignition is activated automatically for starting and on approach to land and whenever a loss of combustion, excessively low engine

speed or rapid deceleration is detected by the FADEC. The pilot may also select ignition manually to on at any time. Whenever ignition is active the message IGN appears in the EICAS display beside the N1 tapes.

Fuel system: Each wing houses an integral tank which feeds, via return fuel motive flow and ejector pumps, into a feeder ‘hopper’ for the respective engine. Each side has a 434.9 USG capacity providing 2,914 lbs of useable fuel per side (= 5,828 lbs total useable capacity).

There is no cross flow system but fuel can be transferred from one hopper to the opposite hopper by the pilot moving the Fuel Transfer selector knob in the cockpit. Maximum fuel imbalance for normal operations is 200lbs.

A Single Point Refuelling (SPR) system is available through an access panel in the fuselage, just ahead of the right wing leading edge root. Normal, over-wing refuelling caps are also provided on top of the outboard end of each wing tank. Standby boost pumps are activated by FADEC for starting or if a low fuel pressure condition is detected, automatically during fuel transfer and if selected manually to ‘on’ by the pilot.

The Crew Alerting System (CAS) will display a message whenever an abnormal fuel system condition is detected, a fuel boost pump is activated or fuel is being transferred. A separate “Low Fuel” annunciator in the centre of the instrument panel also indicates a Low Fuel Level condition.

Instruments and Avionics: The CJ4 is equipped with dual Primary Flight Displays (PFD) and dual Multi-function Displays (MFD) Collins Proline 21 EFIS displays and Collins 3000 series Flight Management System (FMS). The aircraft is fitted with two CDUs for the FMS. A second FMS computer is a sales option. The subject aircraft and simulator during the OEB evaluation was fitted with the optional, second FMS.

The avionics and the FMS are fully integrated and some of the aircraft main systems are also operated through the FMS CDU (e.g. pressurisation). Other main and ancillary aircraft systems are monitored and controlled through menus available from within the PFD or MFD screens (e.g. TAWS, weather radar, ACAS, electrical system status and Crew Alerting System (CAS)).

The systems and avionics integration of the CJ4 means much of the information available to the pilot is via sub-menus from within a main PFD or MFD control panel selection. The availability of this information is not immediately intuitive and pilots must have specific knowledge and systems familiarity to be able to access to the information quickly, when required.

The standby instrument display is a single ESIS unit in the centre of the instrument panel. The instrument is powered by its own dry-cell battery. This instrument receives information from its own (standby) AHRS and ADC and is designed to provide attitude, heading, airspeed and altitude indications for 55 minutes following the loss of the main aircraft power supply.

The CJ4 is equipped with a fitted ELT. The OEB subject aircraft was not fitted with the optional FDR although this is a requirement for European operations in accordance with EU OPS 1.715.

Electronic Flight Bag (EFB): The CJ4 is equipped with the Rockwell Collins IFIS-5000 including electronic terminal charts (en route charts are not available from the system). Chart prioritisation is offered according to the FMS flight plan, with origin and destination charts immediately available on either MFD, however, it is not possible to view a full chart page on the MFD due to the screen size. Only approximately $\frac{3}{4}$ of the chart is visible, although it is possible to scroll the chart to see the top or bottom.

Using JAR-OPS Temporary Guidance Leaflet (TGL) 36 and AMC 20-25 (draft) as a reference, the Rockwell Collins IFIS complies, in most respects, with the requirements of Class 3 EFB. The installed software applications qualify as Type B. However, the IFIS system is powered through the aircraft main DC power system. The system is not on the emergency bus and there is no standby power for the system. Therefore, the system is not suitable for approval of a 'paperless' operation and a suitable backup must be carried on board.

Own ship position (FMS position) is presented on many of these charts. Where own ship position is not available the \emptyset symbol is presented in the top right corner. A digital reproduction of the chart title is continuously displayed when the chart is in view whether scrolled, zoomed or rotated.

Many of the charts are not drawn exactly to scale and the aircraft position may therefore appear incorrect. Unless a digital Airport Moving Map (AMM) has been used for the taxi chart, the error in the chart can be so large as to present the incorrect taxiway under the aircraft position symbol. This can be misleading and pilots must be made aware that, when referring to the aircraft symbol, the apparent position may be incorrect.

Caution: Due to the risk of inaccurate position display it is imperative that pilots are made aware that the IFIS charts are there for convenience and situation awareness only and are not to be used for navigation, either in the air or on the ground – particularly in conditions of low visibility.

Satellite derived graphical weather data overlays, enhanced map overlays (geo-political, airways, airspace etc.) and ACARS data are also available from this system as options.

Other EFB items such as performance calculations, load sheet and aircraft log did not form part of this system at the time of the evaluation. It is understood that these programmes will become available. If, ultimately, these are intended for operational use a further evaluation may be required on these elements of the IFIS.

Hydraulic System: The CJ4 has a single, closed-centre hydraulic system. This is unlike all the other C525 aeroplanes, which have an open system that is pressurised on demand by the closing of a single bypass valve. The CJ4 system is continually pressurised to 3000 psi by two engine-driven pumps providing hydraulic power on demand to the four hydraulic aircraft sub-systems. Landing gear actuation, wing flaps, speed brakes and ground spoilers all use this hydraulic

pressure for operation. Wheel brakes use their own dedicated hydraulic supply and accumulator and are not part of this system (see “Landing Gear & Brakes”, above).

Electrical System: The CJ4 uses two DC starter-generators as the main source of electrical power through two Digital Generator Control Units (DGCU). DC power is then distributed through a series of DC buses and shared by way of a cross-feed bus, protected each way by 225 amp current limiters, in the event of a single generator shutdown.

Backup DC power is available from two engine-driven alternators, normally providing AC power to the windshield heating system. In the event of dual generator shutdown, one or both alternators are automatically switched through their respective Transformer Rectifier Units (TRUs) to provide essential DC power. Power storage for starting (and emergency power – see below) is available from a single 26.4 volt, 44 amp-hour lithium-ion main aircraft battery. A nickel-cadmium or lead acid battery is available as an option if required.

