Data lost?

By John Morris

Portable electronic devices (PED's).

The FAA first used this term in 1961 when FAR 91.19 was written regarding prohibition of using portable frequency-modulated radio receivers [FM transistor radios!] when VOR equipment was in use for navigation. Then in 1963 the now current FAR §91.21 was established:

(a) Except as provided in paragraph (b) of this section, no person may operate, nor may any operator or pilot in command of an aircraft allow the operation of, any portable electronic device on any of the following U.S.-registered civil aircraft;
(1) Aircraft operated by a holder of an air carrier operating certificate or an operating certificate;
or
(2) Any other aircraft while it is operated under IFR.

(b) Paragraph (a) of this section does not apply to--
(1) Portable voice recorders;
(2) Hearing aids;
(3) Heart pacemakers;
(4) Electric shavers; or
(5): Any other portable electronic device that the operator of the aircraft has determined will not cause interference with the navigation or communication system of the aircraft on which it is to be used.

Obviously technology has advanced in communications and navigation since this regulation was written so that the aviation community has progressed from worrying about just FM radios to a host of PED's. And with the way §91.21 is written it is the responsibility of the certificate holder or aircraft operator to determine what PED's are interfering with the aircraft equipment. Just ban everything portable while on-board!

To help the air carriers and operators, including the paying public, the FAA has been issuing Advisory Circulars (AC) to amend§91.21 without actually re-writing the regulation. The first of the AC's regarding PED's was AC 91.21.1- Use of

Portable Electronic Devices aboard aircraft, issued in 1993-no information was available regarding this 1st AC. The following chronology of §91.21.1AC's is condensed so as to keep you awake.

- Year 2000 AC 91.21.1A was issued suggesting curbing all PED use below 10,000' due to sterile cockpit procedures and possible missed safety briefings, The FCC joined in concerning cell phone use at altitude causing transmitter tower interference but with the FAA allowance of cell phone use before taxi. Included were some specific examples of prohibited PED's; "intentional radiators or transmitters" aka CB radios and cell phones.
- 2006 saw AC 91.21.1B, which after further studies addressed use of PED's during non-critical phases of flight and the addition of "mobile telephones", portable computers with wireless capabilities and Personal Digital Assistants (PDA's). These PED's are now referred to as T-PED's. First referral to when safely at cruise altitude, these PED's can be used. With this AC more references are made regarding Part 121 passenger briefings regarding PED's usage.
- 2015 AC 91.21.1C informed of an established rule making committee for PED use – aircraft with on-board WiFi and mobile phone capabilities. Also, the now when approved for all phases of flight, the use of the PED ***Electronic Flight Bags (EFB's)*** during air carrier operations along with more defined FCC rules regarding cellular phone usage.
- 2017 AC 91.21.1D primarily is addressing flight crew use of PED's while at crew stations and includes digital links to various reference sites.

Electronic Flight Bags (EFB's), Part 91 use only, is what I am aiming for with this article. I believe the majority of the GA/PC12 driver community currently has been referring to their PED (EFB) as their iPad or other tablet device. Can you remember when iPad's were not around? Do you still carry paper charts?

Historical refresher of pertinent PED's –

i) the first "Brick" cellphone – 1973, 1st commercial cellphone – 1983
ii) the 1st true laptop computer – 1981
iii) the 1st officially called and aircraft panel mounted EFB – 1999
iv) the 1st iPad was introduced in 2010. Seems longer doesn't it?

Due to the 1st FSDO approved EFB, mounted in a B-737; the FAA foresaw the coming use of EFB's and the reduction in need of paper aeronautical charts by publishing the following additional AC's concerning EFB usage:

AC 120-76 (2002) "Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices"

To spare you the details [hyper condensed] the 1st AC 120-76, issued 2002 "Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices" in essence established (3) classes of PED's and their uses.

- Portable Class 1 and 2, with Class 1 not mounted and Class 2 mounted –no approval necessary since mounts are also "portable"
- Installed Class 3 – approval required

AC 120-76 A (2003) advises for parts 91,135,121 operations approval guidelines all PED classes. -76B (2012), -76C (2014) and -76D (2017) are geared primarily for commercial implementation of newer technological advances.

AC 91-78 in 2007- Use of Class 1 or Class 2 Electronic Flight Bag (EFB) condensed to following:
"Part 91, with information for removal of paper aeronautical charts and other documentation from the cockpit through the use of either portable or installed cockpit displays (electronic flight bags (EFB))".

We (part 91) could use a laptop well before the first iPad but there was probably not enough physical room in the cockpit and/or electrical power available. It was also dangerous to have it loose in the cockpit. But the most important thing is to keep the database current!

This brings us to the reason for this article. Two occurrences - one old [Legacy] and one very recent [NG].

In the spring of 2011 while training/transitioning a new pilot hired to fly a newly purchased, used Legacy we were flying from south Florida to Jamaica and then some flights to/from Jamaica to Haiti. Having been accustomed to the Dual Garmin 430s on-board and what I thought was the "usual" American database

(covered North/Central/South America plus Canada) while we flew in Georgia and Florida I did not concern myself with loading the international flight plan until after engine start. But I also believe in redundancy and so I had previously asked the pilot to buy the Jeppesen (paper) pack covering the Bahamas and Caribbean. Neither of us owned an iPad loaded with the current charts from one of the available vendors of that time.

It was a good thing we had the paper purchase. With the intro of the iPad and Jeppesen database dominance taking a big hit due to cheaper competition, Jeppesen started breaking down the database offerings. It turns out the Legacy I was in only had the American approaches database. This database did not even have an intersection 14 miles off-shore! Needless to say I got some good practice loading user waypoints from the paper, imputing Lat-Long and naming them to match the paper data. Fun! Of course the subscription was corrected by time the training was over.

I did not think the more recent event was a possibility until afterword. But it is the reason for this article.

A new NG client called me a couple of weeks ago asking why after loading the current database into the APEX system he could "see" the aircraft at his home airport (on the MFD) along with the surrounding terrain but no indications of airport/VOR etc. names or any kind of digital data. He absently started to load a flight plan but the system kept telling him the imputed fixes were not in the database. What the hell, I think were some of the possible words used when he called me. I answered pretty much the same! I had no reasonable explanation after going through the usual re-loading procedures.

As it happens he was only about 35 miles to a satellite service center and a possible solution was to fly over to see if this strange malady could be corrected. Except without the database even the GPS cannot help. So, load up a good old flight via VOR navigation and a possible ILS/VOR/NDB approach. Except that that only works if you have the ***data*** for Tower/Approach/VOR/ILS frequencies. And tada – EFB! ***If*** you have one and it has the current aeronautical data. You cannot navigate using GPS in your own ship on the EFB, but you would not need to if you

remember how to use the non-GPS tools in the aircraft. Or you can do what I did and load Lat-Long from years ago.

So what happened with the NG? It turns out the database subscription downloaded the wrong country, Australia instead of America! Pretty hard to find yourself.

Both stories are quite similar with different equipment but the same result. Both events involve redundancy, with the current and best solution of owning an EFB or two. Keep it/them current, and have a power source readily available. When the database "faulted" in the NG it concerned me that there was not a backup database. And what if the database fault was not this simple? It then occurred to me that this can happen with *any* of the Legacy aircraft (even retrofitted ones), since the data loading is being consolidated into one source. It is in the best interests of all pilots to *always* have a separate source of the now readily available digital data. Also keep in mind this data should/must include Sectional/Low and High Altitude IFR charts.

When was the last time you really looked at one of the above mentioned charts?

"A safe pilot is always learning"

John Morris

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