



## **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

July 30, 2015

### **MAINTENANCE RECORDS FACTUAL**

#### **A. ACCIDENT DCA15IA089**

Operator: GoJet Airlines  
Location: Chicago O'Hare International Airport, Chicago, Illinois  
Date/Time: March 14, 2015 about 15:21 Central Daylight Time<sup>1</sup>  
Airplane: Bombardier Inc. CRJ700, Registration Number: N157GJ,  
Serial Number: 10230

#### **B. MAINTENANCE RECORDS FACTUAL**

Group Chairman: Gregory Borsari  
National Transportation Safety Board  
Washington, DC

Group Member: David Avery  
Federal Aviation Administration  
Miramar, Florida

Group Member: Jeff Craig  
GoJet Airlines  
St. Louis, Missouri

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<sup>1</sup> All times are Central Daylight Time (CDT) based on a 24-hour clock, unless otherwise noted. Actual time of incident is approximate.

Group Member: Jacques Desmarais  
Bombardier  
Mirabel, Quebec

Group Member: Ivona Szczerhowicz  
UTC Aerospace Systems  
Oakville, Ontario

## C. SUMMARY

On March 14, 2015, about 1521 central daylight time, GoJet Airlines flight 3645, d.b.a. United Express, a Bombardier CRJ 700, registration N157GJ, landed with the nose gear retracted on runway 32R at Chicago O'Hare International Airport (ORD), Chicago, Illinois. There were no injuries to the 37 passengers and 4 crewmembers onboard and the airplane received minor damage. The flight was operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 121 as a regularly scheduled passenger flight from Gerald R. Ford International Airport (GRR), Grand Rapids, Michigan.

## D. DETAILS OF THE INVESTIGATION

### 1.0 Air Carrier Certificate

The Federal Aviation Administration (FAA) Central Region issued an Air Carrier Certificate (Certificate Number N6WA249L, dated September 20, 2005) to GoJet Airlines LLC, 11495 Natural Bridge Road St. Louis, Missouri 63044.

See attachment 1 for more information

### 2.0 Operations Specifications (OpSpecs)<sup>2</sup>

GoJet Airlines has a Part 121 Air Carrier Certificate, which includes the standards, terms, conditions, and limitations contained in the FAA approved Operations Specifications (Parts D and E).

- (a) Air carrier was authorized as a 14 CFR Part 121 operation.
- (b) Per section D072 of the OpSpecs, authorized the GoJet Airlines CRJ700 Continuous Airworthiness Maintenance Program (CAMP) document, revision 41, dated December 19, 2014 to maintain the airplanes.
- (c) Per section D085 of the OpSpecs, GoJet Airlines have 47 CL-600-2C10<sup>3</sup> aircraft in its fleet.

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<sup>2</sup> Operations Specifications contains the authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted by the certificate holder.

<sup>3</sup> Type certificate data sheet A21EA lists the aircraft as CL-600-2C10 (Regional Jet Series 700, 701 and 702).

- (d) Per section D090 of the OpSpecs, GoJet Airlines was authorized to utilize CASE<sup>4</sup> as a means of qualifying a vendor for services, parts, and materials to satisfy the requirements of 14 CFR Section 121.373.
- (e) Per section D091 of the OpSpecs, GoJet Airlines was authorized to make arrangements with other organizations to perform essential maintenance or alterations on its fleet of aircraft.
- (f) According to Section D095 of the OpSpecs, GoJet Airlines was authorized to use an approved Minimum Equipment List (MEL).
- (g) According to Section D097 of the OpSpecs, the FAA has approved sections of GoJet Airlines maintenance program for the compliance of Repairs Assessment for Pressurized Fuselages (121.1107), Supplemental Inspections (121.1109), Fuel Tank Systems Maintenance Program (121.1113), Flammability Reduction Means (121.1117) and Electrical Wiring Interconnection Systems (EWIS) Maintenance Program (121.1111).
- (h) Per section D485 of the OpSpecs. GoJet Airlines was authorized an Aging Airplane Inspections program. N157GJ was manufactured on November 30, 2005 and was below the initial inspection threshold and record review requirement.
- (i) Per section E096 of the OpSpecs, GoJet Airlines was authorized for a Weight and Balance Program per the General Operations and General Maintenance Manuals. GoJet Airlines was authorized under 14 CFR Part 121 subpart 121.153(b) to use fleet aircraft weights outlined in their Weight and Balance Control Program. The Weight Sampling Program was every 36 months.

### **3.0 Type Certificate Data Sheet**

The Type Certificate Data Sheet (A21EA Revision 35, dated October 22, 2014) prescribes conditions and limitations under which the product for which the Type Certificate (TC) was issued meets the airworthiness requirements of the Federal Aviation Regulations. According to the document, Bombardier, Inc. is the holder of the TC.

See attachment 2 for more information

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<sup>4</sup> The Air Carriers section of the Nonprofit Coordinating Agency for Supplier Evaluations (C.A.S.E.) was organized as a means of sharing non-prejudicial supplier quality approval data among the membership Air Lines. This increases surveillance coverage of suppliers and thereby upgrades their quality programs. It also has an economic impact on each C.A.S.E. member by decreasing the cost of supplier surveillance and making their surveillance programs more effective.

#### 4.0 Aircraft Information

Bombardier, Inc. manufactured the airplane on November 30, 2005. GoJet Airlines is the original owner of the airplane. The airplane N157GJ, serial number 10230 had 26,123.8 total hours with 17,691 total cycles at the time of the incident.

The airplane is equipped with two General Electric CF-34-8C1 engines and an Allied Signal RE220 Auxiliary Power Unit (APU).

**Table 1 - Engine and APU Information**

	<b>No.1 Engine</b>	<b>No.2 Engine</b>	<b>APU</b>
<b>Manufacturer</b>	General Electric	General Electric	Allied Signal
<b>Part Number</b>	CF-34-8C5B1	CF-34-8C5B1	WE3800770-3
<b>Date Installed</b>	6/09/2011	11/22/2010	11/11/2014
<b>Serial Number</b>	E19436	E194312	P-421
<b>Total Time Airframe at Install</b>	15,598.10	14,116.45	25,277.8
<b>Total Cycles Airframe at Install</b>	10,898	9,952	17,150

#### 5.0 Maintenance and Inspection Program

The GoJet Airlines CRJ700 maintenance program is controlled by their Continuous Airworthiness Maintenance Program (CAMP) document, revision 41, dated December 19, 2014. The maintenance program consists of line checks, work packages and block checks, progressing from lighter to heavier maintenance requirements. Line check one and two are performed every 50 and 100 flight hours respectively. There are 10 equalized work packages numbered one thru 10 that are performed every 600 flight hours. Heavier maintenance is performed at the block check intervals. The block checks are tracked by calendar days, flight hours, and flight cycles that include the zonal and structural tasks that were written into the GoJet Airlines maintenance program. There are a total of 49 block checks in the maintenance program. Block checks 39 and 40 are the 6000 flight hour checks where routine landing gear inspection and lubrication tasks are accomplished. In addition to the structural, zonal and corrosion control items that are incorporated into each block check, tasks that do not fit within any of the regularly scheduled block checks are tracked individually. These are referred to as fall out items such as, emergency equipment checks, special form items and tasks that do not fit within a normally scheduled work package or block check.

Table 2 is a listing of the previous ten work packages accomplished on airplane N157GJ.

**Table 2 – Work Package History**

<b>Work Package Number</b>	<b>Check Date</b>	<b>Total Time</b>
7	03/09/2015	26,087
6	12/11/2014	25,510
5	09/27/2014	24,958
4	07/06/2014	24,369
3	04/25/2014	23,791
2	02/10/2014	23,200
1	11/20/2013	22,640
10	09/09/2013	22,065
9	07/04/2013	21,487
8	04/22/2013	20,902

The most recent work package performed on N157GJ was work package number 7 completed on March 9, 2015. Included in the work package were the following items for the Nose Landing Gear (NLG):

- Inspection of the NLG Spade Door, attachments, hinge bolts, bushings and rod ends.
- General visual inspection of the NLG outer cylinder
- Lubricate the NLG
- Lubricate NLG steering components
- Check NLG shock strut extension
- Inspect aft NLG door assembly

The most recent block checks were Block 39 and Block 40.

**Table 3 – Block 39 and 40 Check History**

<b>Block Check Number</b>	<b>Check Date</b>	<b>Total Time</b>
39	1/10/2015	25,719.0
40	8/29/2014	24,753.3

The maintenance record group reviewed the routine and non-routine tasks from these two block checks concentrating on the nose landing gear. In addition to the routine tasks, non-routine items identified with regard to the NLG were reviewed.

As a result of the routine NLG tasks three non-routine items were generated and reviewed;

- Relocate data plate in accordance with Engineering Order CRJ-700-32-002-3
- NLG hydraulic servicing cap lanyard missing - Replaced
- NLG bonding wire frayed at top of NLG - Replaced

Table 4 shows the Bombardier’s NLG recommended maintenance program. Included are the corresponding GoJet requirement for each tasks and when the tasks were last accomplished. No discrepancies were found between the manufacturers recommended program and the corresponding GoJet CAMP.

**Table 4 – Manufacturers NLG Recommended Maintenance Program**

<b>Mfr Task</b>	<b>Description</b>	<b>Interval</b>	<b>GoJet Task</b>	<b>Date Completed</b>	<b>Work Pkg</b>
320100-201	Lubricate the NLG	800 FH	320100-201A	3/9/2015	WP-7
320100-203	Alternate Extension System Operational Check	6000 FH	320100-203	4/22/2013	WP-8
320100-202	DVI NLG Door Mechanism Inspection	6000 FH	320100-202H	11/20/2013	WP-1
700-01	Zonal Inspection of the Nose Landing Gear and Doors	6000 FH	700-01	11/20/2013	WP-1
320100-205	General Visual Inspection of the NLG Shock Strut	100 FH	320100-205	3/9/2015	WP-7
320100-206	General Visual Inspection of the Nosewheel Spin Down Device APPLICABILITY: Pre Modsum IS67032420086	6000 FH	320100-206	11/20/2013	WP-1
320100-208	Functional Check of the NLG Shock Strut for Proper Extension	600 FH	320100-208	3/9/2015	WP-7
320100-209	Detailed Inspection of the NLG Torque Links for Play	5000 FC	320100-209	10/25/2012	Fall Out
320100-211	Restoration (Overhaul) of the Nose Landing Gear Assembly	20000 FC		Not Due	
320100-212	Detailed Inspection of NLG Attachment Points	6000 FH	320100-212A	11/20/2013	WP-1
320100-214	General Visual Inspection of the NLG Retract Actuators	1200 FH	320100-214	12/11/2014	WP-6
320100-216	Servicing of the NLG Shock Struts	2500 FH	320100-216	8/6/2014	Fall Out
320100-217	Detailed Inspection of the Landing Gear Alternate Extension System Mechanical Control Path and Cables in the NLG Wheel Wells	6000 FH	320100-217	9/9/2013	WP-10
320100-218	Restoration of the NLG Drag Brace Harnesses APPLICABILITY: (P/N 52513-1 or P/N 52513-3) and (P/N 52514-1 or P/N 52514-3)	6250 FC	320100-218	10/22/2014 LH 2/26/2013 RH	Fall Out

**Table 4 – Manufacturers NLG Recommended Maintenance Program - Cont**

<b>Mfr Task</b>	<b>Description</b>	<b>Interval</b>	<b>GoJet Task</b>	<b>Date Completed</b>	<b>Work Pkg</b>
324000-201	Visual Check of the NLG Wheel/Tire Assembly for Damage	50 FH	320100-201	4/27/2015	LC-1
324000-202	Functional Check of NLG Tire Pressure	3 days/72 elapsed HR	320100-202	4/26/2015	LC-2
325000-201	Lubrication of the Nosewheel Steering Components	800 FH	320100-201	3/9/2015	WP-7
052000-412	Detailed Inspection of the L/HIRF Protection on the Connectors P112 and P123 at FS235.00, NLG Wheel Well	6000 FH	320100-412	11/20/2013	WP-1

**6.0 Continuing Analysis and Surveillance System (CASS)<sup>5</sup>**

GoJet Airlines has an FAA approved CASS program. The CASS program is to provide surveillance, analysis and measure the effectiveness of the GoJet Airlines Continuous Airworthiness Maintenance Program (CAMP). The program implemented controls to collect and analyze data. In addition, CASS developed and maintained system performance standards with corrective actions. The maintenance records group reviewed the last CASS report dated April 14, 2015.

**7.0 Minimum Equipment List (MEL)<sup>6</sup>**

GoJet Airlines was authorized to use an approved MEL on its airplanes per its OpSpecs. At the time of the incident, there was one open MEL item in the records. The MEL item, number CO 4794 was to re-inspect the air conditioning inlet composite that has several areas of paint flaked off. The item has a re-inspect requirement every 50 flight hours and a time limit of August 16, 2015 for final repair.

**8.0 Airworthiness Directives (AD)<sup>7</sup>**

GoJet Airlines provided an AD summary for review. A review of Airworthiness Directive status lists for the airplane, powerplants and appliances were conducted. All ADs applicable to this airplane were implemented. No discrepancies were found during the review of the listing. No ADs affect the nose landing gear extension and retraction system.

See Attachment 3 for more information

<sup>5</sup> As established by 14 CFR Part 121.373, each certificate holder shall establish and maintain a system for the continuing analysis and surveillance of the performance and effectiveness of its inspection program and the program covering other maintenance, preventative maintenance and alterations and for the correction of any deficiency in those programs, regardless of whether those programs are carried out by the certificate holder or by another person.

<sup>6</sup> The FAA approved Minimum Equipment List contains a list of equipment and instruments that may be inoperative on a specific aircraft for continuing flight beyond a terminal point.

<sup>7</sup> Airworthiness Directive (AD) is a regulatory notice sent out by the FAA informing the operator of an action that must be taken for the aircraft to maintain its airworthiness status.

## 9.0 Aircraft Flight Logs

Aircraft flight logs were reviewed from December 15, 2014 to March 14, 2015. The review focused on the aircraft nose landing gear system for the incident airplane. There was a report of the nose gear strut being low on February 2, 2015. Maintenance serviced the nose landing gear strut.

From February 3, 2015 thru February 19, 2015, maintenance was performed in the NLG area in order to correct a nose wheel steering message and a hydraulic leak discrepancy. During this period maintenance replaced a damaged hydraulic line to the nose wheel steering actuator, cleaned and secured an electrical connector to the steering actuator and on February 19, 2015 replaced the steering manifold.

## 10.0 Weight and Balance Summary

Per the GoJet Airlines OpSpecs, the airplanes were to be weighed every thirty-six (36) calendar months. The last actual weight and balance on the airplane was accomplished on February 11, 2015. The aircraft was maintained in compliance with the Weight program defined in the Weight and Balance Manuals. The figures for the last weight and balance are shown below:

Basic Operating Weight:	44,820	pounds
CG:	790.846	inches
Moment:	35,445,733	lb-inches

See attachment 4 for more information

## 11.0 Service Difficulty Reports (SDR)<sup>8</sup> and Mechanical Interruption Summary Report

Service Difficulty Reports for the incident aircraft for the date range September 2007 to March 2015 were reviewed. There was one SDR reported on April 7, 2013 for a gear disagree message after takeoff. Maintenance found the nose landing gear proximity sensor out of rig and corrected in accordance with the aircraft maintenance manual, section 32-61-05.

FAA reportable mechanical interruptions are being tracked within the CASS program with both upper and lower alert limits. In addition to the alert levels the report includes a four digit ATA breakdown with trends per 1000 flight hours. The maintenance record group reviewed the April 14, 2015 CASS report paying particular attention to nose landing gear extension, retraction and indication. No unusual trends were noted.

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<sup>8</sup> As required under 14 CFR 121.703, each scheduled operator is to report the occurrence or detection of each failure, malfunction or defect concerning (a) fires during flight, (b) false fire warning during flight, (c) engine exhaust system that causes damage during flight, (e) an aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes during flight, (f) engine shutdown during flight, (g) a propeller feathering, (h) aircraft structure requiring major repairs, (i) cracks, corrosion, (j) other safety critical issues as stated in the FAR part. These occurrences must be reported within 72 hours of the event.



## **12.0 Major Repairs**

Major repairs for the aircraft were documented and reviewed. Seven major repairs were accomplished on the airplane affecting cross beams, stringers and fuselage skin. No major repairs for the nose landing gear were accomplished on the airplane.

## **13.0 Supplemental Type Certificates (STC)<sup>9</sup>**

Supplemental Type Certificates (STCs) and major alterations were reviewed. A total of four STCs and one major alteration were documented and installed by the operator. There were no STCs or major alterations that affected the landing gear system.

See attachment 5 for more information

## **14.0 Time Limit Components**

Time Limit component status for the airplane was reviewed. Particular attention was taken for the time limited components that were installed for the NLG. The time limited components were being tracked properly and no discrepancies were noted.

## **15.0 Vendors**

The Maintenance Group reviewed the Quality Systems Oversight manual provided by GoJet Airlines. GoJet Airlines accomplished audits of their essential maintenance providers at a minimum of a Bi-Annual basis. Additionally, per GoJet's OpSpec, GoJet Airlines was also authorized to utilize CASE<sup>10</sup> as a means for qualifying vendors. All essential maintenance and component vendors were listed in the operator's Quality Systems Over Sight manual. There were no discrepancies in the listing.

## **16.0 Method of Record Keeping**

A significant amount of airworthiness-related documentation is produced to provide essential information and data necessary to establish and maintain the airworthiness of an aircraft, engine, and appliances. Much of this data must be retained, for a specified period, and be accessible at any point in time. GoJets's FAA approved hardcopy paper records is the method used to provide the documentary evidence. The paper records are stored for one year. Computers are being used associated with limited production of the airworthiness related information and data. GoJet Airlines takes advantage of the use of Central Airworthiness Tracking System (CATS) in electronic "format" and manner acceptable to the FAA. CATS is capable of providing accurate,

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<sup>9</sup> The FAA issues Supplement Type Certificates, which authorize a major change or alteration to an aircraft, engine or component that has been built under an approved Type Certificate.

<sup>10</sup> The Air Carriers section of the Nonprofit Coordinating Agency for Supplier Evaluations (C.A.S.E.) was organized as a means of sharing non-prejudicial supplier quality approval data among the membership Air Lines. This increases surveillance coverage of suppliers and thereby upgrades their quality programs. It also has an economic impact on each C.A.S.E. member by decreasing the cost of supplier surveillance and making their surveillance programs more effective.

timely, and reliable maintenance records, as required by CFR 121.380. The data is backed up daily.

## **17.0 Manuals**

GoJet Airlines used the following manuals to maintain the airworthiness of its fleet and management of the airline.

General Operations Manual – Manual outlines the Policies and Procedures Manual system used to comply with 14 CFR Part 121 regulatory requirements and to provide information, policies, and procedures for the overall safety, administration, and operation of GoJet’s Operations.

General Maintenance Manual - Manual outlines the overall safety and administration maintenance policies and procedures in order to maintain GoJet’s aircraft.

Minimum Equipment List (MEL) – List of equipment and instruments that may be inoperative on a specific aircraft.

Maintenance Training Manual – Manual outlines the training program, policies and procedures for GoJet personnel.

Quality Systems Oversight Manual – Manual contains the authorized maintenance provider listing, current GoJet required inspection items, maintenance providers checklists, audit checklists and the fuel vendor audit checklist.

Weight and Balance Manual – Weight and balance procedures to be followed by maintenance and flight operations personnel on all aircraft operated by GoJet Airlines.

Manufacture Supplied and GoJet Airlines customized Manuals - Aircraft/Engine Maintenance Manuals, Structural Repair Manuals, Overhaul Manuals, Wiring Manuals, Fault Isolation Manuals, Illustrated Parts Catalog, Corrosion Program Manual, NDT Manual, and Service Bulletins.

## **18.0 GoJet Fleet Inspection**

GoJet Airlines initiated a campaign to inspect all CRJ700 aircraft within their fleet to ensure that the NLG drive arm attaching hardware was intact. The task was a detailed visual inspection to check for the presence of the two attaching pins, two flat washers and two self-locking nuts. In addition, the inspection checked to ensure that threads were protruding from the self-locking nuts. Three of the 47 aircraft inspected were found with loose hardware. The hardware was replaced in accordance with the applicable maintenance manual.

Table 5 details the aircraft inspections for the three aircraft with findings.

**Table 5 – Aircraft with NLG Findings**

<b>Aircraft</b>	<b>Serial Number</b>	<b>Findings</b>	<b>Date Inspected</b>	<b>Flight Hours</b>	<b>Flight Cycles</b>
N153GJ	10219	Drive Arm to Lock Link attaching hardware loose - Replaced	6/12/2015	27,068	18,359
N161GJ	10253	Drive Arm to Lock Link attaching hardware loose - Replaced	6/9/2015	26,047	17,567
N164GJ	10256	Drive Arm to Lock Link attaching hardware loose - Replaced	6/8/2015	26,245	17,556

Due to the initial inspection findings, GoJet Airlines requested from Bombardier Aerospace authorization to replace the two drive arm attaching nuts MS21042L4 and to apply Loctite during the installation process.

Bombardier Aerospace provided the authorization in the form of a Reference Instruction Letter. In addition to replacing the two washers, the two nuts and applying the Loctite, Bombardier increased the installation torque value to 50-70 LBF-IN in addition to the running torque per the applicable AMM.

GoJet Airlines initiated a second fleet campaign which included a physical check to determine if the drive arm fitting was tightly secured prior to replacing the hardware; applying the Loctite and increasing the torque value per the Bombardier Reference Instruction Letter. During the second campaign a fourth aircraft was identified with loose hardware.

Table 6 details the fourth aircraft inspection findings.

**Table 6 – Aircraft with NLG Findings**

<b>Aircraft</b>	<b>Serial Number</b>	<b>Findings</b>	<b>Date Inspected</b>	<b>Flight Hours</b>	<b>Flight Cycles</b>
N159GJ	10238	Drive Arm to Lock Link attaching hardware loose - Replaced	6/27/2015	26,767.5	18,155

## **19.0 Interviews**

Mr. Gordon Kovacevic, Mechanic was interviewed by telephone on April 29, 2015 in Grand Rapids, MI.

Mr. William Clay Jr., Maintenance Control Supervisor was interviewed on April 30, 2015 in Saint Louis, MO.

Mr. John Campbell, Maintenance Controller was interviewed on April 30, 2015 in Saint Louis, MO.

See Attachment 6 for more information

Submitted by: Gregory Borsari  
Aviation Accident Investigator  
Maintenance

### Attachments:

- Attachment 1 - GoJet Airlines, LLC Air Carrier Certificate
- Attachment 2 - Type Certificate Data Sheet
- Attachment 3 - Airworthiness Directives
- Attachment 4 - Weight and Balance
- Attachment 5 - Supplemental Type Certificates
- Attachment 6 - Interview Summaries

# Attachment 1

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## Air Carrier Certificate



US Department  
of Transportation  
Federal Aviation  
Administration

# Air Carrier Certificate

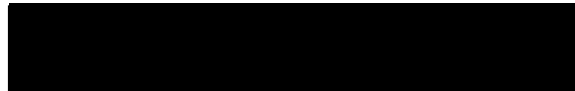
This certifies that

**GOJET AIRLINES, LLC**  
**11495 NATURAL BRIDGE ROAD**  
**ST. LOUIS, MISSOURI 63044**

has met the requirements of the Federal Aviation Act of 1958, as amended, and the rules, regulations, and standards prescribed thereunder for the issuance of this certificate and is hereby authorized to operate as an air carrier and conduct common carriage operations in accordance with said Act and the rules, regulations, and standards prescribed thereunder and the terms, conditions, and limitations contained in the approved operations specifications.

This certificate is not transferable and, unless sooner surrendered, suspended, or revoked, shall continue in effect indefinitely.

By Direction of the Administrator



Marion B. Dittman  
(Signature)

Manager, Flight Standards Division  
(Title)

Central Region  
(Region/Office)

Certificate number: N6WA249L

Effective Date: September 20, 2005

Issued at: CE03

# Attachment 2

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## Type Certificate Data Sheet

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

A21EA  
Revision No.35  
Bombardier, Inc.

CL-600-1A11 (CL-600)  
CL-600-2A12 (CL-601)  
CL-600-2B16 (CL-601-3A Variant)  
CL-600-2B16 (CL-601-3R Variant)  
CL-600-2B16 (CL-604 Variant)  
CL-600-2B19 (Regional Jet Series 100 & 440)  
CL-600-2C10 (Regional Jet Series 700, 701 & 702)  
CL-600-2D15 (Regional Jet Series 705)  
CL-600-2D24 (Regional Jet Series 900)  
CL-600-2E25 (Regional Jet Series 1000)

October 22, 2014

TYPE CERTIFICATE DATA SHEET NO. A21EA

This data sheet, which is part of Type Certificate No. A21EA, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder:           Bombardier, Inc.  
  400 Cote Vertu West  
  Dorval, Quebec, Canada  
  H4S 1Y9

**I - Model CL-600-1A11 (Transport Category), Approved November 7, 1980, by the FAA and August 10, 1980, by the Canadian Department of Transport (DOT).**

Engines                   Two AVCO Lycoming ALF-502L or ALF-502L-2

Fuel	Type	Specifications		
		Canada	U.S.A.	U.K.
Jet A		CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
Jet A-1		CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
Grade JP-5		-	MIL-T-5624	D. Eng RD2452
Grade JP-8		-	MIL-T-83133A	D. Eng RD2453
Jet B		CAN2-3.22-M80	ASTM D1655	D. Eng RD2486
JP-4		CAN2-3.22-M80	MIL-T-5624	D. Eng RD2486

Jet A and Jet A-1 fuels must contain an approved anti-icing additive unless Canadair Modification Summary 600-702 and Lycoming Service Bulletin ALF-502-79-0007 are incorporated.

Oil                        Engine, APU, Generator Adapter:  
MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or other approved oils as identified in the Maintenance Manual (refer to Approved Publications).

Engine Limits	SL Static Thrust(lb.)	Compressor RPM		Interturbine Temperature	
		LP	HP		
		<u>%N1</u>	<u>%N2</u>	<u>°C</u>	<u>°F</u>
Takeoff (5 minutes)	7500	96.0	98.2	904	1660
Maximum Continuous	7100	96.0	96.4	877	1610
*Starting maximum				823	1513

Maximum Oil Temperature: Normal 143°C(290°F)

\*\*Transient 170°C(338°F)

\*Time limit 10 seconds above 793°C(1460°F)

\*\*Permitted during power reduction. Normal temperature must be achieved within two minutes of achieving steady state operation.

