

DEPARTMENT OF TRANSPORTATION  
Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-0039; Directorate Identifier 2009-NM-239-AD; Amendment 39-16350; AD 2010-14-05]

RIN 2120-AA64

**Airworthiness Directives; Bombardier, Inc. Model CL-600-1A11 (CL-600), CL-600-2A12 (CL-601), CL-600-2B16 (CL-601-3A, CL-601-3R, and CL-604 Variants (Including CL-605 Marketing Variant)) Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

Seven cases of on-ground hydraulic accumulator screw cap or end cap failure have been experienced on CL-600-2B19 (CRJ) aircraft, resulting in loss of the associated hydraulic system and high-energy impact damage to adjacent systems and structure. \* \* \*

\* \* \* \* \*

A detailed analysis of the systems and structure in the potential line of trajectory of a failed screw cap/end cap for each accumulator \* \* \* has been conducted. It has been identified that the worst case scenario would be failure of one of the brake accumulator screw caps/end caps, resulting in impact damage causing loss of both hydraulic systems No. 2 and No. 3, with consequent loss of both braking and nose wheel steering and the potential for a runway excursion [resulting in damage to the airplane and hazards to persons or property on the ground].

\* \* \* \* \*

We are issuing this AD to require actions to correct the unsafe condition on these products.

**DATES:** This AD becomes effective August 5, 2010.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of August 5, 2010.

**ADDRESSES:** You may examine the AD docket on the Internet at <http://www.regulations.gov> or in person at the U.S. Department of Transportation, Docket Operations, M-30, West

Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Christopher Alfano, Aerospace Engineer, Airframe and Mechanical Systems Branch, ANE-171, FAA, New York Aircraft Certification Office, 1600 Stewart Avenue, Suite 410, Westbury, New York 11590; telephone (516) 228-7340; fax (516) 794-5531.

**SUPPLEMENTARY INFORMATION:**

**Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. That NPRM was published in the **Federal Register** on February 12, 2010 (75 FR 6862). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

Seven cases of on-ground hydraulic accumulator screw cap or end cap failure have been experienced on CL-600-2B19 (CRJ) aircraft, resulting in loss of the associated hydraulic system and high-energy impact damage to adjacent systems and structure. The lowest number of flight cycles accumulated at the time of failure, to date, has been 6991 flight cycles.

Although there have been no failures to date on any CL-600-1A11, CL-600-2A12 or CL-600-2B16 aircraft, the same accumulators as those installed on the CL-600-2B19, Part Numbers (P/N) 08-60163-001, 08-60163-002, 08-60164-001 and 08-60164-002, are installed on some of the aircraft listed in the Applicability section of this directive.

**Notes:**

1. Earlier accumulators, P/Ns 2770571-102, 2770571-103, 2770571-104 and 2770571-105, were installed in production on the following aircraft: CL-600-1A11 [all Serial Numbers (S/Ns)], CL-600-2A12 (all S/Ns) and CL-600-2B16 (S/Ns 5001 through 5194 and 5301 through 5524 only). These accumulators do not require inspection or replacement. However, if any of the accumulators with the above P/Ns have been replaced in-service by P/Ns 08-60163-001, 08-60163-002, 08-60164-001 and 08-60164-002, these latter accumulators require replacement.

2. The only accumulators ever installed on CL-600-2B16 aircraft, S/Ns 5525 through 5665 and 5701 and subsequent, are P/Ns 08-60163-001, 08-60163-002, 08-60164-001 and 08-60164-002; these accumulators require replacement.

A detailed analysis of the systems and structure in the potential line of trajectory of a failed screw cap/end cap for each accumulator, P/Ns 08-60163-001, 08-60163-002, 08-60164-001 and 08-60164-002, has been conducted. It has been identified that the worst case scenario would be failure of one of the brake accumulator screw caps/end caps, resulting in impact damage causing loss of both hydraulic systems No. 2 and No. 3, with consequent loss of both braking and nose wheel steering and the potential for a

runway excursion [resulting in damage to the airplane and hazards to persons or property on the ground].

