

# CALLBACK

From NASA's Aviation Safety Reporting System



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## Electing the Electronic Flight Bag

The Electronic Flight Bag (EFB) is the electronic equivalent to the pilot's traditional flight bag. It contains electronic data and hosts EFB applications, and it is generally replacing the pilots' conventional paper products in the cockpit. The EFB has demonstrated improved capability to display aviation information such as airport charts, weather, NOTAMs, performance data, flight releases, and weight and balance.

The EFB platform, frequently a tablet device, introduces a relatively new human-machine interface into the cockpit. While the EFB provides many advantages and extensive improvements for the aviation community in general and for pilots specifically, some unexpected operational threats have surfaced during its early years.

ASRS has received reports that describe various kinds of EFB anomalies. One typical problem occurs when a pilot "zooms," or expands the screen to enlarge a detail and thereby unknowingly "slides" important information off the screen, making it no longer visible. A second type of problem manifests itself in difficulty operating the EFB in specific flight or lighting conditions, while yet another relates to EFB operation in a particular phase of flight. This month *CALLBACK* addresses some common problems that pilots have experienced during the EFB's adolescence.

### The Disappearing Departure Course

This A320 crew was given a vector to intercept course and resume the departure procedure, but the advantage that the EFB provided in one area generated a threat in another.

From the Captain's Report:

■ *Air Traffic Control (ATC) cleared us to fly a 030 heading to join the GABRE1 [Departure]. I had never flown this Standard Instrument Departure (SID). I had my [tablet] zoomed in on the Runway 6L/R departure side so I wouldn't miss the charted headings. This put Seal Beach [VOR] out of view on the [tablet]. I mistakenly asked the First Officer to sequence the Flight Management Guidance Computer (FMGC) between GABRE and FOGEX.*

From the First Officer's Report:

■ *During departure off Runway 6R at LAX [while flying the GABRE1 Departure, ATC issued, "Turn left 030 and join the GABRE1 Departure." This was the first time for both pilots performing this SID and the first time departing this runway*

*for the FO.... Once instructed to join the departure on the 030 heading, I extended the inbound radial to FOGEX and inserted it into the FMGC. With concurrence from the Captain, I executed it. ATC queried our course and advised us that we were supposed to intercept the Seal Beach VOR 346 radial northbound. Upon review, both pilots had the departure zoomed in on [our tablets] and did not have the Seal Beach [VOR] displayed.*

### Hidden Holding Patterns

This B757 Captain received holding instructions during heavy traffic. While manipulating his EFB for clarification, he inadvertently contributed to an incorrect holding entry.

■ *[We were] asked to hold at SHAFF intersection due to unexpected traffic saturation.... While setting up the FMC and consulting the arrival chart, I expanded the view on my [tablet] to find any depicted hold along the airway at SHAFF intersection. In doing so, I inadvertently moved the actual hold depiction...out of view and [off] the screen.*

*The First Officer and I only recall holding instructions that said to hold northeast of SHAFF, 10 mile legs. I asked the First Officer if he saw any depicted hold, and he said, "No." We don't recall instructions to hold as depicted, so not seeing a depicted hold along the airway at SHAFF, we entered a right hand turn. I had intended to clarify the holding side with ATC, however there was extreme radio congestion and we were very close to SHAFF, so the hold was entered in a right hand turn.*

*After completing our first 180 degree turn, the controller informed us that the hold at SHAFF was left turns. We said that we would correct our holding side on the next turn. Before we got back to SHAFF for the next turn, we were cleared to [the airport].*

### Name that Taxiway

This B737 Captain has obviously encountered frustration while using his moving map. Although the specific incident is not cited, the Captain clearly identifies an EFB operational problem and offers a practical solution for the threat.

■ *In [our] new version of [our EFB chart manager App],... a setting under Airport Moving Map (AMM)...says, "Set as default on landing," [and I cannot]...turn it off. If [I] turn it off, it turns itself back on. This is bad.... It should be the*

pilot's choice whether or not to display it at certain times—particularly after landing. Here's the problem with the AMM: When you zoom out, the taxiway names disappear.

Consider this scenario: As you turn off of the runway at a large airport, you look down at the map (which is the AMM, not the standard taxi chart, because the AMM comes on automatically, and [I] cannot turn that feature off). You get some complicated taxi instructions and then zoom out the AMM [to] get a general, big-picture idea of where you're supposed to go. But when [I] zoom out the AMM, taxiway names disappear. ... [I] have to switch back to the standard taxi chart and zoom and position that chart to get the needed information. That's a lot of heads-down [tablet] manipulation immediately after exiting the runway, and it's not safe.

