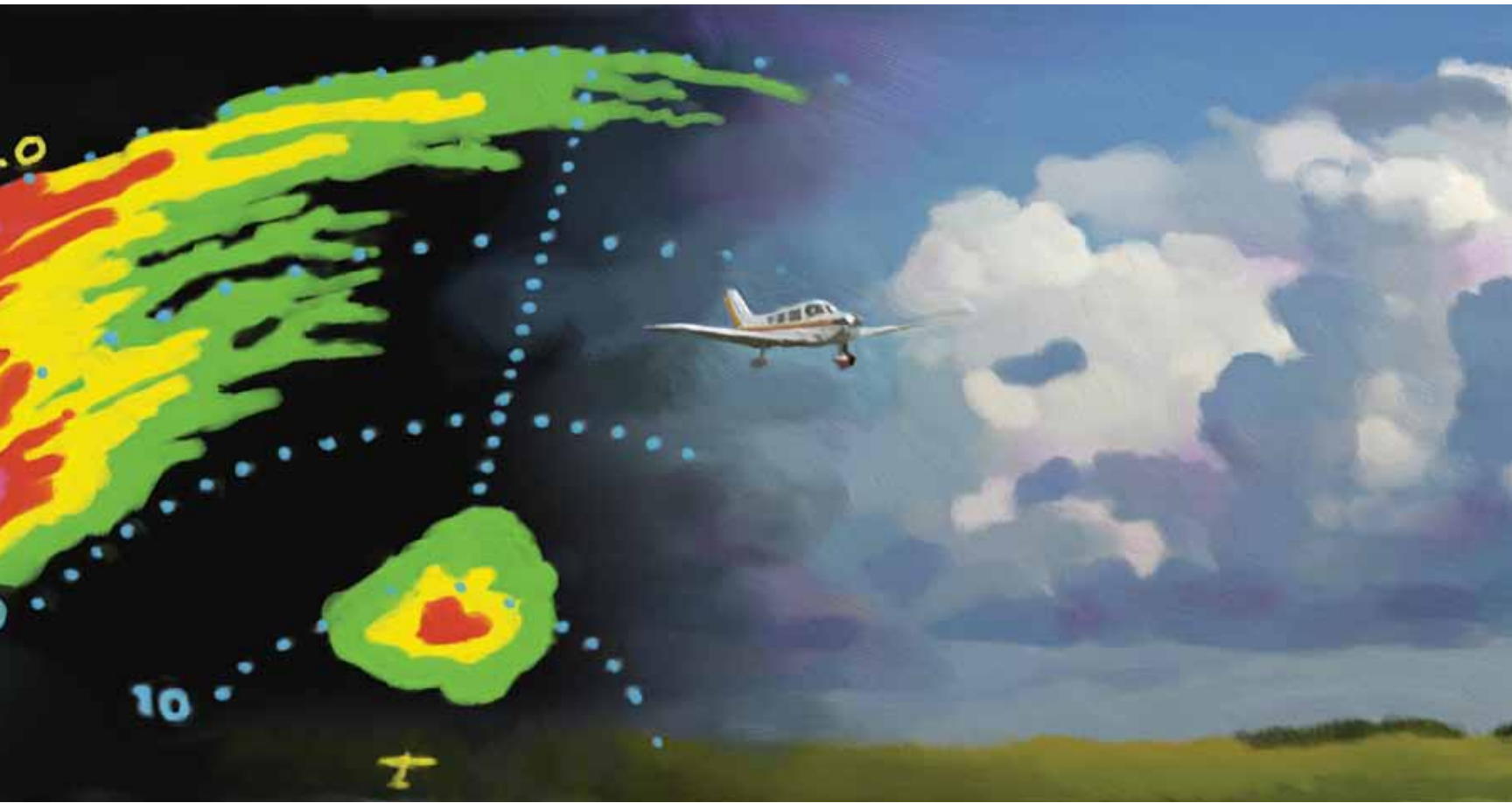




**J. MAC MCCLELLAN**

BETTER PILOT / LEFT SEAT



# Weather Briefings and Satellites

Real-time weather data in the cockpit changes preflight planning

**THE FAA'S RULES ARE** constantly running up against new technology. As in much of our non-flying lives, new technology, mostly electronic, has transformed the way we live. Anybody seen a pay phone lately?