This directive gives instructions to perform identification and records checks, where applicable, and replace accumulators, P/Ns 08-60163-001, 08-60163-002, 08-60164-001 and 08-60164-002, within the time compliance specified.

You may obtain further information by examining the MCAI in the AD docket.

**Comments**

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

**Request to Revise the AD to Allow Replacement of Accumulators With an Overhauled or Refurbished Unit**

Bombardier Aerospace requests that we revise the NPRM to allow replacement of the accumulator with either a new accumulator with the same part number, or an overhauled accumulator with the same part number containing a T-suffix, in accordance with a future revision of the applicable service bulletin listed in the following table "Service Bulletins." Bombardier states that Transport Canada Civil Aviation (TCCA) has been notified of this upcoming change, and a similar request will be made to revise Canadian Airworthiness Directive CF-2009-39, dated October 27, 2009.

SERVICE BULLETINS

Bombardier service bulletin—	Revision—	Dated—
600-0742 .....	01	July 6, 2009.
601-0597 .....	01	July 6, 2009.
604-29-008 ....	01	July 6, 2009.
605-29-001 ....	01	July 6, 2009.

We agree with the request to revise the AD. Since the NPRM was issued, Bombardier has issued Revision 02 of the service bulletins, as specified in Table 1 of this AD. These revised service bulletins allow for the replacement of the accumulators with an overhauled or refurbished unit identified by a "T" or "TNA" suffix. Paragraph (g) of this AD has been changed accordingly.

**Request for Confirmation of Compliance Time**

Pittco, Inc., requests confirmation that a calendar or schedule requirement for the replacement of the system accumulators will not be added. The commenter states that according to the compliance time in the proposed AD, airplanes with low flight cycles could take many years to reach the threshold to replace the accumulator. The

commenter wants to confirm that this compliance time is acceptable and will not be changed to a calendar or schedule requirement.

We confirm that accumulator failures are based on flight cycles and not calendar schedule. The compliance times for this AD are based on a parameter related to failure of a particular component. In this case the failure of an accumulator screw cap or end cap is related to the number of flight cycles. Therefore, this AD includes no calendar or schedule requirement. No change has been made to the AD in this regard.

#### **Request for Clarification of Compliance Time**

Pittco, Inc., requests clarification regarding the manufacturer's compliance time for replacing the accumulator. The commenter states that the service bulletin recommends not replacing the accumulator earlier than at the due cycles.

We agree that clarification is necessary. The manufacturer's recommendation was based on the availability of parts. According to the MCAI and this AD, replacement of the accumulators is required "within" the applicable number of flight cycles, rather than the service bulletin's compliance time of replacing the accumulators "at" 3,750 landings. Operators are permitted to accomplish the requirements of this AD before the specified compliance time. No change has been made to the AD in this regard.

#### **Request for Clarification of Inspections in the Original and Revision 01 of Bombardier Service Bulletin 601-0597**

Pittco, Inc., requests a change of wording to state that Bombardier Service Bulletin 601-0597, dated November 10, 2008, specifies an inspection; and that Bombardier Service Bulletin 601-0597, Revision 01, dated July 6, 2009, does not specify an inspection, but merely provides data for replacement of the accumulators. The commenter requests that stronger language be incorporated to clarify the difference.

We find that clarification is necessary. The actions required by paragraph (g) of the AD include an inspection, which is not specified in Revision 01 of the applicable service bulletin specified in Table 2 of this AD, to determine if the airplane has an affected accumulator. If the airplane has an affected accumulator, it must be replaced within the specified number of flight cycles. Credit for the previous accomplishment of the original version of the applicable service bulletin specified in Table 2 of

this AD as noted in paragraph (g)(4) of the AD, is for the replacement of an accumulator with a new accumulator having the same part number, which is also acceptable for compliance with the requirements of paragraph (g)(2) of the AD. An ultrasonic inspection for cracking, which was specified in the original version of the applicable service bulletins specified in Table 2 of this AD, was removed from Revision 01 of these service bulletins, and is no longer required. No change has been made to the AD in this regard.

