BOMBARDIER BUSINESS AIRCRAFT

Customer Forum & Newsletter

Challenger 300/350 operators: book your Smart Link Plus box install today!

Structural repair team continues to impress

Visit our new Berlin Service Centre

Thursday, January 28, 2021 • VOLUME 18 / ISSUE 2

IN THIS ISSUE

NEED TO KNOW

From the desk of Jean-Christophe Gallagher

Celebrating the next step in our connected aircraft program!

Finding new ways to enhance our customer service offerings is always a top priority for Bombardier's Service and Support team. With this in mind, I want to share exciting news regarding the next steps in our *Smart Link Plus* connected aircraft program.

Effective immediately, operators of *Challenger 300* and *Challenger 350* aircraft can now reserve their exclusive appointment at a Bombardier Service Centre to install a free-of-charge *Smart Link Plus* box as early as mid-2021. Installations for the rest of our *Challenger* and *Global* fleet will follow.

Bombardier's innovative *Smart Link Plus* program promises to be a true gamechanger. With *Smart Link Plus*, aircraft owners and operators will have the opportunity to transform their prized flying assets into truly intelligent aircraft, giving them the opportunity to increase operational efficiency and minimize return-to-service times through data-driven decisions.

The *Smart Link Plus* box, developed exclusively for Bombardier in concert with GE Aviation, is at the heart of the program. This advanced Health Monitoring Unit generates crucial aviation data that enables flight crews and maintenance teams to quickly and efficiently prioritize and proactively troubleshoot key fault notification alerts to highlight what is happening on the aircraft.

The Digital Innovations team has also created an easy-to-use application available on any device that allows access to this critical information at your fingertips. It's easy, effective and efficient. How can you benefit from these impressive enhancements right now? It starts with booking an appointment to get the *Smart Link Plus* box installed – now's the time to act! Click here to learn more about this innovative, value-added technological enhancement!

As always, our dedicated teams are here for you and laser-focused on ensuring you get the industry's best service experience. Thank you once again for your ongoing trust and support!

Sincerely,

Did you know?

Since 2017, we have begun rapidly expanding our service centre footprint worldwide – we are currently on our way to growing our infrastructure by more than 30%.

Get social! Follow us on LinkedIn, Twitter, Facebook, Instagram and YouTube for interesting updates from Bombardier Aviation.

We value your feedback

Your feedback is critical in defining where we will focus improvements to our service network. If you receive a survey from Bombardier, please take the time to fill it out – we are listening! Here's what some of you are saying:

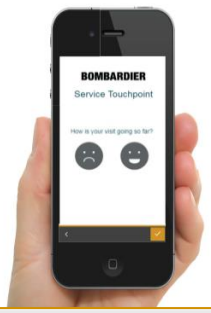
"Great communication from start to completion!"

– Richard Maynard, *Challenger 350* (Tucson Service Centre)

"Burt Russell, my RSM, is always incredibly helpful with ensuring the input. Jill, Mark and the management for the MRT, as well as Marc (GM), always ensure a positive visit. I know service centres always get complaints, but there are great people doing great things!"

– Trey Pendergraft, *Global Express* (Dallas Service Centre)

If you're interested in learning more about our Customer Experience surveys, please reach out to customer_experience_surveys@aero.bombardier.com



New Bombardier service centre for European operators

Earlier this year, Bombardier announced an exciting development for its aircraft operators. The Bombardier service centre network now benefits from a new wholly-owned facility in Berlin.

Strategically located at Berlin Brandenburg Airport, the service centre has been providing exceptional MRO services to Bombardier business aircraft customers since 1997. With more than 160,000 sq. ft. (15,000 sq. metres) of service capacity and 240 highly-skilled employees on site, the service centre provides customers with the exceptional maintenance and support for Bombardier's growing fleet of *Learjet*, *Challenger* and *Global* business jets based in Europe, Russia, Africa and the Middle East.

The service centre has received several awards for its technical excellence and customer satisfaction, thanks largely to an experienced and dedicated workforce. Among its many milestones, it was the first in Europe to perform maintenance on Bombardier's flagship *Global 7500* aircraft. The state-of-the-art service centre recently modernized and transformed its shop floor to maximize efficiencies and streamline processes, providing customers with an unsurpassed service experience.

We look forward to welcoming you to the Bombardier's service centre in Berlin during your next maintenance check.

Structural aircraft repair offering continues to impress

Last July, Bombardier Aviation announced the extension of its worldwide customer support offerings through enhanced structural repair capabilities for its worldwide fleet of business jets.

Since this announcement, the Mobile Repair Team has successfully completed 19 structural repair events in support of Bombardier's customers. The following is just one example of the fantastic work the dedicated repair team has undertaken during the Covid-19 pandemic.

"I just wanted to send a quick note to say thank you for all of the support on this project. We are extremely grateful to the team for not only the amazing job, but also the significant personal sacrifice it took to remain onsite for over 10 weeks. Big thanks to the team, you guys are second to none."

Throughout the world and around the clock, the Mobile Repair Team continues to actively support our customers. One call to the Customer Response Centre will connect you to our specialist structural repair team for global support. For all inquiries, you may reach out to us 24/7 at 1-866-538-1247.

