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Flight Standardization Board Report

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Manufacturer
Bombardier, Inc.

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
T00003NY	BD-700-2A12	Global 7500	G7500

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1. RECORD OF REVISIONS

Revision Number	Section(s)	Date
Original	All	04/09/2019
1	3, 4, Appendix 4	02/10/2021

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) Crewmember 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 crewmember training, checking, and currency requirements.

3. HIGHLIGHTS OF CHANGE

This revision adds Appendix 4, Rockwell Collins Pro Line Fusion Future Air Navigation System (FANS) 1/A+ Corporate Data Link Communications System (CMU-4000/RIU-40X0) Controller-Pilot Data Link Communications (CPDLC).

4. BACKGROUND

The Transport Aircraft Long Beach AEG formed a Flight Standardization Board (FSB), which evaluated the BD-700-2A12 as defined in FAA Type Certificate Data Sheet (TCDS) No. T00003NY (BD-700-2A12). The evaluation was conducted from October 10 to December 7, 2018 using the methods described in FAA Advisory Circular (AC) 120-53B, Guidance for Conducting and Use of Flight Standardization Board Evaluations.

NOTE: The BD-700-2A12 aircraft is a derivative of the original BD-700-1A10 Global Express aircraft certified in 1999 and is included in the same TCDS.

The Global 7500 features fly-by-wire (FBW), which interfaces with dual active control sidesticks. The aircraft is powered by two GE Passport 20-19BB1A turbofan engines capable of producing 18,920 lb of thrust at sea level with temperatures up to 30°C. The Bombardier Global 7500 flight deck incorporates a Rockwell Collins Pro Line Fusion integrated avionics system suite consisting of four large adaptive display units (DU). The avionics system capabilities include:

- Electronic checklist (ECL).
- Integrated Flight Information System (IFIS).
- Synthetic Vision System (SVS).
- Enhanced Vision System (EVS) - Not Evaluated.
- Two-Dimensional (2D) Airport Moving Map (AMM).
- Multi-Scan Weather Radar.
- Predictive (optional) and Reactive Wind Shear Detection.
- Graphical Flight Planning.
- FBW side stick controllers.
- Head-Up Display (HUD) (dual HUD optional). The HUD can be overlaid with images from the EVS or SVS. This new system is referred to as a Combined Vision System (CVS).
- CPDLC.

The Global 7500 is certified for a maximum of 22 occupants (including the crew and no more than 19 passengers). Maximum takeoff weight (MTOW) (certified) for the Global 7500 is 114,850 lb.

In October 2019, a FAA Bombardier Global 7500 FSB formed to evaluate the CPDLC functionality update incorporated into the Pro Line Fusion avionics suite. Due to the standardization of the CPDLC functionality and ease of validating it, the FAA FSB decided to accomplish their review through the analysis of data provided by Transport Canada Civil Aviation (TCCA) whom attended the training in person. The FAA FSB extensively reviewed and analyzed TCCA's operational suitability data report. Through analysis, the FAA FSB found the CPDLC to be operationally suitable.

5. ACRONYMS

- 14 CFR Title 14 of the Code of Federal Regulations
- 2D Two-Dimensional
- ABS Automatic Braking System
- AC Advisory Circular
- ACFT Aircraft
- ACS Airman Certification Standards
- ADS-C Automatic Dependent Surveillance-Contract
- AEG Aircraft Evaluation Group
- AEO All-Engines-Operating
- AFCS Automatic Flight Control System
- AFMS Airplane Flight Manual Supplement
- AFN Aircraft Facilities Notification
- AMM Airport Moving Map
- AT Autothrottle
- ATC Air Traffic Control
- ATN B1 Aeronautical Telecommunications Network Baseline 1
- ATP Airline Transport Pilot

