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SERVICE INFORMATION LETTER

FMS (Flight Management System) Does Not Transition to VNAV (Vertical Navigation) PATH as Expected

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Transmittal Information

Publication Number D201606000057

Summary

This is the INITIAL release.

Revision History

This service information letter has had no revision(s) as shown in Table 1.

Table 1. Revision History

| Revision Number | Revision Date |
|-----------------|---------------|
| 0 | 21 Jul 2016 |

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1. **General Information**

A. **Effectivity**

- (1) This service information letter is applicable to all NZ and Primus Epic® platforms. Refer to Table 2.

Table 2. Table 2. NZ and Primus Epic® Platforms

| Type | PN |
|--|--|
| NZ-2000, NZ-2010, FMZ-2000, FMZ-2010, and NZ-2010/IC-615/IC-800/IC-810/IC-1080 FMS | 7018879-01001, -01002, -02003 thru -02007, -02010, -02017, -03008, -03012, -03014, -03016, -03018, -03020, -03022, -03024, -03026, -03028, -03030, -03032, -03034, -03036, -03038, -03040, -03042, -03044, -10000, -11009, -11015, -11019, -11021, -11023, -11024 7017000-21XXX, -94XXX, -95XXX, -98XXX, -99XXX, 7017300-01XXX, -11XXX, -21XXX, -31XXX, -41XXX, -43XXX, -45XXX, -56XXX, -56026, -56027, -6100X, -61010, -63XXX |
| AgustaWestland AW139 | EB7030191-00105 (Phase 4) EB7030191-00107 (Phase 5) EB7030191-00108 (Phase 6) EB7030191-00109 (Phase 6 HW3/PM) EB7030191-00110 (Phase 7) EB7030191-00111 (Phase 7 V1) EB7030191-00111 (Phase 7 V3) EB7030191-00112 (Phase 7 V4) |
| Cessna Sovereign | EB7031847-00105 (Phase 3) EB7031847-00106 (Phase 4) EB7031847-00108 (Phase 4.1) EB7031847-00109 (Phase 4.2) EB7031847-00111 (Phase 5) EB7031847-00114 (Phase 5.2) |
| Dassault PRIMUS Epic® F900 | EB7036889-00112 Load 21 EB7036889-00114 (EASy II) Load 24.0 EB7036889-00116 (EASy II) Load 26.0 EB7036889-00117 (EASy II) Load 26.0 EB7036889-00118 (EASy II) Load 26.2 EB7036889-00120 (EASy II) Load 28.2 |
| Dassault PRIMUS Epic® F2000 | EB7036889-00203 Load 12.0 EB7036889-00205 Load 14.2 EB7036889-00206 Load 14.4 EB7036889-00207 (EASy II) Load 16.0 EB7036889-00208 (EASy II) Load 16.2 EB7036889-00209 (EASy II) Load 18.0 |

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Table 2. Table 2. NZ and Primus Epic® Platforms (Cont)

| Type | PN |
|----------------------|---|
| Dassault F7X | EB7034843-00102 Load 10.0 EB7034843-00103 Load 10.2 EB7034843-00104 (EASy II) Load 12.0 EB7034843-00107 (EASy II) Load 12.2 EB7034843-00108 (EASy II) Load 14.2 |
| Embraer 170 | PS7027709-00124 (Load 21.2) PS7027709-00126 (Load 21.4) PS7027709-00127 (Load 23.1) PS7027709-00128 (Load 21.5) PS7027709-00129 (Load 23.2) |
| Embraer 190 | PS7027709-00214 (Load 23.1) PS7027709-00215 (Load 21.4) PS7027709-00216 (Load 21.5) PS7027709-00217 (Load 23.2) |
| Embraer 170/190 | PS7027709-00303 (Load 25.1.0.1) PS7027709-00302 (Load 25.2) PS7027709-00304 (Load 25.3) PS7037709-00305 (Load 25.4) PS7027709-00309 (Load 25.5.0.1) PS7027709-00310 (Load 25.6) |
| Gulfstream G350/G450 | EB7031236-00409 (Foxtrot) EB7031236-00410 (Delta) EB7031236-00411 (Echo) EB7031236-00414 (Foxtrot) EB7031236-00415 (Foxtrot SSEC) EB7031236-00416 (ASC 909/909A) EB7031236-00417 (ASC 910) EB7031236-00418 (ASC909B) EB7031236-00420 (ASC911) |
| Gulfstream G500/G550 | EB7031236-00314 (Foxtrot) EB7031236-00315 (Delta) EB7031236-00316 (Echo) EB7031236-00317 (ASC 909) EB7031236-00319 (Foxtrot) EB7031236-00320 (Foxtrot) EB7031236-00321 (ASC 910) EB7031236-00322 (ASC909B) EB7031236-00323 (ASC911) |
| Hawker 4000 | EB7030192-001XX (Load 19) EB60000578-0114 (Load 20) |

