Customer Services

Advisory Wire

REFERENCE NO:	AW700-34-0481, Rev 03	INFORMATION TYPE:	Maintenance Operational
ATA:	34-61	EFFECTIVITY:	Global Express / XRS (9002 - 9312, 9314 - 9380, 9384 - 9429) Global 5000 (9127 to 9383, 9389 to 9400, 9404 to 9431 and 9998)
SUBJECT:	**Post Batch 3, Batch 3.3 and Batch 3.4 Software Upgrade – FMS settings in FLIGHT CONFIG pages**		

1. REFERENCES:

1.1. Honeywell Service Information Letter (SIL) D201406000065R002, Flight Management System (FMS) – Bank Factor set to Zero (0) after upgrade to NZ6.1, dated 06 May 2019

1.2. Bombardier Service Bulletin (SB) 700-31-030 / 700-1A11-31-014, Modification – Integrated Avionics Computer (IAC) System – Batch 3 Software Upgrade

1.3. Bombardier Service Bulletin (SB) 700-31-034 / 700-1A11-31-017, Modification – Integrated Avionics Computer (IAC) System – Batch 3.3 Software Upgrade

1.4. Honeywell FMS Pilot's Guide for the Bombardier Global Express/5000/XRS Software version NZ6.1, Publication number D201203000019, latest revision

1.5. Bombardier Service Bulletin (SB) 700-31-039 / 700-1A11-31-021, Modification – Integrated Avionics Computer (IAC) System – Batch 3.4 Software Upgrade

References 1.1 to 1.5 are available on the Bombardier Customer Portal: (my.businessaircraft.bombardier.com) > Library > Search by Keyword

2. INTRODUCTION:

Revision 3 of this Advisory Wire (AW) provides an update following the release of the revised Honeywell SIL (Ref. 1.1) and of the Bombardier SB Batch 3.4 Software Upgrade (Ref. 1.5). It also provides additional details on Flight Management System (FMS) BANK FACTOR default value setting. This AW also provides details on other FMS erroneous default settings that may be set at an incorrect value on the FLIGHT CONFIG pages.

Although, this could potentially occur following the incorporation of Batch 3 (Ref. 1.2), Batch 3.3 (Ref. 1.3) or Batch 3.4 (Ref. 1.5) software upgrade, this issue is not related to the software upgrade, but rather the vertu of uploading the software to the IAC.

3. DESCRIPTION:

3.1 'SUSPEND WPT SEQ W/HDG' default value:

The pilot selectable 'SUSPEND WPT SEQ W/HDG' setting on FLIGHT CONFIG page 1 gives the ability to the crew to decide if the FMS will suspend or not the normal flight plan waypoint sequencing. When the selection is made to 'ON', this function is activated whenever the lateral flight mode changes from 'LNAV' to 'HDG'. When activated, the active waypoint is maintained as the 'TO' waypoint in the FMS ACTIVE FLT PLAN regardless of where the aircraft is maneuvered relative to the flight plan.

Recently, an operator reported a situation where 'FLY VECTORS TO INTERCEPT' in yellow font was displayed on the FMS ACTIVE FLT PLAN and 'LNAV' mode could not be activated. The crew tried several times to go 'DIRECT TO' but were unable to clear the 'FLY VECTORS TO INTERCEPT'. The investigation showed that the FMS 'SUSPEND WPT SEQ W/HDG' (line 2L) on the FLIGHT CONFIG page 1 was set to 'ON'. After thorough investigation, it was suggested that, after the Batch 3 software upgrade (Ref. 1.2), the 'SUSPEND WPT SEQ W/HDG' could be set to a different value than the default 'OFF' in accordance with the Honeywell FMS Pilot's Guide (Ref. 1.4).

NOTE: It should be noted that the latest selection made by the crew will remain until a new selection is made.

To access the 'SUSPEND WPT SEQ W/HDG' setting:

Press NAV > press NEXT > press MAINTENANCE (2R) > press NEXT > press SETUP (4L) > press FLIGHT (1R) > FLIGHT CONFIG page 1 on each FMSs

For further explanation on the 'SUSPEND WPT SEQ W/HDG' setting and its consequence on the FMS ACTIVE FLT PLAN, please refer to the Honeywell FMS Pilot's Guide (Ref. 1.4), Section 6 – Navigation.