Page No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rev. No.	35	7	6	7	10	7	7	7	10	7	7	7	10	27	11	27	22	25	22	30
Page No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Rev. No.	30	30	30	30	30	30	34	35	33	30	30	30	22	22	26	22	22	30	31	40



Oil Pressure	Maximum	Sea Level	120 p.s.i.		
	Minimum	At steady state low or high idle	30 p.s.i.		
APU Limits	Maximum RPM	110%			
	Maximum EGT:		<u>°C</u>	<u>°F</u>	
	Starting (10 Seconds)		974	1785	
	Running		731	1348	
Airspeed Limits (CAS) (See NOTE 1)	V <sub>mo</sub> and M <sub>mo</sub> (maximum operating)		<u>m.p.h.</u>	<u>Knots</u>	<u>Mach</u>
	Sea level to 10000 ft.		345	300	
	above 10000 ft.		368	320	0.79
	V <sub>fe</sub> (Flaps extended)	20°	265	230	
		30°	226	196	
		45°	193	168	
	V <sub>a</sub> (maneuvering)				
	(See Flight Manual for variation of V <sub>a</sub> with altitude and aircraft weight).				
	V <sub>1o</sub> (Landing gear operation)		226	197	
	V <sub>1e</sub> (Landing gear extended)		288	250	
C.G. Range (See NOTE 1)	<u>Weight, lb.</u>		<u>Forward Limit</u> <u>% MAC (Sta.)</u>		<u>Aft Limit</u> <u>% MAC (Sta.)</u>
	24000 to 31300		16% (+502.848)		---
	36500		18% (+504.701)		28% (+513.965)
	25800		---		33% (+518.598)
	24000		---		33% (+518.598)
	Straight line variation between points given.				
Datum	Fuselage station 0, located 375 inches forward of weighing datum jig point.				
Mean Aerodynamic Chord (MAC)	92.644 in. (Leading edge of MAC from datum at +488.025 in.)				
Leveling Means	Target plate and plumb bob bracket within rear fuselage, at fuselage station 718.				
Maximum Weights (See NOTE 1)			<u>lb. *</u>		
	Ramp		36500		
	Takeoff		36000		
	Landing		30500		
	Zero Fuel		25800		
	Minimum flight weight		24000		
	*Certain aircraft are eligible for operation at an increased weight. See AFM as in approved publications.				
Minimum Crew	Two (Pilot and Co-pilot)				
Maximum Occupants (See NOTE 1)	Twenty-one (includes crew).				

Fuel Capacity		<u>U.S. Gal</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom. Arm-in.</u>
	2 main tanks (each)	732.5	611.3	2259.1	4981	(+506.5)
	1 center tank	751	625.8	2316.1	5107	(+457.5)
	total	2216	1848.4	6834.3	15069	- - -
	<u>Usable</u>					
	2 main tanks (each)	725	605	2236	4930	(+506.5)
	1 center tank	750	625	2313	5100	(+457.5)
	total	2200	1835	6785	14960	- - -
	See NOTE 1(b) for system fuel.					
Oil Capacity		<u>U.S. Gal</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom. Arm-in.</u>
	2-engines (each)	3.69	3.07	12.88	28.4	(+623)
	total	7.38	6.14	25.76	56.8	(+623)
	<u>Usable</u>					
	2-engines (each)	1.94	1.61	6.76	14.9	(+623)
	total	3.87	3.22	13.52	29.8	(+623)
	See NOTE 1(c) for system oil.					
	<u>APU</u>					
	usable	.408	.340	1.43	3.144	(+675)
	total	.714	.594	2.49	5.5	(+675)
	unusable	.306	.254	1.06	2.356	(+675)

Maximum Operating Altitude (See NOTE 1)	Take off and landing:	5000 ft.
	En route:	40000 ft.
		41000 ft. with Canadair Limited Modification
		Summaries 600-1923 and 600-8330 incorporated.

Control Surface Movements	Rudder	20° (+1.0°, - 0.5°)Left	20° (+1.0°, - 0.5°)Right
	Elevator	23.6°(+ or - 1.0°)Up	18.4°(+ or - 1.0°)Down
	Horizontal Stabilizer	0°(+0.5° or -0.25°)LE Up	-9°(+ or -0.5°)LE Down
	Aileron	20.8°(+ or - 1.0 °)Up	21.3°(+ or - 1.0°) Down
	Flap – Inboard		0° - 45° (+ or -1°) Down
	- Outboard		0° -46.7°(+ or -1°) Down
	Flight spoiler	0° -40°(+3°, -0°)Up	

Serial Numbers Eligible 1002, 1004 and subsequent

Service Information: Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**II - Model CL-600-2A12 (Transport Category), Approved March 11, 1983, by the FAA and February 25, 1983, by the Canadian Department of Transport (DOT).**

Engines Two General Electric CF-34-1A or \*

Fuel	Type	Specifications		
		<u>Canada</u>	<u>U.S.A</u>	<u>U.K.</u>
	Jet A	CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
	Jet A-1	CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
	Grade JP-5	-	MIL-T-5624	D. Eng RD2452
	Grade JP-8	-	MIL-T-83133A	D. Eng RD2453
	Jet B	CAN2-3.22-M80	ASTM D1655	D. Eng RD2486
	JP-4	CAN2-3.22-M80	MIL-T-5624	D. Eng RD2486

Oil Engine, APU, Generator Adapter:  
MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or other approved oils as identified in the Maintenance manual (refer to Approved Publications).

Engine Limits	SL Static Thrust (lb.)	Compressor RPM		Interturbine Temp.**		Time Limit
		LP %N1	HP %N2	°C	°F	
Max. takeoff (APR operating)	9140	98.6	99.4	857	1576	5 minutes
Max. takeoff (APR not operating)	8650	96.2	98.2	842	1548	5 minutes
Max. continuous	8920	98.6	99.2	838	1540	
Idle range			62.9-64.0			
Min. Idle in icing conditions			64.0			
Transient:						
Takeoff (APR operating)				886	1627	2 minutes
Takeoff (APR not operating)				864	1588	2 minutes
Start/relight				899	1650	25 seconds
				885	1625	50 seconds

\* One - General Electric CF-34-3A and one CF-34-3A2 or  
One - General Electric CF-34-1A and one CF-34-3A or  
Two - General Electric CF-34-3A or  
Two - General Electric CF-34-3A2  
Service Bulletin 601-0238 "Engines use of 3A engines at 3A power settings," must be incorporated.

\*\* See AFM as listed in Approved Publications for CF-34-3A and CF-34-3A2 engines ITT limits.

#### NOTE

- Above 40000 feet, engine anti-ice bleed or air conditioning unit must be selected ON for each engine.
- Engine Limits with APR Operating are only applicable to Outside Air Temperatures of -4°F (-20°C) and above.

		°C	°F
Oil Temperature	Maximum Permissible (15 minutes Maximum):	+163	325
	Maximum for Single Engine Climb (60 minutes maximum)	+155	311
	Maximum continuous:	+150	302
	Minimum for starting:	- 40	- 40

Oil Pressure	Maximum Transient Cold Start:	100 psi (Six minutes maximum)
	Maximum Continuous:	95 psi
Minimum at steady state idle:	25 psi	
	at takeoff (power):	40 psi

APU Limits	Maximum RPM	110%
	Maximum EGT:	
	Starting (10 seconds)	°C 974 °F 1785
	Running	731 1348

Airspeed Limits (CAS)	V <sub>mo</sub> and M <sub>mo</sub> (maximum operating)	m.p.h.	Knots	Mach
	Sea level to 10000 ft.	345	300	-
	10000 ft. to 21420 ft.	420	365	-
	21420 ft. to 25740 ft.	-	-	0.79
	25740 ft. to 28640 ft.	385	335	
	above 28640 ft.	-	-	0.835

	V <sub>fe</sub> (Flaps extended)	20°	265	230	
		30°	226	196	
		45°	215	187	
	V <sub>a</sub> (maneuvering) (See Flight Manual for variation of V <sub>a</sub> with altitude and aircraft weight).				
	V <sub>10</sub> (Landing gear operation)		226	196	
	V <sub>1e</sub> (Landing gear extended)		288	250	
C.G. Range (See NOTE 1)		Forward Limit	Aft Limit		
	<u>Weight, lb.</u>	<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>		
	25000 to	16 % (+502.848)	- - -		
	42250				
	42250	- - -	30% (+515.818)		
	31000	- - -	35% (+520.450)		
	25000	- - -	35% (+520.450)		
	Straight line variation between points given.				
Datum	Fuselage station 0, located 375 inches forward of weighing datum jig point.				
Mean Aerodynamic Chord (MAC)	92.644 in. (Leading edge of MAC from datum at +488.025 in.)				
Leveling Means	Target plate and plumb bob bracket within rear fuselage, at fuselage station 718.				
Maximum Weights (See NOTE 1)		<u>lb.*</u>			
	Ramp	42250			
	Takeoff	42100			
	Landing	36000			
	Zero Fuel	29500			
	Minimum flight weight	25000			
	*Certain aircraft are eligible for operation at an increased weight. See AFM as in approved publications.				
Minimum Crew	Two (Pilot and Co-pilot)				
Maximum Occupants (See NOTE 1)	Twenty-two (includes crew).				
Fuel Capacity		<u>U.S. Gal</u>	<u>Imp. Gal</u>	<u>Kg.</u>	<u>Weight, lb.</u>
	2 main tanks (each)	721	600.4	2224	4903
	Fuselage Tanks	1012	842.7	3121	6882
	Total	2454	2043.4	7569	16688
	<u>Usable</u>				
	2 main tanks (each)	720	600	2221	4896
	Fuselage tanks	1011	842	3118	6875
	Total	2451	2042	7560	16667
	See NOTE 1(b) for system fuel.				
Oil Capacity		<u>U.S. Gal</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>
	2-engines (each)	1.70	1.42	5.94	13.09
	Total	3.40	2.83	11.88	26.18
	<u>Usable</u>				
	2-engines (each)	1.38	1.14	4.80	10.59
	Total	2.75	2.29	9.60	21.18

See NOTE 1(c) for system oil.

		<u>APU</u>				
	usable	.408	.340	1.43	3.144	(+646.0)
	Total	.714	.594	2.49	5.5	(+646.0)
	unusable	.306	.254	1.06	2.356	(+646.0)
Maximum Operating Altitude	Take off and landing:	10000 ft.				
	En route:	41000 ft.				
Control Surface Movements	Rudder	25°(+1.0°, -.5°) Left		25°(+1.0°, -.5°) Right		
	Elevator	23.6°(+ or - 1.0°)Up		18.4°(+ or - 1.0°)Down		
	Horizontal Stabilizer	0°(+0.5° or -0.25°)LE Up		-9°(+ or - 0.5°)LE Down		
	Aileron	20.8°(+ or - 1.0°)Up		21.3°(+ or - 1.0°) Down		
	Flap - Inboard			0° -45°(+ or - 1°) Down		
	- Outboard			0° -46.7°(+ or - 1°) Down		
	Flight spoiler	0° -40°(+3°, -0°) Up				
Serial Numbers Eligible	1003, 3001, and subsequent					
Service Information:	Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.					

**III - Model CL-600-2B16 (Transport Category), Approved April 30, 1987, by the FAA and April 21, 1987, by the Canadian Department of Transport (DOT).**

Engines	(variant CL-601-3A)	Two General Electric CF-34-3A or CF-34-3A2 or One General Electric CF-34-3A and one CF-34-3A2		
	(variant CL-601-3R)	Two General Electric CF-34-3A1 (Serial Number 5135 and subsequent) Approved by the FAA 15 July 1995.		
	(variant CL-604)	Two General Electric CF 34-3B (Serial Number 5301 and subsequent) Approved by the FAA 31 May 1995.		
Fuel	<u>Type</u>	<u>Specifications</u>		
		<u>Canada</u>	<u>U.S.A.</u>	<u>U.K.</u>
	Jet A	CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
	Jet A-1	CAN2-3.23-M81	ASTM D1655	D. Eng RD2494
	Grade JP-5	-	MIL-T-5624	D. Eng RD2452
	Grade JP-8	-	MIL-T-83133A	D. Eng RD2453
	Jet B	CAN2-3.22-M80	ASTM D1655	D. Eng. RD2486
	JP-4	CAN2-3.22-M80	MIL-T-5624	D. Eng RD2486
Oil	Engine, APU, Generator Adapter: MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or other approved oils as identified in the Maintenance manual (refer to Approved publications).			

**CL-601 3A & 3R Variants**

Engine Limits	SL Static Thrust (lb.)	Compressor RPM	Interturbine Temp.**				
		LP <u>%N1</u>	HP <u>%N2</u>	<u>°C</u>	<u>°F</u>	<u>Time Limit</u>	
	Max. takeoff (APR operating)	9140	98.6	99.4	871	1600	5 minutes
	Max. takeoff (APR not operating)	8650	96.2	98.2	860	1580	5 minutes
	Max. continuous	8920	98.6	99.2	860	1580	

Idle range	62.9-64.0		
Min. Idle in icing conditions	64.0		
Transient:			
Takeoff (APR operating)	900	1652	2 minutes
Takeoff (APR not operating)	878	1612	2 minutes
Start/relight	899	1650	25 seconds
	885	1625	50 seconds

\*\* See AFM as listed in Approved Publications for CF-34-3A and CF-34-3A2 engines ITT limits.

## NOTE

- Above 40000 feet, engine anti-ice bleed or air conditioning unit must be selected ON for each engine.
- Engine Limits with APR Operating are only applicable to Outside Air Temperatures of -4°F (-20°C) and above.

		<u>°C</u>	<u>°F</u>
Oil Temperature	Maximum Permissible (15 minutes Maximum):	+163	325
	Maximum for Single Engine Climb (60 minutes maximum)	+155	311
	Maximum continuous:	+150	302
	Minimum for starting:	- 40	- 40
Oil Pressure	Maximum Transient Cold Start:	100 psi (Six minutes maximum)	
	Maximum Continuous:	95 psi	
	Minimum at steady state idle: at takeoff (power):	25 psi	40 psi
APU Limits	Maximum RPM	110%	
	Maximum EGT:	<u>°C</u>	<u>°F</u>
	Starting (10 seconds)	974	1785
	Running	731	1348

**CL-601 3A & 3R Variants**

Airspeed Limits (CAS)	$V_{m0}$ and $M_{m0}$ (maximum operating)	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach</u>
	Sea level to 10000 ft.	345	300	-
	10000 ft. to 21330 ft.	420	365	-
	21330 ft. to 25640 ft.	-	-	0.79
	25640 ft. to 28720 ft.	385	335	
	above 28720 ft.	-	-	0.835
	$V_{fe}$ (Flaps extended)			
	20°	265	230	
	30°	226	196	
	45°	215	187	
	$V_a$ (maneuvering)			
	(See Flight Manual for variation of $V_a$ with altitude and aircraft weight).			
	$V_{10}$ (Landing gear operation)	226	196	
	$V_{1e}$ (Landing gear extended)	288	250	

C.G. Range (See NOTE 1)	<u>Weight, lb.</u>	Forward Limit	Aft Limit
		<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>
	25000 to 42250	16% (+502.848)	- - -
	43250	- - -	30% (+515.818)
	31000	- - -	35% (+520.450)
	25000	- - -	35% (+520.450)

	Straight line variation between points given.	
Datum	Fuselage station 0, located 375 inches forward of weighing datum jig point.	
Mean Aerodynamic Chord (MAC)	92.644 in. (Leading edge of MAC from datum at +488.025 in.)	
Leveling Means	Target plate and plumb bob bracket within rear fuselage, at fuselage station 718.	
Maximum Weights (See NOTE 1)	<u>lb. *</u>	
	Ramp	43250
	Takeoff	43100
	Landing	36000
	Zero Fuel	29500
	Minimum flight weight	25000
	*Certain aircraft are eligible for operation at different weights. See AFM as in approved publications. 601-3R Variant for aircraft S/N 5135 and subsequent.	
Minimum Crew	Two (Pilot and Co-pilot)	
Maximum Occupants	Twenty-two (includes crew).	

**CL-604 Variant**

Engine Limits	CF34-3B	SL Static Thrust (lb.)	Compressor RPM		Interturbine Temp.		Time Limit
			LP <u>%N1</u>	HP <u>%N2</u>	<u>°C</u>	<u>°F</u>	
Max. takeoff (APR operating)		9220	98.6	99.4	900	1650	5 minutes
Max. takeoff (APR not operating)		8729	96.2	98.2	884	1623	5 minutes
Max. continuous		9140	98.6	99.2	874	1605	
Idle range				62.9-64.0			
Min. Idle in icing conditions				64.0			
Transient:							
Takeoff (APR operating)					928	1702	2 minutes
Takeoff (APR not operating)					900	1650	2 minutes
Start/relight					899	1650	25 seconds
					885	1625	50 seconds

## NOTE

- Above 40000 feet, engine anti-ice bleed or air conditioning unit must be selected ON for each engine.
- Engine Limits with APR Operating are only applicable to Outside Air Temperatures of -4°F (-20°C) and above.

		<u>°C</u>	<u>°F</u>
Oil Temperature	Maximum Permissible (15 minutes Maximum):	+163	325
	Maximum for Single Engine Climb (60 minutes maximum)	+155	311
	Maximum continuous:	+150	302
	Minimum for starting:	- 40	- 40
Oil Pressure	Maximum Transient Cold Start:	115 psi ( 10 min. maximum)	
	Maximum Continuous:	95 psi	
	Minimum at steady state idle: at takeoff (power):	25 psi	45 psi
APU Limits	Maximum RPM	110%	

Maximum EGT:	°C	°F
Starting (10 seconds)	974	1785
Running	731	1348

**CL-604 Variant**

Airspeed Limits (CAS)	$V_{m0}$ and $M_{m0}$ (maximum operating)	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach</u>
	Sea level to 8000 ft.	345	300	-
	8000 ft. to 22160 ft.	400	348	-
	22160 ft. to 26570 ft.	-	-	0.78
	26570 ft. to 30997 ft.	366	318	-
	above 30997 ft	-	-	0.85
	$V_{fe}$ (Flaps extended)	20°	266	231
		30°	227	197
		45°	217	189
	$V_a$ (maneuvering)			
	(See Flight Manual for variation of $V_a$ with altitude and aircraft weight).			
	$V_{10}$ (Landing gear operation)	227	197	
	$V_{1e}$ (Landing gear extended)	288	250	

C.G. Range (See NOTE 1)	<u>Weight, lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>
	26000 to 38000	20% (+506.553)	- - -
	39500 to 44750	16% (+502.847)	- - -
	47700	20% (+506.553)	- - -
	47700 to 43000	- - -	38% (+523.228)
	38000 to 26000	- - -	35% (+520.449)
	Straight line variation between points given.		

Datum Fuselage station 0, located 375 inches forward of weighing datum jig point.

Mean Aerodynamic Chord (MAC) 92.644 in. (Leading edge of MAC from datum at +488.025 in.)

Leveling Means Target plate and plumb bob bracket within rear fuselage, at fuselage station 718.

Maximum Weights (See NOTE 1)	<u>lb. *</u>
Ramp	47700
Takeoff	47600
Landing	38000
Zero Fuel	32000
Minimum	26000

\*Certain aircraft are eligible for operation at different weights. See AFM as in approved publications. 601-3R Variant for aircraft S/N 5135 and subsequent.

Minimum Crew Two (Pilot and Co-pilot)  
Maximum Occupants Twenty-two (includes crew).

<b>3A variant</b>	<u>U.S. Gal</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom.Arm-in.</u>
Fuel Capacity					
	<u>Usable</u>				
	2 main tanks (each)	722	601	2227	4909 (+506.6)
	Fuselage tanks	1010	841	3115	6868 (+455.6)
	Total	2454	2043	7569	16686
	See NOTE 1(b) for system fuel.				

<b>3R variant</b>	<u>U.S. Gal</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom.Arm-in.</u>
Fuel Capacity					
	<u>Usable</u>				
	2 main tanks (each)	722	601	2227	4909 (+506.6)



Fuselage tanks	1010	841	3115	6868	(+455.6)
Tail tank	187.7	156.24	579	1276	(+816.7)
Total	2641.7	2199.24	8148	17962	

See NOTE 1(b) for system fuel.

**604 variant**

## Fuel Capacity

	<u>U.S. Gal.</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom.Arm-in.</u>
<u>Usable</u>					
2 main tanks (each)	722	601	2227	4909	(+506.6)
Fuselage tanks	1062	885	3275	7222	(+450.6)
Tail tank	466	387.9	1437	3169	(+771.7)
Total	2972	2474.9	9166	20209	

See NOTE 1(b) for system fuel.

## Oil Capacity

	<u>U.S. Gal.</u>	<u>Imp. Gal.</u>	<u>Kg.</u>	<u>Weight, lb.</u>	<u>Mom.Arm-in.</u>
<u>601-3A Variant*</u>					
2-engines (each)	1.70	1.42	5.94	13.09	(+653.0)
Total	3.40	2.83	11.88	26.18	(+653.0)

Usable

2-engines (each)	1.38	1.14	4.80	10.59	(+653.0)
Total	2.75	2.29	9.60	21.18	(+653.0)

See NOTE 1(c) for system oil.

APU

usable	.408	.340	1.43	3.144	(+646.0)
Total	.714	.594	2.49	5.5	(+646.0)

unusable .306 .254 1.06 2.356 (+646.0)

\*601-3R Variant & 604 Variant - same as 601-3A, except as listed in the AFM approved publication.

## Maximum Operating Altitude

Take off and landing: 10000 ft.  
En route: 41000 ft.

## Control Surface Movements

Rudder	25°(+ 1°, -0.5°)Left	25°(+ 1° or -0.5°) Right
Elevator	23.6°(+ or -1.0°) Up	18.4°(+ or -1.0°) Down
Horizontal stabilizer	0°(+0.5° or -0.25°)LE Up	-9°(+ or - 0.5°) LE Down
Aileron	20.8°(+ or - 1°)Up	21.3°(+ or - 1°) Down
Flap – Inboard		0° -45°(+ or - 1°) Down
- Outboard		0° -46.7°(+ or -1°) Down
Flight spoiler	0° -40°(+3°, -0°) Up	

## Serial Numbers Eligible

5001 and subsequent

## Service Information:

Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**IV - Model CL-600-2B19 (Transport Category), Regional Jet Series 100 Approved January 21, 1993, by the FAA and July 31, 1992, by Transport Canada.**

**Model CL-600-2B19 (Transport Category), Regional Jet Series 440 Approved November 30,2001, by the FAA and October 4, 2001, by Transport Canada.**

## Engines

Two General Electric CF-34-3A1 or  
Two General Electric CF-34-3B1  
Engines may be intermixed in accordance with AFM as listed in Approved Publications.

Type

Specifications

	<u>Canada</u>	<u>U.S.A.</u>	<u>U.K.</u>	<u>Romanian</u>
Jet A	CAN2-3.23	ASTM D1655	D. Eng RD2494	
Jet A-1	CAN2-3.23	ASTM D1655	D. Eng RD2494	STAS 5639/88 TH†
Grade JP-5	-	MIL-T-5624	D. Eng RD2452	
Grade JP-8	-	MIL-T-83133A	D. Eng RD2453	
Jet B	CAN2-3.22	ASTM D1655	D. Eng RD2486	
JP-4	CAN2-3.22	MIL-T-5624	D. Eng RD2486	

†Fuel Additives Restricted to those listed in AFM (CSP-A-012) (Limitations, Fuel Additives) and/or antistatic STADIS-450 (max. 3ppm).

## Oil

Engine, APU and IDG:

MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or CASTROL 4000. \*

\* Mixing of different types of oils is prohibited.

## Engine Limits Conditions

	Fan RPM	Core RPM	ITT		Time Limit (Min)
	N <sub>1</sub> %	N <sub>7</sub> %	°C	°F	
Max. Take - off (APR Operating)	98.6	99.4	900	1650	5***
			928	1702	2*
Normal Take-off	96.2	98.2	884	1623	5***
			900	1650	2*
Max. Continuous	98.6	99.2	860 (874) (3A1/3B1)	1580/1605 (3A1/3B1)	
Idle Range	-	56.5 to 68.0**	-	-	-
Acceleration	-	-	900	1652	-
Starting	-	20.0	900	1652	-

\* 2 minutes out of 5 total transient.

\*\* Refer to Idle Speed Limit Chart in the AFM

If N<sub>2</sub> idle RPM is more than 2% lower, do not advance thrust lever above 70% N<sub>2</sub> until N<sub>2</sub> idle RPM has stabilized to within normal limits.

\*\*\* Transient limits. NOTE:

Above 40000 feet, one air conditioning unit or cowl anti-ice must be selected on for each engine.

Oil Temperature	Maximum Permissible (15 minutes Maximum):	<u>°C</u>	<u>°F</u>
	Maximum Continuous	+163	325
	Minimum for Starting	+155	311
Oil Pressure	Maximum Transient (after cold start)	-40	-40
	Maximum Continuous		
	Take-off Power		
	Steady State Idle		
	* Engine must remain at idle until oil pressure returns to normal range.		
APU	GARRETT GTCP-36-150RJ		
APU Limits	Maximum RPM:	107%	
	Maximum EGT:	<u>°C</u>	<u>°F</u>
	Starting	974	1785*
	Running	743	1369
	* Not to be exceeded under any operating condition.		

Airspeed Limits	V <sub>m0</sub> and M <sub>m0</sub> (maximum operating)	<u>m.p.h.</u>	<u>knots</u>	<u>Mach</u>
	Sea Level to 8000 ft.	380	330	-
	8000 ft. to 25400 ft.	386	335	-
	25400 ft. to 28300 ft.	-	-	0.80
	28300 ft. to 31400 ft.	362	315	-
	31400 ft. to 41000 ft.	-	-	0.85
	V <sub>fe</sub> (Flaps Extended)	8°	265	230
		20°	265	230

	30°	226	196	-
	45°	220	191	-
$V_a$ (maneuvering)				
(See Flight Manual for variation of $V_a$ with altitude and aircraft weight).				
$V_{I,O}$ (Landing Gear Operation)		288	250	*-
		230	200	**-
$V_{I,F}$ (Landing Gear Extended)		288	250	-
* extending , ** retracting				

C.G. Range:-

Max T/O 47 450 lbMax T/O 51 000 lb

<u>Weight, lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>	<u>Weight, lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>
25480	16.5% (+510.201)	-	25480	16.5% (+510.201)	-
30000 to 34000	11.0% (504.732)	-	30000 to 34000	11.0% (+504.732)	-
36000 to 47700	9.0 % (+502.744)	-	36000 to 51250	9.0% (+502.744)	-
47700	-	-	51250	-	24% (+517.659)
47700 to 36000	-	35% (528.596)	50000 to 36000	-	35% (+528.596)
34000 to 30000	-	32% (+525.613)	34000 to 30000	-	32% (+525.613)
25480	-	27% (+520.642)	25480	-	27% (+520.642)

NOTES: 1) Effect of landing gear retraction on CG position is negligible.  
2) Straight line variation between points given.

C. G. Range:-

Max T/O 53 000 lb

<u>Weight, lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>
25480	16.5% (+510.201)	-
30000 to 34000	11.0% (504.732)	-
36000 to 53250	9.0 % (+502.744)	-
53250	24.0 %	-
53250 to 36000	-	35% (528.596)
34000 to 30000	-	32% (+525.613)
25480	-	27% (+520.642)

NOTES: 1) Effect of landing gear retraction on CG position is negligible.  
2) Straight line variation between points given.

Datum Fuselage station 0, located 375 inches forward of weighing datum jig point.

Mean Aerodynamic Chord 99.43 inches (MAC leading edge at fuselage sta. 494.793)  
(MAC)

Leveling Means Target plate and plumb bob bracket within rear fuselage, at fuselage station 718.75.

Maximum Weights	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>
Ramp	47700	51250	51250	53250	53250	53250
Takeoff	47450	51000	51000	53000	53000	53000
Landing	44700	46750	47000	46750	47000	47000
Zero Fuel	42200	44000	44000	44000	44000	39500
Minimum flight weight	30000	30000	30000	30000	30000	30000

NOTE: The maximum take-off weight and/or maximum landing weight may be further limited due to performance considerations (refer to Airplane Flight Manual).