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Table 2. Table 2. NZ and Primus Epic® Platforms (Cont)

| Type | PN |
|-----------------|---|
| Pilatus PC-12NG | EB7037248-00103 (Build 6.2) EB7037248-00104 (Build 7.2) EB7037248-00106 (Build 8.3.3) EB60000487-0108 (Build 8.6) EB60000487-0111 (Build 8.8) EB60000487-0112 (Build 10.9) |
| Viking DHC6-400 | EB7032889-00101 (Load 1.3) EB60002734-0104 (Load 4.4) |

B. Reason

- (1) The purpose of this service information letter is to advise the operators of an anomaly that results in the aircraft not transitioning to VNAV PATH (VPATH) when expected.

C. References

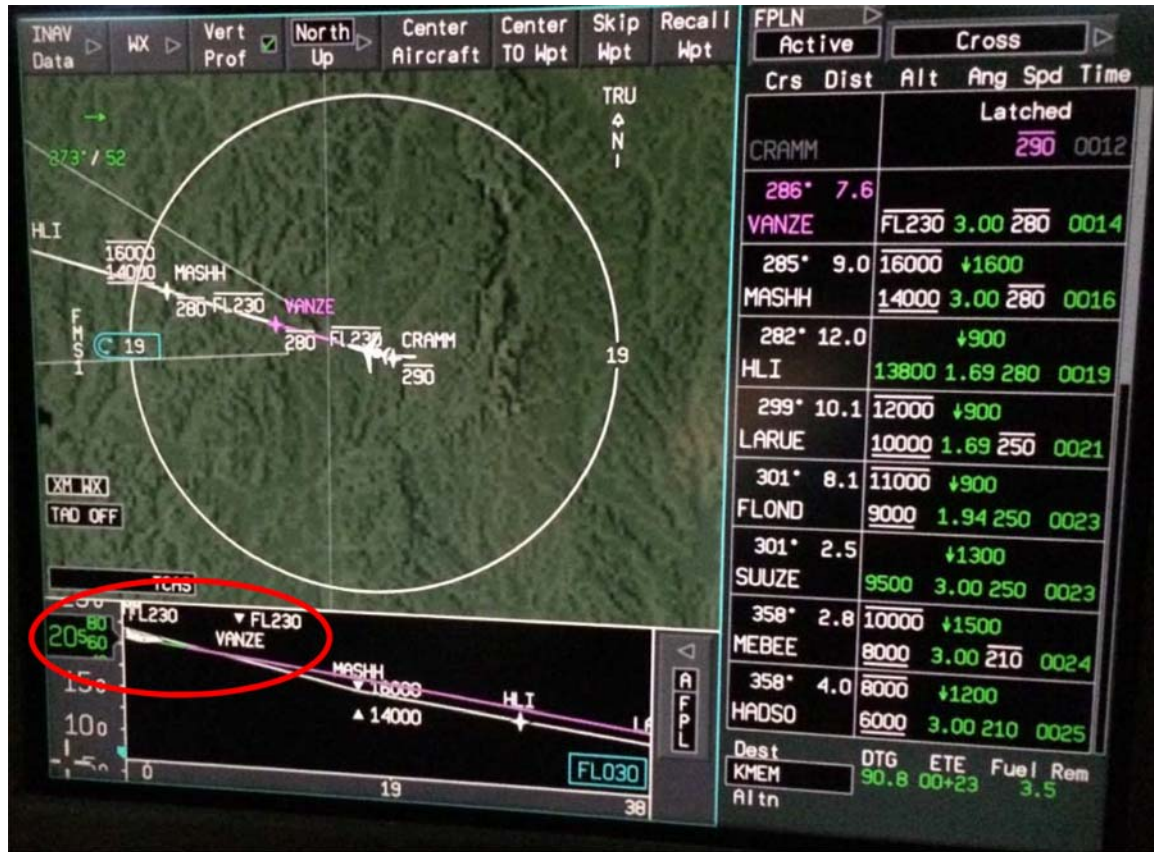
- (1) Not applicable.

