
Type Acceptance Report

TAR 16/21B/29 – Revision 2

Bombardier CL-600 “CRJ” Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Bombardier CL-600 (“CRJ”) Series based on validation of Transport Canada Type Certificate number A-276. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.191, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest State-of-Design Type Certificate Data Sheet.

1. Introduction

This report details the basis on which Type Acceptance Certificate Number 16/21B/29 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer: Bombardier Inc.
Type Certificate: A-276
Issued by: Transport Canada
Production Approval: 12-58

(b) Models Covered by the Part 21B Type Acceptance Certificate:

Model(s): CL-600-2D15, -2D24 (Regional Jet Series 705, 900)

MCTOW: 36,514 kg (80,500 lb) [Standard aircraft]
36,500 kg (80,469 lb) [CR00-417, Airplane Option Code <2217> Standard Range Europe]
36,995 kg (81,560 lb) [CR00-414, Airplane Option Code <2002> Extended Range Europe]
37,421 kg (82,500 lb) [CR00-415, Airplane Option Code <2004> Extended Range N. America]
37,995 kg (83,765 lb) [CR00-421, Airplane Option Code <2006> Long Range Europe]
38,329 kg (84,500 lb) [CR00-420, Airplane Option Code <2005> Long Range N. America]

Max. No. of Seats: 80, including 5 crew members* (75 passengers when fitted with an approved interior) – CL-600-2D15
95, including 5 crew members* (90 passengers when fitted with an approved interior) – CL-600-2D24

*Note: “crew members” means 1 pilot, 1 co-pilot, 1 observer and 2 flight attendants)

Noise Standard: ICAO Annex 16, Vol. I, Chapter 4

Engine: General Electric CF34-8C5 or CF34-8C5A1
Type Certificate: E00063EN
Issued by: Federal Aviation Administration

Note: Refer to Advisory Circular 21-1 Appendix 2 for the New Zealand type acceptance status of any engines listed above.

3. Application Details and Background Information

The application for New Zealand type acceptance was from NAI National Limited, dated 13 June 2016. The application was to support the issuance of a NZ STC to the type, as at the time of writing there is no first-of-type example registered in New Zealand. The Bombardier CL-600 “Regional Jet” is a twin-turbofan single-aisle short/regional-range airliner.

Type Acceptance Certificate No. 16/21B/29 was granted on 21 June 2016 to the Bombardier CL-600-2D24 based on validation of Transport Canada Type Certificate A-131. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The CRJ900 is a derivative of the original CRJ200 regional airliner, itself a derivative of the successful Challenger business jet series. The CRJ900 aircraft is a swept-wing rear-engine horizontal T-tail airliner of mainly conventional aluminium alloy construction, with a MTOW of up to 38,329 kg (84,500 lbs). The CRJ900 is a stretched 76 to 90 seat version of the CRJ700 model, accommodating a 4-abreast cabin with 31” pitch seating configuration, and features two General Electric CF34-8C5 or CF34-8C5A1 engines, an enlarged forward baggage compartment with additional baggage door, added ventral strakes, additional overwing exits, and various systems changes. Post-initial type certification modifications introduced as part of the “Enhanced Performance Package” include a redesigned winglet, reinforced wingbox, modified slat/flap configuration settings and improved braking capability. The aircraft is equipped with a Rockwell-Collins Pro Line IV avionics system, and shares a common type rating with the CRJ100/200 and CRJ700.

This report was raised to Revision 1 to add the CL-600-2D15 model (CRJ 705), which is identical to the CRJ 900 except for its passenger configuration which includes a business class cabin and a reduced maximum seating capacity (75 versus 90 passengers) to allow operation with regional airlines. The application was again from NAI National Limited, dated 03 August 2016, to support the issuance of a NZ STC to the type.