Brexit: service updates for Bombardier customers in the UK

Bombardier has taken several proactive steps to ease the potential impact on operators after the United Kingdom left the European Union on January 21, 2020. And while there is continued uncertainty regarding the application of the new Trade and Cooperation Agreement between the European Union and the UK, Bombardier would like to share some key measures currently in place:

- Bombardier is in constant communication with third-party logistics providers to ensure there continues to be a smooth transition for all parts deliverables
- The Biggin Hill service centre has increased its inventory levels in anticipation of this transition to avoid potential bottlenecks and to minimize any possible short-term disruptions
- Regarding licensing, much of what has been in place with EASA remains in place and will remain valid over a two-year transition period. Following this timeframe, a more detailed understanding of the changes required will come into effect. In the meantime, the Biggin Hill service centre has applied for its Third Country Operators (TCO) approval EASA.UK.145.01364, which became effective on January 1, 2021
- Bombardier has confirmed bilateral agreements in place with the Federal Aviation Administration (FAA), Transport Canada (TCCA) and the National Civil Aviation Agency (ANAC). Discussions with other national aviation authorities have also been secured. All parts distributed from our parts depots as of January 1, 2021 carry all requisite certifications
- All U.S. service centres are equipped to maintain UK-registered aircraft based on revised UK regulations
- We are working with UK- based vendors to ensure parts coming from UK-based organizations will continue to be eligible for EU-based customers.

Bombardier also continues to complete a detailed planning process to safeguard aircraft currently in maintenance with increase pre-loads/safety stock, and we have also brought forward pre-load inventory for January and February inputs.

We have also taken measures to avoid potential delays from specific carrier volumes or to avoid incurring port-of-entry process changes. We also continue to ensure our customer-facing teams are continually updated on the latest procedures and processes.

Several operator associations are actively engaged with their federal governments on behalf of aircraft operators, service suppliers and other members. The British Business and General Aviation Association (BBGA) meets weekly with the UK Department for Transportation (DfT) and UK Civil Aviation Authority (CAA)**.** If any operators are faced with more specific problems that require immediate support, they can send an email here.

Similarly, the European Business Aviation Association (EBAA) has completed a comprehensive guidance document entitled, “Post-Brexit Guidance and OPS info sheet” on its website here.

LEARJET SERIES

FMS-5000 contaminated runway database AFM limitation

Effectivity: *Learjet 60-294, 60-307, 60-319 – 60-430 aircraft*
ATA 34

Bombardier *Learjet* has introduced a new flight limitation in the Airplane Flight Manuals of the FMS-5000 equipped *Learjet 60XR*.

An issue was discovered on a *Learjet 60XR* aircraft and subsequently verified by Collins Aerospace. When an aircraft is on approach and the crew selects one of the contaminated runway options. it can cause one of the FMS units to lock-up. The opposite FMS continues to navigate but is no longer in “Sync” mode, which requires the flight crew to manually calculate landing parameters. The locked-up FMS (1 or 2) is immediately displayed on the PFD where the active NAV source is displayed.

Bombardier *Learjet* has introduced a new flight manual limitation prohibiting the use of landing V speeds from the performance database for contaminated runways to reduce the incidence of one of the FMS units locking up. Ensure the following Temporary Flight Manual revision or Airplane Flight Manual Supplements are placed in your aircraft’s Airplane Flight Manual:

TFM 2020-03
AFMS W1589, Change 2 (Transport Canada Registered Aircraft)
AAC-0430-001, Revision G (60-294 only)

Should you require assistance, please contact Learjet Technical Publications or the Customer Response Centre (CRC) team 24/7 at 1-866-538-1247 and connect to Learjet.

FMS Automatic temperature compensation disable

Effectivity: *Learjet 60-294, 60-307, 60-319 – 60-430 aircraft*
ATA 34

Bombardier *Learjet* has released recommended Service Bulletin 60-34-27, FMS Temperature Compensation Disable, to comply with the requirements of FAA Airworthiness Directive (AD) 2020-10-05. This AD was created in response to reports that certain Collins FMS systems were issuing incorrect turn commands when the altitude climb field is edited or the temperature compensation is activated on the FMS CDU.

Service Bulletin 60-34-27 directs the maintenance technician to inspect, and if necessary, reposition the switch that activates the FMS automatic temperature compensation feature on the two CSU-3100 Configuration Strapping Units located within the IAPS card cage. The inspection must be performed on all *Learjet 60XR* aircraft to ensure the feature is disabled. In addition, a limitation statement must be added to the Airplane Flight Manual regarding the prohibition of using automatic temperature compensation.

For all aircraft, ensure Temporary Revision L60AMM 34-23 is incorporated in your copy of the *Learjet 60* AMM (MM-103). For aircraft with Type Certification installations, ensure Temporary Flight Manual TFM 2020-06 is incorporated in the Airplane Flight Manual 60XR FM-133A

For aircraft with STC installations, ensure one of the following Airplane Flight Manual Supplements are incorporated in the AFM, depending upon the STC installation in your aircraft:

AFMS AAC-0430-001
AFMS W1608, Change 2
AFMS W1610, Change 5

Learjet Service Bulletin 60-34-18 has been revised to revision three (3) to remove activation of the automatic temperature compensation feature.

The FAA mandated compliance date to inspect and disable the automatic temperature compensation feature and place the AFM limitation in the flight manual is June 24, 2021. Please reference FAA AD 2020-10-05 for further information.

Please contact your BAS Regional Manager for more information or to schedule your aircraft for service.