Emergency Power: In the event of the battery becoming the only source of electrical power, automatic load shedding is achieved by the pilot selecting the emergency bus. The battery will then supply power to essential systems, including the main pilot’s PFD, AHRS 1, ADC 1 and essential avionics for at least 30 minutes of flight. The ESIS display is powered by its own dry-cell battery. This instrument is supplied by its own AHRS and ADC and is designed to provide indications for 55 minutes.

Any ancillary unit (except windshield heat) that requires AC power generates its own AC through a dedicated inverter within that unit.

The main electrical system also provides back-up power to the FADEC unit for each engine. For information on normal power for the FADEC, See “Engines” above.

Crew Alerting System: The CJ4 systems are monitored through the Crew Alerting System (CAS). There are over 100 CAS messages that could appear (normally appearing in the upper part of the MFD) either on the ground or during flight. The messages are colour-coded cyan (blue) amber and red to reflect normal, cautionary and emergency conditions as appropriate. It is not reasonable for the pilot to remember all the appropriate actions for each of these and a comprehensive QRH needs to be immediately available in the cockpit for every flight.

The systems architecture is such that emergency memory items are few, however the inter-relationship between systems and their automation means that a series of messages may appear at one time, revealing a number of symptoms that may be the result of a single system fault. Uninformed reliance on the QRH may cause confusion and result in inappropriate action or delay by the pilot.

Although, the most urgent or compelling message is normally prioritised to the top of the visible list, any such situation requires a thorough understanding of the systems by the pilot.

Cessna Citation CJ4 C 525		
Dimensions	Length	16.26m (53'4")
	Wingspan	15.49m (50'10")
	Height	4.67m (15'4")
Engines	Number & Type	2 x Williams FJ44-4A Twinspool turbofan
Maximum Operating	Pressure Altitude	45.000 ft
MTOW		7704.5 kg (17,110 lbs)
Passenger Seats	Max seating configuration	Two cockpit seats plus max 9 passengers
Minimum Crew		1 pilot
Maximum Operating Speed		Mmo 0.77; VMO (8,000-28,000') = 305 KIAS VMO < 8,000' = 260 KIAS

2.3 M2 and CJ3+

The M2 and CJ3+ include a Garmin G3000 Flight Suite, winglets and minor interior modifications.

Size, gross mass and aerodynamic characteristics of the M2 and CJ3+ are similar to other CE-525 variants.

The CE-525 variants have been designed to permit commonality of procedures as far as possible:

- similar normal procedures;
- similar supplementary normal and non-normal procedures dictated by EICAS or warning/caution system
- similar control location for non-normal procedures;
- same CRM and task sharing between PF and PNF.

Cockpit Layout CJ3+



2.4 Customization of Procedures and Checklists, SOPs [AMC]

EASA evaluated standard Cessna procedures and checklists. Any customization should be evaluated by the Competent Authority.

[AMC] Operators should develop SOPs in order to minimise crew workload, reduce the risk of incorrect programming of the flight guidance system, and help retain situation awareness. Where applicable, MCC / MP procedures should be incorporated, including PF and PNF task details. SOPs should specify selection of the navigation source, flight guidance mode selection, configuration, altimetry and aircraft handling techniques for all phases of flight.

[AMC] Standard Noise Abatement procedures should be included in SOPs, as these are common at many European airports.

[AMC] SOPs should be provided to ATOs and ATOs should integrate these procedures into training. Where SOPs do not exist, the ATO should provide a single, simple set of procedures to be used during training containing the elements specified above.

2.5 Aircraft Approach Category

With reference to Part-CAT, CAT.OP.MPA.320(b) the approach category for all C525 series aircraft is as follows:

Aircraft	Category
C525 all variants	B

2.6 All Weather / Low Visibility Operations [AMC]

The operational evaluations were limited to Approach Category I operations and standard take-off minima. Operations to lower take-off or approach minima require further assessment.

2.7 Part-CAT, Subpart D – Instruments, Data, Equipment

EU operators must show compliance with applicable elements of Annex IV to EU Regulation 956/2012 (Part-CAT, Subpart D), prior to beginning commercial transport operations.

[AMC] EASA evaluated the CE-525 M2 and CJ3+ and confirms compliance with the applicable elements of Part-CAT, Subpart D. Operator specific items have not been evaluated.

3. Operator Differences Requirements (ODR)

[M] The relevant ODR tables were evaluated and approved. These are retained by Cessna as part of the operational suitability data.

ODR tables are Cessna generic and therefore may not include items that are applicable to particular operators.

[AMC] Operators using more than one variant must have approved ODR tables pertinent to their fleet.

4. **Master Differences Requirements (MDR) [M]**

4.1 MDR Tables

MDR tables for the CE-525 variants are shown below. Definitions of the various levels for Training / Checking / Currency are those used in CS-FCD.

Master Differences Requirements (MDR) Table											
FROM AIRPLANE											
TO AIRPLANE		CJ	CJ1	CJ2	CJ1+	CJ2+	CJ3	CJ4	M2	CJ3+	
	CJ	-	C/B/C	C/B/C	C/B/C	C/B/C	C/B/C	C/B/C	D/D/D ¹⁾	-	-
	CJ1	C/B/C	-	A/A/A	C/B/C	C/B/C	C/B/C	D/D/B	-	-	
	CJ2	C/B/C	A/A/A	-	C/B/C	C/B/C	C/B/C	D/D/B	-	-	
	CJ1+	C/B/C	C/B/C	C/B/C	-	A/A/A	A/A/A	D/D/B	-	-	
	CJ2+	C/B/C	C/B/C	C/B/C	A/A/A	-	A/A/A	D/D/B	-	-	
	CJ3	C/B/C	C/B/C	C/B/C	A/A/A	A/A/A	-	D/D/B	-	-	
	CJ4	D/D/D ¹⁾	D/D/B	D/D/B	D/D/B	D/D/B	D/D/B	-	-	-	
	M2	-	-	-	D/D/D ²⁾	D/D/D ²⁾	D/D/D ²⁾	D/D/D ²⁾	A/A/B ⁴⁾	D/D/C ³⁾	
	CJ3+	-	-	-	D/D/D ²⁾	D/D/D ²⁾	D/D/D ²⁾	D/D/D ²⁾	D/D/C ³⁾	A/A/B ⁴⁾	

Training at Level A assumes that crew members receive exposure to operation of doors / emergency exits on a static aircraft or by other suitable means.