Minimum Crew Two (Pilot and Co-pilot)

Maximum Occupants Series 100 Fifty-five (55) (including 50 passengers, 4 crew, and 1 flight observer)  
Series 440- Forty-Nine (49) (including 44 passengers, 4 crew, 1 flight observer)

CL-600-2B19 Green Aircraft Configuration  
Refer to Note 5.

Fuel Capacity (usable)	Load *		Weight *	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 main tanks (each)	700.0	582.8	2159	4760
Center Tank	735.0	612.0	2267	4998
Total	2135.0	1669.6	6585	14518

\* Pressure refueling (based on 0.8028 kg/L)

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	kg.	lb.
2 Engines (each)	1.70	1.42	5.94	13.09
Total	3.40	2.84	11.88	26.18
Usable				
2 Engines (each)	1.38	1.14	4.80	10.59
Total	2.76	2.29	9.60	21.18

Maximum Operating Altitude	Take off and landing:	10000 ft.
	En route:	41000 ft.

Control Surface Movements	Rudder	33° Left*	33° Right
	Horizontal Stabilizer	2° LE Up	-13° LE Down
	Aileron	25° Up	21.3° Down
	Elevator	23.6° Up	18.4° Down
	Flight Spoiler	50° Up	
	Ground Spoiler	45° Up	
	Spoileron	50° Up	
	Flap – Inboard		45.09° Down
Flap – Outboard		41.58° Down	

\*Rudder deflections of 33° left and 33° right apply when CF-34-3A1 engines are installed.

\*Rudder deflections of 25° left and 25° right apply when optional CF-34-3B1 engines are installed.

Serials Numbers Eligible 7001 and subsequent

Service Information Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**V - Model CL-600-2C10 (Transport Category), Approved February 16, 2001, by the FAA and December 22, 2000 by Transport Canada.**

Engines Two General Electric CF-34-8C1, or  
Two General Electric CF-34-8C5B1  
Engines may be intermixed in  
accordance with AFM as listed in  
Approved publications

Fuel	Type	Specifications Canada	U.S.A.	U.K.	Roumanian
	Jet A	CAN2-3.23	ASTM D1655	D. Eng RD2494	
	Jet A-1	CAN2-3.23	ASTM D1655	D. Eng RD2494	STAS 5639/88TH
	Grade JP-5		MIL-T-5624	D. Eng RD2452	
	Grade JP-8		MIL-T-83133	D. Eng RD2453	

†Fuel Additives Restricted to those listed in AFM (CSP-B-012) (Limitations, Fuel Additives) and/or antistatic STADIS-450 (max. 3ppm).

Note: CL-600-2C10

JP4 and Jet B not applicable to CL-600-2C10

Oil Engine, APU and IDG:  
MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or CASTROL 4000. \*  
\* Mixing of different types of oils is prohibited.

Engine Limits Conditions Refer to Limits Table in the AFM (CSP B-012)

Oil Temperature	Maximum Permissible (15 minutes Maximum):	°C	°F
	Maximum Continuous	+163	325
	Minimum for Starting	+155	311
		-40	-40

Oil Pressure Maximum Transient (after cold start) 156 psi (130 psi at idle, 10 minutes maximum)\*

Maximum Continuous 45-116 psi

Take-off Power 45-116 psi

Steady State Idle 25 psi minimum

\* Engine must remain at idle until oil pressure returns to normal operating range.

APU ALLIED SIGNAL RE220 (RJ)

APU Limits Maximum RPM: 106%

Maximum EGT:	°C	°F
Starting	692-1038	1274-1900*
Running-Ground	789	1452
Running-Flight	806	1482

\* Dependant upon altitude and temperature. Refer to AFM (CSP B-012)

\*\* Not to be exceeded under any operating condition.

\*\*\* Refer to AFM for detail limitations

Airspeed Limits

Vmo and Mmo (maximum operating)		m.p.h.	knots	Mach
Sea Level to 8000 ft.		380	330	-
8000 ft. to 25400 ft.		386	335	-
25400 ft. to 28300 ft.		-	-	0.80
28300 ft. to 31400 ft.		362	315	-
31400 ft. to 41000 ft.		-	-	0.85
Vfe (Flaps Extended)	1	265	230	
	8	265	230	-
	20	265	230	-
	30	213	185	-
	45	196	170	-

Va (maneuvering)  
(See AFM for variation of Va with altitude and aircraft weight).

VLO (Landing Gear Operation)	253	220	*
	230	200	**
VLE (Landing Gear Extended)	253	220	-

\* extending , \*\* retracting

C.G. Range:- Refer to AFM (CSP B-012) for detail CG limits.

Datum Fuselage station 0, located 144.0 inches forward of aircraft nose

Mean Aerodynamic Chord (MAC) 133.185 inches (MAC leading edge at fuselage sta. 743.1)

Leveling Means Target plate and plumb bob bracket within rear fuselage, at fuselage station 1145.75

Maximum Weights	Type	Spec.	Option
		lb.	lb.
Ramp		73000	75250
Takeoff		72750	75000
Landing		67000	67000

Page No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rev. No.	35	7	6	7	10	7	7	7	10	7	7	7	10	27	11	27	22	25	22	30
Page No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Rev. No.	30	30	30	30	30	30	34	35	33	30	30	30	22	22	26	22	22	30	31	40

Zero Fuel	62300	62300
Minimum flight weight	42000	42000

NOTE: The maximum take-off weight and/or maximum landing weight may be further limited due to performance considerations. Refer to Airplane Flight Manual for aircraft eligibility.

Minimum Crew Two (Pilot and Co-pilot)

Maximum Occupants Series 700 – 68 or less passengers  
Series 701 – 70 passengers  
Series 702 – 78 passengers  
Plus 5 crew-members (Pilot, Copilot, Observer forward and Aft Flight attendants)

Fuel Capacity (usable)	Load *		Weight *	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 main tanks (each)	1110	924.1	3399	7493
Center Tank	683	568.6	2091	4610
Total	2903	2416.7	8889	19596

See Note 1(b) for system fuel

\* Pressure refueling (based on 0.809 kg/L) (6.75 lb/U.S. Gal.)

With option TS670-79-201 – Engine Oil – No Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Total	5.2	4.36	19.30	42.4

With option CR670-79-201 – Engine Oil – Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Replenishment Tank	1.6	1.3	5.9	13.0
Total	6.8	5.7	25.2	55.4

See Note 1(c) for system oil

Maximum Operating	Take off and landing:	8000ft (without Modsum 670T82357) 9600ft (with Modsum 670T82357)
Altitude	En route:	41000 ft.

Control Surface Movements	Rudder	33° Left	33° Right
	Horizontal Stabilizer	2.0° LE Up	13.0° LE Down
	Aileron	25.1° Up	21.3° Down
	Elevator	23.6° Up	18.4° Down
	Multi-Function Spoilers	48.0° Up	
	Ground Spoiler	44.9° Up	
	Flap - Inboard		45.0° Down
	- Outboard		41.6° Down
	Slat		25.0° Down

Serial Numbers Eligible 10002 and subsequent

Service Information Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved

through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**VI – Model CL-600-2D15 (Transport Category), Approved May 4, 2005, by the FAA and May 3, 2005 by Transport Canada.**

Engines	Two General Electric CF34-8C5 or optional CF34-8C5A1 TC No. E00063EN				
Fuel	Type	Specifications			
		Canada	U.S.A.	U.K.	Roumanian
	Jet A	CAN2-3.23	ASTM D1655	D. Eng RD2494	
	Jet A-1	CAN2-3.23	ASTM D1655	D. Eng RD2494	STAS 5639/88TH
	Grade JP-5		MIL-T-5624	D. Eng RD2452	
	Grade JP-8		MIL-T-83133	D. Eng RD2453	
	†Fuel Additives Restricted to those listed in AFM (CSP-C-012) (Limitations, Fuel Additives) and/or antistatic STADIS-450 (max. 3ppm).				
	Note: CL-600-2D15 JP4 and Jet B not applicable to CL-600-2D15				
Oil	Engine, APU and IDG: MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or CASTROL 4000. *				
	* Mixing of different types of oils is prohibited.				
Engine Limits Conditions	Refer to Limits Table in the AFM (CSP C-012)				
Oil Temperature				°C	°F
	Maximum Permissible (15 minutes Maximum):			+163	325
	Maximum Continuous			+155	311
	Minimum for Starting			-40	-40
Oil Pressure	Maximum Transient (after cold start)			182 psi (95 psi after 10 minutes)	
	Maximum Continuous			45-95 psi	
	Take-off Power			45-95 psi	
	Steady State Idle			25 psi minimum	
	* Engine must remain at idle until oil pressure returns to normal operating range.				
APU	ALLIED SIGNAL RE220 (RJ)				
APU Limits	Maximum RPM:	106%			
	Maximum EGT:	°C	°F		
	Starting	692-1038	1274-1900		
	Running-Ground*	789	1452		
	Running-Flight*	806	1482		
	* Dependent upon altitude and temperature. Refer to AFM (CSP C-012)				
	** Not to be exceeded under any operating condition.				
	*** Refer to AFM for detail limitations				
Airspeed Limits	Vmo and Mmo (maximum operating)		m.p.h.	knots	Mach
	Sea Level to 8000 ft.		380	330	-
	8000 ft. to 25400 ft.		386	335	-
	25400 ft. to 28300 ft.		-	-	0.80
	28300 ft. to 31400 ft.		362	315	-
	31400 ft. to 34000 ft.		-	-	0.85
	34000 ft. to 41000 ft.		-	-	0.84
	Vfe (Flaps Extended)	1	265	230	
		8	265	230	-
		20	253	220	-
		30	213	185	-

45            196            170            -

Va (maneuvering)

(See AFM for variation of Va with altitude and aircraft weight).

VLO (Landing Gear Operation)	253	220	*
	230	200	**
VLE (Landing Gear Extended)	253	220	-
* extending , ** retracting			

C.G. Range:- Refer to AFM (CSP C-012) for detail CG limits.

Datum Fuselage station 0, located 144.0 inches forward of aircraft nose

Mean Aerodynamic Chord (MAC) 133.185 inches (MAC leading edge at fuselage sta. 833.1 inches)

Leveling Means Target plate and plumb bob bracket within rear fuselage, at fuselage station 1146.75

Maximum Weights	Type		
	Spec. lb.	Option lb.	Option lb.
Ramp	80,750	82,750	85,000
Takeoff	80,500	82,500	84,500
Landing	73,500	73,500	75,100
Zero Fuel	70,000	70,000	70,750
Minimum flight weight	45,000	45,000	45,000

NOTE: The maximum take-off weight and/or maximum landing weight may be further limited due to performance considerations. Refer to Airplane Flight Manual for aircraft eligibility.

Minimum Crew Two (Pilot and Co-pilot)

Maximum Occupants 75 or less passengers  
Plus 5 crew-members (Pilot, Copilot, Observer forward and Aft Flight attendants)

Fuel Capacity (usable)	Load *		Weight *	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 main tanks (each)	1110	924.1	3398	7492
Center Tank	683	568.6	2091	4610
Total	2903	2416.7	8888	19595

See Note 1(b) for system fuel

\* Pressure refueling (based on 0.809 kg/L) (6.75 lb/U.S. Gal.)

With option TS670-79-201 – Engine Oil – No Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Total	5.2	4.36	19.3	42.4

With option CR670-79-201 – Engine Oil – Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Replenishment Tank	1.6	1.3	5.9	13.0
Total	6.8	5.7	25.2	55.4

See Note 1(c) for system oil



Maximum Operating	Take off and landing:	8000ft (without Modsum 670T82357) 9600ft (with Modsum 670T82357)	
Altitude	En route:	41,000 ft.	
Control Surface Movements	Rudder	33° Left	33° Right
	Horizontal Stabilizer	2.0° LE Up	13.0° LE Down
	Aileron	25.1° Up	21.3° Down
	Elevator	23.6° Up	18.4° Down
	Multi-Function Spoilers	48.0° Up	
	Ground Spoiler	44.9° Up	
	Flap – Inboard		45.0° Down
	- Outboard		41.6° Down
	Slat		25.0° Down
Serial Numbers Eligible	15001 and subsequent		
Service Information:	Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.		

**VII – Model CL-600-2D24 (Transport Category), Approved October 25,-2002, by the FAA and September 9, 2002 by Transport Canada.**

Engines	Two General Electric CF34-8C5 or optional CF34-8C5A1 TC No. E00063EN				
Fuel	Type	Specifications Canada	U.S.A.	U.K.	Roumanian
	Jet A	CAN2-3.23	ASTM D1655	D. Eng RD2494	
	Jet A-1	CAN2-3.23	ASTM D1655	D. Eng RD2494	STAS 5639/88TH
	Grade JP-5		MIL-T-5624	D. Eng RD2452	
	Grade JP-8		MIL-T-83133	D. Eng RD2453	
	†Fuel Additives Restricted to those listed in AFM (CSP-C-012) (Limitations, Fuel Additives) and/or antistatic STADIS-450 (max. 3ppm). Note: CL-600-2D24 JP4 and Jet B not applicable to CL-600-2D24				
Oil	Engine, APU and IDG: MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or CASTROL 4000. * * Mixing of different types of oils is prohibited.				
Engine Limits Conditions	Refer to Limits Table in the AFM (CSP C-012)				
Oil Temperature	Maximum Permissible (15 minutes Maximum):		°C	°F	
	Maximum Continuous		+163	325	
	Minimum for Starting		+155	311	
Oil Pressure	Maximum Transient (after cold start)		-40	-40	
	Maximum Continuous				182 psi (95 psi after 10 minutes)
	Take-off Power				45-95 psi
	Steady State Idle				45-95 psi 25 psi minimum

\* Engine must remain at idle until oil pressure returns to normal operating range.

APU  
APU Limits

ALLIED SIGNAL RE220 (RJ)

Maximum RPM: 106%

Maximum EGT:	°C	°F
Starting	692-1038	1274-1900
Running-Ground*	789	1452
Running-Flight*	806	1482

\* Dependent upon altitude and temperature. Refer to AFM (CSP C-012)

\*\* Not to be exceeded under any operating condition.

\*\*\* Refer to AFM for detail limitations

Airspeed Limits

Vmo and Mmo (maximum operating)		m.p.h.	knots	Mach
Sea Level to 8000 ft.		380	330	-
8000 ft. to 25400 ft.		386	335	-
25400 ft. to 28300 ft.		-	-	0.80
28300 ft. to 31400 ft.		362	315	
34000 ft. to 41000 ft.				0.84*
31400 ft. to 41000 ft.		-	-	0.85
Vfe (Flaps Extended)	1	265	230	
	8	265	230	-
	20	253	220	-
	30	213	185	-
	45	196	170	-

Va (maneuvering)

(See AFM for variation of Va with altitude and aircraft weight).

\*with the incorporation of M/S 690T002727 – Introduction of new winglet

VLO (Landing Gear Operation)	253	220	**
	230	200	***
VLE (Landing Gear Extended)	253	220	-
** extending , *** retracting			

C.G. Range:-

Refer to AFM (CSP C-012) for detail CG limits.

Datum

Fuselage station 0, located 144.0 inches forward of aircraft nose

Mean Aerodynamic Chord (MAC)

133.185 inches (MAC leading edge at fuselage sta. 833.1 inches)

Leveling Means

Target plate and plumb bob bracket within rear fuselage, at fuselage station 1146.75

Maximum Weights

	Type Spec.	Option lb.	Option lb.
Ramp	80,750	82,750	85,000
Takeoff	80,500	82,500	84,500
Landing	73,500	73,500	75,100
Zero Fuel	70,000	70,000	70,750
Minimum flight weight	45,000	45,000	45,000

NOTE:

The maximum take-off weight and/or maximum landing weight may be further limited due to performance considerations. Refer to Airplane Flight Manual for aircraft eligibility.

Minimum Crew

Two (Pilot and Co-pilot)

Maximum Occupants

90 or less passengers  
Plus 5 crew-members (Pilot, Copilot, Observer forward and Aft Flight attendants)

Fuel Capacity (usable)	Load *	Imp. Gal.	Weight *	lb.
	U.S. Gal.		Kg.	
2 main tanks (each)	1110	924.1	3398	7492
Center Tank	683	568.6	2091	4610
Total	2903	2416.7	8888	19595

See Note 1(b) for system fuel

\* Pressure refueling (based on 0.809 kg/L) (6.75 lb/U.S. Gal.)

With option TS670-79-201 – Engine Oil – No Remote Replenishment System

Oil Capacity	Load	Imp. Gal.	Weight	lb.
	U.S. Gal.		Kg.	
2 Engines (each)	2.6	2.2	9.65	21.2
Total	5.2	4.36	19.3	42.4

With option CR670-79-201 – Engine Oil – Remote Replenishment System

Oil Capacity	Load	Imp. Gal.	Weight	lb.
	U.S. Gal.		Kg.	
2 Engines (each)	2.6	2.2	9.65	21.2
Replenishment Tank	1.6	1.3	5.9	13.0
Total	6.8	5.7	25.2	55.4

See Note 1(c) for system oil

Maximum Operating	Take off and landing:	8000ft (without Modsum 670T82357)		
		9600ft (with Modsum 670T82357)		
Altitude	En route:	41,000 ft.		
Control Surface Movements	Rudder	33° Left	33° Right	
	Horizontal Stabilizer	2.0° LE Up	13.0° LE Down	
	Aileron	25.1° Up	21.3° Down	
	Elevator	23.6° Up	18.4° Down	
	Multi-Function Spoilers	48.0° Up		
	Ground Spoiler	44.9° Up		
	Flap – Inboard		45.0° Down	
	- Outboard		41.6° Down	
	Slat		25.0° Down	

Serial Numbers Eligible 15001 and subsequent

Service Information: Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**VIII – Model CL-600-2E25 (Transport Category), Approved December 17, 2010 by the FAA and November 1, 2010 by Transport Canada.**

Engines Two General Electric CF34-8C5 or  
optional CF34-8C5A1  
optional CF34-8C5A2  
TC No. E00063EN

Fuel	Type	Specifications	U.S.A.	U.K.	China	CIS	NATO
		Canada					
	Jet A	CAN2-3.23	ASTM D1655				

Jet A-1	CAN2-3.23	ASTM D1655	DEF STAN 9191	GB653794	RT	F-35
				No. 3 Jet		
Grade JP-5	CAN2-3.24	MIL-T-5624	DEF STAN 9186			F-44
Grade JP-8	CAN2-3.24	MIL-T-83133	DEF STAN 9187			F-34
†Fuel Additives Restricted to those listed in AFM (CSP-D-012) (Limitations, Fuel Additives) and/or antistatic STADIS-450 (max. 5g/m <sup>3</sup> ).						
Note: CL-600-2E25						
JP4 and Jet B not applicable to CL-600-2E25						
Oil	Engine, APU and IDG: MIL-L-7808 (Type I) or MIL-L-23699 (Type II) or CASTROL 4000. *					
	* Mixing of different types of oils is prohibited.					
Engine Limits Conditions	Refer to Limits Table in the AFM (CSP D-012)					
Oil Temperature	Maximum Permissible (15 minutes Maximum):			°C	°F	
	Maximum Continuous			+163	325	
	Minimum for Starting			+155	311	
				-40	-40	
Oil Pressure	Maximum Transient (after cold start)			182 psi (95 psi after 10 minutes)		
	Maximum Continuous			45-95 psi		
	Take-off Power			45-95 psi		
	Steady State Idle			25 psi minimum		
	* Engine must remain at idle until oil pressure returns to normal operating range.					
APU	ALLIED SIGNAL RE220 (RJ)					
APU Limits	Maximum RPM:		106%			
	Maximum EGT:			°C	°F	
	Starting			692-1038	1274-1900	
	Running-Ground*			789	1452	
	Running-Flight*			806	1482	
	* Dependent upon altitude and temperature. Refer to AFM (CSP D-012)					
	** Not to be exceeded under any operating condition.					
	*** Refer to AFM for detail limitations					
Airspeed Limits	Vmo and Mmo (maximum operating)		m.p.h.	knots	Mach	
	Sea Level to 8000 ft.		380	330	-	
	8000 ft. to 25400 ft.		386	335	-	
	25400 ft. to 28300 ft.		-	-	0.80	
	28300 ft. to 31400 ft.		362	315		
	34000 ft. to 41000 ft.				0.84	
	31400 ft. to 41000 ft.		-	-	0.85	
	Vfe (Flaps Extended)	1	265	230		
		8	265	230	-	
		20	253	220	-	
		30	213	185	-	
		45	196	170	-	
	Va (maneuvering)	(See AFM for variation of Va with altitude and aircraft weight).				
	VLO (Landing Gear Operation)		253	220	**	
			230	200	***	
	VLE (Landing Gear Extended)		253	220	-	
	** extending , *** retracting					
C.G. Range:-	Refer to AFM (CSP D-012) for detail CG limits.					
Datum	Xarm 0, located 144.0 inches forward of aircraft nose					

Mean Aerodynamic Chord (MAC) 137.020 inches (MAC leading edge at Xarm 900.257 inches)

Leveling Means Target plate and plumb bob bracket within rear fuselage, at fuselage station 1146.75

Maximum Weights	Type				
	Spec. lb.	Option lb.	Option lb.	Option lb.	Option lb.
Ramp	90,500	92,300	88,673	90,878	86,469
Takeoff	90,000	91,800	88,173	90,378	85,969
Landing	81,500				
Zero Fuel	77,500				
Minimum flight weight	51,000				

NOTE: The maximum take-off weight and/or maximum landing weight may be further limited due to performance considerations. Refer to Airplane Flight Manual for aircraft eligibility.

Minimum Crew Two (Pilot and Co-pilot)

Maximum Occupants 110, including 6 crew members (1 Pilot, 1 Co-pilot, 1 observer and 3 Flight Attendants) (104 passengers when fitted with an approved interior)

Fuel Capacity (usable)	Load *		Weight *	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 main tanks (each)	1113	926.8	3407	7513
Center Tank	710	591.2	2174	4793
Total	2936	2444.7	8989	19818

See Note 1(b) for system fuel

\* Pressure refueling (based on 0.809 kg/L) (6.75 lb/U.S. Gal.)

With option TS670-79-201 – Engine Oil – No Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Total	5.2	4.36	19.3	42.4

With option CR670-79-201 – Engine Oil – Remote Replenishment System

Oil Capacity	Load		Weight	
	U.S. Gal.	Imp. Gal.	Kg.	lb.
2 Engines (each)	2.6	2.2	9.65	21.2
Replenishment Tank	1.6	1.3	5.9	13.0
Total	6.8	5.7	25.2	55.4

See Note 1(c) for system oil

Maximum Operating Take off and landing: 10000 ft.

Altitude En route: 41,000 ft.

Control Surface Movements	Rudder	33° Left	33° Right
	Horizontal Stabilizer	2.0° LE Up	13.0° LE Down
	Aileron	24.1° Up	20.3° Down
	Elevator	23.6° Up	18.4° Down
	Multi-Function Spoilers	48.0° Up	
	Ground Spoiler	44.0° Up	
	Flap – Inboard		45.0° Down
	- Outboard		34.0° Down
	Slat		25.0° Down

Serial Numbers Eligible 19013 and subsequent (see note 11)

Service Information: Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved or Transport Canada approved through the Manufacturers Design Approval Representative are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

**Data Pertinent to all Models**

Approved Publications

Model CL-600-1A11

- (a) Airplane Flight Manual, Canadair Publication RAG-600-101, Issue 2 (PSP 600 (U.S.) FAA, and PSP 600-1 (U.S.) for the appropriate configuration, (See NOTE 1) and approved revisions.
- (b) Drawing List, Canadair Publication RAL-600-105, and later approved revisions.

Model CL-600-2A12

- (a) Airplane Flight Manual, Canadair Publication PSP 601-1A, PSP 601-1A-1, PSP 601-1B and PSP 601-1B-1 for the appropriate weight configuration, (See NOTE 1) and approved revisions.
- (b) Drawing List, Canadair Publication RAL-601-105, and later approved revisions.

Model CL-600-2B16 (601-3A, 601-3R, & 604 Variants (from S/N 5301 to 5699))

- (a) Airplane Flight Manual, Canadair Publication PSP 601A-1, PSP 601A-1-1 and PSP 604-1 for the appropriate weight configuration, (See NOTE 1) and approved revisions.
- (b) Drawing List, Canadair Publication RAL-601A-105 ( 3A & 3R Variants) and RAL-604-0001 (604 Variant), and later approved revisions.

Model CL-600-2B16 (604 Variant (from S/N 5701 & Subs))

- (a) Airplane Flight Manual, Canadair Publication PSP 605-1 for the appropriate weight configuration, (See NOTE 1&9) and approved revisions.
- (b) Drawing List, Canadair Publication RAL-604-0001 (604 Variant), and later approved revisions.

Model CL-600-2B19

- (a) Airplane Flight Manual, Canadair Publication CSP A-012 for the appropriate weight configuration and approved revisions.
- (b) Maintenance Review Board (MRB) Report and subsequent revisions as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP A-053, Part 2 and subsequent approved revisions.
- (c) Structural Repair Manual (SRM), Canadair Publication CSP A-008 and subsequent approved issues.
- (d) Certification Maintenance Tasks, Canadair Regional Jet, Model CL-600-2B19 Engineering Report No. RBR-601R-167, as contained in Part 2 to the Maintenance Requirements Manual (MRM), Canadair Publication CSP A-053, and subsequent approved revisions.

Model CL-600-2C10

- (a) Airplane Flight Manual, Canadair Publication CSP B-012 for the appropriate weight configuration and approved revisions.
- (b) Maintenance Review Board (MRB) Report and subsequent revisions as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part I and subsequent approved revisions.
- (c) Structural Repair Manual (SRM), Canadair Publication CSP B-008 and subsequent approved issues.

- (d) Certification Maintenance Tasks, as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part II and subsequent approved revisions.

Model CL-600-2D15/DC-600-2D24

- (a) Airplane Flight Manual, Canadair Publication CSP C-012 for the appropriate weight configuration and approved revisions.
- (b) Maintenance Review Board (MRB) Report and subsequent revisions as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part I and subsequent approved revisions.
- (c) Structural Repair Manual (SRM), Canadair Publication CSP B-008 and subsequent approved issues.
- (d) Certification Maintenance Tasks, as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part II and subsequent approved revisions.

Model CL-600-2E25

- (a) Airplane Flight Manual, Canadair Publication CSP D-012 for the appropriate weight configuration and approved revisions.
- (b) Maintenance Review Board (MRB) Report and subsequent revisions as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part I and subsequent approved revisions.
- (c) Structural Repair Manual (SRM), Canadair Publication CSP D-008 and subsequent approved issues.
- (d) Certification Maintenance Tasks, as contained in the Maintenance Requirements Manual (MRM), Canadair Publication CSP B-053, Part II and subsequent approved revisions.

Import Eligibility

A U.S. Airworthiness Certificate may be issued on the basis of the Canadian Department of Transport "Certificate of Airworthiness for Export" signed by the Minister of Transport. This form must contain the following statement:

a) Model CL-600-1A11

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the DOT Aircraft Type Approval No. A-131, as modified by Drawing List, Canadair Publication RAL-600-105, and later approved revisions (FAA Type Certificate No. A21EA)".

b) Model CL-600-2A12

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the DOT Aircraft Type Approval No. A-131 as modified by Drawing List, Canadair Publication RAL-601-105, and later approved revisions (FAA Type Certificate No. A21EA)".

c) Model CL-600-2B16 (3A & 3R Variants)

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the DOT Aircraft Type Approval No. A-131 as modified by Drawing List, Canadair Publication RAL-601A-105 and later approved revisions (FAA Type Certificate No. A21EA)".