Learjet door handle replacement

Effectivity: *Learjet 40/45/55/60 aircraft*
ATA 52 – doors

Bombardier would like to remind operators of the main entry and emergency exit-door handle replacement requirement on *Learjet 40/45/55/60* aircraft.

Maintenance Manual Temporary Revisions were released April 30, 2018, adding a replacement requirement for handles installed prior to aircraft serial numbers 45-416, 45-2129, and 60-399. All *Learjet 55* model aircraft are affected. Serial number IRN 5210054 is applicable to *Learjet 55/60* aircraft and IRN 5210053 is applicable to *Learjet 40/45* aircraft, both showing the replacement is due at 6,000 landings or 12 years.

For aircraft with more than 6,000 landings or 12 years on April 30, 2018, the replacement is to be performed within 1,200 landings or 36 months, whichever comes first. Based on calendar time only, this grace period ends on April 30, 2021 for these aircraft.

A note in the IRN refers to Optional Service Bulletins that were released in December 2017. SB40-52-11, SB45-52-20, SB55-52-11 and SB60-52-8 identify a new door handle sub-assembly and provide instructions to replace only the centre section of the door handle. Handle housing and/or bell crank removal is not required for this replacement. Incorporation of these SBs will satisfy the one-time replacement requirement of the new IRN tasks.

Due to lead times with the supplier, Bombardier recommends orders for replacement handle sub-assemblies, per the above Service Bulletins be submitted as soon as possible to ensure stock is available.

DMC reductions through improved maintenance intervals

Effectivity: *Learjet 40/45/60 aircraft*
ATA 5

The Evolved Maintenance Program increases inspection intervals from 300-hours/12 months to 600-hours/36 months. It also introduces Zonal inspections to the maintenance program at 36, 72 and 108 months. Additionally, the Evolved Maintenance Program will utilize our eINSPECTOR tool.

The eINSPECTOR is a web-based tool developed to manage Airworthiness Limitations and Time Limit and Maintenance Checks. eINSPECTOR can be accessed via the Learjet eINSPECTOR, which can be accessed through the Bombardier Customer Portal website at https://my.businessaircraft.bombardier.com > Library > Technical Publications > Learjet eINSPECTOR.

Significant savings are available for aircraft enrolled in *Smart Parts* or aircraft that have a major inspection scheduled at a Bombardier Aviation service centre. If you would like more details of the benefits, request a free analysis of your cost savings tailored to your aircraft age and accumulated flight hours, you may contact Bombardier Maintenance Programs at learjet_mpe@aero.bombardier.com or call us at 316-946-7262.

Learjet 60 APU support update

Bombardier would like to inform operators and maintenance teams of *Learjet 60* aircraft that support of the *Learjet 60* Sundstrand Auxiliary Power Unit (APU) has transitioned from Gulfstream Aerospace to AVMATS Engine Support in O'Fallon, Missouri.

In an October 2020 press release, AVMATS announced the purchase of the Gulfstream assets as it pertains to the T-20G-10C series APU. AVMATS has been providing support for Sundstrand and Honeywell APUs since 1993. Sundstrand is now a part of Pratt and Whitney.

Additional information about AVMATS and a copy of the press release can be found at www.avmats.com.

CHALLENGER SERIES

nice Liquid Crystal Display (LCD) obsolescence

Effectivity: *Challenger 300 aircraft*
ATA 44

Bombardier would like to inform operators and maintenance personnel working on the *Challenger 300* aircraft equipped with the Lufthansa Technik (LHT) *nice* CMS of an obsolescence on the LCD monitor Part number LCD2005-000-100. Although this obsolescence was announced to Bombardier in 2016 by LHT, the stock level and repair capability was adequate at the time to support the fleet. However, all Bombardier stock was depleted by late 2020 and LHT can no longer repair these units, as critical parts required for repairs are no longer produced.

LHT has advised Bombardier that the alternate LCD monitor LCD2013-001-001 can be installed, providing that the Configuration Server Database (CSDB) software is updated in accordance with the LHT Engineering Bulletin SCDC300-EB44-0679.

This new cabin software will support both LCD2005 and LCD2013 installation. A Supplemental Type Certificate (STC) modification is required from Bombardier to cover the installation of the new LCD as updating the CSDB does not constitute an authority to install the alternate monitor LCD2013.

Bombardier has developed engineering to support the installation of the new LCD2013. This engineering will allow the interchangeability of the LCD2005 and LCD2013. Should an operator of a *Challenger 300* aircraft wish to install the LCD2013-001-001 to replace the obsolete LCD2005-000-100, an SRPSA needs to be submitted to obtain a quote for the engineering package.

The CSDB required to support the new display needs to be ordered separately through Bombardier Part Services, by placing a Free of Charge Purchase Order (PO) requesting the following : **"Need new CSDB software, in accordance with the Lufthansa Technik Engineering Bulletin SCDC300-EB44-0679, to support the installation of the LCD monitor P/N LCD2013-001-001 on CL300 serial number 20XXX."**

Should you require more information on the LHT nice CMS, please contact the Customer Response Centre (CRC) team 24/7 at 1-866-538-1247.
.

Challenger CMS software update

Effectivity: *Challenger 350/650 aircraft*
ATA 44

Bombardier would like to remind operators and maintenance personnel about the availability of a Lufthansa Technik nice HD cabin management system (CMS) software update. In February 2019, Bombardier released two Service Bulletins, 350-44-002 and 650-44-002, to introduce a new CMS software built using the latest template used by Lufthansa. The Configuration Server Database (CSDB) for all *Challenger 350* and *Challenger 650* aircraft was built using template 07.