Revision 2 was issued to record the change in Transport Canada type certificate number. This came about because the CL-600 type certificate has been split into two to separate out the regional jet family from the Challenger business jet family, pending sale of the former.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents:

(1) State-of-Design Type certificate:

Transport Canada Type Certificate Number A-276

TC Type Certificate Data Sheet No. A-276 at Issue 1 dated 22 November 2019

– Model CL-600-2D15 (CRJ 705) approved 03 May 2005

– Model CL-600-2D24 (CRJ 900) approved 09 September 2002

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the CL-600-2D15 and CL-600-2D24 is AWM Chapter 525 at Change 525-7, plus additional FAR 25 Amendments adopted via Canadian NPA's prior to the application date, including 25-86, 25-88, 25-89, 25-92, 25-93, 25-94, 25-95, 25-96, 25-97, plus 25.807(d)(6) at Amendment 25-72 in lieu of 25.807(h) at Amendment 25-94; plus 25.365 and 25.831(a) and 25.1447(c) at Amendment 25-87.

This certification basis is equivalent to:

FAR 25 including Amendments 25-1 through 25-86, and 25-88 and 25-89, and 25-92 through 25-97 (with the exception of 25-68, 25-85 and 25-90, which were not adopted in Canada) with the following deviations:

Plus FAR 25.807(d)(6) at amdt 25-72 replaces 25.807(h) at amdt 25-94;

FAR 25.365 at amdt 25-87;

FAR 25.831(a) at amdt 25-87;

FAR 25.1447(c) at amdt 25-87; and

The following additional Canadian Airworthiness Requirements:

Airworthiness Manual, Chapter 525, Change 525-7, Sections –

525.105(c)(1) Takeoff, unpaved runway surface

525.125(b) Landing, unpaved runway surface

525.207(b) Stall warning

525.697(b) Lift and drag devices, controls

525.699(d) Lift and drag device indicator

525.951(d) Fuel System, venting requirements

525.1301-1 Aeroplane operations after ground cold soak

525.1521(e) Take-off operation

525.1557(b)(4) Miscellaneous markings and placards

525.1581(a)(3) AFM - Noise standards

525.1581(e) Aeroplane Flight Manual, units

525.1581(f) Aeroplane Flight Manual, operating on wet and contaminated runways

525.1581(g) Aeroplane Flight Manual, operating rules

The Certification Basis also includes four Special Conditions and ten equivalent level of safety findings. There were no exemptions issued.

This is an acceptable certification basis in accordance with NZCAR Part 21B Paragraph §21.41, as FAR 25 is the basic standard for Transport Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

SCA H2002-05 dated August 19, 2002, High Intensity Radiated Fields (HIRF) – The CRJ-900 incorporates modern electronic systems and new technologies that provide functions whose failure would prevent the continued safe flight and landing of the aircraft. Since these new technologies may be susceptible to damage or interruption of function due to High Intensity Radiated Fields (HIRF), the special condition established a means to demonstrate that protection of these modern electronic systems is achieved.

SCA H2002-04 dated August 19, 2002, Automatic Performance Reset – Details the requirements for the installation of an engine control system that automatically resets the thrust on the operating engine when any engine fails or when the throttle is set to TOGA detent and subsequent to an engine failure.

SCA H2002-03 dated August 19, 2002, Fuel Tank System Safety Ignition Prevention – Details the method of the safety review of the CRJ-900 fuel tank system for possible ignition sources that could lead to a catastrophic failure due to ignition of fuel or vapours, and the establishment of critical design configuration control limitations, inspections or other procedures based on these evaluations.

SCA 2009-02 dated 2009-03-12, Seats with Non-Traditional, Large, Non-Metallic Panels – Transport Canada specified AWM 525, Appendix F, Parts IV and V, heat release and smoke emission to be required testing for seats that incorporate non-traditional, large, non-metallic panels that may either be single or multiple components in a concentrated area in their design. Up to and including 1.5 square feet of this material per seat may be exempted from this requirement.

(iii) *Equivalent Level of Safety Findings:*

FAR 25.103 & Others - Reduced Minimum Operating Speed Factors (Refer to Issue Paper FT-1) – Bombardier had requested the use of reduced minimum operating speed factors based on V_{s1g} . Transport Canada had developed a policy governing the approval of aircraft for which credit is taken for use of reduced operating speed factors based on V_{s1g} . Since the CRJ-900 wing is identical to that of a CRJ-700, compliance was shown by similarity.

