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Flight Standardization Board Report

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Manufacturer Textron Aviation, Inc.

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
T00007WI	750	Citation X (750-001-750-0500) Citation X+ (750-501 & On)	CE-750

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1. RECORD OF REVISIONS

Revision Number	Section(s)	Date
Original	All	10/08/1996
1	All	01/14/2015
2	1, 2, 3, 5, 6, 7, 8, 9, Appendices 2, 4 and 6	08/30/2016
3	All	12/16/2020

2. INTRODUCTION

Aircraft Evaluation Groups (AEG) are responsible for working with aircraft manufacturers and modifiers, during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine:

- 1) The pilot type rating,
- 2) Flightcrew member training, checking, and currency requirements, and
- 3) Operational suitability.

This report lists those determinations for use by:

- 1) FAA employees who approve training programs,
- 2) FAA employees and designees who certify airmen, and
- 3) Aircraft operators and training providers, to assist them in developing their flightcrew member training, checking, and currency.

3. HIGHLIGHTS OF CHANGE

This revision converted the document to comply with section 508. Change bars are not included in this document because the entire report is revised and updated.

4. BACKGROUND

The Small Aircraft AEG formed a Flight Standardization Board (FSB) that evaluated the Textron Aviation Model 750 as defined in FAA Type Certificate Data Sheet (TCDS) No. T00007WI. The evaluation was conducted using the methods described in FAA Advisory Circular (AC) 120-53B, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

5. ACRONYMS

- 14 CFR Title 14 of the Code of Federal Regulations
- AC Advisory Circular
- ACS Airman Certification Standards
- AEG Aircraft Evaluation Group
- AFM Airplane Flight Manual
- APU Auxiliary Power Unit
- ATP Airline Transport Pilot

- CDU Control Display Unit
- CPDLC Controller-Pilot Data Link Communications
- ECL Electronic Checklist
- EFB Electronic Flight Bag
- EGT Exhaust Gas Temperature
- EIS Engine Indication System
- EMI Electromagnetic Interference
- FAA Federal Aviation Administration
- FADEC Full-Authority Digital Engine Control
- FFS Full Flight Simulator
- FMS Flight Management System
- FSB Flight Standardization Board
- FSTD Flight Simulation Training Device
- FTD Flight Training Device
- GTC Garmin Touchscreen Controller
- HIRF High Intensity Radiated Fields
- ICA Instructions for Continued Airworthiness
- IMC Instrument Meteorological Conditions
- IRS Inertial Reference System
- MDR Master Differences Requirements
- MEL Minimum Equipment List
- METAR Aviation Routine Weather Report
- MFD Multifunction Display
- MFF Mixed Fleet Flying
- MLW Maximum Landing Weight
- MTOW Maximum Takeoff Weight
- NAS National Airspace System
- PI Principal Inspector
- RPM Revolutions Per Minute
- SID Standard Instrument Departure
- TAF Terminal Area Forecast
- TC Type Certificate
- TCDS Type Certificate Data Sheet
- TRU Transformer Rectifier Unit
- VMC Visual Meteorological Conditions
- V₁ Takeoff Decision Speed
- V_R Takeoff Rotation Speed
- V₂ Takeoff Safety Speed
- V_{REF} Landing Reference Speed
- XM Satellite Radio

6. DEFINITIONS

These definitions are for the purposes of this report only.

