

Collins Aerospace Pro Line 21 and Pro Line Fusion® Program Updates

CJP Presentation 10/17/2009



Objectives

- Follow-up from CJP Conference
 - Temperature Compensation issues and TCAS II display
 - LPV / TCAS upgrades
 - WAAS/LPV CJ1, CJ2, CJ1+, CJ2+, Encore Plus
 - CJ4 TCAS update (TSS-4100 upgrade with ECU-3000 and TSSE-4100)
 - CJ 1+/2+/3 - Pro Line Fusion® flight deck upgrade
 - Vspeeds, Datalink, Roadmap, Training, Value Prop.

Follow-up Questions from CJP Convention

TCAS II RA Display Issue

- Issue

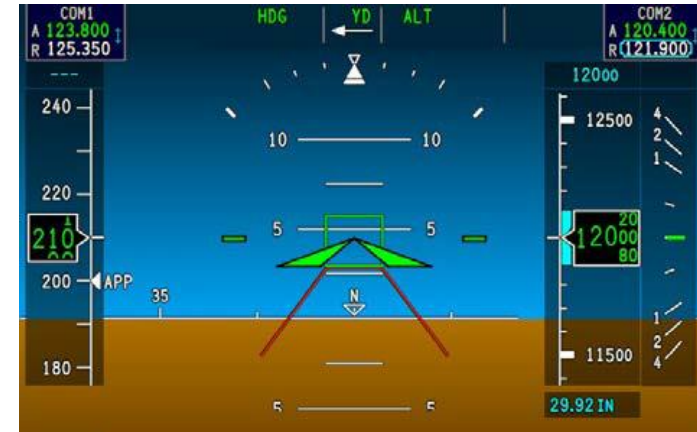
- Incorrect Fly-To Cue display in some scenarios (eg: corrective climb with positive pitch angle)
- Potential conflict with RA aural
- Some display SW versions are not TSO-compliant
- TCAS LRU outputs are correct, as well as aural

- Impact

- PL Fusion-equipped King Airs and CJ3 are impacted
- Collins OPS bulletin, aligned with FAA and EASA, recommends turning off RA while the display SW is being corrected
- This temporarily turns the TCAS II system into TCAS I (TA-only)
- FAA does not mandate TCAS II in US airspace for impacted Textron aircrafts
- In other regions like EASA, operators may have to request temporary waivers beyond MEL grace period

- Corrective action

- Completed- SIL 523-0826420-301000



Temperature Compensation

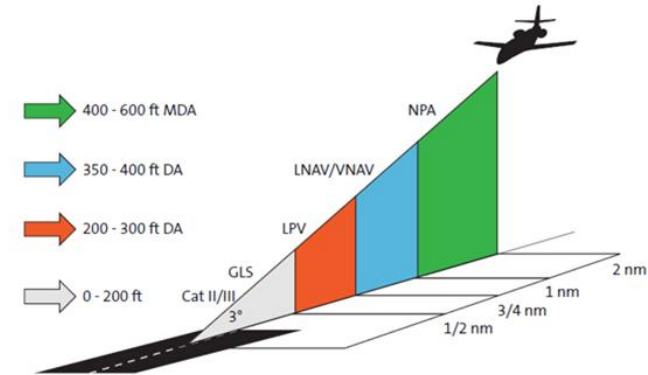
Pro Line 4 and Pro Line 21 aircrafts with FMS 3.3.x and 4.x

- Issue
 - When a “climb to” altitude is manually edited or compensated for temperature, FMS may turn aircraft in wrong direction
- Impact
 - Collins OPS bulletin in 2018 recommended operators to turn off the temperature compensation feature
- Corrective action
 - An Airworthiness Directive from the FAA is expected to mandate the removal of the temperature compensation feature
 - Removal procedure at approved service centers or dealership
 - Approach procedures are not being removed from the FMS
 - FAQs: <https://www.rockwellcollins.com/Landing/FMS/FAQ-OPSB016617R1.aspx>

