ADVISORY WIRE

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REFERENCE NO:	AW300-34-0189 Rev.5	INFORMATION TYPE:	Maintenance Operational
ATA:	34	EFFECTIVITY:	Challenger 300 (20408 - 20500) or A/C post SB 100-34-36 Challenger 350 (20501 - 20999)
SUBJECT:	**Pro Line 21 Advanced Avionics Nuisance Messages and FMS-6200 Issues**		

1. REFERENCE:

1.1. Rockwell Collins Ops Bulletin OPSB 0122-14 (CPN: 523-0822340), Released January 15, 2014, available on Rockwell Collins website and on the Customer Portal website

1.2. AW300-45-0033 Rev.5 Maintenance Diagnostic Tables MDT-3110 for MDC-4100, Released December 21, 2015

1.3. AW300-34-0226 FMC-6200 Lock Up on Ground, Released September 25, 2015

1.4. Service Bulletin 100-34-41- Replacement of the Flight Management Computers (FMC) and the Adaptive Flight Display (AFD) Units

1.5. Service Bulletin 350-34-012 - Replacement of the Flight Management Computers (FMC) and the Adaptive Flight Display (AFD) Units (Effectivity:20501-20663)

2. INTRODUCTION:

The revision to this Advisory Wire (AW) is to inform Operators that the new Flight Management Computer (FMC-6200) is now approved by EASA and is certified for all aircraft.

3. DESCRIPTION:

The FMC-6200 P/N: 822-2488-130 that introduce fixes to the issues described below, is available through incorporation of the Ref. 1.4 SB for Challenger 300 and the Ref. 1.5 SB for Challenger 350. The FMC is baseline in production on aircraft 20664 and subsequent.

In addition to the FMC update, the Ref 1.4 and 1.5 SB also update the Adaptive Flight Display (AFD) to P/N 822-1917-328 or 822-1917-308.

The Ref. 1.4 SB has the instructions to change the CSU strapping to set FMC to SYNC mode only. (Challenger 350 FMC are already set to SYNC mode only). The Rev. 1.5 SB updates the V-speed database to P/N: 096−5016−002.

The following is a summary that provides a description as well as the associated corrective actions or workarounds for known issues reported on aircraft with the Pro Line 21 Advanced Avionics.

3.1. NUISANCE MESSAGES WHEN GPS SIGNAL IS NOT AVAILABLE TO CLOCK

Applicability: Challenger 300 and Challenger 350 aircraft equipped with FMC-6200.

Condition: The FMS date reverts back to 1 Jan 1970 when the clock does not receive a valid GPS signal. This will happen inside the hangar if the A/C batteries were disconnected.

- PSEU PROX SYS FAULT message posted on EICAS and PSEU Failed DEGRADED ARINC A INPUT (B3-007658) posted on Maintenance Diagnostic Computer (MDC)

Depending on options installed, the following messages could also be posted on the MDC:

- FSU 1 MAPS Failed Application Fault (B3-478758)
- FSU 2 MAPS Failed Application Fault (B3-478807)
- FSU 1 XM GWX Failed Application Fault (B3-478778)
- FSU 2 XM GWX Failed Application Fault (B3-478823)

Cause: To increase the FMS reliability and reduce maintenance cost**,** the FMS-6200 does not have an internal battery. This means clock time is not retained when the L/H battery is disconnected.

Workaround: Move the aircraft to a place where the GPS signal is valid or manually set the clock by pressing the GPS/MAN button on the clock and re-entering the date and time. Once done the aircraft will keep a valid time unless the aircraft batteries are disconnected or the clock breakers are pulled.

The MDC FSU fault messages may remain posted after clock date and time are valid. To prevent that, make sure a valid GPS signal is available or the aircraft clock is set manually within 3 minutes of first power up after the L/H battery have been reconnected. These messages can be removed by doing a power cycle with valid time and date on the clock. For example, the FSU MDC faults mentioned above will be removed by cycling L/R FILE SERVER breakers LCBP C6 and RCBP D6 or by cycling aircraft power.

Once the clock is set manually, in order to have the most accurate date/time, the clock should be reset to GPS mode and will capture GPS date/time when GPS signal is available.

Corrective action: These nuisance messages are only posted when the L/H aircraft battery is reconnected and the GPS signal is not valid. In order to prevent unnecessary troubleshooting caused by the messages listed above, the MDT have been revised to add a note to make sure A/C clock date and time are valid. The Ref. 1.2 AW provides more details how to obtain the new MDT P/N: 810-0042-272 on the CIC website.

3.2. FMS CDU DISPLAY MENU

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100.

Condition: When the aircraft is powered down, options selected in the DISPLAY MENU for MFD or PFD MAP DISPLAY pages are reset to default and need to be re-entered.

Cause: FMS software does not support saving these selections on power down.

Corrective action: The Ref. 1.4 SB introduces FMC-6200 P/N: 822-2488-130 to resolve this issue.

3.3. MFD DATA DISPLAY

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100.