Good old FAR 91.103 is the FAA rule that requires preflight planning by all pilots in command. This rule contains the infamous demand that you “become familiar with all information concerning that flight.” How could you possibly know *all* the available information there is? All is an exclusive word that allows no exceptions. It’s the type of rule that would never withstand normal court procedures, but the FAA does not need to submit its laws to the conventional courts.

Since no pilot can ever prove that they were familiar with ALL information concerning their flight, it seems to me that not crashing is a sufficient defense. You may not have known ALL information, but you knew enough to avoid problems. But that is for lawyers to parse, not pilots.

To aid pilots on the way to learning ALL available information, the FAA provides at least a little guidance in FAR 91.103, including the requirement to familiarize yourself with weather reports and forecasts. We

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## What the weather would do three or four hours into the trip was just a guess, at best, and I would be able to watch the conditions change and develop on the displays in the cockpit.

have been told over the years by instructors that this means we must have an “official” weather briefing to comply with the rule. I don’t know of an explicit definition of an “official” weather briefing and what it must include because that ALL demand keeps popping up. But a number of outlets in addition to a flight service station can deliver FAA-approved weather information. And when it comes to the basics such as METARs, TAFs, AIRMETs, SIGMETs, and winds aloft forecasts, there is only one source, and that is the FAA’s weather office in Kansas City, no matter what outlet is delivering the info.

What started me thinking about FAR 91.103 and its absurd and unobtainable requirements for preflight planning was a recent flight from my home airport in Muskegon, Michigan, to Rocky Mountain Metro. The Pilatus Owners and Pilots Association was holding its annual conference in Boulder, Colorado, and was gracious enough to invite me to come and speak.

Big thunderstorms were the preflight planning issue that day. For some reason I don’t understand, we have had an unusually large number of weather systems oriented almost directly east-west across the middle of the country this late spring and early summer, and this day offered up another. Really big thunderstorms were over Chicago, and a more or less unbroken line of radar returns stretched west into Nebraska and eastern Colorado.

Given this weather situation, what made sense for preflight planning for the trip in my Baron? The flight would take nearly five hours, and I would need a fuel stop to arrive at the destination with at least the one hour of fuel reserve that I demand for my own operations, no matter what the weather. If forecasts indicate a chance of the need to divert to an alternate, I plan to arrive at the alternate with

one hour of fuel. For this trip I planned to stop at Norfolk, Nebraska, because the airport has long runways, ILS and GPS LPV (localizer performance with vertical guidance) approaches, and a quick check on FltPlan.com showed it had the lowest fuel prices along my route.

It took less than a minute of looking at the national Nexrad mosaic on the computer to see that there were no weather issues at all for departure and for the first few hundred miles of the trip. My route would keep me comfortably north of the line of storms. There was no TAF for Norfolk, but Sioux City, Iowa, just 54 nautical miles to the east, did have a forecast that included a chance of thunderstorms but with ceiling and visibility that qualified as a legal IFR alternate airport.

Did examining the weather radar picture and the terminal forecast for my alternate airport meet the demands of FAR 91.103 with its ALL requirement? I think that it did because I have satellite weather delivered into my cockpit by XM Weather and Avidyne Sirius/WSI. I know that it’s weird to have two satellite weather systems in the same airplane, but it’s a long story.

### IN-FLIGHT INFORMATION

The fact is that most pilots who fly much at all have the capability to receive up-to-date graphical and text weather via satellite while in flight. There are the installed satellite receivers and displays like I have, but there are hundreds of thousands of portable receivers pilots own and use. Some pilots I know have even had good success receiving radar images on smartphones in the cockpit.