[Pilots should have] control over whether or not to automatically display the AMM after landing. The AMM may work fine at a small airport, but at a large airport when given taxi instructions that are multiple miles long, the AMM is useless for big-picture situational awareness.

## Subtle and Sobering

This A319 crew had to manage multiple distractions prior to departure. An oversight, a technique, and a subtle EFB characteristic subsequently combined to produce the unrecognized controlled flight toward terrain.

■ We received clearance from Billings Ground, "Cleared... via the Billings 4 Departure, climb via the SID...." During takeoff on Runway 10L from Billings, we entered IMC. The Pilot Flying (PF) leveled off at approximately 4,600 feet MSL, heading 098 [degrees]. We received clearance for a turn to the southeast...to join J136. We initiated the turn and then requested a climb from ATC. ATC cleared us up to 15,000 feet. As I was inputting the altitude, we received the GPWS alert, "TOO LOW TERRAIN." Immediately the PF went to Take Off/Go Around (TO/GA) Thrust and pitched the nose up. The Pilot Monitoring (PM) confirmed TO/GA Thrust and hit the Speed Brake handle...to ensure the Speed Brakes were stowed. Passing 7,000 feet MSL, the PM announced that the Minimum Sector Altitude (MSA) was 6,500 feet within 10 nautical miles of the Billings VOR. The PF reduced the pitch, then the power, and we began an open climb up to 15,000 feet MSL. The rest of the flight was uneventful.

On the inbound leg [to Billings], the aircraft had experienced three APU auto shutdowns. This drove the Captain to start working with Maintenance Control.... During the turn, after completion of the walkaround, I started referencing multiple checklists...to prepare for the non-normal, first deicing of the year. I then started looking

at the standard items.... It was during this time that I looked at the BILLINGS 4 Departure, [pages] 10-3 and 10-3-1.... There are no altitudes on...page [10-3], so I referenced [page] 10-3-1. On [page] 10-3-1 for the BILLINGS 4 Departure at the bottom, I saw RWY 10L, so I zoomed in to read this line. When I did the zoom, it cut off the bottom of the page, which is the ROUTING. Here it clearly states, "Maintain 15,000 or assigned lower." I never saw this line. When we briefed prior to push, the departure was briefed as, "Heading 098, climb to 4,600 feet MSL," so neither the PF nor the PM saw the number 15,000 feet MSL. The 45 minute turn was busy with multiple non-standard events. The weather was not great. However, that is no excuse for missing the 15,000 foot altitude on the SID.

## Turbulent Expansion

This ERJ175 pilot attempted to expand the EFB display during light turbulence. Difficulties stemming from the turbulence and marginal EFB location rendered the EFB unusable, so the pilot chose to disregard the EFB entirely.

■ We were on short final, perhaps 2,000 feet above field elevation. [It had been a] short and busy flight. I attempted to zoom in to the Jepp Chart currently displayed on my EFB to reference some information. The EFB would not respond to my zooming gestures. After multiple attempts, the device swapped pages to a different chart. I was able to get back to the approach page but could not read it without zooming. I attempted to zoom again, but with the light turbulence, I could not hold my arm steady enough to zoom. [There is] no place to rest your arm to steady your hand because of the poor mounting location on the ERJ175.

After several seconds of getting distracted by...this EFB device, I realized that I was...heads-down for way too long and not paying enough attention to the more important things (e.g., acting as PM). I did not have the information I needed from the EFB. I had inadvertently gotten the EFB onto a company information page, which is bright white rather than the dark nighttime pages, so I turned off my EFB and continued the landing in VMC without the use of my EFB. I asked the PF to go extra slowly clearing the runway to allow me some time to get the taxi chart up after landing.

...I understand that the EFB is new and there are bugs... This goes way beyond the growing pains. The basic usability is unreliable and distracting.... In the cockpit, the device is nearly three feet away from the pilot's face, mounted almost vertically...at a height level to your knees. All [EFB] gestures in the airplane must be made from the shoulder, not the wrist. Add some turbulence to that, and you have a significant heads-down distraction in the cockpit.

ASRS Alerts Issued in February 2018	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	2
Airport Facility or Procedure	11
ATC Equipment or Procedure	5
Hazard to Flight	1
Other	1
<b>TOTAL</b>	<b>20</b>

459

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February 2018 Report Intake	
Air Carrier/Air Taxi Pilots	4,651
General Aviation Pilots	1,065
Controllers	440
Flight Attendants	420
Military/Other	298
Mechanics	231
Dispatchers	117
<b>TOTAL</b>	<b>7,222</b>