Differences training from the CJ /CJ1 / CJ2 to the M2 or CJ3+ and from the M2 or CJ3+ to any other CE-525 variants have not been evaluated.

¹⁾ Level D currency refers to the separate recent experience requirements when operating both the CJ and the CJ4, as described in this document.

²⁾ Level D currency refers to the route sector currency requirements when operating the M2 or CJ3+ with any other CE-525 variants, as described in this document.

³⁾ Differences levels between M2 and CJ3+ are for rudder bias / performance;

⁴⁾ A/A/B accounts for optional equipment installed.

[M] 4.2 Multiple Differences

When a pilot receives differences training in more than one model, that pilot must receive at least one complete differences course from a base aircraft to a variant. Additional training will be required as necessary to cover the differences that are unique from the base model to other variants. When differences that were previously taught during a differences course for one variant

are the same as for an additional variant, that material need not be repeated. However, any examination or checking requirements associated to the differences training must be met.

5. Specifications for Training

5.1 All CE-525 variants

General training pre-requisites for CE-525 aircraft are contained in Part-FCL, FCL.720.A (Experience requirements and prerequisites for the issue of class or type ratings - aeroplanes).

[AMC] Prior knowledge on EFIS, FMS operation and integrated avionics is recommended for initial training on CJ1+, CJ2+, CJ3, CJ3+, CJ4 and M2 variants.

[AMC] Pilots with limited or no experience of high performance aeroplanes will benefit from additional training which should be completed before starting the type rating course.

[AMC] Pilots undergoing training as MP crew should have completed an MCC course, before commencing MP training for a CE-525 type rating.

[AMC] Practical training must include the minimum training described in Appendix 4, depending on previous experience.

5.2 CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3 Training

5.2.1 CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3 Initial Type Rating Training

[AMC] The CESSNA CITATION 525 Series (CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3) TYPE RATING TRAINING PROGRAMME, initial type rating training, dated 1 June 2004 was evaluated and confirmed compliant with the applicable requirements.

5.2.2 CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3 Differences Training

[AMC] The CESSNA CITATION 525 Series (CJ / CJ1 / CJ2 / CJ1+ / CJ2+ / CJ3) TYPE RATING TRAINING PROGRAMME, Chapter 9, Differences Training, dated 1 June 2004 was evaluated and confirmed compliant with the applicable requirements.

5.2.3 TASE

[M] Operational use of the Collins FMS-3000 must receive special emphasis in initial or differences training for CE-525 CJ1+, CJ2+ and CJ3 variants.

5.3 CJ4 Training

[M] Practical training must include full functionality of the Proline avionics system, use of the FMS and flight automation.

Detailed knowledge of the FMS and its integration with both the Proline avionics and the autopilot is critical to the safe operation of the CJ4. The Collins Proline integrated avionics system makes extensive use of FMS navigation both laterally and vertically. Localizer based procedures will load and display automatically from the FMS, when programmed correctly. However the display may not change to 'green needles' until the localizer is active and pilots should be made familiar with the timing of this process and how to pre-empt or over-ride it.

ADF and VOR / DME procedures can be flown readily and easily as FMS overlay procedures. The primary navigation aid for the approach being flown must always be displayed. Whilst ADF, VOR and DME should always be available on the PFD, these display selections are sometimes 'hidden' in a PFD or MFD sub-menu. It is important that training includes detailed familiarity with the selection and use of the PFD and MFD menu functions so that approaches are not flown without the required information on display.

The capabilities of the automation and avionics in the CJ4, as with many other EFIS aircraft, allow the pilot(s) to fly the aeroplane in a variety of different navigation and flight guidance control modes. Whilst the CJ4 has many systems and flight automation features designed to ease pilot workload, the safe operation of the aeroplane depends on sound, clearly defined operating procedures.

Furthermore, the systems and avionics integration of the CJ4 means much of the information available to the pilot is via sub-menus from within a main PFD or MFD control panel selection. The availability of this information is not immediately intuitive and pilots must have specific knowledge and systems familiarity to be able to access to the information quickly, when required. It is important that crew actions and procedures are clearly specified in writing and reflect the distinct responsibilities of each pilot.

The performance and speed of the CJ4, particularly during departure, arrival and missed approach, is such that advance situation awareness is critical to flight safety and may quickly be lost if flight guidance management becomes a distraction through lack of integrity or workload is increased in the event of systems failure and abnormal procedures. It is imperative therefore that crew responsibilities and procedures are familiar and well-rehearsed. The definition of responsibility between pilots is critical to flight safety, particularly in the terminal area.

5.3.1 Initial Training

[AMC] A minimum of 32 hours practical training should be performed, including a minimum of 16 hours in an FFS and the remaining hours in an FSTD or OTD.

5.3.2 Differences Training from the CJ4

[AMC] Pilots qualified on the CJ4, with little or no experience of individual mechanical flight instruments, are likely to have established a scan pattern quite different from that required by a conventional, mechanical instrument layout. These pilots should obtain Differences Training on

conventional instruments, including selective radial scan techniques, before flying variants with conventional mechanical instrumentation.

5.3.2.1 TASE

The following applies when transitioning from the CJ4 to other Collins Proline 21 equipped CE-525 variants:

[M] Pilots converting from the CJ4 to other Collins Proline equipped CE-525s must be trained to fly instrument approaches using the standby display in the new variant.

The instrument display in the CJ4, when on emergency power, includes the left PFD, NAV 1 & COM 1. This arrangement enables the pilot to fly an instrument approach on emergency electrical power using the normal instrument display. However, the Collins Proline EFIS displays fitted to other CE-525s are not powered through the emergency bus. Consequently, when operating these aeroplanes on emergency power, any instrument approach must be flown using the standby instrument system.