These Service Bulletins were released due the obsolescence of some units in the CMS and the software needed to be updated to accommodate the replacement units. However, there are other benefits in updating the CSDB to the latest template:

- All the maintenance fixes will be incorporated on the aircrafts
- The latest Advanced Access Content System (AACS) Keys will be installed. Having the latest available AACS Keys installed in the Blu-Ray player will allow playback of most movie blockbusters released up to the end of 2018

New AACS keys will be available in the next CSDB Template, scheduled for release in the upcoming months.

The Service Bulletins are recommended for all aircrafts delivered with a CSDB not built with template 07. The effectivity is 20501 to 20772 for the *Challenger 350* and the effectivity is 6050 to 6131 for the *Challenger 650.*

Please contact the Customer Response Centre (CRC) team 24/7 at 1-866-538-1247 should you require more information on the LHT nice HD CMS.

Challenger *nice* HD CMS troubleshooting

Effectivity: *Challenger 350/650 aircraft*
ATA 44

Bombardier would like to inform operators and maintenance personnel of the availability of a troubleshooting procedure for the Lufthansa Technik (LHT) cabin management system (CMS) in the Technical User Guide (TUG). The TUG is on the Bombardier SmartFix Plus website, under “Observed Faults” in Chapter ATA-44.

When occupants report any failure related to the LHT nice HD CMS, such as lighting and In-Flight Entertainment (IFE), maintenance personnel should always refer to the troubleshooting section of the respective TUG and follow the specified instructions. The troubleshooting section provides a step-by-step procedure to troubleshoot the *nice* HD CMS and, combined with the system schematic, will help determine which component is causing the system failure.

By complying with recommended Bombardier Service Bulletins 350-44-002 and 650-44-002, all maintenances fixes of all previous software templates will be incorporated in the CMS, thus improving the stability of the system. Bombardier recommends all operators incorporate the Service Bulletins as soon as possible to prevent unneeded issues and troubleshooting.

On aircraft with the Configuration Server Database part number SCDCX-YYYYY-07Z (template 7) or greater, do not replace the Ethernet Interface Unit (EIU) unless the troubleshooting is carried out per TUG and the Customer Response Centre (CRC) is contacted. If needed, the CRC can enlist the LHT support team to assist with a Remote Session. LHT will determine if the EIU needs replacement. On numerous occasions, through a remote session, the EIU and other units are reset and the software is reloaded to restore the functionality.

These efforts will help reduce the unnecessary removal of the EIU and other LHT LRUs. Our recent records indicate a significant increase of the No Fault Found rate (> 45%) of the EIU for 2019.

Should you require more information on the LHT nice HD CMS, please contact the Customer Response Centre (CRC) team 24/7 at 1-866-538-1247.

GLOBAL SERIES

Leak test of the oxygen pressure switch on Global Express aircraft

Effectivity: *All Global Express aircraft except Global 7500*
ATA 35

Occasionally, oxygen pressure switches are replaced due to leakage when performing Aircraft Maintenance Manual (AMM) task 35-12-17-790-801 - Leak Test of the Oxygen Pressure Switch.

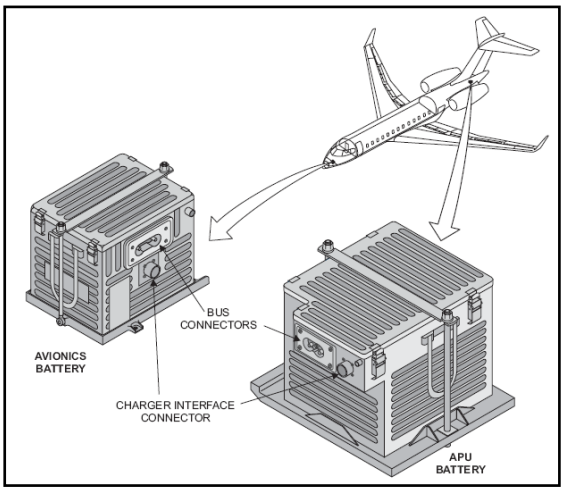
An investigation on some returned units has revealed that in some cases the unit may be declared as leaking when in fact it isn’t. Once leak check fluid is applied and the unit is initially pressurized, a small bubble at the weep hole located on the cylindrical housing of the pressure switch may be present.

This is not always indicative of a leak. A diaphragm located inside the cylindrical housing will inflate upon initial pressurization and may force a small amount of air out of the cylinder. This bubble should be wiped away from the weep hole. If a new bubble forms after wiping, then a leak in the unit is present.

Aircraft nickle-cadium (NiCad) battery cover latches

Effectivity: *Global Express/XRS/5000/5000 featuring Vision Flight Deck/6000/5500/6500 aircraft*
ATA 24

On December 2020, Saft Batteries issued revision B of Service Bulletin (SB) 0516 – Inspection and Tightening of the Battery Box Cover Latch Assemblies. This SB provides instructions/requirements for inspection and adjustment (if necessary) of the battery box cover latch assemblies installed on the Avionics battery Part Number (P/N) 257CH-9 (GL511-2201-5) and the APU battery P/N 427CK-1 (GL511-2301-5).



The aircraft batteries play an essential role in aircraft safety. The condition of the batteries must be verified regularly to ensure proper functionality and integrity. A lack of integrity may cause injury or damage the equipment. Service Bulletin (SB) 0516 revision B reminds operators about the required inspection and adjustment of the battery box cover latch assemblies on batteries manufactured prior to January 15, 2015.