WAAS/LPV upgrade

Available at Textron Service Centers

- Eligible Aircrafts
 - Citation Jets 1 + / 2 + / 3
- Benefits
 - Access to non-ILS runways with reduced minimums (200ft DA, half-mile visibility)
 - About 4,000 LPV approaches now available in US, serving airports (1,200 of which without ILS)
 - Based on SBAS technology (WAAS in the US)
 - Same GPS can be used for ADS-B out compliance
 - Independent from temperature for vertical navigation
- Upgrade (Textron Service Center)
 - New hardware
 - DBU-5000
 - OCM-3110
 - Upgrades through Service Bulletins
 - FMC-3000
 - IOC-3110
 - GPS-4000S
- Or included in baseline Pro Line Fusion[®] flight deck upgrade (CJ3)



Citation Jets 1+/2+/3 - Pro Line Fusion[®] Upgrade

Bringing the latest airspace modernization and situational awareness technologies

- Currently available for the CJ3 at ALL Collins Aerospace Dealer Network
 - 35 aircraft flying today
- Aircraft Value-Add Bundle for latest compliance and enhanced flight deck experience
 - ADS-B out
 - Dual GPS
 - 5 year nav-database subscription included
 - LPV / RNP / RF Legs
 - Three 14.1 inch landscape touchscreens
 - Configurable windows
 - Graphical flight planning
 - High-Resolution SVS with exclusive Airport dome
 - Electronic Navigation Charts
 - USB database loading
- SW update currently under development in close collaboration
 - Adds CJ1+/2+ to STC (Textron only for first 6 months after STC approval)
 - Restores integrated Vspeeds / FMS fuel sense
 - Adds Predictive FMS performance computation
 - Adds CPDLC / FANS / ATN B1 datalink option



Citation Jets 1+/2+/3 - Pro Line Fusion® Roadmap

Next amendment will bring CJ1+/2+ model types, and align with our core forward-fit SW product line for long-term support and future upgrades

		Initial STC	Amendment #2	Amendment #3	Notes
Schedule	Estimated market intro	April 2017	Q3 2020	Market-driven	
Model type	CJ1+	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CJ2+	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CJ3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Features	Pro Line Fusion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Landscape 14" touchscreens, Graphical planning, SVS, LPV
	FMS fuel sense	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New baseline
	Integrated FMS Vspeeds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New baseline (currently available via IMS/PED option)
	Integrated FMS Perf.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New baseline
	Sirius XM support	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option (native)
	FDR support	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option (via 3rd party STC)
	CPDLC (US + Europe)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option
	Oceanic FANS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option
	Airport Moving Maps	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Check Market - New potential option
	LP Approaches	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Check Market - New potential option
	ADS-B In	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Check Market - New potential option
STC support	Adaptor harness + kit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option to reduce touch labor and downtime
	Flight Simulator	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	New option being discussed with 3rd party

Follow-up Questions

- *Long term support for Pro Line 21 other than Fusion*
 - *Long-term support of Pro Line 21 avionics, outside of Pro Line Fusion path:*
 - *Collins is working on long term solutions for PL21*
Update Q2 2020
 - *Next Gen Datalink-CPDLC (US and EU)*
Aircraft under 100,000 pounds and/or built prior to February 2020 are exempt from mandate in EU
CJ Fusion AC available option Q3 2020
CJ4 Textron is working on a SB early 2020
PL21 CJ 1+,2+,3 Roadmap expected in Q2 2020
 - *Sirius SXM Stand Alone*
Fusion AC Q3, 2020 FOC if currently equipped with XM
PL21 AC Q4 2020
CJ4 Textron SB in 2021
 - *Pro Line Fusion Flight Training Device*
Working with FSTAT to announcement at NBAA

Follow-up Questions

- *Pro Line Fusion Affordability-*
 - 2nd GPS*
 - 5 Years Nav-data base*
 - Wiring Harness*
 - Open Channel*
 - ADSB Credits*
- *1st come 1st served vs Best equipped best severed.*

https://www.faa.gov/documentlibrary/media/advisory_circular/ac_90-117.pdf

Similar to RVSM/ADSB airspace

Questions?