- ATS Air Traffic Services
- AV Audiovisual Presentation
- CAS Crew Alerting System
- CG Center of Gravity
- CNS Communications, Navigation, and Surveillance
- CPDLC Controller-Pilot Data Link Communications
- CPT Cockpit Procedures Trainers
- CRM Crew Resource Management
- CTP Control Tuning Panel
- CVS Combined Vision System
- DU Display Unit
- ECL Electronic Checklist
- EDM Emergency Descent Mode
- EGPWS Enhanced Ground Proximity Warning System
- EVS Enhanced Vision System
- FAA Federal Aviation Administration
- FANS Future Air Navigation System
- FBW Fly-By-Wire
- FCP Flight Control Panel
- FD Flight Director
- FFS Full Flight Simulator
- FGS Flight Guidance System
- FMA Flight Mode Annunciator
- FMS Flight Management System
- FPV Flight Path Vector
- FQMC Fuel Quantity and Management Computer
- FSB Flight Standardization Board
- FSIMS Flight Standards Information Management System
- FSTD Flight Simulation Training Device
- FTD Flight Training Device
- HO Handout
- HUD Head-Up Display
- ICBI Interactive Computer-Based Instruction
- IFIS Integrated Flight Information System
- LOC Localizer
- LOC BC Localizer Back Course
- MDR Master Differences Requirements
- MEL Minimum Equipment List
- MFF Mixed Fleet Flying
- MFW Multifunction Window
- MTOW Maximum Takeoff Weight
- NAS National Airspace System
- NWS Nosewheel Steering
- OEI One-Engine-Inoperative

- Part 91K 91 Subpart K
- PTT Part Task Trainers
- RA Resolution Advisory
- RPTS Reports
- RTO Rejected Takeoff
- SA Situational Awareness
- STC Supplemental Type Certificate
- SU Stand-Up Instruction
- SVS Synthetic Vision System
- TC Type Certificate
- TCAS Traffic Alert and Collision Avoidance System
- TCBI Tutorial Computer-Based Instruction
- TCCA Transport Canada Civil Aviation
- TCDS Type Certificate Data Sheet
- TOGA Takeoff/Go-Around
- TSO Technical Standard Order
- UIR Upper Information Region
- V_1 Takeoff Decision Speed
- VNAV Vertical Navigation
- V_{REF} Reference Landing Speed

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 Federal Regulations (14 CFR) parts 91, 121, 125, 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 Characteristics. 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 Bombardier Global 7500 type rating designation is G7500.

7.2 Common Type Ratings. Not applicable.

7.3 Military Equivalent Designations. Military aircraft that qualify for the G7500 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 (T00003NY). The Global 7500 is related to the BD-700-1A10 (Global Express, Global Express XRS, and Global 6000) and BD-700-1A11 (Global 5000 and Global 5000 GVFD).

8.2 Related Aircraft on Different TCDS. Not applicable.

9. PILOT TRAINING

9.1 Airman Experience. Pilots receiving Global 7500 initial type training will benefit from prior experience operating multiengine, large, transport category, and turbojet aircraft, in accordance with part 91, 121, 125, or 135. Additionally, a working knowledge of systems, such as automatic flight control system (AFCS), autothrottles (AT), Automatic

Braking System (ABS), flight management system (FMS), IFIS, ECL, HUD, Nosewheel Steering (NWS) Tiller, FBW and advanced integrated avionics systems with electronic flight displays is highly recommended. Pilots without this experience may require additional training.

9.2 Special Emphasis Areas.

9.2.1 Pilots must receive special emphasis ground training in the following areas:

9.2.1.1 FMS (Initial, Recurrent, Upgrade, and Transition Training).

a) Knowledge of the Flight Mode Annunciator (FMA) and the various FMS modes of automation and limitations;
b) Knowledge and skills related to DU/Multifunction Windows (MFW)/Flight Control Panel (FCP) use;
c) Recognition of mode awareness and transition modes through use of the FMA;
d) Crew Resource Management (CRM) issues linked to automation (task sharing and crosschecks);
e) Programming of a holding pattern (performed on the coupled side);
f) NAV-to-NAV and non-NAV-to-NAV transfers;
g) Localizer (LOC), Localizer back course (LOC BC) and other 2D approaches per operator procedures and techniques; and
h) FMS speed automatically reverts to 250 kts when extending runway centerline while on a vectored approach.