It is recommended that the SB be incorporated on the next scheduled/unscheduled maintenance activity of the affected batteries.

Operators are also encouraged, if not already done, to request the incorporation of this SB to the battery service facility when maintenance will be performed. In cases where operators use their own battery shop, Bombardier recommends that the technicians be trained by the battery's manufacturer. Saft offers comprehensive battery maintenance training, which includes details on theoretical and practical aspects of maintenance. Please refer to Saft's website www.saftbatteries.com, for additional information and to download the SB.

EEC Firebox BR700-710A2-20 engines

Effectivity: *Global Express / XRS, Global 5000, Global 5000 featuring Vision Flight Deck, Global 6000 aircraft*
Multiple ATA

This article has been issued to provide clarification of the ongoing replacement campaign regarding the Engine Electronic Computer (EEC) firebox. There are two different Rolls-Royce (RR) Non-Modification Service Bulletins (NMSB) that cover the EEC firebox replacement. One has a category of alert while the other one is optional. The NMSB that needs to be accomplished on the aircraft is correlated to the part number of the EEC, as per the table below:

EEC part number (prefix)	Firebox part number (prefix)	NMSB number	Compliance date	Airworthiness Directive
1520KDC	BRR	BR700-73-A900083	31st January, 2021	NA
EECU1000	FW	BR700-73-A101977	NA - Optional	EASA AD 2017-0198 – Cancelled AMOC-FAA AD 2018-18-14

RR A-NMSB: BR700-73-A900083

The EEC part number prefix of 1520KDC with a firebox part number prefix of BRR were identified with an improper thickness of intumescent paint, which provides protection to the EEC in the event of a fire. This RR NMSB was released in April 2017 with an original compliance date of December 2018 or 1,500 flight hours. The compliance date has since been extended to January 31, 2021.

RR A-NMSB: BR700-73-A101977

The EEC part number prefix of ECU1000 installed with fireboxes that have FW prefix part number are showing signs of paint deterioration in-service. The replacement of the firebox covered by RR NMSB was released in December 2016 with an original compliance date of January 31, 2021. After a detailed investigation, revision four of this Service Bulletin was issued to change the Compliance Category from Alert to Optional resulting in cancelling the AD Ref: EASA AD 2017-0198 – AMOC FAA 2018-18-14 thus removing the compliance date.

Operators should become familiar with the firebox part number installed on their aircraft in order to take the appropriate maintenance action.

For additional details regarding the EEC firebox investigation, and to obtain a copy of the EASA AD and the FAA AMOC, please refer to the Rolls-Royce Newsflash: NF2020-03 Rev. 1.

A new way for flight crew communication – flight operation notifications (FON) manual

Effectivity: *Global Express/5000/5000 featuring Global Vision Flight Deck/6000/5500/6500/7500 aircraft*
ATA 00

This article contains relevant information for pilots, maintenance personnel and dispatchers.

Over the years, Bombardier has been reaching out to flight crews for items of the following categories, mainly via Operational Advisory Wires (OAW):

- Operational or technical issue with a flight deck effect
- Guidance to carry out a pre-flight reset of a system or component
- Recommendations/operational guidance for condition or observation during in-service experience and workaround where applicable

Shortcoming with the current method:

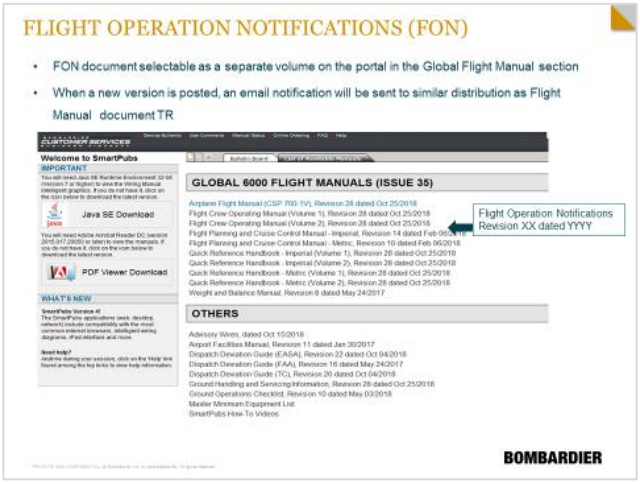
- Maintenance AW mixed with OAW information, often misses out on the operational message
- OAW and FNA do not reach pilot community and are not tailored for pilot use
- Smart Ops is not a revision-controlled tool/document and is no longer updated
- Need one-stop shop for all operational items to alleviate the need to search in different locations
- Need formal communication of operational updates directly to pilots via approved flight manuals

How do we improve?

To overcome the shortcoming of the current communication tools and ensure that all do reach the flight crew, we have developed the Flight Operation Notifications (FON) Manual. The manual contains FON, providing flight crews with readily accessible information relating to items that may affect flight operations. The FON manual content is controlled and revised in a similar manner to other flight manual publications.

Four manuals were published on October 29, 2019, in the periodic publication release

- *Global Express*, *Global 5000*
- *Global 5000* featuring Global Vision Flight Deck, *Global 6000*
- *Global 5500*, *Global 6500*
- *Global 7500*



The manual is organized into sections with a table of contents, using abbreviated titles similar to those found in the Quick Reference Handbook (QRH), and going away from ATA chapters not used by flight crews. In addition, an item may be inserted in a general category when of interest to a flight crew but would not meet the criteria as an individual FON. In such cases, it will be presented in the GENERAL NOTIFICATIONS section and listed by alphabetical order, based on subject title. These will provide a brief description and additional references, as required.