5.4 CE-525 M2 or CJ3+ Training

5.4.1 M2 or CJ3+ Initial type rating training

[AMC] The Cessna Citation M2 and CJ3+ Standard Transition Courses for initial Pilot Type Rating were evaluated and confirmed compliant with the applicable requirements.

[AMC] Initial type rating training consists of the following minimum (per pilot).

Theoretical training, using an FPT and Garmin Desktop trainer:

- Ground school (37.5 hrs) ¹⁾
- System Integration (6.0 hrs) ²⁾

Classroom instruction in Questions and Answer style or a Quiz should be performed, combined with trainees demonstrating proficiency in the FPT to ensure a standard level of competency.

Practical training, using an FFS Level C or D:

- Practical Training (PF / PNF) (28.0 hrs) ³⁾
- LST (2.0 hrs)

¹⁾ Training Modules presented during ground school and in the aircraft system subject area consist of a breakdown of the various systems of the aircraft

²⁾ System Integration training is accomplished using a combination of Matrix Desktop Simulators (DTS) and Matrix Graphical Flight Simulator (GFS). Other devices representing the same technical and operational standards, are acceptable.

³⁾ Training should be accomplished using an FFS Level C or D

Further details are contained in Appendix 2.

[M] 5.4.1.1 TASE

The following aircraft systems and / or procedures should receive special emphasis during theoretical training:

- Flight Management System (FMS) new functionality and complete new system;
- Navigation Display (ND) and primary Flight Display (PFD); new arrangement;
- AFCS relocated; and
- Panel Layout, switches rearranged on new tilt panel to accommodate GTC.

5.4.2 M2 and CJ3+ Differences Training

M2 and CJ3+ differences training has been evaluated from the CE-525 CJ1+ / CJ2+ / CJ3 / CJ4 variants to the CE-525 M2 and to the CJ3+ and between the M2 and CJ3+. No other differences training to / from the M2 and the CJ3+ have been evaluated.

[M] 5.4.2.1 Prerequisites

Crew members must be current and qualified on the respective CE-525 variant.

[AMC] 5.4.2.2 Training Footprint

Differences training consists of the following minimum (per pilot):

- Aircraft System Differences (2.0 hrs)
- Avionics Lecture (6.0 hrs) ¹⁾
- Avionics System Integration (4.0 hrs) ²⁾
- FFS (4.0 hrs) ³⁾

¹⁾ Avionics Lecture should be presented using an interactive training device

²⁾ Avionics System Integration should be trained using a desktop simulator

³⁾ Training should be accomplished on a FFS Level C or D

[AMC] 5.4.2.3 Training Content**Aircraft Systems and Avionics**

The training modules presented in the aircraft systems subject area consist of a breakdown of the various systems of the aircraft. These modules may be taught in any sequence, however all modules must be covered.

Systems:

- Aircraft General
- Electrical
- Lighting
- Master Warning
- Fuel

- Powerplant
- Fire Protection
- Pneumatics
- Ice and Rain Protection
- Air Conditioning
- Pressurization
- Hydraulics
- Landing Gear and Brakes
- Flight Controls
- Avionics
- Oxygen
- Rudder bias during engine failure (CJ3+ only)
- Nose and tail cone baggage compartment smoke detection system (CJ3+ only)

Avionics:

- General Overview
- Displays
- PFDs
- MFD
- GTCs
- Standby Flight Display
- AHRS / ADC
- Radio and Audio Systems
- Hazard Avoidance
- Weather
- Terrain
- TCAS II
- Flight Guidance
- Additional Features
- Safe Taxi
- ChartView
- FliteCharts
- Satellite Phone / Datalink
- WiFi
- XM Radio
- Scheduled Messages
- Electronic Documents
- Limitations
- Avionics Initialization

Minimum manoeuvres to be trained in FFS / FTD:

- Take-off / engine failure at V1
- Rejected landing
- Normal Landing

- Go-around / single-engine missed approach
- Auto Flight
- Electrical power systems and malfunctions
- Indicating and recording systems
- Rudder bias during engine failure (CJ3+ only)
- Nose and tail cone baggage compartment smoke detection system (CJ3+ only)

[M] 5.4.2.4 Demonstration of Proficiency

Completion of M2 or CJ3+ differences training requires demonstration of proficiency through a partial proficiency check. The partial proficiency check is administered in a Line Oriented Flight (LOF) profile of approximately 2.0 hrs. which consists of Preflight and Before Takeoff checks, Departure, Climb to a cruise altitude, Descent, Arrival, Instrument approach and missed approach, Load and fly a different instrument approach, After Landing and Shutdown checks.

Proficiency must be demonstrated in the following items:

- description, location, and identification of all aircraft systems;
- use of normal, abnormal and emergency checklists; and
- proficiency of the Garmin G3000 avionics, in particular:
 - avionics initialization;
 - database check;
 - Weight and Balance inputs;
 - loading and activation of flight plan;
 - accomplishing system tests;
 - setting of v-speeds and display on airspeed tape;
 - access and display an appropriate IP chart;
 - selection / de-selection of SVT for display;
 - tuning / swapping COM and NAV frequencies;
 - setting transponder codes;
 - manually changing navigation source;
 - changing of altimeter setting on PFD and on SFD;
 - changing between Full / Split Mode on PFD and on MFD;
 - inserting and deleting flight plan waypoints;
 - selecting and flying “Direct-To” a waypoint;
 - programming and initiating a VNAV descent;
 - changing arrival airport and procedure;
 - creating/entering/departing a holding pattern;
 - identifying Loss of Integrity (GPS) for an RNAV approach;
 - finding and setting minimums for approach;
 - manipulation of Weather Radar, TAWS and TCAS;
 - operating the G3000 during and after a go-around and preparing for re-landing or diversion;
 - operating GTC in abnormal condition(s) and performing corrective actions;
 - Rudder bias during engine failure (CJ3+ only); and
 - Nose and tail cone baggage compartment smoke detection system (CJ3+ only)

5.5 Differences Training – Avionics and EFIS [AMC]

The range of aeroplanes available within the CE-525 ‘family’ presents a wide variation of differences. Conversion from the CJ3 to CJ4, for example, is a reasonable step for most pilots, however the transition from CJ to CJ4 requires level D Differences training for all pilots. Much of the technology offered by the later, Collins equipped, aeroplanes may be new to the CJ pilot. Before systems and handling differences are addressed, such a significant transition may require additional training in the functionality and use of the EFIS displays, familiarity with the FMS control units and FMS navigation.