Model CL-600-2B16 (604 Variant)

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the DOT Aircraft Type Approval No. A-131 as modified by Drawing List, Canadair Publication RAL-604-0001 and later approved revisions (FAA Type Certificate No. A21EA)".

d) Model CL-600-2B19

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the Transport Canada Type Approval No. A-131 and includes the minimum type design defined in document RAZ-601R-111 as being required to comply with the basis for the FAA Type Certificate No. A21EA".

The approved type design appropriate to the "as delivered" configuration of a particular CL-600-2B19 airplane is defined in the document RAL-601R-XXXX. (XXXX represents the Serial Number for the airplane concerned).

Model CL-600-2B19 Green Configuration

For CL-600-2B19 Green Configuration and associated modifications refer to NOTE 4.

e) Model CL-600-2C10

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the Transport Canada Type Approval No. A-131 and includes the minimum type design defined in document RAL-670-0001 and RAL-670-0002 as being required to comply with the basis for the FAA Type Certificate No. A21EA".

The approved type design appropriate to the "as delivered" configuration of a particular CL-600-2C10 airplane is defined in the document RAL-670-XXXX for S/N 10002 to 10132 and RAL-BA670-XXXX for S/N 10133 and subsequent. (XXXX represents the Serial Number for the airplane concerned).

f) Model CL-600-2D15/CL-600-2D24

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the Transport Canada Type Approval No. A-131 and includes the minimum type design defined in document RAZ-BA690-129 as being required to comply with the basis for the FAA Type Certificate No. A21EA".

The approved type design appropriate to the "as delivered" configuration of a particular CL-600-2D15/CL-600-2D24 airplane is defined in the document RAL-690-XXXX for S/N 15001 to 15013 and RAL-BA690-XXXX for S/N 15014 and subsequent. (XXXX represents the Serial Number for the airplane concerned).

g) Model CL-600-2E25

"This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the Transport Canada Type Approval No. A-131 and includes the minimum type design defined in document RAZ-BA698-009 as being required to comply with the basis for the FAA Type Certificate No. A21EA".

The approved type design appropriate to the "as delivered" configuration of a particular CL-600-2E25 airplane is defined in the document RAL-BA698-19XXX. (19XXX represents the Serial Number for the airplane concerned).

## Certification Basis

Model CL-600-1A11, CL-600-2A12, and CL-600-2B16 (3A & 3R Variants)

FAR Part 25 dated February 1, 1965, including Amendments 25-1 through 25-37, plus FARs 25.675(a), 25.685(a), 25.733(c), 25.775(e), 25.787(c), 25.815, 25.841(b), 25.951(a), 25.979(d) and (e), 25.1041, 25.1143(e), 25.1303(a), 25.1322, 25.1385(c), 25.1557(b), 25.1583(a), of Amendment 25-38; FARs 25.901(b) and (c), 25.903(c) and (e), 25.933(a), 25.943, 25.959, 25.1091(a) and (d), 25.1145(c), 25.1199(b) and (c), 25.1207, 25.1549, 25.1585(a)(9) of Amendment 25-40; and FAR 25.1309 of Amendment 25-41; FAR 25.1353(c) of Amendment 25-42; FAR's 25.571 and 25.629(d)(4) (v) of Amendment 25-45; FARs 25.351 and 25.603 of Amendment 25-46.

Model CL-600-2B16 (604 Variant)



FAR Part 25 dated February 1, 1965, including Amendments 25-1 through 25-78 with the following exceptions: FAR Part 25 at Amendment 25-37 for paragraphs: 109, 149, 365, 561, 625, 701, 772, 783 (except 783(f)), 785 (except 785(g)), 789, 791, 801, 803, 807, 809, 811, 812, 813, 831, 853, 855, 857, 1307, 1359, 1415, & 1419; FAR Part 25 at Amendment 25-37 for existing installations and Amendment 25-78 for new installations for paragraphs: 963, 965, 994, 997, and 1438; FAR Part 25 at Amendment 25-38 for paragraphs 787 and 1439; FAR Part 25 at Amendment 25-40 for paragraph 25.973; FAR Part 25 at Amendment 25-37 for paragraph 25.109 (see note 7); FAR Part 25 at Amendment 25-44 for paragraph 25.1413; FAR Part 25 at Amendment 25-54 for paragraph 851; FAR Part 25 at Amendment 25-80 for paragraph 1316. New FAR Part 25 requirements 562, 810, 819, 832, 858, 869, (a) & (b), 1421, 1423 and 1450 are not part of the certification basis.

Model CL-600-2B19

FAR Part 25 dated February 1, 1965, including Amendments 25-1 through 25-62 with the following exceptions; FAR 25.109 at Amendment 25-41, FAR 25.832 not included, FAR 25.1401 at Amendment 25-40, FAR 25.1438 not included and FAR 25.783(f) at Amendment 25-23 for the cargo compartment door, the main avionics compartment door and the service/emergency door. FAR 25.773(b)(2) and 25.785(h) at Amendment 25-72.

Model CL-600-2C10

FAR Part 25 dated February 1, 1965, including Amendments 25-1 through 25-86 with the following exceptions; FAR 25.783(f) at Amendment 25-23 for the cargo compartment door, the main avionics compartment door and the service/emergency door. FAR 25.571 at Amendment 25-96 and FAR 25.493 at Amendment 25.97.

Model CL-600-2D15/CL-600-2D24

14 CFR Part 25, including Amendments 25-1 through 25-86, Amendments 25-88 through Amendments 25-90, and Amendments 25-92 through 25-98 with the following exceptions: (a) FAR 25.783(f) at Amendment 25-23 shall replace FAR 25.783(f) at Amendment 25-88 for the Aft Cargo Compartment and Main Avionics Bay Doors only (common doors with CL-600-2C10 (CRJ-700)); (b) FAR 25.807(d)(6) at Amendment 25-72 shall replace FAR 25.807(h) at Amendment 25-94; (c) Plus FAR 25.365, FAR 25.831(a) and FAR 25.1447(c) at Amendment 25-87. FAR 25 Amendment 25-91 is not included in Type Certification Basis.

Model CL-600-2E25

14 CFR Part 25 including amendments 25-1 through 25-119 with the following exceptions:

14 CFR Part 25.415 (rudder system only) at Amdt. 25-72;

14 CFR Parts 25.772(c) (not applicable);,

14 CFR Part 25.783(f) at Amdt. 25-23;

14 CFR Part 25.809 at Amdt. 25-72;

14 CFR Part 25.831(g) at Amdt. 25-41;

14 CFR Part 25.841(a) at Amdt. 25-38;

14 CFR Part 25.1329 at Amdt 25-46;

14 CFR Part 25.1335 at Amdt 25-41;

and 14 CFR Part 26.33 in lieu of 14 CFR Part 25.981(c) at Amdt 25-102;

Plus the following requirements: 14 CFR Part 25, Appendix J at Amdt. 25-117; 14 CFR Part 25.1317 at Amdt. 25-122 for the Rudder Control System; 14 CFR Part 25.812(h) at Amdt. 25-128;

Additional FAA Requirements

(a) Model CL-600-1A11

(1) FAR Part 36 dated December 1, 1969, as amended through Amendment 36-9 inclusive.

(2) SFAR 27 dated February 1, 1974, as amended through Amendment SFAR 27-2.

(3) Special Conditions No. 25-94-EA-12 dated March 26, 1980, (FAA Docket No. 16921) and Amendment No. 1 dated September 11, 1981.

Date of application for Type Certificate August 3, 1976. Type Certificate A21EA issued November 7, 1980.

(b) Model CL-600-2A12

- (1) FAR Part 36 dated December 1, 1969, as amended through Amendments 36-9 inclusive.
  - (2) SFAR 27 dated February 1, 1974, as amended through Amendment SFAR 27-2.
  - (3) Special Conditions No. 25-ANM-1 dated March 8, 1983.
- Date of application for amendment to Type Certificate May 1, 1981. Type Certificate A21EA amended March 11, 1983.

(c) Model CL-600-2B16 (3A & 3R Variants)

- (1) FAR Part 36 dated December 1, 1969, as amended through Amendments 36-9 inclusive.
- (2) SFAR 27 dated February 1, 1974, as amended through Amendment SFAR 27-2.
- (3) Special Conditions No. 25-ANM-1 dated March 8, 1983.

Date of application for amendment to Type Certificate March 3, 1986.  
Type Certificate A21EA amended April 30, 1987.

(d) Model CL-600-2B16 (604 Variant)

- (1) FAR Part 36 dated December 1, 1969, as amended through Amendments 36-20 inclusive.
- (2) FAR Part 34 dated August 25, 1990 as amended through Amendment 34-1.
- (3) Special Conditions No. 25-ANM-109 dated October 31, 1995 (HIRF).

Date of application for Change to Type Design June 14, 1993.  
Change to Type Design approved November 2, 1995.

(e) Model CL-600-2B19

- (1) FAR Part 36 dated December 1, 1969, as amended through Amendments 36-18 inclusive.
- (2) Applicable portions of FAR 34 (previously codified as SFAR 27).
- (3) Special Conditions:
  - High Intensity Radiated Fields (HIRF), No. 25-ANM-61 dated July 22, 1992
  - Passenger seats with non-traditional, large, non-metallic panels No. 25-384-SC dated August 12, 2009

Date of application for amendment to Type Certificate May 26, 1988.  
Type Certificate A21EA amended January 21, 1993.

(f) Model CL-600-2C10

- (1) FAR Part 36 dated December 1, 1969, as amended through Amendments 36-22 inclusive.
- (2) Applicable portions of FAR 34
- (3) Special Conditions:
  - High Intensity Radiated Fields, No. 25-ANM-109 dated October 31, 1995
  - Go-around performance credit for use of automatic power reserve (APR) No. 25-167-SC dated October 24, 2000.
  - Passenger seats with non-traditional, large, non-metallic panels No. 25-384-SC dated August 12, 2009

Date of application for amendment to Type Certificate May 6, 1996  
Type Certificate A21EA amended February 16, 2001.

(g) Model CL-600-2D15/CL-600-2D24

- (1a) 14 CFR Part 36, effective September 10, 1990, and including all amendments effective on the date of Type Certification.
- (1b) 14CFR Part 36, effective August 7, 2002 (Amendment 36-24) for CL-600-2D24 incorporating conical nozzle with CF-34-8C5 and CF-34-8C5A1 engines.
- (2) 14 CFR Part 34, effective September 10, 1990, and including all amendments effective on the date of Type Certification.

- (3) Special Conditions:
- High Intensity Radiated Fields, No. 25-ANM-109 dated October 31, 1995
  - Go-around performance credit for use of automatic power reserve (APR) No. 25-167-SC dated October 24, 2000 (same as CL-600-2C10)
  - Sudden Engine Stoppage, No. 25-217-SC dated October 04, 2002
  - Passenger seats with non-traditional, large, non-metallc panels No. 25-384-SC dated August 12, 2009
- (4) Exemption  
Exemption No. 7447 Hydraulic Systems Testing for FAR 25.1435(b)(1)

Date of application for amendment to Type Certificate November 1, 1999.  
Type Certificate A21EA amended October 31, 2002.

- (h) Model CL-600-2E25
- (1) 14 CFR Part 36 effective September 10, 1990, and including all amendments effective on the date of Type Certification.
- (2) 14 CFR Part 34, effective September 10, 1990, and including all amendments effective on the date of Type Certification.
- (3) Special Conditions:
- Interaction of Systems and Structures (for CBW Rudder System), 25-412-SC, dated November 5, 2010
  - Operation Without Normal Electrical Power, 25-413-SC, dated November 5, 2010
  - Limit Torque Loads for Sudden Engine Stoppage, 25-217-SC, dated October 4, 2002
  - Go-around performance credit for use of automatic power reserve (APR) 25-167-SC, dated October 24, 2000 (same as CL-600-2C10 & CL-600-2D24)
  - Passenger seats with non-traditional, large, non-metallc panels, 25-409-SC dated July 27, 2010
  - High Intensity Radiated Fileds, 25-ANM-109, dated October 31, 1995, for changes other than the rudder control system and the unchanged areas.
- (4) Exemption:  
Exemption No 10175, 14 CFR Part 25.981(a)(3) for Structural Lightning Protection Features. See NOTE 11

Date of application for amendment to Type Certificate Feb 23, 2007.  
Type Certificate A21EA amended December 17, 2010.

Equivalent safety has been established for the following requirements:

- (a) CL-600-1A11, CL-600-2A12, and CL-600-2B16.
- (1) FAR 25.773(b)(2) DV Window
- (2) 25.955(a)(4) Blocked Flow Meter Fuel Flow Requirements
- (3) FAR 25.201 Stall Determination
- (b) CL-600-2B16 (604 Variant)
- (1) FAR 25.955 (a)(4) Blocked Flow Meter Fuel Flow Requirements
- (2) Several FAR's for the use of Reduced Minimum Operating Speed Factors
- (c) CL-600-2B19
- (1) FAR 25.811(d)(2) Emergency Exit Marking Sign
- (2) FAR 25.813(c)(1) Access to Type III exit-seat cushion intrusion
- (3) Several FAR's for the use of 1-g Stall Speed (nonstructural items)
- (4) FAR 25.621 (c)(2) Overwing Emergency Exit Door Critical Castings, P/N 601R38685-1, (documented in Transport Airplane Directorate ELOS Memo TD3995NY-T-A-1)
- (5) FAR 25.1441(c) – Oxygen Quantity Indication of Passenger Lavatory Oxygen Dispensing Units, documented in Transport Airplane Directorate ELOS Memo AT07852NY-T-S-1 dated October 14, 2014.
- (6) FAR 25.1443(c) – Minimum Mass Flow of Supplemental Oxygen - Passenger Lavatory Oxygen Dispensing Units, documented in Transport Airplane Directorate ELOS Memo AT07852NY-T-S-2 dated October 14, 2014.

(d) CL-600-1A11, CL-600-2A12, and CL-600-2B16

- (1) Ditching provisions of FAR 25.801
- (2) Ice Protection of FAR 25.1419

(e) CL-600-2C10

- (1) FAR 25.103 and others Reduced Minimum Operating Speed Factors
- (2) FAR 25.107(e)(1)(iv) Vlof and Vmu
- (3) FAR 25.109 Rejected Takeoff and Landing Performance Criteria
- (4) FAR 25.811(d)(2) Main Door Exit Marking Sign
- (5) FAR 25.813(c)(2)(i) Emergency Exit Access documented in Transport Airplane Directorate ELOS Memo AT07658NY-T-C-1 dated April 3, 2014.
- (6) FAR 25.904 Performance Credit for Use of APR During Reduced Thrust Takeoff
- (7) FAR 25.933(a)(1)(ii) Thrust Reverser System
- (8) FAR 25 App. I 25.5(b)(4) Lack of On/Off Switch for Automatic Takeoff Thrust Control System (ATTCS)
- (9) FAR 25.841(b)(6) – High Altitude Takeoff and Landing Operations documented in Transport Airplane Directorate ELOS Memo AT2587NY-T dated January 31, 2007.
- (10) FAR 25.841 (a) and (b)(6) – High Elevation Airport Operations documented in Transport Airplane Directorate ELOS Memo TD6802NY-T-S-1 dated July 31, 2013.
- (11) FAR 25.1441(c) – Oxygen Quantity Indication of Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-1 dated February 10, 2014.
- (12) FAR 25.1443(c) – Minimum Mass Flow of Supplemental Oxygen - Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-2 dated March 6, 2014.

(f) CL-600-2D15/CL-600-2D24

- (1) FAR 25.103 and others Reduced Minimum Operating Speed Factors documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-F-1 dated July 9, 2010.
- (2) FAR 25.811(d)(2) Main Door Exit Marking Sign documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-SE-1 dated March 25, 2010.
- (3) FAR 25.813(c)(2)(i) Emergency Exit Access documented in Transport Airplane Directorate ELOS Memo AT07658NY-T-C-2 dated April 3, 2014.
- (4) FAR 25.904 Performance Credit for Use of APR During Reduced Thrust Takeoff documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-P-1 dated July 6, 2010.
- (5) FAR 25.933(a)(1)(ii) Thrust Reverser System documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-P-2 dated July 6, 2010.
- (6) FAR 25 App. I 25.5(b)(4) Lack of On/Off Switch for Automatic Takeoff Thrust Control System (ATTCS) documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-P-5 dated July 6, 2010.
- (7) FAR 25.841(b)(6) – High Altitude Takeoff and Landing Operations documented in Transport Airplane Directorate ELOS Memo AT2587NY-T dated January 31, 2007.
- (8) FAR 25.841 (a) and (b)(6) – High Elevation Airport Operations documented in Transport Airplane Directorate ELOS Memo TD6802NY-T-S-1 dated July 31, 2013.
- (9) FAR 25.1441(c) – Oxygen Quantity Indication of Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-1 dated February 10, 2014.
- (10) FAR 25.1443(c) – Minimum Mass Flow of Supplemental Oxygen - Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-2 dated March 6, 2014.

(g) CL-600-2E25

- (1) FAR 25.107(e)(1) Take-off Speeds documented in Transport Airplane Directorate ELOS Memo AT5627NY-T-F-2 dated December 24, 2009.
- (2) FAR 25.811(d)(1)&(2) Emergency Exit Marking Sign and Locator documented in Transport Airplane Directorate ELOS Memo AT5627NY-T-C-4-1 dated September 18, 2009.
- (3) FAR 25.813(c)(2) Type III Emergency Exit Access documented in Transport Airplane Directorate ELOS Memo AT5627NY-T-C-4-2 dated September 18, 2009.
- (4) FAR 25.841(b)(6) – Cabin Pressurization – High Altitude Airfield Operations documented in Transport Airplane Directorate ELOS Memo AT5627NY-T-S-4 dated December 16, 2010.

- (5) FAR 25.933(a) Thrust Reverser System documented in Transport Airplane Directorate ELOS Memo AT5627NY-T-P-1 dated November 03, 2010.
- (6) FAR 25.5(b)(4) App. I Lack of On/Off Switch for Automatic Takeoff Thrust Control System (ATTCS) documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-P-5 dated July 6, 2010.
- (7) FAR 25.904 App. I Performance credit for use of APR documented in Transport Airplane Directorate ELOS Memo AT2587NY-T-P-1 dated July 6, 2010.
- (8) FAR 25.1441(c) – Oxygen Quantity Indication of Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-1 dated February 10, 2014.
- (9) FAR 25.1443(c) – Minimum Mass Flow of Supplemental Oxygen - Passenger Lavatory Oxygen Dispensing Units documented in Transport Airplane Directorate ELOS Memo AT07660NY-T-S-2 dated March 6, 2014.

Compliance with the following optional requirements has been established for the CL-600-2B16 (604 Variant):

- (1) Ditching provisions of FAR 25.801
- (2) Ice Protection of FAR 25.1419

Compliance with the following optional requirements has been established for the CL-600-2B19, CL-600-2C10, CL-600-2D15/CL-600-2D24 and CL-600-2E25:

- (1) Ice Protection of FAR 25.1419
- (2) Ditching provisions of FAR 25.801 when the safety equipment requirements of FAR 25.1411 and the ditching equipment requirements of FAR 25.1415 are satisfied.

#### Equipment

The basic equipment as prescribed in the applicable airworthiness requirements (See Certification Basis) must be installed in the aircraft for certification.

#### Part 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes

##### Model CL-600-1A11, CL-600-2A12, and CL-600-2B16 (3A & 3R Variants)

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

##### Exemption 9947

This exemption grants relief to Bombardier Model CL-600-1A11, CL-600-2A12, and CL-600-2B16 (3A & 3R Variants) from having to meet the airworthiness requirements of §§ 26.11, 26.33, 26.35, 26.43, 26.45, and 26.49

See NOTE (10)

##### Model CL-600-2B16 (604 Variant)

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

##### Exemption 9947

This exemption grants relief to Bombardier Model CL-600-2B16 (604 Variant) from having to meet the airworthiness requirements of §§ 26.11, 26.33, 26.35, 26.43, 26.45, and 26.49

See NOTE (10)

##### Model CL-600-2B19

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

Compliance has been found for the following regulations 14 CFR § 26.11, 26.43, 26.45 and 26.49. (Amdt.No.26-0, through 26-1)

Model CL-600-2C10

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

Compliance has been found for the following regulations 14 CFR § 26.11, 26.43, 26.45 and 26.49. (Amdt.No.26-0, through 26-1)

Model CL-600-2D15/CL-600-2D24

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

Compliance has been found for the following regulations 14 CFR § 26.11, 26.43, 26.45 and 26.49. (Amdt.No.26-0, through 26-1)

Model CL-600-2E25

Based on § 21.101(g) for changes to TCs, applicable provisions of Part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

Compliance has been found for the following regulations 14 CFR § 26.11, 26.33, 26.43, 26.45. (Amdt.No.26-0, through 26-3)

Additional Design Requirements and Conditions

The following design details or information must be maintained to ensure that an unsafe design condition is not present:

The engines of the CL-600-2C10, CL-600-2D15, CL-600-2D24, and CL-600-2E25 are able to be restored to a sufficient power/thrust level following an all engines out case, in order to enable the aircraft to achieve level flight without excessive loss of altitude.

NOTE 1

This Aircraft Type Certificate Data Sheet defines a configuration which does not include passenger provision for the CL-600-1A11, CL-600-2A12, and CL-600-2B16 models. Carriage of persons in the cabin is permitted when an approved seating arrangement and related required passenger provisions are incorporated.

(a) Current weight and balance report including the list of equipment included in the certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification.

(b) Model CL-600-1A11, CL-600-2A12, and CL-600-2B16  
System fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tanks to the undrainable level plus unusable fuel in the fuel tanks. The total amount of "system fuel" for the following Challenger variants is:

<u>Model:</u>	<u>Total Unusable (system fuel)</u>
CL-600-1A11, 2A12	16.0 gal. total, 109 lb., (+500.00)
CL-600-2B16 (CL-601A)	17.5 gal. total, 119 lb., (+524.80)
CL-600-2B16 (CL-604 Variant)	19.0 gal. total, 129 lb., (+536.60)

Model CL-600-2B19

System fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tank to the undrainable level plus unusable fuel in the fuel tanks. The total amount of "system fuel" is 14.5 U.S. Gal., 97 lb. (+494.3).

Model CL-600-2C10

System fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tank to the undrainable level plus unusable fuel in the fuel tanks. The total amount of "system fuel" is 33.8 U.S. Gal., 228.2 lb. (arm +819.7 in).

Model CL-600-2D15/CL-600-2D24

System fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tank to the undrainable level plus unusable fuel in the fuel tanks. The total amount of "system fuel" is 34.0 U.S. Gal., 229.4 lb. (arm +929.3 in).

Model CL-600-2E25

System fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tank to the undrainable level plus unusable fuel in the fuel tanks. The total amount of "system fuel" is 37.5 U.S. Gal., 252.8 lb. (arm +997.6 in).

(c) Model CL-600-1A11

System oil, which must be included in the empty weight, is the amount of oil necessary for engine lubrication. The total amount of "system oil" is as follows:

7.38 U.S. gal. (total) 56.8 lb., (+623)

Model CL-600-2A12 and CL-600-2B16

System oil, which must be included in the empty weight, is the amount of oil necessary for engine lubrication. The total amount of "system oil" is as follows:

6.1 U.S. gal. (total) 47 lb., (+680.5)

Model CL-600-2B19

System oil, which must be included in the empty weight, is the amount of oil necessary for engine lubrication. The total amount of "system oil" is as follows:

5.83 U.S. gal. (total) 47 lb., (+785.67)

Model CL-600-2C10

System oil, which must be included in the empty weight, is the amount of oil required to fill the system plumbing and tanks. The total amount of "system oil" is as follows:

With option TS670-79-201 – Engine Oil – No Remote Replenishment System,  
6.1 U.S. Gal., 49.9 lb. (arm +1077.7 in)

With option CR670-79-201 – Engine Oil – Remote Replenishment System,  
7.8 U.S. Gal., 62.9 lb. (arm +1091.2 in)

Model CL-600-2D15/CL-600-2D24

System oil, which must be included in the empty weight, is the amount of oil required to fill the system plumbing and tanks. The total amount of "system oil" is as follows:

With option TS670-79-201 – Engine Oil – No Remote Replenishment System,  
6.1 U.S. Gal., 49.9 lb. (arm +1229.7 in)

With option CR670-79-201 – Engine Oil – Remote Replenishment System,  
7.8 U.S. Gal., 62.9 lb. (arm +1243.2 in)

Model CL-600-2E25

System oil, which must be included in the empty weight, is the amount of oil required to fill the system plumbing and tanks. The total amount of "system oil" is as follows:

With option TS670-79-201 – Engine Oil – No Remote Replenishment System,  
5.2 U.S. Gal., 42.4 lb. (arm +1345.6 in)

With option CR670-79-201 – Engine Oil – Remote Replenishment System,  
6.8 U.S. Gal., 55.4 lb. (arm +1356.8 in)

(d) Model CL-600-1A11

Aircraft which incorporate Canadair Limited Modification Summaries:

- 1) 600-556 Modified main landing gear wheel,
- 2) 600-592 Modified main landing gear sidestay,
- 3) 600-1933 Revised airspeed limitation placard.

May be operated to the following limitations (eligible Serial Numbers 1002, 1004 through 1037):

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	38650
Takeoff	38500
Landing	32500
Zero Fuel	28500

Maximum Occupants                      Twenty-two (includes crew)

<u>C.G. Range</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>Weight, lb.</u>	<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>
24000 to 38650	16 % (+502.848)	- - -
38650	- - -	28% (+513.965)
25800	- - -	33% (+518.598)
24000	- - -	33% (+518.598)

Straight line variation between points given.

Maximum Operating Altitude

Takeoff and landing	10000 ft.	
En route	40000 ft.	
	41000 ft.	with Canadair Limited Modification Summaries 600-1923 & 600-8330 incorporated.

Model CL-600-1A11

(e) Aircraft which incorporate Canadair Limited Modification Summaries:

- 1) 600-594 Landing gear for 40400 lb. takeoff weight aircraft,
- 2) 600-616 Wheels and brakes for the 40400 lb. takeoff weight aircraft,
- 3) 600-643 Structural reinforcement at wing B.L. O rib,
- 4) 600-752 Modified anti-skid unit,
- 5) 600-817 Stall protection system computer for the 40400 lb. takeoff weight aircraft,
- 6) 600-8150 Placard for the 40400 lb. takeoff weight aircraft,
- 7) 600-760 Drop down passenger door-production improvement (required only on S/N 1024 & subsequent).

may be operated to the following limitations (eligible Serial Numbers 1002, 1004 and subsequent):

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	40550
Takeoff	40400
Landing	36000
Zero fuel	28500

Maximum Occupants                      Twenty-two (includes crew)

C.G. Range (Aircraft without Canadair Modification Summary 600-8265)

<u>Weight</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>lb.</u>	<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>



24000 to 40550	16 % (+502.848)	-
40550	-	27% (+513.039)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
27500	-	33% (+518.598)
24000	-	33% (+518.598)

Straight line variation between points given.

C.G. Range (Aircraft with Canadair Modification Summary 600-8265 Incorporated)

<u>Weight</u> <u>lb.</u>	<u>Forward Limit</u> <u>% MAC (Sta.)</u>	<u>Aft Limit</u> <u>% MAC (Sta.)</u>
24000 to 40550	16 % (+502.848)	-
40550	-	27% (+513.039)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
28500	-	35% (+520.450)
24000	-	33% (+520.450)

Straight line variation between points given.