3.2 'BANK FACTOR' default value:

The pilot selectable 'BANK FACTOR' setting permits the crew to establish how aggressively the FMS will turn and therefore, how steep the bank angle will be. The highest 'BANK FACTOR' used by the FMS is fifteen (15) degrees unless a higher angle is needed to maintain protected airspace. The lowest number is zero (0) and the default value is seven (7). For lower settings such as seven (7) degrees or lower, the FMS will anticipate course changes further in advance and make shallower turns. For higher values, the turn is initiated closer to the actual turn point and the bank angle is steeper.

Operators reported behaviour where the aircraft was slow to turn as it passed a waypoint and was late to resume on track and overshoot the next waypoint per the flight plan or the FMS is sequencing waypoints earlier than expected-up to 20 nautical miles. In one case, the operator also indicated that this behaviour was intermittent and more evident on one of the FMSs when master. The investigation showed that the FMS 'BANK FACTOR' (line 1L) on the FLIGHT CONFIG page 2 on all FMS CDUs were not at the same value and in the case of the more problematic FMS; it was set at zero (0). After thorough investigation by Honeywell, it was suggested that, after Batch 3 (Ref. 1.2), Batch 3.3 (Ref. 1.3) or Batch 3.4 (Ref. 1.5) software upgrade, the 'BANK FACTOR' could be set at zero (0) rather than the default setting value of seven (7) in accordance with the Honeywell FMS Pilot's Guide (Ref. 1.4).

Flight crews should pay particular attention to the 'BANK FACTOR' setting since the value selected by the crew must be the same on all FMSs.

To access the 'BANK FACTOR' setting:

Press NAV > press NEXT > press MAINTENANCE (2R) > press NEXT > press SETUP (4L) > press FLIGHT (1R) > press NEXT > FLIGHT CONFIG page 2 on each of the FMSs

For further explanation on the 'BANK FACTOR' setting and possible adjustment when the FMS CDU is operating in single, independent or dual mode, please refer to the Honeywell FMS Pilot's Guide (Ref. 1.4), Section 6 – Navigation.

3.3 'SMARTPERF LEARNING' setting:

'SMARTPERF LEARNING' can be set to 'ON' or 'OFF' when FULL PERF is selected as the PERF MODE. When the learning function is set to 'ON', the FMS continues to write learned data to the Aircraft Database (ACDB) to reflect aircraft performance. The rate of learning slows as more flights accumulate. Once the crew determines that an FMS has the most desirable predictions, it is recommended to transfer the ACDB to the Data loader and saved to external media for future use as needed. It is further recommended to set 'SMARTPERF LEARNING' to 'OFF'. If diverging predictions are observed, the crew must reload the ACDB (either from the navigational database media or use the ACDB that was previously saved) and verify 'SMARPERF LEARNING' functions is set to 'OFF'. To avoid performance predictions from diverging, 'SMARTPERF LEARNING' on all FMSs should be at the same setting and set to 'OFF' once the predictions stabilize.

When 'OFF' is selected, the performance calculations are based on the previously learned data.

To get access to the 'SMARTPERF LEARNING' setting:

Press NAV > press NEXT > press MAINTENANCE (2R) > press NEXT > press SETUP (4L) > press FLIGHT (1R) > press NEXT > FLIGHT CONFIG page 2 on each of the FMSs

For further explanation on the 'SMARTPERF LEARNING' setting and possible adjustment when the FMS CDU is operating in single, independent or dual mode, please refer to the Honeywell FMS Pilot's Guide (Ref. 1.4), Section 6 – Navigation.

4. ACTION:

Operators and flight crew should be familiar with the Honeywell SIL (Ref. 1.1) since the root cause is not known and the possibility that settings on the FLIGHT CONFIG pages could be set to a value other than the default setting, especially after a software upgrade like Batch 3 (Ref. 1.2), Batch 3.3 (Ref. 1.3) or Batch 3.4 (Ref. 1.5).

Following the release of Batch 3.3 (Ref. 1.3) and Batch 3.4 (Ref. 1.5) software upgrade additional instructions were added suggesting pilots to validate FMS configuration settings as part as the initial pre-flight check following the upgrade. This would also be a good practice to apply following replacement of an Integrated Avionics Computer (IAC).

Should you have any queries pertaining to this Advisory Wire (AW), please contact your Bombardier Field Service Representative (FSR) or the Customer Response Center (CRC).