For those pilots with little or no previous experience of these systems additional training in the use of these systems, to a satisfactory level of competence should be completed prior to (or as part of) any differences training being undertaken. This training should include, as a minimum, the following:

Collins Proline 21 Avionics System

- Basic EFIS instrument flying techniques (where little or no previous EFIS experience)
- Full competence in the functionality of the Collins Pro-line EFIS (where applicable)
- PFD & MFD functionality and control including AHRS, ADC and display reversion.
- GPWS modes & over-ride functions (Predictive Windshear in CJ4)
- ACAS 1 / 2 functionality and action in the event of a Resolution Advisory (RA) or Traffic Advisory (TA)
- Radar system control and display
- Display Control Panel (DCP) & Cursor Control Panel (CCP) in CJ4 / Line Select Key and Refs Panel in other Proline 21 aircraft

Use of FMS

Full functionality of the particular FMS in the aircraft to be flown, including.

- Initialisation
- Ancillary systems operation through FMS CDU where appropriate (CJ4)
- Flight planning
- Performance
- Fuel management and loading
- LNAV & VNAV management,
- Editing and amending flight plans
- Diversion and re-planning during flight;
- Loading and activating SID's, STARS and approaches into current flight plan
- Inhibit, “no-Link”, discontinuity & transition to missed approach.

5.6 In-Aircraft Training

[AMC] Flight training should be performed using an FFS. This is the safest and most effective method for training critical emergency procedures (such as engine failure above V1 during take-off), as well as abnormal systems handling and repeat practice of other procedures. With a full flight simulator, the opportunity also exists to vary the environmental circumstances and provide an opportunity to exercise a variety of Crew Resource Management (CRM) issues.

[AMC] If the aeroplane must be used for training, complementary training in an FSTD for all abnormal / emergency procedures, which cannot be trained on the airplane should be completed as part of the type rating training. In exceptional cases (for example, where no simulator is available) training may be performed at a later stage, but it should be completed within 12 months. In this case, the candidate should also have a background on high performance, pressurized, multi-engine turbine aircraft to ensure a basic level of knowledge and experience with specific emergency and abnormal situations.

[M] In-Aircraft training must take into account all applicable TASE, as far as practicable.

5.7 Transition from SP to MP Operations (or vice versa).

[AMC] Pilots transitioning from SP to MP operations (or vice versa) should follow the training described in Appendix 3.

6. Recurrent Training (all variants)

Recurrent training must be compliant with EU regulations for civil aviation aircrew and air operations, as applicable, and include the identified Training Areas of Special Emphasis.

[AMC] The applicable requirements established in EU regulations for civil aviation aircrew and air operations should be considered as a minimum and expanded, as appropriate, for pilots who have had only limited exposure and/or who do no longer fulfil the currency requirements.

[M] Operators must establish an approved recurrent training and checking programme which is relevant to the aircraft variant(s) flown and its intended operation.

[AMC] The requirements for a recurrent training programme may vary with several factors which have a significant influence. Some of these factors are: actual exposure of the flight crew member(s), specific routes and aerodromes used by the operator and new developments in technology. These factors and/or a combination thereof will determine the required recurrent training. The CE-525 variants differ greatly in terms of avionics equipment, operations and performance. Extreme care must be exercised when developing recurrent training programmes as cross-crediting experience between variants may not be appropriate.

[AMC] Recurrent training should incorporate special events training as described in this report, on a rotational basis.

[AMC] Recurrent training should be alternated between the CE-525 variants being operated and difference addressed on a rotational basis.

[M] If recurrent training is not alternated, Difference Levels for training as shown in the MDR tables apply.

7. Specification for Checking

7.1 Checking – LST / LPC / OPC (all variants)

Part-FCL, Appendix 9, A. paras. 13 - 17 contain specific requirements for the skill test / proficiency check for SP aeroplane type ratings, when operated in MP operations.

[M] With reference to Part-FCL, Appendix 9 B., initial and recurrent testing/checking must follow the Part-FCL profile for "Multi-Pilot Aeroplanes and Single-Pilot High-Performance Complex Aeroplanes"

[M] In accordance with Part-FCL, Appendix 9 B.6.(h), when a skill test or proficiency check is performed in MP operations, the type rating shall be restricted to MP operations. If privileges of SP are sought, the manoeuvres / procedures referenced in B.6.(h) have to be completed in addition as SP.

[AMC] Pilots having completed training in the SP role should take the skill test / proficiency check acting as the only cockpit crew member throughout the test / check. Where the test is conducted in a full flight simulator, the examiner should not occupy the second cockpit seat.

7.2 Recurrent Checking – LPC / OPC (all variants)

Recurrent checking is addressed in Part-ORO, specifically in ORO.FC.130, ORO.FC.220, ORO.FC.230, AMC1 ORO.FC.230, GM1 ORO.FC.230, ORO.FC.240, and AMC1 ORO.FC.240

[AMC] Recurrent checking should be alternated between the CE-525 variants when operating more than one variant as described in Figure 1 below. When operating multiple CE-525 variants with different avionics suites, recurrent checking should be alternated between the variants of different avionics suites.

[M] If recurrent checking is not alternated, differences of variants flown must be addressed at the differences levels for checking as shown in the MDR tables, using a suitable device.

[M] With reference to ORO.FC.140(a), full credit is granted for recurrent checking requirements when operating multiple CE-525 variants, either by alternating recurrent checking between the CE-

525 variants, as described above, or by addressing the differences of the variants flown in each checking.