#### **Request for Addition of Equivalent Part Numbers to AD**

Pittco, Inc., requests the addition of equivalent part numbers to the proposed AD. The commenter states that Bombardier and its vendors use the terms "specification numbers" and "part numbers" synonymously, which is not consistent with the service bulletins listed in Table 1 of the NPRM. The commenter states that there are other identification numbers that are likely to be found during a review of the maintenance records. The commenter states that the service bulletins listed in Table 1 of the NPRM have tables that specify equivalent Bombardier part numbers. The commenter requests that the equivalent part numbers be added to the AD.

We agree. This AD requires an inspection to determine the part numbers of the system accumulators that are installed on the airplane. This AD also states that a review of airplane maintenance records is acceptable in lieu of this inspection if the part number of the accumulator can be conclusively determined from that review. The service bulletins listed in Table 1 of this AD list the equivalent Bombardier accumulator part numbers to identify the suspect system accumulators; therefore, we have added those equivalent part numbers in parentheses in paragraphs (g)(2)(i), (g)(2)(ii), (g)(2)(iii), and (g)(3) of this AD.

#### **Conclusion**

We reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

#### **Differences Between This AD and the MCAI or Service Information**

We have reviewed the MCAI and related service information and, in general, agree with their substance. But

we might have found it necessary to use different words from those in the MCAI to ensure the AD is clear for U.S. operators and is enforceable. In making these changes, we do not intend to differ substantively from the information provided in the MCAI and related service information.

We might also have required different actions in this AD from those in the MCAI in order to follow our FAA policies. Any such differences are highlighted in a NOTE within the AD.

#### **Costs of Compliance**

We estimate that this AD will affect 340 products of U.S. registry. We also estimate that it will take about 20 work-hours per product to comply with the basic requirements of this AD. The average labor rate is \$85 per work-hour. Required parts will cost about \$7,717 per product. Where the service information lists required parts costs that are covered under warranty, we have assumed that there will be no charge for these parts. As we do not control warranty coverage for affected parties, some parties may incur costs higher than estimated here. Based on these figures, we estimate the cost of this AD to the U.S. operators to be \$3,201,780, or \$9,417 per product.

#### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

#### **Regulatory Findings**

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this AD:

1. Is not a “significant regulatory action” under Executive Order 12866;
2. Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
3. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

**Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains the NPRM, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

**Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

**PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new AD:

**2010-14-05 Bombardier, Inc.:** Amendment 39-16350. Docket No. FAA-2010-0039; Directorate Identifier 2009-NM-239-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective August 5, 2010.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to the Bombardier, Inc. airplanes, certificated in any category, identified in paragraphs (c)(1), (c)(2), and (c)(3) of this AD.

(1) Bombardier, Inc. Model CL-600-1A11 (CL-600) airplanes, serial numbers 1004 through 1085 inclusive;

(2) Bombardier, Inc. CL-600-2A12 (CL-601) airplanes, serial numbers 3001 through 3066 inclusive; and

(3) Bombardier, Inc. CL-600-2B16 (CL-601-3A, CL-601-3R, and CL-604) airplanes, serial numbers 5001 through 5194 inclusive, 5301 through 5665 inclusive, and 5701 and subsequent.

**Note 1:** Some Model CL-600-2B16 (CL-604) airplanes might be referred to by the marketing designation CL-605 in the applicable service bulletins listed in Table 1 of this AD.

**Subject**

(d) Air Transport Association (ATA) of America Code 29: Hydraulic power.