So what’s the point of spending a huge amount of time poring over endless area forecasts or strings of terminal forecasts that simply repeat the obvious that there was a chance of thunderstorms along almost the entire route? If I had done

**The fact is that most pilots who fly much at all have the capability to receive up-to-date graphical and text weather via satellite while in flight.**

that, would I be familiar with ALL information about the flight? I don't think so. And FltPlan.com, that wonderful free online flight planning and flight plan filing service, had considered my route and the winds aloft and spit out a prediction of time en route and fuel required. I have learned over the years FltPlan.com is very precise in its calculations, so that aspect of the preflight was done almost instantly and perfectly.

For me the valid question concerned the weather conditions for departure and early in the trip, and the general area conditions along the route to be sure some airports would have weather conditions above IFR

approach minimums. What the weather would do three or four hours into the trip was just a guess at best, and I would be able to watch the conditions change and develop on the displays in the cockpit.

The first part of the trip worked out exactly as I expected. Crossing Lake Michigan, southern Wisconsin, and on into Iowa offered smooth air on top of low clouds with only light headwinds. The Nexrad images kept arriving on the Garmin and Avidyne displays about every five minutes, and the radar echoes stayed south of the magenta course line the navigation systems drew on the display. If I didn't know

ALL about the weather, I sure did know what I needed to.

I had filed to cross the Janesville, Wisconsin, VOR and then direct to the fuel stop at Norfolk. That course looked good relative to the radar returns—for a while. But then the line of storms began to drift to the north. I could see on the flat glass displays that if I deviated north to the Mason City, Iowa, VOR and then direct to Norfolk I would stay clear of the weather. Minneapolis Center controllers thought that plan made perfect sense and issued the clearance.

But at some point I still had to go through the line of weather to make it to the Denver area. Each new Nexrad image showed at least small changes in the size and intensity of the radar returns, and it looked like there were some breaks in the line in the Sioux City area. I would continue on and see how the weather changed as I approached. So was I

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- OAT** Outside Air Temp.
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- GPH** Gallons per Hour
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Technology that works

making “preflight” plans because I was not yet to the line of weather, or was I making “in-flight” weather plans? Those satellites above were making FAR 91.103 very obsolete.

I have spent a lot of time flying over the Great Plains in thunderstorm season, and just like those guys in the DC-3s 70 years ago, I have learned that lower is better over this flat land. Heck, maybe even the guys struggling across the Plains in tri-motors learned the same thing. When thunderstorms are over the Plains, the visibility outside of the rain shafts is usually very good so you can dodge the cells visually rather than getting your brains kicked in flying along in the bottoms of the clouds associated with the storms.

As I approached the now-broken area of the line I was still in the clear. Minneapolis granted my request for 4,000 feet, and that got me below the bases for a time. As I flew into Sioux City

terminal airspace the approach controllers there could clear me down to 3,000 feet, and I was again just below the bases and cleared to deviate around the rain shafts. By the time I got to Norfolk a thunderstorm had moved on a few miles to the north, and I landed in a gusty north wind behind the cell.

This trip is now typical in the days of satellite weather, but it would have been very different not that long ago. Before XM Weather and Avidyne Sirius/WSI, I would have had to make some sort of a preflight plan based on radar summary charts that were already a half-hour old, and I could have seen those charts only if I was able to walk into an FSS. My airplane has an excellent weather radar in the nose, but down low it can only effectively see storms for about 30 or 40 miles, which makes dealing with a long line of storms an iffy proposition. But with the Nexrad image, plus outlines of

AIRMETs and SIGMETs, and text terminal forecasts and hourly reports, I was being “briefed” on the weather continuously during the flight.

The requirement to consider weather reports and forecasts before departure still makes sense, but on a trip of any length you are really only deciding if the weather is good enough to depart and fly the first part of the trip. You’ll get the weather information for the rest of the trip as you fly along. We now can know ALL about the weather thanks to satellites. The real requirement is not to know about the weather, but to have the discipline to land short of the destination or divert when the weather doesn’t allow us to safely continue. *EAA*

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**J. Mac McClellan**, EAA 747337, has been a pilot for more than 40 years, holds an ATP certificate, and owns a Beechcraft Baron.



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