D. Summary

- (1) Primus Epic® and NZ operators have reported that VPATH will not capture as expected when the current aircraft altitude is below the AT altitude constraint of the active 'TO' waypoint that has an AT or BELOW altitude constraint.
- (2) With VNAV armed, the FMS will laterally sequence the waypoint, and although the vertical mode may briefly indicate a VNAV capture (and the vertical deviation will indicate on path with no deviation) it will revert to the non-FMS vertical mode and not capture the FMS path.
- (3) Once VNAV is re-armed it will immediately capture and if above path, the aircraft will command a steeper than expected descent to intercept the path.
- (4) With the Dassault EASy platform as an example (refer to Figure 1), the CRAMM.VANZE1 instrument arrival into the KMEM was loaded with PATH (non-VNAV) as the active vertical mode, the LNAV engaged, and the preselector dialed down to 3000 feet. At approximately 5NM from the VANZE waypoint (which has an altitude constraint of AT or BELOW FL230; Refer to Figure 1), VNAV was armed (refer to Figure 2). The aircraft descended below FL230 at a shallow angle prior to sequencing VANZE, the vertical deviation indicator (VDI) indicated approaching and passing through the vertical path, the vertical mode briefly displayed VPATH as the active mode but quickly reverted to PATH even though the aircraft was one dot above glidepath. VANZE sequenced and PATH remained the active vertical mode until VNAV was re-armed by the flight crew, and VPATH immediately became the active vertical mode.

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Figure 1. (Sheet 1 of 1) KMEM CRAMM.VANZE1 Approach - Dassault EASy Aircraft Flying Shallow Angle to Intercept Vertical Path

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Figure 2. (Sheet 1 of 1) VNAV is Armed and Unable to Capture VNAV PATH while Sequencing VANZE

- (5) If the aircraft is above the AT altitude constraint prior to sequencing the waypoint that has the AT or BELOW constraint, the FMS will capture VPATH as expected and will continue the descent and sequence the waypoint as required.
- (6) Doing a vertical DIR TO the AT or BELOW waypoint when above the constraint will allow immediate capture of VPATH.

E. Action

- (1) This is an FMS limitation that does not allow the VNAV to arm VPATH when attempting to sequence a waypoint when below the AT constraint of an AT or BELOW altitude waypoint constraint.
- (2) The crew needs to take appropriate action to make sure the aircraft follows the desired flight path.

F. Recommendation

- (1) It is recommended that operators contact local Service Centers and/or Channel Partners for assistance with service bulletin implementation in the field.

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- (2) The Honeywell Aerospace Technical Support (ATS) team can be contacted for advanced troubleshooting and assistance. Select Option 1 for Avionics, or Option 2 for Mechanical.

Honeywell Aerospace Technical Support
Telephone: 855-808-6500 (Toll Free U.S.A./Canada)
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