- 6.1 Base Aircraft.** An aircraft identified for use as a reference to compare differences with another aircraft.
- 6.2 Current.** A crewmember meets all requirements to operate the aircraft under the applicable operating part.
- 6.3 Differences Tables.** Describe the differences between a pair of related aircraft, and the minimum levels operators must use to conduct differences training and checking of flightcrew members. Differences levels range from A to E.
- 6.4 Master Differences Requirements (MDR).** Specifies the minimum levels of training and checking required between a pair of related aircraft, derived from the highest level in the Differences Tables.
- 6.5 Mixed Fleet Flying (MFF).** The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.
- 6.6 Operational Evaluation.** The AEG process to determine pilot type rating, minimum flightcrew member training, checking and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).
- 6.7 Operational Suitability.** The AEG determination that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., Title 14 of the Code of the Federal Regulations (14 CFR) parts 91, 121, 133, and 135).
- 6.8 Qualified.** A flightcrew member holds the appropriate airman certificate and ratings as required by the applicable operating part.
- 6.9 Related Aircraft.** Any two or more aircraft of the same make with either the same or different type certificates (TC) that have been demonstrated and determined by the Administrator to have commonality.
- 6.10 Seat-Dependent Tasks.** Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.
- 6.11 Special Emphasis Area.** A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time, specialized flight simulation training devices (FSTD) or training equipment.
- 6.12 Specific Flight Characteristic.** A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.

7. PILOT TYPE RATING

7.1 Type Rating. The Textron Aviation Model 750 aircraft type rating designation is CE-750.

7.2 Common Type Ratings. Not applicable.

7.3 Military Equivalent Designations. Military aircraft that qualify for the CE-750 type rating can be found at www.faa.gov under “Licenses & Certificates,” “Airmen Certification,” “Online Services,” “Aircraft Type Rating Designators.” This webpage is kept up-to-date and can be found at https://www.faa.gov/licenses_certificates/airmen_certification/.

8. RELATED AIRCRAFT

8.1 Related Aircraft on Same TCDS.

- Serial No. 750-001 thru 750-0500
- Serial No. 750-500 and On.

8.2 Related Aircraft on Different TCDS. Not applicable.

9. PILOT TRAINING

9.1 Airman Experience. Airmen receiving initial Model 750 training should have previous training in high altitude operations in multiengine transport turbojet aircraft, new generation avionics, and flight management system (FMS) experience. Pilots without this experience may require additional training.

9.2 Special Emphasis Areas.

9.2.1 Pilots must receive special emphasis on the following areas during initial, recurrent, requalification, upgrade, and transition ground training:

- a) Takeoff and landing performance.
- b) The definitions of and the significance of takeoff decision speed (V_1), takeoff rotation speed (V_R), takeoff safety speed (V_2), and landing reference speed (V_{REF}) should be thoroughly explained.
- c) The determination of maximum takeoff and landing weight due to climb capability, obstacle clearance requirements, and brake energy limits should be thoroughly understood by the student.
- d) Aircraft with serial numbers 750-001-0099 have a non-split electrical bus. Aircraft with serial numbers 750-0100 and on have a split bus system. Pilots should receive training on these differences.

9.2.2 Pilots must receive special emphasis on, and perform the following areas during initial, recurrent, requalification, upgrade, and transition flight training:

- a) Stall prevention to first indication of stall with and without autothrust for aircraft serial numbers 750-0501 and on.
- b) Visual meteorological conditions (VMC) and instrument meteorological conditions (IMC) approaches with and without Synthetic Vision for aircraft serial numbers 750-0501 and on.
- c) Engine failure, after V_1 and/or missed approach with and without autothrust for aircraft serial numbers 750-0501 and on.
- d) Accomplishment of the Landing with Flight Control Manual Reversion Emergency procedure (full flight simulator (FFS) only).
- e) Slats only Approach and Landing Flaps 0/Slats Extended configuration (Landing, FFS only).
- f) Regarding aircraft serial numbers 750-001-0099, pilots trained in aircraft serial numbers 750-0100 and on that fly aircraft serial numbers 750-001-0099 should receive training on non-gear aileron flight control forces.

9.3 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the Airline Transport Pilot (ATP) and Type Rating for Airplane Airman Certification Standards (ACS), as applicable.

NOTE: There are no specific flight characteristics.

9.4 Seat-Dependent Tasks. Pilots must receive training in these seat-dependent tasks: nosewheel steering (left seat); initial, transition, upgrade, and recurrent training.