Please take the time to look at this first edition of the manual, which will expand over time, and learn how it can improve your operational experience.

MULTIPLE AIRCRAFT

Honeywell Flight Management System: software upgrades

Effectivity: *Challenger 600/601, Global Express/XRS/5000 aircraft*
ATA code: 34-61

This is a reminder to the previous article published in October 2016, where Honeywell announced via Service Information Letter (SIL) D201604000032 their intention to consolidate support on FMS software version NZ6.1 and higher. The latest revision six (6) of SIL D201604000032 released in November 2020 targeted December 31, 2020 as the end of support for pre-FMS version NZ6.1.

Operators of *Challenger 600/601* and *Global Express/5000/XRS* aircraft equipped with the Honeywell NZ-2000 and Primus 2000XP with FMS software version prior to NZ6.1 are impacted by this Honeywell SIL.

The following are the solutions available to introduce FMS software NZ6.1 for the Bombardier products:

***Challenger 600/601* aircraft**

- Bombardier Aircraft Service (BAS) Supplementary Type Certificate (STC) ST00190DE-D is available in order to implement this FMS software upgrade.

    - Please contact your Bombardier Regional Manager (RM) or a BAS facility for price and availability

***Global Express/5000/XRS* aircraft**

- Bombardier Service Bulletins (SBs) 700-31-030 / 700-1A11-31-014 – Modification – Integrated Avionics Computer (IAC) system – batch three (3) software upgrade

    - Following batch three (3), operators are also recommended upgrade to the latest configuration batch 3.4 software configuration via recommended SB 700-31-039 / 700-1A11-31-021
    - For more details, refer to the Advisory Wire AW700-31-0357 – Availability Update for batch three (3) upgrade

After December 31, 2020, FMS software version prior to NZ6.1 will no longer be supported where an upgrade path exists. As stated in SIL, Honeywell will no longer perform hardware repairs effective January 1, 2021. For 2021, Honeywell Spares Exchange (SPEX) units will be subject to availability and AOG will be prioritized. For 2022 no SPEX will be available.

Navigation database will still be available to operators, but subscription pricing will continue to increase as previously communicated.

Bombardier recommends to the operators of *Global Express/5000/XRS* aircraft still in a pre-Batch 3 configuration to perform the Batch 3/3.4 software in order to support long-term operational capability and maintain the value of the aircraft, along with benefitting from the new capabilities introduced with this software.

Note: As stated in the SIL table 2, note 2, for special certification part numbers the upgrade is not required.

Bombardier SBs and Advisory Wire (AW) are available on the Bombardier Customer Portal: (my.businessaircraft.bombardier.com) > Library > Search by Keyword

Honeywell SIL D201604000032 is available on the Bombardier Customer Portal: (my.businessaircraft.bombardier.com) > Library > Search by Keyword

Global navigation satellite system: interference, signal loss and jamming

Effectivity: *All models of aircraft*
ATA code: 34-55

This article is a follow up from a *Forum* article published in May 2020 and pertains to all pilots and maintenance crew.

Bombardier have been receiving several reports from operators via their Field Service Representative (FSR) or Customer Response Centre (CRC) related to Global Positioning System (GPS) signal loss during flight in

different regions of the world, especially Eastern Europe and the Middle East. These are evident to the crew since both GPS systems and sub-system users would report failure for a certain duration in the affected region and then would resume normal operation without crew action.

In these cases, Bombardier appreciates feedback, but since no troubleshooting is required, as further discussed in this article, it may not be required. However, it is a good practice for operators to report any suspected Global Navigation Satellite System (GNSS) events to regional aeronautical navigation service providers and air traffic controllers (ATC) to enable the publication of NOTAMs. In addition, some websites are allowing reporting like FAA GPS reports https://www.faa.gov/air_traffic/nas/gps_reports/ or independent sources such as Safe Airspace Conflict zone and risk database https://safeairspace.net/about/ to the benefit or all airspace users.

As we all know, GNSS is a key element on the aircraft today in providing navigation guidance as well as providing source information for several systems, including transponders, Automatic Dependent Surveillance Broadcast (ADS-B), Synthetic Vision System (SVS), Surface Management System (SMS), map display aircraft position and GPWS (Ground Proximity Warning System), just to name a few.

As previously mentioned, we have recently seen an increase in the number of operator reports and questions during operation in some regions of the world associated with the loss of GPS signals, jamming/spoofing and service interruption.

These situations may be sporadic and not always formally broadcasted to the aviation community by the governing authorities of those countries. Usually, the reports originate from outside countries with aircraft operation in that area. However, in some cases, NOTAMs are issued, or a website can be consulted; but, regions of known military conflicts or exercises are more susceptible to GPS jamming and voluntary signal degradation.

In some instances, appropriate military authority will direct the ATC concerned to initiate SCATANA (Security Control of Air Traffic and Air Navigation Aids) or ESCAT (Emergency Security Control of Air Traffic) in conditions that do not warrant SCATANA.

These will provide for the most effective use of airspace by aircraft of civil and military agencies by controlling all aircraft entering, departing or moving within the affected areas and their coastal approaches. Selectively limiting air traffic, consistent with air defense requirements and control over air navigation systems, may include complete shutdown.