9.2.1.2 ECL (Initial, Recurrent, and Transition Training).

a) Knowledge of appropriate logic and use of ECL in conjunction with system failures;
b) Prioritization logic of ECL procedures;
c) Conditional item selection (e.g., yes/no, left/right);
d) Procedures without associated Crew Alerting System (CAS) message;
e) Flightcrew positive item identification, crosscheck, and confirmation of actions; and
f) Knowledge of alternative methods of checklist usage (normal, abnormal, and emergency) in the event of MEL deferral of the ECL.

9.2.1.3 Emergency Descent Mode (EDM). Activation, functionalities, and differences between manual and automatic modes (e.g., autopilot, squawk, recovery, heading and altitude management) (initial, recurrent, and transition training).

9.2.1.4 FBW System (Initial, Recurrent, and Transition Training).

a) Knowledge of all characteristics, including flight and structural protections provided by the flight control laws.

b) Operational considerations and handling degradation associated with all FBW direct modes (Primary Flight Control Computer direct mode, Remote Electronic Unit direct mode, and Alternate Flight Control Unit).
c) Knowledge of appropriate pilot actions to take should FBW system malfunctions occur.

9.2.1.5 Traffic Alert and Collision Avoidance System (TCAS) Limitation. TCAS Resolution Advisory (RA) inhibited altitude criteria above 44,000 ft. (initial, recurrent, and transition training).

9.2.1.6 Unreliable Airspeed/Altitude. Unreliable airspeed/altitude procedures including a low-speed scenario, in which pilots have to disregard erroneous Flight Director (FD)/Flight Path Vector (FPV) cues. (initial, recurrent, and transition training).

9.2.1.7 Balked, Bounced, or Touch and Go Landing. The behavior of the flight guidance system (FGS) with takeoff/go-around (TOGA) button activation and nuisance "No take-off" warning during a balked landing with ground contact, bounced landing, and/or touch and go (initial, recurrent, upgrade, and transition training).

9.2.1.8 Control Tuning Panel (CTP). Recovery of the altimeter pressure settings after an inadvertent selection of the STD button following a failed CTP (initial, recurrent, upgrade, and transition training).

9.2.1.9 HUD. Limitations, indications, symbology, and use of HUD(s). Training for failed HUD, single, and/or dual installation (initial, recurrent, upgrade, and transition training).

9.2.1.10 Fuel System (Initial, Recurrent, Upgrade, and Transition Training).

a) Knowledge of the highly automated fuel system.
b) Knowledge of the Fuel Quantity and Management Computer (FQMC).
c) Failures involving the FQMC.
d) Lateral and longitudinal fuel imbalances.
e) Center tank and/or aft tank trapped fuel scenarios and their impacts on aircraft center of gravity (CG) envelope.

9.2.1.11 Principles of Vertical Navigation (VNAV). Including the proper interpretation of all VNAV FMAs during climb, descent, and approach. (initial, recurrent, upgrade, and transition training).

9.2.1.12 Inability to meet departure procedure climb gradient requirement at weights at or above 110,000 lb (initial, recurrent, upgrade, and transition training).

9.2.1.13 Rejected Takeoff (RTO) is in an armed state if wheel speed is greater than 60 kts. There are two deceleration rates that depend on wheel speed being greater than or less than 70 kts when RTO is activated (initial, recurrent, upgrade, and transition training).

