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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2010-0385; Directorate Identifier 2010-NM-068-AD; Amendment 39-16269; AD 2010-09-04]**

**RIN 2120-AA64**

**Airworthiness Directives; Honeywell International Inc., Primus EPIC and Primus APEX Flight Management Systems, Installed on, but not Limited to, Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model ERJ 170 and ERJ 190 Airplanes, and Pilatus Aircraft Ltd. Model PC-12/47E Airplanes**

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain Honeywell International Inc., Primus EPIC and Primus APEX flight management systems (FMS), as installed on the airplanes described above. This AD requires revising the Limitations section of the airplane flight manual to incorporate the procedures necessary to recover from or work around a software anomaly in the FMS. This AD results from discovery of software anomalies which, in certain situations, can cause the FMS to generate misleading navigational guidance to the pilots and to the autopilot system of various airplanes having this same system software. We are issuing this AD to provide the flightcrew with procedures to recover from or work around these software anomalies during flight, which could lead to an airplane departing from its scheduled flight path, and result in possible collision with other aircraft or terrain.

**DATES:** This AD is effective May 14, 2010.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of May 14, 2010.

We must receive comments on this AD by June 14, 2010.

**ADDRESSES:** You may send comments by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this AD, contact Honeywell Technical Operations Center, 1944 E. Sky Harbor Circle, Phoenix, Arizona 85034; telephone 602-365-3099 or 800-601-3099; fax 602-365-3343; e-mail AeroTechSupport@Honeywell.com; Internet <http://portal.honeywell.com/wps/portal/aero>.

### Examining the AD Docket

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

**FOR FURTHER INFORMATION CONTACT:** For transport airplanes: Chip Adam, Flight Test Pilot, Flight Test Branch, ANM-160L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5369; fax (562) 627-5210.

For small airplanes: Doug Rudolph, Aerospace Engineer, Small Airplane Directorate, FAA, 901 Locust Street, Room 301, Kansas City, Missouri 64106; telephone (816) 329-4059; fax 816-329-4090.

### SUPPLEMENTARY INFORMATION:

#### Discussion

We were notified of two software anomalies discovered in the Honeywell Primus EPIC and Primus APEX flight management systems (FMS): The first anomaly can occur when the destination runway is changed without an arrival or approach entered and the runway is the TO waypoint, which causes the destination runway to become the departure runway; the second anomaly can occur when crossing the 180 degree meridian, which causes the FMS longitude position calculation to move by approximately 180 degrees. These software anomalies can cause the FMS to generate misleading navigational guidance to the pilots and to the autopilot system of various airplanes having this same system software. These conditions, if not corrected, could result in an airplane departing from its scheduled flight path, which could result in possible collision with other aircraft or terrain.

#### Relevant Service Information

We reviewed the Honeywell service information letters (SILs) specified in the following table. The SILs describe the procedures necessary to recover from or to work around the identified software anomalies in the FMS described above.

**Table – Honeywell service information letters**

<b>Honeywell Service Information Letter –</b>	<b>Revision –</b>	<b>Model –</b>	<b>Dated –</b>
D201002000007	Original	PC-12/47E airplanes	February 16, 2010
D201002000051	1	ERJ 170 and ERJ 190 airplanes	March 26, 2010

## **FAA's Determination and Requirements of This AD**

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of these same type designs. This AD requires accomplishing the actions specified in the service information described previously, except as discussed under "Difference Between the AD and the Service Information."

## **Difference Between the AD and the Service Information**

The SILs identified in the previous table do not specify revising the AFMs of the affected airplanes to include the information in the General Information section of the SIL; however, this AD requires revising the applicable AFM to include that information in order to ensure that the flightcrew has the necessary procedures to recover from or work around the identified anomalies during flight.

## **Interim Action**

We consider this AD interim action. The FMS manufacturer is currently developing a modification that will address the unsafe condition identified in this AD. Once this modification is developed, approved, and available, we might consider additional rulemaking.

## **FAA's Justification and Determination of the Effective Date**

Certain Honeywell FMS software anomalies, in certain situations, can cause the FMS to generate misleading navigational guidance to the pilots and to the autopilot system of various airplanes having this same system. This misleading navigational guidance to the pilots and to the autopilot system causes the airplane to depart from its scheduled flight path, which could result in possible collision with other aircraft or terrain. We have determined that it is imperative that we notify flightcrews of these anomalies and provide them with procedures to recover from or work around these anomalies during flight. Because of our requirement to promote safe flight of civil aircraft and thus the critical need to assure proper navigational guidance from Honeywell FMS, coupled with the short compliance time involved with this action, this AD must be issued immediately.