Typical actions could include, but are not limited to the following:

• ATC will relay SCATANA implementation to appropriate aeronautical facilities, direct all VFR traffic under its control to land at the nearest suitable airport and file an IFR/DVFR flight plan, and will implement other directions specified by the appropriate military authority. These may include grounding, diversion and other restrictions to flight.

• Flight plans will be examined by the appropriate aeronautical facility to ensure that they conform with the ESCAT restrictions placed in effect. Approval will indicate that the flight is permitted under priority currently in effect or that the flight has been granted a Security Control Authorization.

• Altitude limitations on flight operations in selected areas.

Bombardier and avionics equipment manufacturers are not in charge of the space segment of the GPS system, and therefore are not informed of potential GPS outage or signal degradation. Consequently, we do not track or monitor regions where GPS would be affected.

On the aspect of GPS jamming, this is usually evident to the crew since both GPS systems and sub-system users would report failure for a certain duration in the affected region and then would resume normal operation without crew action. In these cases, no post-flight testing is required. However, if snagged by the flight crew, the maintenance action to return the aircraft to service would be to perform the operational test on the GNSS per the maintenance manual.

Spoofing, which is the broadcasting of false (fake) position information, is more difficult to identify. The GPS is certified to work with interference to levels defined in certification requirements. However, there are currently no certification requirement for detecting and operating in the presence of spoofers. If present, it is possible that the receivers will lock on to the spoofer and provide incorrect position information.

As indicated previously, dual GNSS failure will also affect sub-systems users. The Flight Deck Effect (FDE), message and annunciation of a dual GNSS failure or jamming will differ slightly based the aircraft model. Flight crew should refer to their associated Flight Management System (FMS) operating guide and flight manuals. As general guidance, expect the following FDE:

- GNSS remaining in ACQUISITION mode (not showing NAVIGATION mode or a SBAS mode) and may be associated with FMS messages such as (but not limited to); GNSS NOT AVAILABLE / GPS FAILED / NO DATA; or, in case of a single GNSS failure GNSS REVERTED; or, if within SBAS coverage, SBAS NOT IN USE, UNABLE RNP, LPV NOT AVAILABLE or LPV amber on Primary Flight Display (PFD) due to loss of system accuracy.

- The FMSs will typically revert down the priority chain of sensors from on side GPS, to cross side GPS and if both not available, DME/DME, VOR/DME if sufficient stations coverage is available to perform position computation and finally Inertial Reference System (IRS) (assuming all are enabled for use or IRS installed on the aircraft). During RNP AR operation, where a higher accuracy requirement exists, the priority chain may be limited to on side GPS, then to cross side GPS and for Missed Approach (MA) segment only, use of IRS.

- In most cases FMS would transition smoothly from one navigational sensor mode to the next such that there is no sudden change in FMS position when the mode change is encountered.

- Note, if GNSS is not failed but providing incorrect position, this may be indicative of spoofing. FMS have the ability to monitor GNSS/IRS position data (if IRS installed on the aircraft). Over time, depending on the position error level, it could present IRS-FMS DISAGREE or GPS MISCOMP, FMS/GPS MON UNAVAL

Sub-systems and operational impacts will depend on the aircraft model and capability:

Sub-systems impacts:

- Aircraft clocks date and time would no longer be synchronized by the GNSS
- The following systems should be considered inoperative (if installed) and associated Crew Alerting System (CAS) messages (or similar) may be displayed:
    - ADS B FAIL, ADS–B OUT FAIL, ADS–B IN FAIL. Note that transponder Mode S operations is not affected
    - SVS FAIL (Synthetic Vision System)

- SMS/TLAF Surface Management System/ Takeoff Landing Awareness Function (If installed). SMS NOT AVAILABLE message, if the backup mode for GNSS height is not available
- TAWS TERRAIN FAIL, TAWS MAP FAIL, GND PROX FAIL, GPWS (Ground Proximity Warning System) SYSTEM FAIL
  TAWS Terrain/Obstacle Awareness Function (Forward Looking Terrain Alerting). In some applications, the loss of only GPS(s) will not immediately cause TAWS TERRAIN/ MAP FAIL. TAWS will use FMS and IRS Lat/Long as back up sources. However, eventually with degradation of navigation system input, these messages may be posted. In addition, the MAP display may turn purple, due to position mismatch between the display MRP (Map Reference Point) and Terrain Awareness Warning System (TAWS). Follow associated AFM procedures as applicable. Selection of TERRAIN OFF only disables the enhanced modes, which requires GNSS position, Modes 1 to 6 remain available.