9.2.1.14 Abnormal and Emergency Procedures (Initial, Recurrent, Upgrade, and Transition Training). Bombardier's philosophy is to not identify any steps in the Global 7500 abnormal or emergency procedures as "Memory Items." Bombardier expects pilots to perform some of the initial and critical steps without reference to any documentation. The initial pilot responses for the following emergency procedures should be performed promptly without reference to a checklist:

a) RTO,
b) Engine failure/fire after takeoff decision speed (V_1),
c) Emergency descent,
d) Rapid decompression,
e) Engine exceedance,
f) Overspeed,
g) Stall protection/stall warning activation,
h) Total loss of braking,
i) Enhanced Ground Proximity Warning System (EGPWS) alert,
j) Wind shear alerts, and
k) TCAS activation.

NOTE: In addition, pilots are expected to don oxygen masks promptly when appropriate (e.g., decompression, smoke). Operators and training providers must ensure pilots are adequately trained.

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

a) Direct Mode(s) – Stall recognition and prevention along with the appropriate stall recovery techniques, steep turns, and either visual or instrument approaches ending with a landing in direct mode(s). This training can only be accomplished in a full flight simulator (FFS).
b) Manual flight of the aircraft with the minimum use of automation during one-engine-inoperative (OEI) and all-engines-operating (AEO) takeoff and landings.
c) Appropriate use of speed selection mode and intervention (manual vs. FMS speed).
d) Alternative methods of checklist usage (normal, abnormal, and emergency) in the event of deferral of the ECL by the minimum equipment list (MEL).

e) Bank angle awareness during crosswind landings, due to wing sweep, as the airplane pitch attitude increases, and the bank angle at which the wingtip contacts the ground decreases.
f) FBW flight envelope and structural protections.

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. There are no specific flight characteristics.

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

a) HUD (left seat).
b) HUD (right seat), if installed.
c) NWS tiller usage (left seat).
d) Passenger oxygen (right seat).
e) Cockpit Power On check (left and right seat).

9.5 Regulatory Training Requirements that Are Not Applicable to the Global 7500. None.

9.6 FSTDs.

a) The manufacturer's training program included aircraft systems integration training as an extension of and key component of ground training. The FSB evaluated this training in a Level 6 flight training device (FTD) and determined that the training as delivered was adequate. Training offered in a lower level device would need further evaluation.
b) HUD (single or dual installations) must be trained in a Level C FFS with a daylight visual display, or Level D FFS in both day and night conditions.

9.7 Training Equipment. There are no specific systems or procedures that are unique to the Global 7500 that require specific training equipment.

9.8 Differences Training Between Related Aircraft. Not applicable.

10. PILOT CHECKING

10.1 Landing from a No-Flap or Nonstandard Flap Approach. The probability of flap extension failure, slats extension failure, or slats/flap extension failure on the Global 7500 aircraft is extremely remote due to system design. Therefore, demonstration of a no-flap approach, no-slats approach, or no-slats/flap approach and landing during pilot certification or 14 CFR part 61, § 61.58 proficiency check, part 91, § 91.1065 competency check, and part 125, § 125.287 competency check, or part 135, § 135.293 competency check is not required.

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. There are no specific flight characteristics.

10.3 Seat-Dependent Tasks. Pilots must be checked in these seat-dependent tasks:

a) Precision and Nonprecision approaches using HUD (left seat) (initial, recurrent, upgrade, and transition checking).
b) Precision and Nonprecision approaches using HUD (right seat), if installed (initial and recurrent checking).
c) NWS (left seat) (initial, recurrent, upgrade, and transition checking).

10.4 Other Checking Items. Not applicable.

10.5 FSTDs. There are no specific systems, procedures, or maneuvers that are unique to the Global 7500 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures that are unique to the Global 7500 that require specific equipment for checking.

10.7 Differences Checking Between Related Aircraft. Not applicable.

11. PILOT CURRENCY

11.1 There are no additional currency requirements for the Global 7500 aircraft other than those already specified in parts 61, 125, and 135.