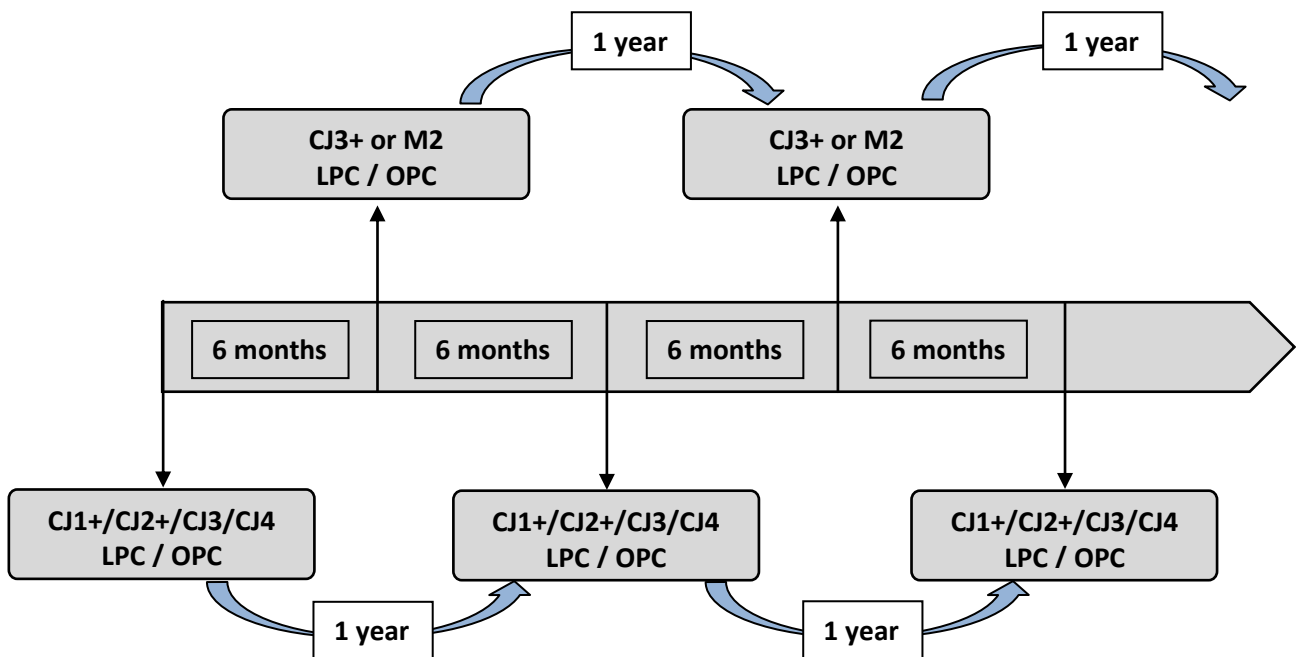


Figure 1

Figure 1 provides an example for alternating checking when operating either the CE-525 M2 or the CJ3+ in combination with CE-525 CJ1+/CJ2+/CJ3/CJ4 variants. Other combinations, such as the CE-525 CJ in combination with CE-525 CJ1+/CJ2+/CJ3/CJ4 variants may be applied accordingly.

7.3 Line checks

[M] A line check on any CE-525 variant is valid for all.

8. Line Flying Under Supervision (LIFUS) / Supervised Operating Experience (SOE) / Familiarization Flights

LIFUS should be performed in accordance with ORO.FC.220 and AMC1 ORO.FC.220(e). Furthermore, GM1 ORO.FC.220(d) provides guidelines for operators to use when establishing their individual requirements.

Supervised Operating Experience (SOE) may be established in accordance with Part-FCL, FCL.720.A (g) through the operational suitability evaluation.

[M] Pilots obtaining an initial type rating on a CE-525 variant without previous experience on a turbo-jet, pressurised turbo-prop, or multi-engine turbo-prop aircraft must receive the number of hours of LIFUS / SOE as shown in the table of Appendix 4.

[AMC] When completing initial type rating for the CE-525 M2 or the CJ3+, a minimum of 10 route sectors of LIFUS / SOE / Familiarization Flights should be performed.

[AMC] When completing differences training from any other CE-525 variant to the CE-525 M2 or to the CJ3+, a minimum of 2 route sectors of LIFUS / SOE / Familiarization Flights (one as PF and one as PNF) should be performed.

[AMC] Where there is a change of operating conditions or route structure this should be taken into account and may need additional route sectors to cover these elements.

9. Recent Experience and Currency

9.1 Specifications for Recent Experience

Recent experience requirements are contained in Part-FCL, FCL.060.

[M] With reference to Part-ORO, ORO.FC.140(a), full credit for recent experience requirements is granted when operating CE-525 variants, except for credit between the CJ and the CJ4 variants which must be maintained separately (see Level D currency requirements in the MDR tables).

9.2 Specifications for Currency

[AMC] Operators should consider establishing currency requirements when operating CE-525 variants with different avionics suites.

[M] Pilots operating the M2 or the CJ3+ in conjunction with any other CE-525 variant or group of variants, must perform a minimum of 2 route sectors (one as PF and one as PNF) on the M2 or the CJ3+ and on the respective variant / group of variants, during a period of 180 days (see Level D currency requirements in the MDR tables).

Appendix 1

CJ4 Initial Type Rating Training

[AMC] 1. Theoretical Training

The following syllabus is considered to be the minimum for the initial type rating training.

Ground School - Class Room (6 days, 42 hrs total)

Consisting of:

- Classroom presentations of aircraft systems principles and construction, function, limitations, in-flight failures & pre-flight checks;
- Systems operation including normal, abnormal and emergency procedures;
- Operational subjects from Aircraft Flight Manual & Aircraft Operating Manual including flight planning, weight & balance & scheduled performance calculations;
- Function and operation of ACAS & ACAS (ii) including response to Traffic Advisories (TA) and Resolution Advisories (RA);
- Operations in RVSM airspace;
- CRM training (single-pilot) covering relevant aspects of situation awareness, decision-making, workload management & SOP, error protection and communication resources;
- CRM & MCC for multi-pilot operations covering relevant aspects of situation awareness, decision-making, workload management & SOP, error protection and co-operation, leadership and communication skills;
- Systems Integration Training in fixed base simulator to support classroom presentations (min 2 hrs. per pilot); and
- Written Test(s) in performance & loading and in systems.