9.5 Regulatory Training Requirements Which Are Not Applicable to the Model 750. Part 135, § 135.345(b)(3): Ground Training, Propellers.

9.6 FSTDs. There are no specific systems, procedures, or maneuvers that are unique to the Model 750 that require a specific FSTD for training.

9.7 Training Equipment. There are no specific systems or procedures that are unique to the Model 750 that require specific training equipment.

9.8 Differences Training Between Related Aircraft. Pilots must receive differences training between variations of the Model 750. The level of training is specified in Appendix 3, Differences Tables.

10. PILOT CHECKING

10.1 Landing from a No-Flap or Nonstandard Flap Approach. The probability of flap extension failure on the Model 750 is not extremely remote due to system design. Therefore, demonstration of a no-flap approach and landing during pilot certification is required. During a § 61.58 proficiency check, § 91.1065 competency check, or § 135.293 competency check, this task may be required.

NOTE: Refer to FAA Order 8900.1, Volume 5, Airman Certification, when the test or check is conducted in an aircraft versus an FFS.

10.2 Specific Flight Characteristics. Maneuvers or procedures required to be checked as referenced in the ATP and Type Rating for Airplane ACS, as applicable.

NOTE: There are no specific flight characteristics.

10.3 Seat-Dependent Tasks. Pilots must be checked in these seat-dependent tasks: Nosewheel steering (left seat); initial, transition, upgrade, and recurrent training.

10.4 Other Checking Items. Not applicable.

10.5 FSTDs. There are no specific systems, procedures, or maneuvers that are unique to the Model 750 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures that are unique to the Model 750 that require specific equipment.

10.7 Differences Checking Between Related Aircraft. Pilots must receive differences checking between the variations of the Model 750. The level of checking is specified in Appendix 3.

11. PILOT CURRENCY

There are no additional currency requirements for the Model 750 other than those already specified in parts 61, 91, and 135.

11.1 Differences Currency Between Related Aircraft. Not applicable.

12. OPERATIONAL SUITABILITY

The Model 750 is operationally suitable for operations under parts 91 and 135. The list of operating rules evaluated is on file at the Small Aircraft AEG.

13. MISCELLANEOUS

13.1 Forward Observer Seat. The Model 750 aircraft can be equipped with a dedicated forward observer seat and is available as an option. No specific aircraft interior passenger seating configuration has been evaluated.

13.2 Aircraft Approach Category. Refer to part 97, § 97.3. The Model 750 is considered Category “C” aircraft for the purposes of determining normal “straight-in” landing weather minima. This is based on the maximum certificated landing weight V_{REF} for “Full.” The minimum indicated airspeed is V_{REF} for the selected flap position and the actual gross weight of the aircraft, plus any additional speed additives for the conditions during the approach, until aligned with the landing runway. If operating at a speed in excess of the upper limit of the speed range for the aircraft’s category, the minimums for the higher category must be used.

13.3 Normal Landing Flaps. The normal “final flap setting” per § 91.126(c) is “Full.”

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	<ul style="list-style-type: none"> • Operating manual revision (handout (HO)) • Flightcrew operating bulletin (HO) 	<ul style="list-style-type: none"> • Crew has already demonstrated understanding on base aircraft (e.g., updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g., different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	<ul style="list-style-type: none"> • Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU) 	<ul style="list-style-type: none"> • Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4-5) 	<ul style="list-style-type: none"> • Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuvers Devices	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B) 	<ul style="list-style-type: none"> • Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C-D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Motion, visual, control-loading, audio, and specific environmental conditions are required. • Significant full-task differences that require a high fidelity environment. • Usually correlates with significant differences in handling qualities.

Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None	None
B	<ul style="list-style-type: none"> • Oral or written exam • Tutorial computer-based instruction (TCBI) self-test 	Individual systems or related groups of systems.
C	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4-5) 	<ul style="list-style-type: none"> • Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B) 	<ul style="list-style-type: none"> • Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C-D) • Aircraft (ACFT) 	Significant full-task differences that require a high fidelity environment.

APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables in Appendix 3. Differences levels are arranged as training/checking.

To Related Aircraft ↓	From Base Aircraft →	Model 750 (#0001 Thru 0500)	Model 750 (#0501 and On)
Model 750 (#0001 thru 0500)		A/A*	D/D
Model 750 (#0501 and On)		D/D	A/A*

A/A* accounts for installation of optional equipment.

APPENDIX 3. DIFFERENCES TABLES

This Design Differences Table, from the Model 750 (#0001 thru 0500) to the Model 750 (#0501 and On) lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500)	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
TO RELATED AIRCRAFT: Model 750 (#0501 and On)	Airplane Configuration	<ul style="list-style-type: none"> • 15 inch fuselage extension forward of cabin door added. • Winglets added. • 8.7 % takeoff thrust increase over s/n 750- 001. • Engine Inlet diameter increased by 1 inch. 	Yes	No	B	B
	Cockpit Panel	Garmin G5000 avionics replaces Honeywell P2000 avionics.	No	Yes	B	B
	Aircraft Weight	Maximum takeoff weight (MTOW) increased 500 lb to 36,600 lb. Maximum landing weight (MLW) increased 200 lb to 32,000 lb.	Yes	No	B	B
	21 Air Conditioning	Auto temperature and pressurization control via soft keys in the Garmin Touchscreen Controller (GTC) 570 controller.	No	Yes	B	B
	22 Autoflight	Garmin G5000 AFCS with autothrottle capability added.	No	Yes	C	B

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500) TO RELATED AIRCRAFT: Model 750 (#0501 and On)	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	23 Communications	<ul style="list-style-type: none"> • P2000 FMS/control display units (CDU) and Primus radios deleted. • Four Garmin GTC 570 touch screen controllers added. • Backup tuning provided by 2 GCU 275 backup controls added. 	No	Yes	C	B
	24 Electrical Power	Two Transformer Rectifier Units (TRU) added as backup to maintain power to emergency bus.	No	Yes	B	B
	26 Fire Protection	Auxiliary Power Unit (APU) Fire switch relocated to center pedestal.	No	Yes	B	B
	28 Fuel	Fuel crossfeed knob, L-R boost pump, L-R center wing transfer, and L-R gravity crossflow switches relocated to center pedestal.	No	Yes	B	B
	31 Instruments	Rotary System Test knob deleted. Systems test soft keys in GTC 570 added.	No	Yes	C	B
	31 Instruments	Synoptic displays on multifunction display (MFD) for flight controls, hydraulics, fuel, and electrical systems added.	No	Yes	B	B

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500) TO RELATED AIRCRAFT: Model 750 (#0501 and On)	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	33 Lights	Interior and Exterior lighting controls relocated to overhead lighting panel added GTC 570 soft keys added for Nav and Ground recognition lights.	No	Yes	B	B
	34 Navigation	Garmin G5000 primary flight displays (PFD)/MFDs replaces Honeywell P2000 PFDs/MFDs.	No	Yes	C	B
	34 Navigation	Garmin Synthetic Vision Technology added.	No	Yes	C	B
	34 Navigation	Dual Honeywell Laseref 5 inertial reference system (IRS) deleted Dual Litef LCR 100 Hybrid Navigation System added.	No	Yes	B	B
	34 Navigation	Garmin G5000 FMS replaces dual Honeywell FMZ series, P-2000 FMS.	No	Yes	C	C
	35 Oxygen	Mechanical oxygen pressure gages deleted. Low pressure warning lights deleted. Misc/FLT Controls/Oxygen pressure synoptic on MFD added.	No	Yes	B	B