Maximum Operating Altitude

Takeoff and landing	10000 ft.	
En route	40000 ft.	
	41000 ft.	with Canadair Modification Summaries 600-1923 & 600-8330 incorporated

Model CL-600-1A11

(f) Airspeed Limits (CAS)

Aircraft which, in addition to the Canadair Modification Summaries essential for operation at a maximum takeoff weight of 40400 lb., also incorporate the following Canadair Modification Summary:

- 1) 600-665 Revised V<sub>mo</sub>/M<sub>mo</sub> outputs of ADC and limitations placard may be operated at the following limitations:

<u>V<sub>mo</sub> and M<sub>mo</sub> (maximum operating)</u>	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach.</u>
Sea level to 10000 feet	345	300	-
Above 10000 feet	420	365	0.835

Extension of the flight spoilers at airspeeds above Mach = 0.79 is not permitted unless the following additional Canadair Modification Summaries are incorporated:

- 1) 600-512 Prevention of spoiler asymmetry
- 2) 600-809 Dormant failure protection of the flight spoiler detent
- 3) 600-8212 Hydraulic pipe routing to suit spoiler detent mechanism.

Model CL-600-1A11

(g) Aircraft Serial Numbers 1086 and subsequent and aircraft incorporated the following:

- 1) Either
  - a) Canadair Service Bulletin 600-0378 – Modification - Stall Protection System - Stall Strip Removal and Altitude Compensation
  - or b) Supplementary Type Certificate SA99NE - Wing Stall Strip Removed.
- 2) Canadair Service Bulletin 600-0379 – Modification - Tires and Airspeed Limitation Placards - 41100 Pounds Takeoff Weight. may be operated to the following limitations (eligible Serial Numbers 1002, 1004 and subsequent)

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	41250
Takeoff	41100
Landing	36000
Zero fuel	28500

Maximum Occupants Twenty-two (includes crew).

C.G. Range Aircraft 1004, 1009, 1053 to 1056, 1066 and subsequent and Aircraft incorporating Canadair Service Bulletin 600-0221

<u>Weight</u> <u>lb.</u>	<u>Forward Limit</u> <u>% MAC (Sta.)</u>	<u>Aft Limit</u> <u>% MAC (Sta.)</u>
24000 to 41250	16% (+502.848)	-
41250	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
28500	-	35% (+520.450)
24000	-	35% (+520.450)

Straight line variation between points given.

C.G. Range (Other Aircraft)

<u>Weight</u> <u>lb.</u>	<u>Forward Limit</u> <u>% MAC (Sta.)</u>	<u>Aft Limit</u> <u>% MAC (Sta.)</u>
24000 to 41250	16% (+502.848)	-
41250	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
27500	-	33% (+518.598)
24000	-	33% (+518.598)

Straight line variation between points given.

Maximum Operating Altitude

Takeoff and landing	10000 ft.
En route	41000 ft.

Airspeed Limits (CAS)

<u>V<sub>mo</sub> and M<sub>mo</sub> (maximum operating)</u>	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach.</u>
Sea level to 10000 feet	345	300	-
Above 10000 feet	420	365	0.835

Extension of the flight spoilers at airspeeds above Mach = 0.80 is not permitted on Aircraft S/N 1005 to 1008, 1010 to 1052, 1057 to 1066 not incorporating Canadair Service Bulletin 600-0086 Modification - Spoilers - Ground Spoiler Activation and Flight Spoiler Detent Mechanism.

Model CL-600-1A11

- (h) Aircraft incorporating the following Canadair Service Bulletins
- 600-0350 Modification - Engine Speed Indicating- N<sub>1</sub> Fan Speed Indicator
  - 600-0379 Modification - Tires and Airspeed Limitation Placards - 41100 lb. Takeoff Weight.
  - 600-0401 Modification - Winglets - Addition

With Aircraft Serial Numbers 1005 to 1008 and 1010 to 1051 incorporating the following additional Canadair Service Bulletins

- either 600-0096 Modification - Nose Landing Gear Steering  
or 600-0380 Modification - Nose Gear - Steer by Wire.

may be operated to the following limitations (eligible Serial Numbers 1002, 1004 and subsequent).

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	41250

Takeoff	41100
Landing	36000
Zero Fuel	28500

Maximum Occupants Twenty-two (includes crew).

C.G. Range Aircraft 1004, 1009, 1053 to 1056, 1066 and Subsequent and Aircraft Incorporating Canadair Service Bulletin 600-0221

Weight lb.	Forward Limit % MAC (Sta.)	Aft Limit % MAC (Sta.)
24000 to 41250	16% (+502.848)	-
41250	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
28500	-	35% (+520.450)
24000	-	35% (+520.450)

Straight line variation between points given.

C.G. Range (Other Aircraft)

Weight lb.	Forward Limit % MAC (Sta.)	Aft Limit % MAC (Sta.)
24000 to 41250	16% (+502.848)	-
41250	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
27500	-	33% (+518.598)
24000	-	33% (+518.598)

Straight line variation between points given.

Maximum Operating Altitude

Takeoff and landing	10000 ft.
En route	41000 ft.

<u>Airspeed Limits (CAS)</u>	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach.</u>
<u>V<sub>mo</sub> and M<sub>mo</sub> (maximum operating)</u>			
Sea level to 10000 feet	345	300	-
10000 ft. to 21420 ft.	420	365	-
21420 ft. to 25740 ft.	-	-	0.79
25740 ft. to 28640 ft.	385	335	-
above 28640 ft.	-	-	0.835

V<sub>fe</sub> (Flaps extended)

20°	265	230
30°	226	196
45°	215	187

Extension of the flight spoilers at airspeeds above Mach = 0.79 is not permitted on Aircraft S/N 1005 to 1008, 1010 to 1052, 1057 to 1066 not incorporating Canadair Service Bulletin 600-0086 Modification - Spoilers - Ground Spoiler Activation and Flight Spoiler Detent Mechanism.

Model CL-600-1A11

- (i) Aircraft incorporating the following Canadair Service Bulletins
- 600-0350 Modification - Engine Speed Indicating- N<sub>1</sub> Fan Speed Indicator
  - 600-0446 Modification - Placard-41250 lb. Take-off Weight (Aircraft with Winglets).
  - 600-0401 Modification - Winglets - Addition

With Aircraft Serial Numbers 1005 to 1008 and 1010 to 1051 incorporating the following additional Canadair Service Bulletins

either 600-0096 Modification - Nose Landing Gear Steering  
or 600-0380 Modification - Nose Gear - Steer by Wire.

may be operated to the following limitations (eligible Serial Numbers 1002, 1004 and subsequent).

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	41400
Takeoff	41250
Landing	36000
Zero Fuel	28500

Maximum Occupants Twenty-two (includes crew).

C.G. Range Aircraft 1004, 1009, 1053 to 1056, 1066 and Subsequent and Aircraft Incorporating Canadair Service Bulletin 600-0221

<u>Weight lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>
24000 to 41400	16% (+502.848)	-
41400	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
28500	-	35% (+520.450)
24000	-	35% (+520.450)

Straight line variation between points given.

C.G. Range (Other Aircraft)

<u>Weight lb.</u>	<u>Forward Limit % MAC (Sta.)</u>	<u>Aft Limit % MAC (Sta.)</u>
24000 to 41400	16% (+502.848)	-
41400	-	26% (+512.112)
38000	-	31% (+516.745)
31000	-	31% (+516.745)
27500	-	33% (+518.598)
24000	-	33% (+518.598)

Straight line variation between points given.

Maximum Operating Altitude

Takeoff and landing	10000 ft.
En route	41000 ft.

<u>Airspeed Limits (CAS)</u>	<u>m.p.h.</u>	<u>Knots</u>	<u>Mach.</u>
<u>Vmo and Mmo (maximum operating)</u>			
Sea level to 10000 feet	345	300	-
10000 ft. to 21420 ft.	420	365	-
21420 ft. to 25740 ft.	-	-	0.79
25740 ft. to 28640 ft.	385	335	-
above 28640 ft.	-	-	0.835

Vfe (Flaps extended)

20°	265	230
30°	226	196
45°	215	187

Extension of the flight spoilers at airspeeds above Mach = 0.79 is not permitted on Aircraft S/N 1005 to 1008, 1010 to 1052, 1057 to 1066 not incorporating Canadair Service Bulletin 600-0086 Modification – Spoilers - Ground Spoiler Activation and Flight Spoiler Detent Mechanism.

Model CL-600-2A12

- (j) Aircraft Serial Numbers 3018 and subsequent and aircraft incorporating the following Canadair Service Bulletin 601-0032 - Modification - Tires and Airspeed Limitation Placards 43100 lb. Takeoff Weight may be operated to the following limitations (eligible Serial Numbers 1003, 3001 and subsequent)

<u>Maximum Weight</u>	<u>lb.</u>
Ramp	43250
Takeoff	43100
<u>Maximum Occupants</u>	Twenty-two (includes crew).

<u>C.G. Range</u>		
<u>Weight</u>	<u>Forward Limit</u>	<u>Aft Limit</u>
<u>lb.</u>	<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>
25000 to 43250	16% (+502.848)	---
43250		30% (+515.818)
31000	---	35% (+520.450)
25000	---	35% (+520.450)
Straight line variation between points given.		

NOTE: 2

Model CL-600-1A11

All placards must be installed in accordance with Canadair Limited Drawings: 600-40402, 600-40452, 600-51000, 600-51002, 600-51004

Model CL-600-2A12

All placards must be installed in accordance with Canadair Limited Drawings: 601-40402, 601-40452, 600-51000, 600-51002, 601-51004.

Model CL-600-2B16

All placards must be installed in accordance with Canadair Limited Drawings: 601-40402, 601-40452, 601A51000, 601A51002, 601A51004.(3A & 3R Variants)  
601-40402, 601-40452 & 604-51000 (604 Variant)

Model CL-600-2B19

All placards must be installed in accordance with Canadair Limited Drawings: 601R47600, 601R47602, 601R47700.

Note: Customized markings and placards drawings are not included.

Model CL-600-2C10

All placards must be installed in accordance with Canadair Limited Drawings: BA670-47501, BA670-47506, BA670-47800. Self Illuminated Signs and Electrical Signs must be installed in accordance with BA670-47802 and BA670-47803.

Note: Customized markings and placards drawings are not included. Drawings noted above are for basic type certification only. For as-delivered aircraft configurations, refer to customer options listed in RAL-670-300.

Model CL-600-2D15/CL-600-2D24

All placards must be installed in accordance with the Bombardier Aerospace Drawings: BA690-47500, BA690-47506, BA690-47804. Self illuminated Signs and Electrical Signs must be installed in accordance with BA690-47805 and BA690-47806.

Drawings noted above are for basic type certification only. For as- delivered aircraft configurations, refer to RAL-690-XXXX for S/N 15001 to 15013, and RAL-BA690-XXXX for S/N 15014 and subsequent. (XXXX denotes the serial number for the aircraft concerned).

Model CL-600-2E25

All placards must be installed in accordance with the Bombardier Aerospace Drawings: BA670-47850, BA670-47869, BA690-47504, BA690-47518, BA690-47525, BA690-47526, BA690-47528, BA690-47529, BA690-47530, BA698-47203, BA698-47502, BA698-47519, BA698-47800, BA698-47805 and CC698-47251. Self illuminated Signs and Electrical Signs must be installed in accordance with BA690-47805 and BA698-47801.

Drawings noted above are for basic type certification only. For as- delivered aircraft configurations, refer to RAL-BA698-19XXX for S/N 19001 and subsequent. (19XXX denotes the serial number for the aircraft concerned).

NOTE: 3

Model CL-600-1A11

The airplane life limits and repetitive inspections for components and equipment are listed in Canadair Time Limits/Maintenance Checks, PSP 605. These limitations may not be changed without FAA Engineering approval. This document with Canadair Maintenance Manual, PSP 602 and Job Inspection Card Manual PSP 622, NDT-612 contain all information essential for proper maintenance.

Model CL-600-2A12

The airplane life limits and repetitive inspections for components and equipment are listed in Canadair Time Limits/Maintenance Checks, PSP 601-5. These limitations may not be changed without FAA Engineering approval. This document with Canadair Maintenance Manual, PSP 601-2 and Job Inspection Card Manual PSP 601-22, NDT-612 contain all information essential for proper maintenance.

Model CL-600-2B16

The airplane life limits and repetitive inspections for components and equipment are listed as follow:

1. CL-601 3A and 3R Variants: Canadair Time Limits/Maintenance Checks, PSP 601A-5;
2. CL-604 Variant (s/n 5301 to 5699): Time Limits/Maintenance Checks, Identification No. CH 604 TLMC, Section 5-10;
3. CL-604 Variant (s/n 5701 and up): Time Limits/Maintenance Checks, Identification No. CH 605 TLMC, Section 5-10.

These limitations may not be changed without FAA Engineering approval. These documents and the associated Canadair Maintenance Manual:

1. CL-601 3A and 3R Variants: Aircraft Maintenance Manual PSP 601-2 Identification No. CH 601MM;
2. CL-604 Variant (s/n 5301 to 5699): Aircraft Maintenance Manual Identification No. CH 604MM;
3. CL-604 Variant (s/n 5701 and up): Aircraft Maintenance Manual Identification No. CH 605MM;

and/or Job Inspection Card Manuals PSP601A-22 (3A) and/or PSP 601R-22 (3R), PSP604-22 (CL604), NDT604-12 contain all information essential for proper maintenance.

Model CL-600-2B19

The airplane life limits and repetitive inspections for components and equipment and information essential for proper maintenance, are listed in Canadair Program Document CSP A-053, Part 2. These limitations may not be changed without FAA Engineering approval.

Model CL-600-2C10

The airplane life limits and repetitive inspections for components and equipment and information essential for proper maintenance, are listed in Canadair Program Document CSP B-053, Part 2. These limitations may not be changed without FAA Engineering approval.

Model CL-600-2D15/CL-600-2D24

The airplane life limits and repetitive inspections for components and equipment and information essential for proper maintenance, are listed in Bombardier Aerospace Program Document CSP B-053, Part 2. These limitations may not be changed without FAA Engineering approval.

Model CL-600-2E25

The airplane life limits and repetitive inspections for components and equipment and information essential for proper maintenance, are listed in Bombardier Aerospace Program Document CSP B-053, Part 2. These limitations may not be changed without FAA Engineering approval.

NOTE 4 :

Model CL-600-2B19

Major modifications which define the aircraft as the "Green Configuration" are recorded in document RAZ-601R-110 (Definition of Type Design for Transport Canada approval), as Appendix 2 to that document.

- NOTE 5 : Model CL-600-2B19  
The green aircraft type design does not include passenger provisions. Carriage of persons in the cabin is permitted when an approved seating arrangement and related required passenger provisions are incorporated in accordance with the Type Approval Basis.  
Aircraft delivered in the “Green Configuration” and incorporating Mod. Summary TC60255 (Blocking of Emergency Exits) are limited to carrying a maximum of twenty-two (22) occupants including the crew and no more than 19 passengers in accordance with FAR 25 requirements.
- NOTE 6 : Model CL-600-2B19  
For all weather flight capability the Regional Jet aircraft is certified to operate in CAT II conditions, except when the aircraft is installed with the HGS system (TC 601R60262), in which case the aircraft is certified to operate in CAT IIIa conditions.
- NOTE 7 : Model CL-600-2B16 (CL-604 Variant)  
The following additional requirements must be included with FAR 25.109 at Amendment 25-37:
1. Airplane Flight Manual information, in the form of guidance material, must be provided for supplementary operating procedures and performance information for operating on wet and contaminated runways.
  2. The accelerate-stop distance and landing distance must be determined using the braking performance which is obtained with the brake conditions that are expected in service.
- NOTE 8: The RJ200 is a marketing designation for the Regional Jet Series 100 aircraft with the General Electric CF-34-3B1 engines installed and is identified as the Regional Jet Series 100 or RJ100 in this TCDS. All Airworthiness Directives issued against any 100 series aircraft are similarly applicable to the 200 series.  
Special Edition (SE) and Challenger 850 are marketing designations used for a CL-600-2B19 delivered in a green configuration (See NOTES 4 & 5) and subsequently finished with an approved interior via Supplemental Type Certificates.
- NOTE 9: The CL-605 is a marketing designation for the Challenger CL-600-2B16 (CL-604 Variant) with Modsums 604DX10000, 604DX20000 and 604DX30000 incorporated, beginning with aircraft s/n 5701 and subsequent. This designation is for marketing purposes only.
- NOTE 10: This exemption does not grant relief from the related operational requirements contained in §§ 121.1109, 121.1111, 121.1117, 125.509, 129.109, 129.111 or 129.117. Should a person choose to operate a Bombardier Model CL-600-1A11 (600), CL-600-2A12 (601 Variant), CL-600-2B16 (601-3A Variant), CL-600-2B16 (601-3R Variant) or CL-600-2B16 (604 Variant) airplane under part 121, 125, or part 129 beyond the operational compliance deadlines as stated in §§ 121.1109, 121.1111, 121.1117, 125.509, 129.109, 129.111 or 129.117, that person will be required to comply with those operational requirements.
- NOTE 11: Exemption No. 10175 for Structural Lightning Protection Features, expires on December 17, 2012. After the expiration of the Exemption, Model CL-600-2E25 aircraft serial number is not eligible for an FAA Certificate of Airworthiness unless it is shown to comply with FAR 25.981(a)(3), Amendment 102.
- NOTE 12: Model CL-600-2E25 aircraft Serial Number (S/N) 19001 to 19012 have not been shown to comply with 14 CFR Part 25.856(b) at time of delivery.  
  
Serial Numbers 19001 through 19012 are not eligible for a US Certificate of Airworthiness unless modified to comply with 14 CFR Part 25.856(b).

...END...