11.2 Differences Currency Between Related Aircraft. Not applicable.

12. OPERATIONAL SUITABILITY

The Global 7500 is operationally suitable for operations conducted in accordance with parts 91, 125, and 135. The FSB determined operational compliance by conducting an evaluation of aircraft serial number 70004 during a series of flights from November 29, 2018 through December 5, 2018. The flights originated in Wichita, Kansas (KICT) with operations at Hayden, Colorado (KHDN), Salina, Kansas (KSLN), Amarillo, Texas (KAMA), and Albuquerque, New Mexico (KABQ). The list of operating rules evaluated is on file at the Transport Aircraft Long Beach AEG.

13. MISCELLANEOUS

13.1 Flightcrew Sleeping Facilities (Part 135). The Global 7500 Flightcrew Sleeping Facilities (Class 1 Rest Facility) is installed via a complete interior Supplemental Type Certificate (STC). The flightcrew sleeping facilities seat identified as a B/E Aerospace, Inc. Technical Standard Order (TSO) authorization (C-127b) Crew Rest Seat (Model Number 3A()F()110()()) located in the forward crew area was evaluated on December 5, 2018 by the AEG. It was determined that it met the requirements of

14 CFR parts 91 subpart K (part 91K), 125, and 135; AC 117-1 CHG 1, Flightcrew Member Rest Facilities; and FAA Order 8900.1, Flight Standards Information Management System (FSIMS).

13.2 The Forward Observer Seat. The Global 7500 forward observer seat is installed via a complete interior installation STC. The seat identified as a B/E Aerospace Fischer GmbH European TSO (EASA.210.10056434) Cockpit Observer Seat 404/356 H153 was evaluated on December 5, 2018 by the AEG and found to meet the requirements of §§ 125.317(b), 135.75(b), and the current edition of AC 120-83, Flight Deck Observer Seat and Associated Equipment.

13.3 Landing Minima Categories.

a) Refer to 14 CFR part 97, § 97.3. The Global 7500 is considered Category C for the purposes of determining "straight-in landing weather minima."
b) Circling approaches for the Global 7500 is flown with the landing gear down, Flaps 4, and reference landing speed (V_{REF}) + 10 kts. The approach category and associated approach minima shall not be less than Category C on a circling approach.

13.4 Normal Landing Flaps. The Global 7500 normal "final flap setting" per § 91.126(c) is Flaps 4.

13.5 ABS. Autobrakes are part of the production configuration. The autobrakes installation contains a magnetically latched arming coil that holds the selected switch position in place while the system is armed. If the system disarms, the coil is de-energized and the spring-loaded rotary switch returns to the "off" position. The autobrakes mode selector switch provides an RTO position for takeoff, and LOW, MED, and HI settings for landing. In the off position, the autobrake function is inhibited. The LOW, MED, and HI landing modes provide a controlled rate of deceleration based upon selection.

13.6 IFIS. The IFIS provides increased situational awareness (SA) and improved flight compartment efficiency through the following functions:

a) Enhanced map overlays with geopolitical data, airspace, and airway map;
b) Electronic navigation charts (e.g., Jeppview, E-Chart);
c) Graphical weather images downloaded from airplane datalink (optional);
d) Document application reader; and
e) Printer application.

NOTE: IFIS information is displayed on the MFWs.

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	• Operating manual revision (handout (HO)) • Flightcrew operating bulletin (HO)	• 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	• Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU)	• Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	• 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)	• 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	• Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B)	• 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	• Level C or D full flight simulator (FFS C-D) • Aircraft (ACFT)	• 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	• Oral or written exam • Tutorial computer-based instruction (TCBI) self-test	Individual systems or related groups of systems.
C	• 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)	• Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	• Level 6 or 7 flight training device (FTD 6-7) • Level A or B full flight simulator (FFS A-B)	• 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	• 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

Not applicable.

APPENDIX 3. DIFFERENCES TABLES

Not applicable.

