2/4/2020 **FOR YOUR INFORMATION** 2020-10/1-2

1698096

To: Honeywell Aerospace

Info: FAA (AVP-1, AVP-200, AFS-300, AFS-280, AFS-800, AFS-900, AFS-200, AJV-A, MKC-AEG, SEA-AEG, LGB-AEG, ANM-100, AQS-230), AMFA, AOPA, ALPA, ASAP, ATSG, GAMA, IAM, IBT, ICASS, NBAA, NTSB, RAA, PAMA, TWU

From: Becky L. Hooey, Director
NASA Aviation Safety Reporting System

Re: Honeywell Epic Flight Management System Generated Track Errors

We recently received an ASRS report describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the enclosed deidentified report.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Gary Brauch at (408) 541-2869 or email at gary.j.brauch@nasa.gov

Aviation Safety Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189

ACN: 1698096

Time
Date: 201910
Local Time Of Day: 1201-1800

Place
Locale Reference.Airport: TEB.Airport
State Reference: NJ
Altitude.MSL.Single Value: 1500

Environment
Flight Conditions: IMC

Aircraft 1
ATC / Advisory.TRACON: N90
Make Model Name: Cessna Citation Sovereign (C680)

Component 1
Aircraft Component: FMS/FMC

Person 1
Function.Flight Crew: Captain
Function.Flight Crew: Pilot Not Flying
ASRS Report Number: 1698096

Events
Anomaly.Aircraft Equipment Problem: Less Severe
Anomaly.Deviation - Track / Heading: All Types
Anomaly.Deviation - Procedural: Clearance
Anomaly.Deviation - Procedural: Published Material / Policy
Detector.Person: Flight Crew
Result.Flight Crew: FLC Overrode Automation
Result.Flight Crew: Returned To Clearance
Result.Flight Crew: Overcame Equipment Problem
Result.Air Traffic Control: Provided Assistance
Result.Air Traffic Control: Issued New Clearance
Result.Air Traffic Control: Issued Advisory / Alert

Narrative 1

Sovereign AOB 19-05 Honeywell Epic Anomalies - Thank goodness I had recently read this AOB (Aircraft Operator Bulletin) and was familiar with it, but it still did not eliminate the following event.

On [date], on a flight departing TEB, I was Pilot Monitoring and my co-Captain was Pilot Flying. He loaded the FMS with the RUUDY6 while parked at TEB [FBO] ramp. After passenger boarding and crew briefings we taxied to Runway 24. My co-Captain performed a normal takeoff from Runway 24 with the Flight Director set to NAV mode. Upon positive rate he called for gear up, I began the process of selecting gear up, turning off lights, configuring the FGP with YD (Yaw Damper) and VS (Vertical Speed) then cleaning the wing at FRA. The Pilot Flying had come out of takeoff power and had gone to cruise power shortly after calling for gear up, which is reasonable for a departure with a close in level off. Tower switched us to TRACON, and while I was making the switch the Pilot Flying engaged the Autopilot. While in the process of checking

in with NY Approach 119.2 and about 1,000 feet MSL, I noticed the aircraft start to make a left hand turn just prior to reaching DAVIM. It took me maybe 8-10 secs to recognize that this was the Honeywell Epic Anomaly that I had just read about, so I began to act. Near simultaneously the Pilot Flying exclaimed something like "Hey why is it turning left." I hit the HDG mode of the Flight Guidance Panel and turned the heading knob to the right to something like 290. I also exclaimed "TURN RIGHT, NOW." Fortunately, the Pilot Flying was not a "Magenta Kid" and had already clicked off the autopilot, rolling the aircraft into a 30 degree right bank and leveling at 1,500 feet MSL. He skillfully handled the aircraft off of autopilot until we were headed in the correct direction and had the situation under control. After all of this; the ready recognition, the quick reaction, the skillful maneuvering, the good crew coordination, it was still not fast enough to keep NY Approach from noticing. Shortly after starting our corrective maneuver the controller chimed in stating "Aircraft X, I suggest you turn right to a heading of 300 immediately. Your Autopilot is taking you off course." I could tell, from the tone in his voice that he had seen this before, and he was really quick with a corrective action as well. I don't believe we got far enough off course that it constituted an airspace violation, but still, this needs to be addressed and fixed.

The Pilot Flying and I discussed the event after climbing to altitude and I showed him the AOB. He stated that he saw the White/Magenta holding pattern appear on the FMS as the aircraft began its left-hand turn. Furthermore, he wasn't sure if the holding pattern had appeared during FMS programming back at [FBO] ramp, and he also was not sure if he had seen it while holding short at the approach end to Runway 24 as the AOB eludes to. I don't recall seeing the holding pattern depicted either before takeoff. But honestly, this is rather non-standard and I think most pilots would not recognize this anomaly from week to week, and would most likely forget to check for it or just plain miss it. I may go into TEB 10 times in a month then not see it again for 6 months. Where else is this going to happen?

I've recently returned to the Sovereign from two other [aircraft] types. I flew the CE680 for several years and during that time Sovereign drivers never had a problem with the RUDDY departure while in NAV mode, vertical speed and autopilot. In fact, this was the standard setup during that time-frame. As far as I know this is still the standard both in the simulator and IOE training. I certainly hope no one is going to suggest that we switch to using HDG mode for this departure as I'm pretty sure this would lead to far more NAV deviation when crews become distracted with normal close-in departure duties and forget to dial in the heading change at DAVIM. In very short order many of us would end up over EWR.

I'm writing this [report] because this really needs to be addressed and most likely by Honeywell and their software developers. What's changed? How has this all of a sudden become a problem? NAV mode should help simplify departures not add confusion.

Callback 1

Reporter stated formerly being in the fleet and that the anomaly did not exist at that time, but that following a several year absence and subsequent return to the fleet, the anomaly was then evident. Reporter further stated that the company, in addressing the issue, has published a bulletin that describes how the anomaly manifests itself. Reporter further stated that the bulletin describes symbology on the navigation display that indicates anomaly presence and prescribes pilot action should the anomaly occur. Reporter further reiterated that the anomaly could and should be eliminated in the software, rather than load the pilot with more work during the already high workload environment of a complex departure in a high density area.

Synopsis

CE680 Captain reported that a known Honeywell Epic FMC anomaly resulted in a course deviation while on the TEB RUUDY 6 SID.