The technical content of all training is identical for SP and MP operations.

2. Practical Training

[M] The following items should be addressed as a minimum:

- Normal manoeuvres/procedures, aircraft handling, navigation;
- FMS navigation and Flight automation;
- All abnormal & emergency manoeuvres & procedures, abnormal & emergency system operation instrument approach & landings;
- Operation of ACAS;
- Operation of EGPWS & wind shear training; and
- Low visibility ground operations and take-offs.

[M] 3. Training Areas of Special Emphasis (TASE)

The following aircraft systems and procedures have been identified as TASE for SP and MP operations:

3.1 Theoretical Training:

- High altitude physiology;
- CRM as applicable for single or multi-pilot operations;
- Setup, operation, limitations, failures and reversionary capability of the Collins Proline EFIS system;
- Availability and layout of PFD & MFD sub-menu functions;
- Functionality and programming of the Collins 3000 series FMS;
- Use of the FMS for systems management (e.g. pressurisation, radio tuning, transponder etc.);
- Use of the FMS for vertical navigation;
- Flight automation modes including VNAV;
- Access to and limitations of IFIS charts display;
- Performance and loading calculations, including wet/contaminated runways;
- Requirement for ballast fuel in aft CG conditions;
- Crew Alerting System, abnormal operation of aircraft systems and use of checklist;
- Single Point Refuelling (SPR) system;
- Function of ACAS, TAWS/EGPWS & Weather Radar; and
- Prohibition of take-off at reduced power.

3.2 Practical Training:

- Comprehensive setup and use of Collins Proline EFIS displays;
- Familiarity with PFD & MFD sub-menus through control panels;
- Comprehensive setup and use of Collins 3000 FMS;
- VNAV operations;
- Detailed SOP for the choice of navigation source, flight guidance mode, aircraft configuration altimetry and aircraft handling techniques in all phases of flight;
- Selection and monitoring of flight guidance / automation mode;
- Loss of cabin pressure procedures;
- Location and operation of cockpit oxygen control valve;
- Wearing of oxygen mask during single pilot operation;
- Instrument flying on EFIS display;
- Actions in response to ACAS Resolution Advisory;
- Actions in response to EGPWS windshear and terrain warnings;
- Use of secondary pitch trim system;
- Approach, landing and emergency braking following loss of DC Power;

- Approaches/Landings with reduced flap settings;
- Loss of autopilot; and
- Emergency Descent Mode.

Appendix 2

[AMC] CE-525 M2 or CJ3+ Initial Type Rating Training – Footprint

Training Day 1	Training Day 2	Training Day 3	Training Day 4	Training Day 5
Groundschool Systems (8:00)	Groundschool Systems (8:00)	System Integration 1 Groundschool Systems (7:00)	System Integration 2 Groundschool Systems (7:00)	System Integration 3 Groundschool Systems (7:00)
Training Day 6	Training Day 7	Training Day 8	Training Day 9	Training Day 10
System Integration 4 System Review Written Exam (6:50)	System Integration 5 FFS 1 (MP 6:50 / SP 4:50)	System Integration 6 FFS 2 (MP 6:50 / SP 4:50)	FFS 3 (MP 6:50 / SP 4:50)	FFS 4 (MP 5:50 / SP 3:50)
Training Day 11	Training Day 12	Training Day 13	Training Day 14	
FFS 5 (MP 5:50 / SP 3:50)	FFS 6 (MP 5:50 / SP 3:50)	FFS 7 (MP 5:50 / SP 3:50)	License Skill Test	
Note: FFS times include time for briefing and debriefing.				

Appendix 3

[AMC] CE-525 Transition Training MP to SP (and vice versa)

The following syllabus contains a minimum training for pilots when transitioning from MP to SP or from SP to MP operations on the CE-525 variants.

1. MP to SP Transition

The theoretical knowledge instruction shall be conducted by an authorized instructor holding the appropriate type / class rating or any instructor having appropriate experience in aviation and knowledge of the aircraft concerned, e.g. flight engineer, maintenance engineer or flight operations officer and shall cover the applicable syllabus, as appropriate.

1.1 Theoretical Training (4 hours)

The transition course should start with theoretical training to address the following subjects:

- SP psychology, decision making, communications and limitations;
- SP task, resource and workload management and personal organization;
- SP operation and management of avionics suite, including charts and ECL, as applicable;
- Differences between MP and SP Abnormal and Emergency procedures;
- Emergency Phraseology; and
- SP operations in icing conditions.

1.2 Practical training, normally using an FFS (4 hours)

The practical training should include the following subjects:

- Use and setup of GARMIN integrated avionics, PFD and MFD, including selection of display (System Synoptic, Map, Weather Radar and optional/ Electronic Check List);
- Use of Flight Director and Autopilot, monitoring of modes;
- Engine failure after take-off;
- In flight restart of failed engine;
- Operation of TCAS (if installed);
- Sequencing of CAS messages regarding subsequent/secondary failures;
- Loss of cabin pressure control and Emergency Descent procedures;
- Instrument flying on standby instruments;
- Failure of trim system;
- Smoke procedures, including smoke removal;
- Approaches/Landing with reduced flap setting;
- Approaches/Landing with failed engine;

- Engine Fire on the Ground;
- Emergency Evacuation; and
- Use of the ECL, if applicable.

2. SP to MP Transition

MCC procedures should be defined in the operations manual and be introduced during the transition training.

2.1 Theoretical Training (4 hours)

The transition course should start with theoretical training to address the following subjects:

- Multi Crew psychology, decision making, communications and limitations;
- Multi Crew task, resource and workload management and organization, MCC procedures;
- MP operation and management of GARMIN, including ECL/optional and Charts;
- Differences between SP and MP Abnormal and Emergency procedures;
- Emergency Phraseology;
- MP operations in icing conditions.