APPENDIX 4. ROCKWELL COLLINS PRO LINE FUSION FUTURE AIR NAVIGATION SYSTEM (FANS) 1/A+ CORPORATE DATA LINK COMMUNICATIONS SYSTEM (CMU-4000/RIU-40X0) CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

1. BACKGROUND

In October 2019, the FAA Bombardier Global 7500 FSB informed the lead regulatory authority that the FAA decided to review and analyze the data provided by TCCA for the Rockwell Collins Pro Line Fusion Future Air Navigation System (FANS) 1/A+, CPDLC System. TCCA submitted their operational suitability data report to the FAA FSB for an extensive review and analysis. The FAA FSB compiled this appendix from TCCA's operational suitability data report after an extensive review and analysis was completed. Through analysis, the FAA FSB found the CPDLC to be operationally suitable.

1.1 Features of FANS 1/A+ Include:

a) CPDLC allows datalink messages to substitute for traditional voice communications between a crew and an air traffic controller. CPDLC messages request and grant clearances, inform the ground of the aircraft's position and situation, and provide instructions to the crew.
b) Aircraft Facilities Notification (AFN) allows the aircraft and an Air Traffic Services (ATS) provider on the ground to exchange addresses, as well as information about which FANS applications they support.
c) Automatic Dependent Surveillance-Contract (ADS-C) allows ATS providers to query the aircraft to provide position reports and other situational data at regular intervals or in response to events specified by the ATS provider, such as a change in altitude or lateral deviation.

1.2 Aeronautical Telecommunications Network Baseline 1 (ATN B1):

a) ATN B1 is a separate standard used in an European Upper Information Region (UIR).
b) ATN B1 has less functionality than FANS 1/A+.

2. PILOT TYPE RATING

Not applicable.

3. RELATED AIRCRAFT

Not applicable.

4. PILOT TRAINING

Level C.

4.1 Experience/Prerequisite. The pilots must be:

a) Qualified and current on the G7500 aircraft; or
b) In training in an initial, differences, transition, upgrade, or recurrent course.

4.2 Special Emphasis Areas. Not applicable.

4.3 Ground Training. Flightcrews operating aircraft equipped with FANS should receive appropriate instruction in its general operational functions, appropriate uses for areas of operation, routes, and airspace procedures. General training should address communications, navigation, and surveillance (CNS) functions covered by FANS 1/A+ and ATN B1. The initial, transition, and upgrade ground training should include a thorough understanding of the use and any limitations associated with the following items:

4.3.1 Ground Training:

a) Data entry formats for FANS 1/A+.
b) CPDLC enroute use restrictions within the United States.
c) Appropriate use or non-use of free text during certain operations.
d) Data link communication failures.
e) Proper manual entry of air traffic control (ATC) clearances into the source FMS.
f) Emergency, Mayday, Pans, and associated elements data entries.

4.3.2 System Integration Ground Training:

4.3.2.1 FANS 1/A+ CPLDC:

a) Logon – Log OFF.
b) Clearances.
c) Emergency.
d) Request.
e) Offset.
f) Reports (RPTS) list.
g) Message logs.
h) Position reporting.
i) ADS-C.
j) Airplane Flight Manual Supplement (AFMS).
k) FANS 1/A+ data link
l) Communications system operator's manual.
m) AC 90-117, Data Link Communications.

4.3.2.2 ATN B1 CPDLC:

a) Network protocol.
b) ATN B1 and FANS 1/A+ interoperability.
c) ATN B1 and FANS 1/A+ differences.
d) Logon.
e) CPDLC page.
f) Request functions.

4.4 Flight Training. Not applicable.

5. PILOT CHECKING

Level C.

6. PILOT CURRENCY

Not applicable.

7. OPERATIONAL SUITABILITY

Based on a review of the TCCA evaluation results, the FSB found the CPDLC to be operationally suitable.