**Reason**

(e) The mandatory continuing airworthiness information (MCAI) states:

Seven cases of on-ground hydraulic accumulator screw cap or end cap failure have been experienced on CL-600-2B19 (CRJ) aircraft, resulting in loss of the associated hydraulic system and high-energy

impact damage to adjacent systems and structure. \* \* \*

\* \* \* \* \*

A detailed analysis of the systems and structure in the potential line of trajectory of a failed screw cap/end cap for each accumulator \* \* \* has been conducted. It has been identified that the worst case scenario would be failure of one of the brake accumulator screw caps/end caps, resulting in impact damage causing loss of both hydraulic systems No. 2 and No. 3, with consequent loss of both braking and nose wheel steering and the potential for a runway excursion [resulting in damage to the airplane and hazards to persons or property on the ground].

\* \* \* \* \*

**Compliance**

(f) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

**Actions**

(g) Do the following actions as applicable.  
 (1) Within 50 flight hours after the effective date of this AD, inspect to determine the part numbers of the system accumulators numbers 1, 2, and 3 and brake accumulators numbers 2 and 3 that are installed on the airplane. A review of airplane maintenance records is acceptable in lieu of this inspection if the part number of the accumulator can be conclusively determined from that review. If all of the installed accumulators have P/N 2770571-102, 2770571-103, 2770571-104, or 2770571-105, no further action is required by this AD.

(2) At the applicable time in paragraph (g)(2)(i), (g)(2)(ii), or (g)(2)(iii) of this AD, replace the accumulator with a new, overhauled, or refurbished accumulator with the same part number, in accordance with the Accomplishment Instructions of the applicable service bulletin listed in Table 1 of this AD.

TABLE 1—SERVICE BULLETINS

Airplane model—	Bombardier service bulletin—	Revision—	Dated—
CL-600-1A11 (CL-600) .....	600-0742	02	May 10, 2010.
CL-600-2A12 (CL-601), CL-600-2B16 (CL-601-3A, CL-601-3R variant) .....	601-0597	02	May 10, 2010.
CL-600-2B16 (CL-604 variant) .....	604-29-008	02	May 10, 2010.
CL-600-2B16 (CL-605) .....	605-29-001	02	May 10, 2010.

(i) For each accumulator having P/Ns 08-60163-001 (601R75138-1), 08-60163-002 (601R75138-1), 08-60164-001 (601R75138-3), and 08-60164-002 (601R75138-3), as applicable, that has accumulated more than 3,650 total flight cycles as of the effective date of this AD: Replace the accumulator within 100 flight cycles after the effective date of this AD.

(ii) For each accumulator having P/N 08-60163-001 (601R75138-1), 08-60163-002 (601R75138-1), 08-60164-001 (601R75138-

3), and 08-60164-002 (601R75138-3), as applicable, that has accumulated 3,650 total flight cycles or fewer as of the effective date of this AD: Replace the accumulator before the accumulation of 3,750 total flight cycles on the accumulator.

(iii) For each accumulator having P/N 08-60163-001 (601R75138-1), 08-60163-002 (601R75138-1), 08-60164-001 (601R75138-3), and 08-60164-002 (601R75138-3), as applicable, for which it is not possible to determine the number of flight cycles

accumulated: Replace the accumulator within 100 flight cycles after the effective date of this AD.

(3) Thereafter, before the accumulation of 3,750 total flight cycles on any accumulator having P/Ns 08-60163-001 (601R75138-1), 08-60163-002 (601R75138-1), 08-60164-001 (601R75138-3), and 08-60164-002 (601R75138-3), as applicable, replace the accumulator with a new, overhauled, or refurbished accumulator having the same part number, in accordance with the

Accomplishment Instructions of the applicable service bulletin listed in Table 1 of this AD.

**Note 2:** The part numbers in parentheses in paragraphs (g)(2)(i), (g)(2)(ii), (g)(2)(iii), and

(g)(3) of this AD, are equivalent specification part numbers, as specified in the applicable service bulletin listed in Table 1 of this AD.

(4) Replacement of an accumulator with a new accumulator having the same part

number is also acceptable for compliance with the requirements of paragraph (g)(2) of this AD, if done before the effective date of this AD in accordance with the applicable service bulletin listed in Table 2 of this AD.