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500) TO RELATED AIRCRAFT: Model 750 (#0501 and On)	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	49 Airborne Auxiliary Power	APU Hobbs meter deleted. APU revolutions per minute (RPM), exhaust gas temperature (EGT), and Volts indicators deleted. Garmin G5000 Engine Indication System (EIS) display with APU parameters added. APU hours and cycles.	No	Yes	B	B
	74 Ignition	Engine ignition control keys deleted. GTC 570 propulsion page ignition soft keys added.	No	Yes	B	B

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500) TO RELATED AIRCRAFT: Model 750 (#0501 and On)	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	76 Engine Control	Throttle lever idle/cut-off triggers deleted. Engine run/stop switches added. full-authority digital engine control (FADEC) in-control indication toggle switches deleted. FADEC in control indication soft keys in GTC 570 added. Thrust reverser piggyback levers deleted. Throttle levers with thrust reverser paddles and pull-through for reverse throttle levers added. Cruise and climb thrust detents deleted. Cruise and climb thrust indication on EIS display (G5000).	No	Yes	C	B
	77 Engine Indicating	Standby Engine Indicator deleted. Garmin G5000 EIS display added.	No	Yes	B	B
	Charts	Electronic chart display capability added.	No	Yes	B	B

This Maneuver Differences Table, from the Model 750 (#0001 thru 0500) to the Model 750 (#0501 and On) lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: Model 750 (#0001 thru 0500) TO RELATED AIRCRAFT: Model 750 (#0501 and On)	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	Rejected Takeoff	With Autothrottle ON.	Yes	Yes	D	D
	Multiengine Go-Around	With Autothrottle ON.	Yes	Yes	D	D
	Low Altitude Level Off	With Autothrottle ON.	Yes	Yes	D	D
	Deployment and Stowing of Thrust Reversers	New throttle quadrant with paddles in lieu of piggyback levers.	No	Yes	D	D
	Modulation of Reverse Thrust	Reverse thrust is modulated moving the thrust levers aft of the IDLE REV detent after thrust reversers deployment.	No	Yes	D	D

APPENDIX 4. ELECTRONIC FLIGHT BAG OPERATIONAL EVALUATION

TEXTRON AVIATION MODEL 750 (#0501 and On)

Garmin 5000 Integrated Flight Suite

1. PURPOSE AND APPLICABILITY

The following is provided for the benefit of FAA principal inspectors (PI) and aircraft operators for their use in determining the acceptance of Electronic Flight Bag (EFB) applications. The Garmin G5000 was evaluated using AC 120-76D, Authorization for Use of Electronic Flight Bags.

2. SUITABILITY DETERMINATION

The Garmin G5000 is operationally suitable for:

- Electronic Display of aeronautical charts.
- Electronic Display of checklists (ECL).
- Weather and aeronautical information.

The evaluation determined chart display functions to be suitable as one source for electronic display of airport diagrams, approach plates, arrival procedures, and departure procedures. Since chart information cannot be displayed in the event of certain avionics failures, a suitable secondary source is required to be available to the flightcrew.

3. DESCRIPTION

The G5000 includes “FliteChart” and optional “ChartView” electronic charts. A specific system description for the system configuration appropriate to the installation is available in the approved Airplane Flight Manual (AFM) and Garmin G5000 Integrated Avionics System Pilot’s Guide.

4. SPECIFICATIONS FOR TRAINING

As a minimum, training should include use of the FMS to flight plan and use of the electronic chart functions to display the airport depiction charts, Standard Instrument Departures (SID), arrival procedures, and approach charts. Pilots should master the weather functions to obtain Aviation Routine Weather Reports (METAR) and Terminal Area Forecasts (TAF) for origin, destination, and alternate airports if satellite radio (XM) weather functions are enabled.

5. SPECIFICATIONS FOR CHECKING

Recommended tasks include demonstrating competency in using the FMS to integrate use of the electronic chart functions to display departures, arrivals, and approaches; and utilizing the graphical weather functions if XM weather functions are enabled.