Because an unsafe condition exists that requires the immediate adoption of this AD, we find that notice and opportunity for prior public comment hereon are impracticable and that good cause exists for making this amendment effective in less than 30 days.

## **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments before it becomes effective. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include "Docket No. FAA-2010-0385; Directorate Identifier 2010-NM-068-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

## **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**

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 that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under 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.

You can find our regulatory evaluation and the estimated costs of compliance in the AD Docket.

## **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:



**2010-09-04 Honeywell International Inc.:** Amendment 39-16269. Docket No. FAA-2010-0385; Directorate Identifier 2010-NM-068-AD.

**Effective Date**

(a) This airworthiness directive (AD) is effective May 14, 2010.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to Honeywell International Inc., Primus EPIC and Primus APEX flight management systems (FMS), having the FMS part numbers (P/N) listed in Table 1 of this AD, installed on, but not limited to, Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model ERJ 170 and ERJ 190 airplanes, and Pilatus Aircraft Ltd. Model PC-12/47E airplanes, certificated in any category.

**Table 1 – Part numbers**

<b>FMS Part Number</b>	<b>Model</b>
Primus EPIC FMS P/N PS7027709-00127 (Load 23.1), and PS7027709-00129 (Load 23.2), both with NZ7.1 VAR12ZS FMS software	ERJ 170 airplanes
Primus EPIC FMS P/N PS7027709-00214 (Load 23.1), and PS7027709-00217 (Load 23.2), both with NZ7.1 VAR12ZS FMS software	ERJ 190 airplanes
Primus APEX FMS P/N EB7037248-00103, with NZ7.1 VAR12 FMS software	PC-12/47E airplanes

**Subject**

(d) Air Transport Association (ATA) of America Code 34: Navigation.

**Unsafe Condition**

(e) This AD results from discovery of software anomalies which, in certain situations, can cause the FMS to generate misleading navigational guidance to the pilots and to the autopilot system of various airplanes having this same system software. The Federal Aviation Administration is issuing this AD to provide the flightcrew with procedures to recover from or work around these software anomalies during flight, which could lead to an airplane departing from its scheduled flight path, and result in possible collision with other aircraft or terrain.

## 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.

### Revise the Airplane Flight Manual (AFM)

(g) Within 14 days after the effective date of this AD, revise the Limitations section of the applicable AFM to include the information in the applicable service information letter (SIL) specified in Table 2 of this AD.

**Table 2 – Service information**

<b>Honeywell Service Information Letter –</b>	<b>Revision –</b>	<b>Model –</b>	<b>Dated –</b>
D201002000007	Original	PC-12/47E airplanes	February 16, 2010
D201002000051	1	ERJ 170 and ERJ 190 airplanes	March 26, 2010
D201002000052	Original	ERJ 170 and ERJ 190 airplanes	March 3, 2010

Note 1: The actions required by paragraph (g) of this AD may be done by inserting a copy of the applicable SIL specified in Table 2 of this AD into the applicable AFM. When the applicable SIL has been included in the general revisions of the applicable AFM, the general revisions may be inserted into the AFM, provided the relevant information in the general revision is identical to that in the SIL.

### Alternative Methods of Compliance (AMOCs)

(h) The manager of the office having certificate responsibility for the affected airplanes has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Before using any approved AMOC on any aircraft 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.

(1) For transport airplanes: Send information to ATTN: Chip Adam, Flight Test Pilot, Flight Test Branch, ANM-160L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5369; fax (562) 627-5210.

(2) For small airplanes: Send information to ATTN: Doug Rudolph, Aerospace Engineer, Small Airplane Directorate, FAA, 901 Locust Street, Room 301, Kansas City, Missouri 64106; telephone (816) 329-4059; fax (816) 329-4090.

### Material Incorporated by Reference

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

**Table 3 – Material incorporated by reference**

<b>Document</b>	<b>Revision</b>	<b>Date</b>
Honeywell Service Information Letter D201002000007	Original	February 16, 2010

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Honeywell Service Information Letter D201002000051	1	March 26, 2010
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Honeywell Service Information Letter D201002000052	Original	March 3, 2010
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(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 Honeywell Technical Operations Center, 1944 E. Sky Harbor Circle, Phoenix, Arizona 85034; telephone 602-365-3099 or 800-601-3099; fax 602-365-3343; e-mail AeroTechSupport@Honeywell.com; Internet <http://portal.honeywell.com/wps/portal/aero>.

(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).

Issued in Renton, Washington on April 8, 2010.

Ali Bahrami,  
Manager, Transport Airplane Directorate,  
Aircraft Certification Service.