FAR 25.107(e)(1)(iv) - Take-off Speeds V_{lof} and V_{mu} (Refer to Issue Paper FT-2) – For the CRJ-700 program, Bombardier had requested that an ELOS be granted by adopting the proposed harmonised FAR/JAR 25.107(e)(1)(iv). Test results from the CRJ-700 program demonstrated that the means of compliance adopted by the harmonised rule was not required and therefore V_{mu} testing for geometry limited aircraft was not conducted. For the CRJ-900, the proposal was to demonstrate compliance by flight test that the aircraft is geometry limited at MTOW during take-off at the minimum all-engine thrust-to-weight ratio.

FAR 25.783(f) - Baggage and Avionics Compartment Doors (Refer to Issue Paper OS-2) – The aft baggage and avionics compartment doors on the CL-600-2D24 do not incorporate specific means to prevent initiation of pressurisation to an unsafe level if they are not properly closed and locked. This was mitigated by demonstrating that these doors were safe against hazards caused by aircraft pressurisation by failure analysis and test.

FAR 25.811(d)(1)&(d)(2) - Entry Door Exit Marking Sign (Refer to Issue Paper OS-3) – Bombardier requested the use of a single sign to perform both functions of exit locator and exit marking signs for the main passenger entry door emergency exit, on the basis of the close proximity of the passenger exit locator sign to the door.

FAR 25.813(c)(2) - Type III Emergency Exit Access (Refer to Issue Paper OS-4) – Seat cushion protrudes into the projected opening of the Type III overwing exit, but it was demonstrated that the protrusion is minor (5.5” H x 5.0” LG), the cushion material is easily compressed and that it did not interfere with the opening of the exit from the inside or outside of the aircraft.

FAR 25.933 – Thrust Reverser System (Refer to Issue Paper P-1) – Direct compliance to the rule would have required tests to verify that the aircraft is capable of continued safe flight and landing under any possible position of the thrust reverser. Bombardier instead proposed to demonstrate an equivalent level of safety by analysis of failures modes and effects, average and specific risk analysis, reliability predictions and in-service monitoring and system safety analysis.

FAR 25.1435(b)(1) Hydraulic System Testing (Refer to Issue Paper M-1) – Bombardier proposed to conduct a dynamic test of the hydraulic system, equivalent to the proposed by FAR 25.1435(c)(3), to a lower pressure than the then current requirement of a static test at 1.5 times the design operating pressure. The dynamic test was considered more stringent and more representative of the actual operating conditions. All hydraulic system components, lines and installations are individually static proof tested.

AWM 525.841(b)(6)/ FAR 25.841(b)(6) Pressurised Cabins - High Altitude Operations – To prevent nuisance cabin pressure altitude cautions and warnings to the flight crew, the proposal was to modify the cabin Pressurization Control System (CPCS) to reset the maximum thresholds for the cabin pressure altitude cautions to 10,500 feet and the warnings to 12,000 feet when operating in the high altitude airfield mode – HI mode. This ELOS applies to the post-type certification modification Modsum 670T82357.

AWM 525.1441(c) Oxygen Quantity Indication, Passenger Lavatory Oxygen Dispensing Unit – Installation of small, sealed, one-time use gaseous oxygen cylinders is similar in concept to chemical oxygen generators, which also do not provide oxygen quantity information to the flight deck and that aspects of the lavatory oxygen system design makes the system equivalently safe to systems that provide oxygen quantity information per AWM 525.1441(c).

AWM 525.1443(c) Minimum Mass Flow of Supplemental Oxygen, Passenger Lavatory Oxygen Dispensing Unit – Bombardier contended that by providing a high concentration of oxygen at the start of inhalation, it would provide a level of protection from the harmful effects of hypoxia equivalent to that provided by previously-certified constant flow oxygen systems because the phased-dilution mask provides oxygen during the phase in the respiratory cycle when it is most effectively used by the body.

(iv) Airworthiness Limitations:

Maintenance Program – Airworthiness Limitation Items, Maintenance Requirements Manual, Publication CSP B-053, Part 2, Airworthiness Limitations

(v) Additional Design Requirements and Conditions:

The TCDS lists the following Additional Design Requirements:

FAR 25.1419 Ice Protection.