# Attachment 3

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## Airworthiness Directives



# FAA AIRWORTHINESS DIRECTIVES

CURRENT STATUS OF AIRWORTHINESS DIRECTIVES REPORT

GoJet Airlines

<b>Aircraft</b>	157	<b>Make/Model</b>	CRJ-700	<b>Mfg. S/N</b>	10230	<b>DOM</b>	11/9/2005	<b>TAT</b>	26127.03322	<b>TAC</b>	17692
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AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
<b>AIRFRAME</b>						
<b>AD-2002-06-51</b>	AD20020651 CENTER FUEL TANK LINES TEST			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD HAS BEEN SUPERCEDED BY AD-2002-08-19	
<b>AD-2002-08-19 (A)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN PARA (A) OF AD	
<b>AD-2002-08-19 (B)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN PARA (B) OF AD	
<b>AD-2002-08-19 (C)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN PARA (C) OF AD	
<b>AD-2002-08-19 (D)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN PARA (D) OF AD	
<b>AD-2002-08-19 (E)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W PARA (E) PER REV 6 9/30/02 OF AFM CSP B-012-002	
<b>AD-2002-08-19 (F)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W BA OPS MMEL UPDATED GOJET MEL BUILD BASED ON UPDATED MMEL	
<b>AD-2002-08-19 (G)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W AFM REV 8 CONTAINS LIMITATION	
<b>AD-2002-08-19 (H)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W AFM REV 8 CONTAINS OPERATIONAL REQUIREMENTS	
<b>AD-2002-08-19 (I)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN PARA (I) OF AD	
<b>AD-2002-08-19 (J)</b>	Airplane Flight Manual - Uncommanded Fuel Transfer			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W ONE TIME DETAILED INSPECTION AT BUILD	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2002-20-09	AD20022009 MODIFY COLLINS FLIGHT DISPLAY			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-2002-22-13	AD20022213 MOD COLLINS MANAGEMENT COMPUTER			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-2002-26-07	Auxiliary power unit (APU)			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-2003-02-51 (A)	Center fuel tank			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W AFM REV 8 CONTAINS LIMITATION	
AD-2003-02-51 (B)	Center fuel tank			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W AFM REV 8 CONTAINS LIMITATION	
AD-2003-02-51 (C)	Center fuel tank			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W I/A/W SB A670BA-28-010 REV 23 JAN 2003 AND AMOC DATED 3/8/04	
AD-2003-02-51 (D)	Center fuel tank			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W I/A/W SB A670BA-28-010 REV 23 JAN 2003 AND AMOC DATED 3/8/04	
AD-2003-12-06	AD20031206 WING ANTI-ICE DUCTS			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD HAS BEEN SUPERCEDED BY AD-2003-24-03	
AD-2003-19-51 (A)(1)	AD20031951A1 INSPECT GEAR DOOR			Date Closed: 7/12/2006 TAT=1353.8 and TAC=1011	CURRENT STATUS **CLOSED** AD-2003-19-51 (A)(1) C/W 7/13/06	
AD-2003-19-51 (C)	AD20031951(C) INSPECT GEAR DOOR			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** C/W PARA (C) OF AD-2003-19-51 IAW (B) AND AMOC AOM 209 UPON COMPLETION CHG INIT TO 450CYC	
AD-2003-24-03	Wing anti-ice (WAI) ducts			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N EFFECTIVITY LISTED IN AD	
AD-2003-26-14	AD20032614 HANDHELD EXTINGUISHER			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO S/N LISTED IN AD (APPLICABLE SN: V-432001 THROUGH W-389653)	
AD-2004-07-01	AD20040701 FUEL EJECTOR LEAK CHECK			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD IS SUPERCEDED BY AD-2004-18-03	
AD-2004-18-03	Airplane flight manual			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-2005-12-05	AD20051205 FLIGHT DECK DOOR			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD IS N/A DUE TO A/C MODEL	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2005-13-02	AD20051302 HYDRAULIC LINE			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2005-13-02-R1	
AD-2005-13-02-R1	AD20051302R1HYDLINECRACKING			Date Closed: 12/3/2008 TAT=8241.3 and TAC=5827	CURRENT STATUS **CLOSED** N/A DUE TO MODSUMS 670T11944 AND 670T11508 ACCOMPLISHED AT TIME OF BUILD	
AD-2005-24-12	Thrust reverser cascades			Date Closed: 1/9/2006 TAT=197.2 and TAC=142	CURRENT STATUS **CLOSED** N/A TO A/C S/N THIS AD EFFECTIVE ONLY TO FUSELAGE S/N 10003 THROUGH 10116	
AD-2006-04-05 (F)	POWER CONTROL UNIT (PCU)		1000 FH	Last Update: 11/8/2014 TAT=25271.8832 and TAC=17146	CURRENT STATUS **OPEN** SB-A670BA-27-023 REV A, C/W 11/8/2014 RECURRING	Due TAT=26,272
AD-2006-04-09 (F)	Camloc fasteners			Date Closed: 3/24/2006 TAT=696.8 and TAC=517	CURRENT STATUS **CLOSED** N/A DUE TO A/C S/N APPLICABILITY AS LISTED IN A/D	
AD-2006-14-05 (G)(1)	LOWER PANEL OF THE LEFT- AND RIGHT-HAND MAIN			Date Closed: 2/28/2012 TAT=17758.59996 and TAC=12260	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2012-03-08	
AD-2006-14-05 (G)(2)	LOWER PANEL OF THE LEFT- AND RIGHT-HAND MAIN			Date Closed: 2/28/2012 TAT=17758.59996 and TAC=12260	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2012-03-08	
AD-2006-14-05 (G)(3)	LOWER PANEL OF THE LEFT- AND RIGHT-HAND MAIN			Date Closed: 2/28/2012 TAT=17758.59996 and TAC=12260	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2012-03-08	
AD-2006-14-05 (G)(4)	LOWER PANEL OF THE LEFT- AND RIGHT-HAND MAIN			Date Closed: 2/28/2012 TAT=17758.59996 and TAC=12260	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2012-03-08	
AD-2006-14-05 (J)	LOWER PANEL OF THE LEFT- AND RIGHT-HAND MAIN			Date Closed: 2/28/2012 TAT=17758.59996 and TAC=12260	CURRENT STATUS **CLOSED** SUPERSEDED BY AD-2012-03-08	
AD-2008-06-01	AD20080601MRMREVISION9			Date Closed: 4/16/2008 TAT=6410.6 and TAC=4596	CURRENT STATUS **CLOSED** MRM REV 9 IN GOJET CAMP THIS AD SUPERSEDED BY AD-2008-22-04 WHICH HAS SAME MRM REQUIREMENTS.	
AD-2008-09-23 (F)(1)(2)	Fuel			Date Closed: 6/6/2008 TAT=6839.9 and TAC=4890	CURRENT STATUS **CLOSED** CDCCL MRM REV 9 INCORPORATED INTO CAMP	
AD-2008-09-23-R1 (F)(2)	Fuel			Date Closed: 12/14/2009 TAT=11242.74998 and TAC=7988	CURRENT STATUS **CLOSED** C/W CDCCL MRM REV 10 TO CAMP	
AD-2008-12-09	Fuel tube self-bonded couplings			Date Closed: 7/16/2008 TAT=7167.6 and TAC=5106	CURRENT STATUS **CLOSED** DUE TO SN# EFFECTIVITY	
AD-2008-22-04 (G)	Fuel system			Date Closed: 12/5/2008 TAT=8252.2 and TAC=5838	CURRENT STATUS **CLOSED** PREVIOUSLY ACCOMPLISHED BY INCORPORATION OF MRM REV 9 INTO CAMP DOCUMENT	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2008-23-18	Cockpit floodlight electrical connections			Date Closed: 12/30/2008 TAT=8454.8 and TAC=5973	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO A/C APPLICABILITY AS LIS	
AD-2008-25-03	Aircraft fuel system			Date Closed: 1/15/2009 TAT=8580.7 and TAC=6065	CURRENT STATUS **CLOSED** NOT APPLICABLE TO AIRCRAFT S/N APPLIES ONLY TO S/N# 10003-10169	
AD-2009-01-07	Fuel tank			Date Closed: 2/27/2009 TAT=8902.83332 and TAC=6326	CURRENT STATUS **CLOSED** NOT APPLICABLE BY A/C S/N APPLIES TO CRJ700 A/C S/N 10003-10169 ONLY.	
AD-2009-01-10	Air Driven Generator (ADG)			Date Closed: 2/27/2009 TAT=8902.83332 and TAC=6326	CURRENT STATUS **CLOSED** ACCOMPLISHED RECORDS INSP PER PARA (F)(3) NO AFFECTED ADGPC S/N INSTALLED	
AD-2009-02-11	Fuel system wiring			Date Closed: 4/2/2009 TAT=9185.34998 and TAC=6521	CURRENT STATUS **CLOSED** NOT APPLICABLE BY A/C S/N AD APPLICABLE ONLY TO FUSE S/N 10003 THROUGH 10169	
AD-2009-10-10 (F)(1)	AD20091010(F)(1)CABINPRESSURECONTROLCHECK			Date Closed: 7/25/2009 TAT=10073.50004 and TAC=7172	CURRENT STATUS **CLOSED** SB-A670BA-21-022 PART A DATED 8/3/06 C/W 7/26/09	
AD-2009-10-10 (F)(2)(3)	AD20091010(F)(2)(3)INSTALLMODIFIED CPCUNITS			Date Closed: 7/25/2009 TAT=10073.50004 and TAC=7172	CURRENT STATUS **CLOSED** SB-A670BA-21-022 PART B/C DATED 8/3/06 C/W 7/26/09	
AD-2009-22-09	Airborne Auxiliary Power			Date Closed: 12/3/2009 TAT=11147.78332 and TAC=7924	CURRENT STATUS **CLOSED** NA TO A/C SN EFFECTIVITY AS LISTED IN AD	
AD-2009-24-20	Wings			Date Closed: 1/8/2010 TAT=11447.81664 and TAC=8146	CURRENT STATUS **CLOSED** AFM REV TO ADD TR CRJ700/107-1 ON 3/12/09 SEE MEMO IN AD FILE	
AD-2010-01-03 (G)(1)	AD20100103(G)(1)REPLACEFFEBOTTLES			Date Closed: 1/26/2010 TAT=11594.09997 and TAC=8242	CURRENT STATUS **CLOSED** AD-2010-01-03 (G)(1) C/W 1/27/10	
AD-2010-04-04 (F)	Equipment/Furnishings			Date Closed: 4/8/2011 TAT=15104.11665 and TAC=10598	CURRENT STATUS **CLOSED** SB-670BA-25-071 DATED 5/15/09 C/W 04/09/11	
AD-2010-04-16 (G)	AD20100416(G)PORTFIREEXTINGUISHERS			Date Closed: 3/8/2010 TAT=11915.48331 and TAC=8461	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY AS LISTED IN AD	
AD-2010-09-06 (F)	FLIGHT CONTROLS			Date Closed: 4/4/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** SB-670BA-27-042 DATED 10/10/09 C/W 4/5/12	
AD-2010-10-21 (F)	HYDRAULIC POWER			Date Closed: 4/4/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** SB-670BA-29-005 REV A DATED 1/29/09 C/W 4/5/2012	
AD-2010-13-05 (F)(3)	Landing gear			Date Closed: 7/28/2010 TAT=13118.95001 and TAC=9277	CURRENT STATUS **CLOSED** N/A DUE TO A/C S/N EFFECTIVITY AS LISTED IN AD	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2010-18-08	Air Conditioning			Date Closed: 10/7/2010 TAT=13724.91669 and TAC=9689	CURRENT STATUS **CLOSED** DUE TO P/N EFFECTIVITY AS LISTED IN AD	
AD-2010-23-14 (G)(123)	DOORS			Date Closed: 1/3/2011 TAT=14334.23333 and TAC=10105	CURRENT STATUS **CLOSED** IS67052110074 REV D DATED 6/2/10 C/W 01/04/11	
AD-2010-23-19 (G)(1234)	LANDING GEAR		600 FH	Last Update: 3/9/2015 TAT=26086.81655 and TAC=17668	CURRENT STATUS **OPEN** SB-A670BA-32-030 REV A, C/W 3/9/2015 RECURRING, FAA AMOC LOG # 10-18, DATED 11/23/2010	Due TAT=26,687
AD-2010-23-19 (K)	Landing gear			Date Closed: 11/24/2010 TAT=14129.85001 and TAC=9962	CURRENT STATUS **CLOSED** N/A DUE TO NO POSITIVE FINDINGS FOUND DURING INITIAL INSPECTION	
AD-2011-01-09 (G)	AD20110109GPBE			Date Closed: 2/9/2011 TAT=14598.03333 and TAC=10284	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY AS LISTED IN AD	
AD-2011-03-13 (H)	FLIGHT CONTROLS			Date Closed: 10/2/2013 TAT=22264.64989 and TAC=15223	CURRENT STATUS **CLOSED** THIS AD IS SUPERSEDED BY AD-2014-02-01	
AD-2011-04-09 (G)(1)(2)	AD20110409(G)(1)(2)CHEMO2GEN			Date Closed: 2/19/2011 TAT=14675.26665 and TAC=10339	CURRENT STATUS **CLOSED** AD-2011-04-09 (G)(1)(2) C/W 02/20/11	
AD-2011-04-09 (H)	AD20110409(H)REVISEDISPATCH			Date Closed: 2/18/2011 TAT=14665.28332 and TAC=10333	CURRENT STATUS **CLOSED** AD-2011-04-09 (H) C/W 02/19/11	
AD-2011-06-08 (G)(2)	ELECTRICAL POWER			Date Closed: 4/5/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** SB-670BA-24-027 ORIG DATED 9/17/09 C/W 4/6/12	
AD-2011-17-12 (H)	TRANSCOWL RTO CONDITIONAL INSP			Date Closed: 9/25/2011 TAT=16555.19997 and TAC=11499	CONDITIONAL REQUIREMENT PROCESS CONTROL BY MX043	
AD-2011-21-07 R1 (G)(2)	AD20112107(G)(2)PITOTSTATICLINEDRAINS			Date Closed: 4/1/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** SB-670BA-34-030 REV B DATED 3/23/10 C/W 4/2/12	
AD-2012-03-08 (H)	AD20120308(H)INSPINBDMLGDOORS			Date Closed: 4/4/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** NA DUE TO A/C S/N EFFECTIVITY AS LISTED IN AD C/W 6/1/10	
AD-2012-04-02 (G)	AD20120402(G)WINGAILERONPULLEYS			Date Closed: 4/4/2012 TAT=18006.21661 and TAC=12416	CURRENT STATUS **CLOSED** REVISED CAMP TASK 271000-218 CYCLE INTERVAL PER PARA ( C/W 4/4/12	
AD-2012-11-09 (L)	INSTALL SUPPLEMENTAL OXYGEN SUPPLY		37 MTH 9/10/2015	Last Update: 8/10/2012 TAT=19014.38326 and TAC=13088	CURRENT STATUS **OPEN** C/W AN APPROVED METHOD TO RE-ESTABLISH O2 IN A LAVATORY CWCW	9/10/2015
AD-2012-12-02 (G)(H)	BLEED AIR SYSTEM SENSING AND SHIELDS			Date Closed: 11/18/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-36-014 & SB-670BA-36-016 BOTH REV A DATED 10/	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2012-18-11 (G)(H)	HYDRAULIC ACCUMULATORS P/N S/N INSPECTION			Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	CURRENT STATUS **CLOSED** RECORDS REVIEW IAW PARA (G)(H) C/W 10/24/12 C/W 10/24/2012	
AD-2012-18-11 (N)	HYDRAULIC SAFE LIFE LIMIT			Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	CURRENT STATUS **CLOSED** ADDED SAFE LIFE REQ. TO MX PROGRAM. DQA LETTER ON FILE C/W 3/17/2011	
AD-2012-22-10 (G)	INSPECT WING TO FUSELAGE NUTS		6600 FH 2/21/2016	Last Update: 8/21/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **OPEN** SB-670BA-53-042 REV A DATED 4/27/12, C/W 8/21/2014 RECURRING	Due TAT=31,353 2/21/2016
AD-2013-14-11 (G)(2)	AFM UNCOMMANDED YAW MOVEMENT			Date Closed: 8/9/2013 TAT=21800.19989 and TAC=14918	CURRENT STATUS **CLOSED** AD-2013-14-11 PARA G2 MANUAL CHANGES IN AFM REV 11 AND C/W 7/13/2013	
AD-2013-17-05 (G)(1)	BELLCRANK SUPPORTS REPLACEMENT			Date Closed: 10/4/2013 TAT=22279.54989 and TAC=15233	Not Applicable	
AD-2013-17-05 (G)(2)	BELLCRANK SUPPORTS REPLACEMENT		20000 FH	Last Update: 8/27/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **OPEN** SB-670BA-27-064 DATED 12/11/12, C/W 8/27/2014 RECURRING (AFTER INITIAL COMPLIANCE RESET INTERVAL TO 20,000 HOURS)	Due TAT=44,753
AD-2013-17-05 (G)(3)	BELLCRANK SUPPORTS REPLACEMENT			Date Closed: 10/4/2013 TAT=22279.54989 and TAC=15233	Not Applicable	
AD-2013-26-02 (G)	CREW O2 SYSTEM OIL TRACES			Date Closed: 8/23/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **CLOSED** SB-670BA-35-012 REV B DATED 5/6/13, C/W 8/23/2014	
AD-2014-02-01 (H)	RTL SPRING INSPECTION		6000 FH	Last Update: 10/2/2013 TAT=22264.64989 and TAC=15223	CURRENT STATUS **OPEN** CW SB-670BA-27-055 REV A DATED 8/6/2010, C/W 10/2/2013 RECURRING	Due TAT=28,265
AD-2014-02-01 (J)(1)	RTL SPRING REPLACEMENT			Date Closed: 3/14/2014 TAT=23478.18322 and TAC=16008	Not Applicable	
AD-2014-02-01 (J)(2)(I)	RTL SPRING REPLACEMENT		2000 CY	Last Update: 3/14/2014 TAT=23478.18322 and TAC=16008	CURRENT STATUS **OPEN** CW SB-670BA-27-059 REV B DATED 9/26/13 CWCW CLOSE AD-2014-02-01 (h) WHEN CLOSING THIS RECORD	Due TAC=18,008
AD-2014-08-03 (G)	SLAT LOCKING PLATES		6000 FH 30 MTH 11/21/2016	Last Update: 5/21/2014 TAT=23995.39989 and TAC=16334	CURRENT STATUS **OPEN** CW SB-670BA-27-066 DATED 6/10/13 CWCW	Due TAT=29,995 11/21/2016
AD-2014-15-11 (G)	DVI OF PILOT SIDE RUDDER PEDAL TUBES		26000 CY	Last Update: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **OPEN** CW SB-670BA-27-065 DATED 11/15/13 PART A WHEN C/W CHANGE INTERVAL TO 750 FC	Due TAC=26,000
AD-2014-15-11 (I)	REPLACEMENT OF PILOT SIDE RUDDER BAR ASSY		90000 CY	Last Update: 9/5/2014 TAT=24799.04987 and TAC=16840	CURRENT STATUS **OPEN** CW SB-670BA-27-065 DATED 11/15/2013 UPON COMPLIANCE CLOSE PARA G	Due TAC=106,840
AD-2014-18-01 (G)	MODE S TRANSPONDER STRAPPING INSP		24 MTH 10/14/2016	Last Update: 10/14/2014 TAT=25097.76654 and TAC=17030	CURRENT STATUS **OPEN** CW ROCKWELL SIL 07-2, DATED 9/12/2008 CWCW	10/14/2016

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2014-21-07 (G)	AFT BAG BAY DOOR FITTINGS			Date Closed: 12/2/2014 TAT=25450.43321 and TAC=17259	CURRENT STATUS **CLOSED** N/A DUE TO A/C S/N PER SB-670BA-52-0037 ONLY APPLIES TO A/C S/N 10303 THRU 10333 C/W 12/2/2014	
AD-72-19-04	AD721904 NICAD BATTERY OVERHEAT PROTECTION			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO CHARGING SYSTEM CONFIGURATION	
AD-74-08-09 R2 (A)	AD740809R2(A) INSTALL PLACARDS			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** PARA (A) C/W AT BUILD AD REVISED AS AD-74-08-09 R3	
AD-74-08-09 R2 (B)	AD740809R2(B) MAKE ANNOUNCEMENT			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** PARA (B) C/W BY IN FLIGHT CREW AD REVISED AS AD-74-08-09 R3	
AD-74-08-09 R2 (C)	AD740809R2(C) INSTALL ASHTRAY			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** PARA (C) C/W AT BUILD AD REVISED AS AD-74-08-09 R3	
AD-74-08-09 R2 (E)	AD740809R2(E) LAVATORY WASTE DOOR INSPECTION			Date Closed: 2/13/2008 TAT=5850.8 and TAC=4218	CURRENT STATUS **CLOSED** TRACKED AS 25-CASS-15 AD REVISED AS AD-74-08-09 R3	
AD-74-08-09 R3 (K)	INSPECT LAVATORY TRASH FLAP		1000 FH	Last Update: 11/8/2014 TAT=25271.8832 and TAC=17146	CURRENT STATUS **OPEN** AD-74-08-09 R3 (K), C/W 11/8/2014 RECURRING	Due TAT=26,272
AD-93-23-01	AD932301 NORDSKOG WATER HEATER			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-93-24-16	AD932416 BREATHING EQUIPMENT			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-94-06-04	AD940604 FULL FACE QUICK DONNING MASK			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-94-14-03	AD941403 NORDSKOG WATER HEATER			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-95-22-01	AD952201 LIGHTING POWER UNIT			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-97-11-10	AD971110 PORTABLE OXYGEN MASK			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-97-18-03	AD971803 CONE AND SEAL			Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
<b>APPLIANCE</b>						
AD-2003-04-27 (102)	AD20030427102 REVISE LIMITATIONS SECTION	642		Date Closed: 8/19/2013 TAT=21891.53321 and TAC=14980	CURRENT STATUS **CLOSED** N/A TO DUE P/N EFFECTIVITY	
AD-2003-04-27 (102)	AD20030427102 REVISE LIMITATIONS SECTION	390		Date Closed: 8/19/2007 TAT=4460.7 and TAC=3221	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY	
AD-2003-04-27 (107)	AD20030427107 REVISE LIMITATIONS SECTION	642		Date Closed: 8/19/2013 TAT=21891.53321 and TAC=14980	CURRENT STATUS **CLOSED** N/A TO DUE P/N EFFECTIVITY	
AD-2003-04-27 (107)	AD20030427107 REVISE LIMITATIONS SECTION	390		Date Closed: 8/19/2007 TAT=4460.7 and TAC=3221	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY	
AD-2003-04-27 (108)	AD20030427108 REVISE LIMITATIONS SECTION	642		Date Closed: 8/19/2013 TAT=21891.53321 and TAC=14980	CURRENT STATUS **CLOSED** N/A TO DUE P/N EFFECTIVITY	
AD-2003-04-27 (108)	AD20030427108 REVISE LIMITATIONS SECTION	390		Date Closed: 8/19/2007 TAT=4460.7 and TAC=3221	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY	
AD-2003-15-07	AD20031507 APU FUEL NOZZLE	P-421		Date Closed: 11/11/2014 TAT=25291.6832 and TAC=17159	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N FITTED AT BUILD	
AD-2008-05-01	AD20080501FMUPOLARITYCHECK	WYGB1858		Date Closed: 11/22/2010 TAT=14116.45001 and TAC=9952	CURRENT STATUS **CLOSED** AD-2008-05-01 PCW SB-73-0030 C/W 9/15/07	
AD-2008-05-01	AD20080501FMUPOLARITYCHECK	WYGB0525		Date Closed: 6/9/2011 TAT=15598.09997 and TAC=10898	CURRENT STATUS **CLOSED** AD-2008-05-01 PCW SB-73-0030 C/W 9/17/07	
AD-2009-06-18 (F)(1)	AD20090618(F)(1)ADGWIRING	2108		Date Closed: 4/30/2009 TAT=9398.66667 and TAC=6680	CURRENT STATUS **CLOSED** NOT APPLICABLE BY S/N INSTALLED RECORD REVIEW ACCOMPLISHED PER PARAGRAPH (F)(1)	
AD-2009-22-12 (F)(1)	AD20092212F1AOAINRUSHTEST	2084C		Date Closed: 8/21/2013 TAT=21907.18321 and TAC=14994	CURRENT STATUS **CLOSED** C/W SB-670BA-27-051 DATE 5/14/09 SUPERCEDED BY AD-2010-20-15	
AD-2009-22-12 (F)(1)	AD20092212F1AOAINRUSHTEST	1256		Date Closed: 7/30/2010 TAT=13136.13334 and TAC=9289	CURRENT STATUS **CLOSED** SB-670BA-27-051 DATE 5/14/09 C/W 7/31/10 SUPERCEDED BY AD-2010-20-15	
AD-2010-12-05 (G)(1)	Electrical power	2108		Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** N/A DUE TO A/C S/N EFFECTIVITY NOT LISTED IN AD	
AD-2010-18-11 (G)	Flight controls	339		Date Closed: 3/8/2012 TAT=17826.18329 and TAC=12299	CURRENT STATUS **CLOSED** DUE TO P/N EFFECTIVITY AS LISTED IN AD	



AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2010-20-09 (I)	Electrical power	2108		Date Closed: 11/1/2010 TAT=13943.46668 and TAC=9835	CURRENT STATUS **CLOSED** N/A DUE TO P/N S/N EFFECTIVITY AS LISTED IN SB-670BA-24-026 ORIG DATED 10/23/09	
AD-2010-20-15 (G)(1)	FLIGHT CONTROLS	2084C	1000 FH	Last Update: 11/26/2014 TAT=25419.1832 and TAC=17236	CURRENT STATUS **OPEN** SB-670BA-27-051 DATE 5/14/09, C/W 11/26/2014 RECURRING	Due TAT=26,419
AD-2010-20-15 (G)(1)	FLIGHT CONTROLS	1256	1000 FH	Last Update: 1/9/2015 TAT=25713.78322 and TAC=17430	CURRENT STATUS **OPEN** SB-670BA-27-051 DATE 5/14/09, C/W 1/9/2015 RECURRING	Due TAT=26,714
AD-2010-20-15 (H)(1)	Flight Controls	1256		Date Closed: 11/5/2010 TAT=13981.25001 and TAC=9857	CURRENT STATUS **CLOSED** NA DUE TO SN EFFECTIVITY	
AD-2010-20-15 (H)(1)	Flight Controls	2084C		Date Closed: 8/21/2013 TAT=21907.18321 and TAC=14994	CURRENT STATUS **CLOSED** NA DUE TO SN EFFECTIVITY	
AD-2010-20-19 (G)	Electrical Power	2108		Date Closed: 11/9/2005 TAT=0 and TAC=0	CURRENT STATUS **CLOSED** N/A DUE TO P/N S/N EFFECTIVITY AS LISTED IN SB-670BA-24-020 REV C DATED 4/20/09	
AD-2010-23-11 (G)	Flight Controls	1256		Date Closed: 7/31/2010 TAT=13144.48334 and TAC=9295	CURRENT STATUS **CLOSED** DUE TO S/N EFFECTIVITY AS LISTED IN SB-A670BA-27-054 DATED JAN 18, 2010	
AD-2010-23-11 (G)	Flight Controls	2084C		Date Closed: 8/21/2013 TAT=21907.18321 and TAC=14994	CURRENT STATUS **CLOSED** DUE TO S/N EFFECTIVITY AS LISTED IN SB-A670BA-27-054 DATED JAN 18, 2010	
AD-2011-12-06 (H)	AD20111206(H)HSTARBG	339		Date Closed: 3/8/2012 TAT=17826.18329 and TAC=12299	CURRENT STATUS **CLOSED** DUE TO P/N EFFECTIVITY AS LISTED IN AD	
AD-2011-17-12 (G)	INSPECT PN SN OF TRANSCOWL	SB/0618		Date Closed: 9/25/2011 TAT=16555.19997 and TAC=11499	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN TRANSCOWL ASSYS , C/W 9/25/2011	
AD-2011-17-12 (G)	INSPECT PN SN OF TRANSCOWL	SB/0615		Date Closed: 11/17/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN TRANSCOWL ASSYS , C/W 9/25/2011	
AD-2011-17-12 (G)	INSPECT PN SN OF TRANSCOWL	SB/0614		Date Closed: 9/25/2011 TAT=16555.19997 and TAC=11499	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN TRANSCOWL ASSYS , C/W 9/25/2011	
AD-2011-17-12 (G)	INSPECT PN SN OF TRANSCOWL	SB/0612		Date Closed: 9/25/2011 TAT=16555.19997 and TAC=11499	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN TRANSCOWL ASSYS , C/W 9/25/2011	
AD-2011-17-12 (I)	REINFORCE TRANSCOWL	SB/0612		Date Closed: 11/16/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-78-008 REV B DATED 12/22/10, C/W 11/16/2012	
AD-2011-17-12 (I)	REINFORCE TRANSCOWL	SB/0614		Date Closed: 11/16/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-78-008 REV B DATED 12/22/10, C/W 11/16/2012	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2011-17-12 (I)	REINFORCE TRANSCOWL	SB/0615		Date Closed: 11/17/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-78-008 REV B DATED 12/22/10, C/W 11/17/2012	
AD-2011-17-12 (I)	REINFORCE TRANSCOWL	SB/0618		Date Closed: 11/17/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-78-008 REV B DATED 12/22/10, C/W 11/17/2012	
AD-2011-23-09 (G)	AD20112309(G)MLGPISTONAXLEINSP	SPP015181		Date Closed: 12/9/2011 TAT=17168.03332 and TAC=11884	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN MLG PISTON AXLE , C/W 12/9/2011	
AD-2011-23-09 (G)	AD20112309(G)MLGPISTONAXLEINSP	SPP015180		Date Closed: 12/9/2011 TAT=17168.03332 and TAC=11884	CURRENT STATUS **CLOSED** C/W RECORD INSP OF ALL PN/SN MLG PISTON AXLE , C/W 12/9/2011	
AD-2011-23-09 (H)(I)	AD20112309(H)(I)MLGPISTONAXLEINSP	SPP015180	30 MTH 2/28/2017	Last Update: 8/28/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **OPEN** SB-670BA-32-023 REV C DATED 1/29/09, C/W 8/28/2014 RECURRING	2/28/2017
AD-2011-23-09 (H)(I)	AD20112309(H)(I)MLGPISTONAXLEINSP	SPP015181	30 MTH 2/28/2017	Last Update: 8/28/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **OPEN** SB-670BA-32-023 REV C DATED 1/29/09, C/W 8/28/2014 RECURRING	2/28/2017
AD-2012-08-05 (G)	AD20120805(G)ADGGCUUPGRADE	1413		Date Closed: 11/20/2012 TAT=19754.46658 and TAC=13575	CURRENT STATUS **CLOSED** SB-670BA-24-031 DATED 5/30/11, C/W 11/23/12	
AD-2012-10-07 (G)	CREW O2 CYLINDER REGULATOR	ALT281-11299		Date Closed: 2/4/2013 TAT=20287.04989 and TAC=13911	CURRENT STATUS **CLOSED** SB-670BA-35-011 ORIG DATED 10/28/11 C/W 12/15/12	
AD-2012-10-08 (G)	LANDING GEAR	MA0265(L)		Date Closed: 6/26/2012 TAT=18633.01659 and TAC=12837	CURRENT STATUS **CLOSED** S/N APPLIES SEE PARA H	
AD-2012-10-08 (G)	LANDING GEAR	MA0266(R)		Date Closed: 6/26/2012 TAT=18633.01659 and TAC=12837	CURRENT STATUS **CLOSED** S/N APPLIES SEE PARA H	
AD-2012-10-08 (H)	LANDING GEAR	MA0266(R)		Date Closed: 6/26/2011 TAT=15758.01665 and TAC=10996	CURRENT STATUS **CLOSED** SEE PARA I FOR COMPLIANCE	
AD-2012-10-08 (H)	LANDING GEAR	MA0265		Date Closed: 6/26/2011 TAT=15758.01665 and TAC=10996	CURRENT STATUS **CLOSED** SEE PARA I FOR COMPLIANCE	
AD-2012-10-08 (I)	LANDING GEAR	MA0266(R)		Date Closed: 6/26/2011 TAT=15758.01665 and TAC=10996	CURRENT STATUS **CLOSED** SB-670BA-32-019 REV A DATED 9/18/08 C/W BY C/W 49000-32-32 ON 8/13/07	
AD-2012-10-08 (I)	LANDING GEAR	MA0265(L)		Date Closed: 6/26/2011 TAT=15758.01665 and TAC=10996	CURRENT STATUS **CLOSED** SB-670BA-32-019 REV A DATED 9/18/08 C/W BY C/W 49000-32-32 ON 8/13/07	
AD-2012-18-11 (I)(2)	INITIAL ULTRASONIC INSP # 3 HYD ACCUMULATOR	11140-2295		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2012-18-11 (I)(3)(6)	INITIAL ULTRASONIC INSP INBD/ORBD BRAKE ACCUM	APR11-0640(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (I)(3)(6)	INITIAL ULTRASONIC INSP INBD/ORBD BRAKE ACCUM	APR11-0637(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (L)	REPEAT U/SONIC INSP IAW (I) FOR APPLIC ACCUM	11140-2295		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (L)	REPEAT U/SONIC INSP IAW (I) FOR APPLIC ACCUM	APR11-0637(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (L)	REPEAT U/SONIC INSP IAW (I) FOR APPLIC ACCUM	APR11-0640(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (L)	REPEAT U/SONIC INSP IAW (I) FOR APPLIC ACCUM	11139-3154		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2012-18-11 (L)	REPEAT U/SONIC INSP IAW (I) FOR APPLIC ACCUM	11139-3098		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2012-18-11 (M)	R & R #1 AND OR #2 HYDRAULIC ACCUMULATORS	11139-3154		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2012-18-11 (M)	R & R #1 AND OR #2 HYDRAULIC ACCUMULATORS	11139-3098		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2012-18-11 (O)	R & R #3 HYDRALUIC ACCUMULATOR	11140-2295		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	CURRENT STATUS **CLOSED** N/A DUE TO P/N EFFECTIVITY	
AD-2012-18-11 (P)	R & R INBD AND OR OTBD BRAKE ACCUMULATOR	APR11-0637(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 (P)	R & R INBD AND OR OTBD BRAKE ACCUMULATOR	APR11-0640(Q)		Date Closed: 10/24/2012 TAT=19604.31659 and TAC=13477	Not Applicable, 10/24/2012 On 10/24/2012 fitted to 157, TAT: 19604.31659 TAC: 13477	
AD-2012-18-11 II(4)(5)	INITIAL ULTRONIC INSP # 1 AND OR # 2 HYD ACCU	11139-3154		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2012-18-11 II(4)(5)	INITIAL ULTRONIC INSP # 1 AND OR # 2 HYD ACCU	11139-3098		Date Closed: 2/26/2013 TAT=20467.21657 and TAC=14032	CURRENT STATUS **CLOSED** SB-670BA-29-014 DATED 12-22-10 C/W 2/26/13	
AD-2013-06-06 (F)	OPERABILITY BLEED VALVE	AWU91		Date Closed: 7/23/2014 TAT=24516.28322 and TAC=16667	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N EFFECTIVITY AS LISTE	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
AD-2013-06-06 (F)	OPERABILITY BLEED VALVE	PFBAMS90		Date Closed: 5/8/2013 TAT=21026.9999 and TAC=14420	Not Applicable, 5/8/2013 On 5/8/2013 fitted to 157, TAT: 21026.99990 TAC: 14420	
AD-2014-13-16 (G)	MLG INBD RETRACT ACT BRACKET PIN INSP	MA0266(Q)		Date Closed: 8/19/2014 TAT=24753.29986 and TAC=16810	Not Applicable, 8/19/2014 On 8/19/2014 fitted to 157, TAT: 24753.29986 TAC: 16810	
AD-2014-13-16 (G)	MLG INBD RETRACT ACT BRACKET PIN INSP	MA0265		Date Closed: 8/19/2014 TAT=24753.29986 and TAC=16810	Not Applicable, 8/19/2014 On 8/19/2014 fitted to 157, TAT: 24753.29986 TAC: 16810	
AD-2014-13-16 (H)	MLG INBD RETRACT ACT BRACKET PIN R&R	MA0266(Q)		Date Closed: 8/19/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **CLOSED** N/A DUE TO P/N AS LISTED IN AD/SB , C/W 8/19/2014	
AD-2014-13-16 (H)	MLG INBD RETRACT ACT BRACKET PIN R&R	MA0265		Date Closed: 8/19/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **CLOSED** N/A DUE TO P/N AS LISTED IN AD/SB , C/W 8/19/2014	
AD-2014-22-07 (G)(I)	MLG INSP OF RETRACT ACTUATOR JAM NUT	SPP020478		Date Closed: 3/1/2014 TAT=23366.76655 and TAC=15939	CURRENT STATUS **CLOSED** SB-49600-32-64 REV 3 CW 12/20/13 @ VENDOR CWCW	
AD-2014-22-07 (G)(I)	MLG INSP OF RETRACT ACTUATOR JAM NUT	SPP020746		Date Closed: 10/22/2014 TAT=25165.64987 and TAC=17072	CURRENT STATUS **CLOSED** CW SB-670BA-32-031 REV C DATED 4/17/12 PART A, C/W 10/ RECURRING	
AD-2014-22-07 (H)	MLG INSP OF RETRACT ACTUATOR BRACKET & PINS	MA0265		Date Closed: 8/27/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **CLOSED** SB-670BA-32-033 REV B DATED 6/26/12, C/W 8/27/2014	
AD-2014-22-07 (H)	MLG INSP OF RETRACT ACTUATOR BRACKET & PINS	MA0266(Q)		Date Closed: 8/27/2014 TAT=24753.29986 and TAC=16810	CURRENT STATUS **CLOSED** SB-670BA-32-033 REV B DATED 6/26/12, C/W 8/27/2014	
AD-2014-22-07 (I)	MLG INSP OF RETRACT ACTUATOR JAM NUT	SPP020746		Date Closed: 10/22/2014 TAT=25165.64987 and TAC=17072	CURRENT STATUS **CLOSED** SB-670BA-32-031 REV C DATED 4/17/12 PART B CW 10/22/11 CWCW WHEN CLOSING THIS AD ALSO CLOSE AD-2013-16-08 (G)(I)	
AD-2014-22-07 (I)	MLG INSP OF RETRACT ACTUATOR JAM NUT	SPP020478		Date Closed: 3/1/2014 TAT=23366.76655 and TAC=15939	CURRENT STATUS **CLOSED** SB-49600-32-64 REV 3 CW 12/20/13 @ VENDOR CWCW WHEN CLOSING THIS AD ALSO CLOSE AD-2013-16-08 (G)(I)	

AD Number	SUBJECT	SERIAL NUMBER	INTERVAL	DATE OF COMPLIANCE	METHOD OF COMPLIANCE	COMPLIANCE DUE
<b>ENGINE</b>						
AD-2005-07-06	AD20050706 MASTER VARIABLE GEOMETRY ACTUATOR	E194360		Date Closed: 6/9/2011 TAT=15598.09997 and TAC=10898	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N AND S/N FITTED TO A/C AT BUILD	
AD-2005-07-06	AD20050706 MASTER VARIABLE GEOMETRY ACTUATOR	E194312		Date Closed: 11/22/2010 TAT=14116.45001 and TAC=9952	CURRENT STATUS **CLOSED** THIS AD DOES NOT APPLY DUE TO P/N AND S/N FITTED TO A/C AT BUILD	

# Attachment 4

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## Weight and Balance

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2.7 CRJ700 Physical Weighing Data (CRJ-WB700)

<b>Physical Weighing Data – CRJ700</b>			
<i>This form is approved for "Jack Stand Method" Only</i>			
AIRCRAFT N#	DATE (Month/Date/Year)		
157GJ	Feb. 11, 2015		
	WEIGHT	ARM	MOMENT
1. NOSE	1,440	278.00	400,320.0
2. RIGHT MAIN	21,045	819.25	17,241,116.3
3. LEFT MAIN	20,845	819.25	17,077,266.3
4. BALLAST (if used enter a negative value)		278.00	0.0
5. DRAINABLE UNUSABLE FUEL	142.2	739.90	105,213.78
6. TOTAL	43,472.2 <small>BEW</small>	0	34,823,916.3 <small>BEW MOMENT</small>
7. OPERATION ADDITIONS	1,348.0		621,817.00
8. BOW	44,820	0	35,445,733 <small>BOW MOMENT</small>

CG =  $\frac{\text{BOW MOMENT}}{\text{BOW}} = \frac{790.846}{1}$

**BOW MOMENT** Calculate the moment to the whole number, if the tenth is 5 or more change the whole number up by 1 number.  
**BOW** Calculate BOW to the whole number. If the tenth is 5 or more change the whole number up by 1 number.  
**CG** Calculate CG to the thousandth. If the ten thousandth is 5 or more change the thousandth up by 1 number.