TABLE 2—PREVIOUS SERVICE BULLETINS

Airplane model—	Bombardier service bulletin—	Revision—	Dated—
CL-600-1A11 (CL-600) .....	600-0742	Original .....	November 10, 2008.
CL-600-1A11 (CL-600) .....	600-0742	01 .....	July 6, 2009.
CL-600-2A12 (CL-601), CL-600-2B16 (CL-601-3A, CL-601-3R variant) .....	601-0597	Original .....	November 10, 2008.
CL-600-2A12 (CL-601), CL-600-2B16 (CL-601-3A, CL-601-3R variant) .....	601-0597	01 .....	July 6, 2009.
CL-600-2B16 (CL-604 variant) .....	604-29-008	Original .....	November 10, 2008.
CL-600-2B16 (CL-604 variant) .....	604-29-008	01 .....	July 6, 2009.
CL-600-2B16 (CL-605) .....	605-29-001	Original .....	November 10, 2008.
CL-600-2B16 (CL-605) .....	605-29-001	01 .....	July 6, 2009.

**FAA AD Differences**

**Note 3:** This AD differs from the MCAI and/or service information as follows:

(1) The MCAI specifies that certain airplanes do not need to be inspected for the part number; however, this AD requires that inspections be done on all airplanes to determine the part number.

(2) The MCAI specifies to record the number of flight cycles accumulated on each affected part. This AD does not require that operators record the number of flight cycles.

**Other FAA AD Provisions**

(h) The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs):* The Manager, New York Aircraft Certification Office (ACO), ANE-170, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: Program Manager, Continuing Operational Safety, FAA, New York ACO, 1600 Stewart Avenue, Suite 410, Westbury, New York, 11590; telephone 516-228-7300; fax 516-794-5531. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

(2) *Airworthy Product:* For any requirement in this AD to obtain corrective actions from a manufacturer or other source, use these actions if they are FAA-approved. Corrective actions are considered FAA-approved if they are approved by the State of Design Authority (or their delegated agent). You are required to assure the product is airworthy before it is returned to service.

(3) *Reporting Requirements:* For any reporting requirement in this AD, under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget (OMB) has approved the information collection requirements and has assigned OMB Control Number 2120-0056.

**Related Information**

(i) Refer to MCAI Canadian Airworthiness Directive CF-2009-39, dated October 27, 2009, and the service bulletins listed in Table 1 of this AD, for related information.

**Material Incorporated by Reference**

(j) You must use the service information contained in Table 3 of this AD, as applicable, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Bombardier, Inc., 400 Côte Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514-855-5000; fax 514-855-7401; e-mail [thd.crj@aero.bombardier.com](mailto:thd.crj@aero.bombardier.com); Internet <http://www.bombardier.com>.

(3) You may review copies of the service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

(4) You may also review copies of the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

TABLE 3—MATERIAL INCORPORATED BY REFERENCE

Bombardier service bulletin—	Revision—	Dated—
600-0742 .....	02	May 10, 2010.
601-0597 .....	02	May 10, 2010.
604-29-008 .....	02	May 10, 2010.
605-29-001 .....	02	May 10, 2010.

Issued in Renton, Washington, on June 17, 2010.

**Robert D. Breneman,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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**BILLING CODE 4910-13-P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2009-0906; Directorate Identifier 2009-NM-075-AD; Amendment 39-16343; AD 2010-13-12]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP Series Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Model 747 series airplanes. This AD requires replacing the power control relays for the main tank fuel boost pumps and jettison pumps, and the center tank scavenge pump, as applicable, with new relays having a ground fault interrupt (GFI) feature. This AD also requires revising the maintenance program to incorporate Airworthiness Limitations (AWLs) 28-AWL-23 (for Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747SP, and 747SR series airplanes), and AWLs 28-AWL-28 and 28-AWL-29 (for Model 747-400, 747-400D, and 747-400F