FAR 25.801 Ditching (when the safety equipment requirements of FAR 25.1411 and the ditching equipment requirements of FAR 25.1415 are satisfied).

FAR 25 Amdt 25-98 (as adopted by NPA 99-170) was included in the certification basis at Bombardier’s request as per Issue Paper G-4.

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Models above have been certificated for engine emissions under FAR Part 34, including Amendments 34-1 through 34-3, and for noise under FAR Part 36, including Amendments 36-1 through 36-24. They have also been certificated under ICAO Annex 16 Volume 2, Part 3 Chapter 2, and ICAO Annex 16 Volume 1 Chapter 4.

(ii) *Compliance Listing:*

Report RAU-BA690-133 FAR 36 - AWM 516 – Annex 16 Certification Report (CRJ-900), Revision D, dated 21 March 2014

Report RAP-GE690-170 Design Compliance – Propulsion System Report, Revision NC, dated 24 May 2002

An example of the certificated noise levels is presented in the table below:

CF34-8C5 Engine (conic exhaust) <2054>						
Airplane Option Code	Weight		Measured Points			
	MTOW	LDW	Description	Noise Limit	Measured Level	Margin
<2005>	38,329 kg	34,065 kg	Flyover	89.0	84.2	4.8
			Lateral	94.3	89.8	4.5
			Approach	98.3	92.3	6.0
			Compliance with Chapter/Stage 4			
<2005>	37,995 kg	34,065 kg	Flyover	89.0	83.8	5.2
			Lateral	94.3	89.9	4.4
			Approach	98.3	92.3	6.0
			Compliance with Chapter/Stage 4			
<2004>	37,421 kg	33,339 kg	Flyover	89.0	83.4	5.6
			Lateral	94.3	89.9	4.4
			Approach	98.2	92.3	5.9
			Compliance with Chapter/Stage 4			

The complete set of certificated noise levels across all Airplane Option Code combinations is published in the Supplement 7 of the Airplane Flight Manual.

(4) Certification Compliance Listing:

Report RAZ-BA690-100 – CRJ-900 Regional Jet – General Compliance Program, Volume 2, dated 08 February 2008

(5) Flight Manual:

Transport Canada-approved Airplane Flight Manual, Bombardier Model CL-600-2D15 and CL-600-2D24 – Publication CSP C-012 – CAA Accepted as AIR 3357

(6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

Aircraft Maintenance Manual CSP B-001 defines the scope of the Instructions for Continued Airworthiness

Structural Repair Manual, Bombardier Publication CSP B-008, Repair Data Section-

Maintenance Program – Airworthiness Limitation Items, Maintenance Requirements Manual, Bombardier Publication CSP B-053:

Part 1, Maintenance Review Board Report

Part 2, Airworthiness Limitations

Maintenance Planning Document – CRJ700/705/900/1000 series, Bombardier Publication CSP B-136

(ii) *Current service Information:*

Service Bulletins supplied through www.iflybombardier.com

(iii) *Illustrated Parts Catalogue:*

Illustrated Parts Catalogue CRJ900, Bombardier Publication CSP C-006

(7) Agreement from manufacturer to supply updates of data in (5), and (6):

Bombardier provides CAA access to www.iflybombardier.com.

(8) Other information:

RAE-BA690-189 Revision D, CRJ-900 Electrical Load Analysis Report

CRJ900 System Schematic Manual, Bombardier Publication CSP C-004

Component Maintenance Manuals, Publication CSP ABCD-033

CRJ900 Wiring Diagram Manual, Bombardier Publication CSP C-003

CRJ900 Flight Crew Operating Manual, Bombardier Publication CSP C-013

CRJ Series Master Minimum Equipment List, Bombardier Publication CSP ABC-044

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

Civil Aviation Rules Part 26

Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	FAR Part 25 par §25.811(a)(e)& (f) at Amendment 25-88
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

Appendix C – Air Transport Aeroplanes – More than 9 Pax

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
C.1	Doors and Exits	FAR Part 25 para §25.809(b) at Amendment 25-72.
C.2.1	Additional Emergency Exits – per FAR 23.807(b) @ 10.5.93	Meets FAR Part 25 certification requirements dated 1999.
C.2.2	Emergency Exit Evacuation Equipment – Descent means	FAR Part 25 para §25.810(a) at Amendment 25-88.
C.2.3	Emergency Exit Interior Marking – Size/self-illuminating	FAR Part 25 para §25.811(e) and §25.812(b) at Amendment 25-88.
C.3.1	Landing Gear Aural Warning – Automatic Flap Linking	FAR Part 25 §25.729(e) at Amendment 25-75.