Condition: FMS does not automatically select the correct page for TAKEOFF or LANDING based on the proper phase of flight. When the takeoff performance is loaded and speeds are sent, the correct information is displayed for TAKEOFF when MFD Data is selected on the ground. After the aircraft becomes airborne, selection of MFD Data will incorrectly display TAKEOFF page again instead of the APPROACH page if the TAKEOFF page was displayed while on ground. This requires that the pilot select the MFD ADV button and then press Next button in order for the landing data to appear.

Cause: FMS software does not clear current page display information.

Corrective Action: The Ref. 1.4 SB introduces FMC-6200 P/N: 822-2488-130 to resolve this issue.

3.4. CDU MAY NOT RESPOND OR MAY REJECT VALID FMS ENTRY AS “NOT IN DATABASE”

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100.

Condition: The CDU may stop responding to FMS selections. This has been observed to occur while the CDU displays:

- LEGS, FPLN, or DIRECT-TO pages, during which the NOT IN DATABASE message might be displayed for a valid crew entry
- MCDU MENU
- Incomplete or blank (black) CDU page
- Any DISPLAY MENU page

In these cases, the crew can continue to use the CDU TUNE page and radio tuning will continue to operate normally.

Cause: These issues are caused by the FMC-6200 software.

Workaround: As per Ref 1.1 Rockwell Collins OPSB, to restore normal CDU operation, the crew should either:

- Press the TUNE key, or
- If the CDU stopped responding while displaying a DISPLAY MENU, the crew should:
  - Select the identical DISPLAY MENU on the opposite side CDU, and then make a single DISPLAY MENU selection

  For example, if CDU2 stopped responding while displaying “DISPLAY MENU” for “MFD MAP DISPLAY” for the Right (R) MFD, the crew actions should be:

  - On CDU1, select “DISPLAY MENU” for “MFD MAP DISPLAY” for the Right (R) MFD
  - On CDU1, press any CDU line select key once

The crew should not make other FMS selections on the unresponsive CDU until taking the above actions to restore normal operation. The crew may use the TUNE page.

Corrective Action: The Ref. 1.4 SB introduces FMC-6200 P/N: 822-2488-130 to resolve this issue.

3.5. FMC MESSAGES POSTED ON THE MDC

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100.

Condition: The following messages are being shown on the MDC:

- FMC 1 NO L-FMC-6 BUS OUTPUT (B3-661764)
- FMC 2 NO R-FMC-2 BUS OUTPUT (B3-006775)

Cause: These nuisance messages are caused by the FMS-6200 software.

Workaround: Switching to the map format for the Left PFD and/or the Right PFD should clear these nuisance messages.

Corrective Action: The Ref. 1.4 SB introduces FMC-6200 P/N: 822-2488-130 to resolve these nuisance messages.

3.6. IOC MESSAGES POSTED ON THE MDC

Applicability: Challenger 300 and Challenger 350 equipped with MDT P/N: 810-0042-270.

Condition: The following messages are being shown on the MDC:

- IOC 1 Failed NO PSEU-A BUS INPUT (B3-223997)
- IOC 2 Failed NO PSEU-B BUS INPUT (B3-224026)

Cause: These nuisance messages are caused by an incorrect maintenance equation.

Corrective Action: This nuisance message condition is resolved with MDT P/N: 810-0042-272. The Ref. 1.2 AW provides more details how to obtain the new MDT P/N: 810-0042-272 available on the CIC website.

3.7 FMC LOCK UP ON GROUND

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100 and Challenger 350 equipped with FMC P/N: 822-2488-101.

Condition: As described in the Ref. 1.3 AW, the FMC could lock up on ground if the power is removed during initialization mode within 40 seconds of power up.

Cause: This issue is caused by the FMC-6200 software.

Workaround: In order to prevent this, we recommended that power to the aircraft and FMC/IAPS should not be removed during initialization, particularly not within 40 seconds of power up.

Corrective Action: The Ref. 1.4 or 1.5 SB introduces FMC-6200 P/N: 822-2488-130 to resolve this issue.

3.8 FMC UNEXPECTED RESET

Applicability: Challenger 300 equipped with FMC P/N: 822-2488-100 and Challenger 350 equipped with FMC P/N: 822-2488-101.

Condition: Some in-flight FMC reset occurrences have been reported by Operators. In all cases, the FMC did reset back to normal operation within approximately 30 seconds without any flight crew action. The following faults were logged in “AIR” mode on the MDC fault maintenance history: FMC OFF/NO OUTPUT with the following B3 code: B3-006760 for FMC 1 or B3-006771 for FMC 2.

Cause: This issue is caused by the FMC-6200.

Corrective Action: The Ref. 1.4 SB introduces FMC-6200 P/N: 822-2488-130 to resolve this issue.

4. ACTION:

Operators should comply with the Ref. 1.4 or 1.5 recommended SB within the 48 month time compliance. Until incorporation of the SB, they should ensure their Flight and Maintenance crews are familiar with the various nuisance messages, FMS-6200 issues and the workarounds detailed in this AW.