2.2 Flight training, normally using an FFS (2 hours as PF and 2 hours as PNF)

The flight training should address the following subjects:

- Use and setup of GARMIN integrated avionics, PFD and MFD, including selection of display (System Synoptic, Map, Weather Radar and Electronic Check List);
- Use of FD and AP, monitoring of modes;
- MCC Procedures;
- Operation of TCAS (if installed);
- Sequencing of CAS messages regarding subsequent/secondary failures;
- Loss of cabin pressure control and Emergency descent procedures;
- Instrument flying on standby instruments;
- Smoke procedures, including smoke removal;
- Trim failure;
- Engine Fire on the Ground;
- Emergency Evacuation; and
- Use of ECL, if applicable.

3. Mixed SP and MP operations

Training should also address aspects of mixed SP and MP operations by the same pilot.

Appendix 4

[M] Pre-requisites and training for an initial type rating on the CE-525

Part-FCL, FCL.720.A (b) and (c) applies regarding experience requirements and prerequisites for type ratings for SP high performance complex aeroplanes.

In addition, pilots seeking the privilege to operate the aeroplane in MP operations shall meet the requirements of FCL.720.A (d) (4).

In accordance with Part-FCL, Appendix 9, paragraph B. 6 (h), when a skill test or proficiency check is performed in MP operations, the type rating shall be restricted to MP operations.

If SP privileges are sought, the manoeuvres / procedures referenced in Part-FCL, Appendix 9, paragraph 6 (h) have to be completed in addition as single-pilot.

Pilots who do not meet the prerequisites for operations as PIC should receive a license endorsement containing the limitation "Co-pilot only".

	License and Experience prerequisites to start training	Combined aircraft and FTD/OTD training	Combined FFS and FTD/OTD training	Testing	SOE or LIFUS (as PF)
SP OPERATIONS OR MP OPERATIONS AS PIC	ATPL(A) + any previous turbo-jet aircraft type rating	12 hrs + 4 hrs FTD or OTD *	SP: 16 hrs FFS MP: 16 hrs FFS + 16 hrs FTD or OTD	Partial Skill Test	0 hrs
	ME Rating + IR Rating Min. 1000 hrs				25 hrs
	ME Rating + IR Rating Min. 500 hrs				50 hrs
MP OPERATIONS AS CO-PILOT	CPL + IR Rating Min. 200 hrs Min. 70 hrs PIC	12 hrs + 4 hrs FTD or OTD *	16 hrs FFS + 16 hrs FTD or OTD	Skill Test License Endorsement: "Co-pilot only"	0 hrs

*Training of selected emergency procedures

Appendix 5

Summary of Characteristics of the CE-525 Variants

Model		525	525	525A		525B	525	525A	525C	525	525B
		CJ	CJ1	CJ2		CJ3	CJ1+	CJ2+	CJ4	M2	CJ3+
Cert Date		10/15/1992	2/16/2000	6/21/2000	FADEC INSTALLATION	10/15/2004	6/17/2005	9/30/2005	03/12/2010	12/20/2013	05/18/2015
Serials		001-359	360-599	001-299		001-450	600 -701	300 and on	0100 & On	0800 & On	0057 and 0451 and on
Max Weights (Lbs)	Ramp	10500	10700	12500		14070	10800	12625	17230	10800	14070
	Takeoff	10400	10600	12375		13870	10700	12500	17110	10700	13870
	Landing	9700	9800	11500		12750	9900	11525	15660	9900	12750
Speeds	Vmo (KIAS)	263	263	275		278	same as CJ1	278	305	263	same as CJ3
	Mmo (Mi)	0.71	0.71	0.72		0.737	same as CJ1	0.737	.77	.71	Same as CJ3
Altitude (Ft)	Max	FL410	same as CJ	FL450		same as CJ2	same as CJ1	same as CJ2	FL450	FL410	same as CJ3
	Type	FJ44-1A	same as CJ	FJ44-2C		FJ44-3A	FJ44-1AP (P/N 72100-200)	FJ44-3A-24	FJ44-4A	FJ44-1AP (P/N 72100-201)	same as CJ3
Engine	Thrust	1900	same as CJ	2400		2820	1965	2490	3621	1965	2820
	Fuel Control	hydro-mech	hydro-mech	hydro-mech		FADEC	FADEC	FADEC	FADEC	FADEC	FADEC
Fuel (Lbs)		3220	3220	3961		4710	3220	same as CJ2	5828	3296	4710
Avionics	Displays	Honeywell	Collins	same as CJ1		Collins	same as CJ3	same as CJ3	Collins	Garmin	Garmin
	Radios	CNS-5000	same as CJ Garmin (Opt)	same as CJ1		Collins	same as CJ3	same as CJ3	Collins	Garmin	Garmin
	Autopilot	Honeywell	Collins	same as CJ1		Collins	same as CJ3	same as CJ3	Collins	Garmin	Garmin
	FMS (Std)	KLN900	UNS-1C/K	same as CJ1		FMS-3000	same as CJ3	same as CJ3	Collins	Garmin	Garmin

Model		525	525	525A		525B	525	525A	525C	525	525B
		CJ	CJ1	CJ2		CJ3	CJ1+	CJ2+	CJ4	M2	CJ3+
	<i>FMS (Other)</i>	UNS-1C/K	Garmin	same as CJ1		Garmin	Garmin	Garmin	Collins	Garmin	Garmin
	<i>Audio Panel</i>	Ametek	KY-196A	same as CJ1		Collins (DB Audio)	same as CJ3	same as CJ3	Collins	Garmin Integrated into GTC	Garmin Integrated into GTC
	<i>Displays</i>	EADI/EHSI	PFD (Single or Dual)	same as CJ1		Dual PFD	same as CJ3	same as CJ3	Collins Dual PFD/MFD	Garmin Dual PFD/MFD	Garmin Dual PFD/MFD
Electrical	<i>Generators (Mfg/Current)</i>	Lucas 300A	APC 300A	same as CJ1		same as CJ1	Advanced Industries 300A	same as CJ1	Advanced Industries 300A	Advanced Industries 300A	same as M2
	<i>Generator Limitations</i>	no flight limits	no flight limits	250A > 41k		300A up to 41K 250A over 41K	300A up to 37K 250A over 37K	300A up to 41K 250A over 41K	170A @ 45K 300A @ 25K Linear	300A up to 37K 250A over 37K	same as CJ3