Appendix D – Air Transport Aeroplanes – More than 19 Pax

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
D.1.1	Exit Types – Shall be per FAR 25.807 @ 29.03.93 [Amendment 25-78 or later]	Meets FAR Part 25 para §25.807 at Amendment 25-94, and para §25.807(d)(6) at Amendment 25-72 replaced para §25.807(h) at Amendment 25-94.
D.1.2	Floor Level Exits – Definition	Meets FAR Part 25 para §25.807(a) at Amendment 25-94.
D.2.1	Additional Emergency Exits – Must meet requirements	(a) Complies (b) Not Applicable - no ventral/tailcone exits
D.2.2	Emergency Exit Access – All Required Exits must have: Passageway unobstructed 500m wide between areas and leading to a Type I or II Exit; Crew assist space; Access to Type III or IV Exit is unobstructed Internal doors must be able to be latched open – placarded	FAR Part 25 §25.813 at Amendment 25-88. ELOS to FAR §25.813(c)(2) in Transport Canada Issue Paper OS-4. Seat cushion projects into opening area of emergency exit. ELOS reviewed and accepted by CAA. Not Applicable – No internal doors.
D.2.3	Emergency Exit Operating Handles – Markings/Lighting	FAR Part 25 para §25.811(e) at Amendment 25-88.
D.2.4	Emergency Exit Evacuation Equipment – Descent means	FAR Part 25 para §25.810(c) at Amendment 25-88.
D.2.5	Emergency Exit Escape Route – Must be slip resistant	FAR Part 25 para §25.810(c) at Amendment 25-88.
D.2.6	Emergency Lightning (a) Switch Provisions; Uninterrupted Power; Last 10 min. (b) Descent Illumination – Automatic and Independent	FAR Part 25 para §25.812(f) and (i) at Amendment 25-88. FAR Part 25 para §25.812(h) at Amendment 25-88.
D.2.7	Emergency Interior Lighting – independent supply; min. Illumination; incl. Floor proximity escape path markings	FAR Part 25 para §25.812(c) and (e) at Amendment 25-88.
D.2.8	Emergency Exterior Lighting – in effect 30.04.72 or later [Amendment 25-32 or later]	Meets FAR Part 25 para §25.812 at Amendment 25-88
D.2.9	Emergency Exit Interior Marking – Clear; instructions Location signs above routes, by exits, on bulkheads Meet provisions in effect 30 April 1972, or later [Amendment 25-32 or later] Minimum brightness 250 microlamberts	Meets FAR Part 25 para §25.811(a)(b)&(d) at Amendment 25-88. ELOS to FAR §25.811(d)(1) and (2) in Transport Canada Issue Paper OS-3. A single sign is used to perform both functions of (d)(1) and (2). ELOS reviewed and accepted by CAA.
D.2.10	Emergency Exit Exterior Markings – 2” contrasting band; opening instructions in red or bright chrome yellow;	Meets FAR Part 25 para §25.811(f) at Amendment 25-88.
D.3	Lavatory Fire Protection – Placards; Exterior ashtray; Waste Bin – Sealed door; built-in fire extinguisher; smoke detector system with external warning	FAR Part 25 §25.791(c)(d) and (e) at Amendment 25-72. FAR Part 25 §25.853(g) and (h) at Amendment 25-83. FAR Part 25 para §25.854(a) and (b) at Amendment 25-74.
D.4	Materials for Compartment Interiors – T/C after 1.01.58: (b) Manufactured 20/8/88 – 20/8/90 – Meet heat release requirements of FAR 25 at 20.08.86 increased to 100/100 Manufactured after 20/8/90 – Meet heat release rate and smoke tests of FAR Part 25 in effect 26.09.88 (c) Seat cushions (except flightdeck) must be fireblocked	FAR Part 25 para §25.853 at Amendment 25-83 [06 March 1995]. FAR Part 25 para §25.853(b) at Amendment 25-83 [06 March 1995].
D.5	Cargo and Baggage Compartments – T/C after 1.01.58: (a) Each C or D compartment greater than 200 cu ft shall have liners of GFRS or meet FAR 25 in effect 29.03.93 (b) Liners shall be separate from the aircraft structure	Only Class C cargo compartments installed. Meets FAR Part 25 para §25.857 (c) at Amendment 25-93 Meets FAR Part 25 para §25.855 at Amendment 25-93