Inspector: \_\_\_\_\_ Emp. #: \_\_\_\_\_ Date: Feb. 11, 2015

Chief Inspector: \_\_\_\_\_ Emp. #: \_\_\_\_\_ Date: 2/11/2015

Flight Ops Computer Updated By: \_\_\_\_\_

CG = Center of Gravity, BOW = Basic Operating Weight

2.4 Service Weight Pick-Up and Loss Form (WB-001)

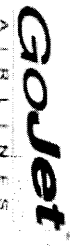
DATE	REASON FOR CHANGE	SIGN		WEIGHT	MOMENT	AIRCRAFT			Initials
		+	-			BEW	BEW MOMENT	CG	
2/11/15	Aircraft Weighed 14CFR	-		51	27,210	43,472	34,823,916	801.065	

Aircraft Registration # N 157 GJ

Worksheet for reestablishment of CURRENT status of aircraft Weight & Balance:

- [1] BEW Exceeding (+/-) 1/2 of 1% of maximum landing weight: 67,000 lbs. \* 1/2 of 1% 335 lbs.
- [2] Cumulative change in CG exceeds 1/2 of 1% of the Mean Aerodynamic Chord (MAC):  
Length of MAC X 1/2 of 1% = .666 inches.

- BEW** Calculate BEW to the whole number. If the tenth is 5 or more change the whole number up by 1 number.
- BEW MOMENT** Calculate the moment to the whole number, if the tenth is 5 or more change the whole number up by 1 number.
- CG** Calculate CG to the thousandth. If the ten thousandth is 5 or more change the thousandth up by 1 number.





2.8 CRJ700 Aircraft Weight & Balance Checklist (CRJ-WBC)  
14CFR 121.135(b)(21)

CRJ-WBC

**CRJ-700**  
**Aircraft Weight and Balance Checklist**

A/CN 1576J

S/N 10230

Date 02/11/2015

1. Thoroughly clean exterior of aircraft
2. Thoroughly clean interior of aircraft
3. Drain fuel system. Use water drains to remove unusable, drainable fuel
4. Ensure toilet is drained
5. Drain potable water
6. Ensure engine and APU oil levels are full
- 6a. Ensure that the remote engine oil replenishment tank (if applicable) is full.
7. Ensure hydraulic reservoir is full
8. Check that no components are removed for maintenance reasons
9. Ensure all seats are in the take-off position
10. Remove the following publications:
  - Aircraft Maintenance Flight Log
  - Normal & Emergency Checklists
  - Minimum Equipment List
  - AFM
  - Quick Reference Handbook (QRH Vol. 1 & 2)
  - All magazines, sick sacks, brief cards, galley supplies, pillows, blankets (galley cart(s) to be emptied of supplies and remain onboard)
  - Jeppesen Airway Manuals - Two (2)
  - Flight Attendant Logbook
11. Set flight controls to neutral and ensure thrust reversers are retracted
12. Retrieve the electronic weighing kit from the tool room and verify the calibration is good
13. Set-up the electronic weighing kit box IAW Manufactures Instructions, which are located inside the test box, turning it on and letting it warm-up.
14. Install the load cells on the jack-stands and move the jacks under the jacking points (ref. AMM Part II Chapter 7)
15. Connect each load cell lead to the weighting kit box and ensure each load cell is zeroed
16. Close all doors and access panels except the aft equipment compartment door
17. Ensure hangar doors are closed
18. Section off the area immediately surrounding the aircraft with CAUTION tape and signs warning "Aircraft on Jacks"
19. Jack aircraft IAW AMM Part II Chapter 7

CRJ700 - Aircraft Weight & Balance Checklist (Reverse Side)

MECH INSP

20. Level the aircraft IAW AMM Part II Chapter 8
21. Weigh the aircraft, recording the appropriate values in the appropriate fields on the CRJ-WB form. For the United fleet, use Table 1 from the Operation Additions in Part 2.1 of this Chapter. For the Delta fleet, use Table 2. Table 3 was created for initial acquisition of Delta fleet. Table 3 is not to be used for future recalculations or physical weigh.
22. Let the aircraft down off the jacks and reinstall the jacking point nylon covers
23. Record Scale Manufacturer's name. REVERE Corp. of America  
 Scale serial # 5462A  
 Calibration date 11-14 DUE 11-15  
 Left S/N 710644 Green  
 Right S/N 696354 RED  
 Nose S/N 710229 YELLOW
24. Attach a copy to this checklist of the certificate of calibration for the scales used to perform weight and balance.
25. The inspector must compare old BEW with new one. If it differs by more than 1/2 of 1% of max landing weight, the weight change must be justified before the aircraft is returned to service.
26. The Inspector must compare old CG with new one. If it differs by more than 1/2 of 1% of the Mean Aerodynamic Chord (MAC), it must be justified before the Aircraft can be returned to service.
27. Reinstall items removed in Step #10.
28. Forward form(s) to flight control for signature and computer update.
29. Shift Inspector shall make a logbook entry stating "Flight Operations computer requires update of weight and balance data.
30. Flight Control shall update the BOW and BOW MOMENT in the computer system, sign CRJ-WB, and then notify Maintenance Control.
31. Maintenance Control notifies Maintenance that the Flight Control computer has been updated with weight and balance data and faxes the signed CRJ-WB back to the Shift Inspector.
32. Maintenance signs off logbook entry stating "Flight Operations computer weight and balance data updated".

Shift Inspector [REDACTED]

A & P Number [REDACTED]

Date: 02/11/15


**Quality Testing Services, Inc.**

2305 Millpark Dr. Maryland Heights, MO 63043  
 888-770-0607 314-770-0607 (fax) 314-770-0103  
 Email: calibration@qualitytesting.com

**Certificate of Calibration**
**Certificate Number: C1411018-1**

<b>Gage ID</b> 5462A <b>Gage S/N</b> 5462A <b>Description</b> Aircraft Scale Set w/ Display <b>Model No.</b> 55800-4-100 <b>Manufacturer</b> Revere Corporation of America <b>Cal. Date</b> 11/14/2014 <b>Next Due</b> 11/30/2015 <b>Cal. Freq.</b> 12.00 EOM	<b>Returned Condition</b> In Tolerance <b>As Found Condition</b> In Tolerance <b>PO#</b> RTOOL-240552 <b>Coverage Factor k</b> 2 <b>Customer Info.</b> Trans States Airlines 11495 Navaid Rd Bridgeton, MO 63044
--	--

**Certification Statement**
**Procedure:** Mfg's Calibration Procedure

This document certifies that the equipment identified above has been calibrated in accordance with the above listed procedure. Quality Testing Services, Inc. calibrations meet the requirements of ANSI Z540, ISO/IEC 17025:2005 (where covered by our scope of Accreditation) and are traceable to NIST. The above purchase order was referenced for customer specifications. QTS equipment calibrations meet requirements listed in active Supplier Specifications Sheet (Form QF4.6.2-1) provided with item.

**Calibration Standards:**

QTS-CAL-1364, Date Due: 30-Oct-15, Report #C-8671J3014

**Environmental Conditions**

**Temperature** 68.03°F  
**Humidity** 28.5%  
**Calibration Location** 2305 Millpark Dr. Maryland Heights, MO 63043

Test Point	Minimum	Nominal	Maximum	Before	Uncertainty	Fail Before
Gage ID of Standard		Units		After		Fail After
001. Cell 1 Force, Compression, Linearity	4872	5072	5272	5072		No
		lbs		5072		No
002. Cell 1 Force, Compression, Linearity	49724	49924	50124	49924		No
		lbs		49924		No
003. Cell 1 Force, Compression, Linearity	79820	80020	80220	79960		No
		lbs		79960		No
004. Cell 2 Force, Compression, Linearity	4750	4950	5150	4950		No
		lbs		4950		No
005. Cell 2 Force, Compression, Linearity	49630	49830	50030	49860		No
		lbs		49860		No

006. Cell 2 Force, Compression, Linearity	79620	79820	80020	79780	No
		lbs		79780	No
007. Cell 3 Force, Compression, Linearity	4878	5078	5278	5078	No
		lbs		5078	No
008. Cell 3 Force, Compression, Linearity	49500	49700	49900	49700	No
		lbs		49700	No
009. Cell 3 Force, Compression, Linearity	79620	79820	80020	79750	No
		lbs		79750	No
010. Cell 4 Force, Compression, Linearity	4920	5120	5320	5120	No
		lbs		5120	No
011. Cell 4 Force, Compression, Linearity	49800	50000	50200	50100	No
		lbs		50100	No
012. Cell 4 Force, Compression, Linearity	79518	79718	79918	79600	No
		lbs		79600	No

Calibration By Blake EverittApproved by 

Notes: 1) This report is not to be reproduced except in full, without the written authorization of Quality Testing Services, Inc. This report is not valid without the raised seal of Quality Testing Services, Inc. Original Copies can be provided on request. 2) Uncertainties if stated on this report represent expanded uncertainties using a coverage factor of k=2 which provides a level of confidence of approximately 95%. The readings taken on this certificate were not taken with consideration to any uncertainties unless specified by the customer. This means that the tolerances, as specified in the specification were not expanded to allow for the uncertainty of the calibration. 3) The results of this calibration cover only the item(s) listed above and calibrated by QTS, Inc. 4) Any number of factors may cause the item to drift out of calibration before the recommended interval has expired.

# Attachment 5

---

## Supplemental Type Certificates

United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* ST03336AT

*This certificate issued to*

Chippewa Aerospace Inc.  
490 Allied Drive  
Conway, SC 29526

*certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 25 of the Federal Aviation Regulations.*

*Original Product--Type Certificate Number:*

A21EA

*Make:*

Bombardier Inc.

*Model:*

CL-600-2B19, -2C10, -2D15, -2D24 Series

*Description of Type Design Change:* Installation of LRU Avionics Protective Covers, in accordance with Chippewa Aerospace Master Drawing List (MDL) No. 601-2451-01-0001, Rev. 7, Dated August 1, 2013, or later FAA approved revision.

*Limitations and Conditions:* This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated, unless it is determined by the installer that the interrelationship between this change and any other previously approved modifications will produce no adverse effect upon the airworthiness of that airplane. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* May 23, 2006

*Date reissued:*

*Date of issuance:* September 29, 2006

*Date amended:* March 15, 2007, January 27, 2010,  
July 13, 2010, November 04, 2013



*By direction of the Administrator*

\_\_\_\_\_  
(Signature)

Melvin D. Taylor, Manager  
Atlanta Aircraft Certification Office  
\_\_\_\_\_  
(Title)

United States of America  
Department of Transportation - Federal Aviation Administration  
**Supplemental Type Certificate**  
(Continuation Sheet)

*Number*

**ST03336AT**

Instructions for Continued Airworthiness (ICA), Chippewa Aerospace, Inc. Document No. # 601-2451-01-0002, Rev 5, dated August 1, 2013, or later FAA accepted revision must be made available to the operator at the time of installation.

*Certification Basis:*

Based on 14 CFR §§ 21.115 and 21.101, and the FAA policy for significant changes in FAA Order 8110.48, the certification basis for the Bombardier CRJ 200/700/705/900 aircraft is as follows:

- a. The type certification basis for Bombardier CRJ 200/700/705/900 airplane is shown on TCDS A21EA for parts **not changed or not affected** by the change.
- b. The certification basis for parts **changed or affected** by the change since the reference date of application, May 23, 2006, is based upon part 25 as amended by Amendment 25-119. Based on 14 CFR §§ 21.115 and 21.101, and the FAA policy for significant changes in FAA Order 8110.48, the certification basis for this modification was determined to be:

**Regulations at the latest amendment 25-0 through 25-119**

§§ 25.301	§§ 25.305	§§ 25.561	§§ 25.603	§§ 25.607	§§ 25.625
§§ 25.303	§§ 25.307	§§ 25.601	§§ 25.605	§§ 25.613	§§ 25.1529

**14 CFR Part 26 Regulations**

Based on 14 CFR §21.101(g), applicable provision of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this STC must demonstrate compliance with the applicable sections. As of the issuance date of this STC, compliance has been found for the following regulation: 14 CFR §26.11.

-----END-----

United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* ST02241NY

*This certificate issued to* Dayton-Granger, Inc.  
3299 S.W. 9<sup>th</sup> Avenue  
Ft. Lauderdale, FL 33315-3000

*certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 25 of the Federal Aviation Regulations.*

*Original Product Type Certificate Number:* A21EA

*Make:* Bombardier, Inc.

*Model:* CL-600-2B19, CL-600-2C10, CL-600-2D15, CL-600-2D24, CL-600-2E25

*Description of Type Design Change:* STC was initially approved by Transport Canada, FAA validated under the Bilateral Agreement. Installation of Winglet and Horizontal Stabilizer End Cap Lightning Protection Kits in accordance with:

**Configuration 1 (CL-600-2B19):**

Master Drawing List DSC740070-MDL, Rev-G, dated July 25, 2014, or later FAA approved revisions.

**Configuration 2 (CL-600-2C10, CL-600-2D15, CL-600-2D24):**

Master Drawing List 701656-MDL, Rev-H, dated May 7, 2014, or later FAA approved revisions.

**Configuration 3 (CL-600-2D15, CL-600-2D24, CL-600-2E25 with W25 Winglets P/N CC690-15352-1, CC690-15352-2, CC690-15352-3, CC690-15352-4):**

Master Drawing List DSC740085-MDL, Rev-N, dated May 7, 2014, or later FAA approved revisions.

*Limitations and Conditions:*

(See Continuation Sheet 3)

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* November 09, 2005

*Date reissued:* March 23, 2009

*Date of issuance:* March 09, 2006

*Date amended:* September 06, 2006; March 17, 2008; March 18, 2011; August 15, 2014

*By direction of the Administrator*



(Signature)

Melvin D. Taylor, Manager  
Atlanta Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.



United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**  
(Continuation Sheet)

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Regional Office of the transfer of this Supplemental Type Certificate.

The FAA will reissue the certificate in the name of the transferee and forward it to him.

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**TRANSFER ENDORSEMENT**

Transfer the ownership of Supplemental Type Certificate Number \_\_\_\_\_

to *(Name of transferee)* \_\_\_\_\_

*(Address of transferee)* \_\_\_\_\_  
*(Number and Street)*

\_\_\_\_\_  
*(City, State, and ZIP code)*

from *(Name of grantor) (Print or type)* \_\_\_\_\_

*(Address of grantor)* \_\_\_\_\_  
*(Number and Street)*

\_\_\_\_\_  
*(City, State, and ZIP code)*

Extent of Authority (if licensing agreement): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date of Transfer: \_\_\_\_\_

Signature of grantor *(In ink)*: \_\_\_\_\_

United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**  
(Continuation Sheet)

*Number* ST02241NY

Date of Issuance: March 09, 2006  
Date of Amendment: August 15, 2014

*Limitations and Conditions* (Continued):

"This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated, unless it is determined by the installer that the interrelationship between this change and any other previously approved modifications will produce no adverse effect upon the airworthiness of that airplane. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission."

1. For Configuration 1:
  - a. Maintenance must be in accordance with Dayton Granger Instructions for Continued Airworthiness 701620, Rev-A, dated May 16, 2006 or later FAA accepted revisions.
  - b. Operate in accordance with Dayton Granger Airplane Flight Manual Supplement AFMS 701626, Rev-A, approved May 16, 2006, or later FAA approved revisions.
2. For Configuration 2:
  - a. Maintenance must be in accordance with Dayton Granger Instructions for Continued Airworthiness 701654, Rev-G, dated May 7, 2014, or later FAA accepted revisions.
  - b. Operate in accordance with Dayton Granger Airplane Flight Manual Supplement AFMS 701657, Rev-C, approved August 15, 2014, or later FAA approved revisions.
3. For Configuration 3:
  - a. Maintenance must be in accordance with Dayton Granger Instructions for Continued Airworthiness 701654 Rev-G, dated May 7, 2014, or later FAA accepted revisions.
  - b. Operate in accordance with Dayton Granger Airplane Flight Manual Supplement AFMS 701730, Rev-B, approved August 15, 2014, or later FAA approved revisions.

*Certification basis:*

14 CFR Part 25 including amendments 25-1 through 25-131.

...END...

United States Of America  
Department of Transportation - Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* ST02005LA

*This Certificate issued to*

C&D Zodiac, Inc.  
5701 Bolsa Ave.  
Huntington Beach, CA 92647

*certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 25\* of the Federal Aviation Regulations. \*Certification basis set forth on continuation page 3.*

*Original Product Type Certificate Number:* A21EA

*Make:* Bombardier, Inc.

*Model:* CL-600-2C10 (Regional Jet Series 701)

*Description of Type Design Change:* C&D Zodiac, Inc. Interior Installations and Modifications per C&D Zodiac, Inc., Index List No. G181, Revision A, dated Sept. 13, 2013, or later FAA approved revisions.

*Limitations and Conditions:* The installation should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previously approved configuration will not introduce any adverse effect upon the airworthiness of the aircraft. A copy of this STC must be included in the permanent record of the modified aircraft. If the holder agrees to permit another person to use this certificate to alter the product, the holder must give the other person written evidence of that permission.

This STC approves provisions for the installation of equipment into overhead bins. The FAA has not certified the equipment for which these provisions are intended. You must get additional FAA approval to install this equipment. The FAA must evaluate the installation to ensure it complies with the applicable airworthiness standards.

(Limitations and conditions continued on page 3)

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* June 3, 2013

*Date reissued:*

*Date of issuance:* September 17, 2013

*Date amended:*

*By direction of the Administrator*



(Signature)

ODA Lead Administrator, [REDACTED]  
(Title)

*Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.*

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Regional Office of the transfer of this Supplemental type certificate.

The FAA will reissue the certificate in the name of the transferee and forward it to him.

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## TRANSFER ENDORSEMENT

Transfer the ownership of the Supplemental Type Certificate Number \_\_\_\_\_

to *(Name of transferee)* \_\_\_\_\_

*(Address of transfer)* \_\_\_\_\_

*(Number and street)*

\_\_\_\_\_  
*(City, State, and Zip code)*

from *(Name of grantor) (Print or type)* \_\_\_\_\_

*(Address of grantor)* \_\_\_\_\_

*(Number and street)*

\_\_\_\_\_  
*(City, State, and Zip code)*

Extent of Authority (if licensing agreement): \_\_\_\_\_

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Date of Transfer: \_\_\_\_\_

Signature of grantor *(In ink)*: \_\_\_\_\_

# Supplemental Type Certificate

(Continuation Sheet)

*Number* ST02005LA

*Certification Basis:*

Based on 14 CFR §§ 21.115 and 21.101 for non-significant changes to type design, the certification basis elected by the STC holder for the modifications and installations to Bombardier CL-600-2C10 (RJ Series 701) airplanes modified by this change is as follows.

- a. The type certification basis for Bombardier CL-600-2C10 (RJ Series 701) airplanes is shown in TCDS A21EA for parts **not changed or not affected** by the change.
- b. The certification basis for parts **changed or affected** by this change as of the reference date of application, June 3, 2013 is based on part 25 as amended by Amendment 25-136 and 14 CFR part 26. Based on 14 CFR §§ 21.115 and 21.101, the certification basis for this modification was determined to be:

**Regulations at the latest amendment 25-0 through 25-136**

25.561(a)-(d); 25.785(a)-(c), (d)(2), (f)(1), (f)(3), (h)(2), (h)(4), (i)-(k); 25.853(a), (c), (d), (e); 25.856(a);

**Regulations at an intermediate amendment**

None.

**Regulations at the amendment level in TCDS A21EA**

25.23(a), (b); 25.301(a)-(c); 25.303; 25.305(a), (b); 25.307(a); 25.562(a), (b), (c)(2), (c)(4)-(c)(8); 25.601; 25.603(a)-(c); 25.605(a); 25.607(a)-(c); 25.609(a), (b); 25.611; 25.613(a)-(e); 25.625(a)-(c); 25.789(a); 25.791(a), (b), (e); 25.811 (c), (d)(1), (d)(3), (g); 25.812(a), (a)(1), (b)(1)(ii), (c), (e), (i), (l)(1), (l)(2); 25.813(c)-(e); 25.815; 25.817; 25.869(a)(4); 25.1301; 25.1309(a), (b); 25.1351(a); 25.1353(a), (d); 25.1357(a), (c); 25.1423(a), (c); 25.1431(c); 25.1441(a), (b); 25.1445(a)(1); 25.1447(a), (c)(1); 25.1450(a), (b)(1); 25.1529; 25.1541; 25.1557(a); Appendix F, Parts IV, V.

**14 CFR Part 26 regulations**

Based on 14 CFR § 21.101(g), applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this STC must demonstrate compliance with the applicable sections. As of the issuance date of this STC, compliance has been found for the following regulations 14 CFR § 26.11(c), (d)(5) (Amdt 26-0). 26.47 (does not affect or create fatigue critical structure).

*Limitations and Conditions (continued):*

Instructions for Continued Airworthiness (ICA), C&D Zodiac Report No. CDRG181-78, Revision A, dated Sept. 3, 2013, or later FAA accepted revision must be made available to the operator at the time of installation.

For MSN 10286-10301 Bombardier Service Bulletin No. 670BA-25-092 must be implemented concurrently with this STC.

---END---

# Attachment 6

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## Interview Summaries

## Interview Summary

**Name:** Gordon Kovacevic  
**Date/Time:** 29 April 2015 at 15:00 CDT  
**Location:** St. Louis, Missouri  
**Representation:** None  
**Present:** Gregory Borsari, NTSB; Pocholo Cruz, NTSB; Bill Bramble, NTSB; David Avery, FAA; Jacques Desmarias, Bombardier; Ivona Szczerbowicz, UTC Aerospace Systems; Bruce Kustes, GoJet Airlines; Jeffrey Craig, GoJet Airlines

The interview was conducted by phone.

Mr. Kovacevic is an employee of Landmark Aviation as a Technician at the Grand Rapids, Michigan Airport. He has an A&P license that he received in the 2013 time frame. Prior to working for Landmark Aviation, Mr. Kovacevic was employed by Endeavor Air in Detroit. At Endeavor he primarily worked on CRJ-200 and CRJ-900 aircraft. After about 2.5 years he took the position with Landmark Aviation as it relocated him back to where he grew up.

Mr. Kovacevic was asked about his work schedule and he indicated that he worked second shift from 1600 to Midnight, Sunday through Thursday. He also stated that every ten weeks or so that he would be on call for the weekend. This duty rotated with the other technicians.

Mr. Kovacevic indicated that his normal sleep schedule would be about from 0130 to around 1000 daily. He lived close to the airport and that he had worked shift work prior to working at Landmark and that his body clock easily adjusted to these hours.

When he would arrive at work he would typically get a turnover from the crew lead. There were on average about eight to nine other Technicians. Mr. Kovacevic indicated that Landmark Aviation had two hangars that were connected plus the ramp area to work from.

Asked how familiar he was with the CRJ-700 series he stated that he had some experience, but was more familiar with the CRJ-900 aircraft and that he had the general familiarization training on the aircraft when he was employed at Endeavor Air.

Mr. Kovacevic indicated that he would take the calls from the different airlines maintenance control departments and that was how work was assigned. He further stated that the controllers were helpful, easy to work with and would provide the documentation he would need usually by e-mail. If not e-mail, they could fax to the shop office.

Asked how the GoJet maintenance controllers were to work with as compared to the other airlines, Mr. Kovacevic stated that they were about the same.

Mr. Kovacevic was asked to provide his recollection of the events the night he worked on the GoJet CRJ-700. He stated then when he talked to maintenance control that he was working

another aircraft at the time. This was acceptable as the airplane would be overnighing in Grand Rapids.