Operational impacts:

- If GNSS are failed prior to flight, after FMS power up, from the FMS INIT page, it is required to load current position using the Airport Reference Point (ARP), airplane position or gate position. Set aircraft clocks, date and time manually.
- Prior to flight, or if the condition occurs in flight, for all FMS, review the FMS INIT STATUS page or Defaults control pages. Ensure FMS can use the other NAV sensors (VOR/DME, DME/DME and IRS)
- Unable to comply with RNP 1, RNP 2 and RNP 4 airspace. The UNABLE RNP FMS message may also be posted indicating that the current navigation source is FMS, and the GNSS Horizontal Protection Limit (HPL) is greater than the Horizontal Alert Limit (HAL). The FMSs will perform their usual internal computations to determine if the current protection and alert limits are being met for the current level of RNP
- Unable to comply with RNAV GNSS (RNP APCH), RNP AR approach, BARO-VNAV and LPV approach requirements (LPV NOT AVAILABLE message may also be posted)
- ADS-B position is not available (transponder operations not affected). Expect related CAS message posted
- Regardless of the FMS's current RNP calculations, if the flight crew has any reason to question the validity of the GNSS data, any performance-based navigation certification (RNAV or RNP) that is predicated on GNSS sensor input should obviously come into question. If available, a switch to ground based navigation should be considered
- Still compliant with RNAV1/PRNAV, RNAV2, RNAV5/BRNAV, En-route VNAV (Using combinations of DME/DME, DME-VOR, IRS as applicable)
- For IRS, RNAV/RNP 10 limited to 6.2 hours without updating. If no IRS installed, unable to comply with RNAV/RNP10

Website links of interest:

- Conflict Zone Information Bulletin CZIB's - https://www.easa.europa.eu/easa-and-you/air-operations/czibs
- FAA Official U.S. government information about the Global Positioning System (GPS) and related topics https://www.gps.gov/support/user/
- NOTAM's for applicable countries/regions, example FAA site https://notams.aim.faa.gov/notamSearch/
- Conflict zone & risk database: https://safeairspace.net/

RECENT DOCUMENTS

ADVISORY WIRES/COMMUNIQUÉS/SERVICE LETTERS/ALL OPERATOR MESSAGES
Click here to view all the Advisory Wires / Communiqués.

Note: Service letters and all operator messages are applicable only for *Challenger 800* series (*Challenger 850*, Special Edition, Corporate Shuttles, CRJ Conversions) − Go to iflybombardier.com to view service letters (SL) / all operator messages (AOM).

Learjet

Date of Issue	Title	Rev	Description
2021-01-25	AW73-008	Basic	Cessation of Pratt and Whitney Smiths Electronic Engine Control (EEC) Support
2021-01-25	Learjet 60 Service Bulletin Complete Sortable Index		Learjet 60 Service Bulletin Complete Sortable Index
2021-01-25	SB60-73-3	1	Engine Controls - Full Authority Digital Electronic Control (FADEC) Upgrade
2021-01-18	SB60-34-18	3	Navigation - FMS-5000 Flight Management System (FMS) with GPS-4000S (WAAS w/LPV) Installation
2021-01-18	SB60-34-27	Basic	Navigation - FMS-5000 Temperature Compensation Disable

Challenger

Date of Issue	Title	Rev	Description
2021-01-26	600-0764	01	Modification - No. 1 and No. 2 Main Systems - Relocation of the Hydraulic System No. 1 and No. 2 Accumulators
2021-01-26	601-0633	02	Modification - No. 1 and No. 2 Main Systems - Relocation of the Hydraulic System No. 1 and No. 2 Accumulators
2021-01-15	350-23-012	06	Modification - Communications - Installation of Inmarsat Satellite Communication (SATCOM) System Option (C23-435)
2021-01-14	AW300-44-0379	Basic	CMS niceHD DRM update compatibility with iOS 14
2021-01-14	AW600-44-2611	Basic	CMS niceHD DRM update compatibility with iOS 14

Global

Date of Issue	Title	Rev	Description
2021-01-22	AW700-71-0812	Basic	Ice Shedding Procedure on Pearl Engine
2021-01-21	700-1A11-23-040	01	Modification - Cabin Communication System - Sigma 7 Handsets Replacement
2021-01-21	700-23-046	01	Modification - Cabin Communication System -Sigma 7 Handsets Replacement
2021-01-21	700-23-5024	01	Modification - Cabin Communication System - Sigma 7 Handsets Replacement
2021-01-21	700-23-6023	01	Modification - Cabin Communication System - Sigma 7 Handsets Replacement
2021-01-20	AW700-57-0810	Basic	Corrosion Protection and Drainage Improvement for the Mid and Outboard flaps Service Bulletins and Support Program
2021-01-19	700-1A11-24-027	01	Modification Circuit Breaker Cabin Fixed Frequency Main Circuit Breaker
2021-01-19	700-23-7501	02	Modification - Printer System - Installation of Cockpit Printer
2021-01-19	700-24-088	01	Modification Circuit Breaker Cabin Fixed Frequency Main Circuit Breaker
2021-01-19	700-24-5013	02	Modification Circuit Breaker Cabin Fixed Frequency Main Circuit Breaker
2021-01-19	700-24-6013	02	Modification Circuit Breaker Cabin Fixed Frequency Main Circuit Breaker
2021-01-15	700-26-012	01	Modification - Portable Fire Extinguishers - Waste Container Fire-Extinguishers Removal
2021-01-13	700-52-7508	01	Modification Service Doors Drainage on Access Panels for Oxygen and Pax Door Switches

WHAT'S ON

If you missed any of our webinars and would like to learn more, please visit our Customer Portal. The Virtual Events Library also highlights a variety of webinars and products and services currently on offer with the customer services and support team. Log in today for more information!

Date	Event	Location
Available **now** on Customer Portal	Dallas Webinar	Virtual
	Biggin Hill Webinar	
	Challenger 604 Pro Line Fusion Webinar	
	New SmartPubs and SmartFix Plus Solution Webinar	
	Wichita Service Centre Webinar	
	Learjet 40-45 RACER Webinar	
Feb. 2-4, 2021	CJI London	Virtual