Compliance with the following additional NZ operating requirements has been reviewed and was found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	FAR Part 25 para §25.785 at Amendment 25-88
91.507	Pax Information Signs – Smoking, safety belts fastened	FAR Part 25 para §25.785 at Amendment 25-72
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR §25.1303(b)(1) FAR §25.1303(b)(1) FAR §25.1303(b)(2) FAR §25.1303(a)(3) FAR §25.1305(a)(2) FAR §25.1305(c)(3) FAR §25.1305(a)(4)
		(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter
		Not Applicable – Turbofan FAR §25.1305(a)(6) Not Applicable – Turbofan Not Applicable – Turbofan FAR §25.699(a) FAR §25.729(e) FAR §25.1351(6)
91.511 Night	(1) Turn and Slip (2) Position Lights	FAR §25.1303(b)(4) FAR §25.1389
		(3) Anti-collision Lights (4) Instrument Lighting
		FAR §25.1401 FAR §25.1381
91.513	VFR Communication Equipment	FAR Part 25 para §25.1307(d) at Amendment 25-72
	The CRJ900 is fitted with dual VHF (Rockwell-Collins VHF-422A) as standard; integrated with the radio navigation equipment into a Radio Tuning Unit (RTU). HF equipment is optional.	
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	FAR 25.1303(b)(5) FAR 25.1303(b)(6) FAR 25.1331(a)(1) FAR 25.1303(b)(2)
		(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent
		FAR §25.1303(a)(1) FAR §25.1303(a)(2) FAR §25.1303(e) FAR §25.1303(b)(3)
91.519	IFR Communication and Navigation Equipment	FAR Part 25 para §25.1307(e) at Amendment 25-72
	The CRJ900 is equipped with dual VHF Navigation receivers (Rockwell-Collins P/N 822-0393-001) which provide VOR/Localiser, Glideslope and Marker Beacon navigation functions; dual automatic direction finders (ADF – Rockwell-Collins ADF-462); dual distance measuring equipment (DME – Rockwell-Collins DME-442)	
91.523	Emergency Equipment: (a) More Than 9 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily accessible to crew (c) More than 61 pax – Portable Megaphones per Table 9	Operating Rule – Compliance to be shown by Operator FAR Part 25 para §25.851 at Amendment 25-72. Part of the flight deck detachable emergency equipment provided as baseline to the airplane.
91.529	ELT – TSO C126 406 MHz after 22/11/2007	Operating Rule – Compliance to be shown by Operator (Artex ELT 110-4, 2-channel TSO C91A fitted as standard)
91.531	Oxygen Indicators – Volume/Pressure/Delivery	FAR Part 25 para §25.1441(d) at Original Amendment. ELOS to FAR §25.1441(c) in Transport Canada Issue Paper OS-9. Lavatory oxygen dispensing unit does not indicate quantity. ELOS reviewed and accepted by CAA.
91.535	Oxygen for Pressurised Aircraft: (1) Flight Crew Member On-Demand Mask; (2) Pax mask, Portable oxygen equipment (3) Crew Member – Pax Oxygen Mask and Portable (4) Minimal Supplemental Oxygen Quantity (5) Specified Supplemental/Therapeutic Oxygen Quantity Above FL250 (1) Quick-Donning Crew On-Demand Mask (2) Supplemental O ₂ Masks for all Pax/Crew and Toilets (3) 15 Minutes Therapeutic Supply Above FL300 (1) Total Outlets Exceed Pax Seats by 10% (2) Extra Units Uniformly Distributed throughout Aircraft (3) Automatically Presented if Cabin Altitude ≥ 14000 ft. (4) Manual Means of Deploying Pax Masks Available	Operating Rule – Compliance to be shown by Operator A gaseous crew oxygen system has a standard 50 cu.ft cylinder sized for FAA requirements for 3 crew members. In addition, 1 PBE (Avox systems P/N 802300-14) is located within the cockpit and 3 PBE are distributed within the passenger cabin as standard. Passenger and flight attendant oxygen is by chemical oxygen generators with a 13-minute duration to meet emergency descent requirements. Total pax outlets exceed pax seats by 17%. Max. Operating Altitude is 41,000 ft. Passenger masks drop automatically when cabin altitude exceeds 14,000 ft and may be deployed manually from a switch in the cockpit.
91.541	SSR Transponder and Altitude Reporting Equipment	Dual Mode S Transponders fitted as standard (Rockwell-Collins P/N 622-9210-008)
91.543	Altitude Alerting Device – Turbojet or Turbofan	Operating Rule – Compliance to be shown by Operator
91.545	Assigned Altitude Indicator	Operating Rule – Compliance to be shown by Operator
A.15	ELT Installation Requirements	The Bombardier installation meets NZCAR Part 91 Appendix A.15 (b)(iii) and (iv) by inspection.