He was instructed to look the NLG gear over as there was clunking noises coming from the gear and to pay particular attention to the aft spade door as it has known issues. According to Mr. Kovacevic, he was not provided an AMM to perform a general visual inspection of the NLG. He did look the NLG over as instructed including the attach points for the spade door, torque links and gear attach points. He noticed that the servicing placard had the straps bent and was instructed to bend them back into place if possible. Mr. Kovacevic referred to these straps as worm clamps and the placard was not located at the original position. The new position was smaller in diameter accounting for the excess length of the straps. He also stated from his previous experience with the CRJ-200 that noise could come from the nose wheel steering system and with maintenance control concurrence he exercised the steering system. Mr. Kovacevic stated other than the placard he could find nothing wrong or duplicate any noise or clunking.

Mr. Kovacevic indicated when he looked at the logbook there was only one write up for the servicing placard that needed to be addressed. Maintenance control provided him a CMM via e-mail that he could use to sign off the one logbook item.

Mr. Kovacevic stated that while looking the gear over it was hard to see up in the wheel well. Not a lot room or light, but he did look at the gear attach points.

When asked about the conditions that night, he indicated as best he could remember it was a clear night, but cold. Nights are still cold up here in Michigan. Mr. Kovacevic stated that the ramp was well lit and that he always carried a stream light (flashlight) with him. It did a good job of lighting the area and that it was adequate for the task.

Mr. Kovacevic indicated that if he needed help and depending on what was needed he could either call for another technician or ask one of the ramp guys to help him out if he just needed another body.

When asked about parts and material, he stated that those items were provided by the airlines unless it was just expendable hardware. Those type items he could get from their shop.

Mr. Kovacevic was asked what he would do if he did not understand the task requirements or needed help. He responded he would contact the airline maintenance control for technical matters and that he could always contact his supervisor if needed.

When asked if he ever saw an FAA inspector, Mr. Kovacevic stated that he had seen some around on occasion doing shop audits but he never had any interaction with them other than when he was contacted about the event. He further indicated that the interaction was professional.



Mr. Kovacevic stated that his training was provided by the airlines for the airplanes he worked on. That the training was typically by CBT (Computer Based Training) and some instructor on sight training on each of the airlines processes. Recurrent training was by CBT.

He indicated that he never had factory training on the CRJ-700 airplanes. He would get what he needed from maintenance control and the AMM.

When asked about other than RII type items if anyone ever inspected his work, Mr. Kovacevic stated that he would ask another technician to provide a second set of eyes on his work whenever possible. It was just good practice to do so whenever possible.

Asked if it was common practice for maintenance control to lead the work over the phone, he stated yes, that it was common for all the airlines to direct the work from the phone.

When asked if he ever was in St. Louis for training, Mr. Kovacevic stated, no, never been there. He also indicated that when signing off an item that their repair station certificate did not include the CRJ-700 so he would have to use his A&P certificate number to clear items.

He was asked if he understood the failure mode during the incident, Mr. Kovacevic stated no, no one has filled him on what happened other than the nose gear up landing.

Asked about whether he felt the turnover from the first maintenance controller to the second was handled correctly, he indicated that the second controller seemed to know what was going on. The controller was busy and it took a couple of phone calls to finally get the CMM information that was needed, but that he seemed knowledgeable of the problem.

Asked again if he accomplished a visual inspection of the nose bay area, Mr. Kovacevic stated that he primarily was focused on the spade door and nose wheel steering.

He stated he spent a good amount of his time looking at the spade door, spade door attachment points and the nose wheel steering as well as the placard.

Mr. Kovacevic was asked if his schedule was the same as normal the week he worked on the incident airplane. He responded he was working 1500-2300 and the schedule has changed since. Mr. Kovacevic had a couple calls that night, so he stated he was tired, but nowhere to where he felt he was unsafe. He further stated that if he felt he was too tired he would make the appropriate calls, call his supervisor. They are not going to make him work if he felt unsafe. He got the call at 2400, started working on it, maybe around 0130-0200 because the one before took some time. Previous airplane was an Air Wisconsin squealing on "E" door, had to do some ground pressurization stuff, he confirmed the squeal. They wanted stuff done from AMM so Mr. Kovacevic did that. He recalled performing the ground pressurization check twice. That was a CRJ 200. He was able to reproduce the squeal but could not fix it. They had to ferry the airplane out.

When asked how long he spent on the incident airplane, Mr. Kovacevic stated, on it for an hour to an hour and a half, and then he had another aircraft after that. How much time doing

inspection, NW steering? A good 45 minutes to an hour was looking at NLG and inspecting. When he was up in the cockpit, that's when he was waiting for the controller to give him the paperwork and do the logbook. He spent at least an hour down there on the nose gear. Took an hour just to get paperwork? Yes, might have been out there a total of two hours. When did you go off shift? He stated that he should have left at 2300, but Air Wisconsin called at 2200-2230, then had quick thing to take care of on another airplane after GoJet. What time did you finish up? After finishing the paperwork and stuff, he stated it was 0400-0430. He was home and in bed by five.

Was it unusual to be there that late? Yeah he stated, it happens from time to time, maybe once a month to get that many calls stacked up in a night. It doesn't happen often.

What day of the week was it for you? It was his Friday. That was his on-call day. He was on call that weekend as well. Mr. Kovacevic was on Monday to Friday at that time. Friday was a regular day. He was on call the following Saturday and Sunday.

How did the previous shifts go? He was out by 2300 Monday - Thursday. He indicated it was a regular schedule.

How did you feel that night, he didn't feel particularly tired? He was up for a while. Tired like anyone would be, but didn't feel like he had to go to bed right away or that he was unsafe. He just felt a little tired.

When asked if the first controller ever explained that the pilot indicated to maintenance control that when they extended the gear it made a loud bang and that the pilot had 3,000 hours in type and had never heard anything like that before. Mr. Kovacevic stated no, he was not given that information. That would be a game changer; I would want to do a gear swing.

Mr. Kovacevic indicated when he inspected the gear that he did not wipe the gear down or that there was excessive grease in the area.

When asked about having to go in the next morning to reconnect the torque links he stated that the lower link was spring loaded and you needed two people in order to hold it in position and reconnect the pins.

Asked again if there was a write up for the clunking or if he made a write up Mr. Kovacevic stated no, there was no write up and that he should have pressed harder with the controller to document what work he did besides the placard issue.

He did check with the crew after reconnecting the torque links to see if anything else was needed and they stated no.

Asked how his health was that night, he stated he was fine. The previous three nights sleep pattern were normal and that he was not tired. He felt comfortable that he could tell his supervisor if he felt he was not fit for duty.

Asked about any medication or alcohol Mr. Kovacevic stated no, no medication and that he hardly ever drank. The last time he had any alcohol would have the previous weekend.

Asked if he felt if there was anything else in hindsight that he should have done and Mr. Kovacevic stated yes, I should have pushed harder to have the extra work documented. He did not know why he did not press harder.

The interview with Mr. Kovacevic ended at 1625 CDT.

**Name:** William Charles Clay Jr.  
**Date/Time:** 30 April 2015 at 09:00 CDT  
**Location:** St. Louis, Missouri  
**Representation:** None  
**Present:** Gregory Borsari, NTSB; Pocholo Cruz, NTSB; Bill Bramble (via phone), NTSB; David Avery, FAA; Jacques Desmarais, Bombardier; Ivona Szczerbowicz, UTC Aerospace Systems; Jeffrey Craig, GoJet Airlines

Mr. Clay has worked at GoJet Airlines for about six years and has an A&P license. Mr. Clay started in maintenance as a mechanic working line checks, repairs and pilot write-ups for about a year. He then went in to maintenance control as a maintenance controller. He worked as a controller for a little over five years and has been a maintenance control supervisor for the last three months. Mr. Clay stated that he attend Michigan Tech where he obtained his A&P license. When asked about any prior experience Mr. Clay indicated he worked for Kalitta Air on their B747 aircraft for about 4 and ½ years. He worked the heavy checks and landing gears. He also stated that he worked the line for one year.

When asked what his work schedule was at the time of the incident he stated that he worked 1300 to 0100. That it was a 12 hours on, 12 hours off rotation. Four days on, three days off. Mr. Clay indicated he typically would sleep from about 0200 to 1000. He further stated, it would be harder to sleep later than that with a three year old in the house. He has two children. Mr. Clay stated that his sleep was normal the morning prior to the incident. When asked about any medications or alcohol use, he responded, no, not with a three year old in the house.

Mr. Clay stated that there were two other controllers on duty the night of the incident. One controller works 1500 to 0300 while the other one works 1700 to 0500. At night there are two controllers and one supervisor on duty.

Mr. Clay responded that qualifications for a controller were “X” years of mechanical experience and an A&P license. He stated that in addition to the maintenance controllers that Dispatch and Planners also worked in the control center as well as the Maintenance Control and Dispatch Managers.

When asked if the various stations were standardized he responded yes, that any controller can log in at any station, they are all laid out the same.

Mr. Clay was asked if there was a method of identifying chronic aircraft and he responded, yes that the maintenance computer system would automatically flag an item by ATA chapter if it had three write-ups in 15 days. The alerts would be color coded, green, yellow and red depending on the number of write-ups.

When asked what resources he had available to him for airplane problems that he was not familiar with, Mr. Clay stated that he could always talk to the fleet coordinator, the hangar

mechanic or if need be contact Bombardier. Asked if he had ever contacted Bombardier he responded that yes he has.

Mr. Clay was asked to tell us about the night of the incident. He stated he remember it was near the end of his shift and that he took the call from the pilot as the other two controllers were busy with another call. He stated according to the pilot that when they extended the gear they heard a popping sound that they never heard before. Gear indication was normal and the landing was uneventful. The pilots took a look at the gear and found some bent straps where the NLG servicing placard is attached. Mr. Clay asked the pilots to send him a picture which they did. Mr. Clay indicated that his attention was to get the gear inspected. He wanted a general visual inspection per chapter 5 or 32 for NLG. When he first contacted Landmark Aviation in Grand Rapids the on duty mechanic was busy on another airplane.

When asked if a log item was created for the sound, he stated that he had the placard written up and wanted to see what the results of the inspection would be.

Asked if he had any similar past experience with gear extension creating a loud noise and Mr. Clay stated yes, something did occur one time previous but it was ice buildup or something along those lines.

Mr. Clay was asked if he would have any concerns taking an aircraft out of service that was due out first thing in the morning. He stated no, no issues. He would work with dispatch to try and move a spare aircraft if possible. When asked if had the authority to remove an aircraft from service, Mr. Clay responded yes he did.

When asked if pilots would want help making a logbook write-up Mr. Clay responded that he would talk with the pilot, they would ask him questions and we would help.

Mr. Clay explained the use of the maintenance journal and how it was used to keep information along with turnover items. Asked how does the mechanic know, he stated by the log book write-up. Asked if a log book write-up was created for the noise, Mr. Clay responded no there was not.

Mr. Clay was asked how he became a maintenance control supervisor. He stated that with his mechanic experience along with five years of controller experience and filling in from time to time for a supervisor and knowing the general manual policies and procedures all helped.

Asked specifically if a log item was created for the loud bang the pilots heard on gear extension he stated no, not while he was on duty. As it was near the end of the shift for him he placed it in the turnover log and talked to both controllers that were on duty with what was going on. When his shift was up he thought the airplane would be good for the morning departure and that everything was in the turn over log.

When asked what a controller would do if there was chronic item or something they could not figure out, Mr. Clay indicated he would contact Bombardier. That they have an online system

and an action plan would be created. He stated it would be a step by step process that you work through

Asked who was the controller that took over the issue and he stated that John Campbell was on-duty and worked the item.

When asked if it was common practice for the supervisor to do the controllers duties, Mr. Clay stated that no that the in-house policy was for the supervisor to handle his duties and let the controllers do their work. It was a busy night and as he had five years' experience as a controller he had no problem lending a hand. He tried to help out by taking the call.

Asked if he thought it would be a big item, he stated he wanted to get the mechanic out to the airplane and talk to the pilot before the crew left, but the mechanic was tied up on another job and that did not happen.

Asked what he did for the turn over prior to leaving, Mr. Clay responded that he talked to the on duty manager about the status of the out of service aircraft and wrote up his turn over log. No, he did not include 157 in the turn over log as I talked to the controller about it. The log was for open MEL items and other work load items.

Asked why they would be looking at the aft spade door, he responded that they have had issues with it. Popping noises, they sometimes jam, break loose or come off.

When asked about his relationship with supervision, he stated it was good, no issues.

Mr. Clay was asked about how items are cleared within the system when returning an aircraft back to service. He stated, either you had to get 100% read back of the signoff or get a photo copy of the log page prior to returning an aircraft to service.

Asked if he would do anything different with what he now knows. Mr. Clay responded that yes, he would force the pilot to put it in the logbook. He also stated that a new training module was being developed for the controllers. He did not have any details or timeline, but knew something was being developed.

Mr. Clay stated he was on duty when the Aircraft Communications Addressing and Reporting System (ACARS) message came in that the gear would not extend, followed by the tower fly by and subsequent gear up landing. He contacted his leadership so the director of maintenance and director of quality assurance would be notified. He followed the procedures and did what was told. Lock down the records.

Asked if he ever felt pressure to get an aircraft out or to reduce the cost, Mr. Clay said, no. No pressure and that he does not hear anything about the cost.

When asked about fleet reliability items, he stated that the fleet coordinator would be responsible for determining which service bulletins would be incorporated. That the fleet coordinator

participated in the Bombardier meetings and that he would either get an e-mail about new projects or see in the newsletter the company sent out.

Mr. Clay was asked what additional training he would like to see. He said that he would like to get out to the airplane once a quarter as things tend to get fuzzy the longer you are away from them.

When asked if there was anything else he would like to tell us, Mr. Clay stated that I just want to get this behind him and he further stated that he felt responsible for what happened.

Interview ended at 1035 CDT.

**Name:** John Campbell  
**Date/Time:** 30 April 2015 at 11:05 CDT  
**Location:** St. Louis, Missouri  
**Representation:** None  
**Present:** Gregory Borsari, NTSB; Pocholo Cruz, NTSB; Bill Bramble (via phone), NTSB; David Avery, FAA; Jacques Desmarias, Bombardier; Ivona Szczerbowicz, UTC Aerospace Systems; Jeffrey Craig, GoJet Airlines

Mr. Campbell has worked at GoJet Airlines for about eight months. He has an A&P license and a FCC General license. Mr. Campbell stated he has approximately 36 years of maintenance experience both as a mechanic and as a maintenance controller at several airlines.

When asked about his responsibilities as a maintenance controller, Mr. Campbell responded that it was primarily to make sure the airplane was safe and legal to fly and that the paperwork was signed off with the proper references following company procedures.

Mr. Campbell said his shift was 1700 to 0500 every Thursday, Friday, Saturday and every other Wednesday. He had been assigned to this shift since about the first of the year.

Mr. Campbell was asked about his normal sleeping pattern. He responded that when he got off shift he was normally in bed by 0600 and he normally slept eight hours per night. He stated, however, that he had recently purchased a house and was preparing to move in and was not sleeping in his own bed. As a result, he was not sleeping as well as usual and he was getting only 6.5-8 hours of sleep per night. On workdays, he tried not to do too much before his shift and to come to work as rested as possible. He estimated that he obtained at least seven hours of sleep the night before the work shift of interest. He described the quality of his last sleep as “a reasonable sleep, not absolutely fantastic, but a decent day sleep.” He recalled feeling well rested during the shift, and further said that the workload was light.

When asked about his familiarity with the CRJ700 series airplane, Mr. Campbell responded that he had had General Familiarization training, which was 40 hours, as well as Rockwell Avionics training. In addition he had completed an on-the-job training package.

Mr. Campbell stated that there were two controllers on duty that night plus the supervisor and again stated that the workload was light. Yes the operations center can be chaotic but that was not the case that night.

When asked about the pros and cons of working for GoJet, he stated that the Saber electronic record keeping system worked well for tracking and they also use an electronic journal for notes and turnovers. He stated, however, that the journal software could be confusing compared to what he had used at Pinnacle and he had thoughts on how to improve aspects of that system, such as its web interface. Items were harder to track at GoJet such as what actually fixed an item as compared to others that Mr. Campbell has used.



Asked how he created an item in the system, Mr. Campbell responded that he would either get a picture of the log page or have the pilot read it verbatim. At times, if the item was lengthy he would have to abbreviate as there was only so much space in the electronic record keeping system. He further stated that he would not try to lead the pilot with wording but would help out if they needed help clarifying an item.

When asked about chronic items, Mr. Campbell responded that they use an alert system that shows up right in front of them. The one issue Mr. Campbell has with the system is it cannot distinguish between items within an ATA chapter such as chapter 25 for interiors. You can have three completely different interior items such as one for a seat, a tray table and an arm rest, but because you have three write-ups within fifteen days in chapter 25 it is now chronic. It is not a real chronic item.

Mr. Campbell was asked about the flight into Grand Rapids. He stated he had first overheard it from Billy, his supervisor who took the call. Both Mr. Campbell and the other controller (Nathan) were on other calls at the time so Billy handled it initially. He further stated he started to work the incident airplane around 0130 and that they were done by 0230. The thing that took so long is it took forever to get all the documents sent to the mechanic in Grand Rapids because there was some email problems. Bigger problem was everybody misspells the mechanic's first name and he was trying to make sure that was correct and that he misspelled the mechanics last name and the mechanic didn't pick that up.

Mr. Campbell stated that he had gotten the pictures of the nose gear servicing placard bands that were bent and that a general visual inspection of the gear was requested. He also stated that he had worked with the mechanic previously. The mechanic stated that he was familiar with the CRJ900 which is pretty much the same airplane and was confident with him working the aircraft. When questioned if he had any previous experience with nose gear noise, Mr. Campbell stated that the nose steering system can make noise from air in the hydraulics or that the aft spade door has given them problems in the past. As they did not have a grease pad to use for a nose steering test he had the mechanic disconnect the torque links so that the steering system could be exercised. He also stated that he should have had the mechanic create a log item for the torque links being disconnected, that he did not and it was a mistake he made.

Mr. Campbell stated that once the steering system was tested with no noise and the general inspection did not uncover any problems he sent the mechanic the component maintenance manual reference on the placard straps.

Asked how the turnover on the pop sound while extending the gear was communicated, Mr. Campbell thought it came from Billy, that he first overheard it from Billy. Mr. Campbell also stated that when the mechanic finished the inspection that he was surprised to find out that there was no log book item for the noise, just the servicing placard. This made him think it was not a big deal if the pilots did not write it up.

When asked if maintenance control ever instructs a mechanic to create a write-up, Mr. Campbell stated that looking back he wished he did have the mechanic create a log item. He further stated

that his presumption was that the pilot had created a log item and when he found out there was none that it must not have been that bad of a noise.

When asked if he had the authority to have the airplane jacked and a gear swing, he responded yes, maintenance control has full authority over line maintenance and can make that call. Asked if it was common for maintenance control to trouble shoot, Mr. Campbell responded that yes, we do help with the troubleshooting when the airplane is at an out station.

When asked how common it was to defer maintenance items, Mr. Campbell stated that during the day it was quite common, 80 – 90% of the items would be deferred while at night it was much less, 15 – 20% of the time.

When asked about additional duties for a maintenance controller, Mr. Campbell talked about the daily reports such as deferred items, extended out of service aircraft that might not make the morning schedule or restricted MEL items. That he would send these out to supervision to keep them informed. He starts with the 2100 hour report, adds and subtracts from that and sends it out as the 0300 report.

Asked if he had any competing tasks 0130-0230 that night, Mr. Campbell stated he was trying to get the 0300 report out, but it was fairly complete. If the reports are going to be late due to working an aircraft out of service he sends out a quick note. The mechanic has his undivided attention. If they go out late, only 10 or 15 minutes late, he will put out a quick note letting people know, but in no way will working that report affect quality of work with a mechanic, he's going to have his undivided attention.

Mr. Campbell was asked by what time he had those reports ready to go, and he said he tried to send everything out 0300, queue it up, and hit send. On that night, the scheduled maintenance was all ready to send and queued in email before Nathan left which was about 0100-0130. The order out report he can't even start until 0230. The 0300 report, it was all but ready, only thing he had to do was process his report – format it and copy to email at the last minute. In this case, he was to take this airplane off the report. That was the only thing that changed on the report between 0100 and 0300. He stated he wasn't even thinking about the reports while working with the mechanic.

Asked to describe his recent sleep, Mr. Campbell estimated that Wednesday night going into Thursday he was probably in bed for 10-11 hours and slept 8-9 hours during that time. The day before work he planned for a long sleep period. The rough timing of his sleep that night was between 0030 or 0100 to 1100 or 1200. Most but not all of that would have been sleep time. Tuesday night going into Wednesday would have been more of a routine sleep schedule. He normally went to bed between 2300 and 0000 and got up around 0800 or 0900 the next morning. That night wasn't any different than usual.

Asked about his sleep quality overall, he said that when he was sleeping in his own bed, he slept well, probably 90-95% sleep quality. In the curved bed he had in his temporary sleeping quarters, his sleep quality was probably 80-90%. Not as good, but he still got a good night's rest.

Asked if he worked any overtime or extra hours during the week of interest, he said no, he had not worked any overtime since he had been with the company.

Mr. Campbell was asked how many were on duty in the control center that night. Just him after Nathan left until the 0300 shift came in. That was about 0315 or something – they work 0300 to 1500.

Asked to describe his thought process with respect to the possible gear problem, Mr. Campbell stated that something within the extension mechanism was his initial thought, but experience had shown him on multiple occasions that the steering collar could do that if it needed lubrication, even on extension. It is pretty much a known problem. The mechanic didn't see anything obvious on the visual, or on any other moving joints, anything on actuators. Mr. Campbell further stated that air in the hydraulic steering is known to cause popping noise, and when moving the wheel it didn't yield anything, he thought maybe air in the hydraulic system had worked itself out.

Mr. Campbell was asked how one can tell if you looked at it if it needed to be lubricated. He stated you can't tell by looking, that's why he wanted him to actuate it – hear it making noise. Based on his previous experience, if the steering collar needed to be lubricated, he would have instructed the mechanic to lube and he would send the appropriate references.

Asked if the mechanic heard anything when actuating the steering system? Mr. Campbell said no, the mechanic did not hear anything and at that point he dismissed the steering. No leaks – he would have picked up on that, no signs of fluid dripping, none of the normal stuff they would think might be associated with an issue down there. That area is not exactly the cleanest on the airplane.

Asked if could explain more on air being in hydraulics. Mr. Campbell responded if air is in system, when the gear is lowered and air passed through, it could make a snap with the actuator which would sound like a pop. The 200s were real bad about that. These aircraft seem to have a lot of air problems with hydraulics in system 3. Mr. Campbell further explained that steering isn't powered in the up position, isn't powered until the gear is lowered, that's when you'd get the pop if air is in the steering. That's what he mentally thought of – had air in system that had purged itself out and everything was good to go.

When they do have that, sometimes does it work itself out? Yes, because the air will get back into the reservoir, theoretically a self-clearing system. It should self-bleed.

When asked if in your mind, air in the system was the most likely explanation for this? He stated, he couldn't answer that. He didn't weigh one more than the other, just methodically troubleshoot what it could be, but nothing found on visual, no fluid leaking, no damaged hardware, nothing that hit something, nothing in the steering area. Mr. Campbell also stated that nothing was seen during the inspection, no air in the system when performing the steering check and the spade door inspection did not uncover any issues along with no pilot write up that they were good to go.

When asked if he knew if the mechanic had wiped anything down while doing the visual inspection Mr. Campbell stated that no, the mechanic did not mention whether he did or not, but that he was a good mechanic, he had worked with before.

When asked again about the lack of a write-up for the loud noise at gear extension, Mr. Campbell stated when the mechanic told him it was not written up, he was surprised. Mr. Campbell said that he hated to say it, but the pilot might have been talked out of writing it up by the maintenance controller who initially handled the issue.

When asked if he talked to the morning supervisor about 157 he stated no, the item had been cleared and the plane was ready. There was nothing to brief him on.

The only issue Mr. Campbell had with the paperwork was getting the documentation to the mechanic as he stated there was a problem with his e-mail, that he had it spelled wrong. Once they figured that out, he had no issues getting the mechanic the references he needed.

Mr. Campbell was asked if had had heard that the pilot stated it was the loudest noise he had heard during gear extension and that he had over 3,000 hours in the airplane and never heard anything like it would it have change your approach? Mr. Campbell stated yes, it would have driven them to either do a gear swing or ferry it out stiff legged to where they could do a gear swing. Further, he would ensure a log write-up was created. He reiterated he did not have this information while he was working the item. He further stated that he would have probably been more insistent that they state that in the logbook. My normal comment to the crew is to tell them to write up exactly what you told me. Sometimes might change the nomenclature, but generally use their words and terminology as much as possible. They're the ones telling the story not me. When asked if it was okay for the pilot to write subjective description? Yes, he prefers the item to be written in the captain's words.

Is that common or less common approach? Can't say, just the way he works. Guy that trained him a long time ago and FAA guy who is a fairly good friend, we were sitting at desk one day and talking about it and said it's best to use what they say and go with it. That's what he has always done. Sometimes put side note to make something a little easier to understand. Exception is the captain Shakespeare with entry too lengthy and not enough room to put it in record.

Asked how long to jack an aircraft? He responded that it depends on whether you are just going to jack the nose or the whole airplane. 30 – 45 minutes just to get the equipment and you would need more than one mechanic to jack the airplane. Also, the airplane would not fit in the hangar, so they would have needed to find hangar space. It could be a safety concern jacking outside and would look at ferrying the aircraft stiff legged to a maintenance station like St. Louis, or at least requested more mechanics. It was best to jack the whole airplane and swing all three landing gear together. At least four people were needed to jack the whole airplane, one on each jack and one to make sure it stayed level.

Asked whether the airplane would have been ready to go in the morning if they had jacked it to swing the gear, he said that was an impossible question to answer concisely. He estimated they would have had a 75% chance of taking a delay. It was conceivable that they would have been

able to get the airplane out on schedule if they had gotten a second mechanic out there and just jacked the nose of the airplane.

When asked about the torque links being left disconnected, Mr. Campbell said that was his mistake. He simply forgot to have the mechanic make a write-up and that was his fault that the mechanic had to go back out and reconnect them. He had planned to have them written up, but forgot. How long was it between the time you said detach and the time you did the logbook? Probably 15 minutes. Asked whether during the intervening 15 minutes he was occupied with discussing things that could be causing the problem and directing the mechanic's visual inspections, he said yes.

Mr. Campbell stated that given the airloads during the two incident-free flights that occurred between the inspection and the accident flight, he did not think they would have been able to duplicate the noise that was initially reported by the flightcrew.

Asked if there were any repercussions as a result of this incident, Mr. Campbell stated he was given a verbal warning about the fact that he did not write up the disconnection of the torque links. He had to sign this warning and it was placed in his file. He also stated that Billy was demoted. Mr. Campbell added that he knew that the training modules were being update, that he did not know what new material would be there or when it would be available. Plus there were policy changes such as a complete read back of the log item and always making sure one was created.

Asked about his relationship with his superiors, Mr. Campbell stated it was fine, no conflicts. They do a good job and that GoJet has been one of the best places he has worked. Mr. Campbell was asked with all of his maintenance control experience why he was not a supervisor, he responded that he did not want to be a supervisor that he liked doing what he did and that being a supervisor was not something he wanted to do.

Interview ended at 1400 CDT.