Civil Aviation Rules Part 121

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
121.355	Additional Instruments (Powerplant)	FAR Part 25 is a Part 21 Appendix C standard
121.357	Additional Eqpt - Windscreen Wiper, Door, Key, Placard	Fitted as standard Fitted as standard Not Applicable – No doors between passenger compartments
121.359	Night Flight - Landing Light, Light in each pax cabin	Fitted as Standard
121.361	IFR Operations	Speed, Alt, spare bulbs/fuses
121.363	Flights over water	Liferafts
121.365	Emergency Equipment	Per §91.523 and EROPS kit
121.367	PBE	TSO C99 cockpit equipment TSO C115 cabin equipment
121.369	Pax Address, Intercom	Meets FAR § 121.318 and 319.
121.371	Cockpit Voice Recorder Appendix B.5 requires TSO C84/C123	FAR Part 25 §25.1457 at Amendment 25-41 – A L3 Comm FA2100 CVR is installed as standard.
121.373	Flight Data Recorder Appendix B.6 requires TSO C124	FAR Part 25 §25.1459 at Amendment 25-41 – A L3 Comm FA2100 DFDR is installed as standard (25Hr Solid State FDR records over 100 parameters including 87 essential parameters as required by FAR§121.344).
121.375	Additional Attitude Indicator	Thales Integrated Standby Instrument (ISI – P/N C16221ZA01) fitted as standard.
121.377	Weather Radar Appendix B.8 requires TSO C63	Rockwell-Collins RTA-844 X-band colour weather radar fitted as standard.
121.379	Ground Proximity Warning System Appendix B.9 requires TSO C92	Not applicable – TAWS A fitted.
121.381	Terrain Awareness and Warning System (TAWS) Appendix B.10 requires TSO C151a or b	Honeywell Mark V EGPWS (Class A) fitted a standard.
121.383	Airborne Collision Avoidance System (ACAS II) Appendix B.11 requires TSO C119b	Rockwell-Collins TCAS II TTR-921 meeting ARINC 735 Change 7.0, and ACAS II (TCSO C119b) fitted as standard.

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.

2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.

3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/119 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

Attachments

The following documents form attachments to this report:

Three-view drawing Bombardier Model CL-600-2D15/-2D24
Copy of Transport Canada Type Certificate Data Sheet Number A-276

Sign off

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David Gill
Team Leader Airworthiness

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Checked – Lino Miguel
Airworthiness Engineer (Avionics)

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
CL-600-2D24 (“CRJ900”)	NAI National Ltd	16/21B/29	21 June 2016
CL-600-2D19 (“CRJ705”)	NAI National Ltd	17/21B/3	20 February 2017